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A FRESH Approach to Addressing Food Insecurity: Student Feedback on University of
California Irvine's Basic Needs Hub

THESIS

submitted in partial satisfaction of the requirements
for the degree of

MASTER OF ARTS

in Social Ecology

by

Vivianna Marie Goh

Dissertation Committee:
Professor Kirk Williams
Professor Valerie Jenness
Assistant Professor Karna Wong

2021

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ABSTRACT OF THE THESIS

A FRESH Approach to Addressing Food Insecurity: Student Feedback on University of

California Irvine's Basic Needs Hub

by

Vivianna Marie Goh

Master of Arts in Social Ecology

University of California, Irvine, 2020

Professor Kirk Williams, Chair

A 2017 report from the University of California (UC) found that nearly half of UC

undergraduate students were food insecure or lacking consistent access to food. Research

has shown that food insecurity has detrimental effects on student health and academic

performance. However, literature on university efforts to address food insecurity is limited.

UC Irvine's FRESH Basic Needs Hub serves food-insecure students by offering a food

pantry, food stamp application assistance, and other services. This study analyzed

qualitative data from over 200 FRESH users to understand what students perceive as

program benefits and areas of improvement. Most respondents (50%) expressed that

FRESH supported their health and provided a safe space to study and prepare food.

However, 16% of students requested a more accessible location, increased food quantity,

and longer hours of operation. These findings can assist FRESH in enhancing services,

while offering suggestions for basic needs initiatives and policies.

INTRODUCTION

Nearly half of all University of California (UC) undergraduate students have experienced food insecurity, meaning that they are unable to afford food, or feel uncertain of whether they will have enough food to last (UC Global Food Initiative [GFI], 2017). This study was conducted to understand the prevalence of food insecurity on UC campuses, as it can potentially "widen disparities in students' academic achievement, overall health, and future success" (UC GFI, 2017, p. 3). Previous studies have found that food-insecure students are at risk of poor physical and mental health, as well as compromised academic performance (Chaparro et al., 2009; Gallegos et al., 2013; Hughes et al., 2011; Kaiser, 2011). Since 2015, UC Office of the President has allocated over $4 million to UC campuses to alleviate food insecurity for students. This funding was used to increase student access to nutritious foods across the UC's ten campuses, including Irvine, Los Angeles, Riverside, San Diego, Merced, Berkeley, San Francisco, Davis, Santa Barbara, and Santa Cruz (UC GFI, 2017). Although UC GFI has highlighted UC campus initiatives to create or expand food pantries, distribute gift cards and farmers' market vouchers, and offer food stamp enrollment services, there are few articles documenting or evaluating these efforts.

The United States Government Accountability Office (2018) remarked that "information about the prevalence of food insecurity among college students nationally is limited" (p. 11). Likewise, there is a deficit in research about the qualitative experiences of food insecure students. This study aims to contribute to the knowledge on college food insecurity by examining open-ended user feedback from UC Irvine's (UCI) Food and Resources Empowering Students with Hope (FRESH) Basic Needs Hub. In May 2018, UCI

undergraduate and graduate students who used FRESH were invited to participate in a survey conducted by the UCI Center for Educational Partnerships. I analyzed the open-ended survey responses for recurring themes based on the research questions, "What benefits do students gain by using FRESH?" and "What do students consider as areas of improvement for FRESH?" Findings from this research will identify best practices for university basic needs centers, provide recommendations for FRESH, and offer suggestions for how policy can alleviate food insecurity on college campuses.

CHAPTER 1: LITERATURE REVIEW

Defining Food Insecurity

In 2019, it was estimated that 690 million people (about 9% of the global population) suffered from hunger and that 750 million people in the world experienced severe levels of food insecurity (Food and Agriculture Organization [FAO], International Fund for Agricultural Development [IFAD], United Nations International Children's Fund [UNICEF], World Food Program [WFP] & World Health Organization [WHO], 2020). *Hunger* can be defined as an uncomfortable, painful sensation and physiological condition caused by insufficient food intake (FAO, IFAD, UNICEF, WFP, & WHO, 2020). Although food insecurity may relate to hunger, it is also influenced by broader issues such as food availability, accessibility, utilization, and stability (Cafiero et al., 2017; Saint Ville et al., 2019). Food-insecure households and individuals may experience reduced food quantities, reduced quality (types and diversity) of foods, psychological stress about decreasing choices and expected lack of food, and adverse reactions from other individuals based on social norms (Saint Ville et al., 2019).

The Food and Agriculture Organization (FAO) of the United Nations developed the Food Insecurity Experience Scale (FIES) in 2013, as a global reference to examine food insecurity as a lived experience (FAO, IFAD, UNICEF, WFP, & WHO, 2020; Saint Ville et al., 2019). FIES asks respondents eight questions about their conditions and behaviors related to food (Table 1.1). However, there are different food insecurity measures specific to certain countries, such as the United States' Household Food Security Survey Module (HFSSM), Brazil's Escala Brasileira de Insegurança Alimentar (EBIA), Mexico's Escala

Mexicana de Seguridad Alimentaria (EMSA), and Guatemala's Escala Latinoamericana y

Caribena de Seguridad Alimentaria (ELCSA; Cafiero et al., 2017).

Table 1.1

English Version of the Food Insecurity Experience Scale

N.	Short reference	Question wording
1	WORRIED	During the last 12 MONTHS, was there a time when you were worried you would not have enough food to eat because of a lack of money or other resources?
2	HEALTHY	Still thinking about the last 12 MONTHS, was there a time when you were unable to eat healthy and nutritious food because of a lack of money or other resources?
3	FEWFOODS	Was there a time when you ate only a few kinds of foods because of a lack of money or other resources?
4	SKIPPED	Was there a time when you had to skip a meal because there was not enough money or other resources to get food?
5	ATELESS	Still thinking about the last 12 MONTHS, was there a time when you ate less than you thought you should because of a lack of money or other resources?
6	RANOUT	Was there a time when your household ran out of food because of a lack of money or other resources?
7	HUNGRY	Was there a time when you were hungry but did not eat because there was not enough money or other resources for food?
8	WHOLEDAY	During the last 12 MONTHS, was there a time when you went without eating for a whole day because of a lack of money or other resources?

Source. Cafiero et al., 2017.

The United States Department of Agriculture (USDA) uses language and measures

similar to FIES in their annual food security reports. *Food insecurity* is described by the

USDA as an economic and social condition, in which access to adequate food is limited by

lack of money and other resources (Coleman-Jensen et al., 2020). In their definition of *food*

security as "access at all times to enough food for an active, healthy life," (Coleman-Jensen et al., 2019, p.2), the USDA references the 1996 World Food Summit's declaration of global food security: when "all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life" (Saint Ville, et al., 2019, p. 1). The USDA Economic Research Service (ERS) assesses food security with the Household Food Security Survey Module (HFSSM). The survey questions were developed in 1995, before the creation of FIES (Coleman-Jensen et al., 2019; Nazmi et al., 2019). These questions (Appendix A) are part of the Food Security Supplement of the annual U.S. Census Bureau's Current Population Survey, which is administered to about 50,000 nationally representative households (Coleman-Jensen et al., 2019). Like FIES, HFSSM asks respondents questions about skipping meals, eating less, and running out of food. However, the full version of HFSSM includes 18 survey items rather than eight, and has slight differences in language. For example, HFSSM uses the phrase, "balanced meals," instead of "healthy and nutritious foods" and offers the options, "Often true," "Sometimes true," "Never true," or "Don't Know/Refused," instead of "Yes," "No," "Don't Know", or "Refused" (Cafiero et al., 2017).

Results of the HFSSM are used to assign one of four food security statuses. As of 2006, the USDA describes food security as either very low, low, marginal, or high. Under the USDA's definition, low and very low food security both indicate food insecurity. Low food security, which was previously labeled "food insecurity without hunger" (National Research Council, 2006, p. 52), indicates reduced quality, variety, or desirability of diet, but with little or no indication of reduced food intake. Individuals with very low food security

experience disrupted eating patterns and reduced food intake, due to lack of money and other resources for food (Coleman-Jensen et al, 2020).

The USDA offers different versions of their food security assessment tool for households (available in English, Spanish, and Chinese), individual adults, and individual youth ages 12 and older. Studies that assess food insecurity on college campuses, including those conducted by the UC system, typically utilize the USDA's Six-Item Short Form of the Food Security Survey Module (Crutchfield et al., 2016; Dubick et al., 2016; Goldrick-Rab et al., 2019, Morris et al., 2016; Nazmi et al., 2019; UC GFI, 2017). Therefore, this thesis will reference the USDA's definitions and measures when describing food insecurity throughout the paper (Coleman-Jensen et al., 2020).

Prevalence of Food Insecurity in United States College Students

Research suggests that college students are at least three times more likely to experience food insecurity compared to the average American (Crutchfield et al., 2016; Dubick et al., 2016; Goldrick-Rab et al., 2019; Morris, et al., 2016; Nazmi et al., 2019). In 2019, the USDA estimated that about 10.5% of households in the United States are food insecure (Coleman-Jensen et al., 2020). A 2016 survey of nearly 4,000 students attending U.S. community colleges and four-year universities found that 48% of respondents had experienced food insecurity, and more than one in five students had reported hunger within the past month (Dubick et al., 2016). Similarly, the Hope Center for College, Community, and Justice reported that 45% of students were food insecure, in a survey of approximately 86,000 students across 101 community colleges and 68 four-year colleges and universities (Goldrick-Rab et al., 2019). This survey also found that undergraduates at

four-year institutions (42%) were more likely to experience food insecurity than graduate students (31%; Goldrick-Rab et al., 2019). The prevalence of food insecurity in the UC system is consistent with these findings, as 44% of the UC undergraduate students and 26% of graduate students reported experiencing food insecurity (UC GFI, 2017). However, these studies did not measure whether students experienced food insecurity prior to attending college. Certain social determinants may increase students' risk of experiencing food insecurity and other health disadvantages, regardless of college attendance (Gallegos et al., 2013; GAO, 2018; Goldrick-Rab et al., 2019; Watson et al., 2017).

Food Insecurity as a Health Inequity, Driven by Social Determinants

Food insecurity is an example of a health inequity, a preventable issue driven by certain social determinants of health (Braveman & Gruskin, 2003; Thompson et al., 2016). Social determinants of health are factors with important direct or indirect effects on health. These can broadly refer to nonmedical factors influencing health (for example, health-related knowledge, attitudes, beliefs, and behaviors), but these influences are often the result of "upstream determinants" like household living conditions, conditions in neighborhoods, communities and workplaces, educational attainment, economic resources, and race or ethnic group (Braveman et al., 2011, p. 383). Health inequities systematically disadvantage people who already face social disadvantages due to unfavorable socioeconomic status, race, immigration status, gender, or sexuality (Braveman et al., 2010; Institute of Medicine, 2011; Makadon, 2011; Morey, 2018; Read & Gorman, 2010; Williams, 2012). In the context of food insecurity on university campuses, it is important to

understand which student populations are at disproportionate risk of experiencing health inequities.

In a 2018 report, the United States Government Accountability Office (GAO) recognized college food insecurity as a national issue, which particularly affects disadvantaged socioeconomic groups. Research suggests that students in the following groups are at highest risk for experiencing food insecurity: low-income or unemployed, undocumented, minorities, first-generation to attend college, international, commuters, veterans, former foster youth, single parents, or lesbian, gay, bisexual, transgender, and queer/questioning (LGBTQ; Gallegos et al., 2013; GAO, 2018; Goldrick-Rab et al., 2019; Watson et al., 2017). The previously mentioned survey from the Hope Center for College, Community, and Justice found that the overall rate of food insecurity was highest (58%) among college students who identified as African American or Black (Goldrick-Rab et al., 2019). Similarly, results from the 2015 and 2016 UC Student Food Access and Security Survey showed that food insecurity was more prevalent among African American, Hispanic/Latino, and American Indian students compared to those who identified as Asian[1] or White. Older age and longer length of schooling may also contribute to food insecurity risk, particularly for transfer students, students in their fifth year or beyond, or those aged 19 and older (UC GFI, 2017). In addition, students may be more likely to experience food insecurity at the end of the quarter, during academic breaks and holidays (Watson et al., 2017).

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[1]Aggregating data from multiple Asian subgroups (such as Indian, Vietnamese, Filipino, and other ethnicities) can mask differences between these subgroups (Hastings et al., 2017; Holland & Palaniappian, 2012).

Food-insecure students have a lower grade point average compared to their food-secure peers, which may be a consequence of poor health (Bruening et al., 2017; Martinez et al., 2018; Maroto et al., 2015; Patton-Lopez et al., 2014; Payne-Sturges et al., 2018). Although food insecurity typically leads to reduced caloric intake, it can also result in higher consumption of energy-dense foods, like sugary snacks and sugar sweetened beverages (Basu et al., 2014; Bruening et al., 2012; Mullie et al., 2012; Sharkey et al., 2011; Leung et al., 2014). Food-insecure individuals are at higher risk of obesity and related chronic health problems, such as atherosclerosis and hypertension (Chaparro et al., 2009; Gallegos et al., 2013; Hughes et al., 2011; Kaiser, 2011). A global analysis of 149 countries (Jones, 2017) found that food insecurity has detrimental effects on mental health. Across different cultures, food-insecure individuals may experience worry, anxiety, shame, guilt, exclusion, and powerlessness associated with "food insufficiency or acquiring food in socially unacceptable ways" (Jones, 2017, p. 271). A related study from Althoff et al. (2016) suggests that food insecurity can lead to poor cognitive and emotional development, and mood disorders such as depression, which have implications on academic performance.

College Attendance Costs as a Cause of Food Insecurity

In a qualitative study conducted at University of California, Los Angeles (UCLA), students described the high cost of attending college (including tuition and fees, books and supplies, housing and food, and transportation) as the primary cause of food insecurity (Watson et al., 2017). As of 2020, annual tuition for California residents is $11,442 for UC undergraduates, compared to $5,742 for those in the California State University (CSU) system (CSU, 2020; UC Office of the President [UCOP], 2020). These prices are lower relative to the overall average for American four-year institutions ($20,050 for public

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universities, and $43,139 for private universities; U.S. Department of Education, 2019). The

graph in Figure 1.1 compares overall trends in undergraduate tuition (not adjusted for

inflation) for the UC and CSU systems from 1992 to 2020, focusing specifically on the

mandatory, system-wide tuition fee per year for resident full-time students (CSU, 2020;

Pickoff-White, 2014; UCOP, 2020). This data does not include additional student fees, such

as room and board, health facilities, or recreational center membership.

Figure 1.1

UC and CSU Tuition from 1992-2020
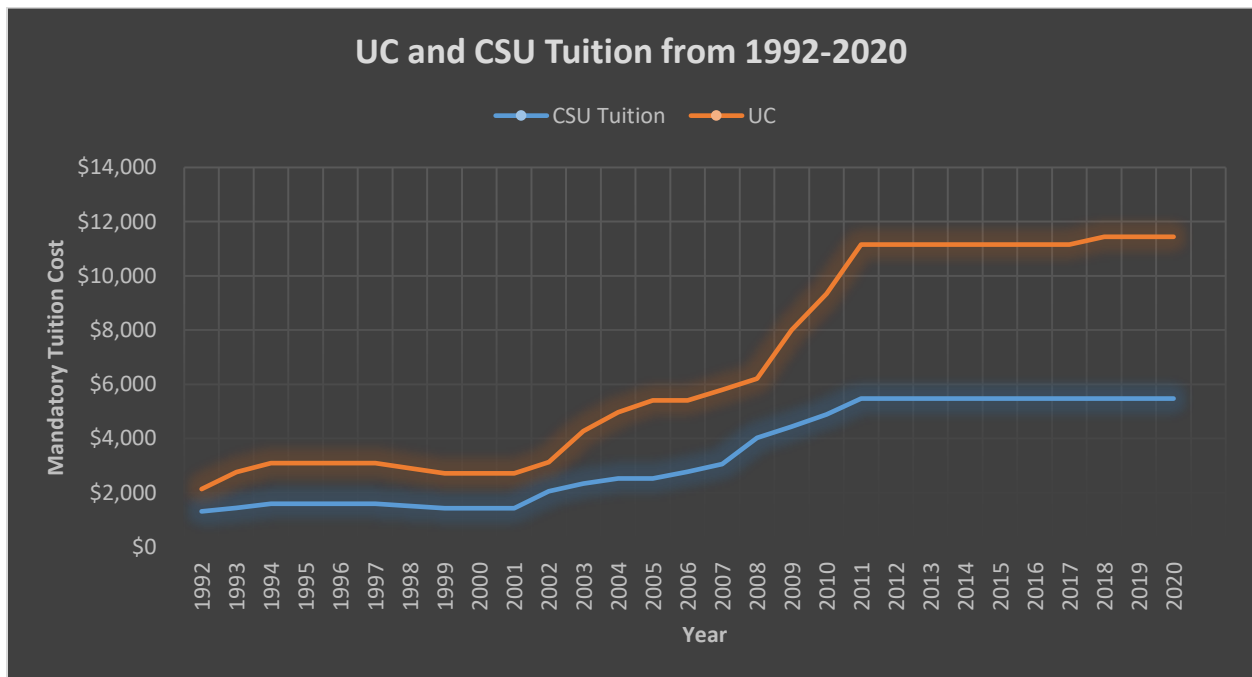
Source. Graph by author, tuition data from California State University and the University of

California Office of the President.

As shown in Figure 1.1, UC tuition has risen at a higher rate compared to that of the

CSU. In 1992, UC undergraduates paid $2,131 per academic year, 68% more than the

$1,308 cost of CSU tuition (CSU, 2020; UCOP, 2020). In 2020, the difference between CSU

and UC tuition has increased to $5,970, meaning that UC students paid 109% more in tuition than if they attended CSU. One of the most dramatic increases in the UC system occurred between the 2006 and 2011 academic school years, when mandatory costs for tuition and student service fees increased over 65% (from $6,657 to $11,160; UCOP, 2019). In comparison, the average for all American public 4-year institutions rose 18% during this same period (U.S. Department of Education, 2019). UCOP Budget Analysis and Planning (2019) stated that the 2011-12 academic year was the first time that the "revenue from student tuition and fees exceeded revenue from the State" (p. 179). Although the trends in UC and CSU tuition fees appear to stagnate after 2011, tuition costs alone do not account for deficits in State funding.

Due to unstable financial aid support from State and federal budgets, students must pay the majority of non-tuition college attendance costs out-of-pocket. The 2011-12 UC Budget for Current Operations directly commented on the unreliability of state funding:

> [T]he volatility of State support and the failure to keep pace with enrollment and inflation, particularly over the last 20 years, have eroded the University's competitiveness and jeopardized the quality of the academic program. The unprecedented cuts in State funding in recent years have brought the University to an insufficient support level that threatens to replace excellence with mediocrity (p. S-4).

In 2011, State funding for the UC system was $2.27 million, over one million dollars less than the $3.15 million allocated in 2002 (UCOP, 2019). Since then, UCOP Budget Analysis and Planning (2019) has attributed funding increases to The Schools and Local Public

Safety Protection Act of 2012, and Governor Jerry Brown's multi-year funding plan for higher education. However, compared to previous years, the amount of State funding per student has been reduced. State funding for the UC was $3.69 billion in 2018, 17% more than in 2002 ($3.15 billion). During those 16 years, the UC student population increased by about 42% (California Budget & Policy Center, 2015; UC, 2020; UCOP, 2019). Therefore, increases in State expenditures are not equivalent to student population growth and rising education costs. Figure 1.2 illustrates the overall decrease in California funding (adjusted for inflation) per UC and CSU student over the last 35 years (California Budget & Policy Center, 2015).

Figure 1.2

State Fund Expenditures Per Full-Time Student, Inflation-Adjusted
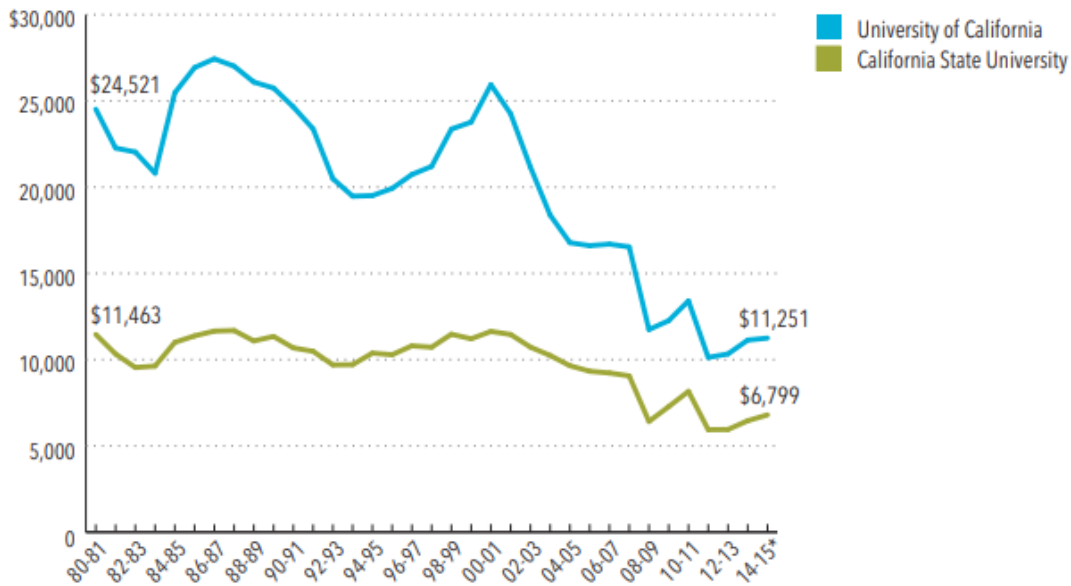
Source. California Budget & Policy Center, 2015.

For the 2014-15 academic year, state spending per full-time UC student was near its lowest amount in over three decades: $11,251, less than half the $24,521 spent per student in 1980 (California Budget & Policy Center, 2015).

Comparatively, the average state and local funding per student was 9% lower in 2017-18 ($7,850) than it was a decade earlier ($8,610, after adjusting for inflation; Baum et al., 2019). Federal student aid in the form of Pell Grants were once sufficient to pay most attendance costs, but after the 1990s, Pell Grants only covered one-third of average fees for tuition, plus room and board (Baum et al., 2019; Martinez et al., 2018). According to a 2019 College Board report on trends in college pricing, the increase in average grant aid and tax benefits between 2009-10 and 2019-20 covered only 15% ($300) of the $2,000 increase in tuition and fees at public four-year universities for full-time, in-state students. In 2019-20, students at public four-year colleges paid about $15,400 out-of-pocket for tuition and housing, not counting books, supplies, and other living expenses. Students at public two-year colleges received enough aid in 2019-20 to cover tuition and fees, but only about $400 remained for other expenses, compared to having nearly $1,000 available in 2010-11. After grant aid and tax benefits, out-of-pocket living expenses for two-year college students averaged $8,600 (Baum et al., 2019).

The cost of living (rent, groceries, utilities, transportation) for students has increased by over 80% over the past four decades, and can account for over 60% of total expenses for attending college (UC GFI, 2017). As previously mentioned, UC tuition is about 43% less than the average American university; however, the median gross rent ($1,503,

based on 5-year estimates from 2015-2019) is 42% higher than the national average

($1,062; U.S. Census Bureau, 2021; U.S. Department of Education, 2019).

According to findings from the 2019 Undergraduate Cost of Attendance Survey, the

majority of UC students (53.1%) live off-campus by owning or renting their own housing,

separate from on-campus dorms, residence halls, or apartments. Systemwide, 39% of

students live on-campus, and 8% are classified by UCOP as "commuters," students who

reside with their parents or other relatives. Off-campus UC students paid an average of

$801 per month for rent in 2019 (UCOP Student Financial Support, 2019). The cost of rent

widely varied by campus, and is especially sensitive to students' number of housemates.

Throughout the UC system, the average rent ranged from $1,109 for students with no

housemates, to $787 for students with six or more housemates. About two out of three

students (66%) reported living with three or more housemates. Most students also shared

their sleeping space, as 49.5% shared a bedroom with one other person, and 15.1% shared

a bedroom with two or more roommates. Though the increase in rent from 2016 to 2019

was "relatively flat" (a 1.5% increase across all UC campuses, adjusted for rent-specific

Consumer Price Index), it was the largest expense for most students (UCOP Student

Financial Support, 2019, p.13). Rent costs may influence how much students can spend on

other items, such as food.

Students may skip or reduce spending on meals to pay other expenses, resulting in

food insecurity (Martinez et al., 2018; Watson et al., 2017). UCOP Student Financial Support

reported that in 2019, off-campus UC students paid an average of $254 per month for

groceries, while commuters (who reside with their families) paid $184 per month. In

comparison, the 2019 USDA "Moderate" monthly grocery cost plan for females aged 19-50 was $257, and $302 for males (UCOP Student Financial Support, 2019). On average, off-campus and commuter students spent more on outside meals and snacks ($166 and $162 respectively) than on-campus students, who spent $137 per month (UCOP Student Financial Support, 2019).

In summary, nearly half of American college students (Dubick et al., 2016; Goldrick-Rab et al., 2019; UC GFI, 2017) may experience food insecurity, a condition that can have detrimental effects on academic achievement and health (Althoff, 2016; Bruening et al., 2017; Jones, 2017; Patton-Lopez et al., 2014; Payne-Sturges et al., 2018). Due to reduced state and local funding, college students must pay the majority of living expenses on their own (Baum et al., 2019; California Budget & Policy Center, 2015; Martinez et al., 2018). Certain student populations, such as those who are low-income, undocumented, minorities, first-generation college students, veterans, former foster youth, single parents, or LGBTQ, are especially vulnerable to experiencing food insecurity (Gallegos et al., 2013; GAO, 2018; Goldrick-Rab et al., 2019; Watson et al., 2017). To ensure that all students have equitable, consistent access to healthy food, universities can boost awareness of the Supplemental Nutrition Assistance Program (SNAP), maintain on-campus food pantries, offer cooking and finance workshops, and provide emergency aid (Chaparro et al., 2009; Crutchfield et al., 2016; Twill et al., 2016). The next chapter will discuss the FRESH Basic Needs Hub, a student-led initiative for alleviating food insecurity at UC Irvine (UCI).

CHAPTER 2: DESCRIPTION OF FRESH BASIC NEEDS HUB

The Food and Resources Empowering Students with Hope (FRESH) Basic Needs Hub is dedicated to promoting equitable access to food and housing for UCI students. This chapter was developed with information from the official FRESH Basic Needs Hub website at https://basicneeds.uci.edu and the assistance of the FRESH Director, a Basic Needs Coordinator, and a CalFresh Student Advocate.

History

In 2015, UCI began offering a small food pantry in the Student Outreach and Retention (SOAR) Center. Andrea Gutierrez, UCI alumna and current director of FRESH, coordinated this initial pantry. SOAR lacked space and refrigeration, so the food pantry consisted of two bookshelves stocked with non-perishable items from the Orange County (OC) Food Bank. Despite the limited inventory, students visited the SOAR food pantry 2,949 times (with 655 unique visits) during 2015 to 2016 (UCI Basic Needs, 2020). In the summer of 2017, FRESH Basic Needs Hub was established in a new 2,630 square-foot location, in Lot 5 next to the Anteater Community Resource Center. This space centralizes the food pantry, advising, community meetings, a community kitchenette, study area, and services for CalFresh (California's food stamp program, federally known as SNAP). FRESH is typically open Monday through Friday, from 10 a.m. to 5 p.m.[1] There are year-round opportunities for volunteering and employment. About 20 UCI students are employed in various positions, related to pantry operations, CalFresh advocacy, marketing, graphic design, management, and outreach.

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[1]At the time of writing, FRESH has reduced hours and remote services in response to the coronavirus (COVID-19) pandemic. Exact hours are listed on the FRESH Basic Needs Hub website.

Mission, Services, and Facility

The FRESH Basic Needs Hub website includes this mission statement:

We understand that meeting the basic needs of our students greatly impacts their
mental and physical health, academic performance, work productivity, and holistic
success. FRESH offers emergency food and toiletries, connects students to critical on
and off-campus resources, and provides educational opportunities for students to
take personal responsibility for their wellness and the well-being of their
communities. We are a home for all students, a collaborative space for innovative
solutions, and an advocate for social justice and equity.

To fulfill this mission, FRESH delivers a variety of services to support UCI students' food
and housing security, including a pantry with food and toiletries, CalFresh application
assistance, basic needs programs and emergency grants, financial and nutrition education,
and consultations with a basic needs social worker.

The FRESH pantry has a layout similar to a grocery store. Students may use a basket
to select items from baskets of fresh produce, a refrigerated area, and shelves stocked with
cereals, pastas, canned goods, and snacks. FRESH increases students' access to food on
campus through the Emergency Meal Swipe Program, which grants ten or more meals from
UCI Campus Eateries (via student identification card "meal swipes"). Students experiencing
a financial crisis related to housing, food, or health care may apply to the Emergency Crisis
Response Grant, which provides up to $1,000. FRESH provides educational opportunities to
students through the Smart 'Eaters Life Skills Series- a set of workshops intended to teach

nutrition, cooking, and financial skills. Confidential counseling with a Basic Needs

Coordinator and CalFresh application assistance is also available.

Students may also utilize FRESH as a community space. FRESH has a dedicated

study area featuring multiple charging stations. Behind this study area, there is a

community kitchenette with a microwave, toaster, coffee maker, water dispenser, sink, and

silverware. This space allows students to quickly heat up food and beverages between

classes, or even prepare meals if they lack access to a kitchen at home. Figure 2.1 shows a

portion of FRESH's interior, including the food pantry, study area, and kitchenette.

Figure 2.1

Photograph of FRESH Food Pantry and Kitchenette

Source. Photograph by author, 2019.

The study area and kitchenette are integrated into the food pantry space, so students can

conveniently work, prepare food, eat, and obtain groceries in the same area. FRESH also

features areas for reading and relaxation. Figure 2.2 is a photograph of a small lounge area

located next to two gender-inclusive restrooms.

Figure 2.2

Photograph of Lounge Area

Source. Photograph by author, 2019.

This photograph shows the lounge area's colorful seating and decorations. Consistent with the FRESH's mission to educate students, the bookcase contains gardening books and free seeds for planting fruits and vegetables.

Funding Sources

FRESH operates on funding from the state government (through the UC system) and student fees. For the 2020-21 academic year, UCI received an ongoing allocation of $1,800,000 basic needs funding from the State of California Governor's Budget. Of that funding, $350,000 is dedicated to the pantry food budget. The remaining funds support payroll, utilities, equipment, and services mentioned in the previous section. FRESH employs four full-time staff, three full-time staff from the Office of Financial Aid and Scholarships and Office of the Campus Social Worker, one part-time Administrative

Assistant, and about 20 student staff members. Additional temporary funds include undergraduate student fees via the Food Pantry Initiative referendum (in place until Spring 2026), one-time funding allocations from undergraduate and graduate student governments, grants from the UC Office of the President (UCOP), and monetary donations. The Student Fee Advisory Committee (SFAC) permanently funds the FRESH Basic Needs Hub Director position, five CalFresh Advocate student positions, and $20,000 toward the Emergency Meal Swipe Program. To assess program impact, FRESH analyzes usage data and demographic information from all students who use FRESH. Chapter 3 will provide details on how FRESH collects this data and describe methodology for examining feedback from student users.

CHAPTER 3: METHODS

The purpose of this research was to examine student users' perceived program benefits and areas of improvement for FRESH. To understand student perceptions of FRESH, this study identified recurring themes from open-ended feedback submitted by FRESH student users in 2018, as part of a preliminary evaluation conducted by the Research and Evaluation Unit of UCI's Center for Education Partnerships (CFEP).

Open-ended User Feedback

User feedback was collected as part of CFEP's preliminary evaluation of FRESH. In 2018, CFEP sent 2,549 students who had accessed FRESH an email invitation to participate in a survey. A total of 463 of students responded to the survey, and 216 students provided additional feedback or comments regarding their experience with FRESH. The original CFEP survey asked FRESH users the following questions:

1. What food and/or products does the FRESH Hub Food Pantry NOT HAVE that you would like for it to have?

2. What services does the FRESH Hub Food Pantry NOT HAVE that you would like for it to have?

3. In closing, please feel free to share any additional feedback or comments regarding your experiences with the FRESH Hub Food Pantry.

Personal Role and Research Paradigm

Self-reflexivity is an important consideration of qualitative methods, as researchers' experiences affect their interpretation of data. Tracy (2013) describes "the mind and body

of a qualitative researcher" as a literal research instrument, "absorbing, sifting through, and interpreting the world through observation, participation, and interviewing" (p. 2). In this section, I will disclose my background and role in data collection, to provide transparency and context for this project.

As a Social Ecology doctoral student with a background in dietetics, I am interested in studying how social and environmental factors affect eating patterns. I became motivated to study college food insecurity after reading that 21% of California State University (CSU) students were food insecure (Crutchfield et al., 2016). At the time, I was an undergraduate nutrition student at CSU Long Beach. I decided to pursue graduate school in order to join ongoing efforts to research student food insecurity.

My approach to inquiry is Participatory Action Research (PAR), described by MacDonald (2012, p. 46) as a "qualitative research methodology that fosters collaboration among participants and researchers." PAR empowers participants to be active in the research process, to achieve social change in the form of a specific action (MacDonald, 2012). Since October 2018, I have collaborated with Director Andrea Gutierrez and other FRESH staff to analyze student data. I believe food insecurity is a multi-faceted issue that requires researchers to work with communities and build a deep understanding of the populations affected. In addition to conducting research, I have volunteered at FRESH to assist with stocking the pantry, organizing the storage room, and composting unusable foods. My prior research and volunteer work allowed me to build rapport with FRESH staff members, which was essential for recruitment and data collection for this research. During

this time, I was granted permission to examine data collected from the 2018 preliminary CFEP evaluation. The "action" that FRESH hopes to achieve through this research is to improve its services by analyzing student feedback.

Population Served

All UCI students are allowed to access FRESH services, with the use of their student identification card. According to UC enrollment data, in Fall 2019, approximately 30,000 undergraduate students and 7,000 graduate students attended UCI (UC, 2020). Nearly half of undergraduates (47%) are first-generation college students, meaning that they are the first in their family to attend college. Overall demographic trends for UCI show that most students identified as Asian/Pacific Islander (36%), Hispanic (22%), or White (16%; UC, 2019). About 3% of students identify as African American, and less than 1% as Native American. The rest of the student population is classified as International (19%), or Did Not Identify/Unknown (3%). China is the country of origin for the majority of international students (74%), followed by India (6%), South Korea (3%), and Taiwan (3%) (UC, 2019).

The UCI Center for Educational Partnerships (CFEP) conducted a preliminary evaluation of FRESH in Summer 2018, after its first year of operation. According to student ID swipe data from May 2018, FRESH had served a total of 2,549 students since its opening in Summer 2017. UCI CFEP sent surveys via email invitation to these 2,549 FRESH users, with the incentive of a raffle entry for one of 200 ten-dollar Target gift cards. After removing incomplete surveys, the total sample size was 463, or 18% of invited students. Table 1 provides further demographic details, collected from institutional record data

linked to student IDs (UCI CFEP 2018; UC 2020). It is important to note that the language

differs between demographic categories listed in CFEP's survey (see Appendix B for full

survey questions) and the official UCI demographic data from 2018. The footnotes provide

more information on discrepancies.

Table 3.1

2018 FRESH User, Survey Respondent, and Overall UCI Demographics

Indicator		FRESH Users (n_1=2,549)	Survey Respondents (n_2=463)	UCI Student Population (*N*=36,908)
Gender	Male	39%	29%	48%
	Female	61%	71%	51%
Ethnicity	American Indian	<1%	2%	<1%
	Asian	37%	35%	36%
	Black/African-American	7%	7%	3%
	East Indian/Pakistani	3%	2%	N/A
	Hispanic	38%	39%	22%
	Polynesian	<1%	0%	N/A
	White	9%	9%	16%
	Decline to State	6%	7%	3%
Class Level[2]	Freshman	21%	14%	82%
	Sophomore	22%	22%	
	Junior	22%	22%	
	Senior	29%	29%	
	Masters	2%	3%	18%
	Doctoral	3%	6%	
Low-income[3]	Yes	43%	47%	38%
	No	50%	42%	62%
First Generation	Yes	57%	56%	47%
	No	34%	31%	50%

[2]UCI enrollment data categorized students as either undergraduate or graduate, rather than by class level.

[3]The CFEP preliminary report uses the language "Low-income," while UCI includes a category for Pell Grant Recipients. Pell Grants are federal aid awarded to low-income undergraduate students.

UCI CFEP (2018) determined that the largest populations of FRESH users are female (61%), Hispanic (38%) or Asian (37%), and first-generation students (57%). Seniors (29%) used services the most compared to other class levels. Unlike the CFEP survey, UCI enrollment data from 2018 (2020) does not specify whether students are East Indian/Pakistani or Polynesian. UCI also lists international students as an ethnic group (19% of the population), while CFEP did not (see Table 2).

Compared to overall UCI demographics, more female, low-income, first-generation, Hispanic, and Black/African-American students were represented in the population of FRESH users. The sample of survey respondents was highly representative of the FRESH user population. For 16 of the 20 demographic indicators, survey respondents had a less than 5% difference between reported indicators for all FRESH users in 2018. Similar to the FRESH user population, the majority of survey respondents were female (71%), identified as Hispanic (39%) or Asian (35%), and mostly senior-level students (29%). Table 2 contains demographic data specifically collected from the 463 FRESH users who completed CFEP's survey.

Table 3.2

Additional Survey Respondent Demographics

Indicator		Frequency (n_2=463)	Percent
Full or Part-time job	Yes	199	40.2%
	No	185	37.4%
Dependents	Children	16	3.2%
	Spouse	13	2.6%

	Other Family	31	6.3%
Family Income (combined income of all people sharing a place of residence)	$0-$49.999k	226	45.7%
	$50k-$99.999k	76	15.4%
	$100k-$149.000k	38	7.7%
	$150k and higher	16	3.2%
	Independent	24	4.8%
International Student	Yes	39	7.9%
	No	418	84.4%
Veteran	Yes	5	1.0%
	No	452	91.3%
Foster Care	Yes	10	2.0%
	No	448	90.5%
Disabled	Yes	21	4.2%
	No	436	88.1%
Lesbian, Gay, or Bisexual	Yes	60	12%
	No	364	73.5%
Transgender	Yes	4	<2%
	No	441	89.1%

Source. UCI Center for Educational Partnerships, 2018.

CFEP included additional demographic questions on student populations at higher risk of experiencing food insecurity, such as those who are low-income, veterans, and disabled (Gallegos et al., 2013; GAO, 2018; Goldrick-Rab et al., 2019; Watson et al., 2017). Of these higher risk groups, lesbian, gay, or bisexual students (12%) and international students (7.9%) were most represented by the sample. According to survey data, 40.2% of respondents were employed full or part-time. The majority (45.7%) reported a household income of $49,999 or less.

The Findings chapter will identify recurring themes from FRESH user feedback, and briefly summarize students' responses regarding food, products, and services. This research will primarily analyze students' additional feedback, as CFEP previously discussed food, product, and service requests in their preliminary evaluation.

CHAPTER 4: FINDINGS FROM STUDENT FEEDBACK

Program Benefits

Out of 463 total survey responses, 216 participants shared additional feedback or comments regarding their experiences with the FRESH Basic Needs Hub. Overall, students expressed gratitude for FRESH. The majority of students (87%) offered positive feedback, using words such as "thankful," "love," "great," "good," "kind," "friendly," and "helpful" to describe their feelings toward FRESH services and staff. Nearly 38% of student responses were general statements of gratitude and appreciation, such as "I think the FRESH Hub is a great idea that helps students and their families" and "I love this space and I truly want it to thrive." The following themes emerged from 109 student responses discussing specific benefits from using FRESH: 1) improved health, 2) a safe, functional space, 3) academic support, and 4) resources from specific programs.

Improved Health

About 30% of 216 respondents attributed improvements in overall physical and mental health after using the FRESH Basic Needs Hub, due to increased access to food, improved nutrition, and reduced stress over lack of food. Students commented that they are grateful to have access to healthy and nutritious foods. One student stated that the FRESH pantry helped them "achieve [their] goal of eating better and losing weight." Five students described FRESH as a "lifesaver" or "life-changing" service that prevented them from skipping meals. A respondent stated that without FRESH, they "would've gone weeks with no healthy food access." Others mentioned that even if they were going through financial or life struggles, food was "one thing less thing to worry about." Four students specifically mentioned that FRESH reduces food insecurity in their survey responses. One

stated, "I feel less stressed and happier now that I have food security," while another claimed, "The fresh produce offered has helped me eat healthier and worry less about food insecurity."

A Safe, Functional Space

Twenty percent of 216 students praised the environment of FRESH, as both a functional space for cooking and studying, and as a "place of security" where they felt welcomed by staff. A student who had visited the original Student Outreach and Retention (SOAR) food pantry shared that they were "amazed by how much it has grown and expanded these past few years," and that the new location "definitely has a different feel and atmosphere compared to it being that small storage space in the SOAR center." Survey respondents described FRESH as a "great," "wonderful," "safe," and "welcoming" space. Staff were also described as "welcoming," "friendly," "respectful," and "helpful." One student expressed that they "never felt out of place or that I didn't belong" at FRESH, while another respondent commented that because "everyone is so friendly," they "don't feel ashamed of going to the pantry and love the environment." A student left the following feedback on their friend's experience:

> Thank you for providing a safe space for students to access food so they can survive. It is very welcoming, and I do not feel judged at all when I go in. My friend especially has lots of anxiety and does not want to seek help due to bad mental health issues, but she actually feels safe and okay going in to visit the pantry. I don't have to see her starve anymore. Thank you.

Students who provided positive feedback for the FRESH space and staff also described the kitchen, cooking appliances, and study space as program benefits. For example, a survey

respondent stated that they are "able to not only get groceries but also use [FRESH's] kitchen and study space which is available to everyone." A student who "hadn't eaten the whole day" described that they ate pastries from the pantry and were taught "how to use the coffeemaker by a staff member" during their first visit to FRESH.

Academic Support

Ten percent of students commented that FRESH services allowed them to focus more on their studies and purchase school supplies. One FRESH user expressed, "it is very difficult to think about class when your stomach is growling from not eating that day." Another described FRESH as a "major contributing factor towards helping [them] get through this academic school year." With the money they saved on food, survey respondents were able to "buy textbooks for the quarter" and "spend money on more school related things." Students who discussed academic support as a FRESH program benefit also described how the food pantry promoted equity on campus, by offering "advantages to disadvantaged students, so that [their] academic life is not interrupted."

Resources from Specific Programs

Respondents who cited specific FRESH programs as a benefit (10%) described CalFresh application assistance, the Emergency Meal Swipe Program (EMSP), the Smart 'Eaters Life Skills Series, and finance workshops as "great programming," "amazing," "very useful," and "a huge help." In reference to CalFresh application assistance and EMSP, a student responded that FRESH had assisted them with receiving "EBT and… food swipes in the first part of the quarter when [they] needed it most." An undocumented student who was ineligible for CalFresh described how "FRESH understands [their situation] and makes exceptions on services for students facing different issues," and that even though they do

not have access to CalFresh, they still receive emergency meal swipes through EMSP. In a separate open-ended question, "What services does the FRESH Hub Food Pantry NOT HAVE that you would like for it to have?" 24% of students responded with "none" or "nothing," or that they feel "satisfied" or "content" with the services currently offered.

Areas for Improvement

Of 216 total responses, 52 respondents (24%) offered feedback on specific areas for improvement. The following themes emerged from student recommendations and reported barriers to using FRESH: 1) availability of food, 2) location, 3) food quality and selection, 4) inclusivity for diverse student populations. Students' two most common concerns about FRESH addressed the location and availability of food throughout the week.

Availability of Food

The theme of food availability recurred from 11% of respondents, who commented on the restricted times that they could access FRESH, and limited quantities of food in the pantry. Students expressed frustration at pantry items "running out" after Monday, the day that shipments arrive, or not being able to access FRESH after 5 p.m. or the weekend (FRESH typically operates Monday through Friday, 10 a.m. to 5 p.m.). Some students recommended having the pantry open longer hours or on the weekend, as operating hours conflict with their class or work schedules. One student stated:

> The location is probably the reason I don't go as often as I really need to. I went twice this year but between 2 jobs, 16 units, a pet and having to take the city bus to and from school I have not been able to make the time to go even when I really need it.

Respondents described how items become scarce or unavailable after Monday, which can be "unfair" to those who have classes or work that day. A few students commented that they "doubt all students really need access" to the pantry, and suggested regulating who can use FRESH, to ensure that students with the highest need are served. Other students recommended that FRESH provide online updates on pantry inventory, and stock items gradually throughout the week to allow visitors the opportunity to get the items they need.

Location

Thirteen respondents (6%) remarked that FRESH's current location in Lot 5 is "too far" from classes. They used words such as "difficult," "struggle," and "hassle" to describe visiting FRESH. These comments specifically described the physical difficulty of accessing FRESH's location, not its staff or services. For example, a respondent "had a great experience with the services and help from the staff," but the distance from their residence to FRESH "only became a problem because I sustained a knee injury and it was difficult to get to the pantry." Another student described FRESH as "pretty great/friendly" before adding, "it's just so far that it stresses me out to find the time to go between classes." Survey respondents suggested that it would be easier for students to access FRESH if there was a direct shuttle or bus line to the hub, designated parking, or a location closer to campus.

Food Quality and Selection

Eleven respondents (5%) critiqued the quality of food and choices available at FRESH. Eight students described the FRESH pantry food quality as "not the best," "expired," or "spoiled." One respondent stated that they "like the environment but… there was no fresh food and a lot of the food there is already expired." A few students requested

additional choices of food, such as "more fruits and vegetables." The next section provides

more details on the types of items that students request from FRESH.

Specific Requests for Food and Products.

A total of 277 survey respondents answered the open-ended question, "What food

and/or products does the FRESH Hub Food Pantry NOT HAVE that you would like for it to

have?" Table 4.1 categorizes student responses based on the U.S. Department of

Agriculture's MyPlate Food Groups (Chang & Koegel, 2019). According to survey results,

21% (57) of students responded that they would like more vegetables at the FRESH food

pantry, and 18% (50) requested more fruits. Students asked for more protein options, with

16% (45) requesting meat and animal products such as fish, chicken, bacon, ground beef,

and eggs. Dairy products such as milk, yogurt, and cheese were mentioned in 8% (22) of

responses. A small percentage of students asked for dairy substitutes, (4%), like almond

milk and soy milk and plant-based protein, (1%).

Table 4.1

Survey Respondent Requests for Food

Food Group	Subgroup	Specific examples	Frequency (*n*=277)	Percent
Grains	Refined grains	Rice, jasmine rice, cereals	11	4%
	Noodles	Pasta, ramen/cup noodles, rice noodles, yakisoba	4	1%
	Breads	Bread, tortillas	23	8%
Protein Foods	Meat/animal products	White meat, fish, salmon, hot dogs, spam, bacon, chicken, eggs, ground beef	45	16%
	Meat alternatives	Vegan/vegetarian protein, tofu, veggie patties	4	1%
Dairy	Dairy products	Milk, yogurt, cheese, lactose-free milk, sweetened condensed milk	22	8%
	Dairy alternatives	Almond milk, soy milk, nut milk	12	4%

Vegetables		Eggplant, spinach, legumes/beans, broccoli, cauliflower, salads, jalapenos, lettuce, baby carrots	57	21%
Fruits		Avocado, "Cuties" tangerines, tomatoes, apples, bananas	50	18%
Other	Flour	Wheat flour	5	2%
	Fats	Canola oil, rapeseed oil, butter, coconut oil	12	4%
	Herbs	Cilantro, basil	2	>1%
	Spices, seasonings	Salt, sugar, brown sugar	9	3%
	Condiments, sauces, spreads	Ketchup, salsa, peanut butter, nut butters, salad dressing, jam, pasta sauce, honey	18	6%
	Non-dairy beverages	Coffee, juices, tea	12	4%
	Frozen food	Frozen vegetables, frozen meat	13	4%
	Snacks	Granola bars, chips, protein bars, crackers, nuts	31	11%
	Microwavable meals	Pizza rolls, macaroni and cheese (non-stovetop)	7	3%
	Desserts	Cookies, sweet bread, ice cream	3	1%
	Soups	Chicken broth, vegetable broth	6	2%
	Healthy foods	Organic, low-sugar or no-sugar, low carb	10	3%
	Ethnic food	Middle Eastern, Asian (hoisin sauce, fish sauce, chili flakes/satay, kimchi), Hispanic	8	3%
	Vegetarian/vegan	Frozen vegetarian foods, hummus	13	5%
	Gluten-free		3	1%
	Baby food		1	>1%

Source. Table by author, responses from UCI Center for Educational Partnerships, 2018.

Following vegetables, fruits, protein, and dairy (including non-dairy alternatives), "snacks" were the fifth most requested food item, with 11% of students naming granola bars, chips, crackers, and nuts as examples. Survey respondents also requested beverages like juice or instant coffee (4%) frozen foods (4%), and microwavable meals (3%).

Miscellaneous foods used in cooking and baking, such as flours, cooking oils, seasonings, spices, herbs, and sauces, were mentioned in about 16% of 277 responses.

Less than 5% of the 277 students included non-food products in their feedback. A few students listed toiletries such as shampoo, toothpaste, floss, razors, deodorant, feminine hygiene products. Others requested paper products (toilet paper and paper towels) and bandages.

Inclusivity for Diverse Student Populations

About 12% of the 277 survey respondents suggested foods that that they connected to specific cultures (Asian, Middle Eastern, and Hispanic) or diets. When listing ethnic foods, students named ingredients such as "fish sauce," "kimchi," and "tortillas." Survey respondents also requested foods that were vegan or vegetarian, "healthy," or gluten-free. About 5% of respondents requested more vegan and vegetarian options in general. Students' examples of "healthy" food included products that were organic, low-sugar or no-sugar, or low in carbohydrates.

Regarding FRESH services, 3% of the 277 survey respondents called for greater inclusivity, specifically alternatives for students who are ineligible for public assistance. For example, a student who qualified for the California Dream Act explained that because they do not qualify for the Free Application for Student Aid (FAFSA), they do not qualify for CalFresh. The student suggested that FRESH should clearly state that EMSP is an alternative to CalFresh, to "be more inclusive when talking about financial aid," and "more conscious of all student populations." Another student, who described themselves as a "self-funded international MS student... facing financial difficulties," also requested that FRESH provide more alternatives to CalFresh. The following chapter will describe how the

FRESH Basic Needs Hub has responded to this preliminary evaluation feedback, implications of this research for other college campuses, and recommendations for future research.

CHAPTER 5: DISCUSSION

This research highlights how student-led initiatives like the FRESH Basic Needs Hub can benefit food-insecure students, and discusses potential areas for improvement. Nearly 90% of the 216 students who provided additional feedback expressed their gratitude for FRESH services, staff, and the space itself. Most respondents (30%) attributed improvements in health to using FRESH, and 20% of students described the space as safe and welcoming. However, 24% of respondents mentioned a variety of challenges unaddressed by food insecurity literature, such as difficulties accessing the food pantry due to hours and location, potential abuse of a food pantry by those who do not need it, and student ineligibility for public assistance programs like financial aid and food stamps. This chapter will discuss the implications of this research for FRESH and university basic needs hubs, limitations of the study design, and suggestions for future research.

Implications

How Basic Needs Hubs Can Benefit Food-Insecure Students

Food insecurity literature describes a multitude of issues faced by food-insecure students, including lower academic performance compared to food-secure peers (Bruening et al., 2017; Martinez et al., 2018; Sturges et al., 2018), higher risk of chronic health problems, (Chaparro et al., 2009; Gallegos et al., 2013; Hughes et al., 2011; Kaiser, 2011), and detrimental effects on mental health and cognitive development (Althoff et al., 2016; Jones, 2017). After using FRESH, survey respondents claimed improvements in health (30%) and academics (10%), due to increased access to food, reduced stress related to food insecurity, and greater ability to afford school supplies. Students offered positive feedback on specific FRESH programs such as finance workshops, Emergency Meal Swipe

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Program, and CalFresh application assistance, which previous studies recommend as comprehensive resources that should be offered in addition to pantries (Cady & White, 2020; Martinez et al., 2020; Nazmi et al., 2020). A unique finding of this research is that students voiced gratitude to FRESH staff for creating a safe, welcoming environment. This indicates that not only is the food a benefit, but the staff, space, and atmosphere are also important benefits. Students described FRESH as a community space and centralized location for accessing food and resources, studying, and preparing meals in the kitchenette. Other universities can potentially incorporate these features into future basic needs hub designs.

Potential Challenges for Basic Needs Hubs

Survey respondents identified the location, hours of operation, quantity and selection of food, and inclusivity of services as challenges or barriers to using FRESH services. Campuses should consider these factors when establishing a basic needs hub. Findings from this research suggest that students had difficulty accessing FRESH due the location's relatively far proximity from the campus ("at least 25-30 minutes" walking distance, according to one student), lack of designated parking and direct public transportation line, or because of time conflicts with their class or work schedule. However, as of 2021, University of California Irvine (UCI) does not have an alternative area to safely receive food shipments, since FRESH requires a comparably sized (2,630 ft^2) building with an appropriate loading zone to continue operations. Students also suggested that FRESH restock food more frequently throughout the week, as the pantry would appear "empty" after Mondays. Because of the reduced availability of food, some respondents were concerned that students who are "well off financially" are taking food away from those who

need it most. Basic needs initiatives aiming to boost awareness of the Supplemental

Nutrition Assistance Program (SNAP) may also need to consider student groups who do

not qualify for public assistance. An international student and undocumented student

voiced their concerns about being ineligible for CalFresh, and suggested that FRESH be

"more conscious of all student populations" when promoting food stamps.

Potential Solutions

To overcome these challenges, FRESH has implemented multiple changes based on

student recommendations from the 2018 preliminary evaluation.

Location

According to survey feedback, FRESH users desire a pantry location that is closer to

campus and housing. Some respondents recommended the return of small farmers'

markets to distribute fruits and vegetables, which could be hosted near student housing

facilities. FRESH plans to address accessibility challenges by hosting monthly mobile

distributions in Graduate Housing and quarterly pop-up food pantries on campus. These

methods can also serve as an alternative for campuses that lack permanent space for a

pantry (Cady & White, 2018).

Food Availability, Quality, and Selection

The FRESH team partnered with local food banks and grocery stores to obtain more

frequent food shipments, and designed a text-based notification system to alert students of

food availability. Food insecurity research suggests that partnerships between campus

officials with state or regional food banks can allow pantries to purchase foods for a little as

$0.14 per pound (Cady & White, 2018). Campus pantries can also partner with campus

foundations, hunger relief organizations, and religious organizations to collect tax-exempt

food donations (Goldrick-Rab et al., 2019). In collaboration with the Second Harvest Food Bank Grocery Rescue, FRESH reduces food waste in the community by recovering excess food from local grocery stores such as Target and Ralphs. FRESH also partnered with the Waste Not Orange County Coalition, which facilitates the donation of surplus food from food facilities to local pantries in Orange County. These donations have allowed FRESH to increase its quantity and selection of food items. In 2019, FRESH installed self-serve dispensers stocked with essentials such as quinoa, rice, cereal, oats, and pasta, and now offers dairy alternatives like soymilk. As a direct response to student comments from the preliminary evaluation, FRESH launched Zot Bites, a text-alert program that notifies pantry users about available food from catered events on campus (FRESH Basic Needs Hub, n.d.). By opting in, students will receive text alerts informing them when and where food is available on campus. Food will be available for a limited 30-minute window, on a first come, first served basis.

Despite student recommendations, FRESH has not extended its hours of operation or created stricter guidelines for accessing the pantry. Few studies elaborate on the specific hours and regulations for using a campus food pantry. In 2016, Twill et al. described that the pantry of a southwestern Ohio university was typically open three days a week for four hours, and two days per week for three hours during the summer. Though this pantry operated less frequently than FRESH, the Ohio university was similar to UCI in ruling that "using the food pantry is a universal benefit for enrolled students" (Twill et al., 2016, p. 348). This policy may help reduce stigma attached to food insecurity, and encourage vulnerable students to access resources (Jones, 2017; Saint Ville et al., 2019).

Serving Students Ineligible for SNAP

Basic needs initiatives on other campuses may need to develop specific policies,

strategies, and programs for serving student populations who are ineligible for government

aid. As mentioned by a few survey respondents, undocumented students cannot access the

Free Application for Student Aid (FAFSA), or SNAP. The Food Assistance Program (FAP)

was created in 2020 by FRESH Basic Needs Hub in collaboration with the State of California

to support food security among undocumented students. The Office of Financial Aid (OFA)

identifies undocumented students enrolled part-time at UCI with at least $600 in unmet

financial need. Through FRESH FAP, OFA provides students a grant award in the amount of

$582 for the quarter, which is equivalent to the maximum CalFresh benefit for a student,

$194 per month.

Limitations

The 2018 preliminary evaluation conducted by the UCI Center for Educational

Partnerships (CFEP) offered novel data on UCI students who used FRESH Basic Needs Hub.

However, out of 2,549 FRESH users contacted, only 463 completed the survey. The raffle

entry for one of 200 ten-dollar Target gift cards may have been an insufficient incentive for

students. Of the 463 survey respondents, 277 (about 11% of the total 2018 FRESH user

population) responded to at least one open-ended survey question. Due to the limited

sample size, and my personal biases as a volunteer, this research may not accurately

capture UCI students' perceived program benefits and areas of improvement for FRESH.

The demographics of the survey sample were very similar to FRESH users overall,

based on usage data from student ID swipes (as discussed in Chapter 3, Table 3.1).

However, it is unclear if survey responses to demographic questions about employment,

income, disability status, and sexuality are representative of the population, since these are additional demographic questions not included in UC admissions data. The additional demographic questions were added to the survey to identify whether FRESH had served certain populations vulnerable to food insecurity (Appendix B). One of these questions asked, "What is your family income? (combined incomes of all people sharing a place of residence)." Responses to this question may be misleading, as this income level does not necessarily reflect a student's budget for food and expenses. There is no additional question that asks about individual income. More recent data needs to be collected in order to examine how the FRESH and its user population have changed since 2018.

Areas for Future Research

Additional research is needed to assess food security prevalence on college campuses, and to evaluate programs that aim to alleviate food insecurity. In one of the few systematic literature reviews on food insecurity among college students, only eight data sources were analyzed, three of which were peer-reviewed publications (Nazmi et al., 2019). Research could potentially fill this gap in literature by evaluating campus basic needs hubs, and investigating underlying causes of student food insecurity, such as limited resources due to socioeconomic status, hesitancy to seek assistance due to stigma, and inadequate financial aid packages.

Updated Evaluation of the FRESH Basic Needs Hub

I plan to continue studying the growth of FRESH through additional student feedback and interviews. Near the beginning of this research in 2018, the FRESH Basic Needs Hub had served 2,549 unique students. That number has nearly quadrupled, as 9,664 students have utilized FRESH as of December 2020 (according to 2020 usage data

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tracked by CFEP). In the future, I intend to conduct a mixed-methods evaluation, to assess whether FRESH is reaching its target audience, effectively delivering services, and achieving its intended goal of alleviating food insecurity. Evaluation results would provide evidence of whether FRESH is effectively serving its target audience of food-insecure UCI students, and identify best practices for operating a university basic needs hub.

Adaptations During the COVID-19 Pandemic

At the time of writing, FRESH is temporarily closed due to the coronavirus (COVID-19) pandemic, which has led to 375,000 deaths in the United States as of January 2021 (Centers for Disease Control and Prevention, 2021). Emerging research suggests that COVID-19 impacts access to food mainly due to household losses of income, but also through price instability, labor shortages in food industries, and export restrictions (Bene, 2020; Laborde et al., 2020). FRESH responded to the pandemic by offering modified services, such as an appointment-only system, pantry box distributions, virtual CalFresh assistance, and a produce voucher program (redeemed at the Tanaka Farms Drive-Through Produce Market Stand in Irvine). While the pandemic has impeded in-person data collection, this may be a potential area of future research because FRESH continues to operate during an unprecedented time.

Understanding the Underlying Causes of Food Insecurity

Food pantries alone cannot address the "upstream" causes of student food insecurity (Nazmi et al., 2018, p. 735). Based on the results of this research and previous literature, future studies should examine the relation between food insecurity and certain social determinants of health. As described in Chapter 1, social determinants of health are factors with important direct or indirect effects on health, such as access to healthcare,

housing and neighborhood conditions, educational attainment, and discrimination based on gender, race or ethnic group (Braveman et al., 2011; Healthy People 2030, 2020). These social determinants of health can be categorized into different levels, based on social ecological theory. As shown in Figure 5.1, the social ecological model demonstrates interactions between social determinants of health that, including intrapersonal characteristics (such as knowledge, behavior, and skills), interpersonal groups, organizational factors, community, and public policy (McLeroy et al., 1988).

Figure 5.1

Social Ecological Theory Applied to Social Determinants of Health
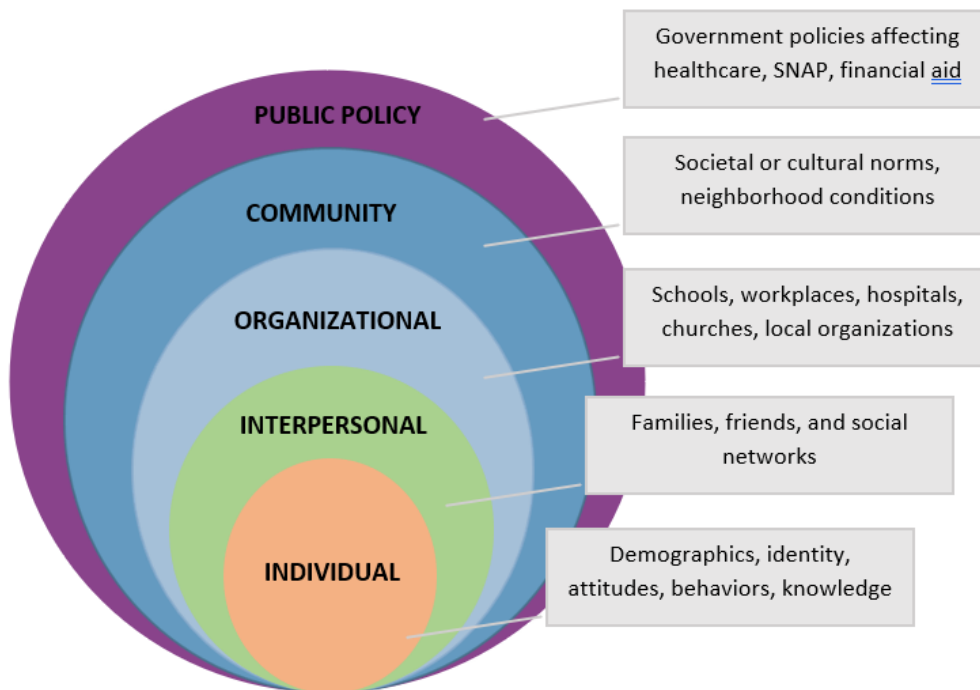
Source. Graphic by author, adapted from model developed by Goldberg, S., 2014.

Social ecological theory offers a framework for understanding the factors associated with food insecurity, as well as identifying potential solutions (Goldberg & Mawn, 2014; Golden & Earp, 2012; Wittman et al., 2017).

Individual

FRESH users mentioned populations (undocumented and international students) in need of more outreach or improved access to services. Research has identified that these groups, along with first-generation, Black, Hispanic, LGBTQ, disabled, low-income, and other student populations, are at disproportionate risk of experiencing food insecurity (Gallegos et al., 2013; GAO, 2018; Goldrick-Rab et al., 2019; Watson et al., 2017). Usage data from FRESH supports these findings, as more first-generation (57%), Black (7%), Hispanic (38%), and low-income (43%) students were represented in the population of FRESH users compared to overall UCI demographics (UCI CFEP, 2018). Females (61%), senior-level students (29%), and those who identify as lesbian, gay, or bisexual (12%), and international students (8%) were also represented in the FRESH user population.

When designing demographic survey questions, researchers should also consider certain population subgroups underrepresented by typical survey measures. For example, the UC GFI (2017) found that food insecurity was less prevalent in Asian students compared to those who identified as African American, Hispanic/Latino, and American Indian; however, aggregating data from multiple subgroups (such as Asian Indian, Chinese, Filipino, Japanese, Korean, and Vietnamese) can mask differences in health between subgroups (Hastings et al., 2017; Holland & Palaniappian, 2012). More research is

necessary to understand why certain student populations are at higher risk of food insecurity, and develop solutions tailored to each group.

Interpersonal

Interpersonal relationships with family, peers, and other social network members may impact students' access to food and other resources. Family expenses may contribute to food insecurity risk, particularly for students who are single parents. A study of two Maryland community colleges found that 77% of single parents reported food insecurity (Maroto et al., 2015). Although the open-feedback responses from this research did not provide more detail on how student parents utilize the pantry, one respondent requested baby food from the FRESH pantry, and 3% of students (16) reported having children as dependents. About 6% (31) reported to claim other family members as dependents. The 2019 UC Cost of Attendance Survey found that 20% of student respondents sent money "to parents or siblings to assist with family expenses," and that low-income or underrepresented backgrounds were more likely to send money home. Surveys that assess student finances should include questions about dependents and family support to provide an accurate measure of income.

Organizational

Future studies could explore organizational partnerships with colleges in alleviating food insecurity, such as FRESH's partnerships with Second Harvest Food Bank, Waste Not Orange County Coalition, and Tanaka Farms. Nonprofit organizations such as campus foundations, hunger relief organizations, and religious organizations can assist college food pantries with acquiring food and other donations (Goldrick-Rab, 2019). Some campuses,

such as UC Santa Cruz (UCSC) and Tufts University, have farm-to-college programs for their dining halls, which could potentially source produce for campus pantries. Farm-to-college programs can provide students with locally-sourced, organic produce, offer new options for campus eateries, and support the local economy (Merrigan & Bailey, 2008; White, 2007). In addition to collaborating with farmers outside the university, UCSC grows its own produce on-campus. Since 2017, UCSC's Center for Agroecology & Sustainable Food Systems has regularly donated to campus pantries and food distributions at student housing and academic resource centers (UCSC, 2021). More research is needed to evaluate such programs.

Community

Community-level research may examine economic and physical conditions associated with food insecurity. For example, students who attend universities located in food deserts (urban areas located over a mile away from a venue offering nutritious foods) face limited eating choices due to their environment. A study describing UC Merced stated that "despite being located at the heart of the most productive agricultural region in California, the university campus… is a food desert, i.e., about 4.5 miles from the nearest supermarket. (Dhillon et al., 2019, p. 1). Scholars suggest that ethnic markets and small locally-owned grocery stores can increase access to healthy foods in urban food deserts (Crowe et al., 2018; Joassart-Marcelli, 2017).

Additionally, social norms within a community influence how students evaluate and experience food insecurity (Hendriks, 2015; Saint Ville et al, 2019). Qualitative research from Watson et al. (2017) found that some UC Los Angeles students had normalized their

struggle to eat as part of the college experience, while others had identified the effects of food insecurity on their health and academic performance. There is evidence that food insecurity is also linked to anxiety, feelings of alienation and deprivation, and adverse changes in family and social interactions (Frongillo, 2013; Hendriks, 2015).

Public Policy

Policies that determine access to food assistance programs and higher education costs may consequently affect student food security. The Government Accountability Office (2018) reported that almost 2 million college students who were potentially eligible for food stamps did not report receiving benefits in 2016, suggesting that students may not be aware of SNAP. Other students may not be eligible for SNAP due to their income or citizenship status. Nearly half of FRESH users (43%) were not categorized as low-income, according to usage data. Some respondents mentioned in the open-ended feedback that although their families cover tuition and housing costs, they are "left largely on [their] own" with food purchases. Students in such a situation may struggle with food insecurity, but not qualify for SNAP benefits. Findings from this research suggest that certain student groups (such as undocumented and international) need alternatives to SNAP, such as university food assistance programs, "meal swipes" at university dining halls, and voucher programs for local markets.

University attendance costs, including tuition, room and board, utilities, and other living expenses, influence students' ability to afford food (Martinez et al., 2018; Watson et al., 2017). Compared to a decade ago, mandatory costs for tuition and student service fees have more than doubled, while state and local funding per student is nearly 10% less

(Baum et al., 2019). This discrepancy in aid results in students paying more attendance costs out-of-pocket (Baum et al., 2019; California Budget & Policy Center, 2015; Martinez et al., 2018; UCOP, 2019). Although basic needs hubs can increase food security at the individual level through food pantries, SNAP application assistance, and financial workshops, these are temporary solutions to long-term, systemic issues. More research is needed at the institutional and government levels to understand trends in increased tuition, housing, and health care costs and develop policies that support student health and financial stability.

Conclusion

Put simply, food insecurity is a barrier to higher education; it interferes with students' ability to succeed in college. UCI's FRESH Basic Needs Hub is an important resource that promotes access to food and creates a sense of community for students struggling financially. According to the findings of this research, FRESH serves vulnerable student populations identified by previous literature, and addresses issues associated with food insecurity by supporting students' ability to eat healthier, focus more on their studies, and afford school supplies. Although basic needs initiatives like FRESH are important for alleviating immediate student needs, further research is needed to understand the underlying causes of food insecurity. Increased partnerships within the UC system and between public, private, and community colleges can assist campuses in developing long-term solutions. Collaboration between researchers and policymakers is imperative to making higher education accessible, by ensuring that all students can afford basic needs.

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APPENDIX A

Questions from U.S. Household Food Security Survey Module: Six-Item Short Form (Blumberg et al., 1999)

HH3. I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months—that is, since last (name of current month). The first statement is, "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

[ ] Often true [ ] Sometimes true [ ] Never true [ ] DK or Refused

HH4. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

[ ] Often true [ ] Sometimes true [ ] Never true [ ] DK or Refused

AD1. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

[ ] Yes [ ] No (Skip AD1a) [ ] DK (Skip AD1a)

AD1a. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

[ ] Almost every month [ ] Some months but not every month [ ] Only 1 or 2 months [ ] DK

AD2. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?

[ ] Yes [ ] No [ ] DK

AD3. In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food? [ ] Yes [ ] No [ ] DK

APPENDIX B

2018 FRESH Hub Pantry User Survey (*University of California Irvine [UCI] Center for*

Educational Partnerships [CFEP], 2018)

* 1. Student ID #

Winter 2018 FRESH Hub Pantry User Survey Draft

2. How are you financing your college tuition?

☐ Scholarship

☐ Grant (free finiancial aid)

☐ Work-Study

☐ Fed Loan Subsidized (deferrednterest accrual)

☐ Fed Loan Unsubsidized (immediate accrual of interest)

☐ Part-Time Job

☐ Full-Time Job

☐ Personal or Parents Savings

☐ Parent (Plus) Loan

☐ Private Loans

☐ Gift Money (i.e. from relatives)

☐ Other (please specify)

3. If you indicated that you receive Federal Loans (subsidized, unsubsidized, etc.), what percentage of your loan offer did you accept? *(ie. If you were offered $10,000, and accepted $5,000, you accepted 50% of your loan offer)*

◯ 1-25%

61

◯ 26-50%

◯ 51-75%

◯ 76-100%

4. How are you financing your living expenses (rent, utilities, food, etc.)?

☐ Scholarship

☐ Grant (free finiancial aid)

☐ Work-Study

☐ Fed Loan Subsidized (deferrednterest accrual)

☐ Fed Loan Unsubsidized (immediate interest accrual)

☐ Part-Time Job

☐ Full-Time Job

☐ Personal or Parents Savings

☐ Parent (Plus) Loan

☐ Private Loans

☐ Gift Money (i.e. from relatives)

☐ Other (please specify)

5. Where do you live?

○ Residence halls (Middle Earth & Mesa)

○ Arroyo Vista

☐ UCI apartment communities (ie. CV, Palo Verde, Verano Place)

☐ ACC apartment communities (ie. Vista del Campo, Puerta del Sol)

☐ Off-campus housing (ie. UTC Apartments)

○ With parents/family

○ In temporary housing (ie. hotel)

☐ Automobile or RV

☐ No permanent residence (ie. staying with a friend rent-free or "couch surfing")

○ Other (please specify)

_____

6. Do you have access to a kitchen at your home?

☐ Yes

☐ No

7. Approximately how many people do you share the kitchen with?

_____

8. How frequently have you skipped or cut the size of meals because there wasn't enough money for food, in the past year?

○ Never

☐ Rarely

☐ Occasionally

☐ Somewhat often

○ Often

○ Very Often

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9. For the following statements, please say whether the statement was often true, sometimes true, or never true for you in the last 12 months.

	Never True	Sometimes True	Often True
I was worried whether my food would run out before I got money to buy more.	○	○	○
The food that I bought just didn't last, and I didn't have money to get more.	�=''	�=''	�=''

10. How did you find out about the FRESH Hub Food Pantry?

☐ Peer Student

☐ Staff

☐ Faculty

☐ Social Media/Email

☐ Print Media

☐ Other (please specify)

[   ]

11. Please rate the following factors about the FRESH Hub Food Pantry.

	Far Below Expectations	Below Expectations	Met Expectations	Above Expectations	Far Above Expectations	Not Applicable to Me
Food availability	○	○	○	○	○	○
Variety of food choices	○	○	○	○	○	○
Quality of food choices	○	○	○	○	○	○
Hygiene product availability	○	○	○	○	○	○

12. Please indicate the frequency with which you are able to do the following at the food pantry:

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	Never	Rarely	Sometimes	Very Often	Always
Access foods that meet your dietary restrictions (vegetarian, gluten-free, etc.)	○	▣	▣	○	○
Access foods that are culturally appropriate for you	○	▣	▣	○	○

13. Please rate the following factors about the FRESH Hub Food Pantry.

	Far Below Expectations	Below Expectations	Met Expectations	Above Expectations	Far Above Expectations	Not Applicable to Me
Location/accessibility	○	○	○	○	○	○
Facility/space	○	○	○	○	○	○
Hours of operation	○	○	○	○	○	○
Level of privacy	○	○	○	○	○	○
Comfort accessing food	○	○	○	○	○	○
Interaction with staff	○	○	○	○	○	○
Services available	○	○	○	○	○	○
Educational materials (ie. brochures, fliers, etc.)	○	○	○	○	○	○
Pantry website	○	○	○	○	○	○
Pantry social media	○	○	○	○	○	○

14. What food and/or products does the FRESH Hub Food Pantry NOT HAVE that you would like for it to have?

15. What services does the FRESH Hub Food Pantry NOT HAVE that you would like for it to have?

16. Please rate the extent to which the FRESH Hub Food Pantry had an effect on the following factors.

	Very Negative Effect	Negative Effect	No Effect	Positive Effect	Very Positive Effect
Your overall physical health	○	○	○	○	○
Your mood	○	○	○	○	○
Your level of stress	○	○	○	○	○
Your level of anxiety	○	○	○	○	○
Your overall mental health	○	○	○	○	○
Your ability to study	○	○	○	○	○
Your ability to attend class	○	○	○	○	○
Your sense of belonging	○	○	○	○	○
Your ability to complete this quarter	○	○	○	○	○

17. Compared to when you DID NOT access the food pantry, please indicate your current level of ability of making the following purchases, AFTER having accessed the food pantry.

	Less Able	No Change	More Able
Ablility to purchase medications I need	○	○	○
Ablility to purchase textbooks	○	○	○
Ablity to make other "educational" purchases	○	○	○

18. How likely are you to recommend the FRESH Hub Food Pantry to your peers?

○ Very Unlikely

○ Unlikely

○ Neither Unlikely nor Likely

○ Likely

○ Very Likely

19. How likely are you to access the food pantry during the next academic year?

○ Very Unlikely

○ Unlikely

○ Neither Unlikely nor Likely

○ Likely

○ Very Likely

○ N/A - I'm graduating or studying abroad

20. Are you currently a registered CalFresh/EBT/Food Stamps participant?

○ Yes

○ No

○ I'm not sure

21. Where did you learn about CalFresh?

☐ On Campus: FRESH Hub

☐ On Campus: Other

☐ Family

☐ Peer

☐ Other (please specify)

[   ]

22. Would you like more information about CalFresh benefits and eligibility?

○

Yes

○

No

Demographics

23. Do you have a job (full or part time, not including work-study)?

○ Yes

○ No

24. Do you financially support any of the following?

☐ Child(ren)

☐ Spouse

☐ Other family members (ie. Parents, siblings, etc.)

☐ Other

☐ Not Applicable

25. What is your family income? (*combined incomes of all people sharing a place of residence*)

○ $0-$49.99k

○ $50k-$99.99k

○ $100k-$149.99k

○ $150k and higher

○ Independent (*determined on the FAFSA*)

Demographics

26. Are you an international student?

○ Yes

◯ No

27. Have you been in foster care?

▢ Yes

▢ No

Demographics

28. Are you a veteran?

▢ Yes

◯ No

29. Do you consider yourself to be a disabled person?

▢ Yes

▢ No

Demographics

30. Do you identify as lesbian, gay, or bisexual?

▢ Yes

◯ No

◯ Prefer not to answer

31. Do you identify as transgender?

▢ Yes

▢ No

◯ Prefer not to answer

32. In closing, please feel free to share any additional feedback or comments regarding your experiences with the FRESH Hub Food Pantry.