



Original Research Article

Food insecurity on campus: A community-engaged case study with student-led families at the University of British Columbia

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Abstract

This paper draws from a community-engagement case study conducted at The University of British Columbia (UBC), Vancouver, Canada. The study examines food insecurity experienced by student families. Research data was collected through quantitative and qualitative methods applied in a residence on campus. The study shows that food insecurity ranges between marginal and moderate among surveyed student-led households; while

5% of student families have (at least) one member “go(ing) to bed feeling hungry”, 3% declared they “sometimes” and “frequently” do not eat enough. Seemingly, financial, food, and housing insecurities are deeply interrelated in student-led households. A system intervention by UBC stakeholders could be optimal to support student wellbeing.

Résumé

Cet article est issu d'une étude de cas communautaire qui a été menée à l'Université de Colombie-Britannique, à Vancouver, au Canada. L'étude examine l'insécurité alimentaire vécue par des familles d'étudiants. Les données ont été collectées dans une

résidence universitaire à l'aide de méthodes quantitatives et qualitatives. L'étude montre que l'insécurité alimentaire survient de légèrement à modérément chez les ménages étudiants interrogés : alors que 5 % des familles étudiantes comptent (au

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moins) un membre qui « va au lit avec une sensation de faim », 3 % ont déclaré que « parfois » et « souvent », ils ne mangent pas assez. Vraisemblablement, les insécurités en matière de finance, de nourriture et de

logement sont profondément reliées chez les ménages étudiants. Un système d'intervention par les acteurs de l'Université de Colombie-Britannique pourrait optimiser le soutien du bien-être étudiant.

Keywords: Food insecurity on campus; student-led household food insecure; food affordability; food accessibility; farm on campus

Introduction

Household food insecurity (HFI) has been affecting a steadily widening spectrum of the Canadian population since 2005 (Statistics Canada, 2020; Tarasuk et al., 2019). HFI is no longer primarily experienced among households relying on social assistance, worker's compensation, or employment insurance for income; rather HFI is increasingly prevalent among employed households, particularly those that rent and those led by lone female parents of dependent children under eighteen years (Fafard St-Germain & Tarasuk, 2020; Food Insecurity Policy Research, n.d.; Tarasuk & Mitchell, 2020). Recent evidence indicates a high prevalence of HFI on university campuses that bears substantial burden on the health and wellbeing of university students (Blundell et al., 2019; Entz et al., 2017; Hattangadi et al., 2019). Health Canada defines HFI as the “inability to acquire or consume an adequate diet quality or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so. HFI is often linked with the household's financial ability to access adequate food” (Canada Health, 2010, para. 1). The PROOF¹ research team emphasizes household finances/income as the primary cause of HFI, and succinctly defines it as “the inadequate

or uncertain access to food because of financial constraints” (Tarasuk & Mitchell, 2020, para. 1). Since 2005, Statistics Canada (2021) has collected data on the prevalence and severity of household food insecurity using the Household Food Security Survey Module in the annual Canadian Community Health Survey. Measures of severity are categorized as: (1) *marginal*, when households face issues of income-related food access such as worry about running out of food and/or limited food selection due to a lack of money for food; (2) *moderate*, indicates quality and/or quantity of food compromised due to a lack of money; and (3) *severe*, refers to household members missing meals, reducing food intake, and in extreme circumstances going day(s) without food (Polsky & Garriguet, 2022). In 2017 to 2018, over 1.2 million households in Canada (16.5 percent of the population), and over 750,000 people in British Columbia (15.9 percent of the population) experienced HFI (Tarasuk & Mitchell, 2020). Clearly, there is a need to tackle this public health issue at its fundamental root cause: a lack of secure, sustainable and adequate household income (Hattangadi et al., 2019; Riches, 2018, 2020; Tarasuk et al., 2019). Gaining a better understanding of the daily stressors associated

¹ PROOF: A leading food insecurity research team formed to identify and inform policy that effectively reduces household food insecurity in Canada (PROOF, n.d).

with living in food insecure households, how stressors are managed within families, and the effects on the social and physical wellbeing of household members can inform how to direct resources to those most in need. The primary purpose of this case study is to analyze the prevalence and dimensions of HFI experienced by student-led families² residing in the Acadia Park residence on The University of British Columbia (UBC) Point Grey campus. To our knowledge, no studies have examined food insecurity among student-led families living in an on-campus residence. A secondary purpose is

to understand how the UBC Farm intersects with student-led families' access to fresh produce. UBC Farm is an on-campus organic farm within a twenty-minute walk from the centre of campus, and a similar distance from Acadia Park. To conclude, we provide actionable recommendations directed to university administrators and the community for tackling the issue of HFI among student-led families

Background

Food insecurity on Canadian campuses affects many postsecondary students. Silverthorn (2016) surveyed 4,013 students from five Canadian universities,³ and reported nearly two in five students (39 percent) experienced moderate or severe food insecurity, with the cost of food and housing, tuition fees, and inadequate income identified as the most common barriers to food security. Compounding known risk factors include belonging to a racialized group, being a first-generation postsecondary student, lacking family support, living in a low-income household, and parenting children. (Bruening et al., 2017; Power et al., 2021).

Food insecurity impacts physical and mental health as well as academic performance (Bruening et al., 2017; Power et al., 2021). A recent Canadian study reported that, “food insecure [postsecondary] students are more likely to have lower grades and to drop out” than their food secure peers (Power et al., 2021, p. 49). The

adverse effect of food insecurity on mental health is often referred to as food worry, and described as “the experience of stress or worry about having enough food to meet basic needs” (Han et al., 2022, p. 2; McAuliffe et al., 2021). Food insecurity and food worry interrupt students' full engagement in the social life of postsecondary education, pointing to impacts on multiple dimensions of human health and wellbeing (Kim et al., 2022).

Food insecurity does not stand in a silo of its own; rather it correlates with insecurities of other basic needs. Leung et al. (2021) reported over 11 percent of college student of a large U.S. Midwestern university concurrently experienced food, financial, and housing insecurities. Compared with peers whose basic needs were met, the cumulative burden of these three insecurities on students significantly increased their risk of experiencing mental health issues, fair or poor health, and a lower grade point average (Leung et al., 2021).

² Student-led families have at least one parent registered as a student, and at least one dependent child under 18 years.

³ The University of British Columbia did not participate in this study.

The intersection of food, financial, and housing insecurities may be more challenging to manage for students who must also take care of dependents. In confronting barriers to food access, individuals are known to switch toward cheaper sources of energy that compromise the quality of their food intake (Food and Agriculture Organization of the United Nations [FAO] et al., 2015). In families, this change in dietary intake is particularly concerning given childhood exposure to food insecurity is strongly correlated with long-term adverse physical and mental health outcomes (McIntyre et al., 2017).

Over the past fifteen years, government spending on postsecondary institutions in Canada has been relatively stable. Across the country, the primary response of universities has been to recruit more international students and increase tuition and other compulsory fees for domestic and international students (Usher, 2021). The ramifications are plentiful by making postsecondary education less affordable for domestic students from low- and median-income households, as

well as for international students who are forced to pay “at least double the tuition fees of domestics students” (Farahbakhsh et al., 2017, p. 71). The economic situation for a student-led family is likely even more precarious due to the expense of feeding and renting a multi-bedroom home, particularly in a market where the costs of housing and food have been increasing faster than the national inflation rate (Silverthorn, 2016).

In the 1970s, Canada officially recognized the right to food ratifying the International Covenant on Economic, Social, and Cultural Rights (United Nations [UN], 1966). Yet, from 2017 to 2018, one in eight Canadian households were food insecure and 4.4 million people—including over 1.2 million children—lived in food-insecure households (Tarasuk & Mitchell, 2020). More specifically, the highest rates of household food insecurity are found among Indigenous, Black and other ethnic and cultural groups (Tarasuk & Mitchell, 2020).

Food insecurity on campus

Although community resources are available in Acadia Park residence on UBC Point Grey campus, student-led families cope with multiple stressors in their day-to-day lives. Graduate student-parents juggle producing high-quality research output that often requires extended periods of time away from their families, paying high tuition fees, and caring for their families—all of which compromise student health and wellbeing.

Results from the 2016 Acadia Park Residence Association (APRA) survey showed 52 percent of participants living in Acadia Park residence had an

annual household income of less than \$30,000, and allot nearly 85 percent of their income toward housing costs on campus (Robinson et al., 2017). In 2017, the BC Centre for Disease Control (Kurrein et al., 2018) estimated the monthly cost to feed nutritious food for a family of four to be approximately \$1,019.⁴ To meet this estimate, families in Acadia Park would be spending approximately one-third of their monthly budget on food costs (Robinson et al., 2017). Comparatively, in 2018 British Columbia households had a median income of \$84,850 and food costs

⁴ Nutritious food is defined as minimally processed, requires preparation, and is considered to be commonly eaten by most Canadians in amounts that provide a nutritionally adequate, balanced diet (BC Centre for Disease Control, 2018).

accounted for approximately 11 percent of household income (Canadian Federation of Students, 2017; Government of British Columbia, 2022).

Several non-peer-reviewed studies conducted by students and faculty on Point Grey campus have revealed that food insecurity among students has existed for many years (Brinkman et al., 2015; MacEwan et al., 2016), and the studies have informed university initiatives, such as the Wellbeing Strategic Framework, the Food Security Initiative, and the Community Food Security Hub (The University of British Columbia [UBC], 2021). In addition, the annual AMS Academic Experience Survey provides insight into the prevalence and degree of food insecurity experienced by UBC students (Yee et al., 2020). In 2019, more than two in five undergraduate and graduate student respondents (N=2,170) were concerned about their ability to feed themselves, including one in five who experienced this challenge at least monthly (Yee et al., 2020).

Furthermore, 42 percent of undergraduate respondents and 44 percent of graduate respondents have ever had concerns about running out of food (Yee et al., 2020).

Access to affordable fresh produce on the Point Grey campus presents challenges to students as well, despite the presence of UBC Farm. When comparing the price of UBC Farm organic food⁵ to the price of organic and conventional produce from five nearby grocers, the cost of fresh organic produce was similar. However, the cost of UBC Farm organic produce ranged between 1.5 to 2 times the cost of conventional food, thereby limiting the affordability of locally-produced organic food (Lee et al., 2016).

The challenges associated with affordability and procurement of local produce are not isolated to the UBC context. In a national study⁶ aimed at identifying the benefits and barriers to local food procurement on

Canadian campuses, 56 percent of respondents pointed out high prices as the primary deterrent to purchasing local food on campus, and difficulties in accessing or sourcing local food ranked second (Atkinson et al., 2013).

Like any other campus, Point Grey has a particular food system that Rojas et al. (2007, p. 2) described as a “microcosm of the global food system”: issues that are present in the global food system are also present at UBC, and food insecurity is one of the mirrored issues. “UBC community must assume full responsibility for what happens in our own backyard” and this requires that we “improve our understanding of the impacts of the food system currently feeding this community” (Rojas et al., 2007, p. 4). Our case study provides a unique perspective on student-led families living in the Acadia Park housing complex at UBC. The confluence of achieving high quality academic output, raising families with low household income, paying high tuition fees, and the close proximity of UBC farm to family residences propelled us to examine how students cope with the challenge of providing their families with healthy food and fresh produce amidst a sea of plenty.

We used four research questions to frame our study: 1) What level of food insecurity (marginal, moderate, severe) do student-led families experience when living in Acadia Park residence? 2) How does family income impact Acadia Park student-led families’ risk of food security? 3) What dimensions of food insecurity influence Acadia Park student-led families’ decision making around food purchases? 4) What are student-parents’ perceptions about food adequacy and acceptability, and access to local and organic produce, both on and off campus?

⁵ The prices for salad greens, kale, carrots, potatoes, and apples were included in the study.

⁶ National study with the exception of Prince Edward Island, and Nunavut, Yukon, and the Northwest Territories (Atkinson et al., 2013).

We considered both local and organic produce because UBC Farm is on campus and supplies produce to UBC and its extended communities.

Case study and data analysis

UBC Point Grey is a research-intensive campus situated on the ancestral and unceded territory of the *xʷməθkʷəy̓əm* (Musqueam) people, in the city of Vancouver, British Columbia, Canada. In 2022, UBC ranked thirteenth globally by Times Higher Education in delivering on the United Nations Sustainability Development Goals, and annually attracts outstanding graduate students from around the world (UBC, 2022b). Point Grey campus is approximately 400 hectares in size and home to 55,780 students with 10,600 graduate students (UBC, 2021). Of the total Point Grey student population, approximately 27 percent are international students, and graduate students alone originate from 119 countries (Mukherjee-Reed & Szeri, 2021).

Acadia Park services over 600 student-led families with approximately 90 percent of households led by a graduate student-parent (UBC AMS Office of VP Academic and University Affairs, 2014). Life in Acadia Park is shaped by a community centre, primary school, childcare services, community garden, coffee shop, and

several playgrounds. Acadia Park is administered by Student Housing and Community Services (SHCS), and residents are organized under APRA.

The UBC Farm is a twenty-four hectare farm situated in a ninety-year-old coastal hemlock forest and is operated by the Centre for Sustainable Food Systems (CSFS). Through the farm, CSFS aims to provide a “more sustainable, food-secure future” (Centre for Sustainable Food Systems [CSFS], 2021, para. 1) for all by facilitating teaching, research, and community activities in support of their goal. Over 200 varieties of fruits, vegetables, and herbs are produced on the farm, which is a mosaic of cultivated annual crop fields, perennial hedgerows and orchards, pasture, honey bee hives, egg-laying and open-pasture hens, teaching gardens, and forest stands (Centre for Sustainable Food Systems [CSFS], 2021). From June to October, UBC Farm sells its produce and eggs directly to consumers at weekly farmers’ markets, on Wednesday afternoons in the centre of Point Grey campus, and Saturday mornings at the farm site.

Methodology

We used a mixed methods approach to capture both quantitative and qualitative dimensions of HFI experienced by Acadia Park families. We added questions to the online Acadia Park Residence Survey, administered a face-to-face paper survey in Acadia Park,

and conducted two focus groups. The research activities with Acadia Park family members were conducted in 2017 and coordinated and developed in collaboration with APRA, SHCS, CSFS and a six-

member student group from a UBC public health nutrition course.⁷

All quantitative results are reported by frequency (percent) of actual responses to each survey item. Qualitative thematic analysis was informed by the methodology presented by Kiger and Varpio (2020), which involves a widely-accepted six-step process.

We followed four of the Five As of Food Security (Chappell et al., 2011; Rocha, 2007) as a theoretical framework to guide data collection, analysis and interpretation: (*economic*) *accessibility*, *availability*, *adequacy*, *acceptability* and *agency*. As explained by Chappell (2018) the first two components target sufficient and socially and economically accessible food, while *adequacy* refers to nutritious, suitably diverse, and safe food produced using environmentally sound practices. *Acceptability* refers to the cultural acceptability of food and its production, without compromising the values and rights of both consumers and food providers. And, finally, *agency* concerns the empowerment of citizens to define and secure their own food security supported by policies, processes, and programs that enable the achievement of overall food security. The questions developed for the data collection tools (described below) asked study participants about the first four components of the Five As of food security framework. In the results section, we refer to each of the components in the context of the UBC Point Grey campus. Although *agency* was not measured in this study we do, however, see a place for student-parents to advocate for structural changes by participating on university committees that are creating programs and policies to promote food security, food

justice, and overall wellbeing for all UBC community members.

ARPA online survey

In early April, APRA conducted an online survey⁸ amongst Acadia Park residents, and our research team was invited to include eight out of thirty-two total questions on demographics, food security, monthly food budgets, food purchases, and food decision making. The set of questions on food security in this population was drawn from the Household Food Security Survey Module (HFSSM) used by Statistics Canada to categorize marginal, moderate or severe food insecurity (Statistics Canada, 2021). We adapted the HFSSM to adjust to the limited number of questions approved to add to the APRA survey, and the relevance of the questions to the *accessibility* and *availability* food security components. Seventy-eight Acadia Park residents responded to the APRA online survey, although not all participants answered every question.

Focus groups

In late April, in the Acadia Park Community complex, eleven residents—ten women and one man—participated across two focus groups to provide a deeper understanding of the responses collected in the earlier online survey, and to further discuss the *adequacy* and *acceptability* food security components. Using a semi-structured interview guide, seven questions were asked about food decision making, food preparation, culturally appropriate food, and organic versus conventional food.

⁷ FNH 473, Applied Public Health Nutrition, is a community-based experiential learning course offered by the Faculty of Land & Food Systems at UBC. In January to April 2017, a student group collaborated with the research team to develop data collection tools for the online and face-to-face surveys and the focus groups administered to APRA residents.

⁸ The APRA Community Survey 2017 included questions about housing, family composition and size, household income, residence safety, and community wellbeing amongst other topics.

Learning workshop and group conversation

During May and June, we offered two community learning activities held at the Acadia Park community garden and at the UBC Farm. The workshop focused on community gardening and food growing in small spaces, and the group conversation centred on land and culturally appropriate food. These activities were not part of the data collection process but were offered by the research team as a way to reciprocate community collaboration with our study.

Pilot pocket market

On four consecutive Thursdays in September, we ran a pilot series of pocket-markets⁹ in the heart of the Acadia Park complex that offered UBC Farm produce at a 15

percent discount. The objectives were to make local and organic produce more affordable and accessible to Acadia Park families, and to assess the feasibility of opening a farm market on a regular basis in the complex.

Face-to-face survey

To explore the first four food security components particular to student-led families and the UBC Farm, we ran a face-to-face survey at the final two pocket-markets in September. The survey included a set of four questions about preferences for organic food versus conventional food, and one question about access to organic produce on campus.

Results

APRA online survey

Seventy-eight Acadia Park residents responded although not all participants answered every question in

the survey. The respondents originated from twenty-nine different countries including Canada, and identified as described below in Table 1:

Table 1: Online survey participants' demographics

Participants' demographic	Percentage of participants
Self-identified as a student	53
Self-identified as a student family member	47
Living with one to three dependents between zero to twelve years old	75
Self-identified as a woman	72
Self-identified as a man	27
Self-identified as a non-binary	1

⁹ The term "pocket" references miniature versions of urban spaces (Evans, 2010; North, 1969). In this case, the pocket market in Acadia Park references the smaller version of the UBC Farm market in Acadia Park.

Focus groups

Eleven participants attended the focus groups. See in Table 2 some demographics of the group.

Table 2: Focus groups participant demographics

Participants demographic	Percentage of participants
Participants between thirty-one and forty years old	63
Participants between forty-one to fifty years old	18
Participants living in homes with one to two dependents between zero to twelve years old	63
Participants living in homes with three to four dependents between zero to twelve years old	27

Only one participant lived with a teenager, and one participant lived with two seniors.

Face-to-face survey

Sixty-three people responded to the survey, and sixty-two survey sheets were processed as valid. One survey sheet was considered invalid because responses were conflicting (e.g., respondent did not know what UBC Farm is, but in a following question they stated that the access to the farm was “easy”).

Impact of household income

For combined household (gross) income, 31.3 percent of the online survey respondents declared an annual household income¹⁰ of less than \$20,000, while 23.4 percent placed it between \$20,000 and \$30,000. Twenty-five percent of households had incomes greater than \$50,000 per year.

Table 3 presents the effect of family income on food security. Of particular note, none of the households reported limiting daily meals for children due to lack of money. However, 5 percent of the respondents reported, “go[ing] to bed feeling hungry”, indicating some student-led families experience severe food insecurity.

¹⁰ Income expressed in Canadian dollars.

Table 3: Family income and impacts on student family food security

In the last month...				
	Yes (%)	No (%)	N/A	Total (n)
Did you worry that the food in your home would run out before you were able to get more?*	22.22	77.78	0	63
Because of a lack of money, did you or somebody else in your household not eat their preferred food?*	25.40	74.60	0	63
Because of a lack of money, did you or somebody else in your household eat a low diversity of foods?*	25.81	74.19	0	62
Because of a lack of money, did you or somebody else in your household eat unhealthy or low-nutrient foods (e.g., fast food)?^	22.22	77.78	0	63
Because of a lack of money, did you or somebody else in your household have to eat less food in some of your main meals?^	9.52	90.48	0	63
Because of a lack of money, did you or somebody else in your household have to reduce their number of daily meals?•	7.94	92.06	0	63
Because of a lack of money, were children in your household affected by the reduction in the number of daily meals?•	0	87.30	12.70	63
Because of a lack of money, did you or somebody else in your household go to bed feeling hungry?•	4.76	95.24	0	63

* Marginal food insecurity
^ Moderate food insecurity
• Severe food insecurity

Table 4 shows food intake was an issue for one family experiencing severe food insecurity, while the majority of families experienced marginal food insecurity.

Table 4: Eat enough vs eat what we want

Which of the following statements best describes what happens in your household regarding food?	
Answer choices	Responses (%)
We always eat enough and the kind of food we want	37.5
We eat enough but not always the kind of food we want	59.4
Sometimes we do not eat enough	1.6
Frequently we do not eat enough	1.6

Food insecurity and household food purchase

In descending order, the following four food security components drive Acadia Park families’ food purchases: *(economic) accessibility, availability, adequacy, and acceptability* of food. Of the four food security

components that drive food purchases, 86 percent of respondents ranked “price” as the most important, followed by availability (supply/location—75 percent), adequacy (24 percent), and acceptability (21 percent).

Economic access to food

In the online survey, 33 percent, 42 percent, and 25 percent of respondents’ monthly food budgets ranged between \$200-\$500, \$501-\$800, and \$901-\$1,500,

respectively (Table 5). Where a numerical range was given as a response, we took the average. Additionally, as income was frequently reported as a range, the median income was used to estimate the percentage of annual income allotted for groceries.

Table 5: Percentage of annual income spent on groceries based on median income

Estimated percentage of annual income spent on groceries (%)	Percent of respondents (n=58) (%)
5-9	1.72
10-14	8.62
15-19	13.79
20-24	25.86
25-30	8.62
>30	41.38

These data provide a general idea of the percentage of Acadia Park residents’ incomes dedicated to their monthly food budget; however, it is limited in several ways. Because ranges of income are reported, it is difficult to accurately calculate the percentage of income allocated for groceries. Similarly, ranges were given for amounts spent on groceries and thus accuracy may be further limited.

On-campus food prices are “much higher [than off-campus]” according to the focus group participants. To manage the economic access to food, the participants procure most of their food off campus, and some implement multi-family or community-based coping strategies to afford or procure food at lower prices or reduced costs. For example, one participant highlighted the benefit of periodically buying large quantities of food, “[Going to Costco twice a month] that’s sort of a race towards the clock: to eat before it [food] goes off because it’s a lot, but I feel like doing that kind of

[thing] we like it ‘cause it forces us to finish it [food at home], and we don’t eat out as much if we consistently go to Costco” (FG2-P4). FG2-P4 refers to focus group #2, participant #4.

This shopping modality presents some challenges such as the need for extra space. In Acadia Park there are restrictions on adding extra electrical appliances at home, such as a second refrigerator to keep food (e.g., meat) fresh for longer. This shopping modality also demands extra storage space. One participant reflected about quantity versus quality as follows: “Since I live here [on campus] I realized that maybe eating less but good quality [food] is better” (FG2-P5).

Food availability on and off campus

preferred places to access bigger amount of food are located off campus as described in the table below.

Online survey respondents buy food on campus very occasionally and in small amounts during the week. The

Table 6: Food availability and source

Where do you purchase/get most of the food consumed by your family? Please check all that apply.	
Answer choices	Responses (%)
Off-campus supermarket/grocery store(s)	82.81
On-campus supermarket/grocery store(s)	46.88
UBC Farmers’ Market	1.56
Other farmers’ markets	3.13
Food bank	1.56
We grow our own food	4.69
*Other (please specify)	3.13
Total	100

(*) Two respondents mentioned some current food delivery services to their homes.

Focus group participants mentioned eleven different places where they most often bought food—none of the on-campus grocery stores were mentioned as a primary food source, only as a secondary food source. Students and their families find themselves forced to go off campus to shop for cheaper food, but this requires time and is especially challenging when families do not have a car. Consequently, food availability is impacted by access to transportation that allows an “easy” and “fast” purchase experience as a participant explains: “[Stores] close to the bus [stops] is probably our main factor [that influences food purchases]” (FG2-P3). Another participant describes the convenience of taking just one bus to do the groceries: “I mostly go to Safeway [off campus] because they are across the street on the same Macdonald Street, so just having that as a way of taking one bus going to the groceries at the same time” (FG1-P2).

On snowy days, access to food becomes more limited as the roads and streets around Acadia Park are not cleaned according to the interviewees, “so you want

to buy food for 2 weeks, 3 weeks until the snow melts [to avoid accidents because of the ice]” (FG1-P2).

Considering the high number of international students on campus and particularly in Acadia Park, the focus group participants discussed the availability of traditional (culturally acceptable) food that they described as limited on campus. Based on participants’ experiences, traditional food includes certain processed foods, spices or ingredients imported from their country of origin. Four international study participants purchase their traditional foods once or twice a month, and must travel for approximately one hour from campus to reach a specific store. They would purchase traditional food more often if it were more easily accessible, “You might be able to find what you are looking for, but it takes you like five places to get your grocery list complete, and that’s really time consuming, loading and unloading [from the transportation vehicle]” (FG2-P3).

For instance, living on the east side of the city used to allow easy access to a big store that has abundant food from Central America (“doing a one-stop shop”)

for one of the families. After they moved to Point Grey campus, their consumption of culturally acceptable food decreased and procuring traditional foods now (e.g., “tortillas”) always requires “an extra special stop to get it” (FG2-P4).

Participants also noticed that the availability of traditional food is not only affected by local conditions but regional conditions as well. One research participant had greater access to Mexican or Latin American food when living in the U.S., but in Vancouver they eat much more Asian food (FG3-P3). Price also affected the consumption of traditional food, one interviewee pointed out the family changed their diet because some food (e.g., cheese) is much more expensive in Canada than in their home country (FG2-P1).

Nutritious produce on campus: acceptable and adequate but not accessible

Statements in the face-to-face survey explored preferences for organic food and conventional food, and then specifically about access to organic produce on campus. Seventy-four percent responded with “agree” and “strongly agree” to the statement, “I prefer organic food over conventional food” while 10 percent “strongly disagree” and “disagree”, and approximately 16 percent reported a “neutral” response to the statement.

Focus group participants also had a high preference for organic and local food, but if they had to choose between non-organic and local¹¹ they would prefer local. Participants perceived organic produce as much more expensive than conventional produce in general, and some research participants pointed out that organic food in Canada is even more expensive than in other countries, notably the U.S. All participants in both

focus groups preferred organic food, but because of its higher price, most often they were not able to purchase it, as indicated in this comment, “If you can access easily and affordable [produce], who would not like to eat local and organic [food]?” (FG1-P2).

One participant was willing to purchase local and organic, “but there is a limit [on the price they can afford]” (FG1-P3). To buy as much organic food as possible with a low-income family budget, two participants used a specific criterion to prioritize some organic produce over others, “I feel like the ‘dirty dozen’ is a big reason [to buy organic produce], but also there are certain organic foods that don’t cost a lot more than conventional foods. I do [buy] organics in those two instances” (FG2-P3).

There were also some community initiatives in Acadia Park that helped to cope with higher food prices for organic food, including neighbours grouping together to make bulk purchases of organic eggs and other farm products from a local farm off campus. Also, a group of women in the community shared recipes and cooked large quantities of food together, then froze portions for later. However, group activities can bring extra pressure to the group as some members were concerned about “healthy eating” and avoiding “artificial colours or preservatives” in food that they give to their children. In addition, some families eat gluten free or dairy free, so all group members must be aware of food preferences and dietary restrictions.

Some interviewees from both focus groups considered UBC Farm produce to be expensive, although this perception was not unanimous. Sixty-five percent of online respondents reported a willingness to

¹¹ Here, the participants refer to “local” as Canadian.

purchase UBC Farm organic food¹² if a market was set up in Acadia Park, while 8 percent expressed no interest and 27 percent selected “I am not sure.” Similarly, most focus-group interviewees were conditionally willing to purchase UBC Farm produce if it were sold in Acadia Park, but only if the produce were inexpensive than current prices. If the produce is expensive, they prefer going off campus and buying it from a regular store, “If [the UBC Farm produce] were cheap, similar to other stores, yes, definitely I [would] buy them” (FG1-P1). By cheap the interviewee means, “compared to vegetables in other stores like, for example, Chinese store, Persian store. They sell [conventional] vegetables and fruit and if the price [at the UBC Farm] is similar, I will buy from here [UBC Farm]” (FG1-P1).

One interviewee indicated, “If the price [in Acadia Park] is similar to [the] Whole Foods’ organic one, I think I will buy here” (FG1-P4). Another interviewee expressed, “I would even pay extra for quality and convenience of having it here. I would prefer obviously, you know, the lowest value as possible, but I would pay more for having it here” (FG2-P4).

During the four pilot markets that offered a 15 percent discount, respondents’ opinions were divided to the statement, “UBC Farm produce is expensive”, with 38 percent reporting “agree” and “strongly agree”, 33 percent “strongly disagree” and “disagree”, and 30 percent felt “neutral.” These results differ from the online survey respondents and focus-group interviewees who more decisively described UBC Farm produce as expensive. In response to the statement, “UBC Farm produce has fair prices considering that it is local and organic”, 66 percent reported they “strongly agree” or “agree”, and only 8 percent chose “strongly disagree” or

“disagree”. Similar to the first statement, 26 percent of respondents were “neutral”. In response to, “I can afford UBC Farm produce at 15 percent off in Acadia Park,” 80 percent chose “strongly agree” or “agree,” 7 percent chose “strongly disagree” or “disagree,” and 13 percent were “neutral.”

We were also curious about relationships with UBC Farm, so we asked the buyers if they had been at the UBC Farm site in the last four months.¹³ Fifty-seven percent responded “yes” while 42 percent responded “no”. Over that time period, 45 percent of respondents had purchased UBC Farm produce “once or 2 times”, 31 percent had done it “3 or more times” and 8 percent purchased it “every week”. Sixteen percent of those surveyed indicated buying UBC Farm produce for the first time. However, when asked, “what market(s) have you purchased [UBC Farm produce] at?” 51 percent reported “Acadia Park”, 4 percent on the UBC farm site, and 4 percent outside of the campus bookstore where UBC Farm runs a market. Other respondents selected two or more places at the same time. The most popular combinations were “UBC Farm market and Acadia Park” at 22 percent, followed by “campus bookstore, UBC Farm site, Acadia Park” at 12 percent.

The four pilot farm markets in Acadia Park averaged lower sales (\$841) than average sales at the weekly markets on campus and on-farm markets (\$1,100).¹⁴ Despite the lower sales, a subsidy provided by this project to run the four pilot markets covered wages for the farm staff and gas to transport the produce, allowing the UBC Farm to run the markets with no added expenses or economic loss, while giving student-led families access to less expensive local, nutritious, and fresh organic food in their residence complex.

¹² In the online survey, we defined organic food as food produced by methods that comply with the standards of organic agriculture. Standards vary worldwide, but organic agriculture is generally conceived as a chemical-free management system, which avoids synthetic inputs and relies on natural substances instead.

¹³ June-Sept 2017, a high season for UBC Farm.

¹⁴ In this particular analysis we do not include the market happening on Saturdays on the farm site. This particular market has always been the most popular one. It is run for 4 hours and is the most advertised among the regular UBC Farm markets.

Discussion and conclusions

UBC Point Grey campus has its own food system, and issues of the global food system are reproduced on campus. Based on the research findings, Point Grey campus food system presents economic and physical barriers to accessing affordable nutritious food for many student-led families living in Acadia Park residence on campus.

Student-parents in food insecure, low-income households shared concern about running out of food to feed their families. In 2017, the Low Income Measure before-tax poverty line was \$41,246 for a family of two parents working full-time with two children (Statistics Canada, 2017), and we found 55 percent of the online survey respondents had an annual household income of \$30,000 or less. This result is critical considering that 75 percent of the surveyed participants live in households of three to five members and it is well-established that a lack of income is the primary cause of HFI, and food insecurity negatively impacts people's health and wellbeing (Leung et al., 2021; Riches, 2018, 2020). It is also important to note in 2016, that nearly 50 percent of student-led households in Acadia Park allocated approximately 85 percent of their income toward housing (Robinson et al., 2017). In the most optimistic of scenarios, this could be considered “transitional poverty” in anticipation that once student-parents graduate, an increase in household income would lift them out of poverty. In some cases, though, this will not happen for quite some time as students may continue to live in perpetual poverty inherited from their parent households and/or from relying on student loans while pursuing their education. We take the stance that access to education, like access to food, should be viewed as a right and not simply a monetary investment in the future.

Interlocking insecurities

This study corroborates what others have found that many university students juggle multiple and interwoven food, housing, and financial insecurities in their pursuit of higher education (Leung et al., 2021). Postsecondary education is a costly endeavour and exposes students to multiple stressors that can negatively affect their health and wellbeing, but all the while, students add to a university's assets, which in turn heightens the university's global ranking. We found the common issues of (economic) accessibility, availability, adequacy, and acceptability are as relevant to food-insecure students at UBC as elsewhere in North America (Blundell et al., 2019; Bruening et al., 2017; Entz et al., 2017; Hattangadi et al., 2019; Leung et al., 2021; Power et al., 2021; Silverthorn, 2016). We believe there is a need for a coordinated intervention that lifts students out of food insecurity and supports student wellbeing in a holistic way by simultaneously addressing (at least) food, housing, and financial intersecting insecurities; otherwise, addressing each insecurity in a piecemeal way will only provide a partial understanding of a complex and interrelated issue, and a partial solution.

It is also worth asking how the campus food system is integrated into the campus general planning; for example, future university initiatives can ensure fair food prices on campus and the creation of a just food system for all students and their families that live on campus. Childhood exposure to food insecurity is a known potent social determinant of developmental and adult health. To mediate these factors, using the university's capital to build an international hub that provisions culturally significant foods would curtail the need for many students to schedule the necessary time,

and cover the cost to travel off-campus and purchase foods that have dietary significance and could effectively improve diet quality (Martinez et al., 2019).

Relevance of on-campus organic food production

The availability of local and organic food is relevant to student-led families because they are deprived of economic access to it, yet prefer it over conventional foods. We learned the price of organic food is a barrier experienced by Acadia Park residents in purchasing preferred foods. Even if local and organic produce was made available in Acadia Park, price is frequently prioritized over decisions on food adequacy and acceptability. While residents' opinions on the price of UBC farm produce were evenly distributed, most of the student-led families believed the produce is priced fairly considering it is local and organic. Student families appreciate the production of organic food on campus as evidenced by a vast majority of the face-to-face survey respondents selecting the statement, "I can afford UBC Farm produce at 15 percent off in Acadia Park" during the pilot fall farm markets. A university subsidy on UBC Farm produce, food coupons or other similar initiatives could help student-led families afford the kinds of nutritious food they want to eat and nourish their families.

Considerations for future action

UBC describes itself "like a combination of a city and a large, complex corporation" (UBC, 2022a, para. 1). Point Grey campus is located on the University Endowment Lands and is not part of the formal City of Vancouver. Unlike most other universities, the UBC Board of Governors manage, administrate and control the property, revenue, business and affairs of the University (UBC, 2022a). Taking actions toward a just

campus for all should be actualized through UBC governance-supported policies and programs. Students living on campus are deeply impacted by UBC governance. Echoing Rojas and colleagues (2007), the UBC Board of Governors must assume full responsibility for effectively addressing challenges that negatively affect large segments of the student population, including the student-led families living in Acadia Park.

This study bolsters the need for sustainable and adequate funds that promote food security and overall wellbeing in the UBC community, and provide ongoing support to initiatives such as UBC Wellbeing Strategic Framework, Food Security Initiative, and Community Food Security Hub. In parallel, a mitigating strategy to address campus HFI is for UBC stakeholders to advocate for a basic income program (provincial and/or national) that would lift segments of the population out of poverty and put into place policies and actions that would build individual, family and community autonomy (Green et al., 2020). Despite British Columbia moving in a positive direction with recently legislating a Poverty Reduction Strategy (Province of British Columbia, 2019), it falls short of recognizing HFI as an issue caused by poverty. Should household income levels rise sufficiently to meet basic needs, a predicted reduction in the prevalence for HFI could happen. As Green and colleagues (2020) propose, food insecurity may be "best addressed by relieving people [and postsecondary students] of the other pressures that lead them to have to cut back on food—housing, health, and income [fair labour market] being among the most central" (p. 36).

Despite the COVID-19 pandemic negatively impacting the bottom line of many institutions, UBC estimates a \$100 million surplus for its consolidated 2022/2023 budget (UBC Today, 2022). Coupled with its high worldwide ranking that relies on high quality

graduate student output, the notoriety benefitting UBC lies in stark contrast to the prevalence and degree of food insecurity experienced by student participants in this study, and to respondents of the Academic Experience Survey at large (Yee et al., 2020). The human cost of holding up the market approach to postsecondary education appears to be too high for students and their family members (Canadian Federation of Students, 2017; Power et al., 2021). In our opinion, there is a need for future research that produces direct actions to ameliorate common stressors affecting the health and wellbeing of student-led families. Given inadequate income is well recognized as a cause of HFI, and adequate income must be a part of the solution.

UBC and many other universities around the world have adopted the Okanagan Charter that calls upon postsecondary institutions to embed health into all aspects of campus culture and lead health promotion action and collaboration locally and globally (International Conference on Health Promoting Universities & Colleges, 2015). The considerations proposed here are guided by the Okanagan Charter to specifically address the struggles faced by student-led families juggling multiple interlocking insecurities, while successfully meeting the rigorous demands of higher education. UBC and other postsecondary institutions across Canada would do well to administer a regularly scheduled, standardized Student Wellbeing Index (SWI), or the Canadian Campus Wellbeing Survey (CCWS) as has been proposed by Faulkner and

Future studies

Student-led families and households are currently underrepresented in the scientific and Canadian community health studies on food security and poverty. While we acknowledge the limitations of an

colleagues (2019) that monitors change over time of indicators such as student mental and physical health, housing, food security, and financial conditions. Changes that lead to social and economic justice on campus will sustain the health and wellbeing of the campus community. All stakeholders—students, staff, faculty, administrators, members of local Indigenous Nations, and the wider university community—can partner in developing interventions and policies that mitigate these basic need insecurities, and ensure conditions for maximal student and family wellbeing, and academic performance, while studying at university. A national SWI would encourage institutions to be accountable for future policies and actions that bring benefit to all students without discrimination—including domestic, international Indigenous, Black, and People of Colour (IBPOC) students. And finally, incorporating a report on SWI into university ranking criteria would tell a fuller story about universities than what is told today.

To summarize, we propose that university administrators provide support to: 1) further investigate students' living conditions (especially student-parents) that leads to adequate incomes for students while pursuing higher education and caring for their families, 2) administer a national, standardized SWI or CCWS to monitor student wellbeing and inform responses that ameliorate common stressors, and 3) include results from a SWI or CCWS type of monitoring survey into university ranking criteria.

adapted version of the Household Food Security Survey Module, and the study sample size to extend the results to the entire population of Acadia Park residence and the campus more broadly, the study provides sufficient information to justify the need to conduct future studies that focus on student-led families at UBC and across Canada. Food preparation is an important

household daily activity, and although children were reported to not be affected by a family's "lack of money" in terms of the number of daily meals consumed, this study did not assess the quality or number of meals children access at their homes. This may be an area for future research specific to the

families living in Acadia Park. There is also a need to conduct future studies on Point Grey campus to understand student-led families' "neutral" position about organic or conventional food, and to measure the current and potential impact of UBC Farm in the campus food system and in student-led family diets.

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