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Student voices: A mixed-method approach to understanding the quality of life of students living with food access barriers

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Abstract

Grounded in Maslow's hierarchy of needs, this mixed-methods study examined how food access influences the quality of life (QoL) among college agriculture students. Because food is a fundamental physiological need, inadequate access can impede students' physical, psychological, and social well-being, as well as their academic success. This study aimed to identify barriers to food access and determine the factors most strongly associated with students' QoL.

A concurrent and sequential mixed-methods design was utilized. Phase 1 consisted of a cross-sectional online survey distributed to 3,336 undergraduate students, resulting in 809 responses (24% response rate). Multiple linear regression analysis revealed a statistically significant model (p = .017) explaining 27.7% of the variance in QoL. Significant predictors included food access, first-generation status, senior classification, and Asian ethnicity. Phase 2 consisted of 19 semi-structured

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interviews that explored the lived experiences underlying the survey findings. Thematic analysis identified nine key themes: barriers to food access, unawareness of resources, financial strain, lack of meal plan funds, limited food options, and the effects of food insecurity on physical health, psychological well-being, social relationships, and academic performance.

Students reported that demanding schedules, transportation challenges, and limited institutional support constrained their ability to access nutritious food. The results highlight food access as a central determinant of students' QoL and educational persistence. Institutions should enhance awareness of available resources, provide financial and meal plan assistance, and ensure inclusive dining options to promote student well-being and academic success.

Keywords
food access, quality of life, college food security, first-generation, college student

Introduction

Many college students face significant challenges accessing sufficient and nutritious food. Today's students are particularly vulnerable to experiencing food insecurity due to the escalating expenses of tuition, childcare, groceries, rent, and utilities (El Zein et al., 2019; Henry, 2017; Tanner et al., 2023). According to Nelson et al. (2009), only a small percentage of young adults attending two-year and four-year institutions adhere to an optimal diet for their needs. Additionally, students who face food access concerns are at a higher risk of encountering academic and health challenges during their school years. Research indicates that these challenges include lower GPAs, decreased academic performance, higher rates of non-completion, and poorer mental and physical health outcomes, among others (Hall et al., 2019; Patton-López et al., 2014; Payne-Sturges et al., 2018; Regan, 2020).

Food access barriers raise significant concerns and have long-term consequences for individuals' overall quality of life (QoL; U.S. Department of Agriculture, Economic Research Service [USDA ERS], 2026). According to the World Health Organization (WHO, 2006) and the Centers for Disease Control and Prevention (CDC; 2000), QoL encompasses various dimensions, such as physical, mental, and social well-being, and individuals' perceptions of their life circumstances within their cultural and social contexts. Access to food plays an important role in determining an individual's QoL. When individuals lack adequate access to food that provides the energy their bodies need, their ability to participate in daily activities can be compromised. This can result in adverse outcomes across physical health, psychological well-being, social relationships, and environmental factors (Donatelle & Ketcham, 2018; Umberson & Montez, 2010; WHO, 2012). Furthermore, academically, insufficient nutrition can impair cognitive function, concentration, and academic performance, ultimately hindering students' educational attainment and prospects (Taras, 2005).

Despite the well-documented impact of food access on QoL, a critical gap remains in the literature regarding how this relationship manifests among college students—particularly those studying agriculture. Agriculture students are uniquely positioned within this issue, as they are deeply engaged in food systems yet may still experience food insecurity. Understanding the specific factors influencing their food access and QoL is essential because their educational and professional trajectories directly intersect with food production, sustainability, and security.

While existing research has highlighted the negative consequences of food insecurity, there is a need for more comprehensive studies that examine the nuanced relationship between food access and QoL among agricultural students. This mixed-methods study addresses this gap by exploring key factors that affect their food security, identifying

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This project was the doctoral dissertation of Lana Petrie (2023). Dr. Rick Rudd was the committee chair and advisor of Petrie.

Statement of Ethical Conduct
This study was approved by the Virginia Tech Institutional Review Board (IRB Number 22-913).

Conflicts of Interest
The authors have no conflicts of interest to disclose.

variables linked to QoL, and analyzing students' perceptions of these issues. By focusing on agriculture students, this research not only contributes to the broader understanding of food insecurity in higher education but also provides insights that can inform targeted interventions and policies to enhance their well-being and academic success.

Theoretical Framework

This study is focused on Maslow's hierarchy of needs (MHoN), which provides a framework for understanding how access to basic necessities, particularly food, may influence students' quality of life and academic success. The following sections describe the hierarchy and explain the connections between food access and quality of life as it relates to this study.

Maslow's Hierarchy of Needs

Abraham Maslow (1943) conceptualized MHoN, that suggests that individuals generally must satisfy lower-level needs before progressing to higher levels. These five levels include physiological needs, safety, belongingness and love, esteem, and self-actualization. However, more recent research indicates that this hierarchy is not as rigid as originally proposed, with individuals sometimes pursuing higher-level needs even when lower-level ones are not fully met (McLeod, 2026).

Physiological needs, including food, water, rest, clothing, shelter, and reproduction, form the foundation of the hierarchy. If these basic needs are unmet, individuals may struggle to focus on higher-level needs, such as safety or belonging, as their primary concern is fulfilling fundamental survival requirements (Maslow, 1943; McLeod, 2026).

Food Access, QoL, MHoN, and Student Success

Food access, QoL, and MHoN are mutually connected and collectively influence a student's academic success. According to Maslow (1943), physiological needs, such as food, are foundational to higher-level needs. If these basic needs are not met, students may struggle to achieve personal growth or academic success. Food is a critical component of the physiological needs level of MHoN; without adequate access to food, students are less likely to meet this essential need, which can negatively impact their QoL (McLeod, 2026).

Students experiencing food insecurity are likely to prioritize meeting their physiological needs over academic achievement as they focus on obtaining food to survive. This disruption in fulfilling basic needs may compromise their overall well-being, leading to a lower QoL. Research has shown that unmet basic needs, such as food insecurity, are linked to poor academic performance and emotional distress (Ansorger, 2021). In contrast, students with reliable access to nutritious food are better equipped to meet their physiological needs, which enhances their QoL and enables them to focus on higher-level academic and personal goals (Braveman et al., 2011). Therefore, ensuring food access plays a critical role in fostering academic success by supporting students' QoL and helping them meet the foundational needs of Maslow's hierarchy (Ansorger, 2021; McLeod, 2026).

Methods

This study used a mixed-methods approach to explore the impact of food access on the QoL of students in the College of Agriculture and Life Sciences at Virginia Tech. As seen in Figure 1, the design followed a multilevel structure with both concurrent and sequential data collection (Creamer, 2018), allowing quantitative and qualitative data to be collected, compared, and integrated. This approach supported a comprehensive examination of food access conditions, group differences, and students' lived experiences as they relate to QoL.

The objectives of this study were to:

- assess food access among first-generation, international, rural, and urban students.
- examine the relationship between food access and quality of life across physical, psychological, social, and environmental domains.
- compare food access and QoL outcomes across first-generation, international, rural, and urban student groups.
- integrate quantitative and qualitative findings to better understand how food access influences students' overall QoL and lived experiences.

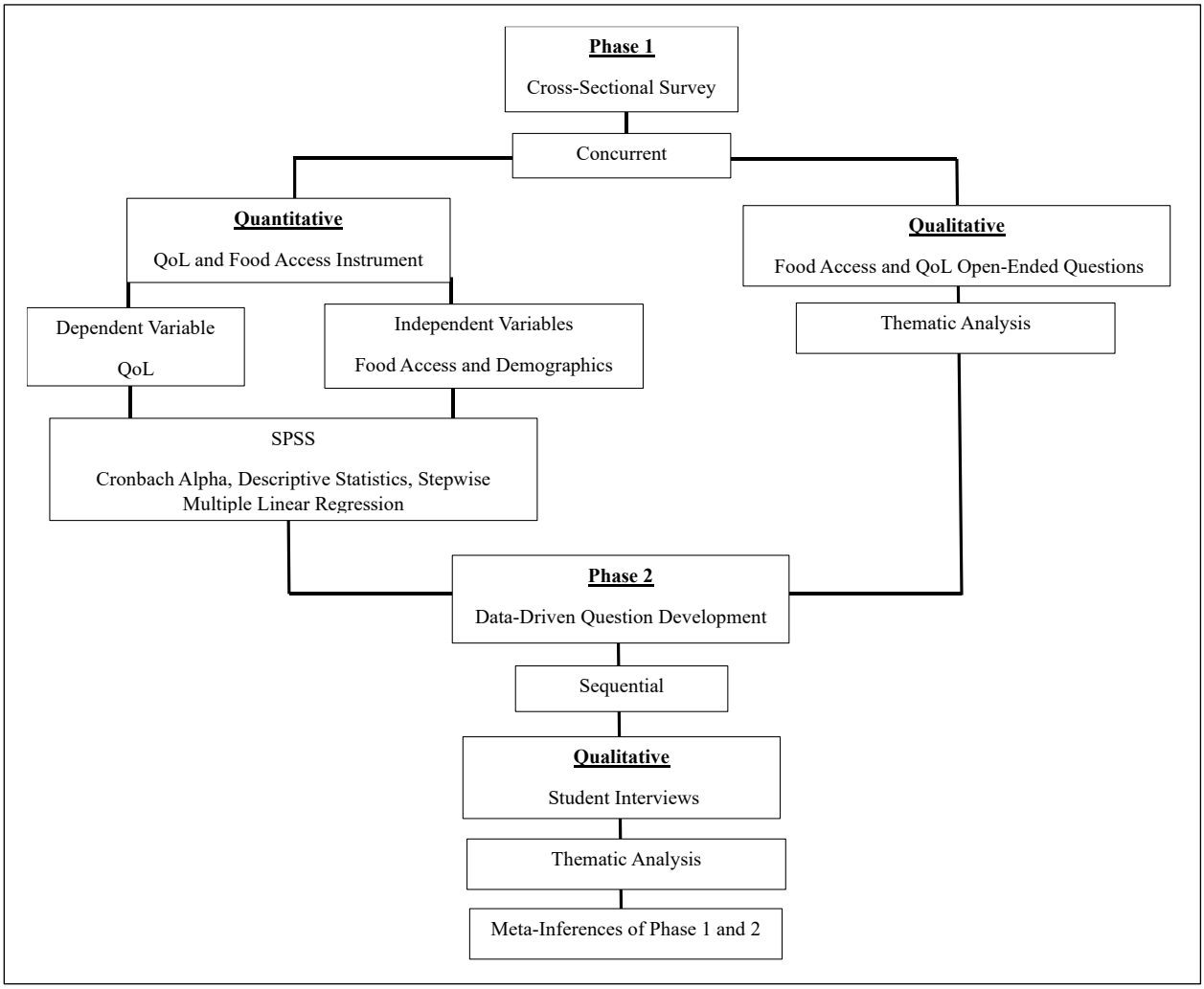
Phase 1: Survey

The first phase utilized a cross-sectional online survey administered through QuestionPro. The survey incorporated quantitative questions, including 11 demographic items, 6 food access questions, and 25 WHOQOL-BREF items, as well as 8 open-ended qualitative questions that explored students' experiences with food access and well-being (Creswell & Creswell, 2018). Skip logic was used to ensure participants only received questions relevant to their experiences. A random single-stage sampling approach was used to invite all Virginia Tech students via the university's email and through classroom recruitment. Prior to distribution, a pilot test with four students ensured clarity and functionality. The final survey remained open for three weeks, and students could volunteer for a follow-up interview by submitting their contact information.

Phase 2: Interviews

Phase 2 expanded upon survey findings through semi-structured Zoom interviews with students who had expressed interest in participating after completing the survey. The first 19 volunteers were selected to represent different backgrounds, including first-generation, international, rural, and urban experiences. Each interview lasted 45–60 minutes and explored emerging survey themes in greater depth. Participants provided consent to be recorded, and the data were securely stored in a protected Google Drive accessible only to the IRB-

Figure 1. Mixed Methods Data Analytic Procedure



approved research team. Interviews continued until data saturation was reached (Hennink et al., 2017).

Data Integration and Analysis

Quantitative data were analyzed using SPSS for descriptive statistics, reliability testing (Cronbach's Alpha), and regression modeling. A forward stepwise multiple linear regression was conducted with QoL as the dependent variable. Stepwise regression was selected to identify the most influential predictors among several demographic and contextual factors, given the exploratory nature of the study and limited prior research on this population. Qualitative responses were coded and analyzed thematically using QuestionPro. Findings from Phase 1 were used to develop interview questions for Phase 2. After interviews were held and analyzed through Reduct, meta-inference (Teddlie & Tashakkori, 2011) was used to reveal how statistical patterns aligned with students lived experiences, offering a view of how food access shapes QoL within the Virginia Tech community.

Results

Phase 1

A cross-sectional survey was distributed to 3,336 undergraduate students in the College of Agriculture and Life Sciences at Virginia Tech, with 809 responses (24% response rate). The QoL scale demonstrated excellent reliability (a = .917), and the food access scale showed acceptable reliability (a = .694).

A stepwise multiple linear regression in SPSS (entry $p \leq .05$; removal $p \geq .10$) identified predictors of QoL. The overall model, as seen in Table 1, was significant (p = .017, adjusted R^2 = .277), explaining 27.7% of the variance. Significant predictors included food access (β = .480, p < .001), Asian identity (β = −.109, p < .001), first-generation status (β = −.109, p < .001), and senior standing (β = .071, p = .017), with food access as the strongest predictor. Departmental models were also significant (adjusted R^2 = .244–.366), with food access consistently predicting QoL. Other predictors varied by group, but food access remained the only variable significant across all models.

Qualitative Survey

Analysis of responses to the eight open-ended questions reinforced the quantitative findings. A dominant theme was the lack of awareness of food resources available both on and off campus. Approximately 64% of respondents reported being unaware of food support services, and nearly half (49%) were unfamiliar with university or community-based programs. Students identified barriers such as schedule conflicts (39%), academic demands (24%), employment commitments (22%), and financial constraints (18%) as limiting access to adequate food. Moreover, 35% reported negative effects linked to food insecurity, including psychological distress (14%), body image concerns (13%), and difficulty concentrating (12%).

The qualitative insights contextualize the regression findings, illustrating how limited food access not only statistically predicts a lower quality of life but also manifests in students' lived experiences through emotional, cognitive, and behavioral challenges.

Table 1. Stepwise Multiple Linear Regression Predicting Quality of Life (QoL)

Predictor	B	SE	β	t	p
Constant	0.930	0.024	—	38.96	< .001
Food Access	0.109	0.007	0.480	16.08	< .001
Asian	−0.049	0.013	−0.109	−3.67	< .001
First-Generation	−0.041	0.011	−0.109	−3.65	< .001
Undergraduate (Senior)	0.030	0.013	0.071	2.40	.017

Note: N = 809. Dependent variable = Quality of Life (QoL). Model statistics: R = .530, R^2 = .281, Adjusted R^2 = .277, F(1, 821) = 5.77, p = .017. Stepwise regression (entry $p \leq .05$, removal $p \geq .10$). β = standardized coefficient.

Phase 2

A total of 19 interviews were conducted to achieve data saturation. The participants represented a diverse demographic profile, including first-generation college students, international students, and individuals from both rural and urban areas. Among the participants, 12 identified as coming from urban areas and four from rural areas. Additionally, six students were first-generation college attendees, and three were international students.

Lack of Awareness

One prevalent theme across both phases was the lack of awareness among students regarding available support programs. Several students shared their frustrations about the lack of information and resources. One student recalled only discovering a helpful program through a friend's recommendation, stating,

> I honestly don't see a lot of programs or anything like that. I know last year I got an email. Actually I didn't even get an email. One of my friends told me about the market, and he like sent a thing you know to sign up for it, and I actually did that last school year, and it was, it was pretty good. But like that, how come I didn't get it, you know, an email? Like why didn't I get that information, and why did he have to tell me about it? So there are things like things like that. I feel like people, like the information isn't out there. I guess you have to go looking for it. I feel like they talk about all the other support except like the food.

Another student echoed this sentiment, emphasizing the difficulty in accessing support due to perceived stigma and fear of judgment. While some students were aware of their own experiences with food insecurity, they often lacked knowledge of the programs and services available to assist them. One participant, for instance, highlighted the societal stigma surrounding food insecurity, noting that many students are hesitant to speak up about their struggles. These accounts suggest that, beyond personal discomfort or shame, a significant barrier lies in the limited awareness of existing campus resources designed to address food insecurity.

Quality of Life

The survey established a link between food access and QoL through multiple linear regression analysis. Students' open-ended responses further illuminated the multifaceted impact of food access on different aspects of their lives. Concerns about the affordability of groceries led to anxiety, which affected emotional health and resulted in persistent worry about financial stability. Physically, students experienced fatigue and difficulty concentrating when meals were insufficient. One student explained: "Yes, I feel extremely tired most days, especially when I haven't eaten enough that day. And it is hard to get through classes, work, and then homework at the end of the night."

Limitations in food access caused strained relationships and social isolation, as the following quote shows:

> Yes, I constantly make excuses not to hang out with some of my colleagues because I don't have the funds to eat out. When I do hang out with them at restaurants, or food places, I'm constantly calculating to the cent of how much the food will impact my overall ability to stay out of debt.

In addition to strained relationships and isolation, students felt embarrassed or excluded from social events due to financial constraints.

During the interviews, participants expanded on the survey findings, emphasizing the direct correlation between food access and physical and psychological well-being. Physical symptoms of hunger, such as lethargy and concentration difficulties, were commonly reported: "So during lunch, like if I don't have lunch, I physically like crumble and like I cannot concentrate whatsoever."

In addition to this quote on physical health, a student addressed the stress of having enough funds to support their family, stating, "So now, credit card [bill] is on the roof. Last year, I was going to donate plasma to get some extra income just to pay a couple of bills. So this is something that I did for a couple of months. And I probably need to do it again."

Being an international student with dietary restrictions played a significant role in facing chal-

lenges in accessing familiar foods and adjusting to the availability of suitable food. One international student stated,

> Internationals in general have a little bit more struggle. I think it's because of where we are, like as a campus so we're definitely on a mountain like kinda in the middle of nowhere so it's, it makes it difficult to access, especially I love seafood, but like over here we have just frozen seafood, we don't have good quality seafood at all, and like if we want some better food we have to drive to Rona, which is 45 minutes away, and we cannot do that every day.

A student with a gluten allergy explained the health issues they faced because of a lack of access to gluten-free foods, stating,

> So with the allergy-based access, I'd say yes, definitely physical. I've seen a bunch of doctors over winter break about some issues that I've had recently that are likely related to nutrition and likely related to not being able to afford healthier food because I'm gluten-free.

Environmental barriers, including class schedules, transportation limitations, and geographical location, further compounded food access challenges, hindering students' ability to obtain nutritious meals. As noted in the survey, students discussed how their social relationships were affected during the interviews. One student wouldn't attend social events or hang out with friends due to low funds to spend on food, and said, "At some point, I was not attending any social events and not going out with my friends, because I was embarrassed that I would not be able to pay for food (among other things)."

The students' perspectives shed light on the complex relationship between food access and students' quality of life while in school. The findings underscore the significance of establishing support networks to help students overcome the barriers to food access that they encounter.

Meal Plan Money

Several students shared their perspectives on the issue of running out of their meal plan funds. One interviewee described the frequent occurrence of running out of meal plan money during the stressful period of final exams, saying, "Yep, every time. It's always like a month before when you're in the middle of final season, just like, okay."

One interviewee emphasized the need to seek support from family members when facing the challenge of limited dining dollars, saying,

> I have to text my mom every so often and be like, "Hey mom, I'm running outta dining dollars." Um, and she's like, "What are you eating?" And I'm like, "I'm literally only eating like two meals a day out."

One student had extra money during their first year, but eventually had to cut back to one meal a day due to financial constraints. The student said, "My freshman year when I had a meal plan on campus. I actually had a big surplus of money, and … I had the minimum one, but I just like would only have like one meal a day."

These perspectives underscore the importance of implementing comprehensive support mechanisms to ensure students' access to essential resources and alleviate financial burdens, fostering a conducive environment for their academic success and well-being.

Virginia Tech Support

Several students have expressed concerns about the lack of recognition of food access issues on campus. One student emphasized the importance of raising awareness and creating solidarity within the community and campus to tackle the issue, likening it to the strides made for diversity and inclusion, stating,

> I think the number one is acknowledge there is the issue. That's the number one, they need to make it aware, the same way they do with the diversity inclusion. They need to … give the same visibility, give you awareness, and create more solidarity to be a community, more solidarity or more sensitive to this matter. Like for

> example, it's not always the answer, is not always putting money on something.

Another student desired change, underscoring the importance of gathering perspectives from those most affected by the issue, saying,

> I don't really know any like resources that's like kind of why I wanted to do this interview was like, just kind of, I don't know, like I do want to see change, so I was like, I don't know, I think it's important to get input from like the people who are actually like affected by it. But I don't, there aren't really any like resources besides the market that I know of, and that's like for people who, like, are like food insecure and like do need access to more ready. But, yeah, there needs to be a lot of change.

Meanwhile, one student emphasized the importance of offering healthy food options, particularly given the campus's reputation for poor nutrition. The student said,

> Giving students food that's not healthy, [I] feel like there needs to be some focus on what are we actually selling to students on campus. If we're a huge nutrition campus, which we are, and you know one of our, our campus is considered to have the best food.

Lastly, in one interview with a student, they recounted personal experiences of feeling unheard, mainly regarding dietary needs, citing instances where essential food options were unavailable due to operational issues and a lack of communication from dining services. The student expressed,

> Chick-fil-A that's in Virginia Tech Grill, they, when they're understaffed, they stop making all grilled items. So if you're gluten free and they're not making grilled items, I simply can't eat there. And like that information is not posted anywhere. So a lot of times I'll show up expecting to be able to get my grilled chicken and be on my way. I asked to speak with the manager at one time that I was there and they directed me to have an email conversation. So I was emailing back and forth with someone from dining and they were explaining that because of the understaffing, they decided that the grilled items were what needed to go. So when I basically wrote back and was like, well, I, there is a whole population of people that now can't eat. Like, how can that be communicated in advance? So and she never responded. So that was unfortunate.

Collectively, these viewpoints suggest that increased attention and action are required to address the challenges surrounding food access and awareness of the issues students face. The recurring themes of lack of acknowledgment, desire for change, and frustration with operational shortcomings within dining services highlight systemic issues that need attention.

Overall, the combined analyses highlight the central role of food access in shaping students' quality of life. Quantitative results identified food access as the strongest predictor, while qualitative narratives revealed the complex emotional, social, and academic challenges associated with food insecurity. Collectively, these findings show the need for institutional initiatives that enhance awareness of food resources, eliminate barriers to access, and foster a supportive campus environment that promotes student success.

Discussion

This study utilized a mixed-method approach to explore the complex issues of food access and its impact on the quality of life among College of Agriculture and Life Sciences students at Virginia Tech. By analyzing cross-sectional survey questions alongside interview data, the objective was to gain deeper insights into the challenges students face in securing their meals. This study aimed to show the unique experiences of agriculture students.

Awareness

One of the major concerns in Phase 1 was the lack of awareness of food resources among students at Virginia Tech. Phase 2 supported Phase 1's findings that students lack awareness of food resources on and off campus. Peterson et al. (2022) and Hagedorn-Hatfield et al. (2022) found that una-

wareness of support was a leading factor in students not accessing resources. If they are unaware of the resources available to them, how can we expect students to utilize them? The stigma surrounding the need for basic support, such as food assistance, has long been a concern, often discouraging individuals from speaking out due to fear of judgment (Duong et al., 2024; Peterson et al., 2022).

Physical Health, Psychological Health, Social Relationships, and Environment

Physical health has been shown to have a significant impact on a student's academic success (Martinez et al., 2019). If a student is not consuming the amount of food necessary to complete daily tasks, their energy levels will be affected (Taras, 2005). In this study, students voiced feelings of fatigue, lethargy, and lack of motivation to participate in daily activities. Food access was shown to affect college students' psychological health negatively by causing added stress, depression, and lack of concentration or learning, which has been documented in other studies as well (Maroto, 2013; Pourmotabbed et al., 2020). A person's QoL will be influenced by their psychological health and how they participate in daily living (WHO, 2012).

Meaningful social relationships were important to students who participated in the interviews. According to the literature, having social relationships while in school is an indicator of success for a student and a key component in one's QoL (Jorgenson et al., 2018; Maslow, 1943; WHO, 2012). A student who lacks social connections during school could potentially drop out. Connecting with friends, family, mentors, leadership, faculty, and staff can help students navigate the hardships they may face. Higher education institutions recognize the importance of social connections for students while they are in school. The ability to "lean" on someone during instances of difficulties has been shown to increase the likelihood of a student staying in school (Schmidt, 2020; Stadtfeld et al., 2019).

Additionally, as voiced in the interviews, the environment in which one lives impacts food access (Mockshell & Villarino, 2019; Ogot, 2021). A student's environment influences the quantity and quality of food available and accessible to them. If students do not have access to the foods they want and need, their QoL can be impacted (Frongillo et al., 2017; Hanmer et al., 2021; Sok et al., 2018).

Running Out of Meal Plan Money

A theme not mentioned in the survey was running out of meal plan money. Students participating in the interviews discussed concerns about running out of meal plan money. Of the 19 students who participated in the interviews, 15 had meal plans, and 11 had exhausted their meal plan funds at some point during their college career. When interviewed, the two students who didn't run out of meals mentioned having only two or fewer meals daily. Other students would put more money into their meal plan if they could afford it. Students who exhausted their meal plans and lacked the financial means to add additional funds were compelled to subsist on minimal food resources for the remainder of the semester, often skipping meals or relying on inexpensive, low-nutrient options.

The University Acknowledging Food Access Concerns

Another theme that students brought to attention in the interviews was the concern that food access issues are not being acknowledged on campus or by leadership. Hall et al. (2019) found that food insecurity exists on campus at Virginia Tech, while The Hope Center (2021) has been researching food insecurity on college campuses nationwide from 2015 to 2021. Although food access and food insecurity are distinct yet interrelated concepts, limited access to affordable and nutritious food options on campus contributes to an increased prevalence of food insecurity among students. Current university resources remain insufficient to address the scope of this issue (Tanner et al., 2023). Additionally, college and university leadership may not be addressing food access concerns due to other competing priorities that also factor in. Taylor et al. (2021) surveyed 348 college and university presidents in the spring of 2021 and asked them to identify the most pressing issue. The top three matters identified by presidents were the mental health of students (72%), the mental health of faculty and staff (58%), and long-term financial viability (41%), while food and

housing insecurity ranked 13th out of 19 issues (15%). Mental health is an important issue to address on campus, but so is access to food. This research highlights the importance of food access and its impact on one's psychological health. Glantsman et al. (2022) stated, "Adequate food and housing are essential to college students' general well-being and academic achievement."

Recommendations

College students are often perceived as privileged in society; however, that doesn't mean they don't face barriers to accessing food. Higher education institutions, such as Virginia Tech, can provide a space for students to break down these barriers and help prevent them from going hungry. The following are recommendations based on the results of this study.

Tailored Support Programs: Developing customized support programs to assist first-generation, international, rural, and urban students in agriculture can improve food access for these groups. Programs should consider the distinctive obstacles faced by these student groups when accessing food and offer personalized solutions and resources.

Financial Support for Meal Plans: Investigating ways to offer financial support, such as scholarships or free meal plans, to students who often run out of their meal plan funds could offset food access concerns. Additionally, schools can increase meal plan allowances or provide emergency meal vouchers to students in need who are running low on meal plan funds during the semester.

Improving Campus Food Options: Enhancing the range of dietary choices accessible on campus to meet the diverse dietary requirements and preferences of students, such as those who require gluten-free, vegan, and allergen-free options, is needed. Schools can collaborate with higher education leadership, dining and nutrition professionals, and students to create options that cater to various dietary needs.

Building Collaborative Relationships: Encouraging partnerships between campus student groups, school leadership, dining services, academic departments, and campus support centers to address food access concerns can alleviate students' burdens. Facilitating conversations to raise awareness, provide support, and advocate for systemic changes can enhance food access and improve the quality of life for all students.

Limitations

This study has limitations to be considered when interpreting the findings of this study. Most notably, the sample was drawn from a single institution. It was limited to students within the College of Agriculture and Life Sciences at Virginia Tech, which constrains the results to a broader student population or institutional outlooks. The reliance on self-reported data also introduces the possibility of recall error and bias, particularly given the stigma surrounding food insecurity and food access concerns on a university campus. Furthermore, although the qualitative component provided valuable depth, the sample size (n = 19) may not fully capture student experiences, especially among smaller or underrepresented subgroups.

Conclusion

Research consistently demonstrates that food insecurity is a significant and widespread issue on college campuses (Broton et al., 2020; Goldrick-Rab et al., 2017; Hall et al., 2019; Leung et al., 2021; Martinez et al., 2019; Regan, 2020). This mixed-methods study contributes to that body of knowledge by showing that agricultural students at Virginia Tech face multiple interconnected barriers to securing adequate food. Students reported frequently running out of meal plan funds, being unaware of available on- and off-campus food resources, and experiencing negative impacts on their physical health, psychological well-being, academic performance, and social relationships. They also expressed a clear desire for institutional recognition of food access challenges and for more robust, visible support systems.

The findings demonstrate that food access is not a secondary concern; it is a core determinant of students' overall quality of life and academic persistence. Colleges and universities cannot expect to retain and graduate students if basic needs remain unmet. Addressing food access barriers must therefore be treated as an institutional priority, not an optional initiative. This requires proactive outreach, transparent communication about resources, im-

plementation of targeted support programs, and engagement with student experiences.

Meaningful progress will occur only when higher education leadership listens to students, acknowledges the scope of the problem, and commits to sustained, systemic action. Ensuring reliable access to food is not simply supplemental support; rather, it is a fundamental condition for student well-being, academic achievement, and long-term success.



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Appendices

Appendix A. Student Survey

Survey Summary
o The objective of this survey is to examine how food access has an impact on the quality of life of College of Agriculture and Life Science students.
o The survey will take ~10 minutes to complete.
o Your responses to the survey will remain anonymous.
o If you have questions, concerns, or complaints or think the research has hurt you, talk to the research team at lanap20@vt.edu.

This research has been reviewed and approved by the Virginia Tech Institutional Review Board (IRB). You may communicate with them at 540-231-3732 or irb@vt.edu if:
o You have questions about your rights as a research subject
o Your questions, concerns, or complaints are not being answered by the research team
o You cannot reach the research team
o You want to talk to someone besides the research team to provide feedback about this research

By selecting yes below, you indicate your consent to participate in this research study. Do you agree to participate in the study?

Yes

No

Q2

Are you 18 years or older?

Yes

No

Q3

Are you a student in the College of Agriculture and Life Sciences?

Yes

No

Q4

What is your department/school within the College of Agriculture and Life Sciences?

Agricultural and Applied Economics
Agricultural, Leadership, and Community Education
Agricultural Technology Program
Animal and Poultry Sciences
Biochemistry
Biological Systems Engineering
Entomology
Food Science and Technology
Human Nutrition, Foods, and Exercise
School of Plant and Environmental Sciences
Dairy Science
Other

Q5

What degree are you currently seeking?

Undergraduate
Graduate (M.S., Ph.D., OMALS)
Associate
Other

Q6

What is your undergraduate status?

Freshman
Sophomore
Junior
Senior
5th year senior
Other

Q7

What is your graduate status?

M.S.

Ph.D.

OMALS

Other

Q8

How would you identify your race/ethnicity? (Select all that applies)

American Indian or Alaskan Native

Asian

Black or African American

Caribbean

Hispanic or Latino

Middle Eastern or North African

Native Hawaiian or Pacific Islander

White or Caucasian

Self-identify as another race/ethnicity

Q9

What is your living situation?

On-campus

Off-campus

No housing or couch surfing

Q10

Are you a first-generation student? (Someone who is first in their family to go to college)

Yes

No

Don't know

Q11

Are you an international student?

Yes

No

Don't know

Q12

How would you classify the geographic location where you grew up?

Rural area

Urban area

Don't know

Q13

What is your current overall GPA?

Multiple Row Answer text

Q14

This assessment asks how you feel about your quality of life, health, or other areas of your life. Please answer all the questions. If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response.

Q15

Question Text

	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
How would you rate your quality of life?	○	○	○	○	○
How satisfied are you with your health?	○	○	○	○	○

Q16

Question Text

	Not at all	A little	A moderate amount	Very much	Extremely
To what extent do you feel that (physical) pain prevents you from doing what you need to do?	○	○	○	○	○
How much do you need medical treatment to function in your daily life?	○	○	○	○	○
How much do you enjoy life?	○	○	○	○	○
To what extent do you feel your life to be meaningful?	○	○	○	○	○

Q17

Question Text

	Not at all	A little	A moderate amount	Very much	Extremely
How well are you able to concentrate?	○	○	○	○	○
How safe do you feel in your daily life?	○	○	○	○	○
How healthy is your physical environment?	○	○	○	○	○
Do you have enough energy for everyday life?	○	○	○	○	○
Are you able to accept your bodily appearance?	○	○	○	○	○
Do you have enough money to meet your needs?	○	○	○	○	○
How available to you is the information that you need in your day-to-day life?	○	○	○	○	○
To what extent do you have the opportunity for leisure activities?	○	○	○	○	○

Q18

How well are you able to get around?

Very poor

Poor

Neither poor nor good

Good

Very good

Q19

Question Text

	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
How satisfied are you with your sleep?	○	○	○	○	○
How satisfied are you with your ability to perform your daily living activities?	○	○	○	○	○
How satisfied are you with your capacity for work?	○	○	○	○	○
How satisfied are you with yourself?	○	○	○	○	○
How satisfied are you with your personal relationships?	○	○	○	○	○
How satisfied are you with the support you get from your friends?	○	○	○	○	○
How satisfied are you with the conditions of your living place?	○	○	○	○	○
How satisfied are you with your access to health services?	○	○	○	○	○
How satisfied are you with your transportation?	○	○	○	○	○

Q20

How often do you have negative feelings such as blue mood, despair, anxiety, or depression?

Never

Seldom

Quite often

Very often

Always

Q21

The following questions pertain to food access. If you are unsure which response to give to a question, please choose the one that appears most appropriate.

Q22

Question Text

	Not at all	A little	A moderate amount	Very much	Extremely
Do you have access to the choice of food you want?	○	○	○	○	○
Are you aware of the resources on campus for food assistance?	○	○	○	○	○
Do you have barriers that restrict your access to food?	○	○	○	○	○
How often do you put other expenses before purchasing food?	○	○	○	○	○
Are you able to aquire the amount of food you want?	○	○	○	○	○
Are you aware of the community resources for food assistance?	○	○	○	○	○

Q23

The following questions will allow you to talk about food access in your own words.

Q32

Would you be willing to participate in a follow-up 15-20 minute discussion about the impacts of food access on quality of life? The first 15 interview participants will receive a $33 gift card to Kroger.

Yes

No

Q33

Are you any of the following demographics? (Please select all that apply)

First-generation student

International student

Rural student

Urban student

Q34

Contact Information

First Name

Last Name

Phone

Email Address

Thank you Page

Thank you for taking part in the survey. If you or someone you know is experiencing food access concerns, please use the resources provided.

- The Dean of Students office: The office offers emergency grants that help with issues such as food and housing needs. Contact the team at 540-231-3787 (after-hours number: enter 540-231-6411 then press 1) or dean.students@vt.edu.
- 209 Marketplace at Virginia Tech: VT students can shop for food, toiletries, and school supplies each week at this pantry. While the organization is located inside a Methodist campus ministry, all are welcome. Learn more on their website.
- Interfaith Food Pantry: qualified residents of Blacksburg and McCoy are welcome to shop at this pantry, which is open weekly Monday and Tuesday from 4–6 p.m. and Wednesday and Friday from 10–11:30 a.m.

Appendix B. Interview Questions

Interview Questions

Student Name: _____

Demographics: _____

Date of Interview: _____

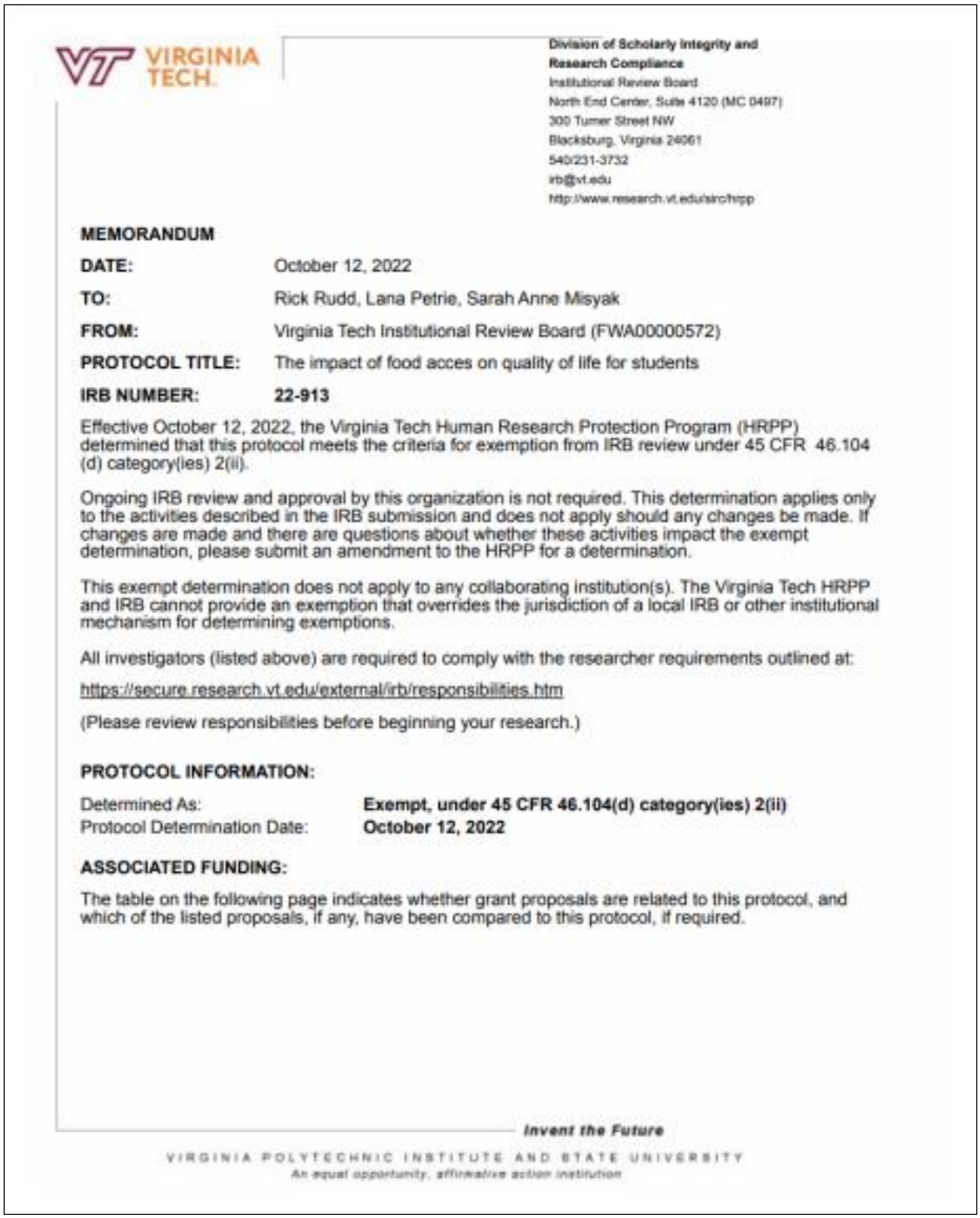
First, I would like to ask you about how access to food impacts your life.

1. How does access to food affect your energy or ability to participate in everyday life activities while in school?
    a. Probes: attending class, studying, grades, receiving academic support, seeing friends, clubs, recreational activities
2. How does money affect your ability to make financial decisions for your basic needs, such as food?
    a. Probes: rent, textbooks, meal plan, childcare
    b. Have you run out of campus meal plan money?
3. How does access to food affect your physical and mental health?
    a. Probes: body image, concentration, stress, depression, weight, sleep
4. How does not having food or being able to purchase food impact your ability to attend social events?
    a. Expand on bringing food to events, going out to eat with friends
5. How does your class schedule determine what and how often you eat in a day?
    a. Probes: Do you skip meals, do you have time to cook, are lines too long, do you have classes back to back

Now, I would like to switch gears a little bit and ask about the resources available on the Virginia Tech campus and what factors impact whether students can access those resources.

6. Have you ever felt comfortable talking with someone about not having access to food? If not, can you explain why?
7. What are your perceptions on why students don't know what resources are available on and off campus?
8. What is the biggest barrier you have to access the amount or types of food you want?
9. In what ways do you think Virginia Tech can support students?
    a. Probe: particularly around food access
    b. At the school, college, and/or department level

Appendix C. Institutional Review Board (IRB) Approval Letter



VIRGINIA TECH

Division of Scholarly Integrity and
Research Compliance
Institutional Review Board
North End Center, Suite 4120 (MC 0497)
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-3732
irb@vt.edu
http://www.research.vt.edu/sirc/hrpp

MEMORANDUM

DATE: October 12, 2022

TO: Rick Rudd, Lana Petrie, Sarah Anne Misyak

FROM: Virginia Tech Institutional Review Board (FWA00000572)

PROTOCOL TITLE: The impact of food acces on quality of life for students

IRB NUMBER: **22-913**

Effective October 12, 2022, the Virginia Tech Human Research Protection Program (HRPP) determined that this protocol meets the criteria for exemption from IRB review under 45 CFR 46.104 (d) category(ies) 2(ii).

Ongoing IRB review and approval by this organization is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities impact the exempt determination, please submit an amendment to the HRPP for a determination.

This exempt determination does not apply to any collaborating institution(s). The Virginia Tech HRPP and IRB cannot provide an exemption that overrides the jurisdiction of a local IRB or other institutional mechanism for determining exemptions.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

https://secure.research.vt.edu/external/irb/responsibilities.htm

(Please review responsibilities before beginning your research.)

PROTOCOL INFORMATION:

Determined As: **Exempt, under 45 CFR 46.104(d) category(ies) 2(ii)**
Protocol Determination Date: **October 12, 2022**

ASSOCIATED FUNDING:

The table on the following page indicates whether grant proposals are related to this protocol, and which of the listed proposals, if any, have been compared to this protocol, if required.

Invent the Future

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
An equal opportunity, affirmative action institution