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INVESTIGATING STUDENT SATISFACTION OF  
FOOD SECURITY SERVICES AT DALHOUSIE  
UNIVERSITY

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**Sustainability 3502 Final Report**

*APRIL 11, 2023*

*SUST 3502 ENVIRONMENTAL PROBLEM SOLVING*

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## **Executive Summary**

This paper aims to determine the level of satisfaction Dalhousie University students associate with free food security services on campus. With food prices and the rates of food insecurity increasing, it was important for us to monitor the amount of awareness towards and the use of food services on the Studley campus. The feedback and responses from students can be used to produce potential improvements to these services to ensure the long-term use of these services. The food security services we studied were the Dalhousie Student Union (DSU) Food Bank and the lunch program through Loaded Ladle because both services are free and open to the community.

Our study population was specific to students that spend the majority of their time on the Studley campus. We conducted research through the delivery of an online survey composed of 8-14 questions about the student's relationship with Loaded Ladle and the DSU Food Bank. We recruited participants through email communication sent to professors and faculty members that distributed the survey to their students. In addition, we collected participants by displaying posters with a QR code across campus, over social media, and through the personal distribution performed by the Wild Bunch team to our peers, friends, and coworkers that fit within our target population. Our data was analyzed through pie and stacked bar charts, a coding tree, and two chi-square tests. Our findings suggest that the majority of students involved in our survey were aware of the services provided by Loaded Ladle and the DSU Food Bank. The Loaded Ladle received more awareness due to residing in a greater trafficked area by students. The null hypothesis was accepted for both the Loaded Ladle and DSU foodbank. Meaning that their performance does not deviate from neutral. Although, the DSU Food Bank is skewed to the negative, most likely due to strained resources. Nearly a quarter of students felt unsure about food security for students, suggesting lack of awareness of the issue. Our findings also show that living off campus without guardians are the students who use the food security services the most.

As the cost of food rises, Dalhousie has the opportunity to step in alongside the DSU Food Bank and Loaded Ladle to support food insecure students through their own means. Our study was limited and wasn't as robust as initially desired and has many data collection biases. We encourage our findings to be used to produce a second study that investigates more demographics of the Dalhousie University campuses.

## Table of Contents

Executive Summary.....	1
1.0 Introduction.....	3
2.0 Methods.....	5
2.1 Population and Target Sample.....	5
2.2 Data Collection.....	5
2.3 Data Analysis.....	7
3.0 Results.....	8
3.1 All Respondents.....	8
3.2 Respondents who do not access the services.....	10
3.3 Respondents who access the loaded ladle.....	11
3.4 Respondents who access the food bank.....	11
4.0 Discussion.....	12
5.0 Conclusion.....	15
5.1 Summary Findings.....	16
5.2 Recommendations.....	16
6.0 References.....	18
7.0 Appendix.....	22

## **1.0 Introduction**

Food insecurity is a global issue impacting a substantial number of individuals that has become a relevant and increasingly significant problem. According to the Government of Canada (2020), food insecurity refers to “the inability to obtain an adequate diet or sufficient quantity of food.” The US Department of Agriculture (2022) defines moderate food insecurity as a reduction in diet quality and variety, emphasizing that the quality of food is just as crucial as its quantity. In Canada, Nova Scotia is one of the provinces with the highest rates of food insecurity, as reported by the Ecology Action Centre (2022). This situation underscores the urgent need to address food insecurity and its current impact on individuals and communities.

Studies show that post-secondary students are more likely to experience food insecurity while completing their degree (Lee et al., 2018). In Canada, rates of food insecurity among university students are often higher than the general population. For instance, students enrolled in the University of British Columbia are four times more likely to experience food insecurity than the average British Columbia resident (Sing, 2022). A study conducted by Meal Exchange found that 39% of students surveyed at five universities across Canada experienced some degree of food insecurity, with 30.7% experiencing moderate food insecurity and 8.3% experiencing severe food insecurity (Silverthorn, 2016). A popular common short-term relief strategy is the presence of food banks (The Nova Scotia Participatory Food Security Projects of the Atlantic Health Promotion Research Centre et al., 2007).

Food insecurity among university students is a prevalent issue and has been linked to negative impacts on academic performance. According to a study conducted by Weaver et al. in 2020, food insecurity increased the likelihood of being in the lower 10% of GPA and decreased the likelihood of being in the upper 10% of GPA. Another study conducted by Meza et al. (2019) found that food insecurity has psychosocial effects, in particular: stress, fear of disappointing family, resentment towards others in more stable food and financial situations, difficulty forming meaningful social relationships, and feelings of hopelessness or undeserving of help. Students may also direct frustration towards their academic institutions for not providing enough support. Additionally, a study by Huelskamp et al. (2021) suggests that students with lower food security are more likely to engage in unhealthy coping behaviors such as consuming cheap, processed foods and overeating when food is plentiful, which can impact their health. It is crucial to address

food insecurity among university students to prevent these negative consequences and support their academic and personal success.

As previously stated, post-secondary students struggle with food insecurity largely due to limited financial resources and high expenses. With the gap between food expenses and financial aid ever widening, students must sometimes decide to sacrifice the purchase of required textbooks to aid their learning experiences, or even miss classes to work at part-time jobs (Frank L., 2020). Dalhousie University has two main services provided by Studley Campus in an attempt to aid students: the Loaded Ladle and the Dalhousie Student Union (DSU) Food Bank. The Loaded Ladle is a free lunch program providing accessible and sustainable food for students (Loaded ladle, n.d.). Their goal is to help with food sovereignty, food security, and food justice (Loaded ladle, n.d.). Dalhousie's Food Bank is specifically targeted towards students who may be facing food insecurity. The appointment-based food bank is open for students on Mondays and Thursdays, providing free ingredients for those who may need it (Food Bank, n.d.). Relying on volunteers and donations, food services such as the Loaded Ladle and DSU Food Bank have their limitations.

Research suggests that the population of food insecure students enrolled in Dalhousie is increasing (Project Dal, 2022). While students have access to the Dalhousie Student Union (DSU) Food Bank, the demand for their services has grown nearly 40% in recent years (Project Dal, 2022). As of 2021, over 300 students were accessing the DSU Food Bank during its operational hours (Campbell, 2021). Dalhousie students are finding that aside from a drastic increase in housing costs, the price of food has increased in Nova Scotia approximately 15% since 2020 (Project Dal, 2022).

Determining the demographic of students utilizing these food security services and how well these services truly benefit students should allow for better application of these services. This leads us to our research question:

**What demographic of Dalhousie University students use Studley campus' Loaded Ladle and DSU Food Bank, and are they satisfied with these services?**

## **2.0 Methods**

### **2.1 Population and target sample**

Our population is all current undergraduate students at Dalhousie University; Dalhousie has +20,000 students currently enrolled at Dalhousie (Dalhousie University, (n.d.)). Students often use multiple campuses, so we will not be strictly excluding students from other campuses, so ~20,000 students are our population. However, our results will exclude Truro campus. Due to the lack of literature on the number of Truro students and the distance of the Truro campus, it is unlikely that Truro students use the services we are studying. Therefore, we excluded them in data collection, but included them in the number of students in our population. Our representative sample was approximately 377 students at a 95% confidence level.

Our target sample was undergraduate students at Dalhousie University that frequent the Halifax campuses. Our sampling will be probabilistic sampling, to generalize our results to the population.

### **2.2 Data collection**

We chose a survey because it has a wide reach by spreading it electronically, as that is the most accessible way through technology (Appendix A). It is also anonymous, does not need the researcher's observation, and time and place are not restrictions. The limitations to using this tool include general low response rates and the inability to verify the identity of the respondents.

We tested the survey on ourselves and friends to ensure it was functioning correctly before sending it off to the world. Respondents were broken down into four categories depending on their access to the Loaded Ladle and DSU Food Bank (Figure 1).

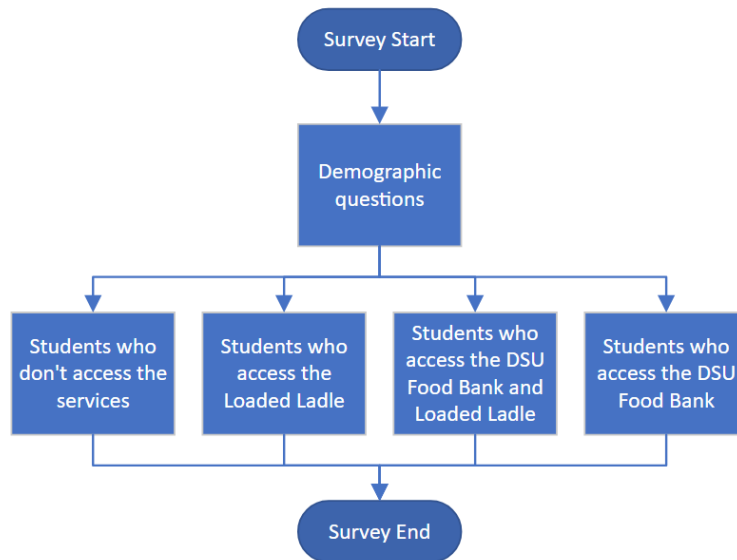


Figure 1 A flow chart of survey configuration that separates respondents into categories to only answer related questions.

We collected data using several tactics. Four posters (Appendix B) went up in 24 Dalhousie owned Buildings (Appendix C). The posters have the least bias as we put an equal amount in every building, trying to include every Halifax student teaching building. Professors of twelve faculties were e-mailed directly (Appendix E) in addition to professors we knew. An email template was used (Appendix D). The limitation to asking professors that we knew is that they were more likely to spread the survey, causing a bias to the faculties we are in. These methods excluded any Truro based buildings or faculties. We asked random people and friends to answer our survey. This method has the biggest bias as the people we were asking were mainly on the Studley campus, causing a bias in Studley student representation. Furthermore, any respondent who filled out the survey in our presence may have an observer bias. They may have filled out the answers to what they think we wanted their answers to be, rather than honestly. Fifty-four societies were contacted via discord, e-mail, or social media (Appendix G). Only societies who had been active in the past two years were contacted. This method causes a bias in students who are active socially and not just academically at Dalhousie. We posted the survey on our personal social media (Appendix F). This has a high bias to have people we know and in our own faculty overrepresented in our respondents.

### 2.3 Data analysis

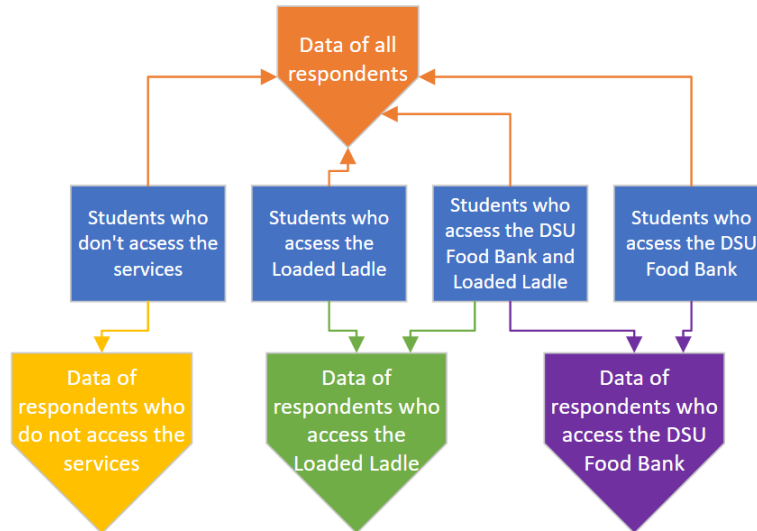


Figure 2 Illustration of where the data flows to which data analysis processing group.

The data of the four categories of respondents will be processed and analyzed in multiple ways (Figure 2). All four categories will inform the data of All Respondents for understanding demographics. Data on the Loaded Ladle and DSU Food Bank will draw from respondents who have identified as someone who accesses the service.

Everyone had demographic analysis using a bar chart, table, and a coding tree. The bar chart was chosen because it clearly shows the proportion of the service users and non-users within each category to which they belong. The table presents the findings in a condensed fashion. The coding tree is helpful to map out the reasons why students were concerned about food insecurity for students.

Non-users have a pie chart to best show the proportions of the reasons why they don't use food security services.

Loaded Ladle and DSU Food Bank takes data from anyone who claimed to use their services. They both use a chi-squared test because it will measure how the overall satisfaction of respondents may deviate significantly from a neutral assumption. A satisfaction index was created. The satisfaction was measured in a Likert scale (Appendix H). Each satisfaction rating had a corresponding number from 1-7, least satisfied and most satisfied respectively. Averaging the satisfaction scores of each criteria gave each respondent a satisfaction index. The satisfaction



indexes were then compared to a neutral assumption of 4 to determine if the Loaded Ladle or DSU Food bank were performing at a statistically significant level positively or negatively.

### 3.0 Results

#### 3.1 All respondents

Our collected sample has 233 respondents, we have 85% confidence that our results are representative of our population. The multiple-choice answers that all respondents needed to complete (Table 1). These helped create a baseline for demographics about the food services and respondents.

Table 1 Data from respondents on awareness of Studley campus food security services, student concern of food security for students, and their current access status of Studley campus food security services.

		Response		
		Yes	No	Other
Data collected from respondent	Respondent awareness of the Loaded Ladle	180, 77%	45, 19%	Unsure 8, 4%
	Respondent awareness of DSU Food bank	133, 57%	91, 39%	Unsure 9, 4%
	Respondent concerned for food security for all Dalhousie Students	132, 57%	50, 21%	Unsure 51, 22%
	Respondents who have assessed the Studley Campus Loaded Ladle and/or DSU Food Bank	115, 49%	113, 49%	Prefer not to say 5, 2%

Most students are aware of the services. Loaded Ladle has significant awareness with 77%, while the DSU food bank has 57%. Additionally, 57% of respondents were concerned about food insecurity for Dalhousie students, outweighing the 21% who are not. Regarding the respondents that expressed concern about food insecurity for students, 75% mentioned the rising costs of housing, healthy food, tuition, and the inability to cover expenses with part time jobs as

major issues (Appendix I). Lastly, around half of respondents use either the Loaded Ladle, DSU Food Bank, or both.

The ~50% split of service access followed though in the demographic of time spent on campus and living situation as seen in figure 3 and 4.

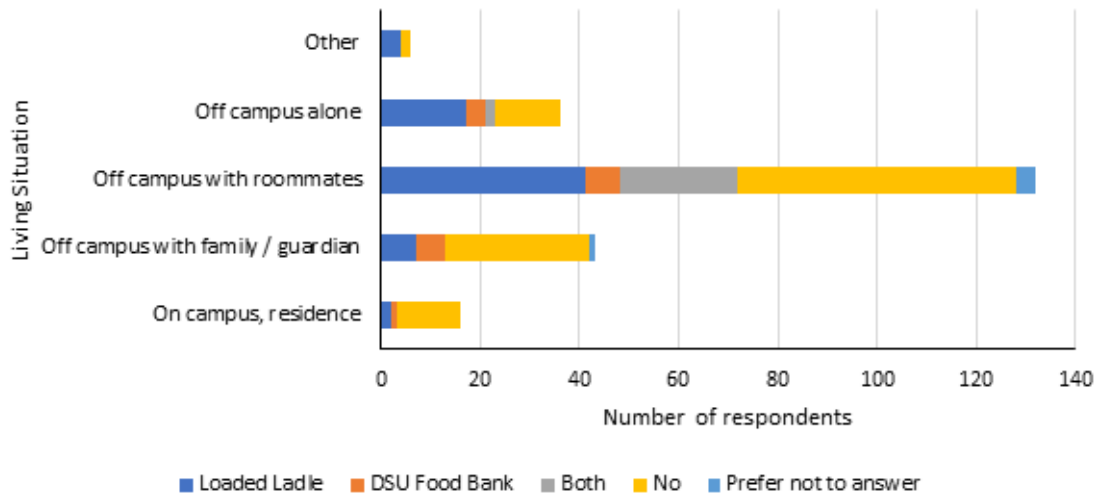


Figure 3 A stacked bar chart of respondent living situation and their use of Studley campus food security services.

There are exceptions to the ~50% spread. If you are off campus alone, you are more likely to use services. If you have support in the form of guardians or in residence, you are less likely to use these services.

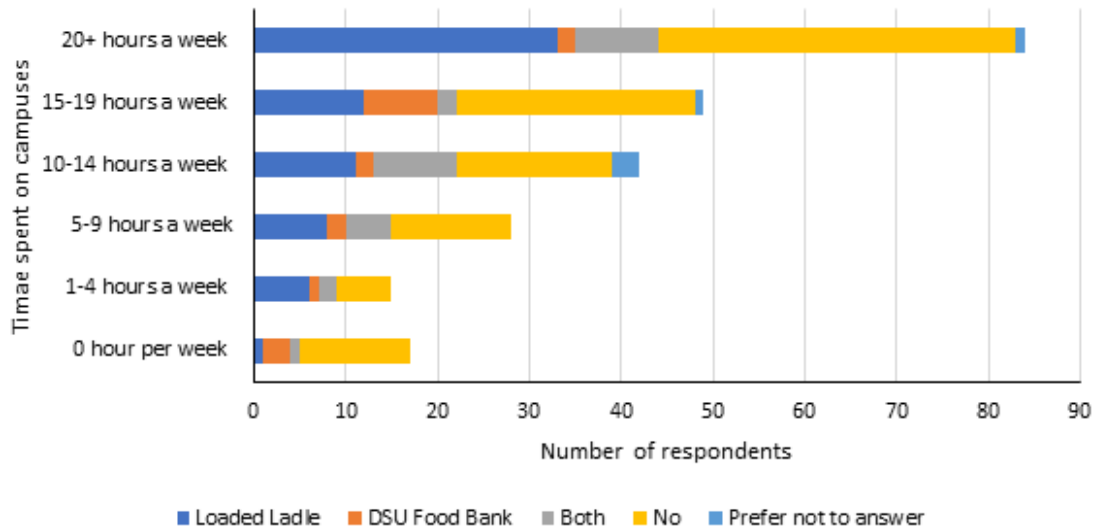


Figure 4 A stacked bar chart of respondent average hours spent on Dalhousie’s campus(es) per week, grouped by their access of food security services on Studley campus.

As above, there are exceptions to the ~50% spread of food security users verses non-users. If you spend 0 hours per week, you are less likely to use the services.

### 3.2 Respondents who do not access the services

The reasons why respondents who do not access the services aren’t accessing them vary (Figure 5).

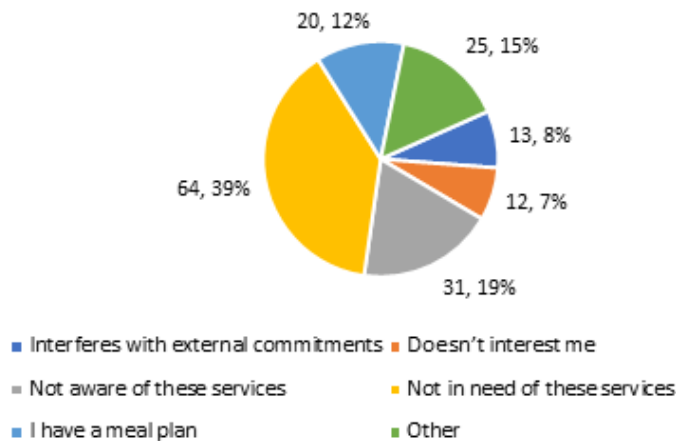


Figure 5 A pie chart of the reasons why, of the participants who do not access the food security service, had not accessed the food insecurity services at the Studley campus.

The largest proportion is contributed to the respondents not needing the services, whether that be in general, having a meal plan, or it not interesting them. A small minority of 8% don't access the services because it interferes with their external commitments.

### 3.3 Respondents who access the loaded ladle

The Loaded Ladle chi squared test looked at the overall experience of respondents compared to a neutral assumption. The results from the chi squared test showed that the satisfaction of respondents was not statistically significant and does not diverge enough from neutral as the critical value of 110.36 > chi-squared of 100.92, despite a pull to the positive (Appendix J). Therefore, the null hypothesis was accepted.

### 3.4 Respondents who access the food bank

Similarly, the DSU Food Bank chi squared test looked at the overall experience of respondents compared to a neutral assumption. The results from the chi squared test showed that the satisfaction of respondents was not statistically significant and does not diverge enough from neutral as the critical value of 47.00 > chi-squared of 32.38, despite the pull to the negative (Appendix K). Therefore, the null hypothesis was accepted.

Of the respondent who use the DSU Food Bank, satisfaction with frequency of the DSU Food Bank service was slightly positive at 24, bring 54%, of respondents saying they were satisfied. 17, 39%, were unsatisfied and the remaining were unsure (Appendix L). We specifically wanted to investigate this due to the restrictions on access. Those who were unsatisfied, the most frequent reason was because of the infrequency of the service (Figure 6).

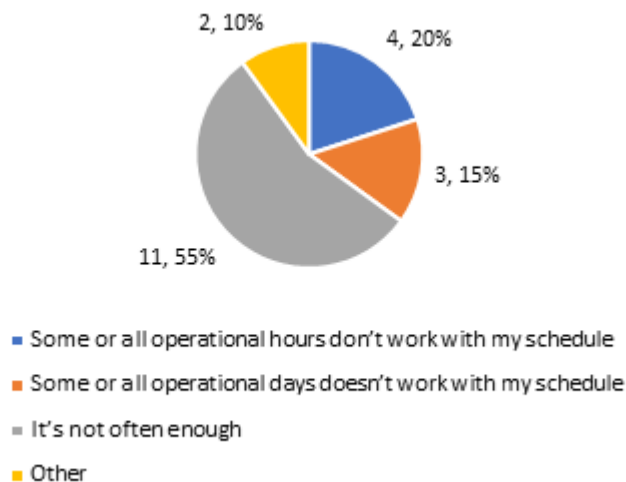


Figure 6 Pie chart of why respondents who access the Dalhousie Student Union Food Bank were unsatisfied with the frequency of access.

## 4.0 Discussion

The results from our survey provided valuable insight into the situation students are facing regarding food insecurity at Dalhousie University, as well as how well Dalhousie is combating these issues. To reiterate, the focus of this research was to determine “What demographic of Dalhousie University students use Studley Campus’ Loaded Ladle and DSU Food Bank, and are they satisfied with these services”? Food insecurity is a growing issue for many Canadians, particularly post-secondary students who are susceptible to experiencing this throughout their degree (Lee et al, 2018). Dalhousie is no exception. The DSU Food Bank alone has seen an increase in usage by 40% in recent years (Project Dal, n.d.), with over 300 students using it as of 2021 (Campbell, 2021). By investigating the demographic of students facing food insecurity, we can determine where Dalhousie needs to provide extra support for their students. Additionally, the investigation into satisfaction regarding the Loaded Ladle and DSU Food Bank could determine where improvements can be made to better meet student needs.

Our findings reveal that awareness of the Loaded Ladle and DSU Food Bank is quite high, with the Loaded Ladle having greater awareness (Table 1). This suggests that they have a strong ability to advertise themselves or reach the population that may require their services. The Loaded Ladle is far more visible than the Food Bank, which may account for their services being more well-known. Student satisfaction did not have a statistically significant difference from a neutral assumption for both services. Therefore, the Loaded Ladle and DSU Food Bank are currently meeting the expectations and necessary support that students require. Regarding access times, the DSU Food Bank is slightly positive (Appendix L). Their biggest issue is that they do not provide services frequently enough by only being available to students on a bi-weekly basis. Due to limited resources, the Food Bank is unable to change this rule and maintain their ability to help as many students as possible. Additionally, there were conflicts between student schedules and times of availability provided by the Food Bank (Figure 6).

Despite great awareness of these services, nearly a quarter of respondents selected “Unsure” regarding concerns for food insecurity for Dalhousie students (Table 1). While this may have been selected due to confusion regarding what the question was asking, it is more likely that these respondents perhaps are not aware of what food insecurity is, or how it affects the student

population. This suggests that there may not be enough information about this issue provided to students, whether by Dalhousie or otherwise.

As part of our investigation into the demographic of students using these services, we considered the correlation between time spent on campus and which service was used, if they were used at all. Students were determined to be more likely to utilize both services when spending 20 or more hours a week on campus (Figure 4). Interestingly, most students accessing the DSU Food Bank spend an average of 15-19 hours on campus a week. This time slot is particularly associated with only being on campus to attend course lectures, tutorials, and labs. More research would have to be done to determine whether that is the case for those respondents. However, students that only spend time on campus for classes and nothing else may be the same students working part-time jobs to try and cover their expenses. With the rising costs of living, groceries, and tuition, even working a part-time job may not allow students to afford necessary items, thus forcing them into using services like the Food Bank. When answering the open-ended question asking for clarification on why or why not students may have concerns about food security issues for Dalhousie students, 75% of respondents mentioned rising costs of life and the inability to cover expenses while working a part-time job (Appendix I). This suggests that perhaps greater financial support is needed to aid students.

In addition to time spent on campus, our team investigated student living situations for an alternative demographic insight. The goal was to determine what living situations were associated with a greater need for food security services. The results revealed that the majority of respondents using either the Loaded Ladle, DSU Food Bank, or both, currently live off-campus. Living off-campus with roommates was by far associated with the greatest need for food security services, followed by living off-campus alone (Figure 3). Due to the current housing crisis in Halifax, not every student living off-campus alone is doing so willingly. Many have had to opt into living alone to ensure they have a roof over their heads. However, they are likely to be in a better financial situation than those that are currently living with roommates. Since having roommates can significantly decrease expenses for things like rent, students in this situation and using the Loaded Ladle or Food Bank are likely facing financial strain more than others. Overall, it appears that greater financial aid for students may be greatly beneficial. Additionally, students that did not require the services of the Loaded Ladle or DSU Food Bank either did not require the services at all, or they had a meal plan (Figure 5). This suggests that increasing the availability of meals plans may be greatly beneficial in addition to greater financial aid. Current

expenses for a “Freedom Plan” meal plan at Dalhousie that provides unlimited meals are listed at \$2,315.16 for the Fall term and \$2,294.84 for the Winter term, bringing the total to \$4,610 a year (Dal.ca, n.d.). Assuming an individual spends about \$300-\$350 per month on groceries, the total cost per year would be about \$3,600-\$4,000 per year (Charlesbois et al., n.d.). Therefore, the current Freedom Plan provided by Dalhousie does not save money. Reducing the number of meals provided by Dalhousie a week does very little as the total expense remains at over \$4,000 (Dal.ca, n.d.). Changes would need to be made to ensure that meal plans can truly be beneficial for students that may need help in their fight against food insecurity. Perhaps Dalhousie can provide support to students by allowing a set amount of money to support meal and/or grocery costs on student Dal cards. However, this does lead to an issue of where the money would come from, and whether it would be more beneficial to place it on student cards or put it towards the Food Bank.

An additional suggestion could be the implementation of a lunch program for food insecure students through residency meal halls, supported by the Loaded Ladle. Individuals that use the Loaded Ladle must deal with long wait times and limited availability. This suggested program would provide more flexibility for students to provide for a wider community, and likely reduce wait times at all locations.

There were several limitations to our study. To ensure a 95% confidence interval, we would have had to receive results from approximately 370 individuals. While receiving more responses than expected, the survey only received a total of 233 responses in the week that it was open.

However, 233 responses equated to an 85% confidence interval. Perhaps a future study can extend the amount of time spent gathering results. Additionally, there were limitations in the survey questions asked. We wanted to keep the total number of questions limited to help encourage individuals to complete the survey. This resulted in the limitation of questions aimed at determining the demographic of students utilizing the food security services provided by Studley Campus, a major focus of our research question. Only two questions were designated to determine demographic: the current living situation of the respondent, and approximately how much time they spend on campus per week. This allowed us to maintain great anonymity for respondents and reduce any feelings of discomfort associated with sharing information about their relationship with food security. However, greater understanding of demographic can provide better insight into what aid Dalhousie can provide students.

Outreach methods were biased, despite attempts to be as neutral as possible. In addition to our team contacting department heads, we also contacted our professors to ask if they would share our survey with their students. Professors that we know personally were far more likely to respond and share our survey for us. Therefore, the data collected by the survey likely have a large influence from Environmental Science, Earth Science, and Sustainability students. Future research should include more focused questions about respondent demographic, less biased outreach, and perhaps a longer data collection period. Including alternative data collection methods such as interviews may provide more personal insight. However, special care must be taken during interviews due to the sensitive nature of this topic. Literature reviews into effective methods for financial aid when there are limited funds may be beneficial, in addition to the existence of other potential supports.

## **5.0 Conclusion**

Our study intended to determine the relationship students on the Studley campus have with Loaded Ladle and the DSU Food Bank as well as determine the level of satisfaction students associate with those services. Students are a vulnerable population to experiencing food insecurity, as 56.8% of Canadian students identified as food insecure during the fall of 2021 (Meal Exchange, 2021). Specifically, to Nova Scotia, where food prices increased 10.5% in 2022 with the prices expected to continue rising throughout 2023 (Charlebois et al., 2022). Food insecurity is actively affecting students across Dalhousie University, with 130 respondents responding YES to having concerns about students experiencing food insecurity (Table 1).

### **5.1. Summary Findings**

Our survey revealed that a total of 115 respondents identify as users of Loaded Ladle, the DSU Food Bank, or both (Table 1). There is a notable amount of awareness, interest and use towards free food security services on campus, solidifying the need for free services like Loaded Ladle and the DSU Food Bank. Our survey determined that students living in residence or with parents were the population to use these services the least. Students within residence must opt in to a food plan that provides several meals per week, which would make food services like Loaded Ladle and the DSU Food Bank unnecessary. While it is not guaranteed food is included for students living with their parents, our survey did reveal that 20 respondents noted not using these



services due to having a meal plan (Figure 5). The main deterrent to students using these services was associated with the long wait times or the external time commitments that prevented them from using these services. Our compiled data support our main takeaway of acknowledging these free food services are under stress. The high demand, interest and need for these services are prevalent. However, these services require further support and resources to ensure they can continue providing service to students on the Studley campus, improve student satisfaction with the service, and eventually beyond.

## **5.2 Recommendations**

The limitations associated with our study provide areas for improvement of the feasibility of our study. The first area of focus for reduction of bias in the distribution of our survey. Had we been more aggressive with outreach we may have reached our targeted number of respondents. Increasing the distribution of our survey would increase the level of engagement our survey received and produce a higher level of confidence, which in turn would provide a more accurate representation of the student population. The next area of focus would be towards improving our survey. The first includes exploring the socio-economic factors that contribute to the rates of food insecurity. While our population included both full and part-time students, it would be interesting to determine where the highest and lowest rates of food insecurity were specific. The recommendation that should be considered to improve our study would be clarifying the term “concern” used in our study, to ensure accurate data is collected (Appendix A). The final area for consideration in our study is the specific stakeholders involved in these food services. The DSU Food Bank is a great service to students as rising food costs are making it difficult for students to maintain satisfactory and nutritious diets. Unfortunately, the DSU Food Bank is unable to consistently accommodate the increasing number of students in need. Further investigation is recommended to understand how to best support this service so they can continue supporting the students that require this service. Satisfying the hunger needs of students on campus can no longer be the sole responsibility of students and student-led initiatives. That is why we recommend representatives from Loaded Ladle, the DSU Food Bank, Dalhousie University and the Dal Student Union have a meeting to navigate issues regarding budgets and resources to ensure these much-needed services are able to meet the increasing demand. Lastly, Loaded Ladle had been identified as the most popular food service on Studley Campus. As a result of the growing success and interest in Loaded Ladle, there has been a significant increase in wait times to access this service. In addition, to the large demand for this service, occasionally Loaded Ladle

will run out of meals. This should highlight the high interest and demand for free meals and Dalhousie University should implement an additional food program that considers our recommendations. The above-mentioned stakeholders should meet with the shared priority of serving the Dalhousie University community.

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## **7.0 Appendix**

### **Appendix A Survey**

We are SUST/ENVS 3502 group investigating to what extent are full and part-time Dalhousie students who use the Studley campus satisfied with Studley campus food services aimed to alleviate food insecurity? To participate in this survey, you must be an adult of sound mind that is studying at Dalhousie University part-time or full-time. Your responses will be recorded and analyzed for our study. No email or other identifiable information will be recorded. By completing this survey, you consent to the use of your responses for our study. The data will be stored offline and be deleted after publication. The study will be widely available online after concluding.

Food services aimed to alleviate food insecurity are the:

- Loaded Ladle - Lunches
- Food bank

#### **Define and explain Food insecurity as a topic:**

Food insecurity is defined as the limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.

[Next Page]

#### **CONSENT FORM**

Investigating Student Satisfaction of Food Security Services at Dalhousie University

Project approval date: [Placeholder]

v1.0.

You are invited to take part in a research study being conducted by Wild Bunch, an undergraduate student group in SUST and ENVS at Dalhousie University. The purpose of this research is to determine the demographic of students that use 'Loaded Ladle and the DSU Food Bank and gauge their satisfaction with these services. The collected data could be used to better improve these services to continue helping alleviate food insecurity. We will use a collection of responses from a survey for students to complete asking about their satisfaction with 'Loaded Ladle and the DSU Food Bank. Full and part-time students at the Studley campus are eligible to complete the survey.

If you choose to participate in this research, you will be asked to answer 10 questions in this anonymous online survey on food insecurity and services that alleviate food insecurity. The survey should take approximately 5 minutes.

Your participation in this research is entirely your choice. You do not have to answer questions that you do not want to answer (by selecting prefer not to answer), and you are welcome to stop the survey at any time if you no longer want to participate. All you need to do is close your browser. We will not include any incomplete surveys in my analyses. If you do complete your survey and you change your mind later, we will not be able to remove the information you provided as we will not know which response is yours.

Your responses to the survey will be anonymous. This means that there are no questions in the survey that ask for identifying details such as your name or email address. All responses will be saved on a secure Dalhousie server. Only Camille Papp, Jemma Samules, Saifu He, Long Bai and Alexis Ingham will have access to the survey results.

We will describe and share general findings of this research in a Final Research Report and Recha Kucha group presentation. We will destroy all information 1 month after reporting the results.

Theoretically, this research has no potential risks. The main activity we need to conduct throughout the research process is the survey and all the information collected in the survey is anonymous. Therefore, we believe that the risks of this study are no different from our daily life. There will be no direct benefit to you in participating in this research. The research, however, might contribute to new knowledge on the study of student satisfaction with food security services at Dalhousie University's Studley campus. If you would like to see how your information is used, please feel free to visit Dalhousie's website <https://www.dal.ca/faculty/science/earth-environmental-sciences/research/publications-and-theses/past-envs-3502-projects.html> after the 2023 studies have been added.

You should discuss any questions you have about this study with Wild Bunch and Dr. Caroline Franklin. Please ask as many questions as you like before or after participating.

If you have any ethical concerns about your participation in this research, you may contact Research Ethics, Dalhousie University at (902) 494-3423, or email [ethics@dal.ca](mailto:ethics@dal.ca)

If you agree to complete the survey, please follow the link here/click continue.



[Next Page]

**1 Where are you currently living?**

- A. On campus, residence
- B. Off campus with family/guardian
- C. Off campus with (non-family) housemates
- D. Off campus in single person household (may have pets)
- E. Other

**2 On average, how much time do you spend on the Studley campus per week during the fall and winter terms?**

- A. 0 hours per week
- B. 1-4 hours per week
- C. 5-9 hours per week
- D. 10-14 hours per week
- E. 15-19 hours per week
- F. 20+ hours per week

**3** Food insecurity is defined as the limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.

**Do you have any concerns about food security for all students on campus?**

- A. Yes
- B. No
- C. Unsure

**4 Tell us why or why not. - Optional**

[writing box]

**5 Prior to this survey, were you aware of the Loaded Ladle?**

The Loaded Ladle provides accessible, sustainable, locally sourced free food on the Dalhousie University campus. It is run by volunteers, and they provide accessible local-sourced food through Tuesday to Friday.

- A. Yes
- B. No
- C. Unsure

**6 Prior to this survey, were you aware of the DSU Food Bank?**

The DSU Food Bank provides free food and hygiene items to university students.

- A. Yes
- B. No

*This question will start branching people into one of four groups: non-users, users both, users Loaded Ladle, and users Food Bank. This is to avoid unrelated questions for participants, helping respondent experience.*

**7 Do you receive food from the Loaded Ladle or DSU Food Bank?**

- a. Yes Both
- b. Yes – Loaded Ladle
- c. Yes – DSU Food Bank
- d. No
- e. Prefer not to answer

*This question is for those who answered 'no' above, then the survey will end for you.*

**8 Select all the reasons why you don't use these services.**

- a. Interferes with external commitments

- b. Doesn't interest me
- c. Not aware of these services
- d. Not in need of these services
- e. I have a meal plan
- f. Other

*This question will only be available to those who have said they have accessed the Loaded Ladle.*

**9 On average, how frequently do you eat the Loaded Ladle Lunches on Studley?**

The Loaded Ladle provides accessible, sustainable, locally sourced free food on the Dalhousie University campus.

- a. 1 meal a week
- b. 2 meals a week
- c. 3 meals a week
- d. 4+ meals a week
- e. I don't eat there anymore

*This question will only be available to those who have said they have accessed the Loaded Ladle.*

*Rating options are: Very dissatisfied, dissatisfied, Somewhat dissatisfied, Neither satisfied nor dissatisfied, Somewhat satisfied, satisfied, Very satisfied*

**10 Are you satisfied with Loaded Ladle's services?**

Satisfaction is defined as this service fulfilling all of your needs for suppletive meals. The Loaded Ladle provides accessible, sustainable, locally sourced free food on the Dalhousie University campus.

<b>Service aspect</b>	<b>Rating</b>
Food quality	

Wait time	
Staff friendliness	
Cleanliness	
Accommodating allergies and food sensitivities	
Portion sizes	
Quality of dish wear, cutlery/utensils	

*This question will only be available to those who said they have accessed the Food Bank.*

*Rating options are: Very dissatisfied, dissatisfied, Somewhat dissatisfied, Neither satisfied nor dissatisfied, Somewhat satisfied, satisfied, Very satisfied*

**12 If you use the DSU Food Bank, are you satisfied with their services?**

The DSU Food Bank, provides free food and hygiene items to university students. Satisfaction is defined as this service fulfilling all of your needs for suppletive meals.

<b>Service aspect</b>	<b>Rating</b>
Food quality	
Wait time	
Staff friendliness	
Cleanliness	
Accommodating allergies and food sensitivities	
Diversity/selection of food available	

*This question will only be available to those who said they have accessed the Food Bank*

**14 The DSU Food Bank is available to students on Mondays and Thursdays between 1:30pm-5pm. The food bank is available to students once every fourteen days.**

The DSU Food Bank provides free food and hygiene items to university students.

**Are you satisfied with how frequently you can use this service?**

Satisfaction is defined as this service fulfilling all your supportive needs for meals.

- A. Yes
- B. No

**Why are you not satisfied with how frequently you can use this service?**

- a. Some or all operational hours don't work with my schedule
- b. Some or all operational days doesn't work with my schedule
- c. It's not often enough
- d. other

**Appendix B Posters**

**DALHOUSIE  
STUDENT?**  
**WE NEED YOU TO  
ANSWER OUR  
SURVEY**



**DALHOUSIE  
STUDENT?**  
**PLEASE ANSWER  
OUR SURVEY**

**WE WANT TO KNOW WHO USES  
LOADED LADLE & FOOD BANK**



### **Appendix C Poster Posting Locations**

Fountain School of Performing Arts at Dalhousie University

Chase Building

Chemistry Building

Collaborative Health Education Building

Dal&King's Bike Centre

Dalhousie Indigenous Student Centre

Dalhousie International Centre

Dalhousie Medicine

Dalhousie Student Health & Wellness Centre

Dalhousie Student Union

Dalhousie University Dentistry

Emera IDEA building

Goldberg Computer Science Building

Kenneth C. Rowe Management Bldg

Killam Memorial Library

Life Sciences Center

Life Sciences Research Institute

Marion McCain Arts and Social Sciences Building

Mark A. Hill Accessibility Centre

Mona Campbell

Morroy Building

Dalplex

Schulich School of Law at Dalhousie University

The National Research Council

### **Appendix D E-mail template**

Hello,

I am [NAME], and I am reaching out as a SUST ENVS 3502 student conducting a campus-wide survey and I need your help! Would it be possible to share our survey to your students?

We are studying who uses services aimed at reducing food insecurity and if the services are satisfactory. We want all students to participate, so all students are welcome, even if they don't use those services.

[tinyurl.com/2s4mvhsv](https://tinyurl.com/2s4mvhsv)

Attached are portrait and landscape images you can choose from.

It's super appreciated,

[NAME]

### **Appendix E List of Faculties**

Faculty of Architecture and Planning

Faculty of Arts and Social Sciences

Arts and Social Sciences

Computer Science

Dentistry

Engineering

Health

Law

Management

Medicine

Open Learning & Career Development

Science

### Appendix F Social post images



### Appendix G List of societies contacted

[Dal Environmental Law Society](#)

[Environmental Programs Student Society](#)

[Green Chemistry Initiative](#)

[School for Resource and Environmental Studies Student Society](#)

[Your Environment Sustainability Society \(YESS\)](#)

[DALHOUSIE URBAN GARDEN SOCIETY \(DUGS\)](#)

Divest Dal

Dal Bee Keeping Society

[DALHOUSIE RECREATION ASSOCIATION \(DRA\)](#)

Dal Dance Society

Dal Esports Society



Dal Film Society

DAL DUNGEONS & DRAGONS

Dal Music Society

DALHOUSIE ANIME CLUB

Dalhousie Outdoors Society

Witch Craft Society - witchcraftsocietydalhousie

Dal Marine Society DAMS

[BIOLOGY ORGANIZATION OF GRADUATE STUDENTS \(BOGS\)](#)

Dal oceanography DOUGS

Dal Science Society

**DALHOUSIE ASSOCIATION OF BIOLOGY STUDENTS (DABS)**

Dal Undergrad Neuroscience Society dalhousieuns

Dalhousie Association of Psychology Students

DALHOUSIE BIOMEDICAL ENGINEERING SOCIETY

Dal International Students' Association

Dal Caribbean Connections

Dal Japanese Society

Dal French Societies

Dal Lebanese Society

DASA (Dalhousie African Students Association)

CKDU

Dal Commerce Society

Dal Law Students Society

Powerlifting

Dalhousie Blood Society

Together at Dal

Dal Women in Tech Society

Dal Management Society

• [The Dalhousie Mackerel](#)

• [Dalhousie Theatre Society](#)

[DALHOUSIE SOLAR CAR TEAM \(DALSOL\)](#)

Dalhousie Swimming

Dal K-pop society

Dal Health Promotion Society

Dalhousie Greens

Dal OUT

[NOVA SCOTIA PUBLIC INTEREST RESEARCH GROUP \(NSPIRG\)](#)

DALHOUSIE MEDICAL CAMPUS RESPONSE TEAM (DMCRT)

GET REAL DALHOUSIE – THE GET REAL MOVEMENT

Squeeze Fitness Society (SFS)

[HEALTH LAW STUDENTS' ASSOCIATION](#)

[DALHOUSIE BLACK MEDICAL STUDENTS' ASSOCIATION \(DAL BMSA\)](#)

[DALHOUSIE ACCESSIBILITY AND INCLUSION SOCIETY \(DAIS\)](#)

**Appendix H Raw data**

Question	Responses	Number
----------	-----------	--------

**1 Do you live on campus or off campus?**

On campus, residence	16
Off campus with family / guardian	43
Off campus with roommates	132
Off campus alone	36
Other	6

**2 On average, how much time do you spend on the Studley campus per week during the fall and winter terms?**

0 hour per week	17
1-4 hours a week	15
5-9 hours a week	28
10-14 hours a week	40

	15-19 hours a week	48
	20+ hours a week	85

**Do you have any concerns about food**

**3 security for all students on campus?**

Yes	130
No	52
Unsure	51

**4 Tell us why or why not. (Optional)**

**Prior to this survey, were you aware of**

**5 the Loaded Ladle?**

Yes	180
No	45
Unsure	8

**Prior to this survey, were you aware of**

**6 the DSU Food Bank?**

Yes	133
No	91
Unsure	9

**Do you receive food from the Loaded**

**7 Ladle or DSU Food Bank?**

Yes- Both	26
Yes - Loaded Ladle	71
Yes - DSU Food Bank	18
No	113
Prefer not to answer	5

**Select all the reasons why you don't use**

**8 these services.**

Interferes with external commitments	13
Doesn't interest me	12
Not aware of these services	31
Not in need of these services	64
I have a meal plan	20

	Other	25
--	-------	----

**On average, how frequently do you eat**

**9 the Loaded Ladle Lunches on Studley?**

1 meal a week	26
2 meals a week	18
3 meals a week	0
4+ meals a week	7
I don't eat there anymore	20

**Are you satisfied with Loaded Ladle's**

**10 services?**

Very dissatisfied	4	6	4	5	4	4
Dissatisfied	0	9	0	0	1	0
Somewhat dissatisfied	2	12	0	3	5	1
Neither satisfied nor dissatisfied	3	10	2	8	4	5
Somewhat satisfied	5	12	4	3	9	6
Satisfied	26	16	16	15	22	20
Very satisfied	31	6	45	37	26	35

**Are you satisfied with the DSU Food**

**11 Bank's services?**

	Food quality	Wait time	Staff friendliness	Cleanliness	Accommodating allergies and food sensitivities	Diversity/selection of food available
Very dissatisfied	2	0	2	2	0	4
Dissatisfied	4	5	2	1	3	4
Somewhat dissatisfied	2	4	2	1	3	1
Neither satisfied nor dissatisfied	2	1	1	3	3	4
Somewhat satisfied	3	4	4	4	1	3
Satisfied	3	3	3	5	6	1
Very satisfied	2	1	4	2	2	1
	18	18	18	18	18	18

The DSU Food Bank is available to students on Mondays and Thursdays between 1:30pm-5pm. The food bank is available to students once every fourteen days. Are you satisfied with how frequently you can use this service?

Yes	8
No	9
Unsure	1

Why are you not satisfied with how frequently you can use this service?

Some or all operational hours don't work with my schedule	1
Some or all operational days doesn't work with my schedule	1
It's not often enough	7
Other	1

On average, how frequently do you eat the Loaded Ladle Lunches on Studley?

1 meal a week	12
2 meals a week	3
3 meals a week	1
4+ meals a week	4
I don't eat there anymore	6

Are you satisfied with Loaded Ladle's services?

--	--

	Food quality	Wait time	Staff friendliness	Accommodating allergies and food sensitivities	Portion sizes	Quality of dish wear, cutlery/utensils
Very dissatisfied	3	2	2	1	1	2
Dissatisfied	0	3	1	2	2	2
Somewhat dissatisfied	2	5	2	1	1	1
Neither satisfied nor dissatisfied	3	1	1	2	2	3
Somewhat satisfied	1	7	0	2	4	0
Satisfied	8	4	6	6	9	10
Very satisfied	9	4	14	12	7	8

**Are you satisfied with the DSU Food Bank's services?**

	Food quality	Wait time	Staff friendliness	Cleanliness	Accommodating allergies and food sensitivities	Diversity/selection of food available
Very dissatisfied	2	3	2	1	1	2
Dissatisfied	3	4	1	2	2	6
Somewhat dissatisfied	3	4	2	1	1	1
Neither satisfied nor dissatisfied	3	1	3	2	2	3
Somewhat satisfied	3	3	3	1	2	2
Satisfied	9	7	7	11	8	4
Very satisfied	3	4	8	8	10	8

**The DSU Food Bank is available to students on Mondays and Thursdays between 1:30pm-5pm. The food bank is available to students once every fourteen days. Are you satisfied with how**

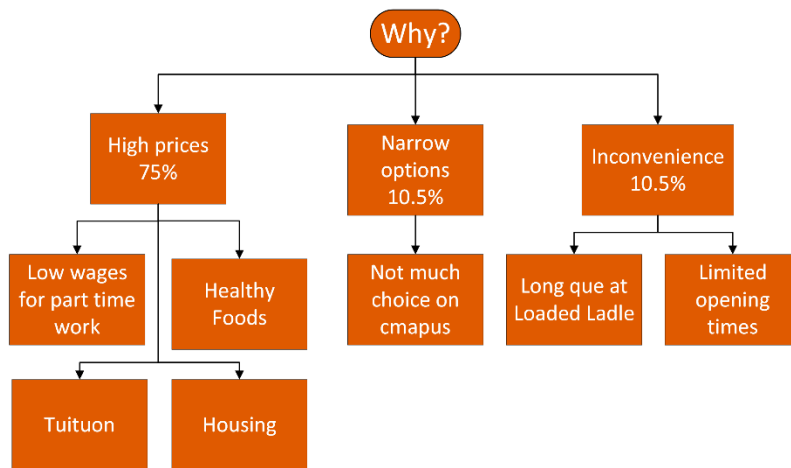
**17 frequently you can use this service?**

Yes	16
No	8
Unsure	2

**Why are you not satisfied with how  
 18 frequently you can use this service?**

Some or all operational hours don't work with my schedule	3
Some or all operational days doesn't work with my schedule	2
It's not often enough	4
Other	1

**Appendix I Coding Tree**



**Appendix J Chi-Squared processed data for Loaded Ladle**

# Dalhousie University, College of Sustainability

## Investigating Satisfaction of Food Security

Loaded Ladle RAW						Loaded Ladle NUMBERATED											
Food quality	Wait time	Staff friendliness	Accommodating allergies and food sensitivities	Portion sizes	Quality of dish overall category/subtotal	Food quality	Wait time	Staff friendliness	Accommodating allergies and food sensitivities	Portion sizes	Quality of dish overall category/subtotal	INDEX - ACTUAL	EXPECTED (observed-expected)	*2	(expct)		
Satisfied	Neither satisfied	Very satisfied	Very satisfied	Very satisfied	Satisfied	1	6	4	7	7	7	6	2.16666667	4	2.16666667	4.09444	1.17811
Satisfied	Somewhat	Very satisfied	Very satisfied	Satisfied	Satisfied	2	6	5	6	7	6	6	6.16666667	4	2.16666667	4.09444	1.17811
Satisfied	Somewhat	Very satisfied	Somewhat	Satisfied	Very dissatisfied	3	6	2	2	5	6	1	3.66666667	4	-0.33333333	0.11111	0.02778
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Satisfied	Very satisfied	4	7	3	7	7	5	7	6	4	2	4	1
Satisfied	Somewhat	Very satisfied	Very satisfied	Satisfied	Satisfied	5	6	5	7	7	6	6	6.16666667	4	2.16666667	4.09444	1.17811
Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	6	6	6	6	7	6	6	6	4	2	4	1
Neither satisfied	Somewhat	Satisfied	Neither satisfied	Neither satisfied	Neither satisfied	7	4	5	6	4	4	4	4.5	4	0.5	0.25	0.0625
Satisfied	Somewhat	Very satisfied	Very satisfied	Somewhat	Satisfied	8	6	5	7	7	5	6	6	4	2	4	1
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	9	7	3	7	7	7	7	6.33333333	4	2.33333333	5.44444	1.36111
Satisfied	Neither satisfied	Satisfied	Satisfied	Satisfied	Very satisfied	10	6	6	6	6	6	6	6	4	2	4	1
Neither satisfied	Very dissatisfied	Satisfied	Satisfied	Very dissatisfied	Very dissatisfied	11	4	2	6	6	6	4	4.33333333	4	0.33333333	0.11111	0.02778
Somewhat	Somewhat	Satisfied	Somewhat	Satisfied	Neither satisfied	12	5	3	6	5	2	6	5.16666667	4	1.16666667	1.36111	0.34078
Satisfied	Very dissatisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	13	1	1	7	7	7	7	5	4	1	0.25	
Very dissatisfied	Somewhat	Very dissatisfied	Very dissatisfied	Somewhat	Very dissatisfied	14	1	3	2	1	3	1	1.66666667	4	-2.33333333	5.44444	1.36111
Very satisfied	Somewhat	Very satisfied	Very satisfied	Very satisfied	Very satisfied	15	7	5	7	7	7	7	6.66666667	4	2.66666667	7.11111	1.77778
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	16	7	7	7	7	7	7	7	4	3	9	2.25
Somewhat	Very dissatisfied	Very satisfied	Somewhat	Somewhat	Satisfied	17	3	5	1	2	5	2	3	4	-1	1	0.25
Somewhat	Very dissatisfied	Somewhat	Somewhat	Very dissatisfied	Very dissatisfied	18	3	2	3	2	2	3	2.66666667	4	-1.33333333	1.77778	0.44444
Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	19	1	1	3	2	1	2	1.66666667	4	-2.33333333	5.44444	1.36111
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	20	7	7	7	7	7	6	6.33333333	4	2.33333333	8.02778	2.00944
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	21	7	7	7	7	7	7	7	4	3	9	2.25
Satisfied	Neither satisfied	Very satisfied	Satisfied	Satisfied	Satisfied	22	6	4	7	8	6	6	5.83333333	4	1.83333333	3.96111	0.84078
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	23	7	7	7	7	7	7	7	4	3	9	2.25
Very satisfied	Satisfied	Very satisfied	Satisfied	Satisfied	Satisfied	24	7	6	7	6	6	6	6.33333333	4	2.33333333	5.44444	1.36111
Neither satisfied	Very dissatisfied	Neither satisfied	Neither satisfied	Neither satisfied	Neither satisfied	25	4	2	4	4	4	4	3.66666667	4	-0.33333333	0.11111	0.02778
Somewhat	Very dissatisfied	Very satisfied	Satisfied	Satisfied	Satisfied	26	6	5	7	6	6	6	5.66666667	4	1.66666667	2.77778	0.69444
Neither satisfied	Neither satisfied	Very satisfied	Neither satisfied	Very satisfied	Satisfied	27	4	4	6	4	6	6	5.66666667	4	1.66666667	1.36111	0.34078
Very dissatisfied	Very dissatisfied	Very satisfied	Very dissatisfied	Somewhat	Very satisfied	28	7	6	7	5	5	7	6.66666667	4	2.66666667	4.09444	1.17811
Very satisfied	Neither satisfied	Very satisfied	Neither satisfied	Satisfied	Very dissatisfied	29	7	4	7	4	6	7	6.66666667	4	2.66666667	2.77778	0.69444
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	30	7	7	7	7	7	7	7	4	3	9	2.25
Very satisfied	Very dissatisfied	Very satisfied	Very satisfied	Very satisfied	Neither satisfied	31	7	2	7	7	7	7	6.66666667	4	2.66666667	2.77778	0.69444
Very satisfied	Satisfied	Very satisfied	Very dissatisfied	Somewhat	Very satisfied	32	7	6	7	1	5	7	5.5	4	1.5	2.25	0.5625
Satisfied	Somewhat	Satisfied	Very dissatisfied	Satisfied	Satisfied	33	6	5	6	4	6	6	5.5	4	1.5	2.25	0.5625
Very satisfied	Very dissatisfied	Satisfied	Very satisfied	Very satisfied	Very satisfied	34	7	1	6	7	7	7	5.83333333	4	1.83333333	3.96111	0.84078
Very satisfied	Somewhat	Very satisfied	Very dissatisfied	Somewhat	Very satisfied	35	7	3	7	7	5	7	6.66666667	4	2.66666667	2.77778	0.69444
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	36	7	7	7	7	7	7	7	4	3	9	2.25
Satisfied	Satisfied	Very satisfied	Satisfied	Somewhat	Satisfied	37	6	6	7	6	5	6	6	4	2	4	1
Somewhat	Satisfied	Very satisfied	Very dissatisfied	Very dissatisfied	Satisfied	38	6	5	7	3	6	5	5.4	4	1.4	1	0.25
Very satisfied	Satisfied	Very satisfied	Neither satisfied	Very satisfied	Satisfied	39	7	6	7	4	7	6	6.66666667	4	2.66666667	4.09444	1.17811
Somewhat	Somewhat	Satisfied	Neither satisfied	Somewhat	Neither satisfied	40	5	3	6	4	3	4	4.5	4	0.5	0.25	0.0625
Very satisfied	Somewhat	Satisfied	Very satisfied	Very satisfied	Very satisfied	41	7	5	7	7	7	7	6.66666667	4	2.66666667	7.11111	1.77778
Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	42	6	6	6	6	6	6	6	4	2	4	1
Satisfied	Very dissatisfied	Very satisfied	Very satisfied	Satisfied	Neither satisfied	43	6	2	7	7	6	4	5.33333333	4	1.33333333	1.77778	0.44444
Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	44	6	6	6	6	6	6	6	4	2	4	1
Satisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	45	6	6	7	7	6	6	6.5	4	2.5	6.25	1.5625
Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	46	1	1	1	1	1	1	1	4	-3	9	2.25
Satisfied	Very dissatisfied	Somewhat	Very dissatisfied	Somewhat	Satisfied	47	6	2	5	7	3	6	4.83333333	4	0.83333333	0.69444	0.17811
Very satisfied	Satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	48	7	6	7	7	7	7	6.83333333	4	2.83333333	8.02778	2.00944
Satisfied	Satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	49	6	5	7	7	7	7	6.5	4	2.5	6.25	1.5625
Very satisfied	Satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	50	7	6	7	7	7	7	6.83333333	4	2.83333333	8.02778	2.00944
Satisfied	Very dissatisfied	Very satisfied	Satisfied	Satisfied	Neither satisfied	51	6	2	7	6	5	4	5	4	1	1	0.25
Neither satisfied	Very dissatisfied	Satisfied	Satisfied	Satisfied	Very satisfied	52	7	4	6	6	6	7	6	4	2	4	1
Very satisfied	Very dissatisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	53	7	7	7	7	7	7	7	4	3	9	2.25
Somewhat	Very dissatisfied	Satisfied	Very satisfied	Very satisfied	Very satisfied	54	6	3	5	7	7	7	5.83333333	4	1.83333333	3.96111	0.84078
Very satisfied	Somewhat	Very satisfied	Very satisfied	Very satisfied	Satisfied	55	7	5	7	7	7	6	6.5	4	2.5	6.25	1.5625
Very satisfied	Very dissatisfied	Satisfied	Very satisfied	Satisfied	Neither satisfied	56	7	3	6	7	5	4	5.33333333	4	1.33333333	1.77778	0.44444
Very satisfied	Very dissatisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	57	7	2	7	7	7	7	6.16666667	4	2.16666667	4.09444	1.17811
Very satisfied	Very dissatisfied	Very satisfied	Satisfied	Satisfied	Satisfied	58	7	3	7	6	6	6	5.83333333	4	1.83333333	3.96111	0.84078
Somewhat	Satisfied	Satisfied	Satisfied	Satisfied	Somewhat	59	7	6	6	6	6	5	6	4	2	4	1
Somewhat	Very dissatisfied	Very satisfied	Very satisfied	Satisfied	Satisfied	60	5	3	7	7	7	5	5.66666667	4	1.66666667	2.77778	0.69444
Very satisfied	Very dissatisfied	Satisfied	Neither satisfied	Very satisfied	Very satisfied	61	7	1	7	4	7	7	5.5	4	1.5	2.25	0.5625
Satisfied	Somewhat	Satisfied	Very satisfied	Very satisfied	Very satisfied	62	6	5	5	7	7	7	6.16666667	4	2.16666667	4.09444	1.17811
Very satisfied	Very dissatisfied	Very satisfied	Neither satisfied	Neither satisfied	Very satisfied	63	7	1	7	4	4	6	4.83333333	4	0.83333333	0.69444	0.17811
Satisfied	Very dissatisfied	Satisfied	Very satisfied	Very dissatisfied	Very dissatisfied	64	6	2	6	7	2	3	4.33333333	4	0.33333333	0.11111	0.02778
Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	65	1	2	1	1	1	1	1.66666667	4	-2.33333333	8.02778	2.00944
Satisfied	Neither satisfied	Very satisfied	Satisfied	Satisfied	Satisfied	66	6	4	7	6	6	6	5.83333333	4	1.83333333	3.96111	0.84078
Very satisfied	Very dissatisfied	Very satisfied	Very satisfied	Satisfied	Very satisfied	67	7	3	7	7	5	7	6	4	2	4	1
Satisfied	Somewhat	Very satisfied	Very satisfied	Satisfied	Very satisfied	68	6	5	7	7	6	7	6.33333333	4	2.33333333	5.44444	1.36111
Satisfied	Very dissatisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	69	6	3	7	7	7	7	6.16666667	4	2.16666667	4.09444	1.17811
Somewhat	Very dissatisfied	Very satisfied	Very satisfied	Very dissatisfied	Very satisfied	70	5	1	7	3	5	4	1	1	0.25		
Very satisfied	Very dissatisfied	Very satisfied	Very satisfied	Satisfied	Very satisfied	71	7	2	7	7	6	7	6	4	2	4	1
Satisfied	Somewhat	Very satisfied	Very satisfied	Very satisfied	Very satisfied	72	6	5	7	7	7	7	6.5	4	2.5	6.25	1.5625
Satisfied	Neither satisfied	Very satisfied	Very satisfied	Satisfied	Very satisfied	73	6	4	7	7	6	7	6.16666667	4	2.16666667	4.09444	1.17811
Satisfied	Satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	74	6	6	7	7	6	7	6.5	4	2.5	6.25	1.5625
Somewhat	Satisfied	Very satisfied	Neither satisfied	Neither satisfied	Very satisfied	75	5	3	4	7	4	7	5	4	1	1	0.25
Satisfied	Very dissatisfied	Very satisfied	Very satisfied	Somewhat	Very satisfied	76	7	3	7	7	4	7	5.66666667	4	1.66666667	2.77778	0.69444
Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	77	1	1	1	1	1	1	1	4	-3	9	2.25



# Dalhousie University, College of Sustainability | Investigating Satisfaction of Food Security 40

Very satisfied	Somewhat	Very satisfied	Satisfied	Very satisfied	Very satisfied	78	7	5	7	6	7	7	6.3	4	25	6.25	1.3615
Somewhat satisfied	Satisfied	Satisfied	Satisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	79	5	6	6	6	4	5	5.33333333	4	1.33333333	1.77778	0.44444
Very satisfied	Very satisfied	Very satisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied	80	7	7	7	4	6	7	6.33333333	4	2.33333333	5.66666	1.96111
Satisfied	Neither satisfied nor dissatisfied	Satisfied	Somewhat dissatisfied	Very satisfied	Satisfied	81	6	4	6	3	7	6	5.33333333	4	1.33333333	1.77778	0.44444
Satisfied	Somewhat	Very satisfied	Somewhat	Very satisfied	Satisfied	82	6	5	7	5	6	6	5.83333333	4	1.83333333	3.36111	0.84278
Neither satisfied nor dissatisfied	Neither satisfied nor dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Satisfied	Satisfied	83	4	4	4	6	6	6	5	4	1	1	0.25
Somewhat dissatisfied	Somewhat	Very satisfied	Satisfied	Neither satisfied nor dissatisfied	Very satisfied	84	6	3	7	6	4	7	5.5	4	1.5	2.25	0.5625
Very satisfied	Somewhat	Very satisfied	Very satisfied	Very satisfied	Very satisfied	85	7	5	7	7	7	7	6.66666667	4	2.66666667	7.11111	1.77778
Somewhat dissatisfied	Somewhat satisfied	Very satisfied	Very satisfied	Very satisfied	Somewhat satisfied	86	3	5	7	7	7	5	5.66666667	4	1.66666667	2.77778	0.69444
Satisfied	Satisfied	Satisfied	Very satisfied	Very satisfied	Satisfied	87	6	6	6	7	7	6	6.33333333	4	2.33333333	5.66666	1.96111
Neither satisfied nor dissatisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	88	4	6	6	6	6	6	5.66666667	4	1.66666667	2.77778	0.69444
Satisfied	Neither satisfied nor dissatisfied	Satisfied	Somewhat dissatisfied	Somewhat satisfied	Very satisfied	89	6	4	5	3	5	7	5	4	1	1	0.25
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	90	7	7	7	7	7	7	7	4	3	9	2.25
Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	91	6	6	6	6	6	6	6	4	2	4	1
Somewhat dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Satisfied	Satisfied	Somewhat satisfied	92	3	4	6	6	6	5	5	4	1	1	0.25
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	93	7	7	7	7	7	7	7	4	3	9	2.25
Very satisfied	Neither satisfied nor dissatisfied	Very satisfied	Very satisfied	Somewhat	Very satisfied	94	7	6	7	7	7	6	6.66666667	4	2.66666667	7.11111	1.77778
Satisfied	Neither satisfied nor dissatisfied	Very satisfied	Very satisfied	Satisfied	Satisfied	95	6	4	7	7	5	6	5.83333333	4	1.83333333	3.36111	0.84278
Very dissatisfied	Dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	96	1	2	1	1	1	1	1.16666667	4	-2.83333333	8.02778	2.00944
Very satisfied	Somewhat dissatisfied	Very satisfied	Satisfied	Satisfied	Satisfied	97	7	3	7	5	6	5	5.5	4	1.5	2.25	0.5625

sum = chi squared	100.9236	Critical value of 110.36 > chi-squared of 100.92
Critical Value	110.362	
96 degrees of freedom		
85% confidence	Null hypothesis accepted	
	could be achieved with more respondents	

experimental #times
theoretical #times if the coin is balanced

$$\chi^2 = \sum \frac{(\text{observed} - \text{expected})^2}{\text{expected}}$$

theoretical #times if the coin is balanced

## Appendix K Chi-Squared processed data for DSU Food Bank

# Dalhousie University, College of Sustainability

## Investigating Satisfaction of Food Security 41

						Food quality	Wait time	Staff friendliness	Cleanliness	Accommodating allergies and food sensitivities	Diversity/selection of food available	INDEX - ACTUAL	EXPECTED	(observed-expected)	*2	/spec
Very satisfied	Satisfied	Neither satisfied nor c	Satisfied	Satisfied	Somewhat satisfied	1	5	5	5	6	4	5	5	5	4	0.25
Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	2	4	4	4	4	4	4	4	4	0	0
Somewhat dissatisfied	Somewhat dissatisfied	Very dissatisfied	Dissatisfied	Dissatisfied	Very dissatisfied	3	3	2	2	2	3	2	2.33333333	4	-1.66666667	2.77778
Very satisfied	Somewhat satisfied	Dissatisfied	Very satisfied	Somewhat satisfied	Dissatisfied	4	6	6	6	6	6	6	6	4	2	4
Somewhat satisfied	Neither satisfied nor c	Somewhat satisfied	Satisfied	Satisfied	Neither satisfied nor dissatisfied	5	1	5	5	4	2	3	4.66666667	4	-0.33333333	0.11111
Satisfied	Satisfied	Satisfied	Very satisfied	Very satisfied	Very satisfied	7	6	6	7	5	6	5	5.83333333	4	1.83333333	3.36111
Neither satisfied nor d	Dissatisfied	Dissatisfied	Neither satisfied nor c	Neither satisfied nor c	Dissatisfied	7	7	7	7	7	7	7	7	4	3	9
Somewhat satisfied	Somewhat dissatisfied	Somewhat dissatisfied	Somewhat satisfied	Neither satisfied nor c	Neither satisfied nor dissatisfied	8	4	5	5	5	4	4	4.5	4	0.5	0.25
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	9	2	2	1	1	2	1	1.5	4	-2.5	6.25
Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	10	5	3	3	6	3	2	3.66666667	4	-0.33333333	0.11111
Satisfied	Neither satisfied nor c	Satisfied	Satisfied	Dissatisfied	Dissatisfied	11	1	3	7	7	7	5	5	4	1	1
Somewhat satisfied	Satisfied	Somewhat satisfied	Satisfied	Satisfied	Satisfied	12	2	3	5	4	2	1	2.83333333	4	-1.16666667	1.36111
Very satisfied	Very dissatisfied	Satisfied	Very satisfied	Very satisfied	Very satisfied	13	3	2	1	1	2	2	1.83333333	4	-2.16666667	4.69444
Very dissatisfied	Very dissatisfied	Somewhat dissatisfied	Very dissatisfied	Very dissatisfied	Very dissatisfied	14	7	6	4	6	6	5	5.66666667	4	1.66666667	2.77778
Neither satisfied nor d	Dissatisfied	Dissatisfied	Very satisfied	Satisfied	Somewhat dissatisfied	15	6	6	6	6	6	6	6	4	2	4
Very dissatisfied	Neither satisfied nor c	Very dissatisfied	Neither satisfied nor c	Satisfied	Dissatisfied	16	3	3	1	2	2	1	2	4	-2	4
Neither satisfied nor d	Satisfied	Somewhat dissatisfied	Satisfied	Very satisfied	Neither satisfied nor dissatisfied	17	7	5	2	7	5	2	4.66666667	4	0.66666667	0.44444
Somewhat dissatisfied	Somewhat dissatisfied	Dissatisfied	Somewhat dissatisfied	Somewhat dissatisfied	Dissatisfied	18	5	4	5	6	6	4	5	4	1	1
Dissatisfied	Dissatisfied	Very dissatisfied	Dissatisfied	Dissatisfied	Dissatisfied	19	6	6	6	7	7	7	6.5	4	2.5	6.25
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	20	4	2	2	4	4	2	3	4	-1	1
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	21	5	3	3	5	4	4	4	4	0	0
Satisfied	Somewhat satisfied	Somewhat dissatisfied	Satisfied	Satisfied	Very satisfied	22	7	7	7	7	7	7	7	4	3	9
Very satisfied	Satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	23	6	6	6	6	6	6	6	4	2	4
Very satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	24	6	4	4	6	6	2	4.66666667	4	0.66666667	0.44444
Satisfied	Somewhat satisfied	Somewhat satisfied	Satisfied	Somewhat satisfied	Somewhat satisfied	25	5	6	5	6	6	6	5.66666667	4	1.66666667	2.77778
Satisfied	Satisfied	Satisfied	Satisfied	Very satisfied	Very satisfied	26	7	1	6	7	7	7	5.83333333	4	1.83333333	3.36111
Somewhat satisfied	Somewhat satisfied	Satisfied	Neither satisfied nor c	Somewhat satisfied	Somewhat satisfied	27	1	1	3	1	1	1	1.33333333	4	-2.66666667	7.11111
Neither satisfied nor d	Neither satisfied nor c	Neither satisfied nor c	Neither satisfied nor c	Neither satisfied nor c	Neither satisfied nor dissatisfied	28	4	2	2	7	6	3	4	4	0	0
Somewhat dissatisfied	Dissatisfied	Dissatisfied	Dissatisfied	Somewhat dissatisfied	Dissatisfied	29	1	4	1	4	6	2	3	4	-1	1
Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	30	4	6	3	6	7	4	5	4	1	1
Very dissatisfied	Somewhat satisfied	Somewhat satisfied	Somewhat satisfied	Neither satisfied nor c	Dissatisfied	31	3	3	2	3	3	2	2.66666667	4	-1.33333333	1.77778
Very satisfied	Satisfied	Very satisfied	Somewhat satisfied	Satisfied	Somewhat satisfied	32	2	2	1	2	2	2	1.83333333	4	-2.16666667	4.69444
Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	Very satisfied	33	7	7	7	7	7	7	7	4	3	9
Neither satisfied nor d	Somewhat satisfied	Somewhat satisfied	Somewhat satisfied	Neither satisfied nor c	Neither satisfied nor dissatisfied	34	7	7	7	7	7	7	7	4	3	9
Dissatisfied	Dissatisfied	Very dissatisfied	Very dissatisfied	Dissatisfied	Very dissatisfied	35	6	5	3	6	6	7	5.5	4	1.5	2.25
Somewhat satisfied	Somewhat dissatisfied	Somewhat dissatisfied	Satisfied	Somewhat dissatisfied	Dissatisfied	36	7	6	7	7	7	7	6.83333333	4	2.83333333	8.02778
Very dissatisfied	Somewhat dissatisfied	Very satisfied	Very satisfied	Very satisfied	Somewhat satisfied	37	7	6	6	6	7	6	6.33333333	4	2.33333333	5.44444
Dissatisfied	Somewhat dissatisfied	Somewhat satisfied	Neither satisfied nor c	Dissatisfied	Very dissatisfied	38	6	5	5	6	5	5	5.33333333	4	1.33333333	1.77778
Somewhat dissatisfied	Dissatisfied	Very dissatisfied	Dissatisfied	Dissatisfied	Dissatisfied	39	6	6	6	6	7	7	6.33333333	4	2.33333333	5.44444

sum = chi squared	32.375
Critical Value	47.0072
df	38
85% confidence	Null hypothesis accepted
	could be achieved with more respondents

### Appendix L Satisfaction with frequency of use of DSU Food Bank

The DSU Food Bank is available to students on Mondays and Thursdays between 1:30pm-5pm. The food bank is available to students once every fourteen days. Are you satisfied with how frequently you can use this service?

	TOTAL
Yes	24
No	17
Unsure	3

**Why are you not satisfied with how frequently you can use this service?**

