Catalyzing a Transition toward Diets Containing Fewer Animal-Rich Meals and More Plant-Rich Meals

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SEEDS Sustainability Program

Practitioners' Summary

TRANSITIONING DIETS FROM ANIMAL-BASED MEALS TO MORE PLANT-BASED AT THE UBC DINING HALLS

BACKGROUND

- Climate change is a pressing global issue that requires a unified worldwide response
- More than half of all international food-related emissions are generated by meat and dairy production, while using more farmland to produce a small proportion of the world's calories
- Switching to plant-based diets is an effective way to reduce emissions and lower the impact our food system has on the enviroment

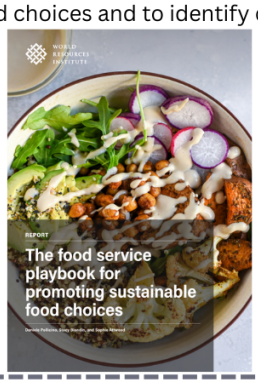
GOALS

- To understand dining hall user preferences and the factors influencing food choices in UBC's residence dining halls
- To understand the barriers, challenges and opportunities associated with transitioning to a plant-based diet
- To recommend techniques and strategies to facilitate the transition to more plant-based foods and fewer animal-rich meals

METHODS

AUDIT

Our primary research method was an observational audit, combining direct observations and interviews with dining hall chefs. Criteria was based on the World Resources Institute's Food Service Playbook. The purpose was to assess how UBC's residence dining halls are promoting sustainable, plant-based food choices and to identify opportunities for improvement.



FEEDBACK

Other research methods included a survey to assess the overall dining hall experience and identify key factors influencing food choices. Secondary data was analyzed to evaluate past feedback on the dining hall menus and compare the preferences for animal-based versus plant-based dishes.

NOTABLE FINDINGS

- Insufficient ingredient signage throughout the dining halls
- Limited promotion of plant-based products, resulting in false assumptions about the availability and quality of plant-based foods
- High demand for specific plant-based items
- Opportunities to explore more eco-friendly dining hall practices

RECCOMENDATIONS FOR ACTION

1. Improved and consistent food labelling

Improve allergy awareness, standardize labelling across the dining halls including self-serve areas to include climate impact, key allergens, informative icons.

2. Use effective promotion techniques

Increase promotion of plant-based options to highlight delicious taste, healthful qualities as well as enviromental impact to change assumptions and improve accessibility.

3. Add New Plant-Based Items to the Menu

Add: Dairy-free desserts, more cut fresh fruit, more high-protein plant-based meals, and continue to prioritize new recipes from around the world.

4. Future Research: DefaultVeg Pilot

Conduct a pilot project using a sustainable dining model such as offering plant-based by default with the option to add on an animal product.

Executive Summary

The food choices we make have a huge impact on our planet and our health. Globally, animal agriculture accounts for 57% of food-related emissions, while plant-based foods only represent 29% (Zhang et al., 2024). Additionally, animal agriculture utilizes 83% of the world's agricultural land while only producing 18% of the world's calories (Poore & Nemecek, 2018). As the UBC food system is a significant contributor to total campus emissions, the university is actively working to reduce greenhouse gas (GHG) emissions by 50% before 2030 (University of British Columbia, n.d.). This project is a part of UBC's efforts to promote plant-rich diets in UBC residence dining halls by reducing reliance on meat-based meals and fostering a culture of environmental sustainability and personal health on campus. Increasing the appeal and availability of plant-based food options are critical to achieve the changes outlined by UBC's climate action plan. As a major part of the UBC food system, the three dining hall locations serve over 5,000 guests per day in total (Food Services staff, personal communication, Jan 22, 2025).

This mixed-methods project featured a Community-Based Action Research (CBAR) approach. CBAR aims to understand how problems manifest in communities and how members experience them (Guillion & Tilton, 2020, p.22, as cited in Richer, 2025). Our research used primary data collection and analysis through a Dining Hall Experience Survey and an Observational Audit. Secondary data analysis of previously collected user feedback on the Nutrislice website, where students can view the updated menu from each dining hall with ingredient and nutrition information. Additionally, conducting a literature review provided further depth to our research conclusions. The audit was designed to assess what dining halls were doing well to promote sustainable, plant-based diets and what gaps there might be to improve upon. Audit criteria were based on the techniques proposed in the Food Service Playbook prepared by the World Resources Institute (WRI) as a part of their Coolfood initiative (World Resources Institute, n.d.). The goal of the audit was to find out which techniques in the Playbook are in use at each dining hall and identify techniques that could be further leveraged. The survey was designed to find out what factors motivate users' choices in the dining hall and collected some demographic data to lend perspective and depth about who uses the dining halls. Secondary data was gathered by our client as part of their ongoing commitment to gather feedback from dining hall users.

Results of the audit revealed the dining halls were using 46/68 (67.6%) evaluated techniques from the World Resources Institute's Food Service Playbook, with key areas of success and possible areas for improvement. The survey indicated taste (90.3%), satiety (48.1%), and nutritional content (70.5%) drive dining hall users' choices and revealed that many people do not consider environmental factors (19.9%) or their personal beliefs (22.2%) as important factors when choosing what to eat. Secondary data analysis found users had concerns with taste and cooking method of certain dishes such as the tofu being overcooked. Barriers impeding the transition to more plant-based dining include inconsistent and inaccurate food labelling and persistent misconceptions about plant protein.

Based on insights gained, our research led to recommendations aimed at advancing the transformation of UBC's dining halls. To enhance campus dining experience, we recommend UBC Food Services should prioritize clear and consistent food labelling and ensure users have access to key information about their meals. We also recommend incorporating new items into the menu, such as dairy-free desserts, more freshly prepared fruits, and introducing high-protein plant-based dishes. Testing innovative sustainable food models, such as DefaultVeg, would provide valuable insight into student reception and the model's effectiveness. To further strengthen engagement, continued feedback gathered through a variety of methods will help UBC Food Services continue to cater to the changing needs of the campus community.

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Abbreviations and Key Terms

KEY TERMS

Animal-based - Diets or dishes which include animal-origin ingredients, including ruminant and non-ruminant meat, seafood, fish, eggs and dairy. (by Authors)

DefaultVeg - A Better Food Foundation initiative based on psychology's concept of nudging, in which plant-based meals are served by default in a particular setting and animal-based add-ons are available upon request. (Better Food Foundation, 2024)

Flextarian - A diet which sometimes contains meat, with an effort to reduce my meat consumption and to often choose plant-based foods instead (Perez-Cueto et al. 2022)

Meat-free - Dishes or diets which do not contain ruminant nor non-ruminant meat, fish or seafood but may contain eggs or dairy. Also, *vegetarian*. (by Authors)

Plant-based - A diet consisting of foods derived from plants and fungi, excludes meat, fish and seafood but may include eggs and dairy (University of British Columbia, 2022).

- Alternative definition not used in the report: Foods derived from plants and fungi rather than animal sources. This includes fruit and vegetables, legumes (e.g., beans, lentils, peas, soybeans), grains, mushrooms, nuts and seeds, plant oils, herbs, and spices. (Attwood et al. 2020; Pollicino et al., 2024)

Plant-rich - A diet in which plant foods make up the majority of the total amount consumed, but may allow for small amounts of animal products, including meat—also. Also, a *plant-forward diet*, and a *sustainable diet*. (Attwood et al. 2020)

Vegan - A diet that excludes all animal-based products and includes only foods derived from plants. (Attwood et al. 2020)

Vegetarian (lacto-ovo) - diet that excludes meat, fish, and seafood but may allow consumption of other animal products such as eggs and dairy. (Attwood et al. 2020)

ABBREVIATIONS

GHG - Greenhouse gas emissions

UBC - University of British Columbia

The Playbook - World Resources Institute: The food service playbook for promoting sustainable food choices (Pollicino et al., 2024)

Gather - Gather Dining Hall at Place Vanier Residence

Feast - Feast Dining Hall at Totem Park Residence

Open Kitchen - Open Kitchen Dining Hall at Orchard Commons Residence

1. Introduction

1.1 RESEARCH TOPIC

A powerful way to mitigate our impact on the environment is by changing our eating habits, both individually and collectively. The University of British Columbia (UBC) is taking bold steps to address climate change and promote environmental sustainability. This project is a continuation in the efforts to pursue a transition toward diets that contain fewer meat-based meals and more plant-based meals in the context of UBC dining halls. Our goal was to continue working towards reducing the dining hall's food-related emissions by 50% in accordance with UBC's 2030 Climate Action Plan (CAP 2030) (University of British Columbia, n.d. a). This research presents an opportunity to promote plant-based diets as a sustainable and nutritious alternative, contributing to a reduction in the environmental impact of food consumption. While the dining halls have made the switch to over 50% plant-based offerings, most dining hall users still choose animal-based entrees (Food Services staff, personal communication, Jan 22, 2025). The objective of our research was to identify the gaps and opportunities in techniques that foster a plant-based transition, find out what motivates dining hall users' food choices, and make recommendations to improve uptake of plant-based choices. Our recommendations will help boost the number of users who will choose plant-based options, thereby reducing UBC Food Services purchases of animal-based ingredients and the overall greenhouse gas (GHG) emissions of the dining halls.

1.2 RESEARCH RELEVANCE

Our project is driven by the need to reduce greenhouse gas (GHG) emissions on campus, as a part of addressing the global issue of climate change. Climate change is causing rising global temperatures, extreme weather events, rising sea levels, ocean acidification, and disruptions to ecosystems (National Oceanic and Atmospheric Administration, 2025). These climate change trends of extreme weather events and rapidly evolving weather variability have implications for human health and safety, food security, water resources, the economy, and inequality (United Nations, n.d.). On a global scale, the food sector is a major contributor to climate change, responsible for approximately one-third of total GHG emissions (United Nations, n.d.). More than half of all international food-related emissions are generated by meat and dairy production, while using more farmland to produce a small proportion of the world's calories (Zhang et al., 2024). Switching to plant-based eating is an effective way of reducing emissions and helps to achieve international agreement emissions reduction targets. One such initiative is the Paris Agreement, an international treaty that directly addressed the goals of limiting global warming and climate change (United Nations Climate Change, n.d.). Nationally, Canada has committed to reducing GHG emissions by 40-45% below 2005 levels by 2030 (Government of Canada, 2025). At a local level, UBC has committed to reducing all campus emissions.

Embedded in an international call for change, UBC has developed local and specific plans to contribute to the reduction of GHG emissions. The UBC Climate Action Plan 2030 (CAP 2030) was developed in 2020 and calls for change at various scales across campus, committing to reducing all campus emissions by 50% by 2030 (University of British Columbia, n.d. a). Food system-specific actions include the following directive (University of British Columbia, n.d. c):

1) Develop campus-wide Climate-Friendly Food System (CFFS) definition, mandatory CFFS labelling, and a toolkit to increase sustainable dietary choices and habits.
2) Develop and implement mandatory campus-wide Climate-Friendly Food System Procurement Guidelines applicable to all food providers (University of British Columbia, n.d. c).

The procurement guidelines of UBC dining halls include specific targets to reduce purchases of ruminant and non-ruminant animal products, dairy products, and other carbon-intensive food products (UBC Campus + Planning, n.d.). UBC Wellbeing has further highlighted the University's commitment to providing students with diverse, nutritious, and affordable foods while prioritizing locally grown and minimally processed ingredients (UBC Wellbeing, n.d.). The UBC climate action plan comes to life through the UBC Food Services statement including a vision and a set of values that guides all their business decision (UBC Student Housing and Hospitality Services 2022). The document highlights two key elements: providing food to customers at a reasonable cost and supporting the improvement of skills and knowledge of staff and customers. Food system sustainability is highlighted in the "Caring for and Supporting our Planet" value, which states that:

> We recognize the critical importance of a climate friendly food system and understand the benefits of creating an environment that prioritizes plant-forward eating and reduces the amount of red meat and dairy. We encourage eating plant-forward food because it is better for our health, our planet and our economy. To support this, plant-based options are readily available, abundant, and affordable. (UBC Student Housing and Hospitality Services, 2022).

As a leader in food system innovation UBC plays a crucial role in setting an example.

However, shifting dietary habits is not simply a matter of availability or policy, food choices are deeply embedded in cultural identities, gender and social norms. Overcoming the assumptions about the nutritional benefits and protein content of plant-based foods are essential to facilitate a transition to plant-based diets. Current preferences for animal-rich diets, combined with social resistance to change, pose a challenge to meet GHG reduction targets at scale (Nevalainen et al., 2022). Based on customer preferences, experience and dining hall practices, our project points to strategies that increase and normalize the consumption of plant-based meals in UBC dining halls. Continuing the transition toward diets containing fewer animal-rich meals and more plant-rich meals at UBC dining halls will help reduce campus GHG emissions and help to mitigate climate change. This can be scaled up and inform other institutions, such as universities and governments, to transition towards plant-based eating, reduce GHG emissions, and achieve global, national and regional targets or agreements. The 17 United Nations' Sustainable Development Goals provide a universal blueprint for sustainable development. Our project is connected to objectives found within 3 specific goals:

> *#2 Ending hunger, achieving food security, improved nutrition, and promoting sustainable agriculture*
> *#12 Ensure sustainable consumption and production patterns*
> *#13 Take urgent action to combat climate change and its impact*s (United Nations, 2023).

Aligning directly with UBC's efforts to reduce greenhouse gas emissions through dietary shifts, our recommendations will contribute to local, national and global levels by promoting sustainable dining practices and improving access to plant-based food options. This shift is essential for long-term adherence to climate goals and can catalyze further changes in public perception and behaviour in the effort toward a more sustainable future.

1.3 PROJECT CONTEXT & BACKGROUND

1.3.1 International Call for Action

Climate change is a pressing global issue that requires a unified worldwide response. One significant step in addressing this challenge is the Paris Agreement, a legally binding international treaty adopted by 196 Parties during the UN Climate Change Conference (COP21) in Paris, France, on December 12th, 2015 (United Nations Climate Change, n.d.). This landmark agreement represents the first instance of nations worldwide coming together under a shared framework to combat climate change and adapt to its effects. Therefore, a dietary shift, which is a key element in climate change mitigation, should be focused on increasing the production and consumption of foods of plant origin (Perez-Cueto et al., 2022). With this increase in plant-based foods there also needs to be a reduction in animal-based food, especially in the developed world. In Canada, animal agriculture produced around 37 megatonnes of GHG in 2023, compared to 17 megatonnes in crop production for direct human consumption (Government of Canada, 2025). With the emissions produced by the agriculture sector increasing by 37% from 1990 to 2023, Canada has a way to go to reach their goal of a 40-45% total reduction below 2005 levels by 2030.

As places of innovation and learning, universities have a responsibility to drive a global dietary shift by making sustainable choices the norm, not the exception. Several Canadian universities are actively transitioning toward plant-rich diets in their dining halls to promote sustainability and reduce the environmental impact of animal-based food production. Western University is launching a fully vegan café, while the University of Toronto and Concordia University are expanding plant-based offerings and reducing meat and dairy procurement (MacLean, 2023; Park, 2024). UBC Food Services is keeping pace, committing to cutting food system emissions by 50% by 2030 (University of British Columbia, n.d. a). The basis of this report is to provide recommendations to UBC Food Services on ways they can increase plant-based consumption.

1.3.2 UBC Context

The University of British Columbia (UBC) is advancing climate action through its Climate Action Plan 2030 (CAP 2030), which prioritizes transforming campus food systems to reduce greenhouse gas emissions. Meeting these goals requires a substantial shift toward plant-rich options, as plant-based foods are significantly more sustainable than animal agriculture, using fewer natural resources (Sabaté & Soret, 2014). Working separately and alongside UBC Food Services, UBC's Alma Mater Society Sustainable Action Plan 2026 (SAP 2026) requires at least 30% of new food outlets and catering menus to be plant-based (Alma Mater Society of UBC Vancouver, 2023). UBC Food Services has already introduced plant-based options, and meeting CAP 2030 goals requires a significant reduction in animal-based meals and an increase in plant-rich alternatives. The CAP 2030 goals create the need for our project, which continues the transition towards increased plant-based choices in UBC dining halls. Our research identified barriers, motivators, and strategies for increasing plant-based eating in residence dining halls. Previous research with our client partners underscored the importance of accessibility, awareness, and affordability in shaping dietary decisions. Gao (2014) highlighted that, despite initiatives such as Meatless Monday and ingredient substitutions designed to promote sustainable dining, limited vegetarian options and accessibility constraints deterred consumers from choosing plant-based meals. Similarly, Ma et al. (2024) found that students faced significant barriers to adopting climate-friendly diets due to unclear labelling, lack of knowledge, and perceived higher costs, with reluctance often stemming from concerns over taste and price. Lee (2023) highlighted the importance of sustainability labels at Feast, Gather, and Open Kitchen in encouraging students to reconsider their dietary habits and actively participate in climate protection. Our study builds on this prior research, aiming to assess how well current dining hall practices meet sustainability goals and uncover opportunities to enhance

accessibility, awareness, and knowledge to facilitate greater adoption of plant-based eating among UBC students.

1.3.3 The Playbook

The primary guiding document that forms the basis of our research is the World Resources Institute (WRI) *The Food Service Playbook for Promoting Sustainable Food Choices*. This document was published in 2024 building from WRI's first guide for food service released in 2020. The playbook was developed based on nearly 350 academic trials and extensive collaboration with various food businesses through Coolfood, an initiative by the World Resources Institute (WRI) aimed at reducing diet-related emissions. Coolfood supports individuals and organizations in lowering the climate impact of their food choices by encouraging a shift toward more plant-rich diets (World Resources Institute, n.d.). From our knowledge and prior research, we would be the first group to conduct an audit using the playbook. In the playbook, there are 90 techniques divided into 6 categories: price, placement, promotion, presentation, product, and people (Pollicino et al., 2024). Price refers to techniques that adjust the cost of plant-rich dishes to influence purchasing decisions. Placement involves the strategic arrangement of food displays and modifications to the physical dining environment to encourage the selection of plant-based options. Promotion encompasses communication strategies, marketing efforts, advertising, and campaign approaches aimed at increasing awareness and appeal. Presentation focuses on refining the language, imagery, and layout of menus, signs, and labels to make plant-rich options more attractive. Product refers to techniques that modify the actual food being served to enhance its taste, variety, and appeal. People strategies target food service employees, aiming to improve their role in promoting and preparing plant-rich meals. 18 of the 90 techniques are identified as priority techniques which are strategies supported by both research and industry experience.

1.3.4 Our Project

UBC Food Services is a large operation within UBC campus, managing over 30 restaurants, cafes, markets, and the three residence dining halls (University of British Columbia, n.d. b). The three residence dining halls, Open Kitchen at Orchard Commons, Feast at Totem Park, and Gather at Place Vanier, serve approximately 5,000 people each day (Food Services staff, personal communication, Jan 22, 2025). Our client, UBC Food Services, is a self-operated organization aligned with the University's broader goals and is solely responsible for providing food and beverage services on and around campus (University of British Columbia, 2022). Their mission statement is as follows:

> "We nourish and support the students, faculty, staff, and visitors of UBC by providing a diverse selection of fresh, healthy, delicious, and memorable food experiences in a socially and ecologically conscious manner because our guests, our food, and our wellbeing matters. Our commitment to leadership extends well beyond UBC into the Canadian and North American post-secondary community" (University of British Columbia, 2022).

This mission statement aligns closely with the goals of our research project, emphasizing the importance of socially and ecologically conscious food practices. Its focus on providing diverse and healthy food experiences supports our aim to explore ways to increase plant-based consumption within the residence dining halls. Moreover, the broader leadership goals outlined in the statement complement our objective of contributing meaningful insights to support the transition toward more sustainable food systems at UBC and beyond.

Promoting the appeal and availability of plant-based food options is essential to achieving the goals set out in UBC's climate action plans and strategies. To explore how this transition could be supported, our research included an audit based on the techniques described in the World Resource Institute's *The food services playbook for promoting sustainable food choices*. This involved evaluating the use of specific

techniques from the Playbook across all three dining halls. To further investigate the beliefs, motivators and barriers that influencing students' dietary behaviours, we distributed a Qualtrics survey to dining hall users. We also conducted a secondary data analysis of existing feedback provided by our clients to gain any further insights. From these combined methods we identified key barriers to adopting plant-based diets and uncovered substantial opportunities to promote them. Drawing on these insights, we highlighted priority techniques and developed strategic recommendations to support UBC Food Services in advancing its sustainable food system transformation.

1.4 PROJECT PURPOSE, GOALS AND OBJECTIVES

1.4.1 Purpose

To promote plant-rich diets in UBC residence dining halls by reducing reliance on animal-based meals and fostering a culture of environmental sustainability and personal health on campus.

1.4.2 Goals

- To understand dining hall user preferences and the factors influencing their food choices.
- To examine the barriers, challenges and opportunities associated with transitioning to a plant-based diet.
- To recommend strategies that support a shift towards diets containing fewer animal-rich meals and more plant-rich meals in the UBC's residence dining halls.

1.4.3 Objectives

1. Establish a baseline understanding of the current availability and presentation of plant-based food options at all three UBC dining halls through an observational audit using on the techniques from *The Food Service Playbook for Promoting Sustainable Food Choices*.
2. Identify and understand the challenges and opportunities of transitioning to plant-based diets among dining hall users through primary data collection from a dining hall user preferences and motivations survey.
3. Identify opportunities to increase the availability and appeal of plant-rich meals through secondary source analysis of UBC Food Services data.
4. Investigate promising practices implemented at other universities that may help promote plant-rich meal choices in UBC's Residence Dining.
5. Evaluate the viability of DefaultVeg model in encouraging students to choose plant-based meals more frequently by gathering user feedback.

2. Research Methodology and Methods

2.1 RESEARCH METHODOLOGY

Our research approach was grounded in the principles of Community-Based Action Research (CBAR), which seeks to understand how problems manifest within communities and how community members experience them (Gullion & Tilton, 2022, p. 22, as cited in Richer, 2025). CBAR emphasizes collaboration, shared knowledge, and the centering of community needs, principles that guide our work with SEEDS and stakeholders from UBC Food Services (UBCFS). In accordance with CBAR principles we maintained consistent and transparent communication with both UBC Food Services and SEEDS stakeholders to ensure our research objectives aligned with their operational priorities. Early consultation with client stakeholders provided insight into current menu engineering practices, promotional strategies, and food production totals, which helped us contextualize our research withing the realities of dining hall operations. Our survey tools were designed to reflect the concerns of dining hall users, such as cultural food preferences and dietary restrictions, drawing from stakeholder input and existing literature. By centering the perspectives of both stakeholders and users, we aimed to ensure that our recommendations were relevant, inclusive, and actionable. In keeping with CBAR's commitment to diversity and inclusion, our methodology was crafted to capture a wide range of participant experiences across cultural, dietary, and socioeconomic backgrounds.

2.2 RESEARCH METHODS

2.2.1 Primary Data: Observational Audit

Our primary research method was an observational audit, combining direct observations and interviews with dining hall chefs into one data collection tool. The purpose was to assess how UBC's residence dining halls are promoting sustainable, plant-based food choices and to identify opportunities for improvement. The audit was based on the *World Resources Institute's 2024 Playbook*, which outlines 90 techniques across six categories: Product, Price, Presentation, People, Promotion, and Placement. Eighteen of these techniques are identified as priority strategies which are well supported by research and industry.

We developed an audit matrix over several weeks, using the Playbook descriptions to define criteria for evaluating each technique. We excluded 22 techniques that were not applicable to the dining model (e.g., price manipulation and packaging modifications; Appendix A: Audit Matrix). This left 68 techniques, each linked to specific indicators of implementation. At regular intervals during the development of our audit matrix we consulted our client, UBC Food Services, to ensure our criteria was sensible and would provide useful insights to them. A pilot audit was conducted on March 12th to refine our tools and methods. Two group members visited each of the three dining halls, Feast, Gather, and Open Kitchen, together twice. Audit data collection took place during dinner on March 19th and lunch on March 20th. Each visit lasted approximately one hour for each dining hall. Observations focused on food stations, menu language, signage, presentation and the overall environment. Data was recorded directly into an electronic audit matrix. To assess non-observable criteria, such as menu planning, staff training, and operations, interviews were conducted with the lead sous chef at each dining hall. These interviews, lasting between 30 to 60 minutes, were a core component of the audit, providing insight into back-of-house practices that support sustainable food choices. Following data collection, we used Excel to calculate the implementation rate for each technique and to assess the overall alignment across the dining halls. By combining observational and interview data, our audit provided a comprehensive assessment of current sustainability practices and highlighted areas for improvement in promoting plant-rich diets.

2.2.2 Primary Data: Survey

To gather insights into the UBC student dining hall experience and factors influencing food choices, an anonymous online survey was administered using the Qualtrics Experience Management Platform. The survey targeted active dining hall users, primarily first-year student who have been regularly using the dining halls since September 2024. A sample of the survey can be found in Appendix B: Survey Questions. The objective of the survey was to identify the key motivators and barriers influencing food choices, with a focus on the adoption of plant-based diets.

To obtain an adequate sample, a total of 37 printed copies of the survey QR code were placed in all three student dining halls, academic buildings, libraries, and undergraduate society spaces. Moreover, electronic copies of the posters in the form of canvas announcements and a PowerPoint slide (Appendix C: Survey Promotional Material) were shared with professors of 100- and 200-level UBC courses such as BIOL 121, PSYC 101, APSC 101, and LFS 250. To further maximize the survey engagement, survey links were shared on social media, and face-to-face promotions were conducted inside of the Orchard Commons and Feast dining halls using tablets. Additional details on the recruitment process can be found in Appendix D: Survey Recruitment Plan.

The survey remained open for 2 weeks from March 11th at 4:30 pm to March 27th, 2025, at 11:59 pm. Physical copies of the posters were displayed starting March 11th, while electronic versions were shared on March 16th. Face-to-face promotions occurred on March 20th, and the survey link was further distributed on social media. Implementing diverse advertising methods provided the opportunity to enhance the accessibility of the survey and ensure adequate sample representation. To boost engagement, participants had the chance to enter a draw to win one of three $50 UBC Food Services gift cards. Contact information for the draw was collected separately from survey responses to maintain anonymity.

With an initial target of 200 responses to ensure the reliability of our findings, a total of 203 responses were collected, with 168 meeting eligibility criteria. Given the role dining halls play in UBC's greenhouse gas emissions, the findings offer valuable insights for shaping more sustainable and health-conscious dining initiatives on campus.

2.2.3 Secondary Data Analysis: Nutrislice

The secondary data analyzed in this project was provided by our clients and consists of user feedback collected through Nutrislice, a digital platform used by UBC Food Services to share nutritional and dietary information about dining hall menu offerings. Nutrislice supports informed decision making by allowing users to access online menus, allergen information, visual icons, and dietary filters (University of British Columbia, n.d. c). The goal of this analysis was to better understand student opinions about dining hall dishes and gain insight into why certain meals, particularly non-plant-based ones, might be preferred over plant-based options. To provide a broader perspective and observe potential changes in user sentiment over time, we analyzed feedback from two time periods: September 2024 and February 2025. Each month was evaluated separately to highlight evolving preferences and ensure inclusion of the most recent data, which we consider to be more reflective of current user experiences (Appendix E: Nutrislice Codes and Criteria). As a first step, all dishes were categorized as vegan, vegetarian or animal-based to align with our research objective of increasing plant-rich consumption. For the quantitative component, we calculated average ratings for each dining hall and dish type. In preparation for qualitative analysis, we developed an initial set of codes based on expected themes, such as taste and texture. Analysis codes consisted of meta-categories which contain relevant sub-categories, such as the meta-category, taste, with subcategories; sweet, salty and sour. As we progressed through the data, we refined our coding framework by adding or adjusting categories based on emerging patterns and user feedback. Each user comment was systematically coded and classified as either positive (1) or negative (0) to allow for a structured analysis. This approach helped retain the original meaning

of the feedback while filtering out irrelevant information. Finally, we created visuals to highlight common themes and trends, allowing us to construct a narrative that illustrates user preferences and the key factors influencing satisfaction with menu items.

3. Results

3.1 PRIMARY DATA COLLECTION RESULTS: OBSERVATIONAL AUDIT

The World Resources Institute released their tool, *The food service playbook for promoting sustainable food choices*, in 2024. The techniques listed in the Playbook have various areas of action. To promote sustainable food choices in the UBC Dining Hall we assessed the dining hall's use of these techniques one by one at each food station and then analyzed them overall. Our results combine insights about what techniques UBC Food Services are already using, as well as highlights techniques which could be implemented more. As far as we know, this is the first assessment using the 2024 Playbook techniques at a major institution such as UBC (Figure 1.)

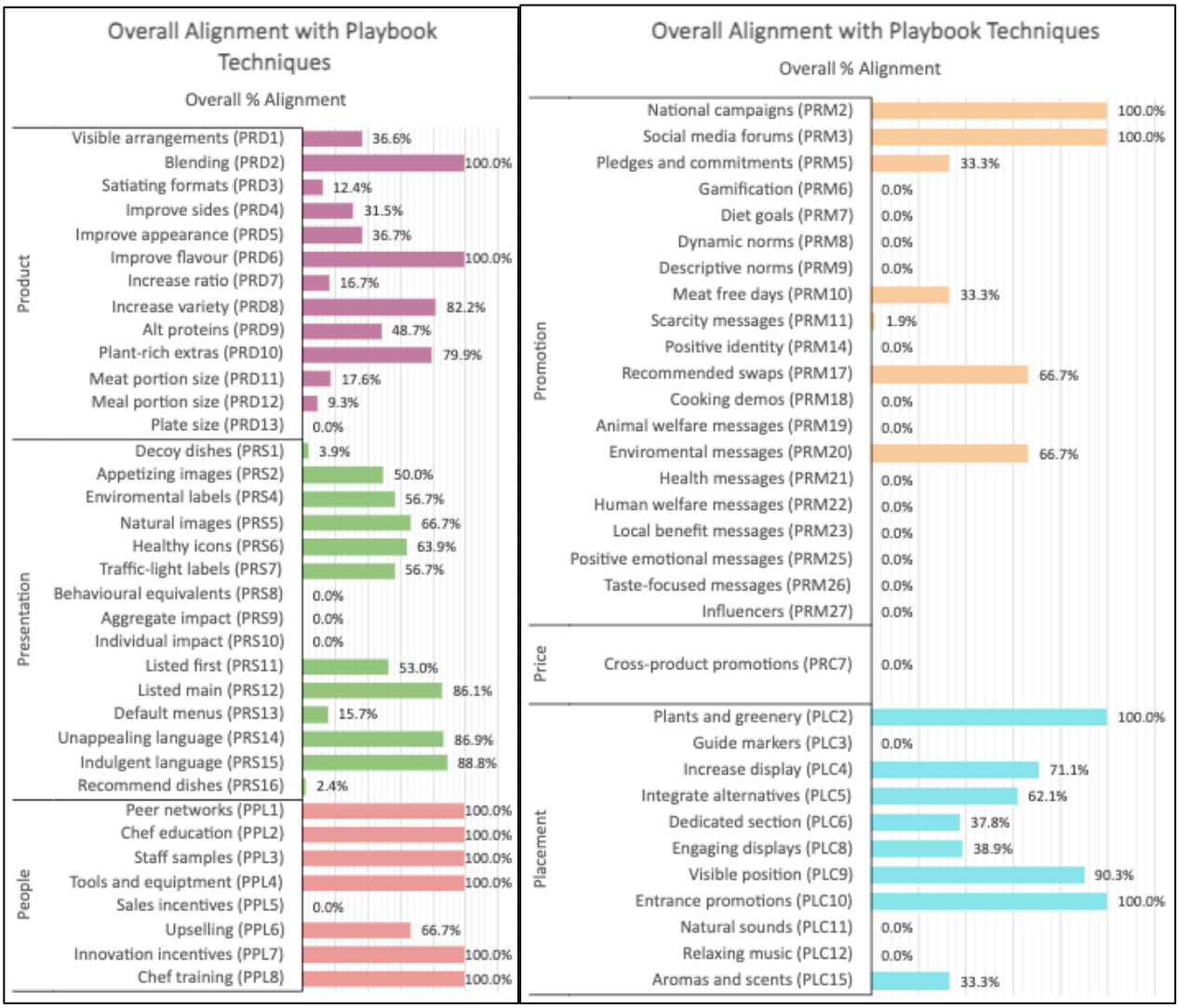
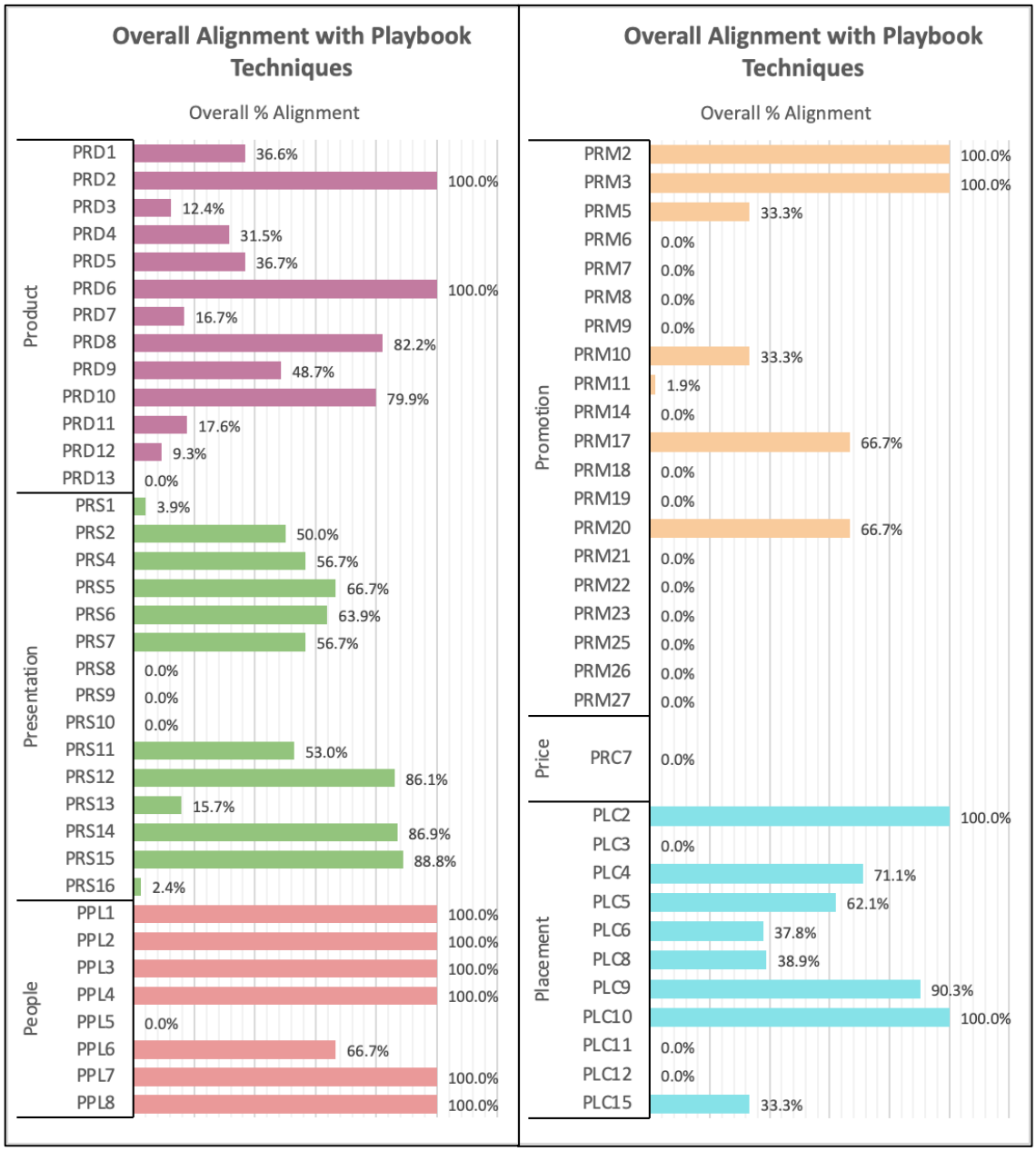


Figure 1: Percentage of alignment of the overall UBC Dining Hall operation of every evaluated technique. *Alignment with the World Resources Institute: The food service playbook for promoting sustainable food choices. a) Product (PRD), Presentation (PRS) and People (PPL) techniques. b) Promotion (PRM), Price (PRC) and Placement (PLC) techniques.*

3.1.1 Overall Alignment



Through the observational audit, significant findings emerged regarding the effectiveness of dining halls in promoting sustainable food choices and areas for improvement. The overall alignment with all evaluated Playbook techniques across the three dining halls is 41.2%. Notably, the highest implementation of the 68 techniques is observed at Gather (45.3%) (Table 1). Regarding priority techniques, there is a 54.09% alignment, with Feast demonstrating the greatest adoption of priority techniques (57.6%), followed by Open Kitchen (53.1%) and least Gather (51.6%) (Table 2).

In total, 46 out of 68 (67.6%) techniques were in use across the operations at all, with 18 widely (ie. ≥75%) implemented across all dining halls (Table 1). In terms of priority techniques, 15 out of 18 (83.3%) were in use across all operations, with at least 7 of these priority techniques widely (ie. ≥75%) adopted and integrated across many stations within the operation (Table 2).

Table 1: Techniques Alignment

Totals	Feast	Open Kitchen	Gather	Overall
Total Percentage Alignment	40.9%	42.2%	45.3%	41.2%
Techniques that aligned ≥75%	24	24	26	18/68
# of techniques in use At All	43	46	46	46/68

Alignment with the World Resources Institute: The food service playbook for promoting sustainable food choice. Observational Audit alignment totals by each dining hall, average percentage alignment by dining hall and overall technique totals.

Table 2: Priority Techniques Alignment

Priority Techniques: Totals	Feast	Open Kitchen	Gather	Overall
Total Percentage Alignment	57.6%	53.1%	51.6%	54.1%
Techniques that aligned ≥ 75%	9	8	7	7/18
# of techniques in use At All	14	14	12	15/18

Alignment with the World Resources Institute: The food service playbook for promoting sustainable food choice. Priority Technique Observational Audit totals for each dining hall, average percentage alignment by dining hall and technique totals.

3.1.2 Areas of Success

Areas of success were observed primarily in the implementation of product techniques that modify the food being served to enhance the appeal of plant-based options (Figure 1). Including success in Blending (PRD2), Improve flavour (PRD6) and Increase variety (PRD8). Wide use of Blending (PRD2), in blending of plant foods such as mushrooms and lentils into ground meat items, specifically mixing 50% pea protein into beef burgers across the system. Improve flavour (PRD6) and Increase variety (PRD8), were both leveraged widely (≥75%). These techniques were demonstrated by use of flavour boosting ingredients like spices and herbs, a variety of taste and texture options serving salads and curries at different stations, appropriate preparation methods, globally inspired flavour profiles across the dining halls, and complimentary food pairings aimed at enhancing the flavour and diversity in plant-based dishes.

Additionally, Plant-rich extras (PRD10), which recommends that all sides and extras be plant- based, was consistently implemented (79.9%). This was reflected across all 3 dining halls, where most add-ons like fries or sauces at stations were plant-based, and all self-serve areas exclusively offered plant-based options. The successful implementation of product techniques, Blending (PRD2), Improve flavour (PRD6) and Increase variety (PRD8) also reflects strong performance in their application as priority strategies. Listed main (PRS12),

Unappealing language (PRS14) and Indulgent language (PRS15) are widely leveraged all dining halls to integrate plant-based options within the main food areas, rather than isolating them in dedicated sections (except for the Vegetarian Kitchen station at Open Kitchen). The use of Unappealing language (PRS14) was evident through the limited to non-existent use of terms such as “vegetarian” or “meat-free”. Meanwhile PRS15, encourages the use of terms describing plant-based options with taste-focused, appealing language such as Miso Mushroom Ramen and Pistachio Pesto Penne (University of British Columbia, 2025). Both PRS14 and PRS15 are also identified as priority techniques within the presentation category.

Additionally, as seen in Figure 1, strong performance was found in the people category with all lead sous chefs indicating the techniques to be a priority and in use at all three dining halls, particular success was seen in priority technique Chef Training (PPL8). This success highlighted the organization’s commitment to ensuring that chefs and staff are properly trained to prepare high-quality plant-based dishes. The dining hall environment was also considered, with high scores in placement techniques Plants and greenery (PLC2), Increase display (PLC4) and Entrance promotions (PLC10), reflecting in the inclusion of plant-based offerings within produce displays and the availability of dedicated plant-based self-serve stations for salads and sides.

3.1.3 Opportunities for Improvement

Several opportunities for improvement were identified through the observational audit process. Product techniques, Satiating formats (PRD3) and Meat portion size (PRD11) could be more effectively utilized to prepare meat-based dishes in ways that encourage slower eating and greater satiation, such as incorporating larger, chewier pieces of animal-based proteins or using bone-in cuts and prioritising the inclusion of vegetables in every dish even when they contain animal-origin ingredients. Although some evidence of PRD3 was observed, seen in a bone-in chicken entree served during the audit, chefs reported that promoting slower eating through dish design or menu planning was not a primary consideration.

During interviews, chefs reported that use of Improve sides (PRD4), was an important consideration in menu design through developing specific sides, dips, and sauces to encourage guests to try plant-based dishes. Some evidence of PRD4 was observed during the audit, seen in serving focaccia with the pasta bar, there remains room for wider implementation. The Playbook also identifies Product Technique 7 (PRD7), increasing the proportion of plant-based offerings, as a priority technique. However, during evaluation period, only Feast during dinner service on March 20th surpassed the Playbook’s recommended target of 75% or more meat-free options as seen in Table 3. Meal portion size (PRD12) also presents an opportunity for improvement by offering smaller portions that encourage diner to try a greater variety of items and support sustainable choices.

Table 3: Dining hall percent offerings vegan and plant based on the days of observational audit evaluation

Date	Feast		Open Kitchen		Gather	
	Plant-Based	Vegan	Plant-Based	Vegan	Plant-Based	Vegan
March 19th Lunch	68%	50%	65%	45%	64%	47%
March 20th Dinner	78%	60%	67%	53%	67%	36%

Dining hall percent offerings vegan and plant based on the days of observational audit evaluation by dining hall, used to evaluate alignment with name PRD7: increasing the proportion of plant-based offerings.

A major area for improvement identified through the audit relates to presentation techniques: Enviromental labels (PRS4), Healthy icons (PRS6) and Traffic light labels (PRS7). While the Climate Friendly

Food (CCF) label and other informative icons were present at main stations, self-serve areas such as salad bars, sides, and soups lacked consistent labelling and did not feature the CCF label, a gap also highlighted in survey feedback. Presentation Technique 16 (PRS16), recommended dishes, could also be more effectively leveraged to highlight and attract attention to plant-based dishes.

Additionally, priority technique Price Technique 7, cross-product promotions, is also identified as a gap. Finally, significant room for improvement was observed in the promotion category, where low scores were noted across multiple techniques related to communication and advertising strategies to inform and engage guests about plant-rich eating and diets.

3.2 PRIMARY DATA COLLECTION RESULTS: SURVEY

Understanding student dining preferences and experiences is crucial for enhancing meal options and ensuring satisfaction in university dining halls. This survey examined the food choices, dietary habits, and perceptions of plant-based meal models among University of British Columbia (UBC) students. Out of 203 dining hall survey respondents, 2 withdrew consent and 33 were excluded which did not meet our participant inclusion criteria (lack of dining hall usage). The final sample included 168 participants who completed the survey and were included in the analysis. With completed responses from 168 participants, this section aims to provide the most important information on demographics, food choices, dietary habits, and qualitative feedback to be interpreted in the discussion section.

3.2.1 Demographics

For the 168 participants 98.8% were UBC students, with 84.5% in their first year of university, and the majority (86.9%) living in student residence. In terms of gender, 65.5% identified as female, 26.8% as male, and the remainder as other gender identities. The sample was composed of East Asian (47.0%), Caucasian (39.3%) and other self-reported ethnic identities (31.5%). The distribution of religious beliefs showed atheism/agnosticism (44.0%) as most prevalent, followed by Christianity (17.3%), while 18.4% of participants declined to respond. Additional demographic data is presented in Table 4.

Table 4: The demographics of the 168 survey respondents

Demographics	Number of respondents (%)	Demographics	Number of respondents (%)
Affiliation with UBC		Housing Arrangement	
First-year student	142 (84.5)	Student residence	146 (86.9)
Upper-year students	24 (14.3)	Private residence	19 (11.3)
UBC Staff	1 (0.6)	Prefer not to answer	1 (0.6)
Other	1 (0.6)		
Gender Identity		Religious Background	
Female	110 (65.5)	Christian	29 (17.3)
Male	45 (26.8)	Islam	2 (1.2)
Non-binary	2 (1.2)	Hindu	7 (4.2)
Two-spirit	2 (1.2)	Judaism	4 (2.4)

Prefer not to answer	9 (5.4)	Atheism/Agnostic Shinto Buddhism Prefer not to answer Other	74 (44.0) 1 (0.6) 9 (5.4) 31 (18.4) 11 (6.5)
Ethnicity			
White/European	66 (39.3)	Middle Eastern	3 (1.8)
Indigenous/Pacific Islander	4 (2.4)	Black/African/Caribbean	5 (3.0)
East Asian	79 (47.0)	Hispanic/Latino	6 (3.6)
Southeast Asian	10 (5.9)	Prefer not to answer	10 (5.9)
South Asian	14 (8.3)	Other	1 (0.6)

Ethnicities, genders and religious backgrounds categories were chosen based on the most prevalent groups in Canada. For the participants who are multiracial, their responses were split into each ethnic background. Additional factors include housing arrangement and affiliation with UBC.

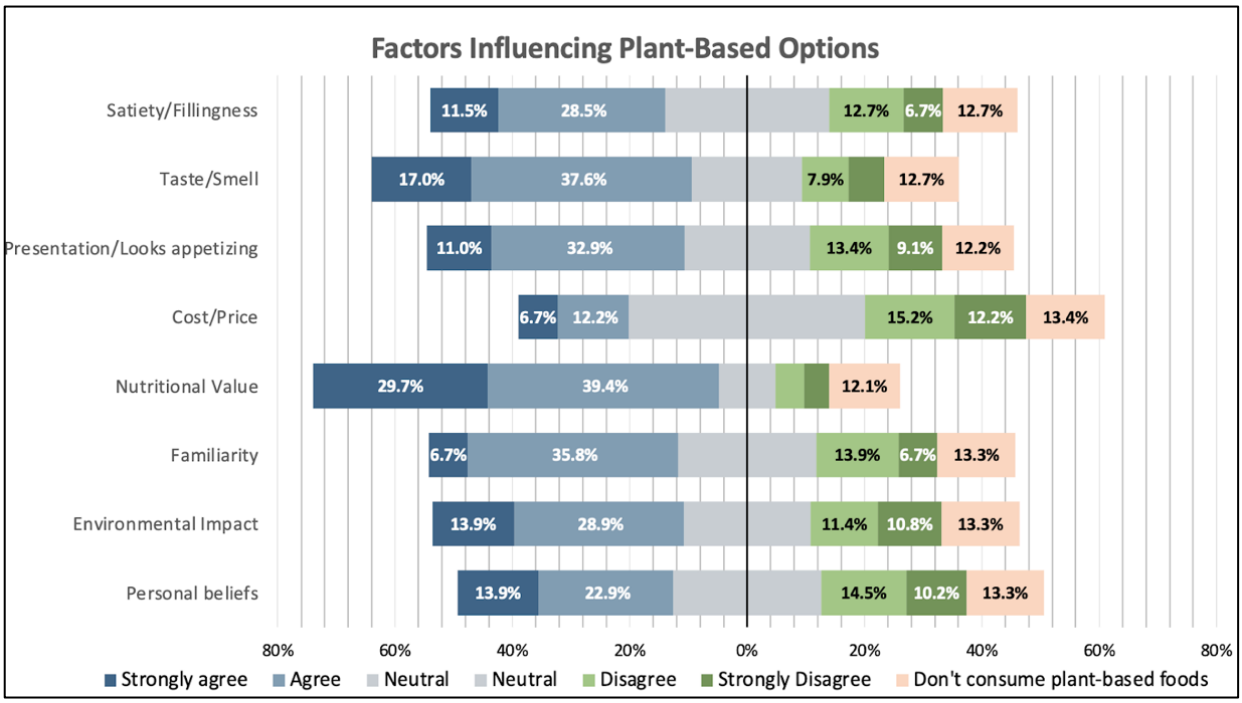
3.2.2 Food Choice Factors

When asked about their dietary preferences, most respondents reported following an omnivorous diet (78.6%), meaning they consume both plant-based and animal-based foods. Additionally, many participants (79.2%) indicated they had no dietary restrictions related to allergies, religious beliefs, or personal preferences (Table 5). Eight factors were chosen to determine what respondents prioritize in choosing their meals. These factors are as follows: taste/smell, nutritional value, cost, climate impact, presentation, satiety, personal beliefs, and familiarity. Taste/smell refers to the how important the sensory experience of food is to the user. Nutritional value refers to how important the nutritional content of a dish is to the user. Cost refers to how important the price of a food item is when picking foods. Climate impact refers to how significant of an impact preparing the meal was to the environment (i.e. animal meat on pizza having a higher impact compared to vegetables on a pizza). Presentation refers to the overall look and appeal the dish has to the user. Satiety refers to how filling or satisfying the meal is to the user. Personal beliefs referrers to the individual's choices of eating, such as a Muslim not eating pork or a pescetarian only eating fish. Finally, familiarity refers to if the dish is familiar to the individual, such as the dish reminding them of a common favourite childhood meal. Analysis affecting food choices revealed that taste/smell (90.3%) and nutritional value (70.5%) were rated as the most significant (Figure 2c). Personal beliefs (56.7%) and environmental impacts (45.8%) were considered not important (Figure 2c). Similar patterns emerged when comparing meat-based and plant-based options. However, personal beliefs (36.8%) and environmental impact (42.8%) were considered more important for plant based (Figure 2a) compared to meat-based options (22.2% for personal beliefs and 12.9% environmental impact) (Figure 2b).

Table 5: Nutrition-related lifestyle factors of the respondents

Nutrition-related lifestyle factors	Number of respondents (%)	Nutrition-related lifestyle factors	Number of respondents (%)
Dietary Pattern		Dietary Restrictions	
Omnivore Flexitarian Pescetarian Vegetarian Vegan Other Prefer not to answer	132 (78.6) 12 (7.1) 1 (0.6) 11 (6.5) 3 (1.8) 7 (4.2) 2 (1.2)	Allergies, religious beliefs or personal preferences None Prefer not to answer	30 (17.9) 133 (79.2) 5 (3.0)

a)



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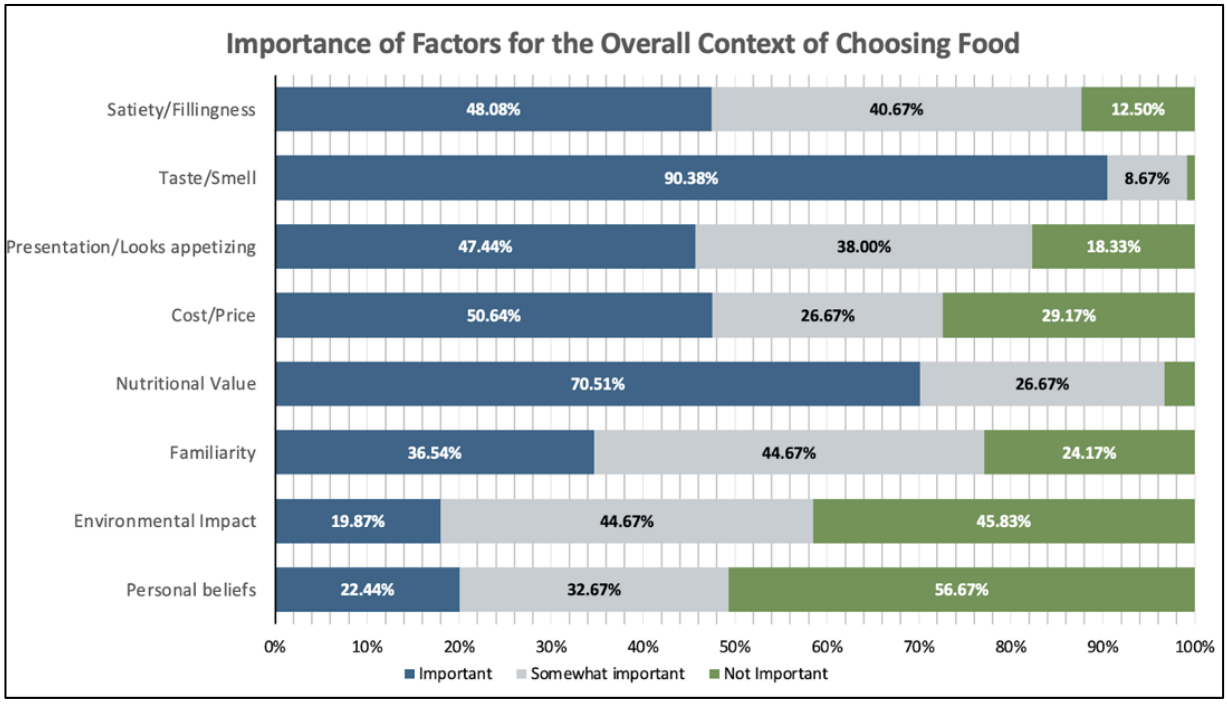


Figure 2: Factors that affect food choices

A comparison of factors that influence food choices when considering (a) plant-based options, (b) meat-based options, and (c) the overall context of choosing food. The factors include personal beliefs, environmental impact, familiarity, nutritional value, cost, presentation, taste/smell, and satiety.

3.2.3 Factors that Affect Food Choices

Going more depth into what factors respondents prioritize when picking plant-based meals (Figure 2a), taste/smell (54.6%) and nutritional value (69.1%) were the most important factors when combining strongly agree and agree responses. While the rest of the factors were in relatively the same range of priority around 40%, cost/price was considered the least important factor at only 18.9% combined strongly agree to agree responses. As for meat-based dishes (Figure 2b), satiety (73.5%), taste/smell (78.3%), and nutritional value (80%) were the overwhelmingly the most important factors when totalling strongly agree to agree responses. Familiarity follows behind with 70.5% combined responses for both meat and plant-based choices, however only 18.7% chose to strongly-agree to agree. Interestingly, familiarity was a larger factor of interest for meat-based versus plant-based choices, with meat-based receiving a total of 70.5% strongly agree and agree responses compared to plant-based with only 42.5%. For meat-based dishes, cost/price (20.5%), environmental impact (12.9%), and personal beliefs (22.2%) are at a step minority of importance when combining strongly agree to agree responses. When considering the most important factors for all food choices (Figure 2c), taste/smell (90.3%) and nutritional value (70.5%) were the most important factors. Satiety, presentation, and cost were around 50% of respondents' most important factors. As for least important factors, environmental impact (45.8%) and personal beliefs (56.7%) were picked as not important.

3.2.4 Dining Hall Experience

Out of the 168 respondents who responded yes to using the dining halls, daily dining hall use was common among them (81.55%), with Open Kitchen emerging as the most frequented hall (84.66%). On the other hand, Gather was the least utilized (69.33%; Table 6). As for the rest of the respondents, 13.1% rarely (once a week or less) used the dining halls, and 5.4% used it often (two to three times a week). Most

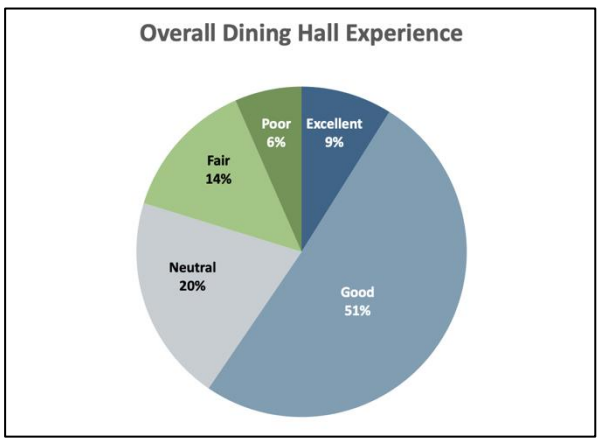
respondents were users who have used the dining halls since September of 2024 (96.43%), with only 3.57% of respondents using the dining halls before September 2024.

Table 6: Dining hall usage statistics

Dining Hall Usage Statistics	No. of respondents (%)
UBC Dining Hall Usage	
Open Kitchen dining hall	138 (84.66)
Gather dining hall	113 (69.33)
Feast dining hall	128 (78.53)
Frequency of Dining Hall Usage	
Rarely (less than once a week)	22 (13.10)
Often	9 (5.36)
Almost every day	137 (81.5)
Dining Hall Usage Since September 2024	
Used the dining hall since September 2024	162 (96.4)
Used the dining hall prior to September 2024	6 (3.6)

When asked whether the dining halls represent their cultural or religious identity as per Figure 3, 50% of respondents agreed (35.7%) or strongly agreed (14.3%), while 36.9% remained neutral, and 13.1% either disagreed (8.9%), strongly disagreed (3%) or preferred not to answer (1.2%). As for the overall quality of main dishes, 57.1% thought the food was excellent to good, 22.6% had neutral feelings towards them, and 20.2% thought the main dishes were fair to poor. For the overall dining experience, 59.5% had excellent to good experiences, 20.2% had neutral experiences, and 20.2% had fair to poor experiences.

a).



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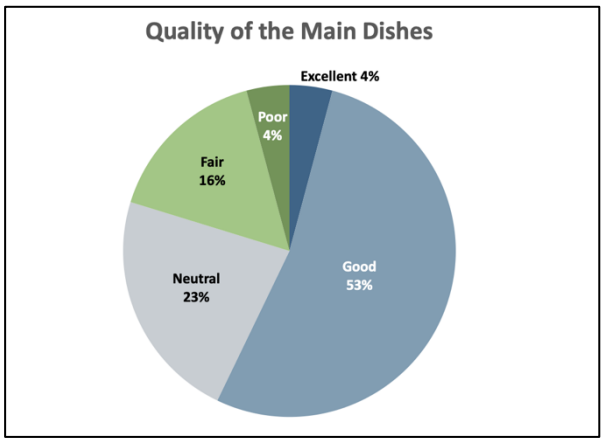

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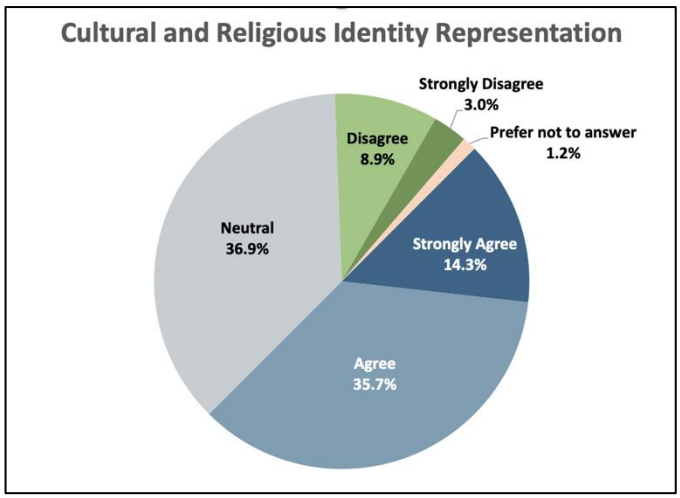


Figure 3: Dining hall experience survey feedback

(a)The overall dining hall experience. (b) The quality of the main dishes, which exclude drinks, salad bar, fruits, and desserts. (c) The level to which the dining hall dishes represent the participant's cultural background, religious beliefs or self-identity.

DefaultVeg is a model where plant-based meals are the standard, but consumers can add on animal-based products if they prefer. When people were presented with this concept in dining halls, 47.0% said they would consider using it as referenced by Table 7. Respondents who noted they have used the dining halls before September of 2024 were given an additional question. This question asked whether they knew of the increase in plant-based dishes, and in knowing this question would they continue to frequent the dining halls the same amount as before. As there were only 6 respondents for this question, the data may not be the best representative indicator of dining hall users' attitude towards the increase in plant-based options. Regardless, looking at table 4, 50% would not change the frequency, 16.7% would use the dining halls more often, and 33.3% would go less often.

Table 7: Transition to plant-based offerings

Transition to plant-based offerings	No. of respondents (%)
Implementation of DefaultVeg	
Agrees with the implementation of DefaultVeg Disagrees with the implementation of DefaultVeg Other Prefer not to answer	79 (47.0) 85 (50.6) 1 (0.6) 3 (1.8)
Change in Dining Hall Usage After the Increase in Plant-Based Options in September 2024	
Would use the dining hall more often Would not change the frequency of visits Would use the dining hall less often	1 (16.7) 3 (50.0) 2 (33.3)

Asking whether respondents would like to see DefaultVeg implementation after providing its definition. For the 6 respondents who used the dining halls before September 2024, they were asked if they would alter the frequency of their visits knowing now that plant-based options have increased since.

3.2.5 Qualitative Dining Hall Experience Feedback

Qualitative feedback on the dining hall experience highlighted an appreciation for the cultural diversity of dishes, the variety of plant-rich options, and the availability of nutritious meals featuring fresh produce. Male respondents were more likely than female respondents to request more meat-based options, or comment on the quality of meat-based dishes. However, participants also identified areas for improvement, including greater allergy awareness, the inclusion of more descriptive labels at smaller side stations, a wider selection of vegan desserts, and more fruit options within meal rotations. Descriptive labelling was a big contention, with 6.1% of negative responses not knowing what exactly was in a dish that lacked proper labelling. This ties into 3.3% of negative responses raising concerns about a lack of allergy awareness. Emphasis in comments was primarily leaning towards the negative side, with 13.9% of negative responses having some sort of emphasis on their feedback. As for positive comments, only 2.7% of positive responses had some sort of emphasis. One example of a positive compliment with emphasis is: “THE LOADED SWEET POTATO!!!! So good and filling! The breakfasts were also good.”

Among the positive feedback, 47.9% of comments praised the wide variety of offerings. In contrast, 58.3% of negative comments focused on concerns about food quality. 35.7% of negative comments mentioned dissatisfaction with food quality (too oily, salty, no seasoning, etc), with 20.9% specifically describing the food as bland or lacking flavour. Only 26% of positive commenters appreciated the taste of the dining hall food, and even then, praise typically referred to specific items, such as desserts or sushi. Additionally, 22.6% of negative comments raised issues with health concerns, including 3.3% citing foods as too sugary, and 3.28% reporting worries about potential food poisoning incidents. Furthermore, 20.9% of negative feedback reflected concerns about the lack of high-quality animal and plant protein, as well as instances of undercooked animal-based dishes. 37.5% of users reported a lack of variety in meal items such as fresh fruit, dairy free desserts, plant and animal-based proteins, and culturally varied foods. However, 47.3% of positive comments commented about the high variety of foods.

3.3 SECONDARY DATA COLLECTION RESULTS: NUTRISLICE

Secondary data was collected by our client on an ongoing weekly basis through their Nutrislice website. It is composed of both quantitative and qualitative data, including dining hall users’ average rating on a scale 0 to 5 and their descriptive feedback on individual dishes from each dining hall.

3.3.1 Rating Based on Dish Type

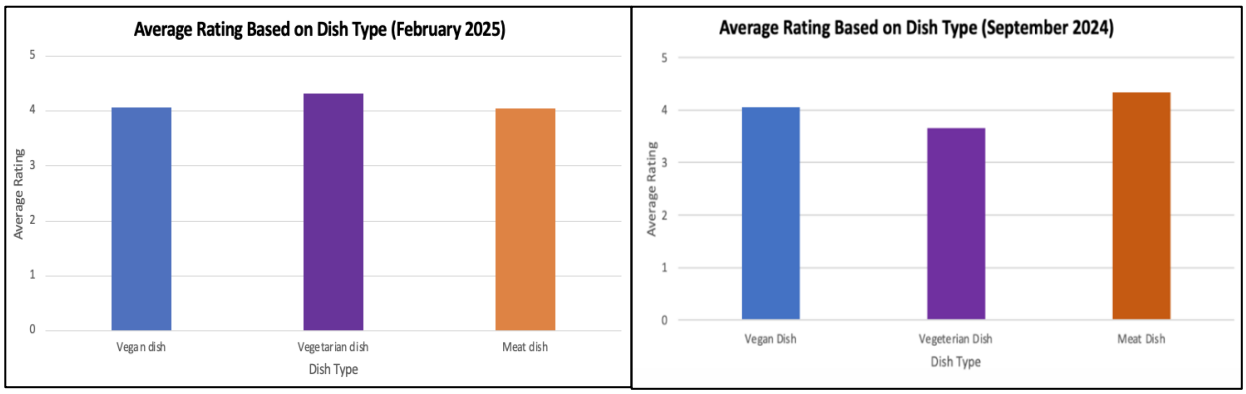


Figure 4: Average Nutrislice Ratings by Dish Type

*a) Data from **September 2024**. b) Data from **February 2025**. Comparison of the average ratings by dish type (vegetarian, vegan, and meat). The horizontal axis represents the dish types, and the vertical axis displays the dining hall users' average rating on a 0-5 scale, where 0 is low and 5 is high.*

A total of 237 responses were collected through Nutrislice, with 168 from September 2024 and 69 for February 2025. In **September 2024,** meat dishes received the highest average rating of 87% (4.34/5) across 80 reviews, suggesting a continued preference for meat-based options. Vegan dishes followed with an average rating of 81% (4.05/5) across 57 reviews, while vegetarian dishes received the lowest average rating of 73% (3.65/5) from 31 reviews. By **February 2025,** the differences in average ratings among dish types were narrower. Vegetarian dishes received the highest average rating of 86.7% (4.33/5), followed by vegan dishes at 81.2% (4.06/5, 34 reviews), and meat-based at 81% (4.05/5, 26 reviews). However, the small sample size of vegetarian dish reviews (n=9) in February limits the representativeness of this result.

3.3.2 Rating Based on Dining Halls

Figure 5 presents the average ratings by dining hall for both February and September 2024. In **September 2024,** all three dining halls received similar average ratings. Feast led with an average rating of 83.4 (4.17/5, 66 reviews), followed by Open Kitchen at 80% (4.0/5, 33 reviews), and Gather at 79.4 (3.97/5, 69 reviews). In **February 2025**, Feast remained the highest-rated dining hall, with an average rating of 4.78/5 from 23 reviews. Open Kitchen followed with 3.81/5 (25 reviews), while Gather received 3.65/5 (20 reviews). These results indicate a consistent preference for Feast among dining hall users.

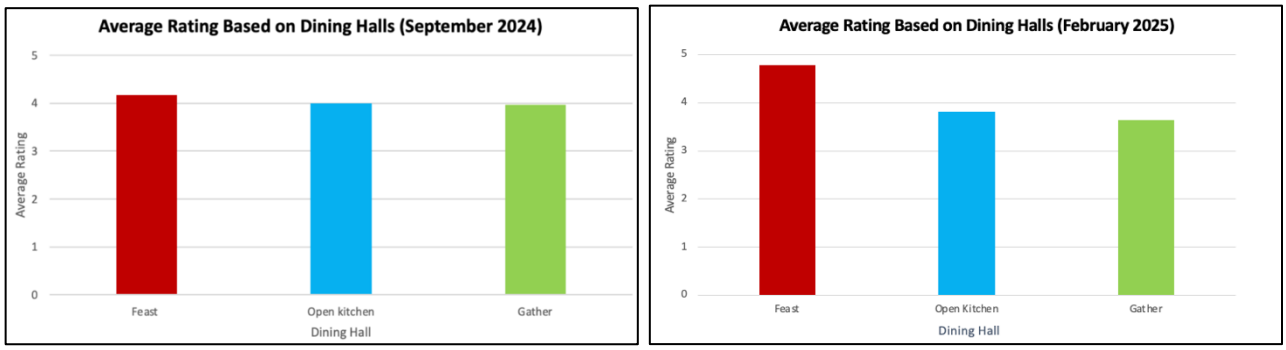


Figure 5: Average Nutrislice Ratings by Dining Halls

a) Data from September 2024. b) Data from February 2025. Comparison of average ratings for Feast, Open Kitchen, and Gather. The horizontal axis indicates the dining halls, and the vertical axis shows the average rating of dining hall food on a 0-5 scale.

3.3.3 Analysis of Positive Comments

From the qualitative data analysis, taste and texture were leading factors in the positive comments. In **February 2025**, taste was the most frequently praised attribute, mentioned in 37% of positive comments. Several students have expressed that they like the flavour and seasoning of the spicy chilli garlic noodle bowl. 37% of positive comments used emphasis to highlight their comment; using capital letters, exclamations, or words like "love." Textures such as juicy or chewy were mentioned in 17% of the total positive comments, and compliments about the secondary ingredients such as coconut cream, were mentioned in 9% of the total positive comments. For **September 2024**, health and taste are the most praised attributes, with an average of 31% and 26%. For instance, a user mentioned that the Oregano Greek salad is very fresh, healthy and tasty.

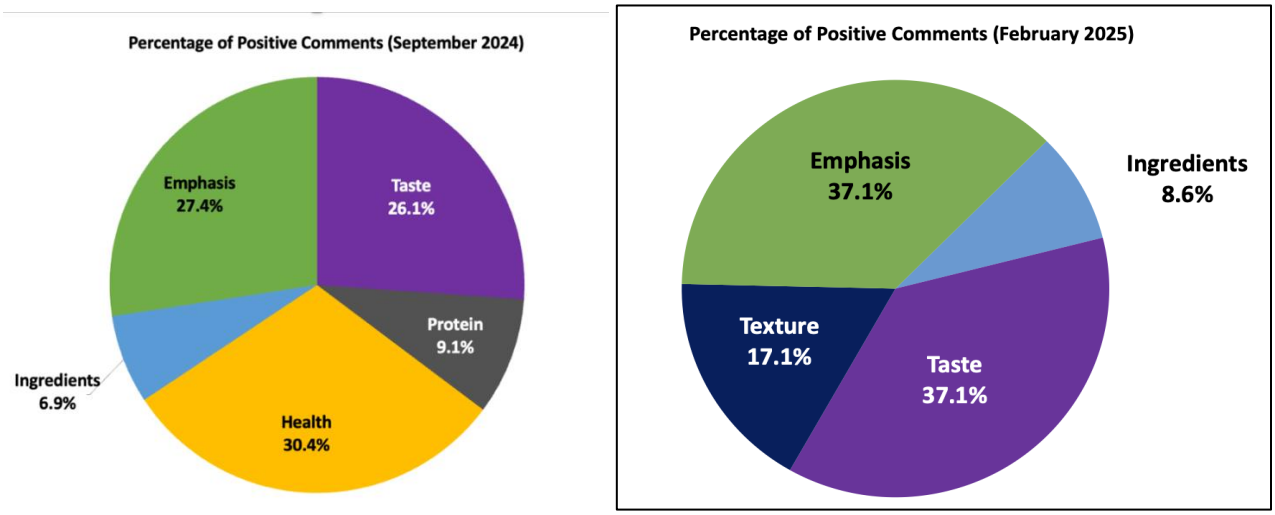


Figure 6: Breakdown of positive comments by meta-category

a) Data from September 2024. b) Data from February 2025. Pie chart showing the distribution of positive comments based on meta-categories such as texture, taste, ingredients, and emphasis.

3.3.4 Analysis of Negative Comments

In **September 2024**, negative feedback most addressed food texture (36.8%) and secondary ingredients (28.5%). One user criticized the poutine for having “un-melted cheese curds, uncovered fries,” and “gravy [that] was weird and watery”. Protein content was also mentioned by two users, who suggested dishes like Gather Bowl and Risotto Primavera lacked adequate protein. In **February 2025, negative** comments were more evenly distributed across dish frequency, portion size, healthiness, and protein content, each accounting for approximately 16.5% of complaints. For example, users noted limited availability of popular items like cauliflower tacos and salmon bowls, and small portion sizes. Two users mentioned that the tofu was too dry and criticized the sugar content in overnight pineapple oats. Secondary ingredients made up 13.8% of negative feedback.

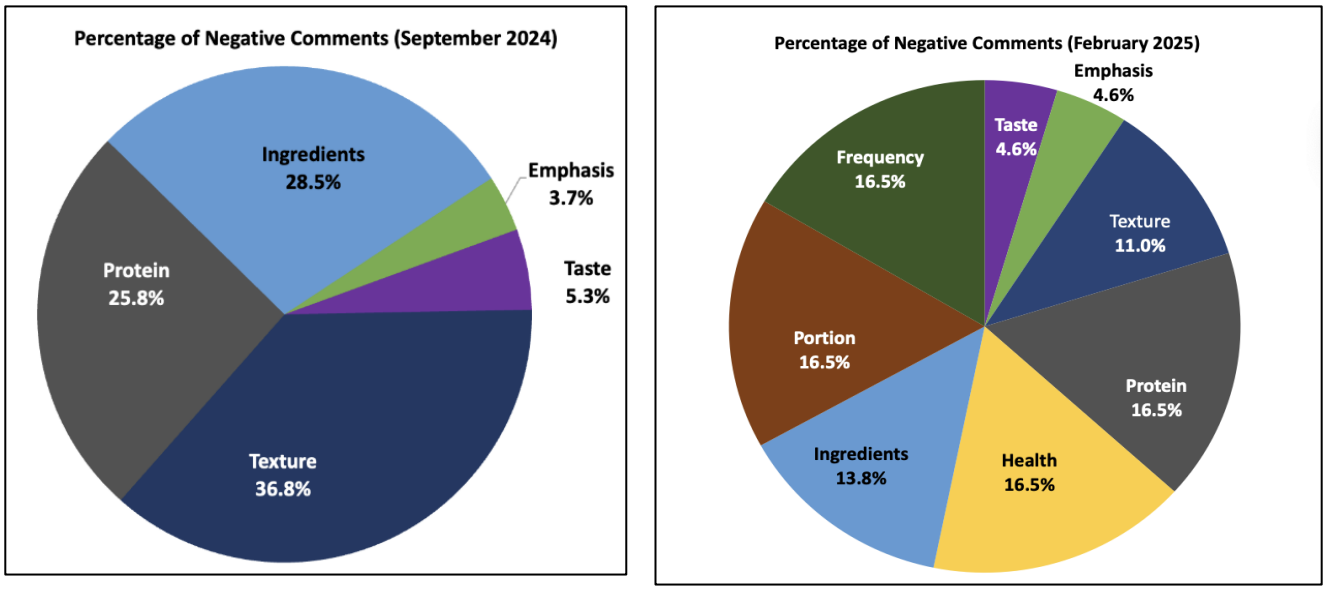
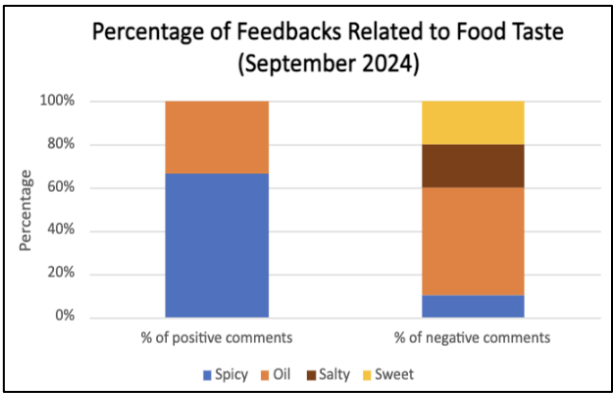


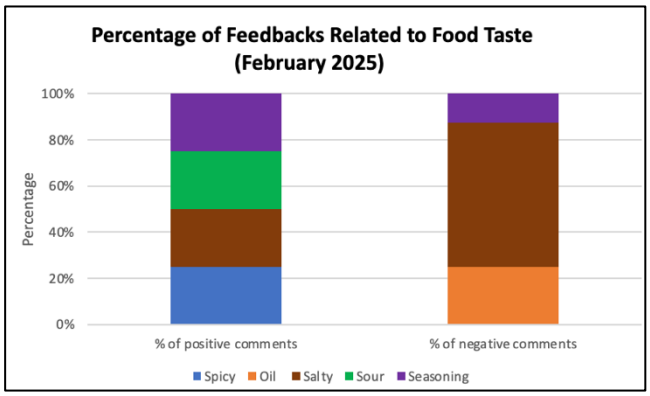
Figure 7: Breakdown of Negative Nutrislice Comments by meta-category

a) Data from September 2024. b) Data from February 2025. Pie chart comparing the distribution of negative comments across themes including texture, ingredients, portion size, healthiness, and dish frequency.

3.3.5 Analysis Based on Subcategories

In **February 2025,** negative feedback was evenly distributed across several themes, including dish frequency, portion size, healthiness, and protein content, with each making up approximately 16.5% of the negative comments (Figure 7). A common concern was the limited availability of popular dishes like cauliflower tacos and salmon bowls, as well as the portion size being too small. Additionally, some students complained about the way the tofu was being cooked, sharing that the texture was too dry. In addition, there are also more concerns about health as users pointed out that [overnight pineapple oats] has “too much sugar in the morning.” Secondary ingredients also take 14% of the total negative comments, as students state that they would prefer whole wheat ciabatta bread in smashed avocado toast. In **September 2024**, food texture and ingredients are the two most complained sections with an average of 37% and 28%. For example, some students expressed that the Friday feature poutine has “un-melted cheese curds, uncovered fries [and] gravy was weird and watery and had gross spots, onions did not make it better.” Followed by food texture and secondary ingredients, protein type has also been complained about in this month’s nutrislice as students





stated some dishes like gather bowl and risotto primavera could use more protein.

Figure 8: Positive and Negative Feedback Related to Taste

a) Data from September 2024. b) Data from February 2025. Stacked bar charts comparing the positive and negative feedback regarding dining hall food taste. It includes taste subcategories like spicy level, greasiness, saltiness, sourness, and food seasoning. Each column adds to 100%, representing the total of comments.

For the **September 2024** Nutrislice, we have not received any positive feedback regarding food texture. The negative feedback regarding food texture is evenly distributed by certain dishes' toughness, sogginess, and being served cold, with 33.3% each. For example, a dining hall user mentioned that the chicken is very soggy in the achiote chicken plate, and the poutines' fries are cold with un-melted cheese. For the **February 2025** Nutrislice, most of the positive feedback we received regarding food texture comes from how well the food is cooked, with an average of 50% of the total positive texture comments belonging to this category. For example, a dining hall user mentioned that they liked how the perogies are cooked. Most negative comments are about how the food is cooked as well, with a percentage of 57.1%, followed by the food's dryness and toughness. For example, 2 dining hall users have mentioned that the tofu is a bit too dry and hard to chew after frying. It is important to note why soggy appears in the positive comment section. Prawn makhani was praised for its soggy texture being fixed as it was previously soggy, according to the feedback.

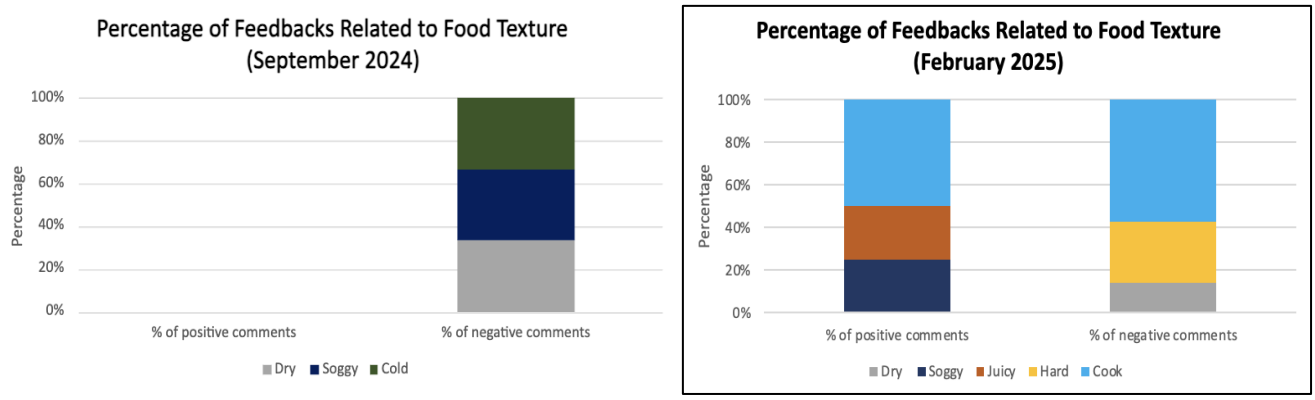


Figure 9: Positive and Negative Feedback Related to Food Texture

a) Data from September 2024. b) Data from February 2025. Stacked bar charts comparing positive and negative feedback regarding dining hall food texture. Subcategories include dryness, sogginess, juiciness, hard to chew, and food being more or less cooked. Each column adds to 100%, representing the total of comments. The positive comment related to soggy texture refers to this texture being improved compared to a previous month.

4. Discussion

4.1 SUCCESSES IN THE CURRENT OPERATION

4.1.1 Product

The audit highlighted several areas where UBC dining halls excelled in promoting plant-based dining. One significant success was the implementation of priority technique PRD2, blending ground meats with plants such as lentils and mushrooms. This approach effectively reduces reliance on ground meat, a protein with significant environmental impact due to its high greenhouse gas emissions, while increasing plant-based options. This shift toward sustainable protein alternatives is supported by Nutrislice feedback, which showed

positive reception for flavourful plant-based dishes, especially those incorporating spices and seasonings. In September 2024, 67% of positive comments highlighted the appeal of spiciness, and 25% in February did as well. These findings align with prior research, which suggests that taste is a critical factor in increasing the consumption of plant-based foods (Nevelainen et al., 2022).

Another success was the implementation of PRD6, which focuses on enhancing the flavour and variety of plant-based dishes. The dining halls have shown strong alignment with this priority technique, especially by incorporating ingredients such as garlic, lemon juice, and herbs into plant-based dishes. These efforts have been well-received by dining hall users, as evidenced by positive feedback related to both taste and texture in February 2025. Additionally, PRD8, variety in taste and texture, was successfully implemented, with 82.2% of dining halls aligning with this technique. The reduction in negative comments related to food texture between September 2024 (36.8%) and February 2025 (11%) indicates that improvements in cooking methods have addressed previous concerns, enhancing the sensory experience of meals.

Lastly, PRD10, which focuses on side dishes and plant-based extras, was also successfully implemented across all dining halls. For the product technique, improve flavour (PRD5) the dining halls all scored well (100% alignment) based on criteria of including flavour boosting ingredients such as herbs and spices, using preparation methods relevant to the origins of the dish and creating complementary pairings within dish components.

4.1.2 Presentation

In terms of presentation and environment, UBC dining halls demonstrated meaningful progress in implementing strategies that promote plant-based eating without alienating non-vegetarian and non-vegan consumers. Techniques like PRS14 and PRS15, which focus on using taste-focused, inclusive language and avoiding labels like “vegetarian” or “vegan”, were successfully applied. This approach not only makes plant-based dishes more appealing to a broader audience but also helps normalize their consumption. The survey findings further support this, with 13.4% of respondents stating they do not consume plant-based foods, likely due to the phrasing of “plant-based’ in the survey itself. This suggests that the inclusive language strategy has been effective in avoiding labelling that could discourage non-vegetarian users.

4.1.3 Placement

The physical layout and presentation of plant-based options also played a key role in increasing their visibility and accessibility. Techniques such as PLC2 (displays of fresh fruits and vegetables, PLC5 (incorporating plant-based meat alternatives into meat sections), and PLC10 (using promotional material to highlight plant-based options) were implemented effectively across all three dining halls. The consistent alignment with these techniques (100% for PLC2 and PLC10) suggests that the dining halls are creating a more welcoming and visible environment for plant-based eating. The success of these techniques can be seen in the increased visibility and choice of plant-based meals, which are subtle yet effective nudges that can shift dietary habits over time.

4.1.4 People

The dining halls also excelled in the People category, with a notable 100% alignment on the priority technique PPL8, which focuses on chef training. By investing in the training of food preparation staff to create appealing and high-quality plant-based dishes, UBC dining halls have demonstrated a commitment to improving the execution of plant-based meals. This is evident in the positive feedback on food texture and the overall increase in satisfaction, particularly at Feast dining hall. Feast consistently outperformed the other dining halls, likely due to difference in menu offering, meal execution, or overall dining atmosphere. The success of this technique is critical, as well-prepared meals are more likely to be well-received, enhancing the perception of plant-based eating as both satisfying and desirable.

Overall, these findings suggest that UBC dining halls are making substantial progress in creating a plant-forward food environment through strategic implementation across the Product, Placement, Promotion, and People categories. These efforts have not only led to higher satisfaction levels but also demonstrated a clear commitment to sustainable and inclusive dining practices.

4.2 BARRIERS TO A PLANT-BASED SHIFT

Through our research a few key barriers to a plant-based shift have emerged, including food product/ingredient quality, lack of signage leading to confusion, and recurring misunderstandings about the nutritional quality of plant-based dishes.

4.2.1 Ingredients, Product Quality, and Consistency

The results from the audit in the product category which includes techniques used to modify the food being served were varied with some techniques in use widely and others not being harnessed to their full potential. 58.3% of negative comments from the survey focused on concerns about food quality. The Playbook outlines that how a dish looks will have a strong influence on whether diners choose it especially in self-service settings where diners make food choices very quickly. For this reason, they emphasize that it is important that a dish is visually appealing and can win attention away from competing options. Good lighting can make a big difference since shine indicates ingredient freshness (Pollicino et al., 2024). The specific technique, improve appearance (PRD6) which assesses the appearance of food items served, the dining halls overall scored 36.7%, with varying degrees of alignment across multiple criteria to meet the technique and varying scores across the different dining halls (Appendix A: Audit Matrix). Particularly low usage of colourful or eye-catching garnish (Feast 12.5%, Open Kitchen 25.0% and Gather 22.0%) as well as lighting to enhance elements of shine (Feast 32.22%, Open Kitchen 64.58%, and Gather 26.79%). Low use of approaches to increase the vibrance and attractiveness of the foods being served are a potential barrier to more people choosing to try the plant-based options in the dining hall.

According to the Playbook, texture and flavour are two of the most important features of a dish and dictate whether a first try of an item will become habitual dietary choice or not. In other studies plant-rich dishes have been associated with more negative taste expectation compared to meat, with consumers considering them bland, heavy, or dry the expectation that plant-based food products would not be tasty enough (Pollicino et al., 2024; Perez-Cueto, et al., 2022). 35.7% of negative comments from our dining hall user survey mentioned dissatisfaction with overall taste, with 20.9% specifically describing the food as bland or lacking flavour. Only 26% of positive commenters appreciated the taste of the dining hall food, and even then, praise typically referred to specific items, such as desserts or sushi. In September 2024, negative feedback received through the Nutrislice platform focused heavily on food texture (37%) and ingredients (28%), including issues with soggy fries and un-melted cheese. Diners' dissatisfaction with the flavour and texture of items is also a potential barrier to widespread habitual plant-based choices.

Infrequency of favourite options and reports of irregular/not often enough desirable plant-based options came up as well in Nutrislice feedback. Not offering the plant-based options people like may hinder enthusiasm for sustainable meal options. 37.5% of our survey respondents reported a lack of variety in meal items such as fresh fruit, dairy free desserts, plant and animal-based proteins, and culturally varied foods. Variety of foods is specifically called out as an important technique in fostering the transition to sustainable eating, with Increase variety (PRD8) a priority technique that specifies that dishes offered should draw

influences from a variety of cuisines and daily offerings should be diverse in their taste and texture profiles. Overall good use of PRD8 (82.2% average alignment) was seen at all dining halls, with some room for improvement. The gaps in variety are identified by the users' feedback, who are looking for more variety of fruits, more dairy free desserts and more protein options.

Nutrislice comments also reported issues with the quality of cooking of items. Comments related to tofu were frequent and are an important consideration as it is a major plant-based protein alternative. Concerns were related to the method of cooking used, how much the tofu was cooked, the texture, and the quantity of oil used. Improving tofu preparation and cooking techniques is a huge opportunity to increase the adoption of plant-based alternatives. Priority technique, Chef training (PPL 8) explains that it is essential that chefs and other food preparation personnel are skilled in creating healthy, sustainable meals that are also delicious (Pollicino et al., 2024). Plant-based foods and plant-based proteins such as tofu may require additional training to ensure that chefs and staff are adequately supported to use specific preparation methods which are needed to prepare delicious plant-based dishes. Across both months of Nutrislice data analyzed (September 2024 and February 2025), the overall average ratings by dish type fluctuate. This alludes to the subjective nature of food choice preferences and the difficulty that large operations such as UBC Food Services face when making changes and innovating.

4.2.2 Knowledge and Misunderstandings about Plant-Based Foods

Dietary choices are wrapped up in the expression of our cultural identities, gender norms, and social norms, making it difficult to transition toward plant-based eating and preventing large-scale adoption. A key barrier to facilitating a plant-based transition identified by other research is the need to address nutrition related misunderstandings about plant-based foods not being filling enough or that a person would not get energy or strength from these products (Perez-Cueto, et al., 2022). The belief that humans are meant to eat lots of animal-based meat combined with a social stigma about veganism are prominent barriers inhibiting a dietary shift to more plant-based eating (Massih, et al. 2024). 20.9% of negative feedback from our survey reflected concerns about the lack of high-quality animal and plant protein upon analyzing responses concerning nutrition. Compared to men, women are more prone to adopt predominantly plant-based food consumption (Perez-Cueto, et al., 2022). Our survey found that male respondents were more likely than female respondents to request more meat-based options, or comment on the quality of meat-based dishes. Such differences in behaviours have been associated with the belief that meat is a masculine feature (Perez-Cueto, et al., 2022).

4.2.3 Lack of Signage Leading to Confusion

A key barrier found through the observational audit is a discrepancy in signage and labelling between main stations and sides/salads/soup areas. Alignment of presentation techniques Environmental labels (PRS4) at 56.7%, Healthy icons (PRS6) at 63.9% and Traffic light labels (PRS7) at 56.7% can be considered together to be working towards proper labelling at the dining hall. While the Climate Friendly Food (CCF) label and other informative icons were present at main stations, self-serve areas such as salad bar stations, side stations, and soup stations lacked consistent labelling and did not feature the CCF label, a gap also highlighted in survey feedback. Descriptive labelling was a big contention in our survey, with 6.1% of negative responses not knowing what exactly was in dishes as they lacked proper labelling. This ties into 3.3% of negative responses raising concerns about a lack of allergy awareness. Confusion and uncertainty about ingredients are another potential barrier to people choosing plant-based items.

4.3 OPPORTUNITIES FOR IMPROVEMENT

Our findings emphasize the need for improvements in meal offerings and communication strategies. Our Nutrislice analysis demonstrates that students are open to plant-rich meals when they are flavourful, satisfying, and healthy. Though our survey results are based only on a small sample size of 168 respondents our results affirm that simply increasing plant-based offerings is not enough, perceptions around taste, satiety, and nutritional content need to be addressed. In general, the findings from the comments align with the barriers identified in the literature: limited availability, negative stereotypes about plant-based meals, and concerns about satiety and protein adequacy (Clark & Bogdan, 2019; Mycek et al., 2018). By refining meal options, improving food labelling, and increasing variety, dining services can continue to work towards the Climate Action Plan 2030 goals.

4.3.1 Food Product Design

Persistent concerns about food taste and variety, particularly with plant-based proteins, highlight areas for refinement. Qualitative analysis of survey comments revealed dissatisfaction with limited culturally representative meals, lack of flavourful options. This may reflect differences in menu offerings, meal execution, or overall dining atmosphere. Food satisfaction varies widely between locations, so improvement efforts will need to be tailored to each site. The most cited concerns across all dining halls from our survey were portion size, protein content, healthiness, and dish frequency, each making up 16.5% of negative feedback. This suggests that while taste draws students in, nutritional balance and menu planning are essential to maintaining satisfaction. The findings from Nutrislice reinforce the findings from the survey. There appears to be a trend with user dissatisfaction with protein content and quality, overall healthfulness (as defined by each individual respondent a little differently, including nutrient content, level of sodium, and particular ingredients), and the variety and frequency of certain dishes. Findings from the audit highlights some product techniques that could be areas for improvement. Satiating formats (PRD3) could be made a priority in menu, as it encourages slower eating and satiation with smaller total amounts of meat consumed by designing meat-based dishes to contain chewier cuts or encourage slower eating (bone in cuts, large pieces). Satiety formats only focus on meat-based dishes as the main goal is to make them more satisfying in lower total quantity to reduce meat consumption. While there were some cases of its implementation, chefs interviewed did not report PRD3 as a priority in menu design. Similarly, Meal portion size (PRD12), which prioritizes serving small portions, also has room for improvement in implementation. PRD12 states that serving plant-based dishes in smaller portions is advantageous for food service. A study conducted by the NIH found smaller portions carry both environmental and personal health benefits (Cohen & Story, 2014). PRD12 improves accessibility of plant-based options by allowing guests to try more options with less pressure to finish a large portion. Playbook technique Improve sides (PRD4), highlights the importance of the development of specific sides, dips, and sauces to entice trying plant-based dishes, and is another area of improvement. Chefs did report PRD4 as a priority in menu design, by creating plant-based dishes as singular entities with their own flavour profiles and sides. During the audit there was some evidence of this with overall alignment from the audit 31.5%, but overall, there were low rates of promotion and use. Previous research by Gao (2014), identified variety as a key factor limiting plant-based meal adoption. Concerns about food taste and variety persisted in both the survey and Nutrislice feedback. Future research could explore strategies for enhancing meal appeal through improved flavour profiles, more diverse menu offerings, differences in menu offerings, meal execution, or overall dining atmosphere. Playbook technique, Meat portion size (PRD11) is a potential technique which the dining halls could also utilise to reduce meat purchases without reducing the number of menu options which contain meat. By increasing the inclusion of plant-based ingredients in meat dishes, those dishes can also be considered plant-rich which is better for human health and for the environment.

4.3.2. Complete and Consistent Labelling

Qualitative analysis of survey comments revealed dissatisfaction with unclear dish labelling. These challenges call back to a previous study by Ma et al. (2024), which identified unclear labelling and limited knowledge on menu information as barriers to climate-friendly diets. Addressing these concerns could foster a dining environment that makes plant-based choices more appealing and accessible. The result from the audit also echoes this feedback highlighting inconsistent labelling across the dining halls. As per techniques PRS4/6/7, labelling in the main stations were good, but salads, sides and soup bars lacked important information (no ingredients, no allergens, no diet icons, no CCF). Research by Gao (2014) identifies accessibility as a key factor limiting plant-based meal adoption. A priority opportunity for improvement is to ensure all items on offer have complete labelling to allow for dining hall guests to navigate easily and have adequate information to make choices between food items.

4.3.3 Effective Promotion

Our survey results highlight several opportunities for enhancing UBC dining halls to better support plant-based eating. While students primarily prioritize taste, satiety, and familiarity over climate impact, these insights establish a baseline for further research on user preferences. When considering plant-based options, respondents showed greater concern for environmental and nutritional factors, suggesting that targeted messaging could encourage more sustainable choices. However, accessibility and variety remain key barriers to plant-based meal adoption, as identified by Gao (2014). Since dining halls are an integral part of students' daily routines, with 81.6% using them every day, there is substantial potential to enhance meal offerings and refine communication strategies. Since dining halls influence student perceptions of food through messaging and daily interactions, they have the unique opportunity to shape attitudes toward sustainable eating. The results from the audit point to low usage of promotion techniques overall to communicate the many positive attributes of plant-based dishes and plant-based eating. There are promotion techniques which can be harnessed to promote the health and environmental benefits as well as advertising the delicious flavour of plant-based options. Promotion technique, recommend dishes (PRS16) noted some areas for improvement as well. Increasing promotional material for plant-based dishes such as ‘chef’s special’ and highlighting the nutritional and health benefits of these dishes is a good start for improvement. As the dining halls are capable of shaping student perception on food through messaging and daily interactions, they have the unique opportunity to shape students' perception of plant-based eating. In a study of university students in California, students’ beliefs did not add significantly to their intention to follow a plant-based diet, and their current environment was a better predictor of choice than their pre-existing beliefs (Massih et al., 2024). Another angle of promotion which is proposed by the playbook is to use price manipulations. Priority technique, Cross product promotion (PRC7) saw no use in the dining halls due to the dining hall single-price, all-access, all-you-care-to-eat model. Price manipulations are a possible area of improvement for the uptake of plant-based options by making them more attractive but would require a total overall of a system which is otherwise well received and works well for the dining hall operators and users. Our results echo Perez-Ceuto et al. (2022) who state that promotion of plant-based foods should focus on addressing beliefs regarding the necessity of meat in a healthy diet, and the experience of plant-based foods, with special focus on plant-based food sensory characteristics and the pleasure obtained from their consumption. Ultimately, our study underscores the importance of uptake, awareness, and messaging in encouraging plant-based consumption at UBC dining halls. The findings support existing literature on dietary motivators while highlighting areas where dining services could improve to continue to work towards with the Climate Action Plan 2030 goals.

4.4 UNEXPECTED FINDINGS

While our research focused primarily on identifying strategies to promote plant-based eating, several unexpected findings emerged highlighting broader concerns that may indirectly influence dietary choices. In the survey, there were few responses (3.5%) regarding concerns with food safety. Another concerning theme that emerged from our survey comments is the potential for disordered eating and eating disorders. Other research has reported high rates (almost 30%) of respondents were struggling with an eating disorder (Massih et al., 2024). The same study emphasized that enhancing students' relationships to healthy foods was crucial for student health and may be an important consideration in facilitating a plant-based transition.

4.5 LIMITATIONS TO OUR RESEARCH

4.5.1 Primary Data: Audit

Several limitations were identified in the audit process. First, observational bias, preconceived notions could get in the way of conducting the audit without any bias. A good change to this would be to assign researchers who have not been to the dining halls before to avoid any negative bias. As the audits were only conducted twice in the same week (both on weekdays), it is likely not much would've changed in between the time. This was due to the small timeframe given to conduct the audits. Given more time, more audits could have been conducted and at a more spread-out rate, allowing for a larger change in the overall presentation of the dining halls. Additionally, one audit could have been conducted during the weekend, as the menu has less variety based on survey responses. During the chef interviews it is possible that they felt pressured or obligated to give more positive responses. Some reasons include bias of working towards positive changes in which they could only focus on the good and a sense of pride or positive bias towards their work. Additionally, their responses were not anonymous and therefore left with a feeling of wanting to perform well. To improve the interviews, we could interview more members of staff to get a more accurate representation rather than just the head chefs. Preparing more examples and going into more depth on the questions would allow for a bigger dataset to average out and determine any outliers.

4.5.2 Primary Data: Survey

The survey limitations included a small sample size, lack of time, and questions lacking depth in relation to DefaultVeg. Even though there were 206 responses, only 168 of those responses gave actual data as the rest either did not agree to consent or did not use the dining halls. This ties into the lack of time to conduct the survey, as there only was a two-week window. To reach the 200-response target in time, multiple outreach methods had to be taken as stated in the methods. Had there been more time, the scale of the survey could have expanded and with continuous outreach there would be an increase in the responses. Additionally, with more time to develop their survey, questions could have gone into more depth about DefaultVeg and what users would want to see with more plant-based options in their dining halls.

4.5.3 Secondary Data: Nutrislice

The primary limitation with the Nutrislice analysis was the small sample size and lack of time. As analysis was only 2 months (September 2024 and February 2025), gaining access to more months in the school year have allowed for a deeper analysis of the months in between. Within those months additional limitations were an unequal sample size across months and dish types (e.g., only 9 vegetarian reviews in February), possible overrepresentation of highly motivated users, and lack of demographic data for deeper segmentation limiting our ability to generalize findings with high confidence. With more months to analyze,

there could have been more conclusive data to better support the primary findings. Future data collection should aim for larger samples, better representation across dish types and halls, and consider integrating optional user contests like dietary identity which allows analysis of how factors might affect the results, especially satisfaction and openness to plant-based meals. This said, we want to acknowledge the limitations in data contextualization and the potential for bias in categorical simplifications.

5. Recommendations

5.1 RECOMMENDATIONS FOR ACTION

5.1.1 Immediate Action (0-6 months)

#1. Improved and consistent food labeling across all dining halls.

To address the gap identified through the application of playbook techniques from Healthy Icons (PRS6) and Traffic-Light Labels (PRS7), as well as findings from the dining hall user survey, we highlight a lack of allergy awareness and insufficient labelling at sides and salad stations. To improve communication of this, we propose the implementation of consistent and enhanced food labelling across all dining halls on campus by UBC Food Services. Labels should include detailed information on the climate impact of each item, using the climate Friendly Food Label along with use of informative icons and potentially a full list of ingredients. This recommendation directly responds to audit results and survey responses, which highlighted that stations such as salad bars, sides, soups, and other self-serve areas require significant improvement in terms of clarity. Standardizing these labels will ensure that dining hall users have the necessary information to make informed food choices. Moreover, this step aligns with the broader goal of enhancing sustainability initiatives across campus by making the environmental footprint of food more transparent.

5.1.2 Mid-term Action (6-12 months)

#2. Promoting plant-based food emphasizing key factors for students.

In the medium term, we recommend that UBC Food Services strategically promote plant-based options by emphasizing the factors students value most: taste, satiety, and nutritional value. As mentioned, audit results pointed to an overall lack of use of promotion techniques and survey findings revealed that sensory qualities and nutritional content are the leading factors of food choices, whereas environmental impact and personal beliefs ranked significantly lower. This highlights the need to frame plant-rich options around concrete, personally relevant benefits.

To achieve this, we suggest the application of promotional techniques PRM21 (Health messages) and PRM 26 (Taste-focused messages), ensuring that promotional materials consistently emphasize the delicious flavours, satisfying portions, and health advantages of plant-based dishes. Tailoring messaging in this way can significantly shift perceptions and increase the adoption of plant-rich meals across campus.

5.1.3 Long-term Action (12-24 months)

#3. Expanding Nutrislice and innovating dining hall engagement.

Looking ahead, we recommend that UBC Food Services explore more ambitious and innovative strategies to promote plant-rich eating habits across campus. One opportunity is to expand the use of Nutrislice by incorporating more targeted promotional materials that highlight the more tangible benefits of plant-based meals, with continued emphasis on taste, satiety, and nutrition. This is a key factor based on the

results of the audit and survey Additionally, we suggest piloting progressive dining hall models such as DefaultVeg, where plant-based meals are presented as standard, with animal-based alternatives available upon request, thereby subtly encouraging more sustainable choices while preserving diners' autonomy.

For a more transformative approach, we propose the development of a dedicated app for UBC dining hall users. This app would feature regularly updated menus, complete ingredient and nutrition lists for each meal, and an integrated feedback system allowing students to rate and comment on individual dishes. Integration with UBC's CWL login would enable students to load their Flex Dollars into their account and pay for dining hall entry directly through their phones.

5.1.4 Recommendations for Menu Designs

#4. Explore adding more non-dairy plant-based options

The qualitative survey analysis revealed a significant demand for more plant-based dairy-free options, particularly at the dessert self-serve stations. While 12.2% of respondents expressed satisfaction with the current dessert offerings, several participants were unable to enjoy the sweet treats. As one survey respondent noted: "**It's sad to see the food events (like carnival ice cream day) knowing they will never be vegan, so I don't get to enjoy them**". Accordingly, the dining hall could benefit from further exploration of non-dairy dessert recipes and consider modifying current recipes to incorporate plant-based dairy alternatives such as coconut milk or cashew cream. With adequate research and proper ingredient labels on the dessert stations, the presence of non-dairy plant-based desserts would promote a more inclusive dining experience for students with diverse dietary needs and preferences.

#5. Incorporate high-protein plant-based options

While the survey respondents provided valuable feedback on protein dishes offered, 23.71% of comments identified areas for improvement regarding the availability and quality of both animal and plant protein options. Several survey participants noted: the "**lack of protein options**", followed by: "**vegetarian options often low protein"**. As this project aims to promote plant-rich diets by reducing reliance on animal-based meals, greater emphasis should be placed on enhancing the flavour and taste of plant-based protein. Moreover, incorporating high-protein plant-based options should involve labelling that highlights and informs the consumers on the benefits and the nutritional value of the protein, aligning with the Playbook techniques PRM 26 (Taste-focused messages) and PRM21 (Health messages).

#6. Increase the variety of available fresh fruit options

The observational audit revealed that PLC2 (Produce displays) and PLC10 (Produce displays at the entrance) placement techniques from the Food Service's playbook were successfully implemented into the dining halls. Insight from the dining hall survey indicated that many dining hall users are satisfied with the accessibility and availability of fruit offering. However, several participants expressed a desire for greater variety in fruit options provided per meal rotation. Expanding the selection of fruits would not only encourage more students to consume fresh produce but also offer a wider variety of options that cater to different dietary needs among the dining hall users.

#7. Continue to prioritize new recipes from across the world to improve variety

By prioritizing recipes from around the world, UBC Food Services will be able to enhance dining hall engagement through culturally authentic dishes. The incorporation of traditional flavours and ingredients from diverse cuisines will appeal to a broader range of taste palates and provide a feeling of inclusion. This approach could also aid in promoting plant-rich dishes in new and exciting ways and ultimately encourage more climate-friendly food choices. As per the audit, section PRD8, increased variety of food items, is a

priority playbook technique the dining halls did well in. In this case, it is recommended to keep improving in this area to exceed the expectations of the playbook.

5.2 RECOMMENDATIONS FOR FUTURE RESEARCH

5.2.1 Explore Climate Friendly Food Models

#1. DefaultVeg Pilot

To better support UBC's CAP 2030 goals, we recommend conducting a pilot project involving a dining hall station takeover using a sustainable dining model such as DefaultVeg at the UBC Dining Halls in collaboration with UBC SEEDS program. Success has been seen through similar projects at other universities at various scales. We suggest selecting a popular station in each dining hall and converting it to DefaultVeg offering at the start of the academic year. This would be a non-invasive approach allowing students to provide strong users' responses. Our recommendation is grounded in research demonstrating the success of DefaultVeg implementation at other universities. For instance, the University of Victoria (UVic) successfully transitioned its dining halls to a DefaultVeg model, reporting significant positive outcomes (UVic, n.d.).

Looking ahead, a more ambitious recommendation would be to implement a complete DefaultVeg takeover at a large scale through converting one of the dining halls at the beginning of the school year. Introducing this model as the norm for new incoming first-year students could foster greater acceptance, as it would become their standard dining experience from the start. Converting an entire dining hall would allow for UBC Food Services to navigate challenges and opportunities in real-time, providing valuable insights to the wider global university community and continue to be a leader in innovation to foster sustainable diets on campus.

#2. Explore Other Possibilities

Alongside described pilot projects, we advise incorporating integrated behavioural strategies, particularly the combination of default nudging and priming techniques in the dining hall environment by UBC Food Services. Research shows that making plant-based meals the default choice substantially increases selection rates, reinforcing the role of accessibility and subtle behavioural cues in shaping food decisions (Hiltje Hielkema & Bøker Lund, 2021; Perez-Cueto et al., 2022). Priming methods, such as promoting environmental and health benefits of plant-based options through positive messaging, can further strengthen these choices without overwhelming consumers with excessive information (Lehner et al., 2016; Gravert & Kurz, 2021). Additionally, evaluating the efficacy of targeted plant-based messaging to increase the uptake of plant-based dishes. Another point of research we advise is to continue to evaluate the Playbook techniques on an ongoing basis, every 2 years for example, to monitor for change.

5.2.2 Build Knowledge about Choice Motivators

#3. Navigating Evolving Dietary Trends and Preferences

Another important direction for collaborative research between UBC Food Services and UBC SEEDS is to explore the key motivators behind user meal choices. While our survey provided some initial insight to this, our sample size was relatively small and may not accurately represent the approximate 5000 daily users. As a new cohort of students arrive every year, ongoing collection of data about what motivates their choices will be critical to continue the transition to sustainable diets. In the face of cultural and norm changes, the motivation behind food choices will adapt and differ. Keeping up-to-date understandings will help to ensure that marketing approaches, menu design and labelling connect effectively with diners. We suggest scaling up research and continuing to build from where our research began. As surveys are passive and don't necessarily

capture every user's thought, we suggest diversifying methods used including conducting focus groups and holding a "town hall" meeting or public forum where managers get direct feedback on what students prioritize when making food choices. Using this feedback, UBC Food Services can continue to modify and adapt their menu, marketing, and labelling to appeal to what users want.

6. Conclusion

This research project aimed to explore strategies to promote plant-rich diets in alignment with UBC's Climate Action Plan (CAP 2030) and evaluate food choices among UBC dining hall users. Using a mixed-methods approach, including an observational audit, user survey, and analysis of secondary data we achieved our objectives: to understand student preferences, identify barriers and opportunities for plant-based shift, and propose feasible recommendations to support sustainable dining options. Our findings revealed an overall alignment of 41.2% of the dining halls with all evaluated techniques with 46/68 evaluated techniques in use across the dining hall operations. While UBC dining halls have made considerable progress, evidenced by 55% dining hall options being plant-based, our survey and the Nutrislice analysis found student preferences still lean toward animal-based dishes. This tendency is largely influenced by concerns about the taste, familiarity and nutritional content of plant-based options. Despite this, successful implementation of several strategies from the World Resources Institute Playbook such as incorporating plant-based ingredients into meat dishes (PRD2) and using indulgent menu language (PRS15), shows promising progress. However, gaps in food labelling and promotional efforts remain crucial barriers to greater adoption of plant-based dishes.

These findings contribute to the broader discourse on sustainable food systems by demonstrating how targeted interventions in dining halls can align with global, national, and local climate goals, including the United Nations' SDGs and Canada's emissions reduction targets. By fostering a dining environment that prioritizes flavourful, accessible, and well-labelled plant-based options, UBC can continue to reduce its food-related greenhouse gas emissions, a step in achieving its CAP 2030 goals. This study also highlighted the value of student feedback as a foundation for enhancing the dining experience. Incorporating their ideas into future improvements can ensure that initiatives resonate with the campus community, fostering a feeling of acknowledgement. Creating a more diverse menu that caters to all ethnicities/dietary restrictions will make students feel more at home and provide a sense of inclusion in the campus. Additionally, while UBC dining halls already employed strategies to promote sustainable eating, the research identified notable gaps that, if addressed, will strengthen progress toward the university's CAP 2030 goals. Despite these challenges, the research contributes significant progress to understanding sustainable dining practices and user preferences, paving the way for actionable changes that align with UBC's sustainability targets. Continued engagement with student feedback and innovative dining models will be essential to promote a plant-based transition for UBC dining hall service and reach its CAP 2030 goals.

7. References

Alma Mater Society of UBC Vancouver (2023, December). *AMS sustainable action plan 2026*. AMS UBC. https://www.ams.ubc.ca/wp-content/uploads/2023/12/AMS-Sustainable-Action-Plan-2026_reduced.pdf

Attwood, S., Voorheis, P., Mercer, C., Davies, K., & Vennard, D. (2020). Playbook for guiding diners toward plant-rich dishes in food service.

Better Food Foundation. (2024, October 4). *Initiatives – DefaultVeg.* https://www.betterfoodfoundation.org/initiatives/defaultveg/

Clark, L. F., & Bogdan, A. M. (2019, January 23). *(PDF) The Role of Plant-Based Foods in Canadian Diets: A Survey Examining Food Choices, Motivations and Dietary Identity*. ResearchGate. https://www.researchgate.net/publication/330416049_The_Role_of_Plant-Based_Foods_in_Canadian_Diets_A_Survey_Examining_Food_Choices_Motivations_and_Dietary_Identity

Cohen, D. A., & Story, M. (2014). Mitigating the health risks of dining out: the need for standardized portion sizes in restaurants. *American Journal of Public Health*, *104*(4), 586–590. https://doi.org/10.2105/ajph.2013.301692

Environment and Climate Change Canada. (2025, March 21). *Greenhouse gas emissions*. Government of Canada. https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions.html

Gao, A., Gao, F., Verdin, H., Wong, P., & Park, S.Y. (2014). Less Meat Campus Strategy. *UBC Social Ecological Economic Development Studies Report.* https://sustain.ubc.ca/sites/default/files/seedslibrary/2014UBCFSP-Group9LessMeatCampusStrategy.pdf

Government of Canada. (2025, March 21). *Greenhouse gas emissions*. Canada.ca. https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions.html#agriculture

Lee, J. (2023). Climate-Friendly Food (CFF) Labels Data Assessment Menu Item for the three dining halls (Open Kitchen, Feast and Gather) 2022 - 2023. *UBC Social Ecological Economic Development Studies Report.* https://sustain.ubc.ca/sites/default/files/seedslibrary/Climate-Friendly%20Food%20%28CFF%29%20Labels%20Data%20Assessment%20Menu%20Item%20for%20the%20three%20dinning%20halls%202022%20-%202023_Final%20Report.docx_.pdf

Ma, J., Wang, V., Meyer, M., Wang, M., & Bhutta, N. (2024). Project 5: Understanding Eating Habits and Dietary Preferences that can Accelerate Positive Climate Actions. *UBC Social Ecological Economic Development Studies Report.* https://sustain.ubc.ca/sites/default/files/seedslibrary/LFS%20450%20Eating%20Habits%20and%20Dietary%20Preferences%20to%20Accelerate%20Climate%20Action%20Final%20Report.pdf

MacLean, V. (2023, September 14). *Western makes 43 per cent of residence meals plant-based*. The Gazette • Western University's Student Newspaper. https://westerngazette.ca/news/campus/western-makes-43-per-cent-of-residence-meals-plant-based/article_bffa6d00-5349-11ee-845f-5335d4c6b8c3.html

Magnus, A. M., & Rai, K. (2023). Doing rural community-based action research (CBAR): Community perceptions and methodological impacts. *Qualitative Research, 24*(4), 851–871. https://doi.org/10.1177/14687941231188884

Mycek, M. K. (2018). Meatless meals and masculinity: How veg* men explain their plant-based diets. *Food and Foodways*, *26*(3), 223–245. https://doi.org/10.1080/07409710.2017.1420355

National Oceanic and Atmospheric Administration. (2025, April 2). *Climate change impacts*. https://www.noaa.gov/education/resource-collections/climate/climate-change-impacts

Nevalainen, E., Niva, M., & Vainio, A. (2022). A transition towards plant-based diets on its way? Consumers' substitutions of meat in their diets in Finland. *Food Quality and Preference*, *104*, 104754. https://doi.org/10.1016/j.foodqual.2022.104754

Park, R. (2024, March 16). *The Canadian University Initiative: Climate Leadership through Food Procurement - Plant Based Cities Movement*. Plant Based Cities Movement. https://plantbasedcities.org/canadian-university-initiative/.com

Perez-Cueto, F. J., Rini, L., Faber, I., Rasmussen, M. A., Bechtold, K. B., Schouteten, J. J., & De Steur, H. (2022). How barriers towards plant-based food consumption differ according to dietary lifestyle: Findings from a consumer survey in 10 EU countries. *International Journal of Gastronomy and Food Science*, *29*, 100587.

Pineda, E., & Chen, J. (2024). Californian public university students' attitudes, beliefs, and behaviors toward plant-based diets. *Progress in Community Health Partnerships: Research, Education, and Action*. Advance online publication. https://doi.org/10.1177/15598276241303700

Plant-Based Universities. (n.d.). *Students are making universities plant-based! Want yours to be next?* https://www.plantbaseduniversities.org/

Pollicino, D., Blondin, S., & Attwood, S. (2024, May 7). *The food service playbook for promoting sustainable food choices*. World Resources Institute. https://www.wri.org/research/food-service-playbook-promoting-sustainable-food-choices

Reisch, L. A., Sunstein, C. R., & Kaiser, M. (2022). Nudging interventions on sustainable food consumption: A systematic review. *Journal of Cleaner Production, 368*, 133-145. https://doi.org/10.1016/j.jclepro.2022.133145 Wikipedia

Richer, L. (2025, January 15). *LFS 450: Research foundations & project management (Part 1)* [Lecture slides]. University of British Columbia.

Sabaté, J., & Soret, S. (2014). Sustainability of plant-based diets: back to the future. *American Journal of Clinical Nutrition*, *100*, 476S-482S. https://doi.org/10.3945/ajcn.113.071522

UBC Student Housing and Hospitality Services. (2022). *Food services vision, mission & values*. Food UBC. https://food-ubc.b-cdn.net/wp-content/uploads/2023/02/Food-Services-Vision-Mission-Values-Feb-2023-FINAL.pdf

UBC Campus + Planning. (n.d.). *Sustainability Action Plans | UBC Campus & Community Planning*. UBC. https://planning.ubc.ca/sustainability/sustainability-action-plans

University of British Columbia. (n.d. -a). *CAP 2030 targets and actions: Food systems*. UBC Campus & Community Planning. https://planning.ubc.ca/sustainability/sustainability-action-plans/climate-action-plan-2030/cap-2030-targets-and-actions-food-systems

University of British Columbia. (n.d. -b). *Feed Me – Food at UBC Vancouver*. https://food.ubc.ca/feedme/

University of British Columbia. (n.d. -c). *Food + nutrition*. UBC Wellbeing. https://wellbeing.ubc.ca/food-nutrition

University of British Columbia. (2022). *Food services vision, mission & values*. https://food-ubc.b-cdn.net/wp-content/uploads/2022/10/Food-Services-Vision-Mission-Values-May-2022-FINAL.pdf

University of British Columbia. (2025, April 16). *Open Kitchen at Orchard Commons menu*. UBC Nutrislice. https://ubc.nutrislice.com/menu/ubc-open-kitchen/open-kitchen-at-orchard-commons/2025-04-16

United Nations. (n.d.). *Five ways the climate crisis impacts human security*. https://www.un.org/en/climatechange/science/climate-issues/human-security

United Nations. (2023, August). *Sustainable development goals: 17 goals to transform our world*. https://www.un.org/en/exhibits/page/sdgs-17-goals-transform-world

United Nations Framework Convention on Climate Change. (n.d.). *The Paris Agreement*. https://unfccc.int/process-and-meetings/the-paris-agreement

Vockeroth, B. (2019). *Climate-friendly food labels are making sustainable food choices easier on campus – FOOD AT UBC VANCOUVER*https://food.ubc.ca/climate-friendly-food-labels/

World Resources Institute. (n.d.). *Cool Food Pledge*. https://www.wri.org/initiatives/cool-food-pledge

World Resources Institute. (2024, May 7). *The Food Service Playbook for Promoting Sustainable Food Choices*. https://www.wri.org/research/food-service-playbook-promoting-sustainable-food-choices

Zhang, A. W., Wharton, C., Cloonan, S., Boronowsky, R., Magesh, V., Braverman, I., Marquez, A., Leidy, H., Wang, M. C., Cleveland, D. A., Jay, J., & Stecher, C. (2024). Changing the default meal option at university events to reduce harmful environmental impacts: Six randomized controlled trials. *Appetite*, 200, 107572. https://doi.org/10.1016/j.appet.2024.107572

8. Appendices

APPENDIX A: AUDIT MATRIX

Audit Matrix

APPENDIX B: SURVEY QUESTIONS

Survey Questions

APPENDIX C: SURVEY PROMOTIONAL MATERIAL

Posters

Powerpoint Slide

Canvas Announcement Blurb

Do you have opinions about the UBC dining hall food? We would love to hear your feedback!

Complete this anonymous survey by March 24th to enter a draw for 1 of 3 $50 gift cards.
https://ubc.ca1.qualtrics.com/jfe/form/SV_6wXjNdrBUiS8N9A

APPENDIX D: SURVEY RECRUITMENT PLAN

Survey Timeline

March 11th: Survey launch and physical copies of the survey placed around the UBC campus

March 16th: First- and second-year courses reach out

March 20th: Face-to-face promotions

March 21st & 22nd: Social media advertisement on Instagram

Survey Recruitment Contact List and recruitment methods implemented

Dining hall managers and dining hall supervisors

- **Orchard Commons Student Residence– Open kitchen**
    - Manager
    - Senior supervisors
    - 7 Physical posters
        - 5 posters in the dining hall area, 1 poster in front of the dining hall, 1 poster by the student residence printer on the main floor of Orchard Commons Student Residence
    - Face-to-face promotion
- **Totem Park Student Residence – Feast**
    - Manager
    - 8 Physical posters
        - 6 posters in the dining hall area, 2 on the sandwich boards at the dining hall entrances
    - Face-to-face promotion
- **Place Vanier Student Residence – Gather**
    - Manager
    - Supervisors
    - 8 Physical posters
        - 7 posters in the dining hall area, 1 poster at the entrance

Collegia (first-year students program)

- Physical posters – Rejected as the program is for first-year commuters

Student study spaces – Libraries

- **Irving K. Barber Learning Centre (IKB) and Walter C. Koerner Library**
    - Asked for permission in person at the front desk
    - 2 Physical posters
        - 1 poster in each library

Morris and Helen Belkin Art Gallery

- 1 Physical poster

LFS Academic and Career Engagement ACE program

- Program advisor
- Instagram story post with our survey link – Rejected
    - Recommended to submit a blurb to the LFS Newslettuce (https://www.landfood.ubc.ca/newslettuce-submission/). Due to schedule discrepancies between our project timeline and their posting schedule, we were unable to leverage this method.
- **HR MacMillan Building**
    - 7 Physical poster
        - 6 posters on floors 1 to 3, 1 poster by Agora Café

Undergraduate/graduate societies - if we can put posters up in their space or if they would be willing to share our poster and a link virtually

- **Graduate Student Society**
    - 1 Physical poster on their bulletin board
- **FUS – Forest Sciences Centre**
    - 2 Physical poster on their bulletin boards (FUS and 1st/2nd year announcements)
- **EUS – Engineering Student Centre**
    - 1 Physical poster on their bulletin board by the stairs
- Reached out, followed up, but no response
    - LFSUS
    - SUS
    - KUS
    - AUS
    - CUS

Residence life managers – Rejected due to long poster processing time

- Acadia Park
- Brock Commons & Iona House
- Exchange
- Fairview Crescent & Fraser Hall & Ponderosa Commons
- Marine Drive
- Orchard Commons
- Place Vanier
- Ritsumeikan-UBC House
- tə šxʷhələm̓s tə k̓ʷaƛ̓kʷəʔaʔɬ & Thunderbird
- Totem Park
- Walter Gage

100- and 200-level courses

- **Responded and shared the survey as a Canvas announcement or a lecture slide with their class**
    - LFS 250
    - BIOL 121
    - CAP 100

    - WRDS 150
    - PSYC 101
    - PSYC 102
    - FNH 160 & 161
    - FNH 200
    - LFS 100/150
    - LAND one
    - LING 100/101
    - APSC 101
- Followed up and/or no responses
    - BIOL 112
    - CHEM 123
    - WRDS 150
    - PSYC 102
    - ATCS 113
    - COMS 127
    - EOSC 116, ECON 101/102
    - DSCI 100
    - BIOL 111
    - LFS 100/150
    - LING 100/101
- Responded but redirected us to another person/email address
    - CHEM 123
    - APSC 101

APPENDIX E: NUTRISLICE CODES AND CRITERIA

Comments must be directly related to the category; for example, a person saying “Love the taco” would not go under the taste category, as the person did not specifically mention the taste. 1 indicates a positive comment related to the category, and 0 indicates a negative comment related to the category.

- Emotion and Emphasis
- Emotion & Emphasis **(Emp)**: Written in a form that communicates intensity, strong emotion, and emphasis. Written with capital letters, exclamation marks, or intense emotional expressions such as “love.”
- Texture **(Texture):** Texture-specific comments.
    - Dry **(Dry):** Specific texture complaints or compliments.
    - Chewy **(Chewy):** Specific texture complaints or compliments.
    - Sawgy **(Soggy):** Specific texture complaints or compliments.
    - Cooking level **(Cook):** Comment related to things being more or less cooked. Doneness or preparation level (e.g., overcooked, undercooked).
    - Hard **(Hard):** Specific complaints or compliments about food being hard in texture, such as tough to chew, overly firm, or difficult to bite through.
- Taste **(Taste):** General mention of taste.
    - Salty **(Salty):** Specific flavour mentioned.
    - Sweet (**Sweet):** Specific flavour mentioned.
    - Spicy **(Spicy):** Specific flavour mentioned.
    - Sour **(Sour):** Specific flavour mentioned.
    - Seasoning **(Seasoning):** Refers to flavouring or spice level overall
- Temperature:
    - Cold **(cold):** The Dish was colder than it should be.
- Secondary Ingredient **(Ing):** General mention of an ingredient.
    - Vegetable ingredient **(VegI):** Mentions of vegetable ingredients or ingredients.
    - Other ingredients **(OtherI):** Other specific non-protein ingredients like mayo or coconut cream.
- Portion **(Portion)**
    - Big **(Big):** Complaints or compliments about the portion size being big.
    - Small **(Small):** Complaints or compliments about the portion size being small.
- Health **(Health):** Used for comments directly related to health perception, concerns, or compliments.
    - Salty **(HSalty):** Specific health-related comments about salt.
    - Oily **(HOil):** Specific health-related comments about oil and fat.
    - Fibre **(HFibre):** Specific health-related comments about fibre content.
    - Vegetables **(HVegetables):** Specific health-related comments about vegetable content.
    - Sugar **(Sugar):** Specific health-related comments about sugar content.
- Culture **(Cult):** Cultural relevance or issues.

        - Halal **(Halal):** Mention of Halal.
        - Kosher **(Kosher):** Mention of Kosher.
- Options
    - Add-ons **(Add):** Requests or complaints related to add-ons.
- Protein **(protein):** Protein content or presence.
    - Red meat (**Redm):** Red meat comments.
    - Fish **(Fish):** Fish comments.
    - Chicken **(Chick):** Chicken comments.
    - Tofu **(Tofu):** Tofu comments.
- Hours **(Hours):** Feedback about operating hours.
- Frequency **(Freq):**
    - **Frequency is low (LFreq):** Comments about dishes being offered infrequently.
    - **Frequency is high (HFreq):** Comments about dishes being offered frequently.
- Cut size **(Cut):** Comment on the cut size of food (e.g., vegetables, meat chunks).

* **Note: Not all codes were used as they did not appear in the feedback.**