

Food Access, Concerns and Perceptions During Covid-19 First Wave: Alberta Survey



Mary Beckie
and
Aleksandra Tymczak

School of Public Health, University of
Alberta

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In collaboration with



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Executive Summary

The main goal of this study was to advance our understanding of food access, food purchasing behaviours, food consumption behaviours, and food related perceptions and concerns of Alberta consumers during the first wave of the COVID-19 pandemic. The study was conducted via an online survey platform, Survey Monkey, from June 1 – August 31, 2020. The results provide evidence of the impacts of a pandemic on one of the basic human needs - food - from the consumer's perspective. More specifically, the consumer survey revealed how the COVID-19 pandemic has affected Alberta consumers' food purchasing and consumption experience. This study also contributes to the on-going discussion on the importance and urgency of transitioning into a more reliable and resilient regional food system.

This survey was part of a larger collaboration among the Institute for Sustainable Food Systems (Kwantlen Polytechnic University), Faculty of Extension and School of Public Health (University of Alberta), School of Journalism and Communication (Carleton University), School of Human Nutrition (McGill University) and Food Policy Lab (Dalhousie University). The survey was administered in British Columbia, Alberta, Ontario, Quebec, and Atlantic Canada. There was a total of 4,928 participants across all these provinces. We are grateful for the support of all the collaborators and extend special thanks to the Institute for Sustainable Food Systems team. The link to the other provincial/regional reports are provided in Appendix A.

Key Findings from Alberta

- 50% of participants indicated a change in food consumption, with higher proportions of people reporting increased consumption of sweet and salty snacks, fruits and vegetables, and home cooked meals, whereas meat consumption was lower for more people.
- Significant changes in food access occurred, with marked decreases in in-person access and notable increases in online food access.
- There was a general increase in the purchase of shelf and freezer foods, and cooking ingredients.
- 61% of participants perceived an increase in food prices.
- 45% of participants reported difficulties in accessing food, primarily due to anxiety about in-person shopping, limited income and higher food prices.
- Foods most difficult to access were flour, fresh produce, meat and baking supplies.
- There was a mid to high level of concern over the reliability of the global food system; prominent concerns being safety and quality of imported foods, and the safety and health of employees in large meat processing facilities.
- The majority of respondents agreed that a local/regional food system can be more reliable, as well as strengthen the local economy, increase local employment, and help to strengthen buyer trust with local providers.

- The majority also agreed that the provincial government should support development of a local/regional food system.

Limitations of this Study

There are limitations to the results of this survey. First, it was conducted in Alberta from June 1 – August 31, 2020, when the province was in Stage 2 of the relaunch and many restrictions impacting food access had been lessened. Hence, the results may have been different if the survey had been conducted in the earlier part of the first phase of the pandemic, when public health restrictions were more severe. Second, there were not a statistically valid number of responses to this survey, relative to the provincial population, and not all regions of the province were represented in these responses. Additionally, a high proportion of respondents (approximately 50%) reported household incomes above the median household income for the province.

Funding Acknowledgement

The Alberta survey was funded through the Faculty of Extension, University of Alberta. The larger study was also supported by the VanCity Credit Union, Carleton University's Rapid Response Research, McGill Interdisciplinary Initiative and Immunity Emergency COVID-19 Research Funding, the Canada Research Chairs program, and Social Sciences and Humanities Research Council.

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Corresponding author: Mary A. Beckie, mary.beckie@ualberta.ca

1 Introduction

Toward the end of 2019, the world first learned about a novel coronavirus that was later named COVID-19 and declared a pandemic. Within three months, restrictions on travel, social gathering, recreational activities and business operations were imposed in over 100 countries all over the world (BBC News, 2020). Such restrictions were of a scale the world had never seen before. The effort to slow virus transmission through physical distancing and limiting economic activities resulted in the loss of businesses, jobs and incomes. Canadian Real Gross Domestic Product (GDP) fell by nearly 12% from March to April 2020 (Statistics Canada, 2020a). In May 2020, Canadian unemployment rate reached a record high at 13.7% (Statistics Canada, 2020b). Global GDP growth is expected to fall by 5% in 2020 (IMF, 2020). Economic crises, caused by this pandemic, have jeopardized human well-being development progress especially in vulnerable and disadvantaged groups (UN, 2020).

In Canada, by the end of March, the federal government had advised against all non-essential travel outside of the country, issued restrictions on the entry of foreign nationals and recommended the adoption of work-from-home policies (Canadian Institute for Health Information, 2020). Provincial health authorities worked with their governments to recommend and ultimately impose restrictions on inter-provincial travel, non-essential businesses and services, and recreational sites according to situations in their provinces or territories (Government of Canada, 2020; WorldAware, 2020).

As the number of daily cases rose in Canada, so did concern and trepidation. During the first few weeks after the declaration of the pandemic, a behaviour of “hoarding” of medical/cleaning supplies and food emerged (Lau, 2020; Brewster, 2020). Empty grocery store shelves and stories of those who were left without food regularly made headlines across Canada from early March to mid-April (Lopez Martinez, 2020; Bench, 2020). The promise of convenience and abundance of food delivered to consumers through the global supply chain was broken. North America’s global-industrial food systems “just-in-time” inventories, which boast freshness and efficiency, manifest as one of its numerous weaknesses as a result of the pandemic.

The pandemic has revealed serious fragilities in the global-industrial food system that many food system experts have long raised concerns about (Shattuck, Holt-Giménez, and Patel, 2009; Rosin, Stock and Campbell, 2012; Puma, et. al., 2015). Now the general populace has been made far more aware and have been motivated to rethink the relationship between their food system and community resiliency. The disruption of our food system caused by the pandemic represents a ‘dress rehearsal’ for the kinds of disruption we can expect as a result of other widespread shocks, such as climate change, global economic and political instabilities and conflict. As such, it is very valuable to understand how the current crisis has affected citizens and which citizens were most acutely affected. Thus, the purpose of this study was to assess how the COVID-19 pandemic affected people’s food access, food purchasing and consumption, and how perceptions regarding our food system may have altered. The results provide quantitative and qualitative information on behaviours and sentiments of Canadians during the pandemic. These findings help assist food system actors in preparing response actions from future threats and building resilient food system for the 21st century.

This study is a collaboration of five institutions across Canada: the Institute for Sustainable Food Systems (Kwantlen Polytechnic University), Faculty of Extension and School of Public Health (University of Alberta), School of Journalism and Communication (Carleton University), School

of Human Nutrition (McGill University) and Food Policy Lab (Dalhousie University). The study was supported by the VanCity Credit Union, University of Alberta – Faculty of Extension, Carleton's University Rapid Response Research program, McGill Interdisciplinary Initiative and Immunity Emergency COVID-19 Research Funding, the Canada Research Chairs program and Social Sciences and Humanities Research Council Five online surveys were administered separately in British Columbia, Alberta, Ontario, Quebec, and Atlantic Canada (New Brunswick, Prince Edward Island, Nova Scotia, and Newfoundland and Labrador) from April to August 2020. A total number of 4,928 people participated in the surveys. The distribution of participants in the five survey regions can be found in Appendix A.

Results in this report focus on those from Alberta. The link of findings from other regions and a summary report of findings across Canada can be found in Appendix A. A pan-Canada study such as this one can shed light on the similarities and differences in the impacts of COVID-19 on food related behaviours and perceptions of the pandemic and food systems in each region. The information highlights how geography and cultures influence people's behaviour and contributes to the on-going discussion of the importance and urgency of creating a more reliable and resilient regional food system.

2 Methodology

This study was a collaboration involving research teams from Kwantlen University, the University of Alberta, Carlton University, and Dalhousie University. The initial survey was designed by the research team at Kwantlen University and then adjusted by the University of Alberta research team to fit with the Alberta context. The survey was distributed to the University of Alberta community through an advertisement on the Students Digest email and the Graduate Students Digest email. In order to advertise the survey to a wider audience, partner organizations were asked to distribute the survey to Alberta residents through their own websites and social media platforms (Twitter, Instagram and Facebook). Partner organizations refers to other non-University of Alberta organizations which have working relationships with the university such as Campus Food Bank, Edmonton Food Council, City of Calgary, Edmonton Food Bank, Fresh Routes, Calgary Meals on Wheels, Young Agrarians, Organic Box, Bow Valley Food Alliance, Wild Heart Collective, Community Food Connections, Town of Banff, Food4Good, Leduc County, TK Ranch, and YYC Growers and Distributors. The snowball method was also used by asking the partner organizations to send the survey link to other organizations which may be interested in this survey. The inclusion criteria for the Alberta study was residents over the age of 18 years old, who have access to the Internet and equipment to complete the online survey. If potential participants did not have access to computers or the Internet, they would not be able to participate in the survey.

The survey opened in Alberta on June 1, 2020 and closed on August 31, 2020. Participants accessed the survey through a web link via the Internet and computers (or smart phones, tablets, etc.) Participants completed the survey independently at their convenience. Researchers were not working with them to fill in the survey. However, the participants were advised to contact the research team if they had any questions regarding the online survey. Participants were informed that they could stop the survey at any time or skip any questions that they did not feel comfortable answering. After the participants completed and submitted the survey, they were not able to withdraw their responses. This is because all responses were

anonymous, and the researchers would not be able to retrieve and delete specific participants' responses from the database.

The data for the survey was collected via the Survey Monkey web platform. Survey Monkey securely stored data in their SOC 2 accredited data centers that adhere to security and technical best practices. They ensure that collected data is transmitted over a secure HTTPS connection, and user logins are protected via TLS. The research team at Kwantlen University had access to the raw data collected through Survey Monkey. After it was aggregated, the data for Alberta was then sent to the University of Alberta team for analysis. Collaboration occurred between all four research teams regarding how the data would be analyzed and presented.

Conducting this study through an online survey provided several advantages including an increased response rate and convenience for the participants to complete the survey on their own schedule and at their own pace. Conducting the survey via an online platform was also the most effective way of reaching potential participants during the lockdown restrictions and those who were in quarantine. A shortcoming of conducting the study through an online survey was the potential exclusion of a certain sample of participants. For instance, certain populations are less likely to have access to the internet or appropriate technology to complete the survey. This may include the elderly population, populations of lower socioeconomic status who do not have access to personal technology or populations in rural communities with limited broadband. Another limitation of conducting the survey via an online platform is the lack of available clarification provided to participants if necessary. Therefore, there is potential for questions to be misunderstood and as a result less reliable data collected.

3 COVID-19 Timeline in Alberta and Impacts on Our Food System

During the initial pandemic response, the strongest public health guidelines to manage COVID-19 were implemented. On March 13, 2020, the Government of Alberta Premier and Chief Medical Officer of Health prohibited gatherings of more than 250 people (Canadian Institute for Health Information, 2020). This was followed by the closure of elementary, middle and high schools, as well as post secondary institutions, licensed childcare, out-of-school care and preschool programs, on March 15, 2020 (Canadian Institute for Health Information, 2020). Shortly after, on March 17, 2020, the Government of Alberta Premier and Chief Medical Officer of Health declared a public health state of emergency in the province of Alberta. This was accompanied by prohibited gatherings of more than 50 people, ordered closure of some publicly available institutions including arenas, museums, galleries, community centres, etc., and ordered closures of private entertainment facilities including gyms, swimming pools, and casinos. Limited capacity of sit-down restaurants, cafes, coffee shops, food courts and other facilities was also implemented (Canadian Institute for Health Information, 2020). Furthermore, on March 27, 2020, prohibited gatherings of more than 15 people was implemented as well as ordered closures of close contact businesses and all sit-down restaurants, cafes, coffee shops, food courts, bars and other facilities. Takeout was still permitted (Canadian Institute for Health Information, 2020).

On May 14, 2020, Stage 1 of the relaunch strategy was activated (Government of Alberta, 2020a). Stage 1 allowed some businesses to resume operations with enhanced infection prevention and controls in place. Lifted restrictions included the reopening of all farmers' market vendors, museums and art galleries, daycares and out-of-school care (with occupancy limits), day camps (including summer school with occupancy limits), and cafés, restaurants, pubs and

bars (with table service at 50% capacity) (Government of Alberta, 2020a). Decisions were applied at both provincial and local levels. An outbreak may have resulted in enhanced health measures being implemented in a local area. For instance, the cities of Calgary and Brooks reopened more gradually due to higher case numbers and fully entered Stage 1 as of June 1, 2020 (Government of Alberta, 2020a).

Since the testing data showed low infection rates, hospitalization rates and intensive care unit cases, Alberta proceeded to Stage 2 of the relaunch strategy on June 12, 2020 (Government of Alberta, 2020a). Stage 2 allowed additional businesses and services to reopen and resume operations with physical distancing requirements and other public health guidelines in place. This included the reopening of elementary, middle and high schools, movie theatres and live theatres, community halls, indoor recreation, fitness and sports, including gyms and arenas, indoor and outdoor pools for leisure swimming and indoor and outdoor hot pools/whirlpools, bingo halls and casinos, and indoor children's play centres (Government of Alberta, 2020a). There were also lifted restrictions on events and gatherings such as 50 people at indoor social gatherings, including wedding and funeral receptions, and birthday parties, 200 people at audience-type community outdoor events, such as festivals, firework displays, rodeos and sporting events, and outdoor performances, and 100 people at other outdoor events and indoor seated/audience events, including wedding ceremonies, funeral services, movie theatres, indoor arts and culture performances and other indoor spectator events where people remain seated. All restrictions on the number of people at restaurants, cafes, lounges and bars, casinos, bingo halls, and exhibits and trade shows were lifted (Government of Alberta, 2020a). On the other hand, major festivals and concerts, large conferences and events, amusement parks, and major sporting events and tournaments were still not permitted to open. Factors such as active cases, health-care system capacity, hospitalization rates, and intensive care unit cases will determine the progression to Stage 3 of the relaunch strategy (Government of Alberta, 2020a).

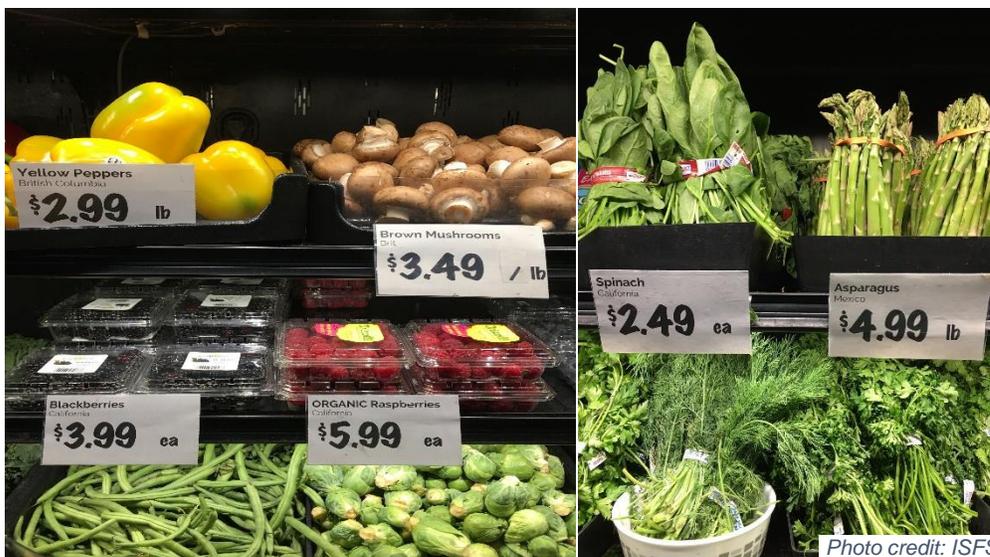


3.1 Impacts to Consumers

At the start of the pandemic, due to uncertainty about the spread of the virus and the duration of restrictions, consumers began to stock up on food. From February to March 2020, the Canadian retail sales of food and beverage increased by nearly 3 billion dollars (Statistics Canada, 2020c). Around this time, panic buying caused temporary interruptions in access for basic items such as hand sanitizers, toilet paper, non-perishable food items and other staple goods (Bogart, 2020). As a result, some stores put measures in place to restrict the number of items purchased for some high demand essential items, such as hand-sanitizer (Pedersen, Tomlinson and Matteis, 2020). However, the larger supply-chain for food remained largely unaffected (CBC News, 2020a).

Consumers, during this time were motivated to adjust their food procurement and dining behaviours. They increased utilizing means such as online food shopping. They also increased preparation of meals at home (Accenture, 2020; Food Insight, 2020). Dalhousie University in partnership with Angus Reid Institute conducted two surveys of Canadian consumers in March and April 2020. They found that the majority of Canadians were concerned about health risks from going to the grocery store, so they did not shop as often and took precautions such as increasing the use of sanitizer, disinfecting grocery products, and wearing masks and gloves when they did (Agri-Food Analytics Lab, 2020a and 2020b).

Additional concern over food access was related to increasing food prices. During the pandemic, consumer price index of food indicated that food prices have increased (Statistics Canada, 2020d). For example, in May 2020, prices for meat rose more than 13% compared to May 2019. Cost of other non-perishable food such as canned tuna, flour and rice also rose between 9-14% (Statistics Canada, 2020e). Clapp and Moseley (2020) contend the food system crisis stemming from the COVID-19 pandemic was due to three inter-related issues: disruptions of supply chains, job losses and economic recessions, and uneven food price dynamics. As a result, the livelihoods of many Canadians are at risk.



3.2 Impacts to Producers and Workers

As food and beverage establishments were closed for indoor service in Alberta, there was a large drop in sales for this sector in March and April (Statistics Canada, 2020f). Many small-scale farmers reliant on direct consumer and retail sales experienced substantially curtailed trade. Also, the links within the food supply chain that connect farmers to institutions like schools, restaurants, and prisons, collapsed (Henderson, 2020).

Many individual agricultural sectors have been impacted by the pandemic and the resulting fractures in the food supply chain. The potato industry experienced a 30% reduction in acres in the 2020 growing season and temporary shutdowns of processing facilities such as McCain Foods, because of a decrease in direct restaurant sales (Henderson, 2020). Similarly, Alberta dairy farmers have experienced a 5% decrease in production because of reduced direct restaurant and café sales, such as to Starbucks (Henderson, 2020). Also, pork farmers are selling their products at a loss due to a decrease in direct sales demand and an oversupply at the farm end (Henderson, 2020). In addition, poultry and egg farmers have experienced a 7.5% decrease in annual production (Henderson, 2020). The mushroom industry which operates on thin profit margins to begin with, reported that producers and processors were paying an extra \$240,000 per week to keep their staff safe in order to avoid any outbreaks that would shut down farms and threaten their businesses (Henderson, 2020). Lastly, it is anticipated that the honey industry will lose between 50,000 to 60,000 hives in 2020. This is due to the lack of imported essential supplies such as, imported foreign bees to build up existing colonies and skilled foreign workers that help restore weakened colonies (Fieber, 2020). These are significant losses since Alberta is the largest honey producer in Canada.



As the pandemic continued, significant issues within the food sector were brought to light, especially in regard to COVID-19 outbreaks in the meat processing and horticulture sectors, highlighting underlying issues that already existed prior to the pandemic, especially with regards to sanitation and workers' safety (Bureau, 2020; Carrigg, 2020; Duncan, 2020; Hunter, 2020; Korstrom, 2020). Major COVID-19 outbreaks occurred in Alberta in March and April, 2020 at two meat processing plants – Cargill Inc. in High River and JGS Canada in Brooks – and also occurred in August at the Harmony Beef company packaging plant in Balzac (Sagan, 2020). The High River and Brooks facilities make up 70 percent of Canada's beef processing capacity. The Cargill plant outbreak, which resulted in more than 1,500 cases of COVID-19 infections and three deaths, is the largest single-site outbreak in Canada and at the time was the largest single-site outbreak in North America (CBC News, 2020b; Sagan, 2020). Hundreds of other workers were infected at the two other plants in Alberta, and outbreaks were also reported at similar facilities across Canada (Hunter, 2020; Tait, Baum and Grant, 2020). Frigid temperatures, cramped working conditions and long hours put workers at high risk (CBC News, 2020b). The pandemic highlighted systematic problems such as employees' living and working conditions, healthcare coverage, and the rights and protection of foreign workers, as well as the need for all levels of government to collaborate to address such issues (Haley et. al., 2020).



Photo credit: WavebreakMediaMicro

4 Results

4.1 Demographic Information

A total of 298 participants agreed to participate in the study and complete the survey. Even though all the participants were permanent residents of Alberta, nine of the participants were residing outside of the province at the time they completed the survey. Majority of the respondents were from Edmonton and surrounding areas (Figure 1). The current provincial population is 4,421,876 (Government of Alberta, 2020b)

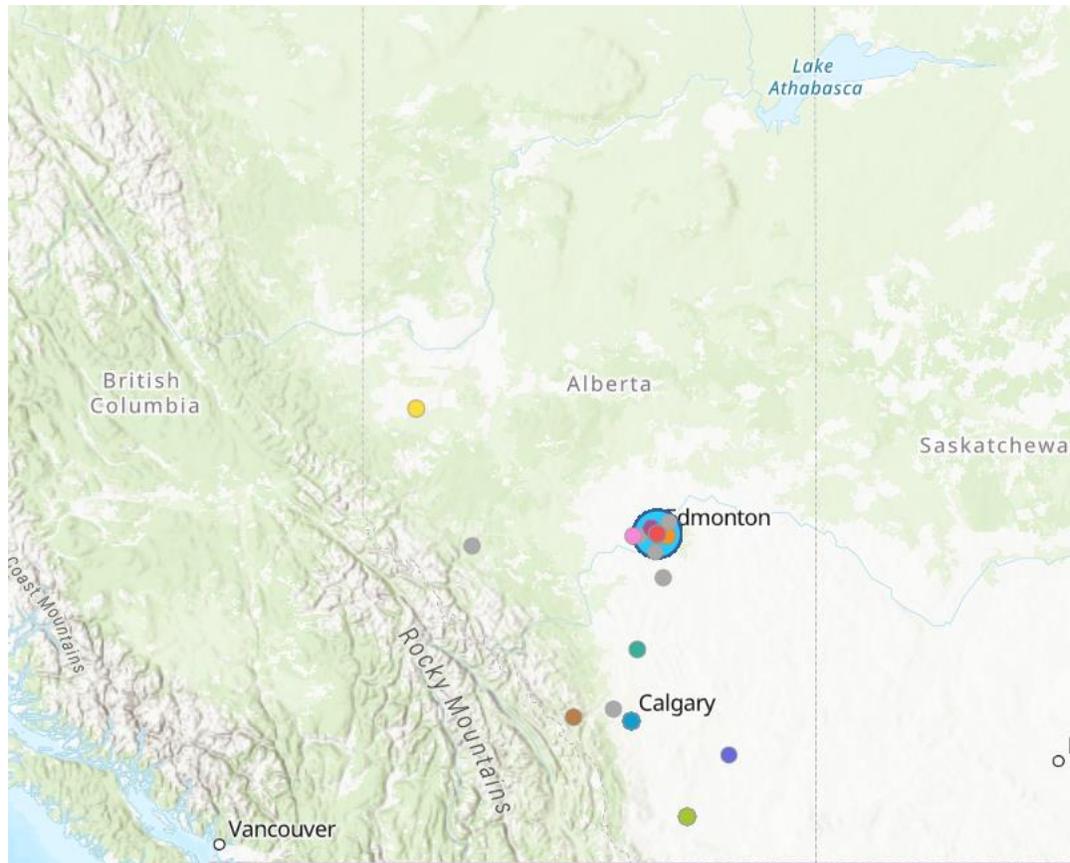


Figure 1. Distribution of participants in Alberta

Table 1 provides a detailed description regarding demographic information of the survey participants. To summarize¹, 81% of the participants were women and the age categories with the highest representation were between the ages of 18 and 29 (25%), and between the ages of 30 and 39 (24%). The most prominent education level among the participants was a bachelor's degree (37%).

Approximately 50% of participants were employed, 35 hours per week or more, and 60% of participants experienced no change in employment status after the declaration of the COVID-19 pandemic. Moreover, the most prevalent household income identified was between \$100,000

¹ All figures within the written results sections of this report are rounded off to whole numbers.

and \$199,000 (29%) and the most common federal support claimed by the participants was the Canada Emergency Response Benefit (46%). As a reference point, Alberta's median after-tax annual household income in 2018 was \$72,700, when counting both individuals and families (Statistics Canada, 2018).

Fifty-nine percent of participants were married or in a domestic partnership; of these, 37% were in a two-person only household. Seventy percent of participants indicated that there is no one under the age of 18 living in their household, and 80% of participants indicated that there is no one over the age of 65 living in their household.

Regarding risk status for COVID-19, 30% of the participants indicated that they belonged to a vulnerable group with increased risk of severe illness from COVID-19 infection.

Table 1. Demographic information about the participants.

Gender		Household Income		Number of People Living in Household
n=297		n=266		n=294
Woman	81.48%	Less than \$20,000	10.15%	1
Man	15.49%	\$20,000 – \$39,999	13.53%	2
Non-binary	1.35%	\$40,000 – \$59,999	10.90%	3
Not disclosed	1.68%	\$60,000 – \$79,999	16.17%	4
Age		\$80,000 – \$99,999	9.02%	5
n=297		\$100,000 – \$199,999	29.32%	6 or more
18-29	24.92%	More than \$200,000	10.90%	Number of People Under 18 Living in Household
30-39	24.24%	Employment Status		n=284
40-49	18.18%	n=298		1
50-59	14.14%	Employed, 35 hours per week or more	49.66%	2
60-69	14.14%	Employed, 20-34 hours per week	7.72%	3 or more
70-79	4.04%	Employed, less than 20 hours per week	9.73%	none
80 and older	0.34%	Unemployed	24.16%	Number of People Over 65 Living in Household
Education Level		Retired	8.72%	n=289
n=294		Change in Employment Status Due to Covid-19		1
Less than high school diploma	1.02%	n=294		2
High school diploma or equivalent (GED, ABE)	7.82%	None	59.52%	3
Some college but no degree	8.50%	Reduced work hours	13.95%	none
College diploma	16.67%	Increased work hours	6.46%	Risk Status for Covid-19
Bachelor's degree	37.41%	Became unemployed	19.05%	n=292
Graduate degree/professional degree	28.57%	Chose to retire	1.02%	Aged 65 years or older
Marital Status		Qualification for Federal Supports		Have chronic lung disease or asthma
n=293		n=118		Have serious heart condition
Single, never married	29.69%	Canada emergency response benefit	45.76%	Immunocompromised including cancer treatment
Married or domestic partnership	59.04%	Canada child benefit	12.71%	Have severe obesity or certain underlying medical conditions
Widowed	2.05%	Employment Insurance	4.24%	Not in high risk group
Divorced	5.46%	Federal government wage subsidy paid to my employer	4.24%	
Separated	3.75%	Canada emergency student benefit	15.25%	
		One time tax-free payment for seniors	0.85%	
		None	33.90%	

4.2 Concerns About the COVID-19 Pandemic

Participants were asked to rate their overall level of concern regarding the COVID-19 pandemic, on a 10-point scale (Figure 2). Overall, the results show the level of concern about the COVID-19 pandemic during the first wave was on the middle to high end of the spectrum. The average level of concern was 6.6 and the most common levels of concern were: 7 (65 participants), 8 (60 participants), and 6 (35 participants). Eleven participants indicated a level of concern of 1 or less.

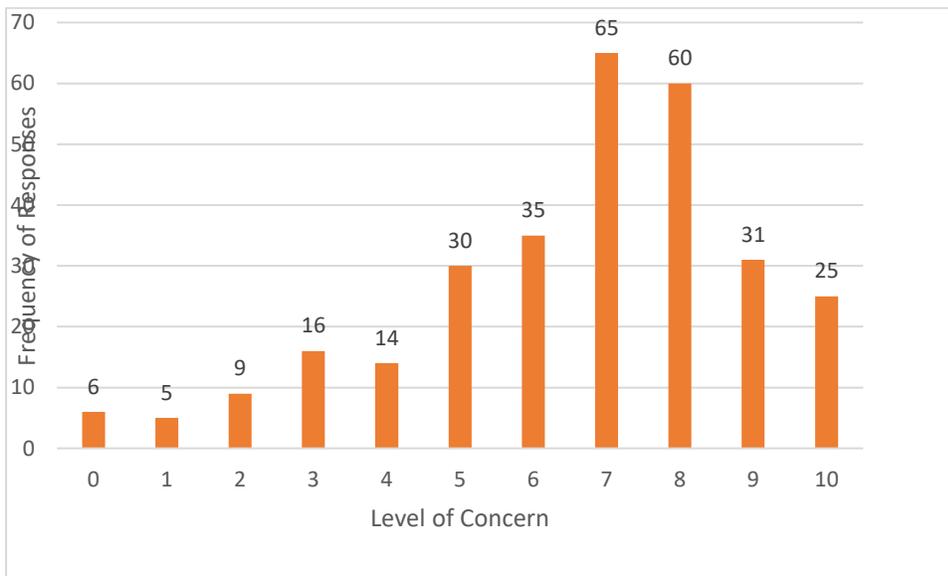


Figure 2. Level of concern about the COVID-19 pandemic (n=296).

4.3 Food Access Channels

People use a variety of ways to acquire their food. In this survey we presented 17 different ways through which people may access their food. We evaluated the pandemic's impact on participants by the frequency that various food channels were accessed.

Figure 3 illustrates the frequency at which food channels were accessed in 2019 prior to the declaration of the COVID-19 pandemic. Food channels that were accessed with the highest frequency were in-person grocery shopping (97%), dining at restaurants (85%), and take out from restaurants (68%). In comparison, the food channels that were accessed with the lowest frequency were meals received from the workplace (7%), other online stores such as Amazon and Instacart (6%), and food received from food banks/charities (3%).

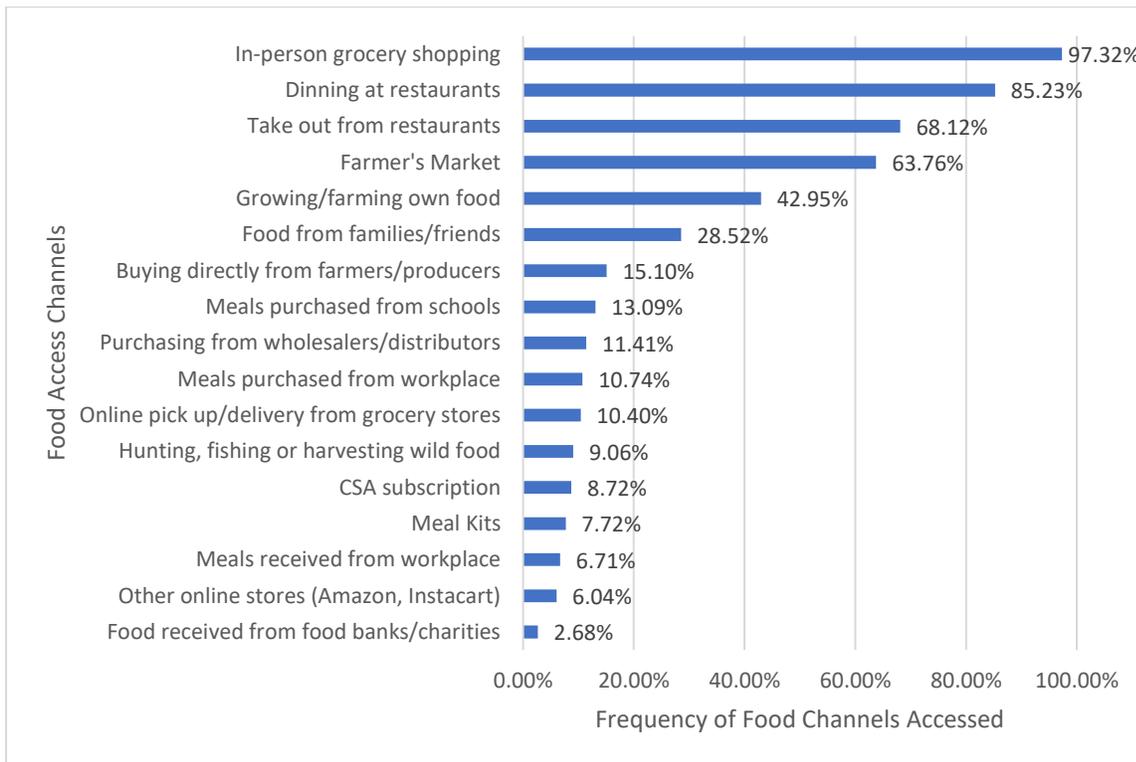


Figure 3. Food access in 2019 prior to the pandemic (n=298).

Figure 4 illustrates the frequency at which food channels were accessed during the first wave of the COVID-19 pandemic. Food channels that were accessed with the highest frequency were in-person grocery shopping (89%), take out from restaurants (65%), and growing/farming your own food (47%). In comparison, the food channels that were accessed with the lowest frequency were meals purchased from the workplace (0.7%), meals received from the workplace (0.3%), and meals purchased from schools (0%).

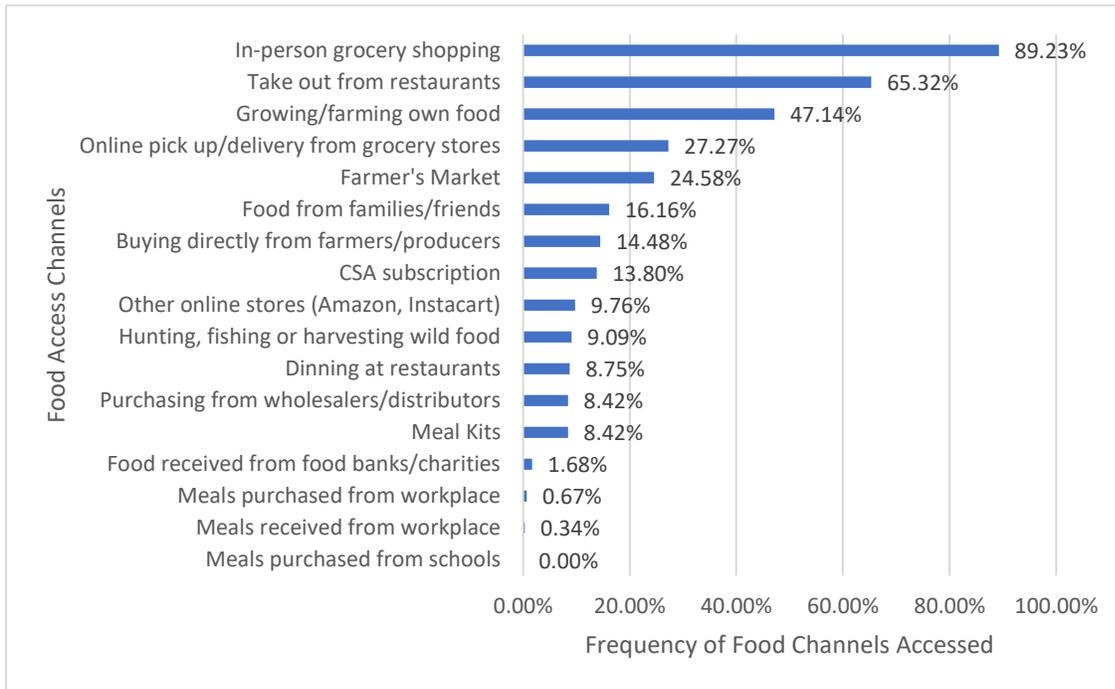


Figure 4. Food access in 2019 during the first wave of the COVID-19 pandemic (n=297).

4.3.1 Comparison of food access channels

Figures 5, 6, 7 and 8 place the food access channels into four categories: in-person shopping channels, online distance shopping channels, local food sourcing channels, and received food channels. The graphs illustrate the changes in the frequency at which food channels were accessed in 2019 prior to the declaration of the COVID-19 pandemic in comparison to the first wave of the COVID-19 pandemic.

4.3.1.1 Decreases in in-person food shopping channels

Figure 5 illustrates the decreases in frequency of accessing food through in-person shopping channels. Of these, shopping at grocery stores, dining at restaurants, meals purchased from schools, and meals purchased from the workplace had the most pronounced decrease in access frequency. The frequency of in-person grocery store shopping decreased from 97% to 89%; whereas the frequency of dining at restaurants decreased from about 85% to only 9%. The frequency of meals purchased from schools decreased from 13% to 0%, while the frequency of meals purchased from the workplace decreased from 10% to 1%.

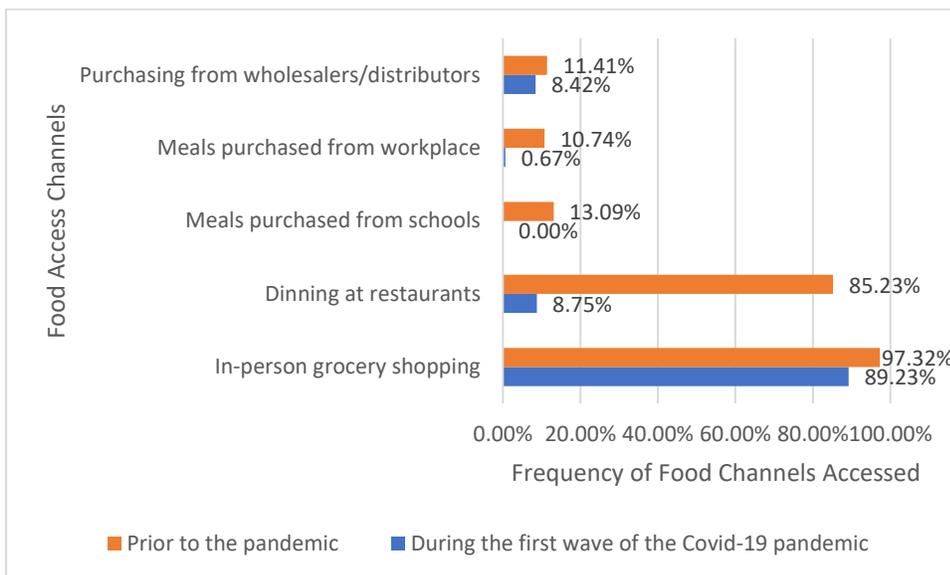


Figure 5. Food access via in-person shopping channels in 2019 prior to the pandemic in comparison to during the first wave of the COVID-19 pandemic.

4.3.1.2 Increases in distance food shopping channels

Figure 6 illustrates the changes in frequency of accessing food access via distance shopping channels, all of which experienced an increase in frequency except for take-out from restaurants (declined from 68% to 65%). The most significant changes occurred with online pick up/delivery from grocery stores, which increased from about 10% prior to the pandemic to 27% during the first wave of the pandemic. The second most significant increase in frequency occurred through other online stores (Amazon, Instacart), from 6% to 10%. The frequency of accessing food through online meal kits saw only a minor increase.

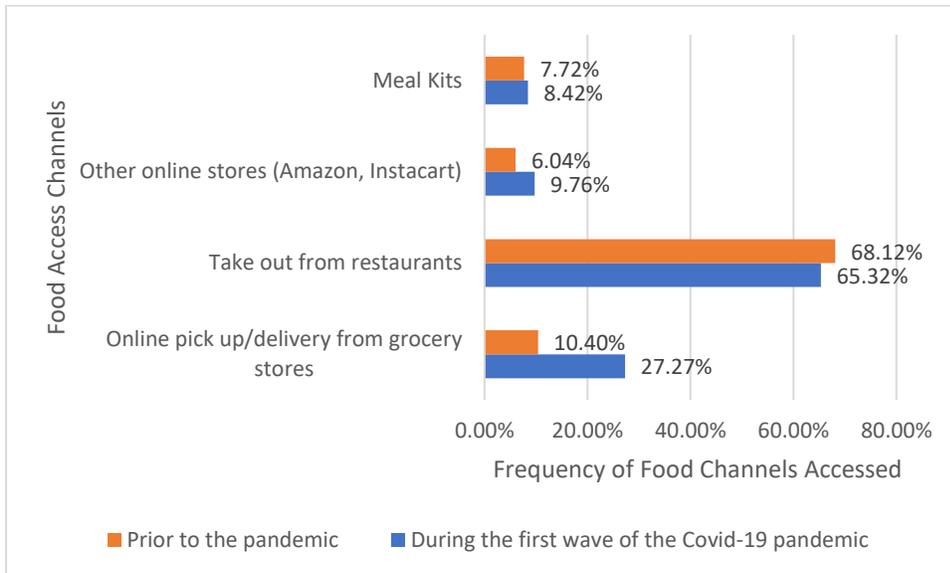


Figure 6. Food access via online distance shopping channels in 2019 prior to the pandemic in comparison to during the first wave of the COVID-19 pandemic.

4.3.1.3 Changes in accessing local food

Figure 7 illustrates the changes that took place in accessing local food through various channels prior to and during the first wave of the pandemic. The frequency of growing/farming food increased from approximately 43% of participants prior to the pandemic to 47% of participants during the first wave of the pandemic. Similarly, the frequency of accessing local food through CSA subscriptions increased from about 9% to 14%. Conversely, the frequency of accessing local food through farmers' markets decreased from 64% prior to the pandemic to 25% during the first wave of the pandemic.

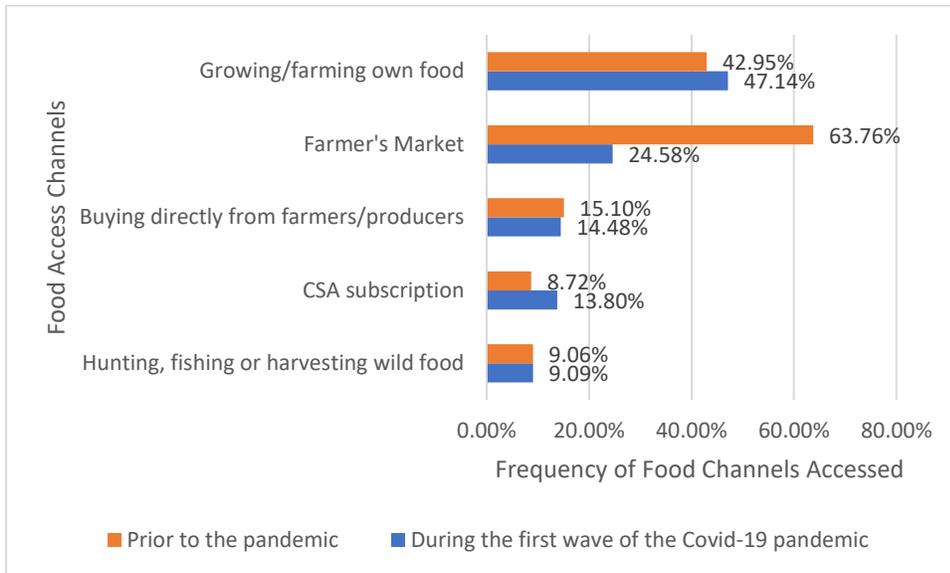


Figure 7. Food access via local food sourcing channels in 2019 prior to the pandemic in comparison to during the first wave of the COVID-19 pandemic.

4.3.1.4 Decreases of access frequency through received food channels

Lastly, Figure 8 shows the decreases in frequency of food accessed through received food channels. The most pronounced decreases in accessing food through these channels were from families/friends (decrease from 25% to 16%) and meals received from the workplace (decrease from 7% to 0.3%). Food accessed through food banks and other charities decreased by about 1%.

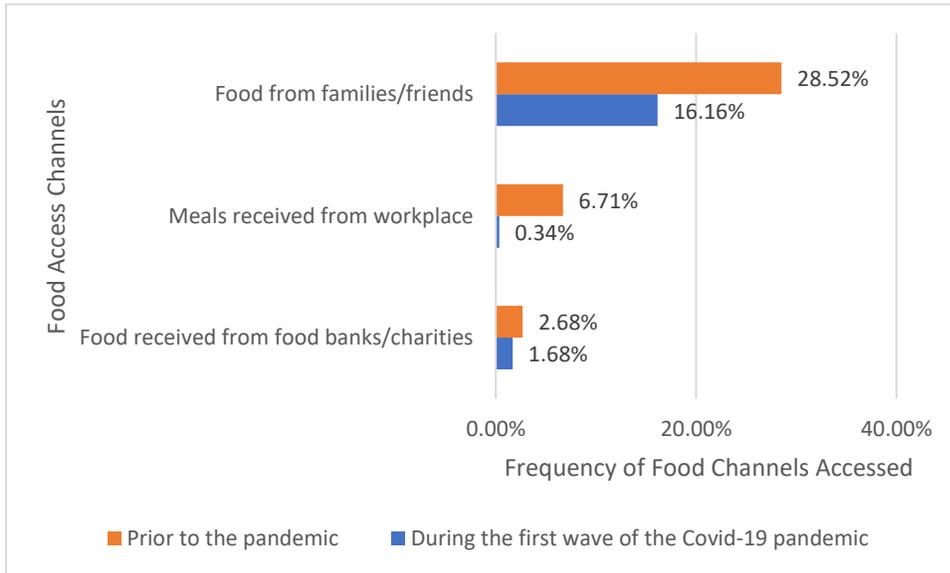


Figure 8. Food access via received food channels in 2019 prior to the pandemic in comparison to during the first wave of the COVID-19 pandemic.

4.4 Food Access Challenges and Concerns

Irrespective of any particular food access channel, participants were asked to rate the overall level of difficulty that they were experiencing in accessing food during the first wave of the COVID-19 pandemic, using a 10-point scale (Figure 9). Overall, the results illustrate that participants' level of difficulty in accessing food during the first wave of the COVID-19 pandemic was low, with an average level of difficulty of 2.4. The most common levels of difficulty indicated by participants were: 1 (73 participants), 0 (56 participants), and 2 (40 participants). Only three participants indicated a level of difficulty of 9 and higher.

These results were also supported by the frequency of food purchases identified. When participants were asked how routinely they purchased food since the declaration of the COVID-19 pandemic, about 58% of participants indicated that on average they purchased food four times or more per month. Only about 4% of participants indicated that they purchased food once per month or less.

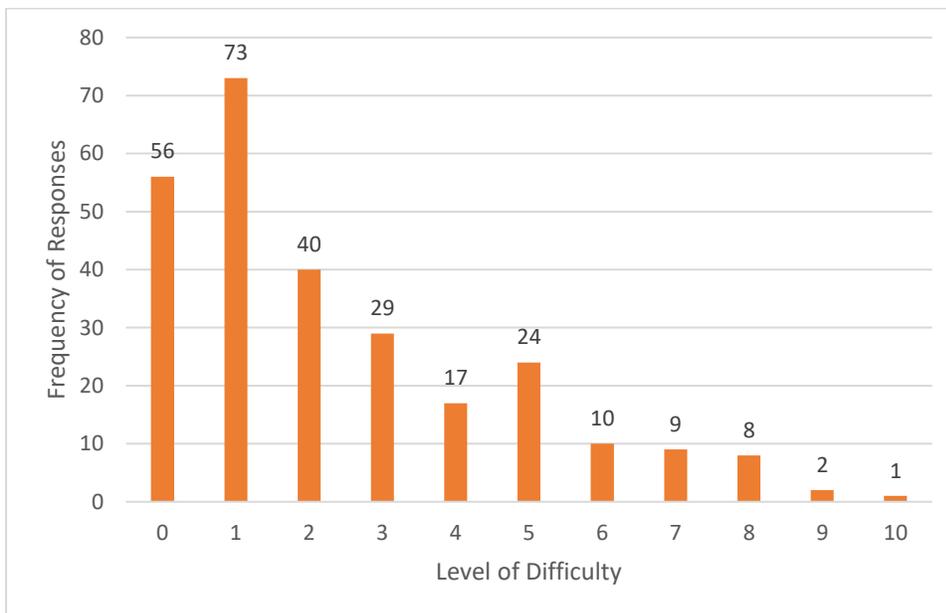


Figure 9. Level of difficulty in accessing food during the COVID-19 pandemic (n=269).

4.4.1 Factors limiting food access

In connection to the level of difficulty in accessing food, participants were asked to identify the factors that were limiting their food access during the first wave of the COVID-19 pandemic. Figure 10 illustrates that about 55% of participants indicated that their access to food was not limited by any factors. However, for those whose food access was limited, the two most common factors identified were worry/anxiety of going out and purchasing food (29%), and limited income or expense of food (21%). The least common factors identified were: store closures (6%), living in remote communities (5%), and increased time to access food due to store line ups, restricted shopping hours, and extended work hours for certain professions (4%).

In a follow-up question, participants were asked if they have noticed an increase in the price of food. The results showed that about 61% of participants have noticed an increase in the price of food.



Figure 10. Factors that are limiting food access during the COVID-19 pandemic (n=286).

4.4.2 Types of food difficult to access

In connection to the level of difficulty in accessing food, participants were also asked to identify the types of foods that were difficult to access during the first wave of the COVID-19 pandemic (Figure 11). The majority of the participants (145) identified that they did not have difficulty accessing any type of food.

Of the remaining participants, the types of foods identified most frequently were flour, fresh produce, meat (such as beef, poultry, pork, and deli cuts), yeast, and baking supplies (such as baking powder, baking soda, powdered sugar, sugar, and powdered milk). On the other hand, foods such as cooking condiments, butter, cooking oil, junk food, nuts, pre-made meals (found deli sections), allergy-free food, tofu, and granola were identified as least difficult to access.

4.4.3 Types of support for accessing food

As a follow up question, participants were asked to describe the types of support they would like to receive to enable them to access the food and quantity that they want. The most prevalent answers provided were:

- financial help in order to make healthy foods more accessible and affordable,
- better information about where local food is available and how to get it (in-person or online),
- greater accessibility to farmers' markets by opening them during the weekdays and making their products available at grocery stores.

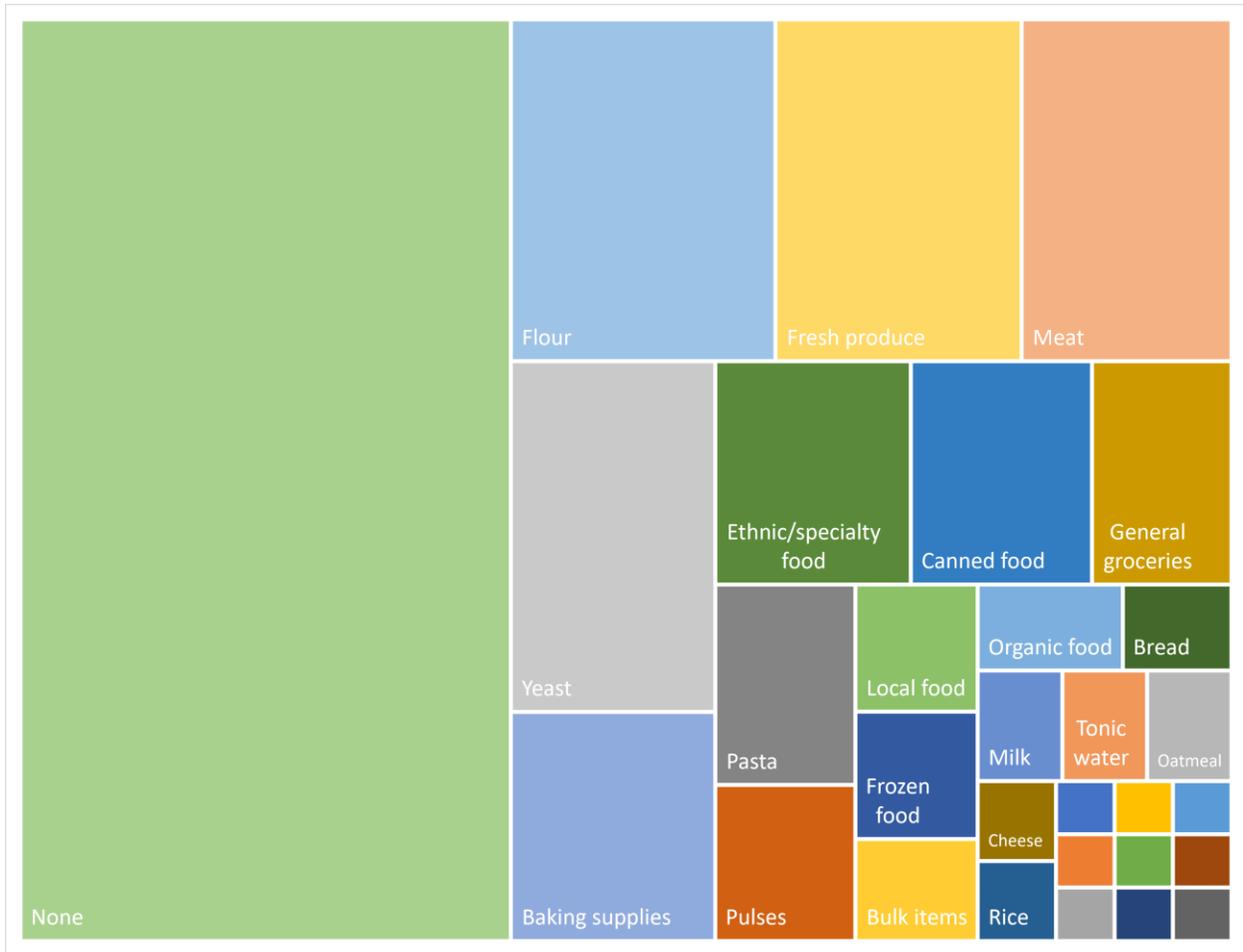


Figure 11. Types of food identified as being difficult to access during the COVID-19 pandemic (n=269)

4.5 Food Purchasing Behaviour

The pandemic's impact on overall food purchasing behaviour was evaluated by the frequency of reported food purchases during phase one of the pandemic.

4.5.1 Foods purchased more during the pandemic

Figure 12 illustrates the frequency of responses regarding the foods that were purchased more after the declaration of the COVID-19 pandemic. The foods that participants identified as purchased the most were: baking supplies (42%), dried and canned food (41%), and frozen food (34%). Baking supplies included items such as flour, yeast, baking powder, grains, nuts, etc.

In comparison, foods identified least commonly as being purchased more were meats and prepared meats (10%), cooking condiments (8%), and fish and shellfish (5%). Cooking condiments included items such as salt, pepper, spices, ketchup, chutney, salsa, hot sauce, etc.

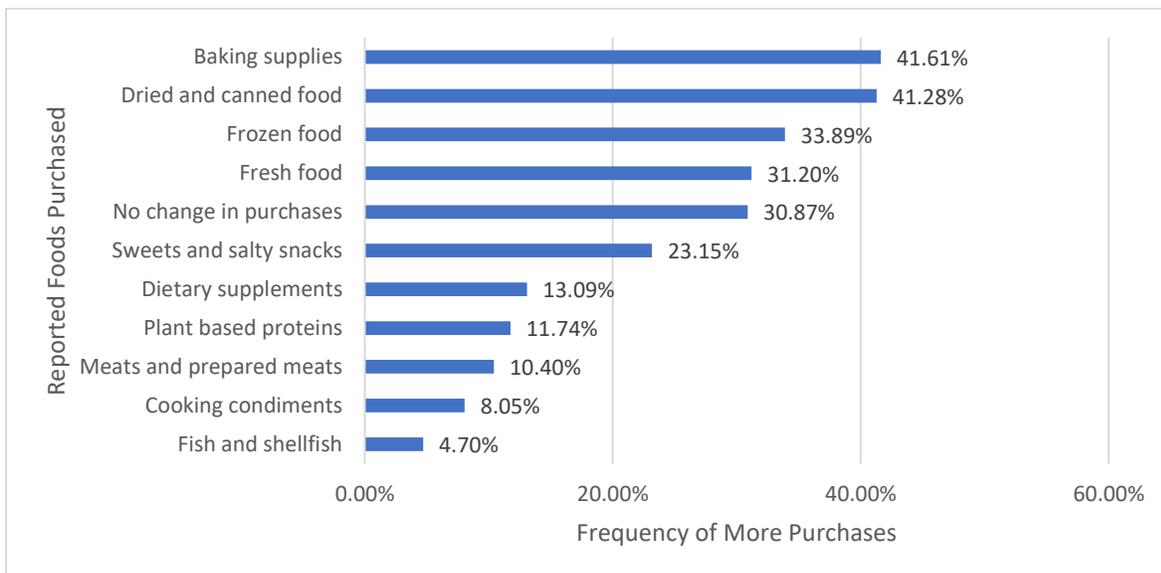


Figure 12. Reported foods purchased more after the declaration of COVID-19 pandemic (n=298).

4.5.2 Foods purchased less during the pandemic

Figure 13 illustrates the frequency of responses regarding the reported foods that were purchased less after the declaration of the COVID-19 pandemic. About 42% identified that they did not purchase less of any type food after the declaration of the COVID-19 pandemic. Of the 58% of participants that did indicate a change in purchasing behaviours, the foods most commonly identified were: fresh food (26%), meats and prepared meats (21%), and sweets and salty snacks (21%). In comparison, the foods that participants least commonly identified as being purchased less were dried and canned food (5%), dietary supplements (3%), and plant-based proteins (2%).

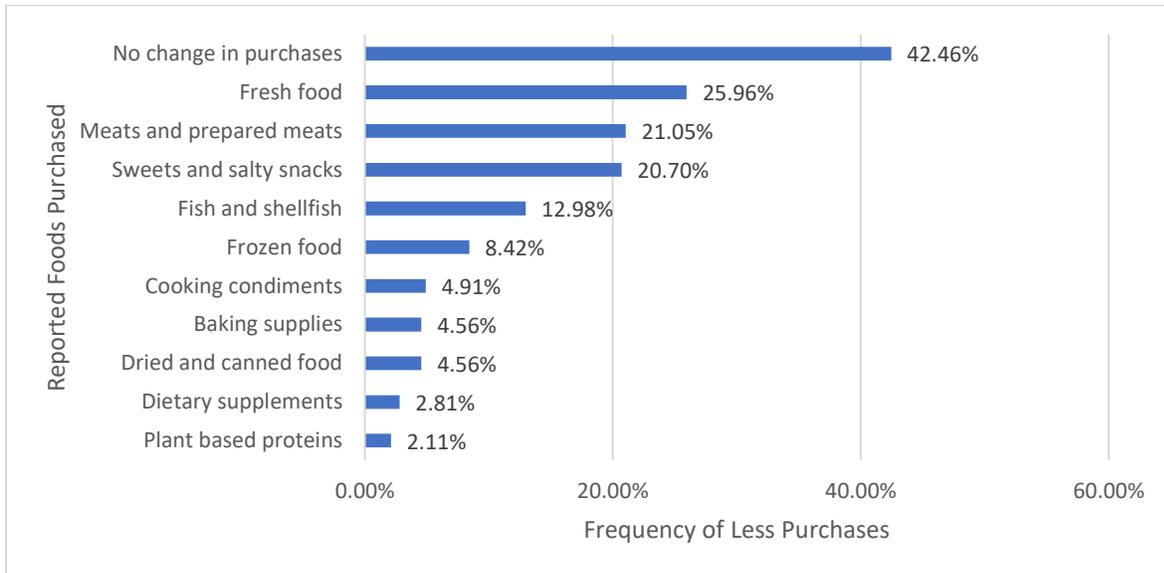


Figure 13. Reported foods purchased less after the declaration of COVID-19 pandemic (n=285).

4.5.3 Comparison of purchases after the pandemic by food category

Figures 14, 15, and 16 place foods purchased into three categories: shelf/freezer stable foods; cooking ingredients; and fresh foods. For each category, the graphs illustrate the comparison between the frequency of participants identifying purchasing more of that type of food and the frequency of participants identifying purchasing less of that type of food after the declaration of the COVID-19 pandemic.

4.5.3.1 Increases in shelf and freezer stable foods

Figure 14 presents the data for changes in the purchase of shelf and freezer stable foods during phase one of the pandemic. For the food types in this category, more participants increased their purchases of these foods than those participants purchasing less of those foods. About 34% of participants increased their purchase of frozen food, in comparison to the 8% who identified that they purchased less of this type of food. Similarly, regarding dried and canned food, 41% of participants identified that they purchased more of this type of food whereas, only about 5% identified that they purchased less of this type of food. In addition, regarding dietary supplements, 13% of participants identified that they purchased more of this type of food whereas, only about 3% identified that they purchased less of this type of food.

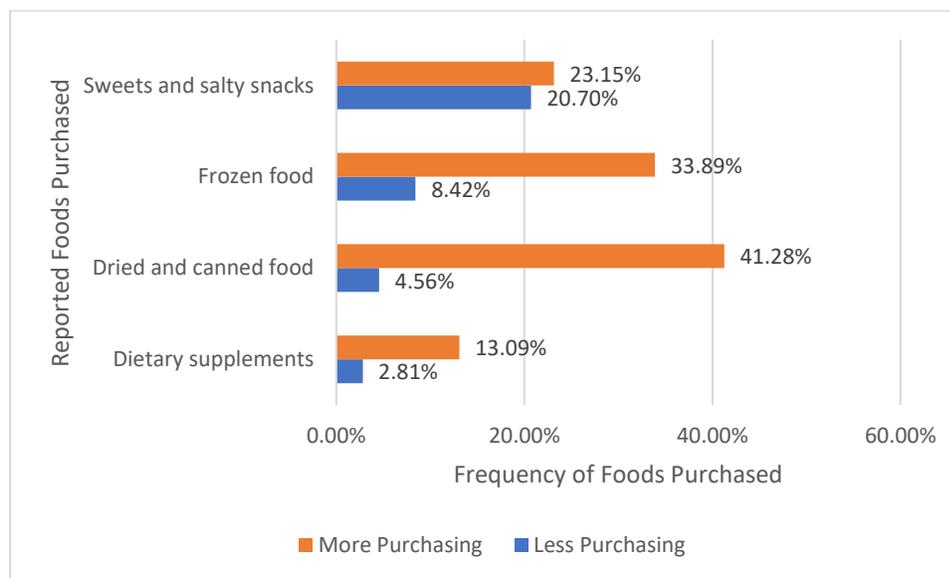


Figure 14. Types of shelf/freezer stable foods identified as being purchased more in comparison to being purchased less after the declaration of the COVID-19 pandemic.

4.5.3.2 Increases in cooking ingredients

Similarly, Figure 15 indicates the changes in purchasing for cooking ingredients after the declaration of the pandemic. For the food types in this category, more participants increased their purchases of these foods than those participants purchasing less of those foods. About 42% of participants purchased more cooking condiments in comparison to 4% of participants that identified they purchased less of this type of food. Regarding baking supplies, 8% of participants identified that they purchased more of this type of food, whereas 5% identified that they purchased less of this type of food.

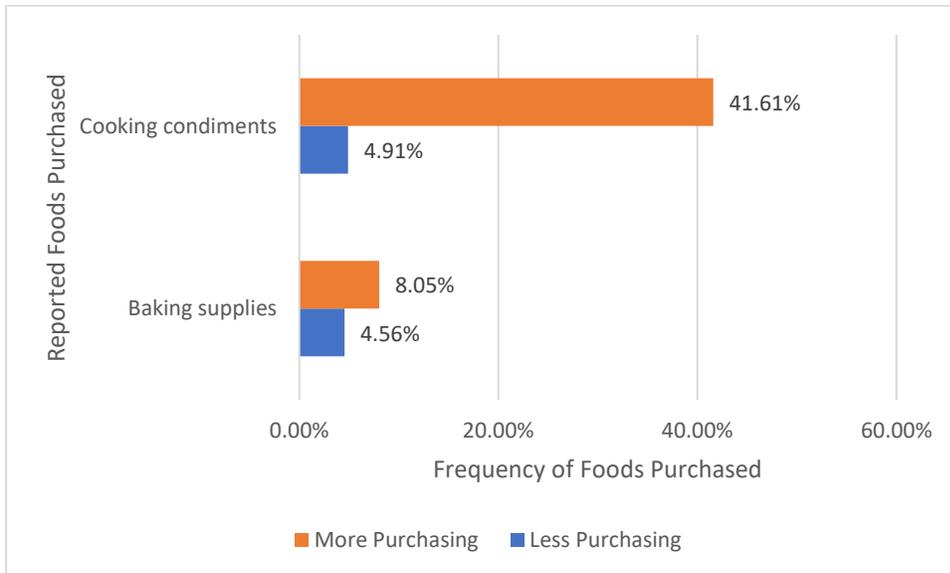


Figure 15. Types of cooking ingredients identified as being purchased more in comparison to being purchased less after the declaration of the COVID-19 pandemic.

4.5.3.3 Changes in fresh food purchases

Figure 16 compares changes in food purchasing for the fresh food category. More participants indicated purchasing more fresh food and plant-based proteins than those participants purchasing less of these foods. However, for the other food types in this category, meats and prepared meats and fish and shellfish, more participants indicated that they purchased less of those foods than those participants that indicated they purchased more of those foods. Regarding meats and prepared meats, 21% of participants purchased less of this type of food in comparison to 12% of participants that purchased more of this type of food. Similarly, regarding fish and shellfish, 13% of participants identified that they purchased less of this type of food whereas, 10% identified that they purchased more of this type of food.

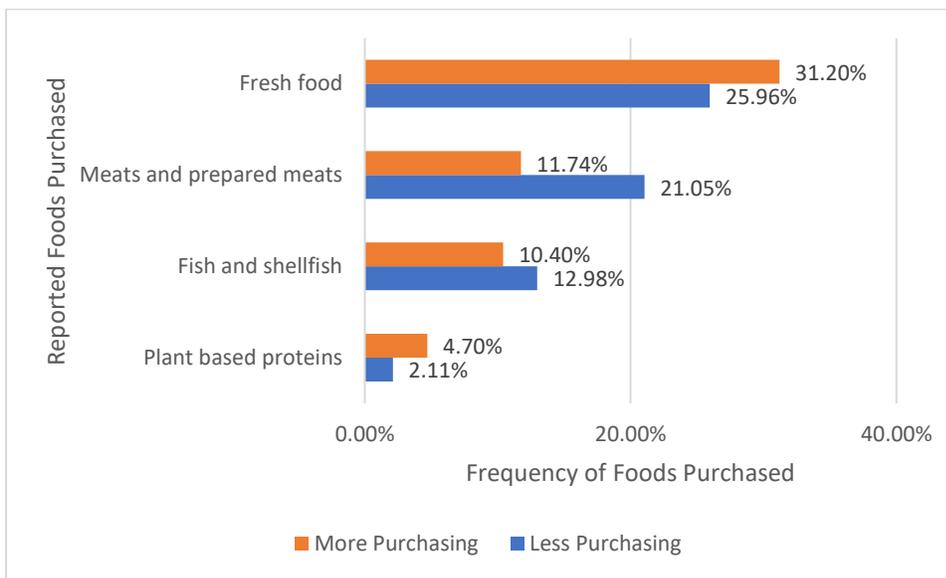


Figure 16. Types of fresh foods identified as being purchased more in comparison to being purchased less after the declaration of the COVID-19 pandemic.

4.6 Changes in Diet

The pandemic's impact on overall food consumption was evaluated by exploring the proportion of participants identifying a change in their diets after the declaration of the COVID-19 pandemic. Figure 17 illustrates that 50% of the participants indicated that their diet had changed after the declaration of the COVID-19 pandemic and the other 50% of participants indicated that their diet had not changed since the declaration of the COVID-19 pandemic.

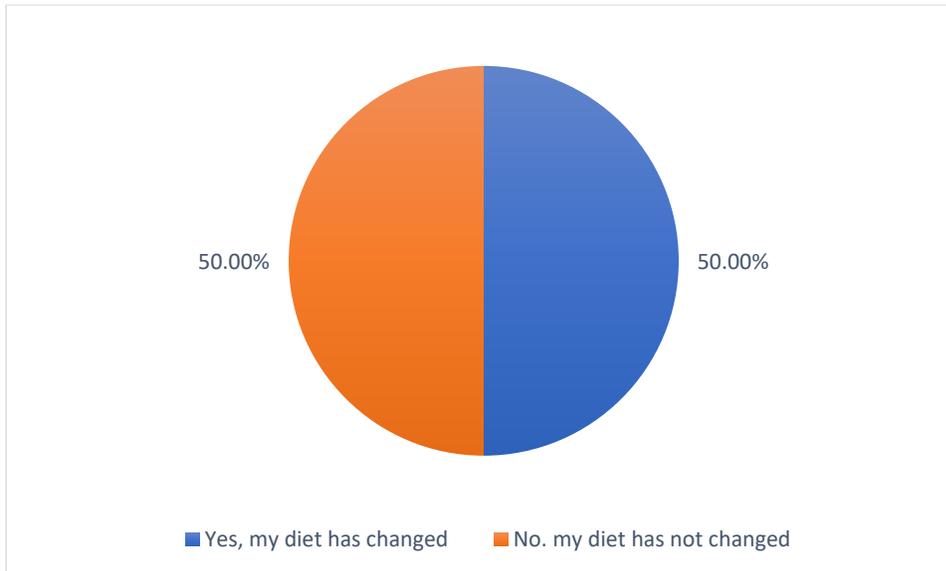


Figure 17. Proportion of participants identifying a change in their diets after the declaration of the COVID-19 pandemic (n=296).

In relation to the proportion of participants that identified a change in their diets, these participants were further asked to identify the types of diet changes that they experienced after the declaration of the COVID-19 pandemic. Figure 18 illustrates that more people (49%) increased their consumption of sweets and/or salty snacks, whereas about 19% decreased their consumption of these foods. More people (40%) also increased their consumption of fruits and vegetables, whereas about 22% decreased their consumption of these foods. Conversely, more people (34%) decreased their consumption of meat proteins, in comparison to the 9% that increased meat consumption. Fourteen percent indicated that they began eating more home cooked meals and began paying more attention to the healthiness and variety of the foods consumed. In connection to this, about 5% indicated that they began eating more baked goods prepared at home such as breads. Lastly, 12% indicated that they began taking dietary supplements.

As a follow up question, participants were also asked to briefly explain why their diet had changed. The most prevalent answers recorded by participants were:

- the growing expense of food (especially meat and fish),
- looking for cheaper alternatives (such as pulses),
- stress/emotional eating,
- working from home allowing more time to meal plan and cook homemade meals.

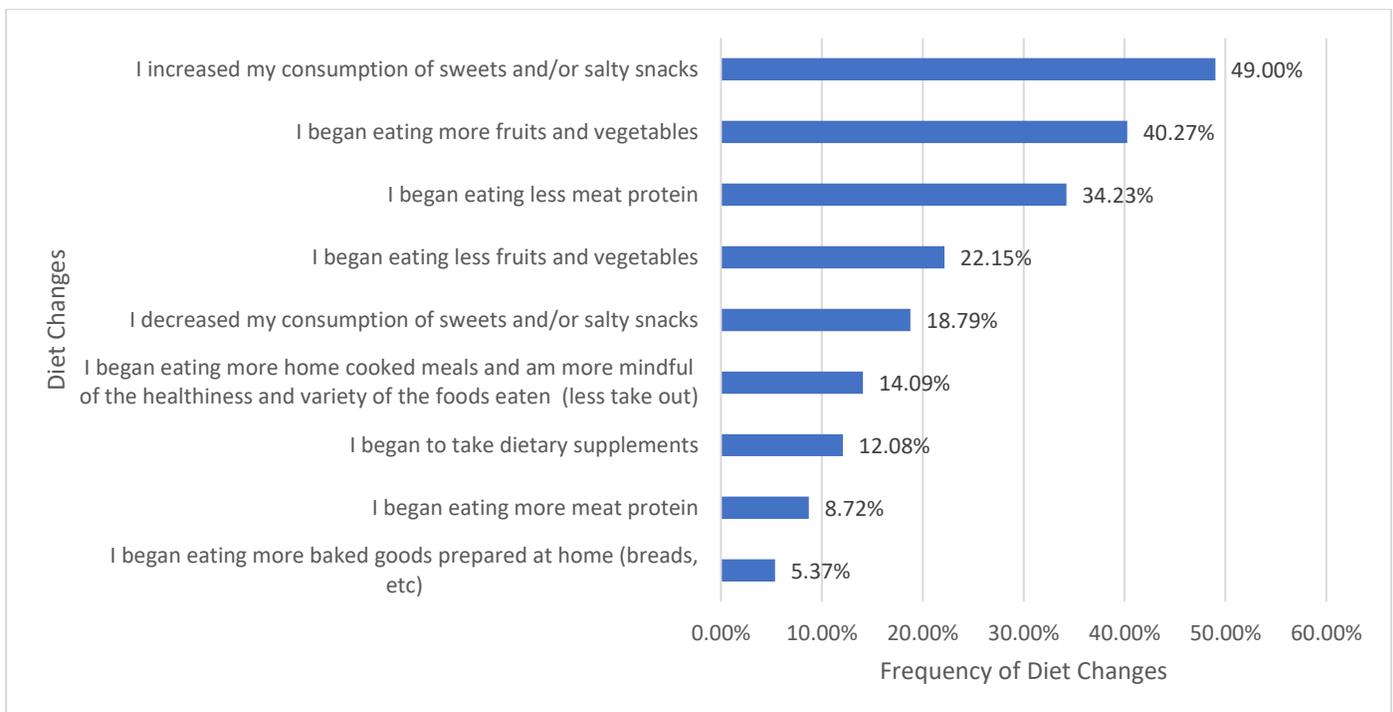


Figure 18. Types of diet changes identified by participants after the declaration of the COVID-19 pandemic (n=149).

4.7 Food Access Concerns

The pandemic's impact on food access concerns was evaluated by exploring the proportion of participants identifying experiencing some level of food insecurity at three different time stages: in 2019 before the pandemic; during the first-wave of the pandemic in the month they filled out the survey; and, thinking about the month ahead of them. For each time stage, participants were asked if they "didn't have enough food for an active healthy life" or if they were concerned that they "will not have enough food for an active healthy life" with regards to the future time stage. If participants indicated "always true," "usually true," or "occasionally true" to those statements, they were considered to be experiencing some level of food insecurity. Figure 19 illustrates that 12% of the participants experienced some level of food insecurity in 2019 prior to the declaration of the COVID-19 pandemic. This proportion increased to 19% of the participants indicating that they experienced some level of food insecurity during the first wave of the pandemic in the month they filled out the survey. Furthermore, thinking about the month ahead of them, about 20% of participants indicated that were concerned about being food insecure.

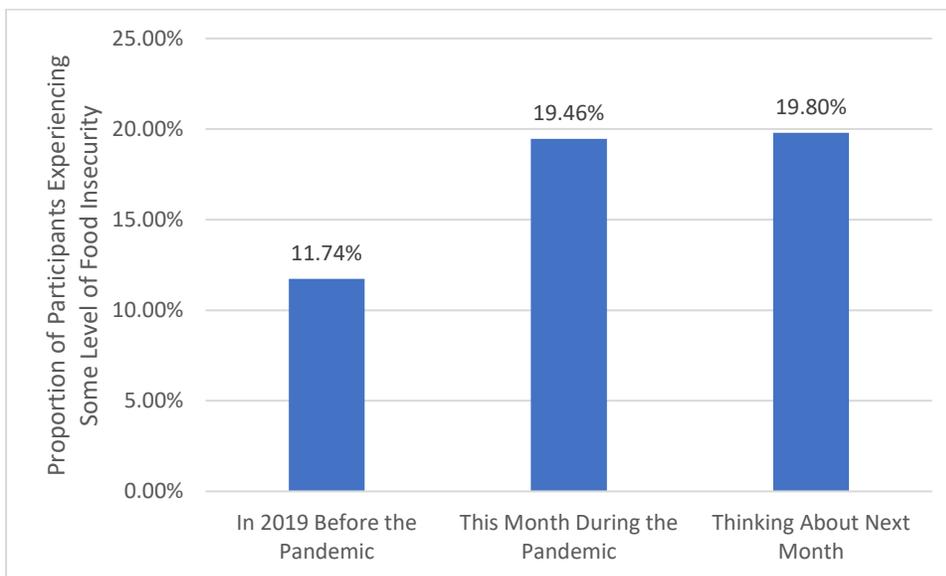


Figure 19. Proportion of participants experiencing some level of food insecurity in 2019 prior to the pandemic, during the first wave of the COVID-19 pandemic and thinking about the future (n=298).

4.8 Perceptions of Food System Reliability and Types of Support Needed

The reliability and resilience of the globalized and industrialized food system is a topic of growing concern, particularly in light of widespread shocks to the system such as climate change and the COVID-19 pandemic. As evidenced globally, the dominant food system and our relationships with it have been severely tested by the pandemic.

This section evaluates respondents' perceptions of both the global and local/regional food systems, based on their responses to four questions. The first question asked respondents to rate their level of concern over the reliability of the global food supply chain, on an ascending 10-point scale. As a follow-up question to the first question, participants were asked to briefly explain why they are concerned about the reliability of the global food supply chain. The next question asked respondents to rate their level of agreement/disagreement that a substantially developed local/regional level food system can be more reliable than the global food supply chain; the response scale was from 0 (strongly disagree) to 10 (strongly agree). The final question asked respondents if the pandemic had them thinking that the provincial government should put greater efforts into building and strengthening local/regional food systems in Alberta. Similar to the previous question, the response scale was from 0 (strongly disagree) to 10 (strongly agree).

Figure 20 shows the response to the first question regarding their level of concern about the reliability of the global food supply chain. Overall, the results illustrate that the level of concern about the reliability of the global food supply chain is on the middle to high end of the spectrum. The most common levels of concern indicated by participants were: 6 (47 participants), 5 (43 participants) and 7 as well as 8 (35 participants each); the average level of concern was 5.6. Only 27 participants indicated a level of concern of 1 or less.

Next, participants were asked to provide reasons for their responses to the first question. One of the prominent concerns voiced was regarding the safety and quality of the food imported during the COVID-19 pandemic. Participants specifically noted their concern about the level of processing involved in most imported foods and the extent of food handling during processing and transportation, increasing the risk of contamination. Some participants also mentioned the current outbreaks that have occurred in meat-packing facilities and on farms producing fruits and vegetables (for example onion farms) that have further highlighted the health risks that workers are subjected to. Another prominent concern was regarding the instability of international production and trade. Participants noted that due to COVID-19 restrictions, there has been a decrease in foreign farm labour availability, a decrease in processing capacity, as well as shipping/transport issues due to border closures. This meant that certain fresh foods produced/processed globally, or ethnic foods that are not produced in Canada, became unavailable. Participants also noted economic concerns over the rising costs of foods if production capacities are low in exporting countries and food shortages become commonplace.

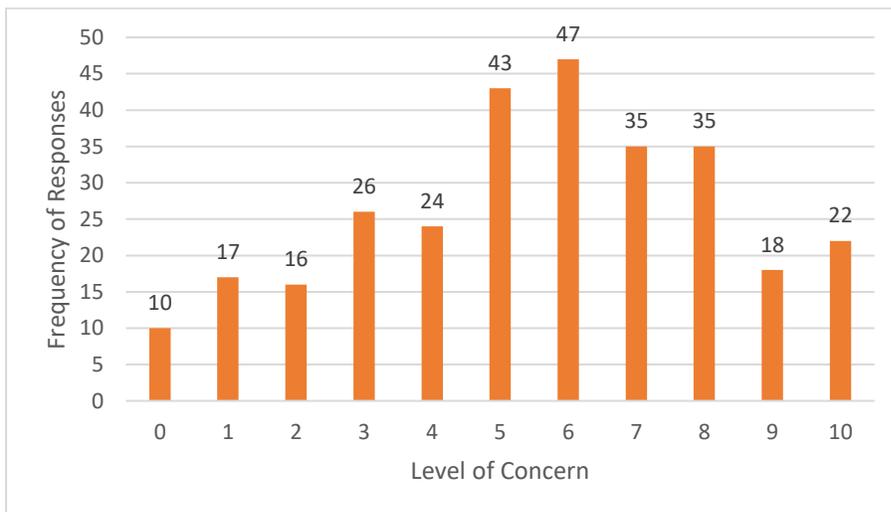


Figure 20. Level of concern regarding the reliability of the global food supply chain (food imported from other countries) during the COVID-19 pandemic (n=293).

Figure 21 illustrates participants' level of agreement/disagreement that a sustainably developed local/regional level food system (food grown and distributed in Alberta) can be more reliable than the global food supply chain during the COVID-19 pandemic. The average level of agreement was identified to be 7.6 on a 10-point scale. The most common levels of agreement indicated by participants were 10 (93 participants), 8 (48 participants) and 5 (37 participants). Only six participants indicated a level of agreement of 1 or less.

As a follow up question, participants were asked to briefly explain why they believe that a sustainably developed local/regional level food system in Alberta can be more reliable in bringing food to the table than the global food supply chain. Participants noted that a local food system would be less subjected to fluctuations in the global market that are caused by trade barriers, tariffs, global price fluctuations and trade wars. Instead, it would strengthen the local economy, increase local employment, and help to strengthen buyer trust with local providers. Participants also noted that producers and processors within a local food system have more capacity to control the production and transport of their products; therefore, ensuring better quality. Furthermore, it was commented that local food producers and processors have the knowledge and entrepreneurial capability to produce food using sustainable and environmental approaches as well as care for land stewardship; whereas this approach is not prominent in large-scale industrial operations. Finally, participants noted that developing a local food system would enable Alberta to decentralize our current food system from multinational corporations and increase the diversity of our production from the handful of monocrops that are mostly exported. Decentralizing and increasing production diversity would increase food security within the province and decrease our reliance on the global food system.

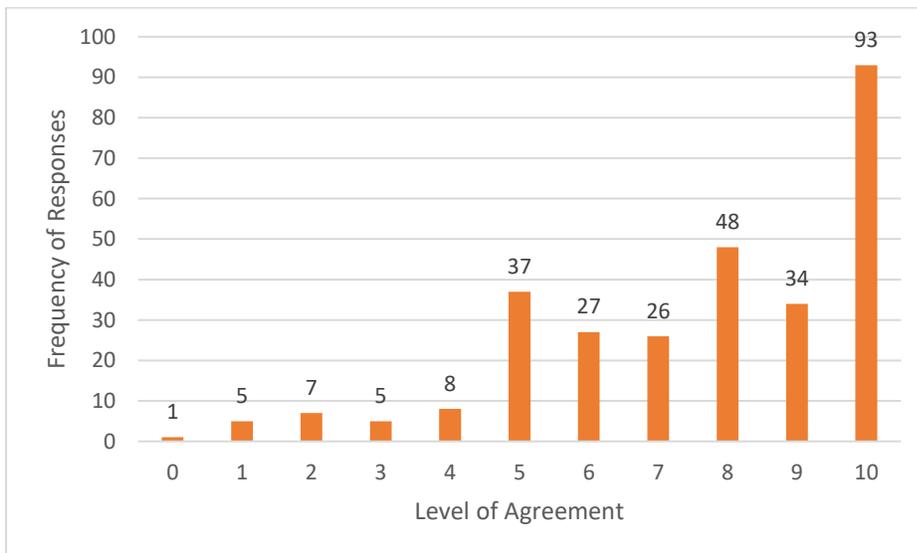


Figure 21. Level of agreement that a sustainably developed local/regional level food system (food grown and distributed in Alberta) can be more reliable than the global food supply chain during the COVID-19 pandemic (n=291).

Finally, participants were asked to rate their overall level of agreement that a greater effort by the provincial government should be put forth to build and strengthen local/regional food systems in Alberta (Figure 22). Overall, the highest proportion of respondents (112 out of 296) agree that a greater effort should be put forth by the provincial government to build and strengthen local/regional food systems in Alberta. The average level of agreement was identified to be 7.7.

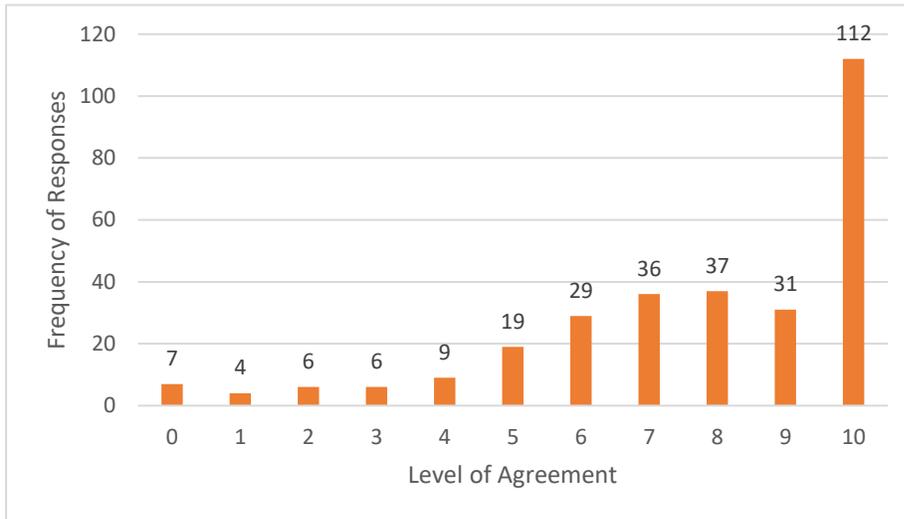


Figure 22. Level of agreement that a greater effort by the provincial government should be put forth to build and strengthen local/regional food systems in Alberta (n=296).

5 Discussion

The rapid and global spread of the COVID-19 virus has resulted in many changes in consumers' relationship with food (Aday and Aday, 2020; Béné, 2020; Butu et. al., 2020; DeBroff, 2020). This study highlights 4 key, interconnected ways in which respondents in Alberta adjusted their food behaviours during the COVID-19 pandemic, as well as their perceptions of the reliability of global versus localized food systems.

1. Changes in Food Access

All forms of in-person food access declined during the pandemic compared to 2019. While in-person shopping at conventional grocery stores remained the key food access channel for respondents in Alberta, online food purchasing increased significantly compared to 2019. Similarly, a survey in the United States found that nearly half of respondents currently participate in online food retails (Redman, 2020), and Germany also saw a growth in online food trade (Dannenberg et. al., 2020). The shift to online food shopping reflects consumers' efforts to reduce personal risk of transmission during the pandemic. Shifting to an online model was also a strategy implemented by many small scale, local food producers and businesses (e.g., retail, restaurants) in Alberta, despite competition in this area from large, established international players using online ordering platforms (Butu, et. al., 2020). In order to increase their market competitiveness, a number of Calgary food and drink producers formed an online collective – The Best of Calgary Foods – as a way to collaborate, innovate and facilitate customer access to local food products (Clapson, 2020). The success of this initiative, and similar collaborations occurring in Saskatoon and Winnipeg, should be noted by government or other organizations interested in supporting local food businesses to be competitive and remain viable.

2. Pandemic Anxiety

Pandemic anxiety played an important role in limiting food access for a high percentage of our respondents. Results indicate that pandemic anxiety affected consumers in different ways: (1) it indirectly turned food shopping into a stressful activity; (2) it directly caused consumers to reduce in-person food access; and, (3) it also caused concern over the future and the ability to access enough food for their household. Studies from China, Finland and Poland suggest that perceived severity of the pandemic and fear of limited access to food induced consumer behaviours such as food stockpiling and hoarding (Wang et. al., 2020; Laato, et. al., 2020; Jeżewska-Zychowicz, Plitcka and Królak, 2020). In Iran, increased price of essential goods was one of the main sources of stress during the pandemic (Mousavi, Hooshyari and Ahmadi, 2020). In the United States, a survey found that anxiety was centered around not having access to specific foods when out shopping (DeBroff, 2020). Safety and sanitization measures have become a new norm for Canadian consumers when shopping for food (Agri-food Analytics Lab, 2020b; Haas et. al., 2020; Nielsen, forthcoming). To address consumers' fear and reduce anxiety, information (such as risk of transmission via food, additional restrictions and safety measures, etc.) should be communicated clearly by health officials using evidence-based approaches. Local food producers and businesses can also reassure consumers by continuing to provide a safe shopping environment with enough space to physical distance and providing hand sanitizing and contactless payment options.

3. Changes in Diet

Two contrasting behaviours of dietary change emerged during the pandemic – increased consumption of sweet/salty snacks and increased consumption of fruit and vegetable. Some respondents also reported eating less meat. Studies from France, Poland and Spain shared similar results on the two contrasting dietary changes (Deschasaux et. al., 2020; Górnicka et. al., 2020; Scarmozzino and Visioli, 2020). There is scientific evidence supporting stress-eating behaviour especially of sugar, fat and alcohol (Kamel and Abbas, 2020; Mattioli et. al., 2020; Ingram, Maciejewski and Hand, 2020). A healthy diet (such as consumption of fruits and vegetables) is often referred to as one important strategy to improve our immune systems to protect against infection and/or reduce the severity of illness when infected (Han and Hoang, 2020; Jawhara, 2020; Moazzen et. al., 2020). Public health programming on food choices, nutrition education and food preparation to encourage healthy eating during stressful events such as a pandemic should be designed and implemented.

4. Supporting the Development of Local/Regional Food Systems

The majority of respondents would like to see development of a robust local-regional food system in Alberta and they identified a number of reasons why this would be beneficial, socially, economically and environmentally. Having a stable local food supply with short travel distances would increase reliability of food access and increase resilience of the food system in the face of major shocks, such as the pandemic, climate change, and trade wars. They also identified the importance to the local economy of supporting local producers and businesses. Despite these and other benefits, Clapp and Moseley (2020) point out that diversified market opportunities and infrastructure to support local producers is often lacking in Canada compared to businesses in the global supply chain. Therefore, the development of appropriate environments for local farmers and businesses who participate in local supply chains should be a priority in economic recovery and development strategies for provincial and local governments. Business models that enhance producers' collaboration and market opportunities should also be supported by all levels of government. Another aspect of local/regional food system development reported in this study was the increase in people growing their own food. Governments and organizations can encourage and support this by providing information and training to enhance their skills, and for increasing access to land/community gardens. This last finding illustrates the need for innovative extension education programming.



Photo credit: ISFS, Tsawwassen Farm School

6 Conclusion

This survey was conducted to understand the impact of the COVID-19 pandemic on consumer food access, purchasing and consumption behaviour, as well as their perceptions of and concerns about the reliability of the food system during the first wave of the pandemic. The survey results suggest that food purchasing and consumption changed in Alberta as a result of the pandemic and the public health measures put in place by the provincial government.

Half of the respondents reported experiencing a change in diet, which included an increase in the consumption of sweet and salty snacks, as well as fruit and vegetables, but a decrease in meat consumption. A significant proportion of participants (45%) experienced difficulties in accessing food, primarily due to anxiety about in-person shopping, limited income and the rise in food prices. An increase in food prices was noted by the majority of respondents. However, our survey participants also reported making changes to increase their food access, such as through online ordering and growing their own food. Whether or not these changes outlast the pandemic remains to be seen, but at the time this report is being prepared, the province finds itself in the second wave of COVID-19 infections and the pandemic is likely to continue through the winter months. Most participants were concerned about the reliability of the global food supply chain and wanted the provincial government to support development of a stronger local/regional food system. The results suggest that Alberta residents would be less concerned about food availability and safety during times of crisis, if a stronger local/regional food system was developed.



Photo credit: ISFS, Tsawwassen Farm School

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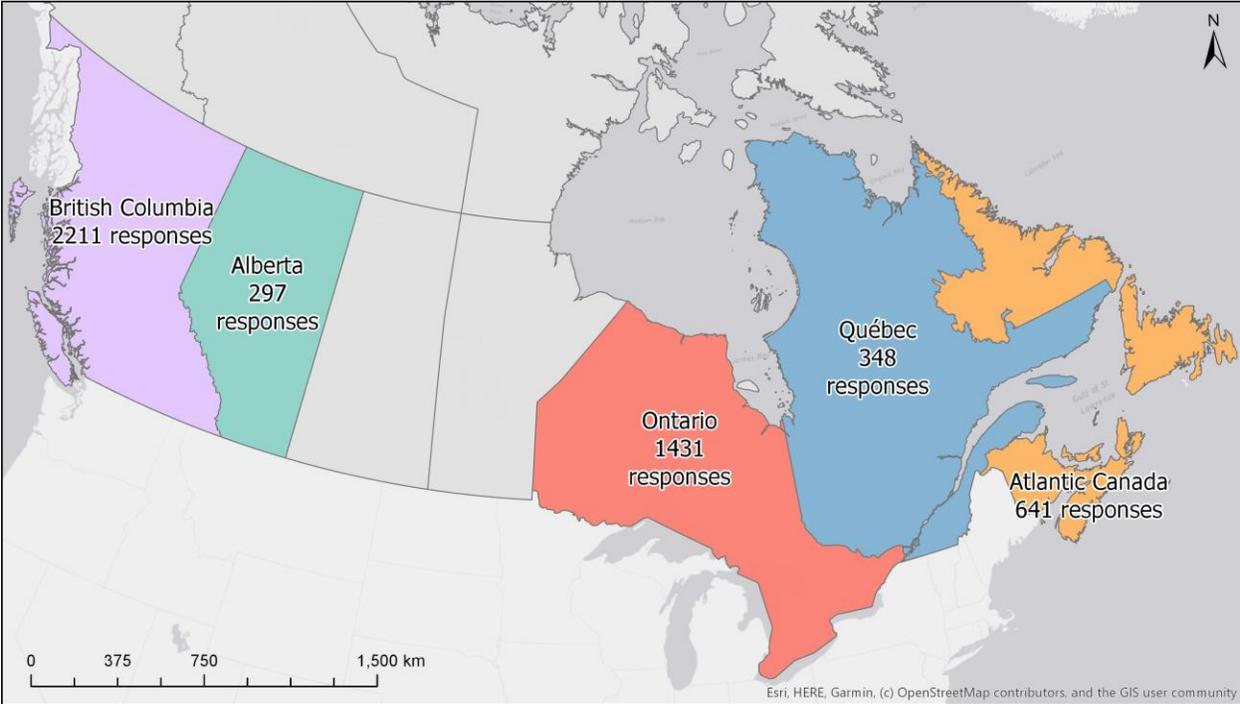
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Appendix A - Interprovincial Survey Response Rates by Province and Links to Other Regional Reports

Survey response rates in each province are summarized in the figure below. Due to limited resources, the survey was not conducted in Manitoba, Saskatchewan, Yukon, Nunavut and the Northwest Territories.

Final reports from Alberta, Ontario, Quebec and Atlantic Canada can be found at: <https://www.kpu.ca/isfs/covid19-consumer-survey>



Appendix B – Survey Questionnaire

Letter of Informed Consent

Title of Research Project: Alberta consumer food access, perceptions and concerns during the COVID-19 pandemic

Principal Investigator: Dr. Mary Beckie

You have been invited to participate in a survey on consumer food access, perceptions and concerns during the COVID-19 pandemic. This project is designed and executed by the Faculty of Extension and the School of Public Health at the University of Alberta. The survey can be completed online in approximately 15 minutes. Please review the informed consent information and contact the principal investigator if you have any questions.

Purpose of the Project

The main goals of this project are to advance our understanding of food access and the food related behavior of Alberta consumers during the COVID-19 pandemic. The results will provide evidence of the impacts of a pandemic on one of the basic human needs - food - from the consumer's perspective.

Voluntary Participation

Your participation is voluntary. You may withdraw from the study by simply clicking the exit link on the top right hand corner or closing your web browser. Any responses you completed up to that point will be deleted. You may skip any of the questions you do not wish to answer. There will be no negative consequences for an incomplete survey response or withdrawal.

Procedures and Confidentiality

Your answers are completely anonymous. Survey responses will be summarized and reported in an aggregate form within a report.

Please note that when doing online research, there is always the chance of hacking from outside sources. To protect you, we will do the following: (a) we are not asking you to provide personally identifiable information; (b) we will disable IP address tracking by our online survey; (c) we will download and store your data on a secure University of Alberta server; (d) after downloading, we will delete your responses from the online survey tool; and (e) we will treat your anonymized data confidentially and will only allow the research team or future researchers to have access to the data. We suggest that you disable any browser cookies before beginning this survey or clear them after completing the survey.

Risks of Harm/Discomforts/Inconvenience

There is no potential negative economic or social risk associated with your participation. A minimal amount of emotional risk is expected by your participation in this project. If you become distressed during the online survey process, you can stop the survey at any time. You can contact the principal investigator, Dr. Mary Beckie or the University of Alberta Research Ethics Office to express your concerns.

Benefits

There are no financial benefits associated with completing the survey. However, your participation will help provide information on the impacts of Covid-19 on consumer food access, food purchases and consumption, as well as food related perceptions and concerns. Furthermore, the knowledge gained from this study will contribute to the on-going discussion on the importance and/or urgency of transitioning into a more reliable and resilient regional food system.

Contact Information

By consenting to participate, you have not waived your rights to legal recourse in the event of research related harm. If you wish to contact someone regarding this research, contact the principal investigator, Dr. Mary Beckie (email: mary.beckie@ualberta.ca) or the University of Alberta Research Ethics Office at 780-492-2615 or reoffice@ualberta.ca.

* 1. I agree to participate in this study. I understand the purpose and nature of this study and I am participating voluntarily. I understand that I can withdraw from the study at any time, without any penalty or consequences.

Yes No

* 2. I understand that I can withdraw from this survey at any time by closing the web browser.

Yes No

* 3. I understand that I can skip any questions that I do not feel comfortable with or wish to answer.

Yes No

* 4. Please know that you can withdraw from the study by clicking "Exit" in the top right hand corner or closing your web browser. You may also skip any questions you don't want to answer.

Do you want to continue answering the survey?

Yes, I want to continue

No, I do not want to continue

Confidentiality Statement: All your answers will be anonymous and your name will not be attached to your responses.

5. Are you 18 years of age or older?

Yes No

6. Are you a resident of Alberta?

Yes No

7. Are you are currently residing in Alberta?"

Yes No

8. Please enter the first three digits of the postal code of your current residence

Concern about the COVID-19 Pandemic

Note:

- On March 11th, 2020, the World Health Organization (WHO) announced that the worldwide
- COVID-19 outbreak is a pandemic. On March 13th, 2020, the Government of Canada advised against non-essential travel abroad. Thereafter, physical distancing practice was implemented, non-essential businesses closed and activities were cancelled.

9. Do you belong to one of the following groups that are identified as high-risk for severe illness from COVID-19? Please select all that apply

- People aged 65 years and older
- People who live in a nursing home or long-term care facility
- People with chronic lung disease or moderate to severe asthma
- People who have serious heart conditions
- People who are immunocompromised including cancer treatment
- People of any age with severe obesity (body mass index [BMI] >40) or certain underlying medical conditions, (particularly if not well controlled, such as those with diabetes, renal failure, or liver disease etc)
- People who are pregnant
- Other (please specify)
- I do not belong to a vulnerable group

10. Rate how concerned you are about the COVID-19 pandemic:

Not at all concerned Extremely concerned

Food access perceptions and concerns in Alberta during the COVID-19 pandemic

Food Access

11. Prior to the pandemic (in 2019), how did you access your food? Select all that apply.

- Buying groceries/meals in-person at a grocery store
- Buying groceries/meals online from a grocery store to be picked up/delivered to your home
- Buying groceries/meals from other online stores (i.e SPUD, Amazon, Instacart) and receiving deliveries to your home
- Buying produce/products at Farmers markets
- Receiving CSA (Community Supported Agriculture) weekly produce box
- Buying produce/products directly from farms/farmers
- Dine at restaurants (including fast-food, café, etc)
- Order take-out meals from restaurants (including fast-food, café, food trucks, etc.)
- Order prepared meals or kits to be delivered from delivery services (i.e Hello Fresh, Chef's Plate etc)
- Meals purchased from school/university cafeteria or dining hall
- Meals purchased from workplace cafeteria or dining hall
- Groceries or meals received from food banks/charities
- Groceries or meals received from workplace
- Groceries or meals received from family or friends
- Growing your own food
- Hunting, fishing, or harvesting wild food
- Other (please specify)

12. Since the declaration of the pandemic, how do you access your food now? Select all that apply

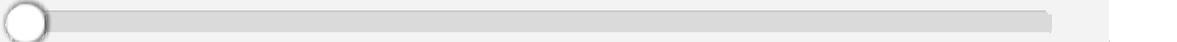
- Buying groceries/meals in-person at a grocery store
- Buying groceries/meals online from a grocery store to be picked up/delivered to your home
- Buying groceries/meals from other online stores (i.e SPUD, Amazon, Instacart) and receiving deliveries to your home
- Buying produce/products at Farmers markets
- Receiving CSA (Community Supported Agriculture) weekly produce box
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- Dine at restaurants (including fast-food, café, etc)
- Order take-out meals from restaurants (including fast-food, café, food trucks, etc.)
- Order prepared meals or kits to be delivered from delivery services (i.e Hello Fresh, Chef's Plate, etc)
- Meals purchased from school/university cafeteria or dining hall
- Meals purchased from workplace cafeteria or dining hall
- Groceries or meals received from food banks/charities
- Groceries or meals received from workplace
- Groceries or meals received from family or friends
- Growing your own food
- Hunting, fishing, or harvesting wild food
- Other (please specify)

13. Since the declaration of the pandemic, how often do you purchase food?

- Less than once a month
- Once a month
- 2 times per month
- 3 times per month
- 4 times per month
- More than 4 times per month

14. How difficult is it currently to access food?

Extremely easy Extremely difficult



15. What are the factors that may be limiting your access to food right now? Select all that apply.

- I am in quarantine/self-isolation
- I do not have transport
- Stores are limited in the area I live
- Stores are closed
- I am too worried/anxious to go out and purchase food
- Income is limited or food is too expensive
- Food is scarce
- My access to food is not limited
- Other (please specify)

16. Please specify the type of food you have trouble accessing during the COVID-19 pandemic? If it is none, please type "None"

17. Have you noticed an increase in the price of food?

- Yes
- No

Personal Food Security Concern

Please indicate your level of agreement on each of the following statements:

18. At times in 2019, I didn't have access to enough food for active healthy life, for all household members"

- Always true
- Usually true
- Occasionally true
- Never true

19. "During the COVID-19 pandemic, in this month, I don't have access to enough food for active healthy life, for all household members"

- Always true
- Usually true
- Occasionally true
- Never true

20. "Thinking about next month, I am concerned that I will not have access to enough food for active healthy life, for all household members"

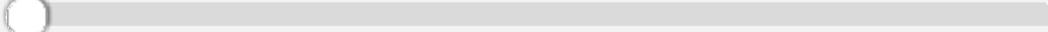
- Always true
- Usually true
- Occasionally true
- Never true

Food access perceptions and concerns in Alberta during the COVID-19 pandemic

Food system related perceptions and concerns

21. During the COVID-19 pandemic, how concerned are you about the reliability of the global food supply chain (where most of our food is imported from other countries) to bring food to your table?

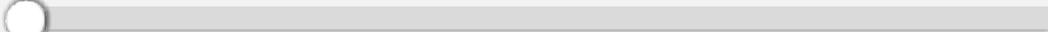
Not at all concerned Extremely concerned



Please explain briefly why you selected the level of concern in the previous question.

22. During the COVID-19 pandemic, do you believe that a substantially developed local/regional level food system (food is grown and distributed in Alberta/your region) can be more reliable in bringing food to your table than the global food supply chain?

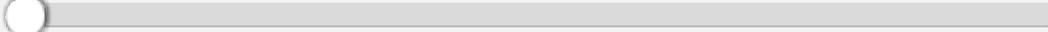
Strongly Disagree Strongly Agree



Please explain briefly why you selected the level of agreement in the previous question

23. Does the pandemic have you thinking greater effort by the provincial government should be put forth to build and strengthen local/regional food systems in Alberta?

Strongly Disagree Strongly Agree



Food access perceptions and concerns in Alberta during the COVID-19 pandemic

Food consumption

24. Has your diet changed since the COVID-19 became a global pandemic?

- Yes, my diet has changed.
- No, my diet has not changed.

25. How has your diet changed? Select all that apply.

- I began eating more fruits and vegetables.
- I began eating less fruits and vegetables.
- I began eating more meat protein.
- I began eating less meat protein.
- I increased my consumption of sweets and/or salty snacks.
- I decreased my consumption of sweets and/or salty snacks.
- I began to take dietary supplement.
- Other (please specify)

26. Please explain briefly why your diet changed?

Food Purchases

27. What types of food do you **buy more of** now during the pandemic? Select all that apply.

- Fresh food (including groceries and meals)
- Frozen food (including groceries and meals)
- Dried and canned food (including groceries and meals)
- Sweets and salty snacks
- Baking condiments (i.e. flour, yeast, baking powder etc)
- Cooking condiments (i.e salt, pepper, spices, ketchup, chutney, salsa, hot sauce, etc)
- Dietary supplements (i.e multi-vitamins, Vitamin C, Vitamin D, Elderberry extract, Omega-3, etc)
- There is no change. I always buy the same type and quantity of food.
- Other (please specify)

28. What types of food do you **buy less of** now during the pandemic? Select all that apply.

- Fresh food (including groceries and meals)
- Frozen food (including groceries and meals)
- Dried and canned food (including groceries and meals)
- Sweets and salty snacks
- Baking condiments (i.e. flour, yeast, baking powder etc)
- Cooking condiments (i.e salt, pepper, spices, ketchup, chutney, salsa, hot sauce, etc)
- Dietary supplements (i.e multi-vitamins, Vitamin C, Vitamin D, Elderberry extract, Omega-3, etc)
- There is no change. I always buy the same type and quantity of food.
- Other (please specify)

29. What types of support would you like to receive to enable you to access the food that you want in the quantity that you want?

Demographic questions

30. What gender do you identify with?

- Female
- Male
- Non-Binary
- I prefer not to disclose

31. Which category below includes your age?

- 18-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70-79
- 80 and older

32. What is the highest level of school you have completed or the highest degree you have received?

- | | |
|--|---|
| <input type="radio"/> Less than high school diploma | <input type="radio"/> College diploma |
| <input type="radio"/> High school diploma or equivalent (e.g., GED, ABE) | <input type="radio"/> Bachelor degree |
| <input type="radio"/> Some college but no degree | <input type="radio"/> Graduate degree/professional degree |

33. What is your total household income before tax in 2019?

- | | |
|---|---|
| <input type="radio"/> Less than \$20,000 | <input type="radio"/> \$120,000 – \$139,999 |
| <input type="radio"/> \$20,000 – \$39,999 | <input type="radio"/> \$140,000 – \$159,999 |
| <input type="radio"/> \$40,000 – \$59,999 | <input type="radio"/> \$160,000 – \$179,999 |
| <input type="radio"/> \$60,000 – \$79,999 | <input type="radio"/> \$180,000 – \$199,999 |
| <input type="radio"/> \$80,000 – \$99,999 | <input type="radio"/> More than \$200,000 |
| <input type="radio"/> \$100,000 – \$119,999 | |

34. What is your marital status?

- | | |
|---|---------------------------------|
| <input type="radio"/> Single, never married | <input type="radio"/> Divorced |
| <input type="radio"/> Married or domestic partnership | <input type="radio"/> Separated |
| <input type="radio"/> Widowed | |

35. What is your employment status today?

- Employed, 35 hours per week or more
- Employed, 20-34 hours per week
- Employed, less than 20 hours per week
- Unemployed
- Retired

36. Has your employment status changed because of the COVID-19 pandemic?

- No
- Yes, I have reduced my hours of work.
- Yes, I have increased my hours of work.
- Yes, I became unemployed
- Yes, I had to/chose to retire

37. Did you qualify for the following federal supports? Select all that apply.

- Canada emergency response benefit
- Canada child benefit
- Temporary salary top-up for low income essential workers
- Federal government wage subsidy paid to my employer
- Canada emergency student benefit
- No, I did not qualify
- I do not know whether I would qualify
- Other (please specify)

38. How many people (including yourself) are living in your household?

39. How many children under the age 18 are living in your household?

40. How many adults over the age 65 are living in your household?

Submit your responses

41. Would you like to submit your responses now?

- Yes, I would like to submit my survey responses
- No, I would like to withdraw from the survey

Thank you for taking the time to participate in this project. Your contributions will be invaluable in understanding how the COVID-19 pandemic affects consumer food access, food purchases and consumption, food related perceptions and concerns.

If you are interested in learning more about this project, please contact our principal investigator, Mary Beckie at mary.beckie@ualberta.ca. Once the study is complete, the survey results will be published online at: <https://www.kpu.ca/isfs/covid19-consumer-survey>