

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



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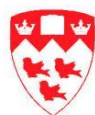
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Executive Summary

This report provides an overview of the results from a provincial survey titled *Food Access During Covid-19 First Wave: Ontario Survey*. Between May 21 to August 31, 2020 a total of 1431 participants completed the survey.

Key findings include:

- Just over half (54%) of the respondents reported changes in diet due to the pandemic, the most common change being an increase in the consumption of sweet and/or salty snacks.
- Respondents reported a 76.83% decrease in restaurant dining and a 62.59% decrease in take-out ordering, as compared to their pre-pandemic practices.
- 27.89% of the respondents started ordering groceries on line from grocery stores, and another 9.93% started ordering from online vendors.
- Majority of the participants reported no food access concerns, but this was changing: 10.13% had such concerns prior to the pandemic, 16.01% were worried when they completed the survey, and 18.33% were worried about having enough food in the month that would follow. Not surprisingly, the concern was higher among those in lower household income categories.
- 75% of the respondents expressed moderate to high concern with the reliability of food supply, with border closures cited as the top concern (495 participants). 91.98% reported moderate to high belief that local/regional systems would be more reliable, and 95.92% expressed moderate to high desire to see the province better support local food systems.
- 32.55% of the participants reported belonging to one or more equity-seeking groups and 48.66% identified as being at high risk for severe illness from COVID-19.
- 83.31% of the respondents identified as women.
- 71.01% reported no change in their employment status; this number includes 32.10% of respondents who were retired. 10.06% reported having lost employment due to the pandemic and 12.39% saw their work hours decrease.

The survey was part of a larger collaboration among the Institute for Sustainable Food Systems (Kwantlen Polytechnic University), 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. Links to the other provincial/regional reports are provided in Appendix B. We grateful for the support of all the collaborators and extend special thanks to the Institute for Sustainable Food Systems team, for their leadership on this project and extensive contributions to our discussion section.

Funding acknowledgment

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Cover image: FG Trade, Portrait of woman buying at supermarket - using face mask

Introduction

At the end of 2019, the world first learned about a novel coronavirus which was later given the name COVID-19 and declared a global health emergency. Within three months, pandemic-related restrictions on travel, social gatherings, recreational activities and business operations were imposed by governments all over the world. Such restrictions were of a scale that the world had never seen before. The effort to slow the transmission through physical distancing and limiting economic activities resulted in the loss of businesses, jobs and incomes. For instance, Statistics Canada reported an estimated 56,000 business closures in June (The Canadian Press Staff, 2020), while the Canadian Federation of Independent Business voiced concerns that as many as 19% of Canadian small businesses could face closures related to the pandemic and economic strain (Deschamps, 2020). Economic crises, caused by this pandemic, have jeopardized human development especially in vulnerable and disadvantaged groups (United Nations, 2020).

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

As the number of daily cases rose in Canada, so did fear and panic. During the first few weeks after the declaration of the global pandemic, a behaviour of “hoarding” of medical/cleaning supplies and food was widely reported in the media. Empty grocery store shelves and stories of those who were left without food constantly made headlines across Canada from early March to mid-April. The promise of convenience and abundance of food delivered to consumers through the global supply chain was broken. The “just-in-time” inventories, which boast freshness and efficiency, became one of the many weaknesses of our current food system during 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). 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. At the same time, media reported stories of organizations, community groups, and spontaneous individual and community initiatives trying to respond to the crisis through food programs like “good food boxes” and food recovery initiatives (Feinberg, 2020). Anecdotal evidence suggested intensified public discussion around food waste, economic disparities, and environmental consequences of industrial agriculture. Various food-issue listservs featured stories of local food producers and processors around the globe being unable to meet the new demand for their products (see, for example, the Food and Agriculture Organization’s “Food for the Cities” listserv, <http://www.fao.org/fcit/fcit-home/en/>). This in turn prompted many locally-based producers, processors and distributors to seek new sales channels. In Canada, some partnered with local restaurants to offer pop-up markets to accompany take-out menus. Others found ways to collaborate -- one Ottawa kombucha bottling facility, Buchipop, allocated space in their plant where consumers in the neighbourhood could pick up local food they ordered through the company’s website (see their website at <https://burrowshop.buchipop.com/>). Many Canadian farmers’ markets turned to on-line sales, and at least one direct-to-consumer platform, the Open Food Network Canada (see

<https://openfoodnetwork.ca/>) saw a several-fold increase in membership. Canada also saw a boom in people growing their own food (Mullins, Charlebois, Music and Finch, 2020), and growing interest in home-cooking and fermenting. All of these factors indicate that there is a shift underway in how those who live in Canada purchase, procure, and think about food.

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 instabilities and conflict. As such, it will be very valuable to understand how the current crisis has affected citizens and which citizens were most acutely affected. The purpose of this study is to assess how the COVID-19 pandemic has affected people's food access, food purchasing and consumption, and how perceptions regarding our food system may have changed. The results provide quantitative and qualitative information on behaviors and sentiments of Canadians about a food system for the 21st century.

This study is a collaboration between five institutions across Canada: the Institute for Sustainable Food Systems (Kwantlen Polytechnic University), 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). 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 4928 people participated in the surveys.

Results in this report focus on survey responses from Ontario. Links of findings from other regions can be found in Appendix A. An inter-provincial study such as this one can shed light on the similarities and differences in the impacts of Covid-19 on food related behaviors and perceptions of the pandemic and food systems in each region. The information highlights how geography and cultures influence people's behavior and contributes to the on-going discussion of the importance and urgency of creating a more reliable and resilient regional food system.

Covid-19 timeline and impacts on the food systems

Ontario stretches across just over one million square kilometers and is home to nearly 15 million residents. It boasts a vibrant agrifood sector, which in 2019 accounted for more than 860,000 jobs or 11.6% of the province's employed labour force (OMAFRA, 2020). The sector produces a diverse range of crops and manufactured goods. The seasonality of fresh produce is partly mitigated through a growing greenhouse industry, and although the province exported \$16.6 billion worth of food in 2019, it also imported \$29 billion in food in that same year (OMAFRA, 2020). Over the past decade, various studies have estimated that Ontario household spend, on average, roughly 10% of their income on food, but this number obscures both economic inequities, and geographic variations, as food is significantly more expensive in the northern parts of the province.

Ontario was the first province or territory in Canada to report a confirmed case of a positive coronavirus test, which was recorded in late January in the Greater Toronto Area. By early March, the World Health Organization declared a pandemic, the first COVID-19 related death was recorded in Ontario and on March 12 a two-week school closures were announced. Just five days later, the provincial government declared a state of emergency, and a wide-reaching lockdown began. Testing efforts expanded alongside these measures, and the number of new daily cases started to decrease. In mid-May the province rolled out its plan for "re-opening" that would be guided by case-numbers and risk levels in different regions in the province.

Throughout the month of June, public health restrictions started to relax region by region, allowing for outdoor dining, small gatherings, and services such as fitness centres. By mid-August, more restrictions were relaxed, and the plan for re-opening schools in September was announced.¹

Between the public measures and documented outbreaks in the agri-food sector, the impact of the pandemic has been enormous on the province's food system. Restaurant shutdowns greatly diminished the demand for some products, and impacted income stability for those employed in the sector. Food bank use rose sharply too. For instance, the Daily Bread food bank in Toronto reported a 200% increase in the number of clients (Lourenco, 2020). Border closures created a great deal of worry around trade (both imports and exports), although there is little indication that the trade channels have been significantly disrupted at this point. Major COVID-19 outbreaks in meat processing plants in Brampton and Breslau threatened the access to processing for meat producers and dozens of workers got sick. The provincial agricultural sector also relies on some 18,000 temporary foreign workers every year – employers had to find ways to get the workers to Ontario safely (e.g., by ensuring the workers quarantine upon arrival and securing safe working conditions), but many ultimately failed and some 1300 migrant workers tested positive for the coronavirus by the end of the summer (Pazzano, 2020). In Essex County, for instance, nearly half of all the confirmed cases of the coronavirus were among agricultural workers (Windsor-Essex County Health Unit, 2020), the vast majority on farms where migrant workers are housed in close quarters and reluctant to report symptoms for the fear of losing income.

Methodology

The Institute for Sustainable Food Systems at Kwantlen Polytechnic University initiated the original survey in British Columbia in April 2020. Their existing collaborations with other food systems researchers in Canada led to discussions about rolling out the survey in other provinces. For the Ontario survey, the Kwantlen team adapted the survey tool and launched it on the same platform (Survey Monkey), and the Carleton team then promoted the survey, completed the analysis of the results and generated this report. Several video-conference meetings enabled research teams across the country to connect, share updates and collaboratively prepare the report series.

The Ontario survey ran from May 21 to August 31, 2020. We promoted the survey through Carleton University social media channels and various food systems organizations in the province, but the uptake in the first few weeks was slow (just over 200 responses in six weeks). We then purchased Facebook² advertising. From July 16 to August 15, advertisements randomly appeared on Facebook timelines of Ontario residents, which generated an additional 1200 responses, for a total of 1431 completed survey submissions.

The number of respondents was not insignificant, but we acknowledge that our findings cannot be understood as random or representative of the Ontario population. The voluntary nature of online surveys means that participants self-select, and that those who participated were likely to

¹ For a more detailed provincial timeline, please see the Global News summary at <https://globalnews.ca/news/6859636/ontario-coronavirus-timeline/>

² As critical scholars we made this decision reluctantly. Given the complicated relationship that Facebook has with a range of public interest issues, we hesitated to further their commercial success. However, with our limited budget (we spent a total of \$400 on advertising), the time-sensitive nature of this research, and our desire to diversify the respondent pool, this decision was the most practical and fruitful one at the time.

have pre-existing interest in food, good internet connection, and be an active Facebook user. Nevertheless, the insights from this survey do point to several trends and concerns that deserve closer attention – now and in the coming months.

Results and discussion

Demographic information

The vast majority of the survey participants identified as women (over 80%, see Figure A1); and the older age groups were more significantly represented among the participants, with more than half reporting being over the age of 50 (Figure A2). Participants from equity-seeking groups made up just under one third of respondents (Figure A3), and over 80% reported having completed a college diploma or a university degree (including graduate degrees, Figure A4). About one third were employed full time, and another third were retired (Figure A5). 71.01% reported no change in their employment status, 10.06% reported having lost employment due to the pandemic and 12.39% saw their work hours decrease (Figure A6). A wide range of household income was represented among the participants (Figure A7). Most were married or in a domestic partnership (Figure A8), with varied household size (Figure A9), but most without children under the age of 18 (Figure A10) and only about a third with at least one household member over the age of 65 (Figure A11). Participants indicated the first three characters of their postal code, and the results suggest province-wide coverage (Figure A12), with just 35 participants reporting currently residing outside of the province (but identifying as Ontario residents). The highest response rates came from postal codes in the Sault Ste. Marie and Barrie areas. Notably, in May 2020 Walmart announced it was closing one of its two downtown Sault Ste. Marie stores, and Barrie was where the first COVID-related death was reported in Ontario. Nearly half of the participants identified as high-risk for severe illness from COVID-19 (Figure A13). Most were moderately to highly concerned with the pandemic (Figure A14); rated on a scale from 1 to 10, the most frequent response was 10, followed by 8, 7 and 9, in that order. Figures with the demographic information summarized here, can be found in Appendix A.

Food access

We noted several changes in how our participants accessed food during the first wave of COVID-19, compared to their food access prior to the pandemic. The single most significant change was that 76.83% participants stopped dining in restaurants. While indoor dining was not allowed in the spring, most of our respondents participated in July and August, when the restrictions were relaxed, and warm weather allowed for patio dining. However, most of our participants indicated high levels of concern, and nearly half identified as high-risk for severe illness from the coronavirus. It is thus likely that they avoided unnecessary situations that could lead to infection. Loss of income is likely a contributing factor here as well, since 62.59% of participants who used to order take-out meals before the pandemic ceased ordering such meals. There was also a 40.31% decrease in shopping at farmers' markets (which had difficulties reopening in some parts of the province), and a 16.77% decrease in shopping at grocery stores. At the same time, online ordering from grocery stores, for pick-up or delivery, increased by 27.89% and shopping through online stores like Amazon and Instacart went up by 9.93%. Figure 1 below details the reported changes in food access.

Access channel	Change compared to 2019
Buying groceries/meals in-person at a grocery store.	-16.77%
Dine at restaurants (including fast-food, café, etc).	-76.83%
Order take-out meals from restaurants (including fast-food, café, food trucks, etc.).	-62.59%
Buying produce/products at farmers' markets.	-40.31%
Growing your own food	4.17%
Buying produce/products directly from farms/farmers/fish and seafood harvesters	-4.51%
Groceries or meals received from family or friends	-4.95%
Hunting, fishing, or harvesting wild food	-0.55%
Receiving CSA (Community Supported Agriculture) weekly produce box.	1.96%
Buying groceries/meals online from a grocery store to be picked up/delivered to your home.	27.89%
Meals purchased from workplace cafeteria or dining hall.	-5.79%
Buying groceries/meals from other online stores (e.g., Amazon, Instacart) and receiving deliveries to your home.	9.93%
Buying produce/products directly from wholesalers/distributors	1.41%
Order prepared meals or kits to be delivered from delivery services (i.e Hello Fresh, Chef's Plate etc).	0.43%
Groceries or meals received from workplace.	-3.77%
Meals purchased from school/university cafeteria or dining hall.	-4.26%
Other (please specify)	2.87%
Groceries or meals received from food banks/charities.	-0.55%

Figure 1

Food purchasing behavior

In addition to the changes noted in the previous section, our participants reported varied frequencies of food purchasing (Figure 2) and more than one third reported not using any contact-less delivery services (Figure 3). Just over a third of the participants reported no changes to the types of food they purchased. Among the other respondents, the most significant changes were increased purchasing of baking supplies and frozen food (Figure 4).

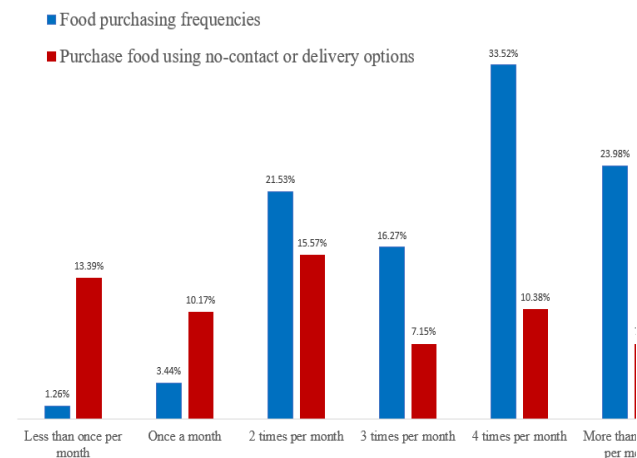
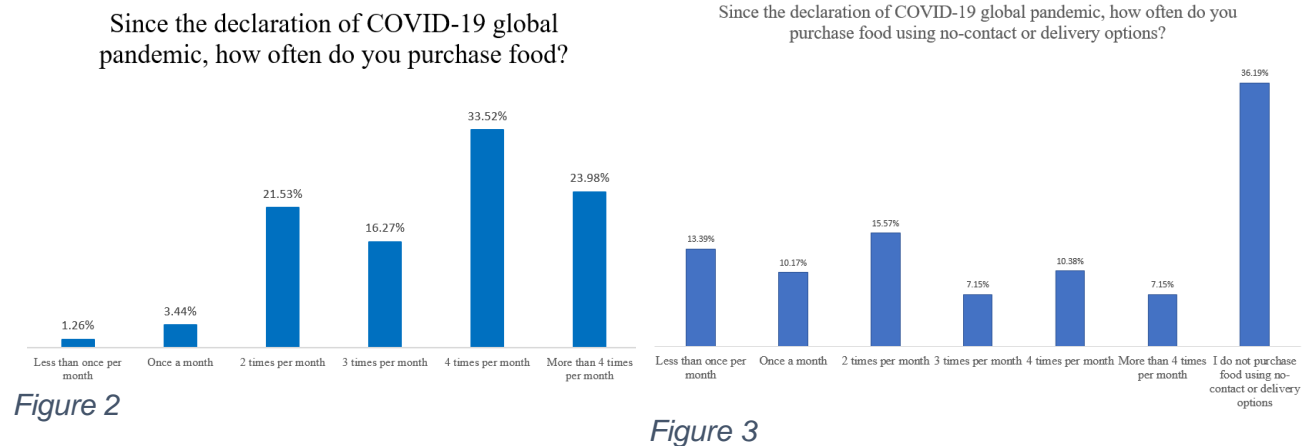


Figure 2 and 3 Comparison

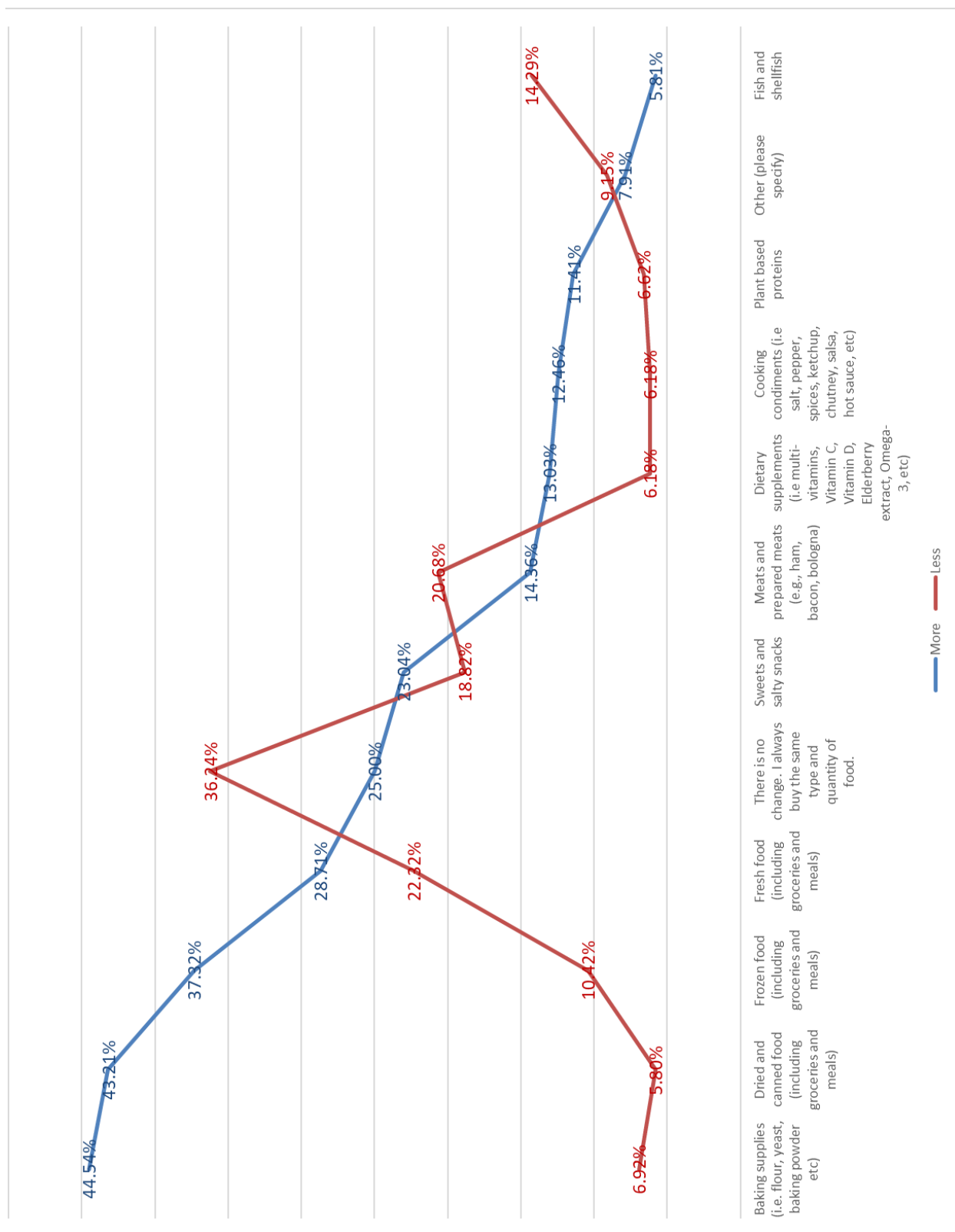


Figure 4: Types of food bought more or less, compared to pre-pandemic purchases

Food consumption

More than half (54%) of the participants reported that their diets changed with the pandemic, with an increase in the consumption of sweet and/or salty snacks being the most frequent change, followed closely by an increase in fruit and vegetable intake (Figure 5).

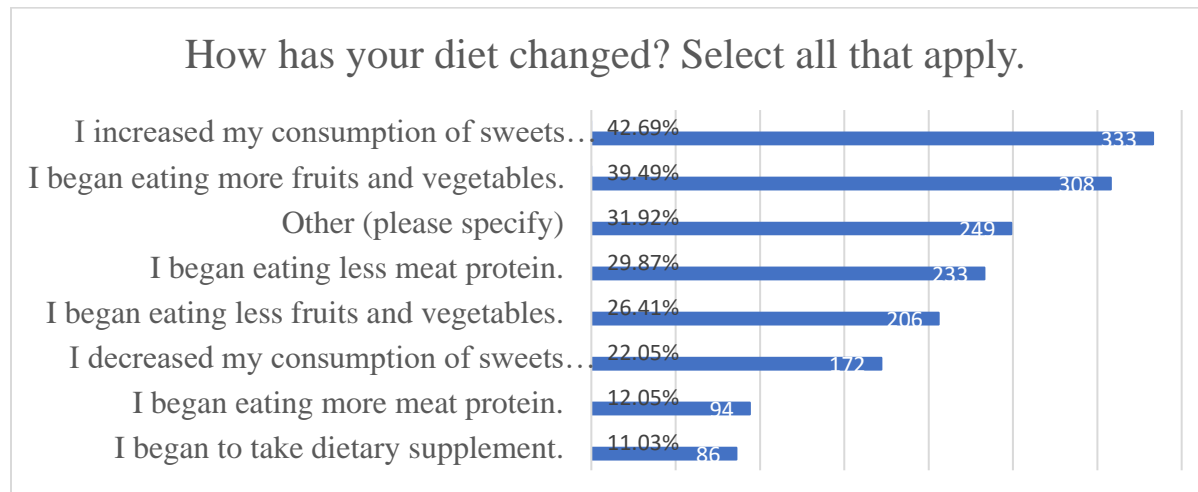


Figure 5

Concern over food access

Most participants indicated low level of difficulty accessing food. On a scale of 0 to 10, the most common answer was 1, but the average answer was 4, and 16% rated their difficulty at 6 or higher (Figure 6). About half of the participants suggested their access was not limited. Those whose access to food was limited noted various factors (Figure 7). Some had difficulty accessing specialty items related to dietary restrictions, but most challenges were related to flour and baking supplies, followed by meat and fresh produce (Figure 8, Figure 9). 78.51% of the participants noticed an increase in the price of food since the pandemic was declared, with those with lower household income noticing this more (Figure 10). Whereas most noted no food access concerns, there was a notable increase in the proportion of participants who were worried (Figure 11).

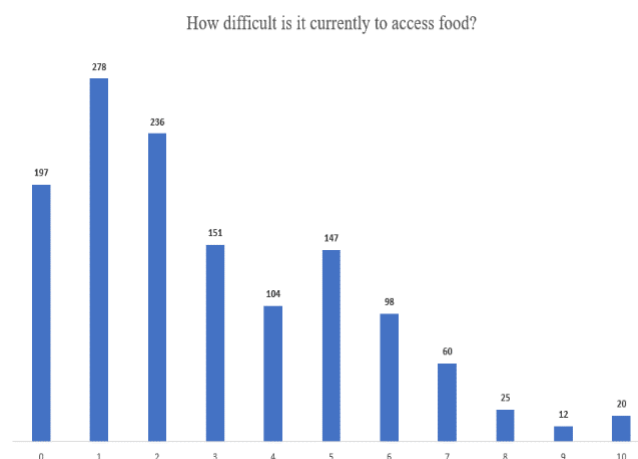


Figure 6

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

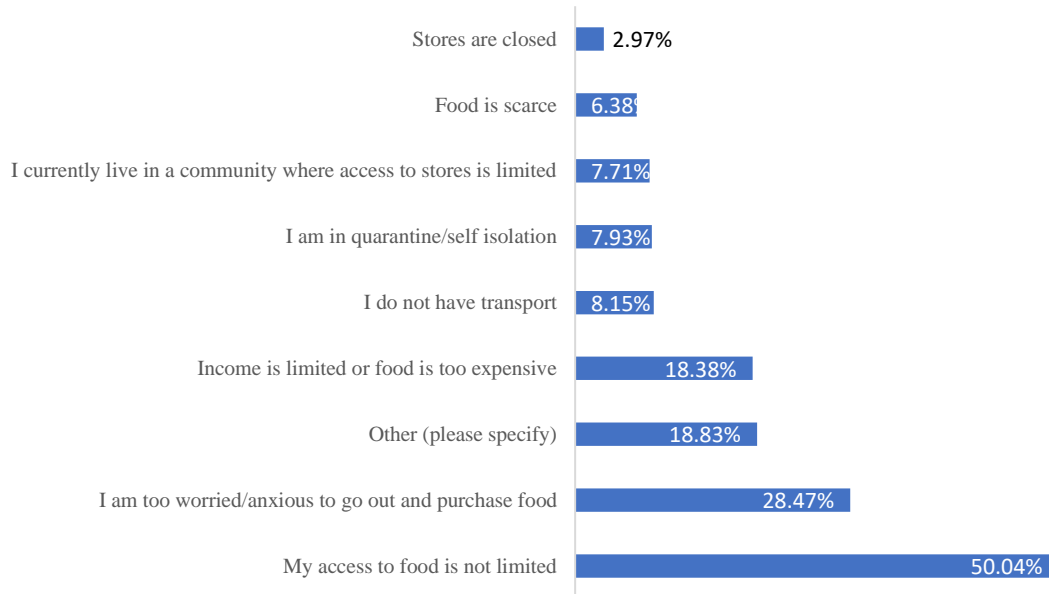


Figure 7

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

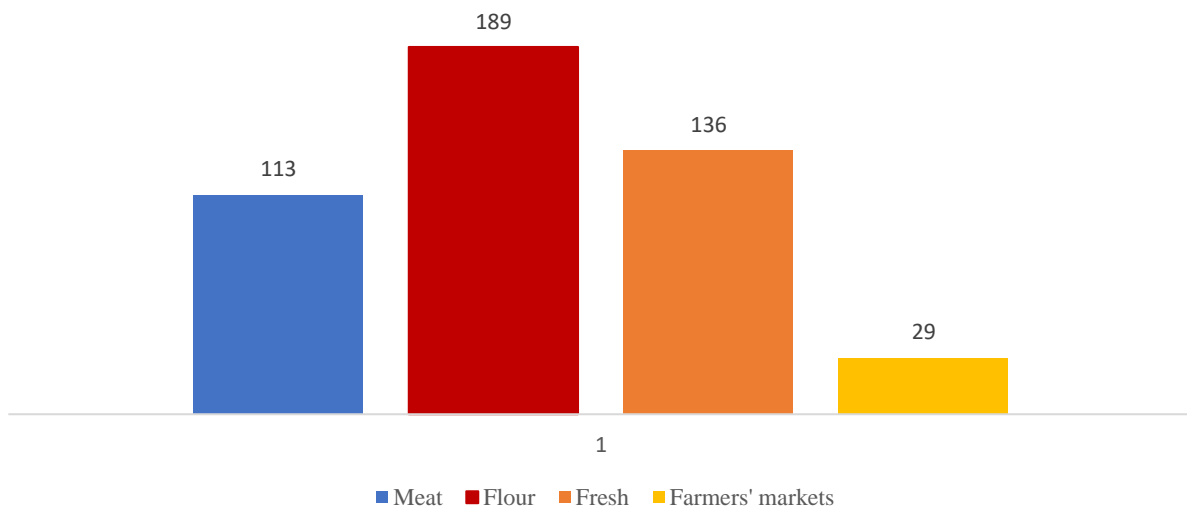


Figure 8

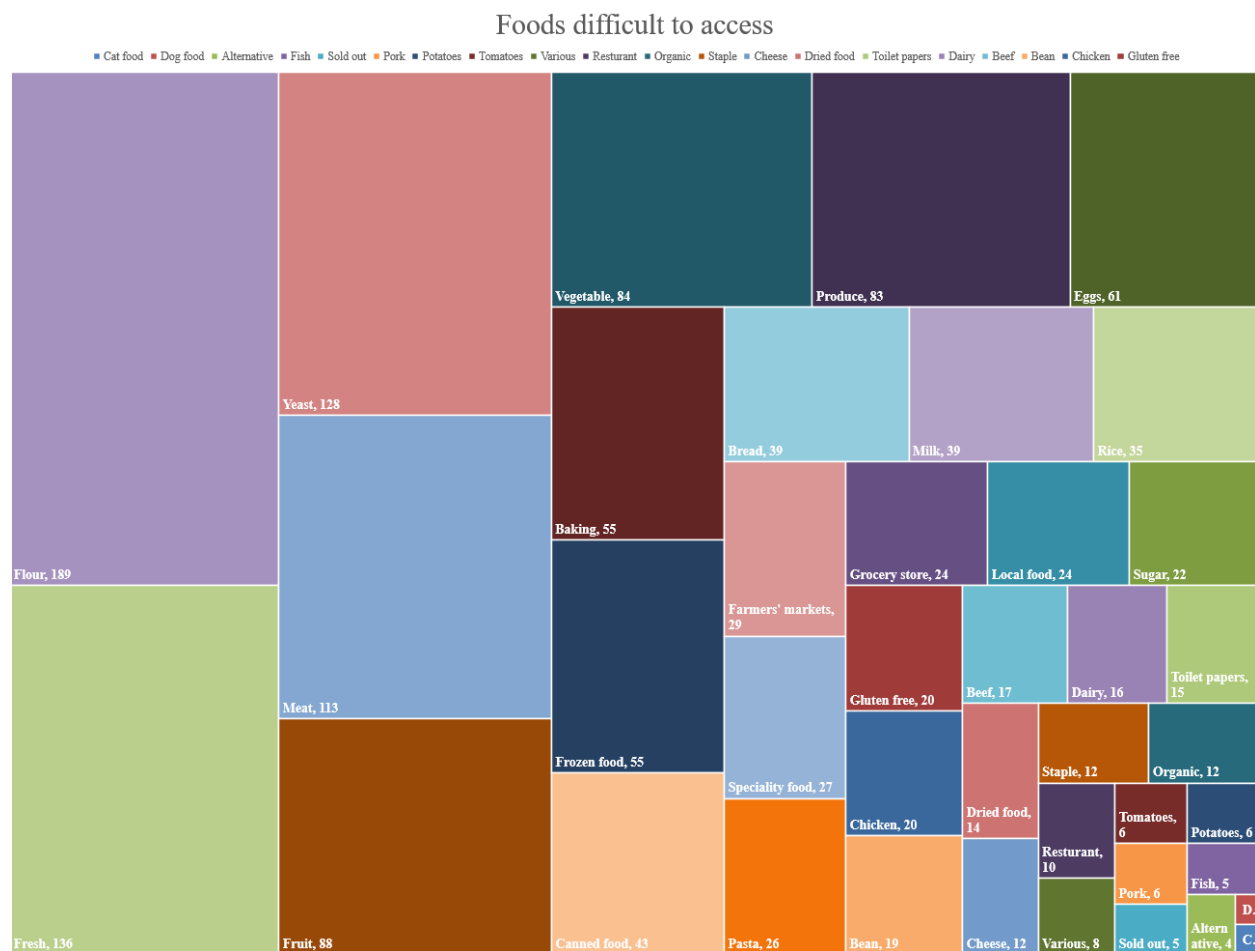


Figure 9

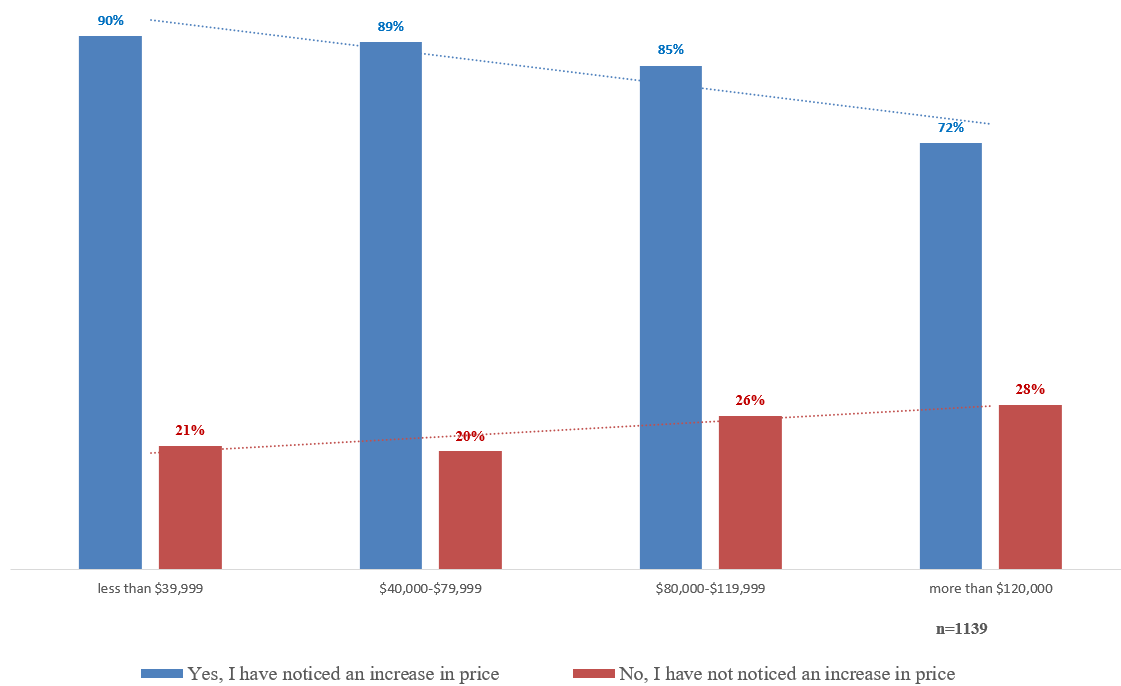


Figure 10

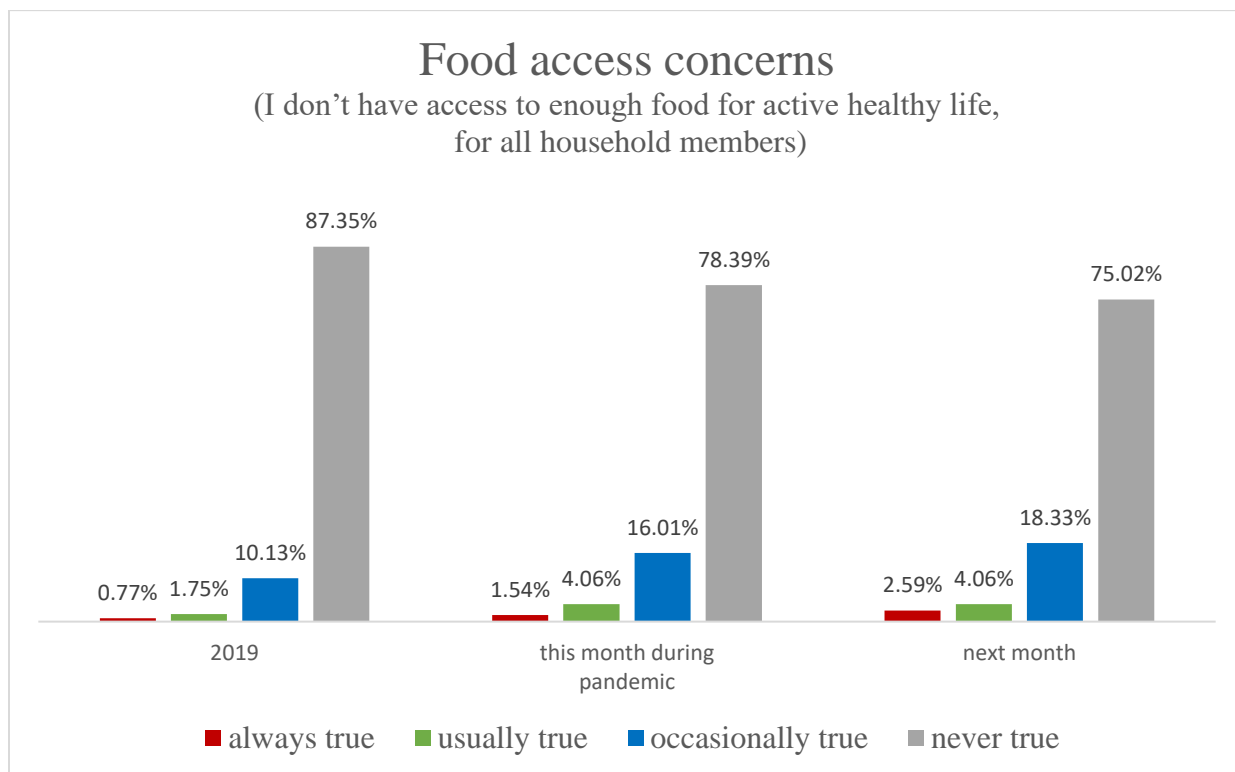


Figure 11

Perceptions of global and regional food systems

Our participants indicated varied levels of concern with the reliability of the global food supply chain (Figure 12), with the average answer of 6 on the 0-10 scale. An open-ended question asked the participants to provide a rationale for their concern generated a diversity of answers, but the most common one was border closures, noted by 34.59% of the participants. On a 0-10 scale, 91.98% reported moderate to high (5 or above) belief that developed local/regional food system would be more reliable (Figure 13), and 95.92% expressed moderate to high desire to see the provincial government to do more on that front (Figure 14).

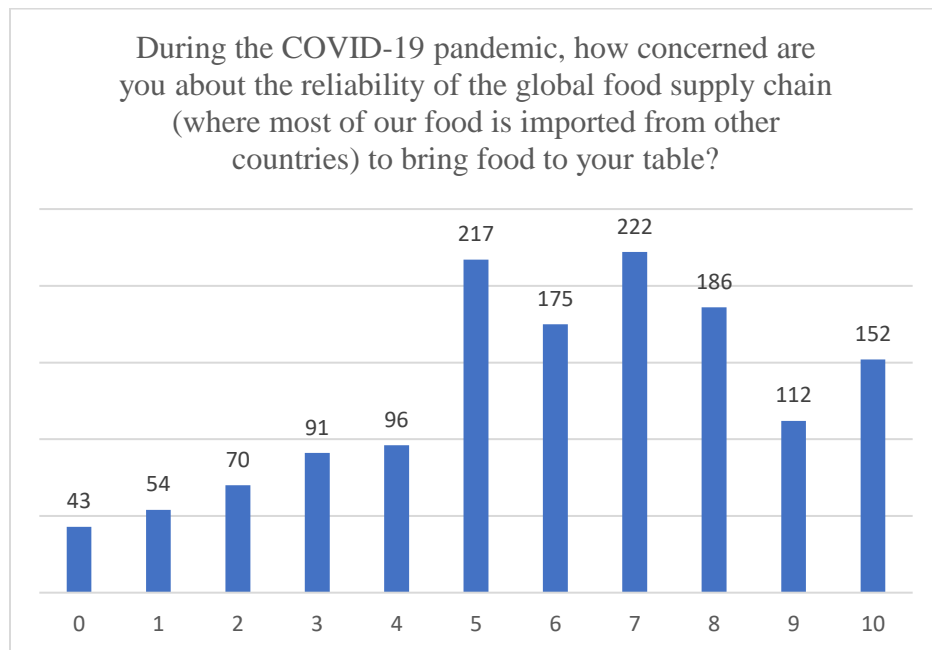


Figure 12

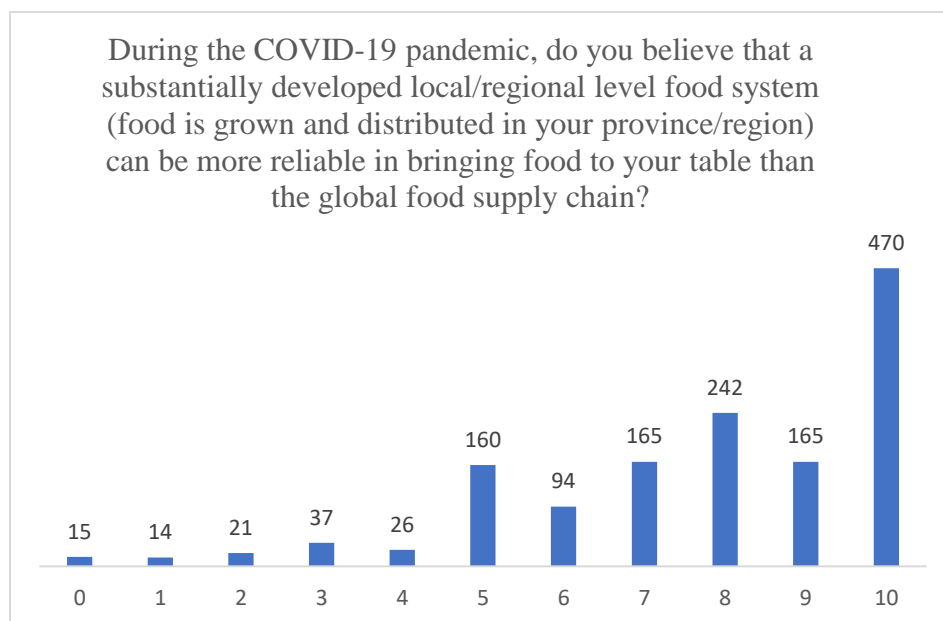


Figure 13

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 your province/region?

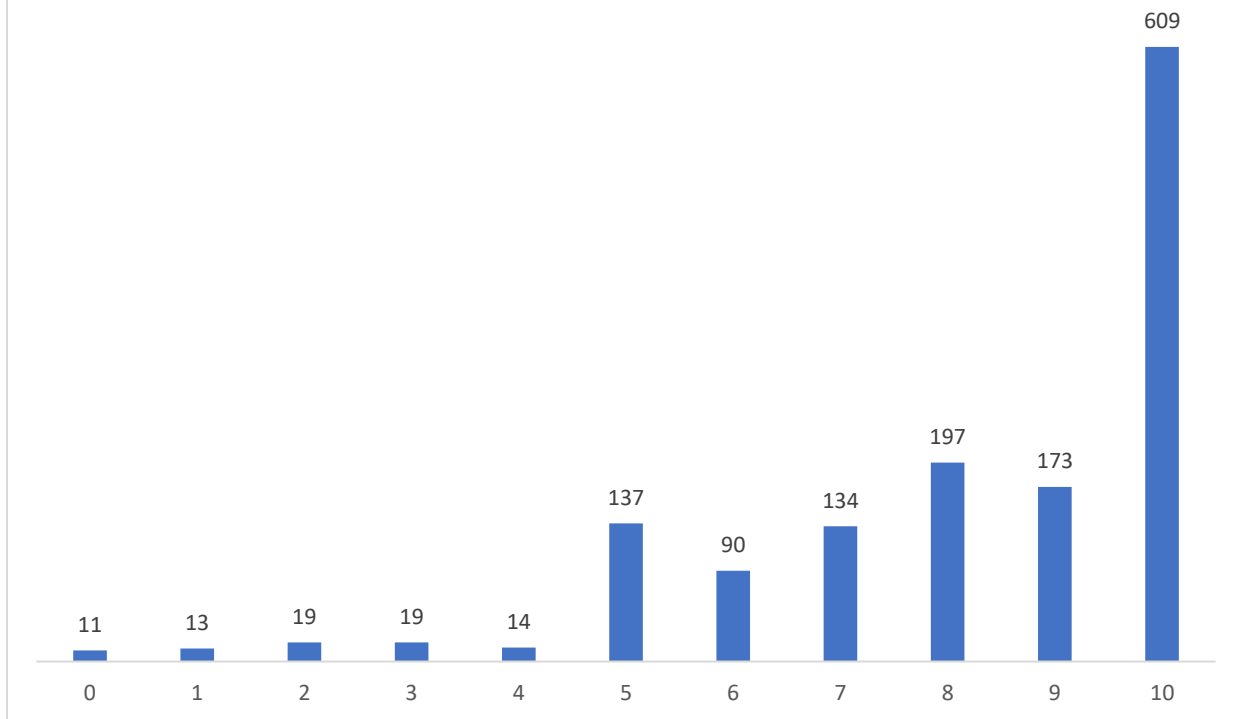


Figure 14

Discussion and Implications

Since the rapid spread of COVID-19 around the world, there have been many changes in the way consumers behave and perceive their relationship with food and the system through which they access it (Aday and Aday, 2020; Béné, 2020; Butu et. al., 2020; DeBroff, 2020). This report brings to light five key, interconnected points regarding how Ontarians adjusted their behaviors and perceptions during the COVID-19 pandemic. These findings may provide valuable guidance in regard to system shock response and have important implications in shaping our local/regional food system in preparation for a prolonged period of pandemic most immediately, as well as an uncertain post-pandemic world.

First, Ontarians reported adjusting their purchasing practices, with online food shopping becoming more prominent during the pandemic. Additional support for online marketing should be provided to local producers to help maintain their competitiveness.

Results illustrated that all forms of in-person food access experience in Ontario declined during the pandemic compared to 2019. While in-person shopping at conventional supply chain outlets remained the key food access channel, the greatest reduction in food procurement rates was restaurant dining. Online food purchase was the only food access channel where participation rate increased significantly compared to 2019.

Findings from other provincial surveys (linked in Appendix B), and other published studies, point to similar findings. A survey in the United States (US) found that nearly half of respondents currently participate in online food retail (Redman, 2020). The COVID-19 pandemic and the “stay at home” recommendations induced a temporary growth in online food trade in Germany (Dannenberg et. al., 2020). Chang and Meyerhoefer (2020) found evidence of a positive relationship between the number of new cases and the sales of online food trade in Taiwan. Even when the pandemic ends, a number of Canadian consumers are expected to continue to access food online (Agri-food Analytics Lab, 2020b). The shift to online food shopping reflected consumers’ effort to reduce personal risk of virus transmission during the pandemic.

Thus, this result should be taken into account by local food producers in their business planning. However, small scale local producers and businesses may be at a disadvantage compared to businesses in the global food supply chain regarding the use of online ordering platforms (Butu, et. al., 2020) as well as the incursion of e-commerce platforms into food retail (Livingstone and Knezevic, 2020). Hence, additional assistance from the government or other organizations may be needed to ensure that local producers and processors remain competitive and can utilize low-cost, regionally focused e-commerce platforms.

Second, among the participants who reported limited food access, pandemic anxiety and the importance of shopping environments were frequently noted in open-ended answers. Clear communication by health care officials is needed. Safe shopping environments should continue to be provided.

Our results indicated that pandemic anxiety may directly or indirectly affect consumers in different ways. (1) It directly caused consumers to reduce the number of ways and places where they accessed food. (2) It also caused concern over the future and the ability to access enough for active and healthy life for all household members. And (3) it indirectly turned food shopping into a stressful activity.

Results from other studies revealed similar trends. Studies from China, Finland and Poland suggested that perceived severity of the pandemic and fear of limited access to food induced consumer behaviors such as food stockpiling and hoarding (Wang et. al., 2020; Laato, et. al., 2020; Jeżewska-Zychowicz, Plitcka and Królak, 2020). A consumer survey conducted in the US found that the anxiety was centered around not having access to specific food when out shopping (DeBroff, 2020). In Iran, the increasing price of essential goods was one of the main sources of stress during the pandemic (Mousavi, Hooshyari and Ahmadi, 2020). Safety and sanitization measures have become a new norm for Canadian consumers when shopping for food (Agri-food Analytics Lab, 2020; 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.) has to be communicated clearly by health officials using an evidence-based approach. Local food producers and businesses can also reassure consumers by continuing to provide safe shopping environments with enough space to physically distance, sanitization stations, and using contactless payment methods.

Third, the pandemic heightened inequality in our food systems. Greater fiscal and social interventions are necessary to increase vulnerable population's ability to access food, and ensure that new types of vulnerability are not created.

Our results highlighted a long-established food security dynamic: that income is a key barrier to food access (now coupled with pandemic anxiety). Lower income households were more sensitive to changes in food prices and reported greater worry about having enough food now and in the future. Although our study did not use the standard measurement of food insecurity, our results were consistent with other literature on population food insecurity. Loopstra (2020) identified groups of population who were vulnerable to food insecurities during the UK lockdown. These people were economically vulnerable (at risk of poverty), adults experiencing loss of income, people with disabilities, and those in self-isolation. In May 2020, Statistics Canada reported that Canadian households with children living at home were experiencing higher levels of food insecurity as well as those who were not employed during the survey period (Statistics Canada, 2020). In this regard, fiscal and social interventions should be put forth to assure that vulnerable populations can exercise their right to access adequate, healthy food during the pandemic.

Fourth, two contrasting behaviors of dietary change emerged during the pandemic. Public health programming needs to address the impact of mental health on diet choices and implement strategies to encourage and maintain healthy diets in population.

On one hand, a number of respondents reported increasing consumption of sweet/salty snacks due to pandemic stress and boredom resultant from time spent at home. On the other hand, nearly as many consumers reported increasing consumption of fruits and vegetables in order to remain healthy, boost their immune systems and reduce potential severity of illness in the event of getting sick.

There is scientific evidence supporting stress-eating behavior especially of sugar, fat and alcohol (Kamel and Abbas, 2020; Mattioli et. al., 2020; Ingram, Maciejewski and Hand, 2020). Therefore, our result demonstrating increased snack consumption was not surprising. A survey of European consumers suggested that around 10-27% of consumers in England, France, Italy,

Germany and Spain consumed a less healthy diet during the COVID-19 outbreaks in March and April (Wunsch, 2020).

While the pattern of unhealthy eating emerged during the pandemic, the opposite pattern of healthy eating also occurred. 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). Healthy diet (such as consumption of fruits and vegetables) is often referred to as one of the prevention strategies for numerous diseases (Willett, 1994). It is believed that whole fresh food could improve our immune system to protect against infection and/or reduce the severity of illness when infected (Han and Hoang, 2020; Jawhara, 2020; Moazzen et. al., 2020).

Implications for health officials are threefold: (1) 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. (2) Greater efforts need to be put into monitoring the population's diet and mental health to better ensure people can transition from bad eating habits developed during the pandemic to avoid long term health consequences. (3) Strategies to maintain the adoption of healthier eating (even after the pandemic) would be beneficial to reduce public health care related expenses in the long run.

Fifth, Ontarians would like to see development of robust local-regional food systems. Greater infrastructure support should be provided to local communities to assist producers and processors in delivering food to consumers.

The knowledge of having a stable food supply with short travel distances (i.e. supply chains) reassured people of their food access capacity during the pandemic. From the consumer perspective, respondents also understood the importance of supporting local producers and businesses especially during the pandemic. The results indicated that the majority of consumers needed most support in procurement of local products. This not only reflected consumers' preference for local food but indirectly indicated the inadequacy of the current local systems including production, distribution, and retail. Clapp and Moseley (2020) pointed out that diversified market opportunities and infrastructure which supported local producers was often lacking compared to businesses participating in the global supply chain.

Therefore, the development of appropriate environments for local farmers and businesses who participate in alternate supply chains should be a priority in economic recovery and development strategies for provincial and local governments. A business model such as co-operatives should be revisited and supported to enhance producers' collaboration and market opportunities.

Conclusion

The survey results suggest that food purchasing and consumption changed in Ontario as a result of the COVID-19 pandemic. Purchasing practices were certainly impacted by public health measures put in place by the provincial government, such as restrictions on indoor dining and farmers' market transactions, as well as general appeals to the public to restrict unnecessary shopping trips. However, our respondents also reported taking voluntary steps to protect themselves and their families, with the rise in online ordering being the most notable change. More than half of the participants also noted changes in their diets, which were varied. 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. Whereas most of the participants indicated no major food access concerns, there was an increase in the proportion of those whose worries grew with the pandemic, and the vast majority reported noticing increases in food prices. Most participants questioned the reliability of the global food supply chain and wanted the provincial government to support development of stronger local food supply. The results suggest that the changes are not only behavioural and that Ontario residents could be less worried about crises like this one, if a stronger local/regional food system was developed.

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Appendix A: Demographics

What gender do you identify with?

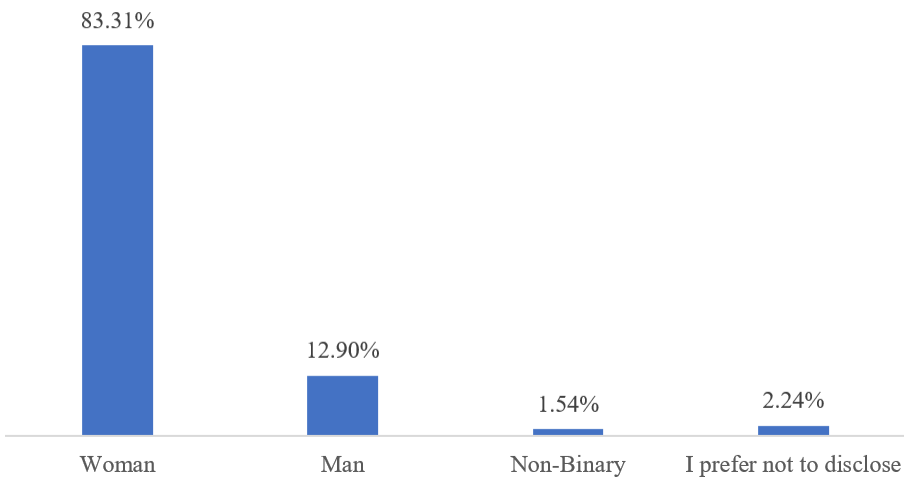


Figure A1

Which category below includes your age?

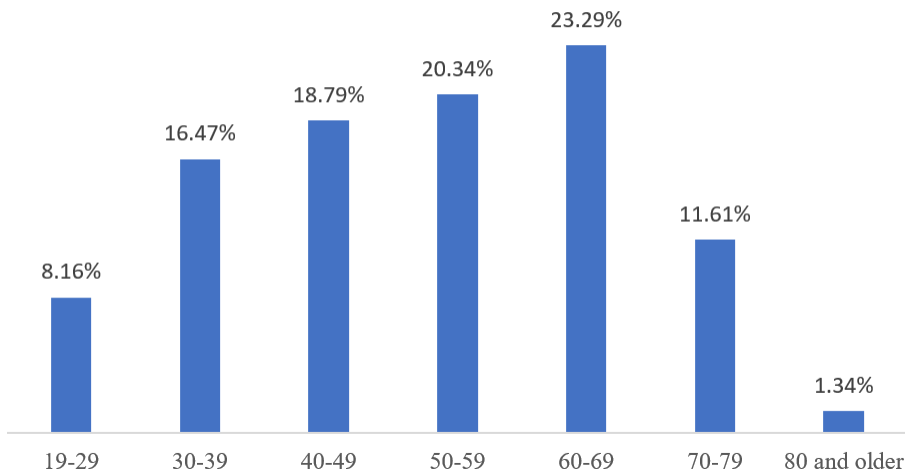


Figure A2

Please specify whether you belong to any of the following equity-seeking groups? Select all that apply.

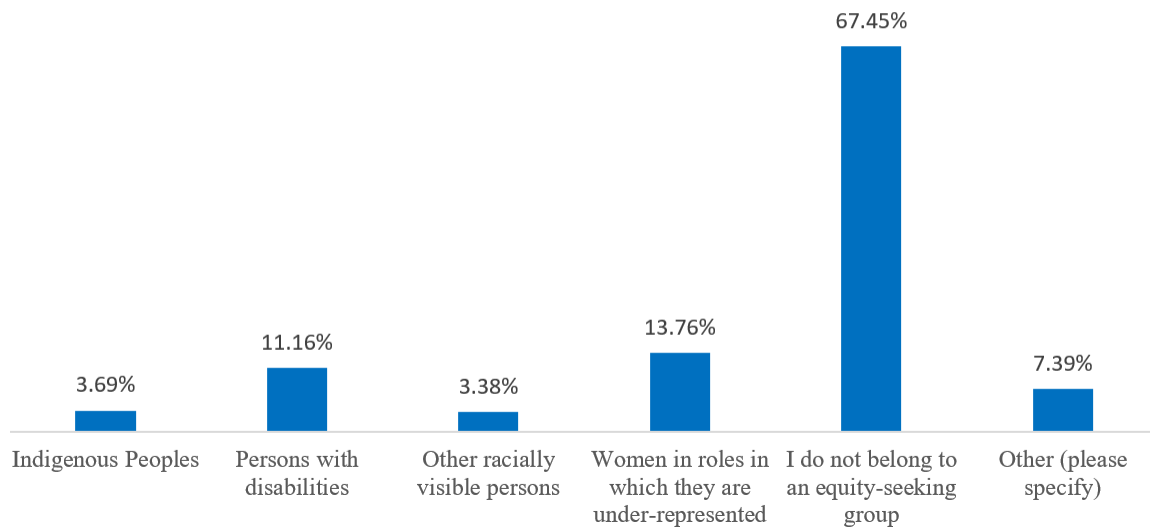


Figure A3

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

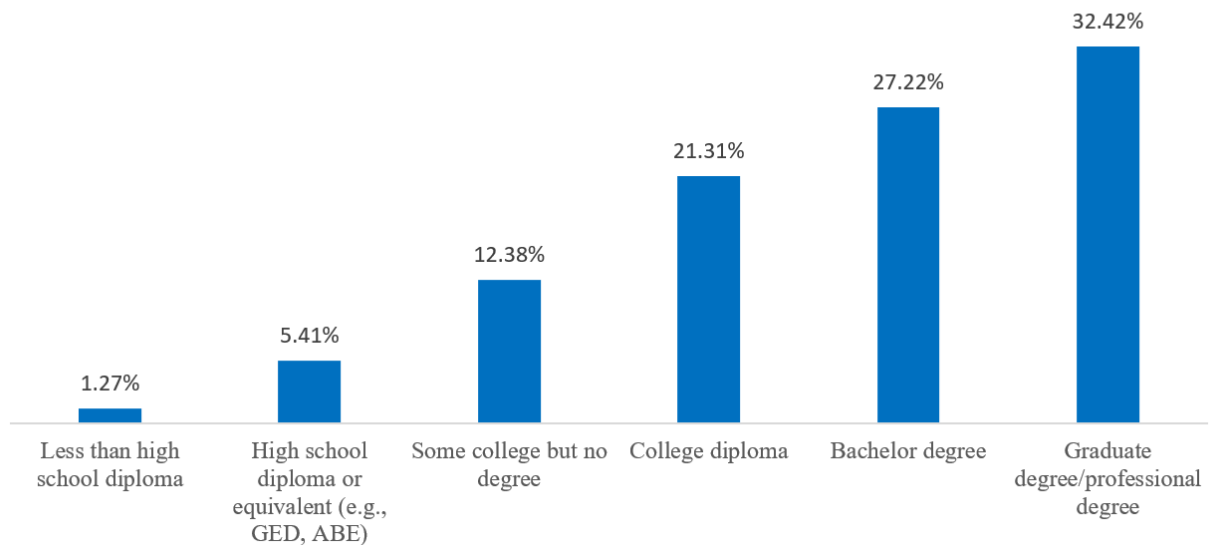


Figure A4

What is your employment status today?

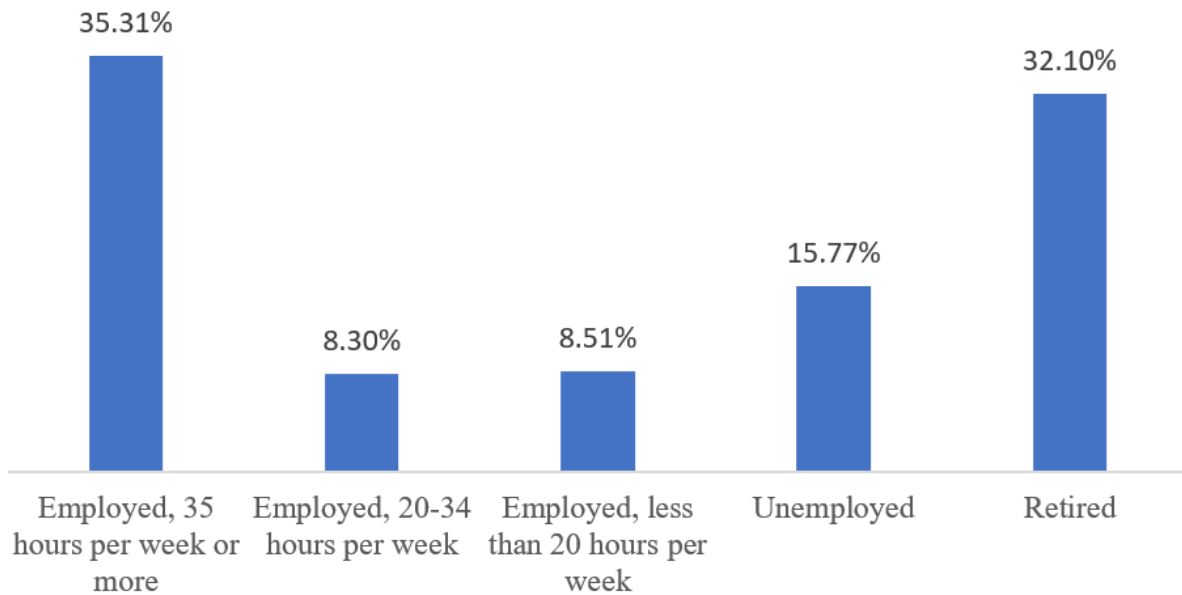


Figure A5

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

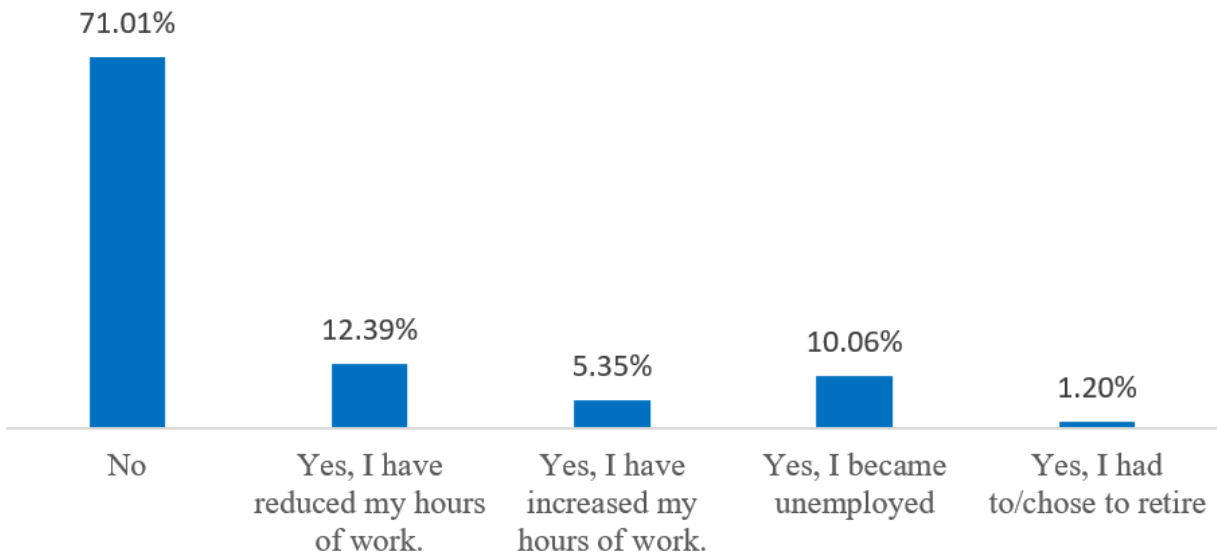


Figure A6

What is your total household income before tax in 2019?

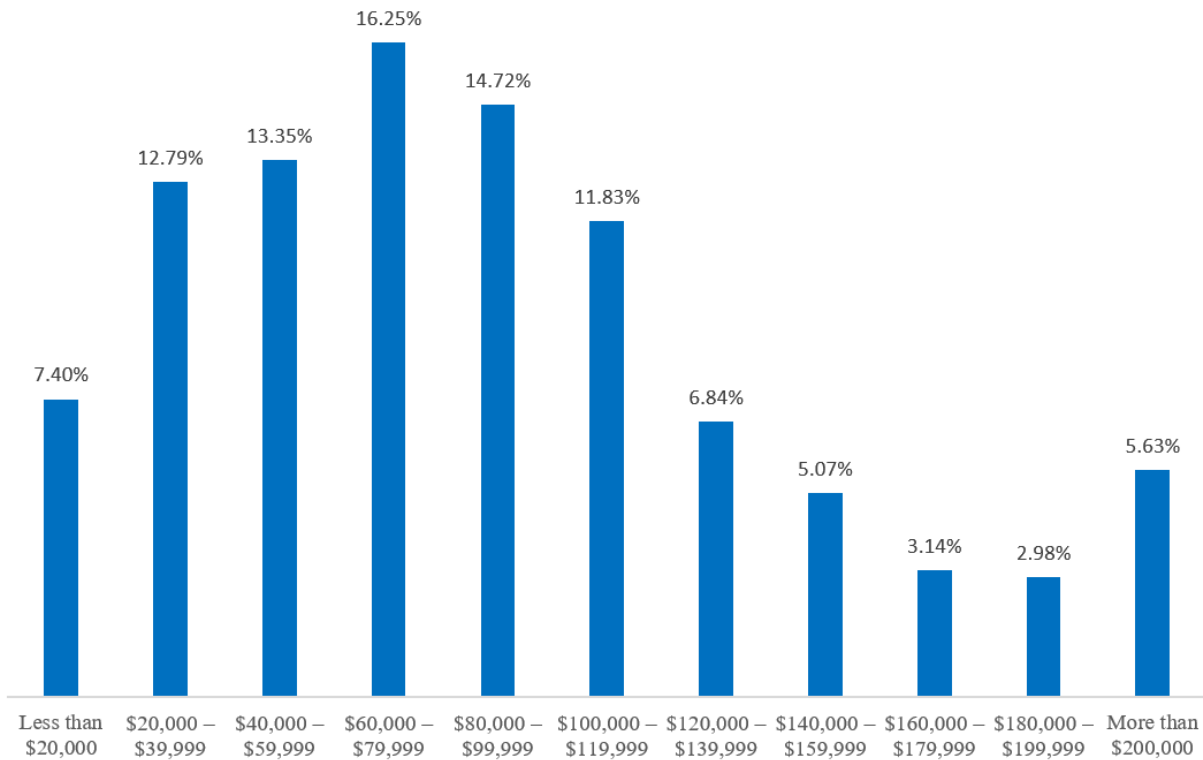


Figure A7

What is your marital status?

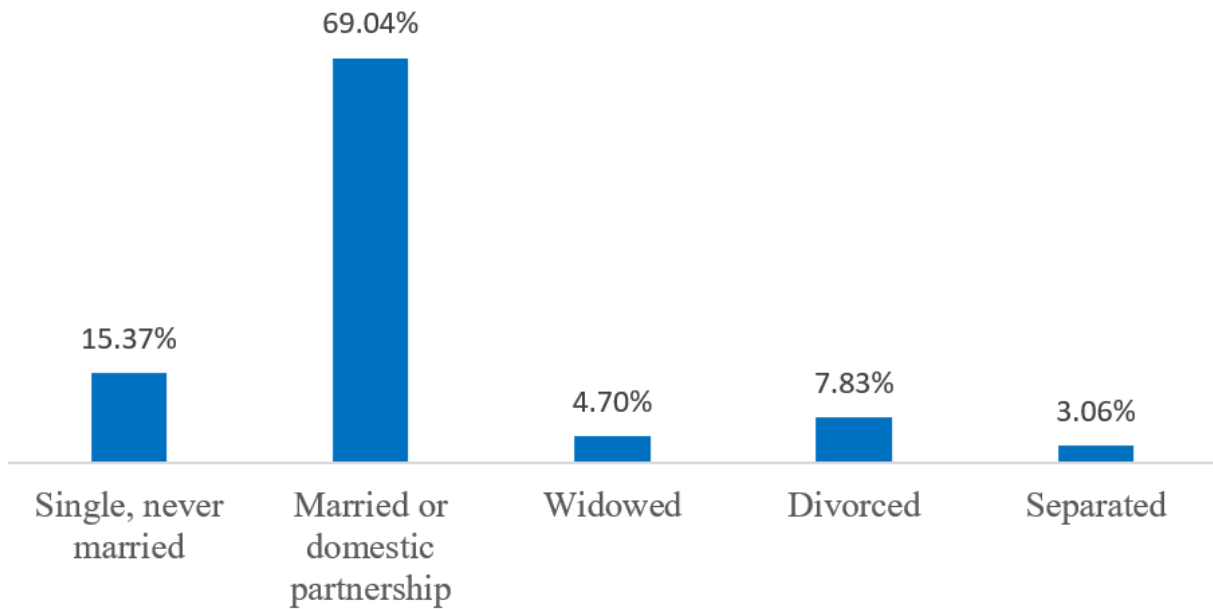


Figure A8

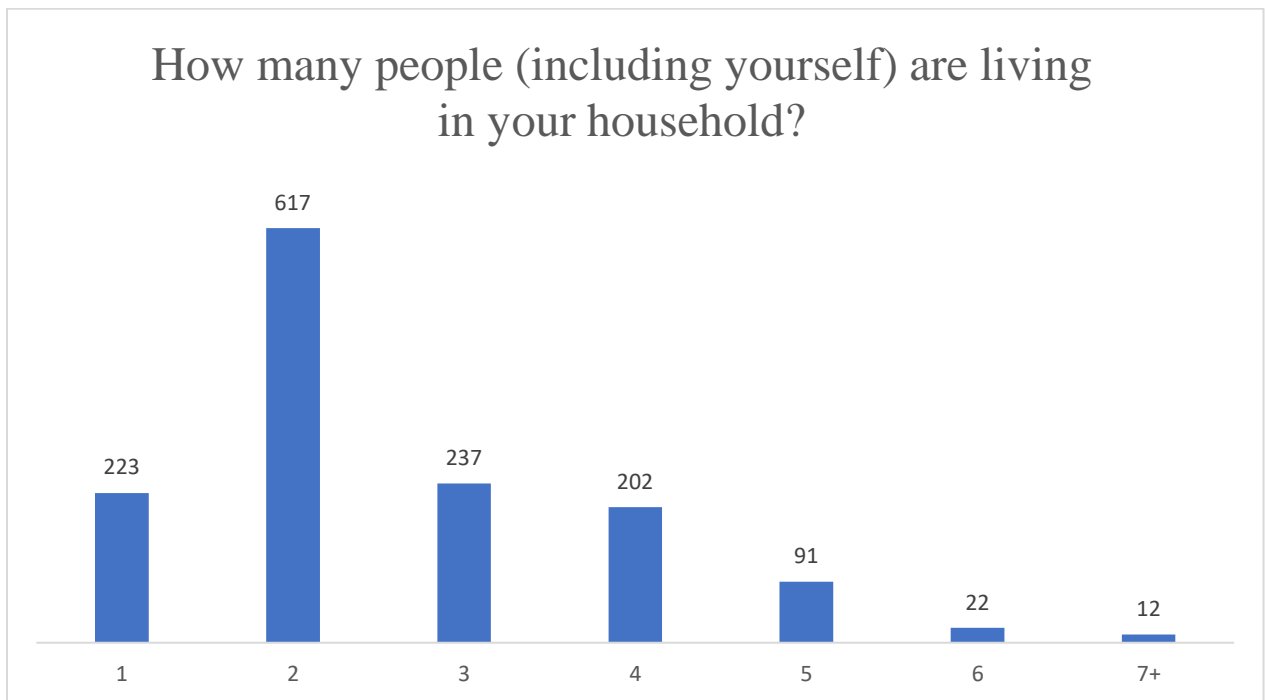


Figure A9

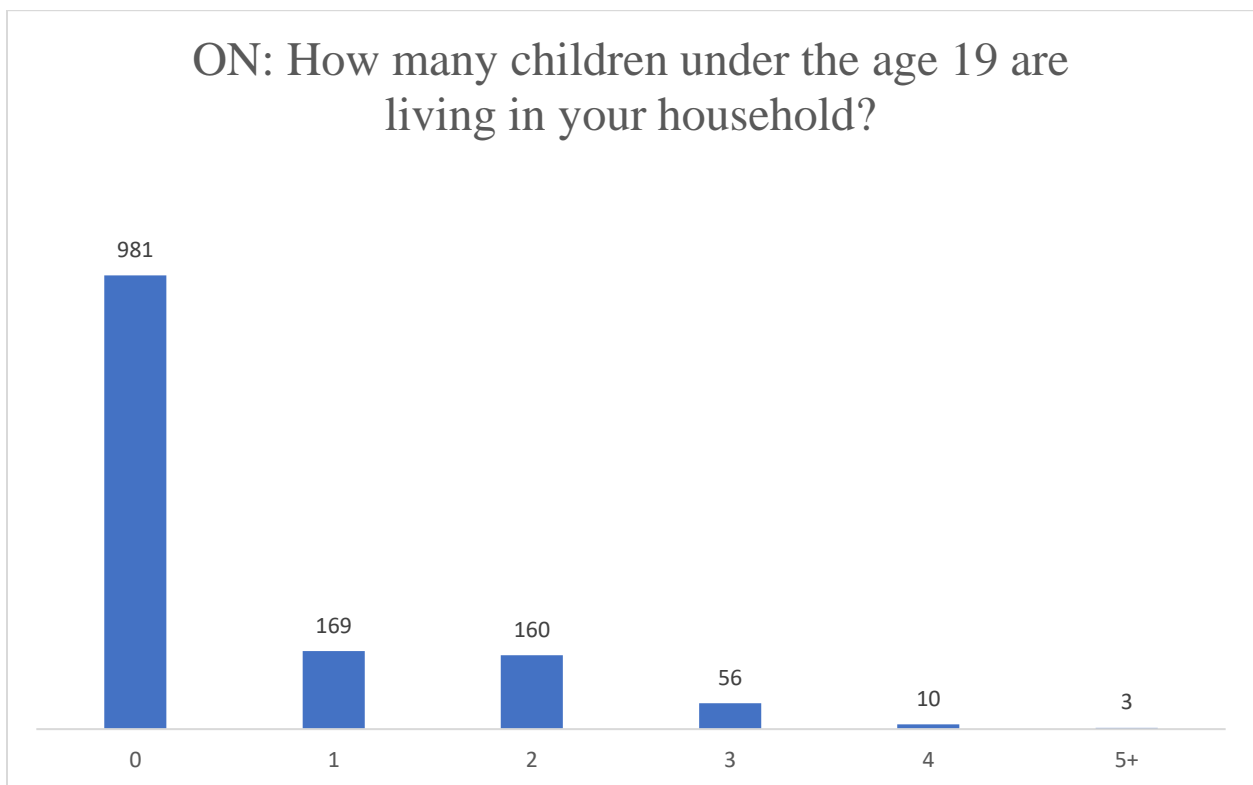


Figure A10

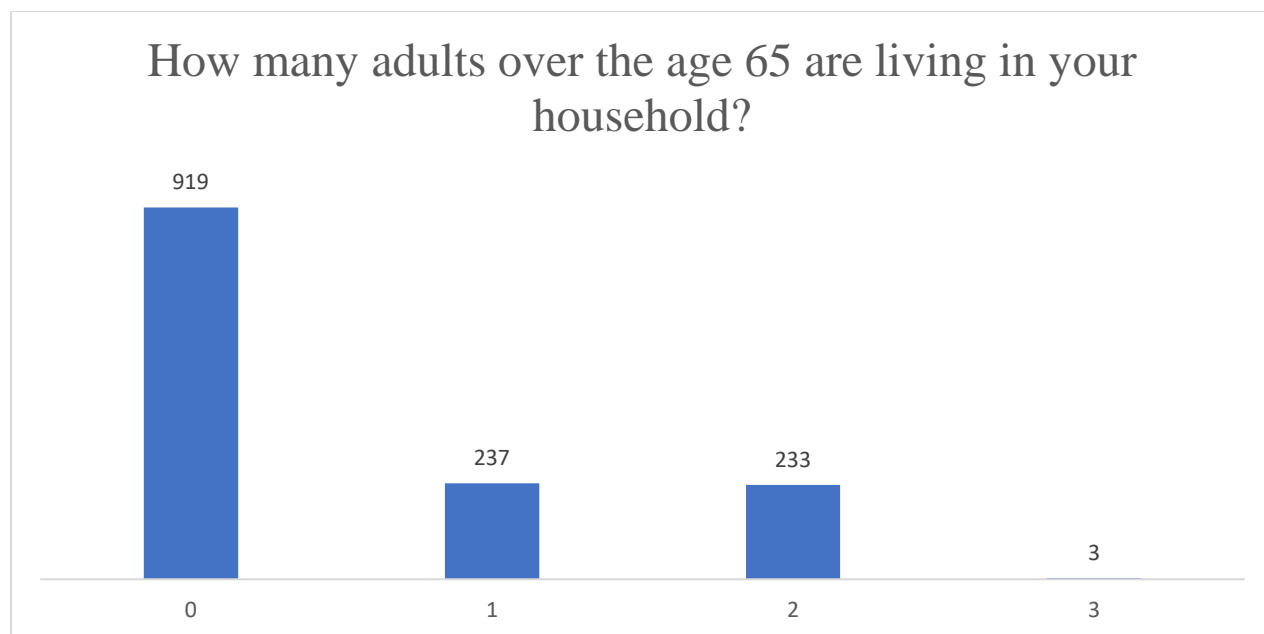


Figure A11

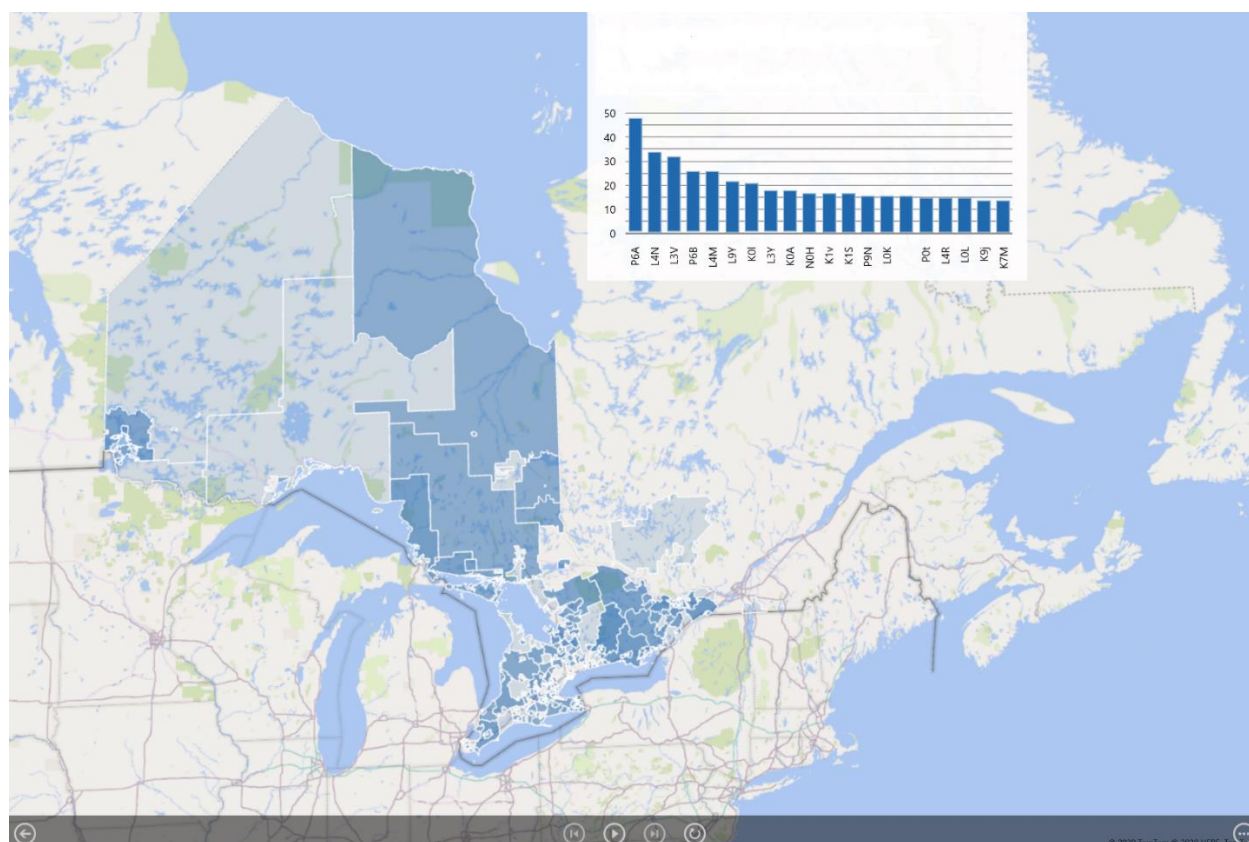


Figure A12

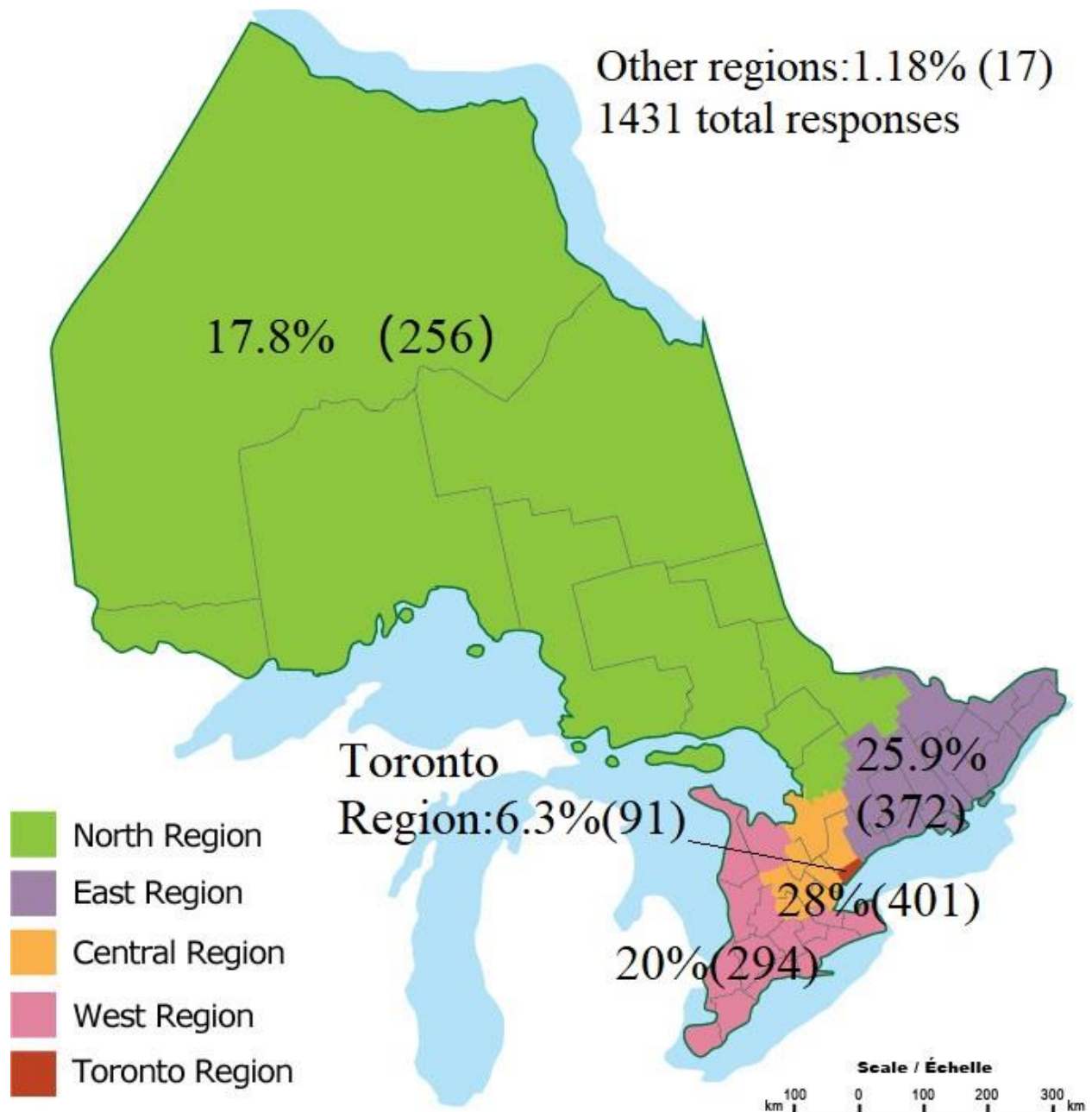


Figure A13: Respondent distribution by postal code

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

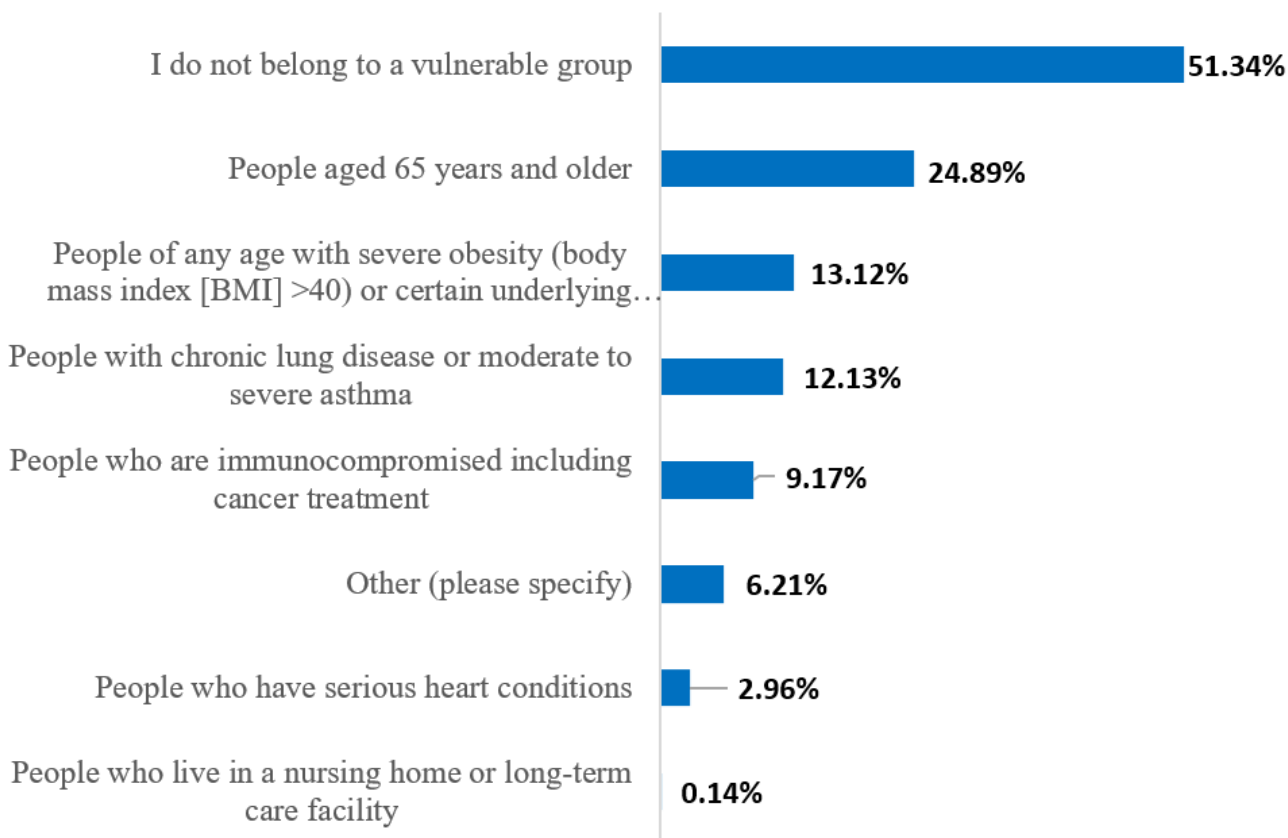


Figure A14

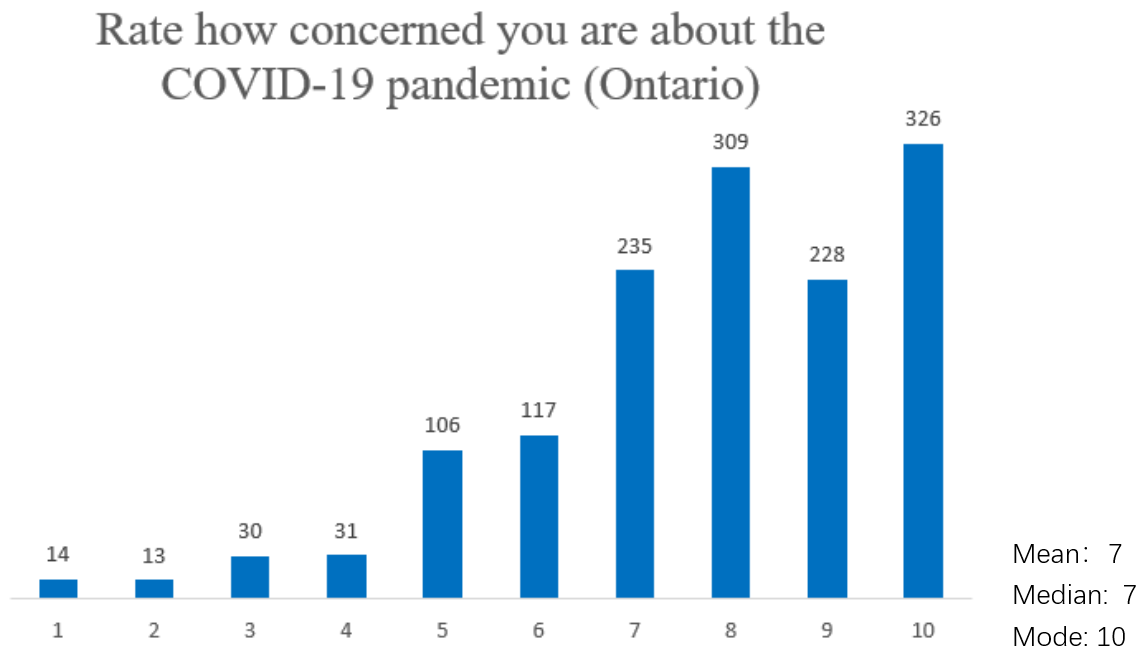


Figure A15

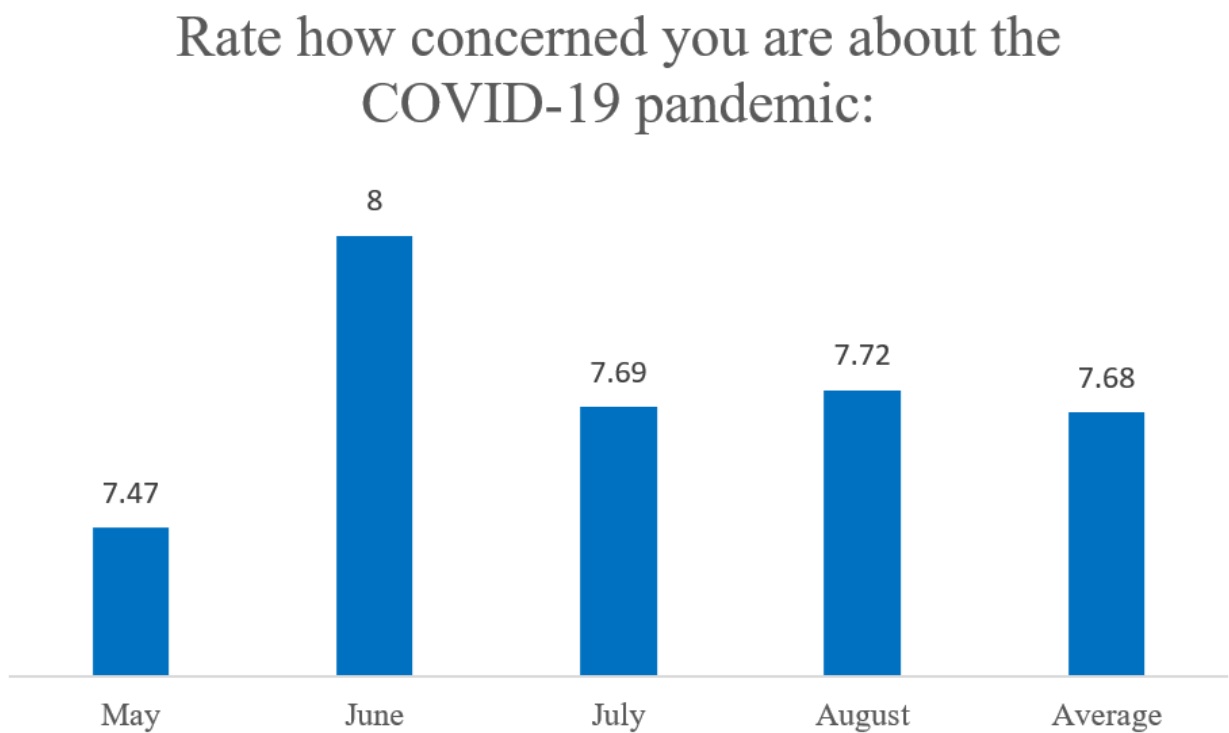


Figure A16

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

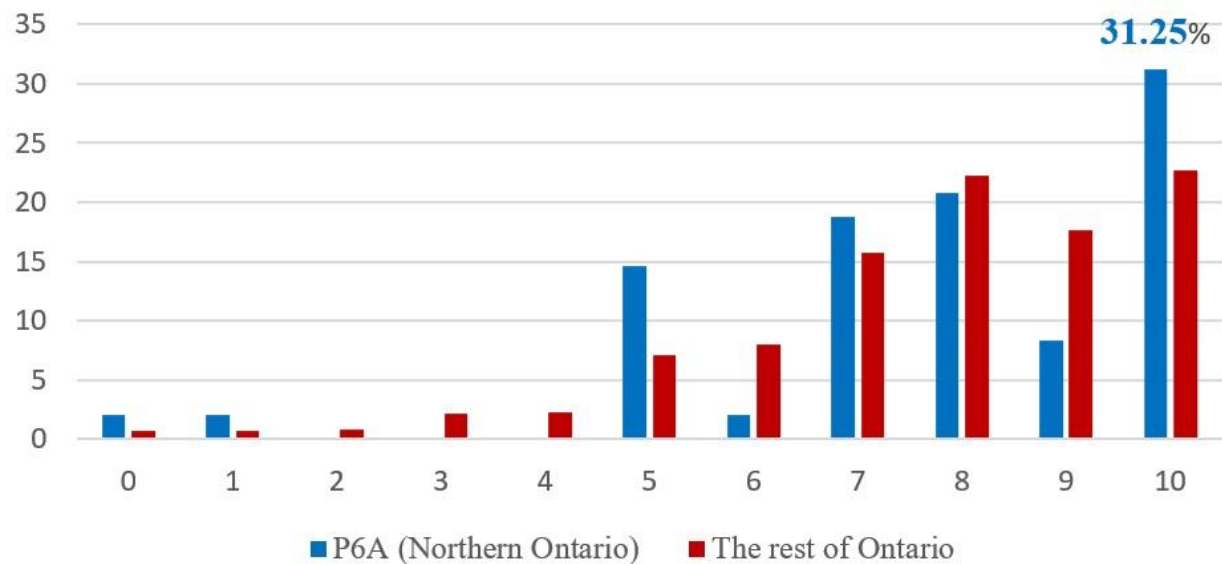


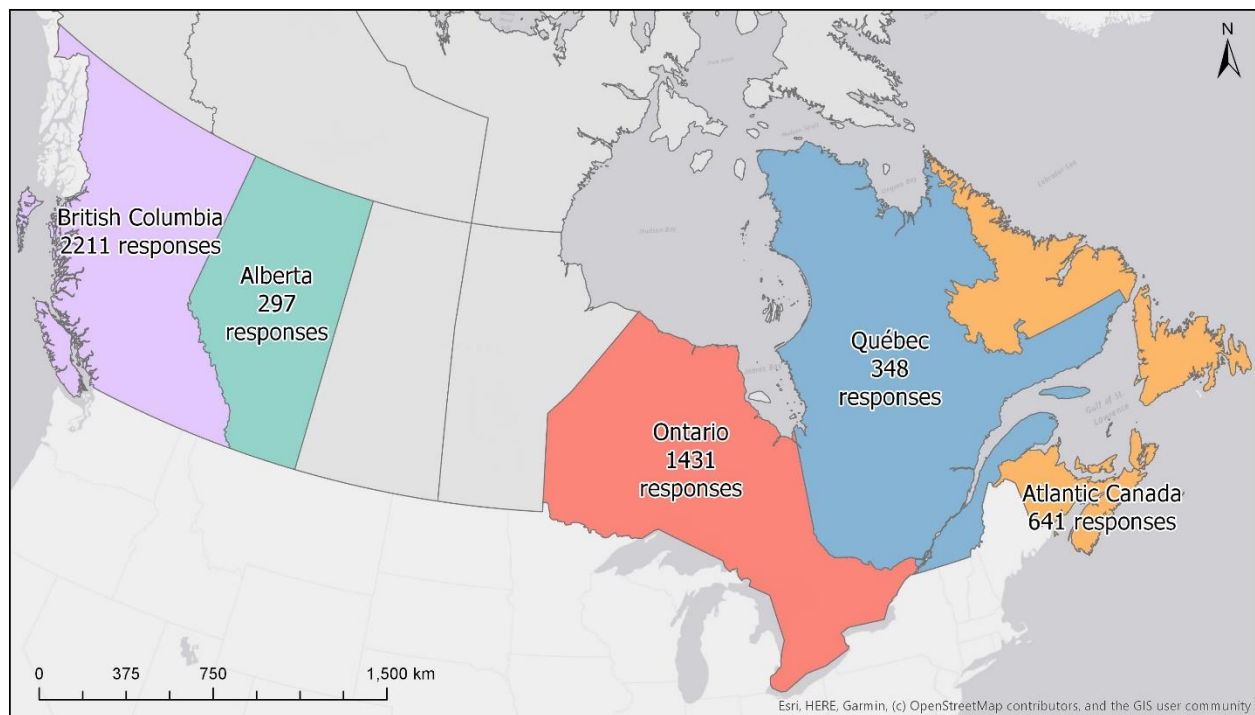
Figure A17

Appendix B: Inter-provincial 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, British Columbia, Quebec and Atlantic Canada can be found at:

<https://www.kpu.ca/isfs/covid19-consumer-survey>



Appendix C: Survey Questionnaire

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

Letter of Informed Consent

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

Principal Investigator: Dr. Kent Mullinix and Dr. Irena Knezevic

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 Institute for Sustainable Food Systems (ISFS) at Kwantlen Polytechnic University (KPU) and Carleton University. 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 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. The report study will be published on the ISFS website at <https://www.kpu.ca/isfs/publications>.

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 KPU 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 ISFS' Director, Dr. Kent Mullinix, 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. Kent Mullinix (Tel: 604-599-2540 or email: kent.mullinix@kpu.ca) or the Kwantlen Polytechnic University Research Ethics Board at 604-599-3163 or reb@kpu.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 19 years of age or older?

☐ Yes ☐ No

6. Are you a resident of Ontario?

☐ Yes ☐ No

7. Are you are currently residing in Ontario?"

☐ Yes ☐ No

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

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

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)
- ☐ 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 Ontario 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/fish and seafood harvesters"
- ☐ 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.
- ☐ Buying produce/products directly from farms/farmers/fish and seafood harvesters
- ☐ 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. Since the declaration of the COVID-9 global pandemic, how often do you purchase food using no-contact or delivery options?

- ☐ 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
- ☐ I do not use no-contact or delivery options

15. How difficult is it currently to access food?

Extremely easy Extremely difficult

16. 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)

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

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

- ☐ Yes
- ☐ No

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

Personal Food Security Concern

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

19. 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

20. "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

21. "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 during the COVID-19 pandemic

Food system related perceptions and concerns

22. 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.

23. During the COVID-19 pandemic, do you believe that a substantially developed local/regional level food system (food is grown and distributed in your province/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

24. 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 Ontario?

Strongly Disagree

Strongly Agree



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

Food consumption

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

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

26. 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)

27. Please explain briefly why your diet changed?

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Food Purchases

28. 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)

29. 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)

30. 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?

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Demographic questions

31. What gender do you identify with?

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

32. Which category below includes your age?

- | | |
|-----------------------------|------------------------------------|
| <input type="radio"/> 19-29 | <input type="radio"/> 60-69 |
| <input type="radio"/> 30-39 | <input type="radio"/> 70-79 |
| <input type="radio"/> 40-49 | <input type="radio"/> 80 and older |
| <input type="radio"/> 50-59 | |

33. Please specify whether you belong to any of the following equity-seeking groups? Select all that apply.

- ☐ Indigenous Peoples
- ☐ Persons with disabilities
- ☐ Other racially visible persons
- ☐ Women in roles in which they are under-represented
- ☐ I do not belong to an equity-seeking group
- ☐ Other (please specify)

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

- ☐ Less than high school diploma
- ☐ High school diploma or equivalent (e.g., GED, ABE)
- ☐ Some college but no degree
- ☐ College diploma
- ☐ Bachelor degree
- ☐ Graduate degree/professional degree

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

- ☐ Less than \$20,000
- ☐ \$20,000 – \$39,999
- ☐ \$40,000 – \$59,999
- ☐ \$60,000 – \$79,999
- ☐ \$80,000 – \$99,999
- ☐ \$100,000 – \$119,999
- ☐ \$120,000 – \$139,999
- ☐ \$140,000 – \$159,999
- ☐ \$160,000 – \$179,999
- ☐ \$180,000 – \$199,999
- ☐ More than \$200,000

36. What is your marital status?

- ☐ Single, never married
- ☐ Married or domestic partnership
- ☐ Widowed
- ☐ Divorced
- ☐ Separated

37. 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

38. 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

39. 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)

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

41. How many children under the age 19 are living in your household?

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

Submit your responses

43. 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, Kent Mullinix at kent.mullinix@kpu.ca Once the study is complete, the survey results will be published online at: <https://www.kpu.ca/isfs/publication>