Mapping Food Citizenship Within Edmonton's Local Food System

Analyzing and Identifying Food Citizenship System Actors and Dynamics During COVID-19

By

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Executive Summary

Introduction

The COVID 19 pandemic has unveiled deficiencies of the agri-food system and the materials economy, which places an importance on consumerism to the detriment of environmental sustainability and consumer health and wellbeing. The pandemic has also put additional strain on pre-existing weaknesses of global food supply chains, distribution systems and production, which were already embattled from impacts of the Anthropocene, a term used to describe the earth's polluted, fragile ecosystems and habitability, impacted by global resource exploitation, globalization and industrialization (Williams et al., 2021, p.91).

Researchers and food policy advocates have recognized the critical need to understand how COVID 19 has impacted interconnected food supply chains, distribution systems, and consumption at a wholistic level (Williams et al., 2021, p.91; FAO, 2020; Petetin, 2020). The pandemic tested and empowered citizens, communities, and organizations to collectively respond to rising inflation, labour shortages, supply chain backlogs and food insecurity. This collective response is an example of food citizenship, which can be defined as citizens, communities and organizations desiring higher-quality food, better access to food information and choices and local food action and advocacy at an individual and community level (Booth & Coveney, 2014 a cited in Petetin, 2020, p. 332).

This master's project analyzes how COVID-19 has affected food citizenship within Edmonton's local food system by identifying Edmonton food citizenship stakeholders and groups affected by the pandemic. Further, it evaluates COVID-19-instigated trends, initiatives, and events in international, North American, Canadian and Edmonton's local food systems.

Methodology and Methods

The principal research design used for this project was a case study. Within the case study, a stakeholder mapping and analysis and trends, issues, and events analysis methodology were also used. The project analyzed predominantly grey literature for the stakeholder analysis and trends, initiatives, and events analysis. Data from documents in the document review was interpreted and coded through relational content analysis and thematic data analysis approaches.

Key Findings

Key findings of this study included the identification and analysis of sub-systems and supra-systems of stakeholders within Edmonton's local food system that have been affected by the COVID-19 pandemic, including the 29 subsystems pop-up/ seasonal markets, yard sharing, community gardens, private citizen gardens, community fridges, cultural food banks, food halls, food rescues, mobile food vendors/ food delivery organizations, independent and community grocers, non-profit gardens, street food/community outreach, food network and hub organizers,

hydroponics gardens, community food kitchens, food hampers/ pantries, online farmers markets, online food donation directories, food subscription services, community subscription services, seed libraries, non-profit groceries, ghost kitchens, curated food boxes, non-profit/ subsidized food boxes, online donation campaigns, food apps, and online business directories. These sub-systems fit into nine supra-systems, including food recovery organizations, gardens, food collectives, food donation/ subsidized food organizations, educational food resources, food boxes, alternative restaurant spaces, subscription services and online directories.

Further, results from this project were intrinsic to discerning and analyzing broad food citizenship trends and initiatives that have developed or grown during the COVID-19 pandemic, including:

- growth in Edmontonians' participation in urban agricultural initiatives
- local businesses, producers and food donation organizations using more online service models instead of or along with traditional direct-to-customer (DTC) service models
- creation of non-traditional community food donation systems and organizations
- evolution and creation of informal and formal food hubs (Thilmany et al., 2021; Ngumbi, 2020; Stephenson, 2021; Huncar, 2021; FAO, 2020; City of Edmonton, 2022).

Transferability of Research Findings

This project geographically and conceptually mapped out food citizenship stakeholders, initiatives and trends using a social economy model and complex systems theory approach, which can be used to inform non-profit, private and public governance, strategies, programming and policies, from strategy formation, resource allocation, locations for future programs to partnership opportunities. Particularly, it provides food citizenship stakeholders with critical information to evaluate where individual initiatives fit across systems and within systems, and their potential individual and collective impacts.

The sub-systems and supra-systems identified, although formed and categorized specifically to Edmonton's local food system, could be applicable to other municipalities to provide a more comprehensive understanding of local food landscapes and systems. Further, it provides a comprehensive understanding of how organizations, communities and individuals came together to change complex food system problems, which can be used to inform transformational-change tactics for future pandemics and emergency responses.

Additionally, the geographic map of food citizenship stakeholders and initiatives could be used by Edmonton-based researchers to better understand food system gaps, areas of food insecurity and disparity, with opportunities to cross-analyze the map's data with socioeconomic statistics, such as population density, income level and food insecurity level.

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Introduction

This master's project focuses on how COVID-19 has affected the interrelationships, system dynamics, and various actors within Edmonton's local food system regarding food citizenship and on COVID-19 trends, initiatives and events that have occurred, grown, or emerged in international, North American, Canadian and Edmonton's local food systems.

Food citizenship, also sometimes referred to as food democracy, can be defined as increasing citizen participation in the development of food systems, policies, and programs from all aspects of food extraction, production, distribution, consumption, and disposal (Leonard, 2007; Davies et al., 2019, p. 9). For the purposes of this project, the term food citizenship is used over food democracy to shift the focus to citizenship and community participation.

This project also hopes to advance the current understanding of the development of food citizenship trends and initiatives within North America at a holistic level within local food systems. Previous research that has mapped out food citizenship trends, initiatives, and stakeholders has focused on one element of food citizenship (such as community gardens and food-sharing initiatives). In contrast, using a systems theory approach, this research will focus on local food citizenship trends and initiatives that have grown or been influenced by the COVID-19 pandemic to explain changeable interrelationships and dynamics between system parts and actors within environmental, social, and biological systems (Davies et al., 2019; Patton,2021, p. 76; Lai &Lin, 2017; Auspos & Cabaj, 2014; Hurst & Zimmerman, 1994; Burnes, 2005). Complex system theory includes order-generating rules, various interdependent actors, nested systems, intersecting system boundaries and complicated behavioural patterns (Auspos & Cabaj, 2014, p. 4; Keshavarz et al., 2010). This approach will help better understand the interrelationships between local food citizenship system boundaries, perspectives, relationships, and dynamics (Davies et al., 2019; Patton, 021, p. 76).

Further, this project hopes to advance understanding of how COVID-19 has affected the development and growth of food citizenship initiatives and trends within Edmonton's local food system, in contrast with trends and initiatives that have grown or developed in Alberta, Canada, North America, and globally. The COVID-19 pandemic has exposed several weaknesses and gaps in the agri-food system (e.g., from over-reliance on seasonal workers to focus on consumerism versus health) and investigating how food citizenship trends and initiatives affected by COVID-19 can potentially help fill these gaps is imperative to the future sustainability and resilience of local food systems.

There is no client for this project.

1.1 Defining the Problem

Research has shown that the COVID-19 pandemic has affected global, national, provincial, and local food systems, from supply chain issues to labour unrest and shortages to production and manufacturing issues (Jackson, 2021; Lorinc, 2022; FAO, 2020; Harrap, 2021). These impacts have further exacerbated unstable food systems during what researchers call the Anthropocene, an era of widespread resource exploitation and consumption, industrialization, and globalization, which has created detrimental global air, water, and land pollution (Williams et al., 2021, p.91).

The COVID-19 pandemic has also highlighted several weaknesses of the agri-food system that typically prioritizes reducing costs and increasing profits through market monopolization by large global food conglomerates, intensive mass farming production practices (with a heavy reliance on seasonal workers), and highly processed foods that are "formulated to be hyper-palatable and habit forming" (Booth & Coveny, 2015, pp. 3-10). Pre-existing issues of the agri-food system include that it is dependent on continuous production from farmers, synchronized global supply chains and seasonal workers from often developing countries (Lorinc, 2022; Reisman & Fairbairn, 2021; Orden, 2020).

Edmonton has felt the effects of COVID-19 on its local food system, including periods of food shortages and reduced accessibility to nutritious food through traditional food purveyors such as grocery stores, supply chain disruptions, record-setting inflation driving up prices on food staples such as dairy and meat and small-business closures due to impacts of labour shortages and physical distancing requirements. While the pandemic highlighted these problems, Edmonton was already affected by the effects of the Anthropocene on its climate, weather, growing seasons and local food system.

For instance, according to climate projections outlined in the City of Edmonton (2021)'s Climate Resilient Edmonton: Adaptation Strategy and Action Plan, "By the 2050s, on average it is expected that Edmonton's annual average temperature of +2.1°C will increase by 3.5°C to 5.6°C and by approximately six °C to 8°C by the 2080s. In winter, however, the average temperature of -13°C is expected to increase by 4.5°C by the 2050s to -8.5°C and by 7°C to -6°C by the 2080s" (p. 2). Other current Edmonton economic forecasts predict that climate change effects on the City of Edmonton could escalate to as much as $8.0 billion by the 2050s and $18.2 billion by the 2080s, in contrast to current economic estimations (City of Edmonton, 2021, p. 23). 'Social costs' comprise health costs, environmental costs, and financial losses (City of Edmonton, 2021, p. 23).

Gaps in Edmonton's agri-food system existed prior to the pandemic, including an abundance of food swamps and food desserts, evaluated in research studies dating from 2008 up to 2019 prior to the onset of the pandemic. Hemphill et al. (2008) analyzed "neighbourhood-level distribution of fast-food outlets in Edmonton" and socio-economic factors in 204 Edmonton neighbourhoods and found that income, education, employment, immigration status and housing tenure were primary contributors to residents' access to fast food purveyors (Hemphill et al., 2008, p. 429).

Mainly, neighbourhoods comprised of predominantly renter populations increased probably of accessing and purchasing fast food by 2.5 times that of homeowners in affluent areas (Hemphill et al., 2008, p. 429). Neighbourhood income was also a contributing indicator of the concentration of fast-food purveyors in neighbourhoods, approximately doubling accessibility versus more affluent neighbourhoods (Hemphill et al., 2008, p. 429). This study highlighted several weaknesses of food accessibility within Edmonton's agri-food system, including centralization of larger, less expensive, "healthier" food purveyors in more affluent suburban locations and centralization of smaller, more expensive, "less healthy" food purveyors in more vulnerable, central locations (Hemphill et al., 2008, p. 429).

Yang et al. (2019) evaluated food deserts (neighbourhoods with inaccessibility to nutritious food), food swamps (neighbourhoods with high accessibility to innutritious food) and food oases (neighbourhoods with high accessibility to nutritious food) in Edmonton and found "child population is negatively associated with both healthy and unhealthy food resources; good access to public transportation is associated with good coverage of all healthy food outlets and convenience stores, and deprived neighbourhoods with higher percentages of minority populations have better coverage of both healthy and unhealthy foods in general" (p. 135). Geographically, Edmonton has food deserts that are dispersed throughout the city (see Figure 1); in addition to having low accessibility to nutritious food, these neighbourhoods have fewer residents that own private vehicles, a higher concentration of families with children and higher unemployment levels in contrast to the city average (Yang et al., 2019, pp. 145-146).

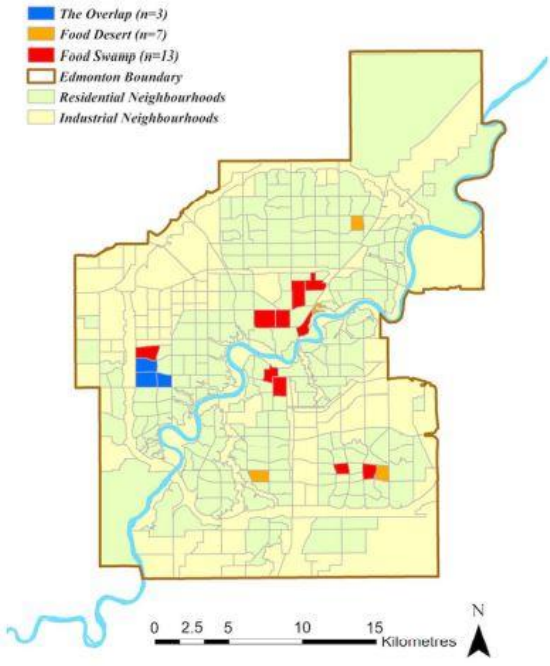

FIGURE 1 "IDENTIFICATION OF FOOD DESERTS BASED ON DIFFERENT DEFINITIONS" (YANG ET AL., 2019, P. 146)

Food swamps are concentrated in three areas within Edmonton: central Edmonton, south-central Edmonton (University area), and west Edmonton (Yang et al., 2019, p. 146). In contrast to the city average, these neighbourhoods have a larger population of minority groups, a low population of children and seniors, a high unemployment level, less private vehicle availability and residents are more dependent on public transportation (Yang et al., 2019, p. 146; Smoyer-Tomic, 2007, p. 751). Food oases (see Figure 2), as well, are dispersed throughout the City of Edmonton, where residents have a higher level of education and salaries, lower levels of unemployment, and own more private vehicles than the City of Edmonton neighbourhood average (Yang et al., 2019, p. 148).

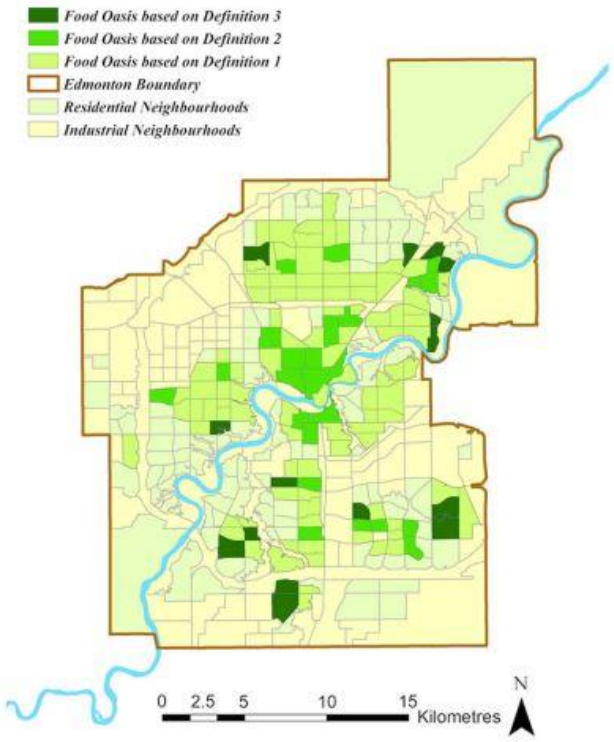

FIGURE 2 "IDENTIFICATION OF FOOD OASES BASED ON DIFFERENT DEFINITIONS" (YANG ET AL., 2019, P. 147)

Another socioeconomic indicator that impacts Edmontonians' ability to access nutritious food is their level of energy poverty. Canadian Urban Sustainability Practitioners (CUSP) defines energy poverty as "the experience of households or communities that struggle to heat and cool their homes and power their lights and appliances" (CUSP, 2019). A resultant issue is that those who experience energy poverty are more likely to spend less on nutritious food and groceries, considering unaffordable utility bills (CUSP, 2019). Table 1 outlines home energy affordability in Edmonton. CUSP (2019) defines home energy cost burden as the "percentage of total after-tax household income that is spent on home heating and electricity. For most Canadians, this value is below 3 percent…Households that spend more than twice this value on home energy services

can be said to experience high home energy cost burdens…CUSP uses this 6 percent threshold of home energy cost burden to define households that experience energy poverty."

Home Energy Affordability	Percentage/ Number of Edmontonians
Very high home energy cost burden 10%+	6.3%, 19,840
Extreme home energy cost burden 15%+:	3.0%, 9,500
Low home energy cost burden <3%:	51%, 158,105
Moderate home energy cost burden 3-6%:	33%, 104,025
Median home energy expenditure	$2,300

TABLE 1 HOME ENERGY AFFORDABILITY IN EDMONTON (CUSP, 2019)

In the last two years of the COVID-19 pandemic, Edmonton has felt the escalated effects of the COVID-19 pandemic on pre-existing and new systemic issues of the agri-food system. For instance, according to the Edmonton Social Council (2020), "Within Edmonton, 13.8% of residents were food insecure in 2017-2018. In 2019, 63,323 people received a hamper from Edmonton's Food Bank or one of its affiliates." Further, the Edmonton Food Bank had 18% more users of its services in March 2020 in contrast to March 2019 (CEYC, 2021, p. 5).

According to research conducted by the University of Toronto, over 20% of Albertans indicated that they felt food insecure at some point in 2021, the greatest rate of food insecurity felt by Canadians in provinces included in the study, data from territories was precluded from the study due to unavailability (see Figure 3) (Anchan, 2022).

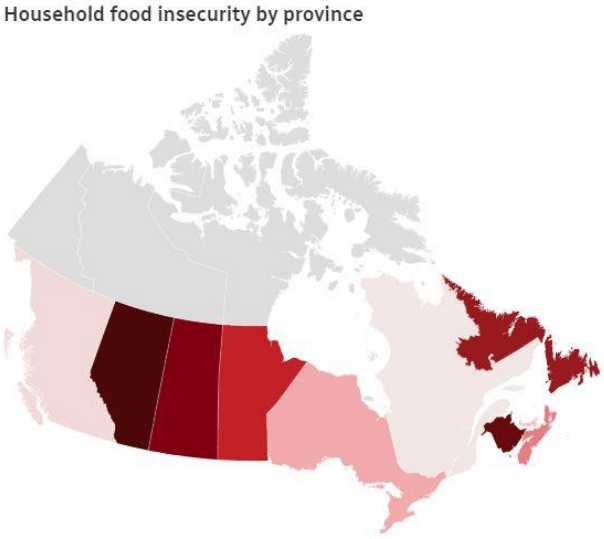

FIGURE 3 HOUSEHOLD FOOD INSECURITY BY PROVINCE (ANCHAN, 2022 DATA SOURCED FROM STATISTICS CANADA)

Further, approximately 6.3% of Albertans included in the study indicated that they experienced acute food insecurity, meaning that they underwent several instances during the past year where they went without food (Anchan, 2022). The Edmonton Food Bank has been overwhelmed with increased new user need as inflation continues to grow to record levels, with a 97% growth in new

clients from June 2020 to June 2022 (Panza-Beltrandi, 2022). For instance, just in June, Edmonton's Food Bank provided services to approximately 35 000 Edmontonians (Panza-Beltrandi, 2022).

To respond to these issues, this project will identify the gaps and weaknesses of the agri-food system that were exposed and magnified by the pandemic and subsequently identify how the COVID-19 pandemic has affected the development of food citizenship trends and initiatives in Edmonton's local food system. Currently, there is no research that has been done in this area, and this work is intended to help Edmonton become increasingly resilient in future pandemics and other crises and emergency situations.

1.2 Project Objectives, Research Questions, and Scope

Purpose

This research study aims to analyze the impact COVID-19 has had on food citizenship within Edmonton's local food system. Further, this research study is intended to help address how COVID-19 has affected food citizenship within Edmonton's local food system through the development of Edmonton-specific "food systems stakeholder maps."

Research Questions

Primary: How has the COVID-19 pandemic affected food citizenship in Edmonton's local food system?

Secondary:

- What stakeholders have been involved in influencing changes to food citizenship within Edmonton's local food system?
- How has the COVID-19 pandemic influenced international, North American, Canadian and Alberta's food systems?

To better understand how the research questions will be explored, the following terms are defined and will be used in this report:

Food citizenship – Food citizenship is described as the process whereby citizens, communities and organizations increase food accessibility, enterprises, social innovation, and alternative-food systems through providing food education, expertise, and different methods of accessing food (outside of traditional purveyors) to communities (Booth & Coveney, 2015, p. 16).

Local/ regional food system: The terms "food system," "regional food system," and "local food system" are defined differently across current literature; however, for this research study, local food system will be understood to mean "place-specific clusters of agricultural producers of all kinds—farmers, ranchers, fishers—along with consumers and institutions engaged in producing, processing, distributing, and selling foods" (Low et al.,2015, p. 1).

Scope

While elements of food justice, food sovereignty, and food security may be explored in this research study in relation to food citizenship trends, they are not the focus of this study, which will focus on food citizenship initiatives and trends that have emerged or grown since COVID-19.

1.3 Significance of Study

Prior research has focussed on understanding food citizenship at a more theoretical level, on case studies of local food systems prior to the COVID-19 pandemic and, broadly, what trends and initiatives have emerged or become popularized because of the COVID-19 pandemic. While there are a few exceptions, including Davies et al. (2019)'s case study analysis of three European cities including, Berlin, London and Dublin, predominantly, existing studies that have mapped out food citizenship initiatives within local food systems have focussed on one initiative or trend of food citizenship, rather than on food citizenship trends and initiatives in their entirety, such as the growth of community gardens, emergency food community assistance initiatives, urban agriculture and food sharing initiatives (Booth & Coveney, 2015; Petetin, 2020; Adelle, 2019; Bornemann & Weiland, 2019; Thorton, 2020; Thilmany et al., 2021; Cranfield, 2020; Reed & Keech, 2019; Davies et al., 2019; Welsh & MacRae, 1998; Prost, 2019).

As well, to date, current literature has not employed a complex adaptive systems theory methodology to identify and map stakeholders within local food systems to explore the concept of food citizenship (Booth & Coveney, 2015; Petetin, 2020; Adelle, 2019; Bornemann & Weiland, 2019; Thorton, 2020; Thilmany et al., 2021; Cranfield, 2020; Reed & Keech, 2019; Davies et al., 2019; Welsh & MacRae, 1998). Recently, evaluation theorists have recognized the critical need to use complex systems evaluation and research frameworks, rather than traditional, reductionist frameworks that can not fully address the pressing total systems interventions and transformations needed to understand how to react to the compounded impacts of the Anthropocene and the COVID-19 pandemic (Patton, 2021, p. 61; Reisman & Fairbairn, 2021, p.688). For instance, Reisman & Fairbairn (2021) note, "if the Anthropocene concept is to mobilize action for reversing problematic trends, it must address agriculture in a way that does not treat it only as a set of impacts to be avoided but rather as a site of political, economic processes to be accounted for and reimagined" (p. 688).

This study hopes to increase understanding of Edmonton's food citizenship system intricacies, interrelationships, and interdependences (Auspos & Cabaj, 2014, p. 4; Keshavarz et al., 2010). Further, through identifying stakeholders using the social economy model, one can better understand where initiatives that are not easily categorized as non-profit, private, or public fit into Edmonton's food system and how they interact with other stakeholders within the system (Mook & Armstrong, 2009, p. 81).

1.4 Organization of Report

Introduction

The introduction chapter of this report outlines the report's research problem, project objectives, research questions, scope, and the significance of the study.

Literature Review

The literature review of this report unpacks how existing research on the agri-food system and materials economy, food models and theory, complex systems theory and the Anthropocene can help address how COVID-19 has impacted food citizenship within Edmonton's local food system.

Methodology and Methods

This research study will use a case-study research design, with a document review methodology and content and thematic data analysis for the report phases listed below.

Stakeholder Analysis

Stakeholder Mapping

Trends and initiatives analysis

Findings

Trends and initiatives will be assessed after the stakeholder analysis and stakeholder mapping to help understand how COVID-19 has impacted the global agri-food system and impacted North American, Canadian and Edmonton's food systems: spurring the development of food citizenship trends and initiatives at a global, national, and regional scale. Results and findings of this report are generalized into main themes for further discussion.

Discussion and Analysis

The discussion and analysis segment of this report will address the research findings from the project's trends and initiatives analysis, answer the research questions, address new themes and ideas (or unexpected findings) from the report, strategic or research implications, limitations and areas for future research and summarize the study's research findings, including reanalyzing its initial theoretical, conceptual, and analytical frameworks.

Conclusion

The conclusion of this report will summarize the entirety of the research study, address the larger significance of the study and generalizable findings, identify how existing gaps and research have or have not been addressed by the study and present new ways of interpreting or addressing the report's initial research problem.

Chapter 2.0: Literature Review

2.1 Introduction

The purpose of this literature review is to understand how current research in the agri-food system and materials economy, food models and theory, complex systems theory and the Anthropocene can help explain how COVID-19 has affected food citizenship within Edmonton's local food system.

Previous research studies and literature have looked at the concept of food citizenship holistically, have mapped out food citizenship trends, stakeholders and initiatives within different local jurisdictions pre-pandemic in Europe and South America and have identified, generally, food citizenship trends that have started to emerge since the pandemic (Booth & Coveney, 2015; Petetin, 2020; Adelle, 2019; Bornemann & Weiland, 2019; Thorton, 2020; Thilmany et al., 2021; Cranfield, 2020; Reed & Keech, 2019; Davies et al., 2019; Welsh & MacRae, 1998). To date, little to no research has been done in relation to mapping out and analyzing food citizenship trends, initiatives, and stakeholders within local food systems in North America that have emerged or grown since the COVID-19 pandemic. Further, there is a gap in current literature related to how, collectively, these food citizenship initiatives and trends are affecting local food systems and how sustainable and resilient these initiatives will be post-pandemic.

Search criteria used for the literature review include local food, COVID-19 pandemic, complex systems theory, food citizenship, food democracy, civic food networks, food sovereignty, food security, Anthropocene, food justice, alternative food systems, civic food networks, local food networks, food commons and the materials economy, which were inputted into the University of Victoria's EBSCOhost database.

Themes that will be explored in the literature review of this study include agri-food systems and the materials economy, the Anthropocene, food citizenship, food democracy, alternative food networks and civic food networks, complex systems theory, the social economy model, and other theories explaining food citizenship.

2.2 Agri-Food System and Materials Economy

The COVID-19 pandemic has exposed weaknesses of the agri-food system and materials economy, which prioritizes consumerism through externalizing costs throughout stages of the system for the consumer. The most agreed upon definition of the agro-food (or agri-food system) in food research is the entirety of actors and activities a part of the production, distribution, and consumption of food, the interconnections between them and the regulatory and political environments that influence local and global food systems (Castree et al., 2013; Sage, 2018, p. 1; FAO, 2022). The agri-food system is a part of the materials economy, which includes extraction, production, distribution, consumption, and disposal (Leonard, 2007). Annie Leanord, in her video

"Story of Stuff," describes the materials economy as a "linear system on a finite planet" that consistently "'bumps' into limits" and, therefore, is unsustainable (Leonard, 2007). Leonard cites that the philosophies of our consumeristic materials economy are grounded in the theories of Victor Lebow, an economic theorist who advised Harry Truman after World War II, who said "Our enormously productive economy demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek our spiritual satisfaction, our ego satisfaction in consumption…we need things burned up, replaced and discarded at an ever-accelerating rate" (Leanord, 2007).

In the agri-food industry, large corporations (grocery stores, fast food companies and other food and beverage companies), as Lebow describes, have "converted the buying and use of goods into a ritual," exercising their powerful influence at all stages of the agri-food system from extraction to disposal (Booth &Coveny, 2015, pp. 5-8; Leonard, 2007). Hamilton (2004) refers to these corporations as 'Big Food' (Booth &Coveny, 2015, p. 3). Agricultural pollution from Canadian farmers accounts for 10% of Canadian greenhouse gas emissions (Agriculture and Agri-Food Canada, 2020). Globally, intensive farming practices account for 70% of water removal; further, farm wastewater runoff of agrichemicals, organic materials, sediments, and saline drainage are highly detrimental to the world's water sources (FAO, 2021).

Approximately 25% of food that is produced goes unaccounted for as it moves along the stages of the agri-food system, from production to disposal: totalling "24 percent of the freshwater resources used in food-crop production, 23 percent of total global cropland area and 23 percent of total global fertilizer use" (FAO, 2021). From extraction, Big Food binds farmers and other producers into long-lasting contracts, with particular produce stipulations including produce proportions, weight and required amounts and delivery specifications (Booth &Coveny,2015, p. 8). Frequently, contractual agreements with Big Food offer producers less money for their products individually than they would receive through selling their produce in alternative venues and formats (including direct-to-sale transactions and farmers' markets); however, grocers are able to sell their products in larger quantities, so contracts remain appealing to smaller producers (Booth &Coveny, 2015, p. 8).

Leonard (2007) describes that the goals of the distribution process in the materials economy are to "keep prices low, keep people buying and inventory moving." Global food conglomerates manufacture foods that are artificially made to last on shelves longer, and their processed products are often sold in big sizes and have low nutritional value (with high sugar content, trans and saturated fats and salt), which has led to an increase in conditions such as diabetes and other chronic disorders (Booth & Coveny, 2015, pp. 9-10). A study conducted by Mourbarac et al. (2012) into the amount of artificial food products that Canadian households eat found that three-quarters of a household's sugar ingestion came from pre-prepared sugary snacks and beverages, which together totalled 19.2% of all dietary energy purchased by Canadian individuals and families (Moubarac et al. 2012 as cited in Booth & Coveny, 2015, p. 9). While Canadian health is

being compromised by Big Food's prioritization of profits in the agri-food industry, food waste from the agri-food industry has been detrimental to the planet's health.

Leonard (2007) emphasizes that the materials economy is founded on the principles of *planned obsolescence* and *perceived obsolescence*. Planned obsolescence involves creating products which are meant to be tossed away, and perceived obsolescence involves tossing away functional products (Leonard, 2007). The Government of Canada cities that some of the main sources of Canadian's food waste include storing an overabundance of perishable food which goes bad before it is consumed or sold, keeping food in insecure containers, packaging, or areas where food is prone to contamination or rotting and discarding uneaten food in waste containers rather than composting it (Government of Canada, 2020).

2.3 Food Citizenship and Food Democracy

The concept of food democracy originated in the 1990s and was first conceived by Professor Tim Lang, a British food policy researcher with a background in farming (Booth & Coveney, 2015, p. 14). Lang believed in the underlying principles of asset-based community development for food policy and system reformation, including those efforts to start from and be led by the community rather than from private or public organizations: 'bottom up' rather than 'top down' (or needs-based) approaches to community development (Booth & Coveney, 2015, p. 14). Lang & Heasman (2004) argue that food policy and program formulation in the food sector is influenced by duelling forces, with actors from Big Food and the agri-food system on one end, with a focus on consumerism and system monopolization and alternative food systems based on citizen empowerment and decentralization on the other end (Booth & Coveney, 2015, p. 14). Booth and Coveney (2015) characterize food democracy as "the right of all people to an adequate, safe, nutritious, sustainable food supply…at its heart is the concept that people can exert power, remodel and improve the existing food system" (p. 14).

In current literature, food citizenship and food democracy are often used in lieu of the other, and both concepts are the same in practice and fundamental components (Booth and Coveney, 2015, p. 16).

2.4 Food Sovereignty and Food Justice

While the focus of this project is on food citizenship, it is essential to understand the key differences between food sovereignty, food justice and food citizenship politics, main institutions and motivations when examining COVID-19's impacts on food citizenship system actors and dynamics within Edmonton's local food system (Booth & Coveney, 2015, p.15). The term 'food sovereignty' was first conceived in 1996 in relation to a global, community-led agricultural movement started by local growers and producers called Via Campesina (Wittman et al., 2010 as cited in Booth & Coveney, 2015, p. 15). Core distinguishing components of food sovereignty include "its rights-based, rural focus and the fact that it is firmly located from a small-producer perspective" (Renting et al., 2012, as cited in Booth & Coveney, 2015, p. 15).

Food justice is associated with vulnerable populations and is based on egalitarian principles that advocate for increased accessibility to nutritious food for all members of society (Booth & Coveney, 2015, p. 15.) Holt-Gimenez and Shattuck (2011) further elaborate that food justice is fundamentally routed in governmental and legislative actions which strive to create more balanced and resilient food systems (Booth & Coveney, 2015, p. 15.) In Table 1, Holt-Gimenez and Shattuck (2011)'s dimensions of food justice and food sovereignty are further contrasted in terms of political dimensions, main organizations or institutions involved and community rights orientation (Booth & Coveney, 2015, p.15).

Discourse	**Food justice**	**Food sovereignty**
Politics	Progressive	Radical
Main institutions	Alternative fair trade and many slow food chapters; organizations in the Community Food Security Movement; Food Policy Councils and youth food and justice movements; farmworker and labour organizations	Via Campesina, International Planning Committee on Food Sovereignty; Global March for Women; many food justice and rights-based movements
Orientation	Empowerment	Entitlement

TABLE 2 "KEY DISTINCTIONS BETWEEN THE TERMS FOOD JUSTICE AND FOOD SOVEREIGNTY—ADAPTED FROM HOLT GIMEZ AND SHATTUCK (2011)" AS CITED IN BOOTH & COVENEY, 2015, P.15.

Booth & Coveney (2015) argue that food citizenship is distinct from food justice and food sovereignty because its goal is to convert complaisant grocery store shoppers into conscious food advocates (p. 16). The authors further contend that food citizenship is not about abolishing Big Food and the agri-food industry or protecting basic food freedoms but focuses on applying pressure to the materialistic food industry through supplying food education, expertise, and different food accessibility options to communities (Booth & Coveney, 2015, p. 16).

2.5 Alternative Food Networks (AFNs) and Civic Food Networks (CFNs)

Alternative food networks and the emergent term civic food networks are both used to describe alternative methods of accessing food through non-traditional suppliers, distributors, and producers. It is critical to understand and compare AFNs and CFNs as theoretical concepts to understand better how COVID-19 has impacted food citizenship within Edmonton's local food system. Renting et al. (2003) describe alternative food networks (AFNs) as "a broad embracing term to cover newly emerging networks of producers, consumers and other actors that embody alternatives to the more standardized industrial mode of food supply" (p. 394). Jarosz (2008) argues that AFNs can be characterized by four significant theoretical approaches: (1) by less travel between producers and consumers; (2) by smaller-production farms or farming techniques with less associated environmental impacts (3) by alternative food purveyors and distributors which

equally place value on the social and societal value of food, as well as its monetary and economic value (4) by a dedication to understanding social, economic and environmental food system components as it relates to long-term, equitable and maintainable food production, distribution and consumption (p. 232).

AFNs can encompass a variety of food trends and initiatives; therefore, a criticism of the term by food theorists is that the term is too broad to adequately address the diverse spectrum of food systems—they argue that when using AFNs as a construct, it should be further delineated by characteristics as noted above (Renting &Banks, 2003; Holloway et al., 2007; Renting et al., 2012; Fonte & Cucco, 2018). Further criticisms of the term are that AFNs present alternative and conventional agri-food systems as definitive concepts which do not consider the spectrum of evolving food systems and that AFNs do not adequately account for power relations or egalitarianism principles (Renting & Banks, 2003; Holloway et al., 2007; Renting et al., 2012; Fonte & Cucco, 2018; Jarosz, 2008).

With criticisms of AFNs focussing less on egalitarian principles, some theorists have advanced civic food networks (CFNs) as a methodology to better account for the social, citizen and participatory aspects of food systems, not to take the place of other terminology, but as an interrelated, supportive term (Renting et al., 2012; Fonte &Cucco, 2018; Prost, 2019). CFNs, in contrast to AFNs, "aim to practice closer producer-consumer relationships and become spaces of democratic decision-making, empowerment and/or collective action to challenge the wider food system" (Prost, 2019, p. 142). Food citizenship or food democracy is the underlying theoretical model which CFNs fall underneath (Prost, 2019, p. 142; Fonte & Cucco, 2018, p. 348; Renting et al., 2012, p. 292). Renting et al. (2012) argue that:

1. CFNs are centred around social connections between producers, distributors, and consumers.
2. CFNs are inclusive of wide food system structures, components, and interactions, outside of interrelationships between producers, distributors, and consumers, and can also involve other people and system components involved in alternative food models and movements.
3. CFNs examine the transformational nature of the food system at a policy, economic, national, international, and agri-food system level but also examine the role localized forces and civic engagement have in impacting changes to the food system.
4. CFNs adapt to and relate to the dynamics between agri-food systems and city and rural food relationships, with metropolitan areas often acting as the spurring force in the development of CFNs: counter to traditional agri-food systems change which begins with rural farmers and distributors, to urbanites and consumers.
5. CFNs encompass new food models, approaches, and learning, which are developed and built through relationships between new food system citizens and stakeholders: some of these models include trends and initiatives such as 'permaculture' and 'grow it yourself.'
6. CFNs often grow and evolve in lieu of other food political, social, and economic causes, trends, initiatives, and ideologies, which include but are not limited to, place-based

development, ecofeminism, degrowth and solidarity economy districts. At the route of CFNs is their experientialism which encourages the growth of new versions of food citizenship and relationships (pp. 292-293).

Prost (2019) articulates three challenges that should be accounted for in the development of CFNs including:

1. The proclivity for CFNs to generate nutritious, albeit expensive, specialty food, which may be inaccessible to low-income populations, versus standard, less expensive food offered at traditional food purveyors.
2. The need for consumers and producers to actively participate in changing the food system and the need to shift the emphasis from the individualistic motivations of consumers and producers to the collectivistic powers of change of communities and relationships.
3. The need for CFNs that are both specialized and generalist to impact larger food system changes, as most CFNs currently focus on a particular system problem to better employ scarce human and material assets: thereby, they may focus on one system lever of change such as environmental sustainability but discount another such as social inequities and disparities in food access (pp. 143-144).

Due to CFNs conceptual linkages with food democracy and food citizenship, CFNs rather than AFNs will be used as the description of localized food hubs, relationships, and networks in this research study (Renting &Banks, 2003; Holloway et al., 2007; Renting et al., 2012; Fonte & Cucco, 2018; Jarosz, 2008; Prost, 2019). Further, the challenges and opportunities of CFNs as a theoretical food concept will be explored within this research study in terms of how they have changed or grown since the emergence of COVID-19, including urban agricultural initiatives, new community food donation systems and organizations, virtual food sale models, informal and formal food hubs etc. (Thilmany et al., 2021; Ngumbi, 2020; Stephenson, 2021; Huncar, 2021; FAO, 2020; City of Edmonton, 2021).

2.6 Anthropocene

The Anthropocene is a term some researchers and industry experts are assigning to the current period of the world, a period characterized by "intensive resource extraction and consumption; industrialization and globalization; and (related) polluting of air, water, and land" (Williams et al., 2021, p. 91). The Anthropocene concerns not only humanity and its detrimental actions, which have led to consequences on the planet, but also 'The Earth Systems function," which can be characterized as the interactions between the planet's elemental processes and forces that are the basis behind the balance of conditions of the planet's habitability (Sandford, 2019, p. 22). Sandford (2019) argues that there are two essential components of the Earth's Systems function, including that "…the Earth is a single system, within which the biosphere is an active and critical component… 'and' that human activities are now so pervasive and profound in their consequences that they affect Earth System function at a global scale" (p. 24).

Williams et al. (2020) further contends that "COVID-19 has underscored our global connectivity, uncertainty, complexity, and interdependent systems—and the importance of collective decisions and actions. It has also underscored the importance of rapid-learning cycles and use of evidence to course-correct, improve responses, save lives, and support our common interconnected future" (p. 91).

2.7 Theories Explaining Food Citizenship

Complex systems, tragedy of the commons, food citizenship, knowledge democracy and asset-based community development and social economy model theories are explained in this section to increase understanding of how COVID-19 has impacted food citizenship within Edmonton's local food system through providing a theoretical basis to understanding complexity, interrelationships between system actors and system parts and emergent, evolving food citizenship trends and initiatives.

Complex Systems Theory

Complex theories are a set of theories rather than one ideological approach and can be divided into three overarching categories, including chaos, dissipative structures, and complex adaptive systems (CASs) theories (Burnes, 2005, pp. 74-78). Chaos theorists argue that systems continuously change in unalterable ways, influenced by external forces and interconnected relationships where even slight behavioural modifications can affect larger, evolutionary systems change (Burnes, 2005, p. 78). Dissipative structures are unbalanced elements that interact with their environment in mercurial fashions (Prigogine, 1997; Prigogine& Stengers, 1984; Rosenhead, 1998; Styhre, 2002 at cited in Burnes, 2005, p. 78). New elements' structures are unforeseeable from trying to assess patterns of the previous phase and are internally rather than externally change-driven (Stacey, 2003; Stacey et al., 2002, Prigogine, 1997 as cited in Burnes, 2005, p. 78). CASs, in distinction to chaos and dissipative structures theories, attempt to perceive patterns in behaviour of both systems and their interdependent parts and agents (Stacey et al., 2002 as cited in Burnes, 2005, p. 79). CASs are comprised of several elements which are governed according to patterns of constrained interactions; therefore, elements co-evolve and have to modify their operations to reflect that of surrounding elements (Burnes, 2005, p. 78). CASs have order-generating rules, various interdependent actors, nested systems, intersecting system boundaries and complicated behavioural patterns (Auspos & Cabaj, 2014, p. 4; Keshavarz et al., 2010). Further, CASs are impacted by subtle environmental shifts, and actors within them are co-adapted and evolve in response to both inner and external change factors (Auspos & Cabaj, 2014, p. 4).

Clark &Harley (2020) maintain that the Anthropocene can be characterized as a complex adaptive system in their integrative framework for sustainability science in that it has "persistent heterogeneity (individuality, diversity) of its elements, relationships (interactions) among those heterogeneous elements that are local or context-specific, and autonomous selection processes that enhance some elements (but not others) based on the outcome of the local interactions" (pp. 338-340). Edmonton's food system is comprised of several distinct groups, who each have defining

traits, values, and interests. These groups are both sub-systems, systems within larger, overarching systems, and supra-systems whose boundaries contain several smaller systems (Keshavarz et al., 2010, p. 1468). Therefore, individual groups within CASs are nested systems with intersecting, converging boundary lines (Auspos & Cabaj, 2014, pp. 4-5; Hurst & Zimmerman, 1994, p. 341). Edmonton's local food system, although comprised of several nested systems, has order-generating rules or established patterns of behaviour observable at each level of the system (Hurst & Zimmerman, 1994, p. 339). Although complex-adaptive systems are irregular and unpredictable with distributed levels of control, they still self-organize in accordance with basic recurrent patterns which maintain system stability (Burnes, 2005, p. 80; Hurst & Zimmerman,1994, p. 339). Through understanding the sub-systems and supra-systems of Edmonton's local food system, this research study will be better able to explain the interconnections, relationships, and intersecting interests of stakeholders in Edmonton's food system.

In CASs, there is no such thing as systems balance; rather, when one systems function is filled, another opens, which is referred to as perpetual novelty (Waldrop, 1991, p. 147 as cited in Hurst & Zimmerman, 1994, p. 339). Co-created evolution can be compared to eco-lifestyle theories; both theories contend that established organizations can become susceptible to radical changes under the right conditions (Hurst & Zimmerman, 1994, p. 339). In eco-lifestyle theories, developed, niche-specific systems have less opportunities and variability for change than developing systems with less established relationships (Hurst & Zimmerman, 1994, p. 340). Eco-lifestyle and CASs theories contend that regenerating systems requires chaos and disequilibrium (Hurst & Zimmerman, 1994, p. 349). CASs are also notable in the aspect that under the appropriate circumstances, order-generating rules can be redefined when systems changes are no longer manageable (Burnes, 2005, p. 80.) Otherwise, seemingly balanced systems still require partial destruction to continue to grow and evolve (Hurst & Zimmerman, 1994, p. 349). COVID-19, in this research study, will be explored as the 'radical' change which has created disequilibrium and chaos within Edmonton's food system and affected food citizenship initiatives, organizations, and stakeholders within this system.

The self-organizing feature of CASs, when applied to organizational change, only works if power is equally distributed amongst key players who have access to informal relationship and information networks (Jenner, 1998, as cited in Burnes, 2005, p. 83). It is important to understand the self-organizing feature of Edmonton's complex adaptive food system to understand how COVID-19 has affected food citizenship within Edmonton's local food system.

Knowledge democracy and asset-based community development

Adelle (2019) unpacks the concept of food democracy through using key components of the broader-encompassing term knowledge democracy. Knowledge democracy can be defined as "an interrelationship of phenomena… 'which can be set' out in four dimensions, namely: cognitive justice and the co-production of knowledge; multiple representations of knowledge; knowledge as a tool for action; and knowledge sharing" (Tandon et al., 2016 as cited in Adelle, 2019, p. 215). Asset-based community development (ABCD) was created by community development

researchers and practitioners John McKnight and Cormac Russell; like the concept of knowledge sharing, ABCD is broken down into five fundamental elements: it is *citizen-led, relationship-oriented, asset-based, place-based,* and *inclusion-focused* (Russell, 2020, as cited in Tjoa, 2021, p. 3). This research study will use the five basic principles of ABCD to help evaluate how COVID-19 has affected food citizenship within Edmonton's local food system.

Food and 'the commons'

Ostrom (2015) describes that " 'the tragedy of the commons' has come to symbolize the degradation of the environment to be expected whenever many individuals use a scarce resource in common" (p. 2). In the case of the agri-food system, where the scale of agriculture and human demand has outpaced the earth's limited resources, food has become a 'tragedy of the commons.' The "commons dilemma" refers to when a group with shared resources is motivated by their individualistic interests over collectivistic interests and when individuals are prone to favour solutions of the least work for the most reward or otherwise will piggyback on the efforts of others in a group (Ostrom, 2015, p. 6; De Schutter et al., 2018). Similarly, some group individuals are prone to put in more work for less reward and also act upon the group's resources, which means that the system will never be balanced or reach idealistic collectivistic conditions, where everyone benefits equally for the same level of effort (Ostrom, 2015, p. 6). One can see several examples of the commons dilemma in the agri-food system, where wealthy first-world nations exploit global agricultural land and resources for material gain while developing nations increasingly and disproportionately feel the impacts of climate change.

For instance, in Brazil, there has been a historic increase in the rate of disforestation in the country, with large amounts of Indigenous land being illegally possessed by cattle ranchers, loggers and other farmers (Aljazeera, 2020) Land that is cleared for farming and mining activities threatens Indigenous populations' ability to sustain themselves on their traditional hunting diet, and likewise, threatens their quality of life and continuation of their culture (Aljazeera, 2020). Large food conglomerates control most of the global food supply chain and markets through their skilled operations and negotiation power versus small suppliers and retail chains (De Schutter et al. 2018, p. 375). In the case of Brazil, first-world countries' excessive meat-based diet drives the needs for more land and more resources to sustain their privileged quality of life, over developing nations' control of their own land and culture (De Schutter et al., 2018, p. 377). In September 2020, tensions escalated between commercial lobster fisheries and an Indigenous lobster fishery in Nova Scotia, with commercial fisheries arguing that the Sipekne'katik-owned lobster fishery should not be operating when lobsters moult outside of the federally mandated fishing season, from November to May (MacDonald, 2020). However, the Sipekne'katik fishery argued that it was in compliance with its own fisheries conservation plan to ensure lobster stocks were not overfished (MacDonald, 2020). At the heart of the dispute is the Sipekne'katik fishery's right to exercise their federally protected treaty rights over complying with federally mandated lobster fishing seasons, based on a vague Supreme Court of Canada 1999 ruling (MacDonald, 2020). The Marshall ruling first stipulated "the rights of the Mi'kmaq,

Maliseet, and Passamaquoddy bands in Eastern Canada to hunt, fish and gather to earn a 'moderate livelihood'" and then, subsequently two months later, clarified "the constitutionally protected treaty rights cited in the first decision were not unlimited, and the Indigenous fisheries could be regulated…justified for conservation or other important public objectives" (MacDonald). Arguably, in this instance, commercial fisheries had more 'negotiation' power with the federal government to argue that the Sipekne'katik fishery was acting in a way that was threatening to the local stock of lobsters in the area. As De Shutter et al. (2018) contend, "as a narrow set of large firms increasingly act as gate-keepers to the high-value markets of rich countries, small-scale farmers find it increasingly difficult to join these supply chains, and the gap is growing between large and small producers in a context in which both categories of producers compete for access to resources, credit and political influence" (p. 377). This trend is observable in Edmonton's local food landscape. Nutritious, less expensive food is more accessible from large food purveyors in affluent suburban locations and more expensive, non-nutritious food is more accessible from small food purveyors in central locations in part because large food conglomerates can capitalize on lower prices due to market control, while small purveyors can not afford to lower prices while staying in operation (Hemphill et al., 2008, p. 429).

Ostrom (2015), however, argues that policy analysts and researchers should not perceive that citizens who have equal stakes in a commons can not free themselves from the 'tragedy of the commons' or the 'commons dilemma' and that each situation depends upon the internal and external system domain factors acting upon the group (p.21). Further, Ostrom (2015) posits that theoretical inquiry necessities evaluating common, recurrent system variables and forces in complicated problems to understand a situation more fulsomely (p. 24). Prost (2019)'s challenge in the development of successful CFNs of the need for consumers and producers to actively participate in changing the food system and the need to shift the emphasis from the individualistic motivations of consumers and producers to the collectivistic powers of change of communities and relationships speaks to Ostrom (2015)'s views on situational impacts of a group and individuals in escaping the food commons dilemma. This research study, through complex systems theory and identification of common systems variables within and between CFNs, will help decipher how COVID-19 has impacted food citizenship within Edmonton's local food system.

Food citizenship models

Hassein (2008) developed the following model for understanding the essential elements of food democracy (or food citizenship), which includes five aspects:

i. "Collaborating towards food system sustainability
ii. Becoming knowledgeable about food and the food system
iii. Sharing ideas about the food system with others
iv. Developing efficacy with respect to food and the food system

v. Acquiring an orientation towards the community good" (as cited in Booth & Coveney, 2015, pp. 18-19).

Petetin (2020), in her article "The COVID-19 Crisis: An Opportunity to Integrate Food Democracy into Post-Pandemic Food Systems," details how the COVID-19 Pandemic has nourished the development of food democratic or food citizenship models, which "can be characterized as citizens wanting 'better food, more information, and choices, and preference for local action and personal involvement'" (Booth & Coveney, 2014 a cited in Petetin, 2020, p. 332). Petetin (2020) describes four fundamental food citizenship components which are apparent in emerging food citizenship initiatives jumpstarted by the COVID-19 pandemic, including:

- "True information, genuine choice and alternative products being offered to consumers;
- Upstream engagement and bottom-up approach in the decision-making process;
- Good health, food safety, sustainable agriculture and environmental protection, improvement of the rights of farmers and agricultural workers and their opportunities; and,
- Restoration of faith and trust in the food system, its institutions and in farmers" (Petetein, 2020, p. 333).

Social economy model

According to the social economy model, lines are getting more blurred between the non-profit, private, and public sectors (Quarter, Mook & Armstrong, 2018, p. 16). Social economy model researchers advocate for the use of a mixed economy model (see figure 4), which recognizes the

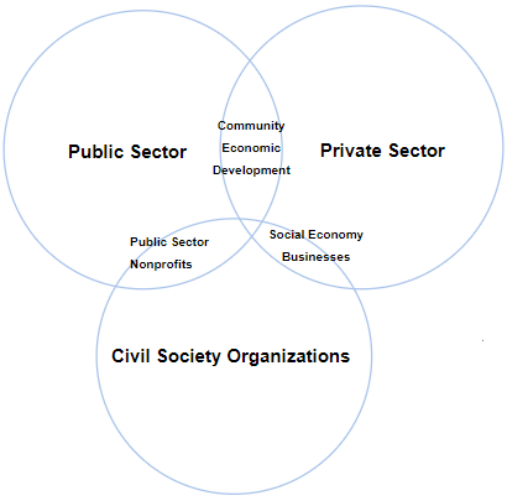

FIGURE 4 SOCIAL ECONOMY MODEL DIAGRAM (QUARTER, MOOK & ARMSTRONG, 2018, P. 16).

need for overlap categories and fluidity between the public and private sector for the variety of organizations and social, economic models whose core mandates are routed in advancing social outcomes (Quarter, Mook & Armstrong, 2018, pp. 16-17).

Within these divisions have emerged public-sector non-profits and community economic development (CED) organizations (Quarter, Mook & Armstrong, 2018, p. 16). CED organizations can include "community development corporations, community benefits agreement coalitions, performing arts organizations, online community economic development and supported social enterprises for marginal social groups, both training organizations and employers" (Quarter, Mook & Armstrong, 2018, p. 19). The defining trait of CEDs is that they integrate both public and private funds to create or develop community resources for social and community gain (Quarter, Mook & Armstrong, 2018, p. 19). Public sector non-profits can include "non-market housing organizations, health care non-profits and childcare centres" (Quarter, Mook & Armstrong, 2018, p. 20). These organizations are amalgamations of social economy organizations and non-profits; they are autonomous and have independent boards and incorporations but are heavily reliant on government programs, policies, and funding (Quarter, Mook & Armstrong, 2018, p. 20):

i. The shared economy and social economy businesses have also emerged where organizations come together for a common purpose: normally to promote income, social, cultural, or environmental objectives (Hall, Elson & Wamucii, 2015). Social economy businesses are businesses with the primary purpose of retailing goods and services with the goal of simultaneously meeting both financial and social, environmental, and cultural objectives (Hall, Elson & Wamucii, 2015). Social economy businesses may include "differing forms of co-operatives with share capital that earn their revenues from the sale of services, commercial, non-profit organizations that earn their revenues from the market, social enterprises that support a non-profit organization, aboriginal businesses and community-supported agriculture and community-supported fishing/fisheries" (Quarter, Mook & Armstrong, 2018, p. 18).

ii. Lastly, civil society organizations can not be defined as either public or private sector organizations, and can be categorized into one of the following four classifications "(1) non-profit mutual associations relating primarily to the economy, such as unions, professional associations, and consumer groups; (2) non-profit mutual associations focusing on social needs, such as religious groups, associations of race and ethnicity, and self-help groups that serve a defined membership having a mutual or shared interest that they seek to satisfy through the organization; (3) member-based associations that serve the public, either at large or specific groups of people in need, such as political parties and other sociopolitical advocacy associations (e.g., environmental groups or feminist associations) and service clubs (e.g., the Lions, the Shriners, and the Elks); and (4) different forms of foundations and fundraising mechanisms serving the public" (Quarter, Mook & Armstrong, 2018, p. 21).

2.8 Conceptual Framework

This section explains the conceptual framework used to address how COVID-19 has impacted food citizenship within Edmonton's local food system, what stakeholders have been involved in influencing changes to food citizenship within Edmonton's local food system and how has the

COVID-19 pandemic influenced international, North American, Canadian and Alberta's food systems. The conceptual framework used in this project incorporated different elements of complex systems theory, the social economy model, and general and COVID-19-specific food citizenship models

Hassein (2008)'s broad food citizenship model, Petetin (2020)'s COVID I9-specific food citizenship model and Davies et al. (2019)'s stakeholder analysis chart were the basis for the development of this project's conceptual model to understand how COVID-19 has influenced food citizenship trends, initiatives, and stakeholders within Edmonton's local food system.

Food citizenship stakeholders were identified using the social economy model in this project to better understand the food landscape of Edmonton's local food system and the fluidity of food actors and organizations that are not easily distinguishable as falling within the private, non-profit, or public sectors.

Patton (2021) developed a set of six criteria for evaluating transformation, including *transformation fidelity*, *complex systems framing*, *eco-efficiency full-cost accounting*, *adaptive sustainability*, *diversity*, *equity*, *inclusion (DEI)* and *interconnectedness* (pp. 76-77). Patton (2021) applies his criteria against the case study of the Global Food Alliance, which "has adopted an agroecological perspective that is based on complex systems understanding and dynamics. The evaluation approach includes mapping food systems landscapes and creating and tracking social systems maps of networks and initiatives working on agriculture and food systems transformation as well as the institutions, corporations, and initiatives that oppose transformation" (p. 67). Through this approach, The Global Food Alliance has developed a theory of transformation that guides the development of its strategies, activities, and evaluations (Patton, 2021, p. 64). This "theory" is:

> Genuine food system transformation occurs when diverse actions, networks, and individuals intersect across sector and issue silos, the global and local, the macro and the micro. These intersections facilitate convergence around shared visions and values and, ultimately, build critical mass and momentum behind tipping points that lead to healthy, equitable, renewable, resilient, and culturally diverse food systems that dynamically endure over time (Patton, 2021, p. 64).

This broad theory of "food system transformation" will guide the work of this research study in terms of understanding the impacts of COVID-19 on food citizenship in Edmonton's local food system. Although the Global Food Alliance has done this work broadly, at a global food system level, this research study hopes to apply one criterion (*complex systems framing criterion*) to one trend or component (food citizenship) of Edmonton's local food system to better understand how COVID has transformed the development of initiatives and relationships between stakeholders.

The conceptual framework applied Patton (2021)'s complex systems framing criterion (see table 1) against Edmonton's local food system (p. 76).

Criteria	Guidance	Potential Operational Dimensions and Concepts
Complex Systems Framing	• Assess systems transformation using systems thinking principles and complexity concepts • Ensure that transforming systems is the transformational focus • Apply complex systems understandings and frameworks in evaluating transformation	**Complexity** • Emergence • Nonlinearities • Dynamics • Adaptation • Co-creation • Path dependence **Systems** • Boundaries • Perspectives • Relationships • Dynamics

TABLE 3 CRITERIA FOR EVALUATING TRANSFORMATION (PATTON,2021, P. 76).

This project incorporated complexity and systems operational dimensions and concepts outlined in Patton (2021)'s complex systems framing through the thematic and content analysis coding, trends and initiative analysis and mapping of food citizenship stakeholders to address how the COVID-19 pandemic affected food citizenship with Edmonton's local food system, what stakeholders have been involved in influencing changes to food citizenship within Edmonton's local food system and how the COVID-19 pandemic has influenced international, North American, Canadian and Alberta's food systems.

Complex systems framing "connects systems thinking and complexity concepts to define the processes, nature, trajectories, and results of transformational engagements" (p. 78). Through understanding food citizenship at both a systems and complexity level through interrelationships between stakeholders and system components, this project helps address how COVID-19 has transformed food citizenship within Edmonton's local food system.

After stakeholders were assessed using this chart, they were visually grouped on a diagram (based on the social economy model) to illustrate sub-systems and supra-systems, how many organizations fall into which category/ or sector and external forces which act upon Edmonton's local food system (Carnegie UK Trust, 2009, p. 4; Claridge, 2013).

The Anthropocene, as well as the compounded impacts of COVID-19 and climate change, have, within the last two years, impacted the foundations of the agri-food system, from global supply

chain issues to rising inflation, to food product delays and shortages to food accessibility issues. COVID-19 has also acted as one of the catalysts to transform Edmonton's complex adaptive local food system. Understanding existing literature on food democracy and the differentiation between food democracy, food justice, and food sovereignty is key to unpacking how the COVID pandemic has affected food citizenship with Edmonton's local food system.

Chapter 3.0: Methodology and Methods

3.1 Introduction

This project used a case study research design with a relational and thematic content analysis data collection method from public domain sources to identify and analyze stakeholders within Edmonton's local food system. This project used the social economy model and complex adaptive systems theory (nested systems, order-generating rules, and co-created transformation) to identify and map out stakeholders and analyze trends and various initiatives. Additionally, it identified food citizenship trends and initiatives in Edmonton's local food system.

A case study research design is a comprehensive research approach that is used to study a specific research issue or problem and is typically preferred when a researcher wants to reduce the scope of a larger area of research and study particular research cases or topics within a research subject area (University of Southern California, 2022).

3.2 Methodology

The primary approach for this project was a case study. A case study research design was chosen for this research study because using this approach allows one to better conceptualize a complicated problem (food citizenship) through an in-depth analysis of specific events, circumstances, and relationships (University of Southern California, 2022). As noted by the University of Southern California (2022), a case study research design is also a very flexible research approach that gives a researcher the option of drawing upon several research methodologies, methods, and resources in their theoretical, conceptual, and analytical frameworks to address their research problem A case study research design can also help increase knowledge on a specific topic within a larger research subject area or reinforce findings from current literature (University of Southern California, 2022). Further, a case study research design uses applicable, current examples to put into practice specific concepts, theories, and methods specific to current literature on the research topic (University of Southern California, 2022).

Qualitative data from current literature and public domain documents (social media, websites, reports, books etc.) was used as the basis for the study's stakeholder analysis, stakeholder mapping and trends and initiatives analysis.

Within the case study, the following approaches were also adopted, including a stakeholder mapping and analysis and trends, issues, and events analysis.

<u>Stakeholder Mapping and Analysis</u>

This project used stakeholder mapping and analysis to primarily help address how the COVID-19 pandemic affected food citizenship with Edmonton's local food system through better

understanding what stakeholders have been involved in influencing changes to food citizenship within Edmonton's local food system.

This project incorporated a few of the stakeholder analysis categories Davies et al. (2019) developed in their chart identifying 'food sharing initiatives' within Dublin, Berlin, and London, including *initiative activities, initial goals, and impacts* (p. 12). However, rather than *relation to dimensions of food democracy* and *initiative identifier*, the chart used in this project was universally applied to the concept of food citizenship and as described earlier, incorporated concepts of complex systems theory and the social economy model, including:

1. Name of organization/ initiative
2. Overarching organizations, if applicable
3. Organizational type (including public sector, civil agencies, boards and committees, NGOs and special interest groups, public sector non-profits, community development organizations, non-profits, civil organizations, private sector, and individual citizens/community groups)
4. Years active
5. Seasons
6. Initiative sub-system
7. Initiative supra-system
8. Initiative vision, mission, and values
9. Focus area/interest
10. Social/ political movement
11. Temporary/permanent initiative (Quarter, J., Mook, L. & Armstrong, A., 2018; Davies et al., 2019, p. 12).

After stakeholders were identified and coded against the above criteria, they were mapped geographically on ArcGIS and according to the social economy model.

Trends, Issues and Events Analysis

The trends, issues and event analysis was compiled through a document review methodology of relevant academic literature and grey literature on COVID-19's impacts on North American, Canadian, international and United States' food supply chains and systems from March 2020 to Sept 2022.

Identifying stakeholders involved in food citizenship initiatives within Edmonton's local food system in the stakeholder mapping and analysis chapter was key to identifying larger trends, initiatives, and systems impacts of COVID-19 on Edmonton, Canadian, North American, and international food systems in the trends, issues, and events analysis.

3.3 Methods and Tasks

Document Review

A document review research method was used for this research study. A document review research method is "a systematic collection, documentation, analysis and interpretation, and organization of data as a data collection method in research…The documents may be external or internal to an organization, such as a school, organization, company, government agency, and others, and can be in hard copy or electronic form" (Bretschneider et al., 2017, p. 5). Examples of documents that can be included within a document review can range from reports, social media, speeches, marketing materials, meeting minutes, memos, deeds, annual reports, funding proposals etc. (Bretschneider et al., 2017, p. 4).

The main benefit of using document review as the research method of this study is that it can cover a diverse range of documents, which will be vital to gaining a holistic picture of how COVID-19 has affected food citizenship within Edmonton's local food system (Bretschneider et al., 2017, p. 6). Also, document review is less cumbersome of a research method versus other methods, such as surveys and focus groups, which demand more of a stakeholder's time. Therefore, document review was ideal for this research study due to the wide variety of stakeholders, food citizenship initiatives and trends that were included within this study and for the development of the stakeholder analysis, stakeholder mapping, trends, and initiatives analysis chapters within this study (Bretschneider et al., 2017, p. 6).

Further, qualitative and quantitative data gathered through a document review method is simpler to classify than other research methods and can help provide context to guide the use of other complementary research methods within a study (Bretschneider et al., 2017, p. 6). Document review, versus other data collection methods, can also aid in investigating a research question from a national and international context (Bretschneider et al., 2017, p. 7).

Tasks

1. Created inclusion criteria for a document review checklist (Bretschneider et al., 2017, p. 7).
2. Gathered and collated comparable documents, contrasted them, and evaluated them, then investigated the documents altogether (Bretschneider et al., 2017, p. 9).
3. Categorized data as outlined within theoretical, conceptual, and analytical frameworks and then ascertained pertinent trends and themes to the research questions after documents were evaluated collectively and individually (data analysis) (Bretschneider et al., 2017, p. 9).
4. Developed stakeholder map using ArcGIS or other mapping software
5. Wrote stakeholder analysis chapter.
6. Wrote trends and initiatives analysis chapter

3.4 Data Analysis

This study used content and thematic analysis for data analysis.

Thematic Data Analysis

Thematic data analysis is "a method for analyzing qualitative data that entails searching across a data set to identify, analyze, and report repeated patterns" (Kiger &Varpio, 2020, p. 847). In contrast to content analysis, which will be described further below, the thematic analysis uses *themes* vs *codes* to analyze data (Kiger &Varpio, 2020, p. 848). A category represents and gives systemization to content which is being analyzed from a document review (Kiger &Varpio, 2020, p. 848). A theme, versus a category, is a particular arranged sequence of concepts or codes originating from a data set that guides a research question (Kiger&Varpio, 2020, p. 848). Themes, unlike categories in content analysis, can be discerned regardless of the quantity of occurrences a concept or theory connected to a theme emerges in a data set (Kiger&Varpio, 2020, p. 848).

Further, a theme can be characterized as *semantic* (also defined as manifest) or *latent;* semantic themes refer to precise or clear interpretations of categories or concepts in a data set, whereas latent themes refer to more abstruse, intrinsic interpretations, conjectures, or theories (Kiger &Varpio, 2020, p. 848). Thematic data analysis researchers can either employ a *deductive* or *inductive* approach to analyzing documents or texts for themes (Kiger &Varpio, 2020, p. 848). An inductive approach uses themes with originate from a researcher's dataset whereas a deductive approach uses themes that build upon current theories or frameworks or are based on a researcher's individual introspections and postulations on the topic being investigated (Kiger &Varpio, 200, p. 848). This research study employed an inductive and deductive approach to both expand upon current frameworks, models, and theories on food citizenship and to draw in the researcher's own introspections and postulations of how the COVID-19 pandemic has impacted them (Kiger &Varpio, 2020, p. 848).

Tasks

This research study employed Braun and Clark (2006)'s steps for thematic analysis, including:

1. Familiarizing yourself with the data
2. Generating initial codes.
3. Searching for themes.
4. Reviewing themes.
5. Defining and naming themes.
6. Producing the report/ manuscript (p. 87).

Content Analysis

Content analysis can be classified as either *relational* analysis or *conceptual* analysis (Colorado State University, 2021). Conceptual analysis involves choosing specific terms or concepts and then counting how many times they come up within a document or documents being analyzed (Colorado State University, 2021). Relational analysis expands on conceptual analysis by

investigating relationships between terms or concepts in a document or across documents in an analysis (Colorado State University, 2021). This research study used relational content analysis to explore the research question, "How has COVID-19 affected food citizenship within Edmonton's local food system?"

There are several predominant research areas and theories which have shaped relational analysis as a data analysis practice, including research practices and theories that originate from cognitive science, including mental models (Colorado State University, 2021). Mental models are "groups or networks of interrelated concepts that are thought to reflect conscious or subconscious perceptions of reality" (Colorado State University, 2021).

Mental models that were used for research study include the social economy model, complex adaptive system theory and asset-based community mapping.

Tasks

Typical steps involved in using this data analysis approach, which were used in this study, include:

1. Identifying concepts
2. Defining relationship types
3. Coding the text on the basis of 1 and 2
4. Coding the statements
5. Graphically displaying and numerically analyzing the resulting maps (Colorado State University, 2021).

An advantage of using relational content analysis is that it allows one to contrast several different types of maps and mental models within a research study, which each display information from a diverse range of resources, direct and indirect information, and *socially shared cognitions* (Carley, 1990 as cited in Colorado State University, 2021)

3.6 Strengths and Limitations

Case Study Research Design

A case study research design, while well-suited to this research design due to its versatility in utilizing several different research methods, was limited in terms of its ability to reliability establish cause and effect relationships (University of Southern California, 2022). Yet conducting a contextual analysis, a stakeholder analysis, stakeholder mapping and a trends and initiatives analysis allowed for reasonable inferences to be drawn from current literature and the document review in terms of how COVID-19 may have affected the development and growth of certain food citizenship initiatives. Further, since this study is intended to focus on COVID-19 and its specific impacts on food citizenship initiatives in Edmonton, Alberta, the results of the study cannot be generalized to food citizenship in Edmonton or other jurisdictions at a broader level (University of Southern California, 2022).

Document Review

Disadvantages of document review include that it is particularly susceptible to possible biases or possible misunderstanding of a document's contents (Bretschneider et al., 2017, p. 7). However, creating a robust document review checklist that is "…selective, 'scrutinizes' all documents under consideration for inclusion and 'uses' a pre-determined set of criteria appropriate to the research question" can help mitigate the limitations of using document review as a research method (Bretschneider et al., 2017, p. 9).

Thematic Analysis

The strengths of thematic analysis are that it is well disposed to research studies where a large volume of diverse datasets is being investigated and that it allows researchers to analyze key components of and draw inferences from diverse, large datasets (Kiger &Varpio, 2020, p. 853). Furthermore, thematic analysis was well suited for this study because, in most circumstances, it is not employed to create new theories; rather, it is used more commonly to expand upon and include more classifications to an existing theory, model or framework (Kiger&Varpio, 2020, p. 848). In this project, thematic analysis was used to expand upon and include more classifications to existing food citizenship models related to the impacts of COVID-19. Disadvantages of thematic content analysis include its overall fluid and variable approach, which can be perceived as less accurate and precise than other methods, its reliance on researchers to accurately deduce which components of data to prioritize or which theoretical model or framework to base their interpretation of data on and its fluid design susceptibility for researchers to employ terms irregularly and inaccurately versus method analyses which are more structured (Kiger &Varpio, 2020, p. 853).

Relational Content Analysis

Limitations of the relational analysis include the extended data collection process, that it can be susceptible to increased researcher inaccuracy and that it can often be used unreasonably loosely when drawing conclusions about connections between independent and dependent variables and results suggested by a research study (Colorado University, 2021). This project, however, drew upon multiple theoretical models (including the social economy model, complex systems theory, integral theory, and asset-based community development) as the basis for its stakeholder analysis, stakeholder mapping and trends and initiatives analysis, which reduced the risks of overgeneralizing relationships and conclusions in the relational and thematic content analysis (Colorado University, 2021).

4.0 Findings: Stakeholder Identification and Analysis

4.1 Introduction

This chapter summarizes the results of a food citizenship stakeholder analysis of actors and organizations in Edmonton's local food system during the COVID-19 pandemic from March 2020 to September 2022. Out of 99 documents collected in the document review, comprised of grey literature including newspaper articles, social media pages, comments and blogs, organizational websites, radio interviews and television interviews, 64 food citizenship initiatives were identified.

For the purposes of this chapter, results of the stakeholder analysis will be summarized geographically (location-specific initiatives and overarching Edmonton initiatives), by initiative supra-system and subsystem and by initiative socio-economy model identification, status, years-active and seasonality.

4.2 Edmonton Food Citizenship Initiatives Map

Appendix A COVID-19 Food Citizenship Initiatives in Edmonton's Local Food System geographically maps out the results of the stakeholder analysis of COVID-19 food citizenship initiatives and organizations within Edmonton's local food system using the mapping platform ArcGis.

How To Read the Map

Map Link: https://arcg.is/0v1101

1. The map has 21 distinct layers showing location-specific initiatives, overarching Edmonton initiatives, food citizenship supra-systems, social economy model status, operational status (temporary, inconclusive, and permanent) and seasonality within Edmonton's local food system.
2. Each map feature also has further attributes listed per initiative, including initiative name, overarching organizations (if applicable), organization type, sub-system, years active during the pandemic, focus area/ interest, initiative vision, mission, and values (if applicable) and associated political and social movements.
3. If locations are identified as "overarching," they can be found clustered at the center of the map and, if clicked on, will expand to show further overarching initiatives.
4. Locations of each initiative are based on the populations and communities of Edmontonians whom the initiative provides services and goods to, rather than where administrative offices and gardens are physically located.

4.3 Summary of Geographic Findings

Figure 5 shows the geographic locations of the 64-identified location-specific and overarching, Edmonton-based food citizenship initiatives in Edmonton on an ArcGIS map, see Appendix 1.

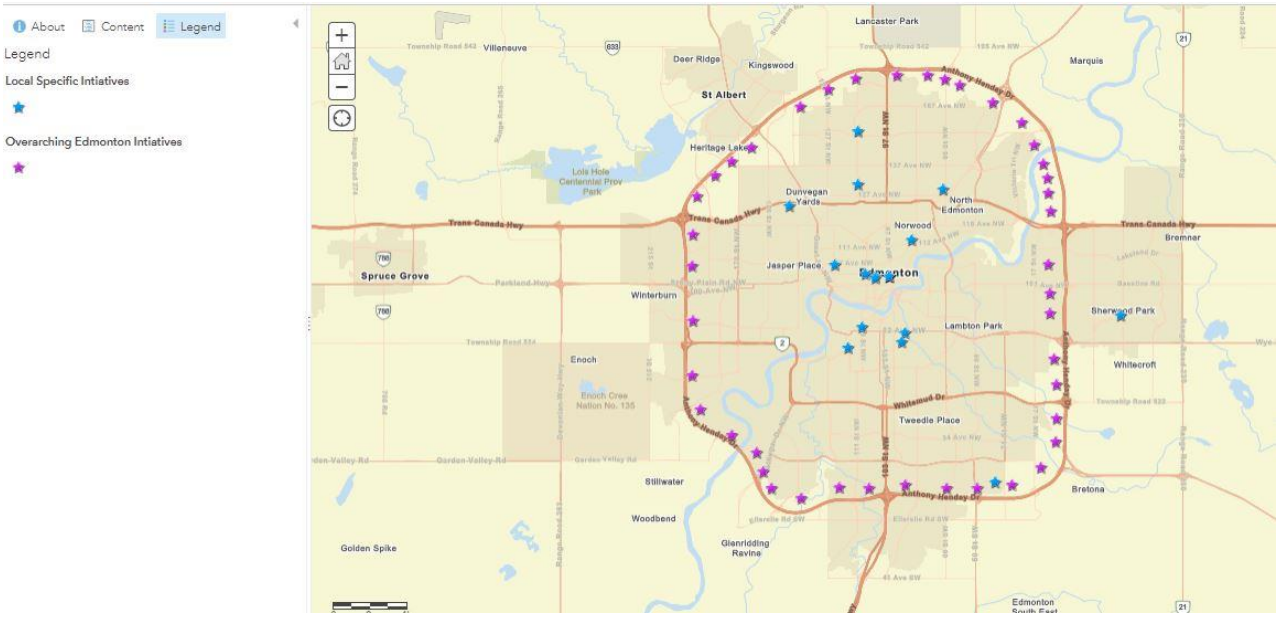

FIGURE 5 GEOGRAPHIC LOCATIONS OF FOOD CITIZENSHIP INTIATIVES IN EDMONTON

Out of the 64 food citizenship initiatives, 46 initiatives operate through Edmonton or operate online versus at a brick-and-mortar location. Overarching locations are identified by the purple stars on the map. 18 initiatives are neighborhood or location specific. Predominantly, these locations are clustered in central and southcentral Edmonton, with a few initiatives in northwest, northeast and southwest Edmonton. Temporary initiatives are identified by blue stars on the map.

Out of all the 9 supra-systems, food collectives have the most location-specific initiatives based out of brick-and-mortar locations. Figure 6 highlights food collectives that grew or were created during the COVID-19 pandemic in Edmonton's local food system.

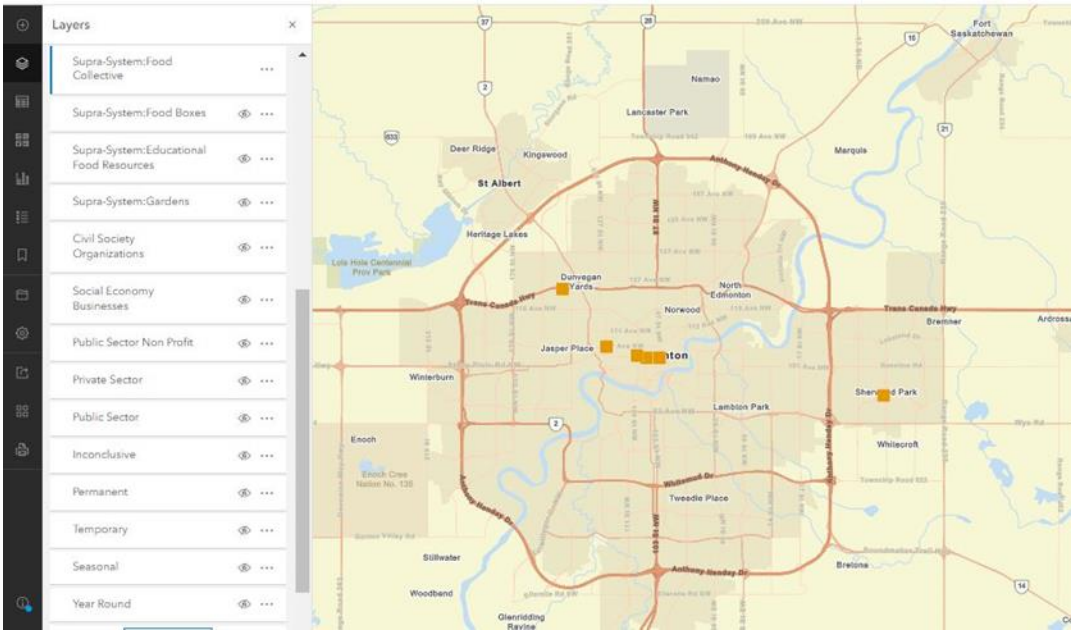

FIGURE 6 COVID-19 FOOD COLLECTIVE FOOD CITIZENSHIP INITIATIVES

Following food collectives, alternative restaurant spaces, as shown in figure 7, have the most location-specific brick-and-mortar locations, predominantly consisting of food halls.

FIGURE 7 COVID-19 ALTERNATIVE RESTAURANT SPACES FOOD CITIZENSHIP INITIATIVES

The seven remaining supra-systems (food boxes, educational food resources, gardens, food recovery organizations, online directories, food donation/ subsidized food organizations and subscription services) predominantly are mobile services or online services that serve all the City of Edmonton.

4.4 Summary of Initiative Supra-Systems and Sub-Systems

Appendix B, Stakeholder Analysis Sub-System and Supra-System Category Definitions, lists the 29 sub-systems and 9 supra-systems which were identified from the 64 food citizenship initiatives, including the definition of each system as they were used in this study for categorization. These include the sub-systems pop-up/ seasonal markets, yard sharing, community gardens, private citizen gardens, community fridges, cultural food banks, food halls, food rescues, mobile food vendors/ food delivery organizations, independent and community grocers, non-profit gardens, street food/community outreach, food network and hub organizers, hydroponics gardens, community food kitchens, food hampers/ pantries, online farmers markets, online food donation directories, food subscription services, community subscription services, seed libraries, non-profit groceries, ghost kitchens, curated food boxes, non-profit/ subsidized food boxes, online donation campaigns, food apps, and online business directories.

The nine identified supra-systems included food recovery organizations, gardens, food collectives, food donation/ subsidized food organizations, educational food resources, food boxes, alternative restaurant spaces, subscription services and online directories. Edmonton's food system is encompassed of a diverse range of groups, who each have distinct traits, values and interests. These groups are sub-systems, systems contained within larger, broader systems, also known as supra-systems.

Sub-system definitions and supra-system definitions were primarily derived from the results of the 99 documents collected in the food citizenship stakeholder analysis. Subsystems and supersystems were sorted, defined and categorized based on *system boundaries, perspectives, relationships and dynamics* of food citizenship stakeholders and initiatives in Edmonton's local food system (Patton,2021, P. 76).

Some of the emergent food citizenship sub-systems which were identified in Edmonton's local food system during COVID 19 include, but are not limited to:

- Online food donation directory: Directory that highlights where food donation organizations are available and lists their services, eligibility, and location (211 Alberta, 2022).
- Restaurant donation initiative: COVID-19 prompted restaurant donation initiatives where restaurants either donated surplus food or staff time to local food charities or non-profits (CBC News, 2020).
- Community subscription service: A subscription service for community-specific services, including restaurants and independent grocers, that goes towards funding a community league (Richie Community League, 2022).

New or developing supra-systems include, but are not limited to:

- Educational Food Resources: For the purposes of this study, educational food resources are where citizens, organizations or communities offer services or resources related to their food expertise or skills to teach others about food-citizenship practices

- Alternative Restaurant Spaces: Alternative restaurant spaces are where food vendors offer their services at in-person locations that are different than the traditional model of one food restaurant in a permanent location (Curio City, 2022)

Appendix A geographically showcases where sub-systems and supra-systems have overlapping system boundaries: many food citizenship initiatives fall within several sub-systems and subsystems. For instance, the food citizenship initiative/ organization TGP Wholesale Market supplies fresh groceries, meat, and groceries to both commercial businesses and retail shoppers and has a full commercial teaching kitchen: it falls into the sub-system independent/ community grocer and falls into the supra-systems, food collective and educational food resource (The Grocery People, 2022). Likewise, the Pandemic Planting Project falls within the supra-systems food donation organization/ subsidized food and gardens (Kornik, 2021).

Appendix C Sub-System and Supra System Summary highlights what sub-systems fall within each supra-system and the number of initiatives and percentage of total initiatives that fall within each sub-system and supra-system. For instance, the sub-systems ghost kitchens, food halls and food network and hub organizers fall within the supra-system alternative restaurant spaces. As well, the sub-systems yard sharing, community gardens, non-profit gardens, hydroponics gardens, private citizen gardens and seed libraries fall within the supra-system gardens.

As shown in Appendix C, most initiatives fall within the supra-system food donation/subsidized food organizations, with 39 out of 64 initiatives, and the least initiatives fall within the supra-systems educational food resources, food subscription services and online directories at 2 out of 64 initiatives each.

Further, as shown in Appendix C, the average amount of initiatives in each of the 29 sub-systems is 2 initiatives at 3% of overall initiatives, with the least number of initiatives per sub-system at 1 and the highest at 8 initiatives falling within mobile food vendor/ food delivery at 13% and, following that, 6 initiatives within food hampers/ pantries at 9%.

4.5 Summary of Initiative Social Economic Identification, Status, Years-Active, Seasonality

Table 4 highlights the status of each food citizenship initiative identified as year-round, seasonal, permanent, temporary, or inconclusive. 47 out of 64 or 73% of food citizenship initiatives are identified as permanent, whereas 16 out of 64 or 25% of initiatives are identified as temporary. Some initiatives are both temporary and permanent, as in the case of The Public, a food network and hub organizer, which hosts various seasonal and permanent food citizenship initiatives, including, but limited to, year-round, permanent online sales of products from local vendors and seasonal farmers' markets (The Public, 2022). 16 temporary initiatives comprise 25% of the total 64 food citizenship initiatives, and 47 year-round initiatives comprise 73% of the total 64 initiatives. As in the example of The Public, there are some initiatives that are both temporary and permanent.

Status of Initiative	Year-Round	Seasonal	Permanent	Temporary	Inconclusive
Number of Initiatives	47	18	47	16	1
Percentage of Total Initiatives	73%	28%	73%	25%	2%

TABLE 4 STATUS OF FOOD CITIZENSHIP INITIATIVES YEAR-ROUND, SEASONAL, TEMPORARY, AND INCONCLUSIVE

*Not that some initiatives fall both within year-round and seasonal categories, and some initiatives fall within both permanent and temporary categories

Table 5 highlights the number of initiatives that fall within each social economy model category. 53% of initiatives have public sector organizations involved in an initiative at 35 out of 64 identified food citizenship initiatives, followed by social economy businesses at 14 out of 64 identified initiatives or 22% of overall initiatives.

Several initiatives, as reflected in Table 5 and in Appendix A, have multiple types or combination types of social economy model organizations involved in an initiative. For instance, the initiative Dil-E-Punjab had private, non-profit, and provincial organizations that were a part of the initiative of donating 32 thousand free meals to community members during the COVID-19 pandemic in partnership with Green Scholars of Alberta, the Government of Alberta and the private restaurant, Dil-E-Punjab (Komadina, 2021). Another example of a multiple sector-led initiative was the online donation campaign #YEGTechCares which was a partnership between 13 private organizations in Edmonton's tech industry and the Edmonton Food Bank where employees in Edmonton's "tech sector" asked citizens to contribute one hour of their hourly wage towards the Edmonton Food Bank monthly (Griwkowsky, 2020).

Social-Economy Organizations Involved in Initiatives	Private	Public-Sector Non-profit	Civil Society Organizations	Social Economy Businesses	Public Sector
Number of Initiatives	13	1	9	14	35
Percentage of Total Initiatives	20%	2%	14%	22%	55%

TABLE 5 NUMBER OF INITIATIVES IN EACH SOCIAL ECONOMY MODEL CATEGORY

*Note that some initiatives have various combinations of different/ multiple types of organizations involved

4.6 Summary

This chapter highlights features of the 64 identified food citizenship initiatives from this project's stakeholder analysis, including geographical features, initiative sub-system and supra-system, initiative status (temporary, permanent, inconclusive, seasonal, and year-round) and social economy model status of each organization involved in initiatives.

Further, Appendix A identifies the years each initiative has been active, its focus area/ interest, its initiative vision, mission, and values (if applicable) and its associated political and social movements, which will be discussed more broadly in the next chapter, Chapter 5: Trends, Issues and Events Analysis.

5.0 Findings: Trends, Issues, and Events Analysis

5.1 Introduction

This chapter outlines the international, North American, Canadian, Albertan and Edmonton context of the COVID-19 pandemic and its impacts on global, North American, provincial, and regional food systems from March 2020 to Sept 2022. It focuses on how the COVID-19 pandemic has exposed limitations of the agri-food system and increased susceptibility to issues such as supply chain issues, food insecurity and labour shortages from the onset of the pandemic to the fifth wave of the pandemic. It also outlines how COVID-19 has spurred the increased development and growth of food citizenship initiatives at a global, North American, provincial, and regional food system level.

5.2 Pandemic Wave Timelines in Canada and Public Health Orders in Alberta

As of July 2022, there have been seven documented Canadian "waves" of the COVID-19 pandemic, starting with the first wave of the pandemic, which reached an escalation at the end of May 2020, and cases dropped toward the end of summer 2022 (Rutty, 2022; Government of Canada, 2022) The second wave of the pandemic started in approximately the middle of July 20, and reached its escalation in the middle of January 2021, with cases easing towards the end of January and into February (Rutty, 2022, Government of Canada, 2022) By the middle of March, however, a third wave of the pandemic had started and reached its escalation by the middle of April (Rutty, 2022; Government of Canada, 2022).

The fourth wave of the pandemic started in the summer of 2021 and reached its escalation by the end of September 2021 (Rutty, 2022; Government of Canada, 2022). The fifth wave of the pandemic, influenced by the Omicron variant, a less serious but more transmissible variant, started at the beginning of November 2021 and cases escalated by the beginning of March 2022 (Rutty, 2022; Government of Canada, 2022). Canadian Public Health officials, however, reported a six wave of the pandemic at the start of April 2022 (Rutty, 2022; Government of Canada, 2022). The seventh wave of the pandemic started at the beginning of July 2022 (Rutty, 2022; Government of Canada, 2022).

At the onset of the pandemic Dr. Deena Hinshaw, Alberta's former chief medical officer, introduced Order 02-2020 which banned patrons from dining indoors at restaurants, bars and other nightclubs and groups assembled of more than 50 people (Government of Alberta, 2022). On March 27, 2020, group-gathering exceeding 15 people were banned (Government of Alberta, 2020). By May 14, 2020, patrons were allowed to dine indoors at restaurants again, provided they maintained physical distancing (Government of Alberta, 2020). By November 12, 2020, however, as cases rose over the summer and into the fall, Dr. Hinshaw introduced a new order which disallowed restaurants, pubs, and bars from selling liquor at 10:00 p.m. and required that

they close by 11:00 p.m., although take-out and delivery operations were still allowed to continue (Government of Alberta, 2022). As cases continued to rise into the holiday season, Dr. Hinshaw then banned all indoor and outdoor gatherings and required the use of masks across the province (Government of Alberta, 2022). By summer 2021, however, as cases dropped, the Government of Alberta started its "Open for Summer Plan" and reduced public health requirements to the point where Albertans were allowed to go to restaurants provided they maintained physical distancing requirements and provided their proof of vaccination status through a mobile app (Government of Alberta, 2022; CBC News, 2021). However, into the fourth wave of the pandemic, from summer 2021 to September 2021, physical distancing requirements were gradually reinstated, and by December 16, 20211, patrons were again banned from dining indoors at restaurants (Government of Canada, 2022; Government of Alberta, 2022). By December 24, 2021, however, restaurants were permitted to reopen indoor dining if patrons wore masks unless seated and the number of people sitting at a table was not more than 10 people (Government of Alberta, 2022). By February 10, 2022, public health orders started to ease, and although the number of patrons at a table still could not exceed 10 people, 'interactive activities such as dancing was permitted (Government of Alberta, 2022). By summer 2022, all physical distancing and masking requirements, along with Alberta's proof of vaccination status program, ended (Government of Alberta, 2022).

5.3 International Context

At the beginning of the pandemic, urban cities struggled to adapt to the effects of COVID-19, specifically developing nations who do not have the health resources or ability to address ramifications to the agri-food system brought on by the COVID-19 pandemic (FAO, 2020, p. 1). Especially, 1.2 billion global inhabitants of overpopulated, close-confined settlements (often without access to unpolluted drinking water, waste treatment services and consistent electricity) are susceptible to increased malnutrition and inadequate access to fresh food because of the pandemic (FAO, 2020, p. 1).

According to the Food and Agriculture Organization of the United Nations, the beginning of the COVID-19 pandemic created several systemic problems to local food systems for global cities to address, which arose unexpectedly and in short sequence. Problems included food supply, reachability, and cost concerns that subsequently led to potential food insecurity and malnutrition in many parts of the world (FAO, 2020, p. 1). Increasingly, urban populations in developing nations are dependent on alternative local food purveyors, such as street and wet markets and independent, small grocers versus large grocery store conglomerates and distributors (FAO, 2020, p. 1). Most low-income populations (making below a living wage) could only purchase food in low amounts at a time from alternative food purveyors, which became more difficult with COVID-19 physical distancing and isolation requirements (FAO, 2020, p. 1). For improved food accessibility and security, urban city dwellers started to relocate to suburban and agricultural areas. This became problematic for rural health authorities, who often supply minimal and restricted health services and can increase COVID-19 virus transmission (FAO, 2020, p. 1).

In the fourth wave of the pandemic, summer 2021 to late September 2021, climate-change-driven extreme weather events and rising inflation due to global supply chain issues led to widespread food shortages that exacerbated the long-term future of agri-food systems. For instance, while the World Bank indicated that international food costs stayed relatively consistent over the course of the pandemic, domestic food costs have climbed and continue to climb in most countries globally (The World Bank, 2021; Rutty, 2022). Further, "The Agricultural Commodity Price Index stabilized in the third quarter of 2021 but 'remained' 14% higher than its January 2021 level. Maize and wheat prices are 44% and 38% higher, respectively than their pre-pandemic (January 2020) levels, and rice prices are about 4% lower" (The World Bank, 2021). The World Bank argues that the predominant threats to food security are at a domestic, national level; they observe that climbing food costs, associated with decreased incomes, will require more individuals, families, and organizations to decrease the quantity and quality of the food products they consume (The World Bank, 2021). Specifically, in the range of 720 and 811 million global citizens experienced food insecurity in 2020, as reported by the UN report on the State of Food Security and Nutrition in the World (The World Bank, 2021). COVID-19-influenced supply chain interruptions and accelerating consumer food demand have significantly increased food costs internationally, which in turn, has magnified the intensity of food insecurity for 821 million people in developing countries who currently use the majority of their income on food (U.S. Global Leadership Coalition, 2021).

Further pandemic interferences and their economic ramifications to developing country food systems could increase food costs and result in unemployment and reduced quality of life for farmers, small producers, and other alternative food suppliers such as street vendors and independent grocers (FAO, 2020, p. 1). For instance, the Omicron variant, which was first identified in southern Africa, led to several countries imposing travel restrictions on countries in the region, including Canada, the United States, Great Britain, and China, which further impacted the already struggling global supply chain and create further delays and shortages of food products (Campsi, 2021). The agri-food system, already damaged from COVID-19 supply chain impacts, was further impacted when Russia invaded Ukraine on February 24, 2022 (Ellyatt, 2022). Since then, global nations have imposed hard and fast economic sanctions on Russia, although President Biden and other global leaders have discouraged imposing food export and import sanctions on Russia, which could further devastate the already COVID-19-weakened global supply chain (Wingrove, 2022). Specifically, Ukraine and Russia export a large percentage of global wheat supplies, and their wheat planting and harvest seasons have been significantly impacted from Russia's February invasion (Wingrove, 2022).

With increasing shortages in global wheat supplies stemming from the Ukraine War, four large wheat conglomerates, including Archer-Daniels-Midland Company, Bunge, Cargill, and Louis Dreyfus (together referred to as ABCD) that have monopoly over 70% to 90% of the global wheat trade have had almost unprecedented profit levels (Harvey, 2022). For instance, Cargill divulged that they had a 23% gain in their annual profit margins as of May 31, 2022; Archer-Daniels-Midland saw its largest historic profit gain in the second quarter of 2022; Bunge saw a gain of 17%

in trades compared to 2021 in the second quarter of 2022; Louis Dreyfus accounted that they saw an 80% escalation in annual profits in contrast to 2020 with revenue gains exceeding more than 25% at $1.62 billion (Harvey, 2022). According to the UN Food and Agriculture Organization, food prices have escalated beyond 20% compared to 2021 (Harvey, 2022). Further, the World Food Programme indicates that there are 345 million international citizens suffering from acute food insecurity in contrast to 135 million citizens prior to the COVID-19 pandemic (Harvey, 2022). Food pundits and food security experts are raising the alarm over the concentration of global wheat supplies that are held by ABCD, and of the lack of action from these companies to address increasing food insecurity from countries dependent on wheat stability, and from lack of accountability in reporting how much wheat supply they maintain (Harvey, 2022)

Although Canada and the United States plan on helping to subsidize the global wheat supply, Russia is also a significant exporter of fertilizer, which global farmers are reliant on for their crops (Foroohar, 2022). Fertilizer prices were already high due to inflation and COVID-19 supply chain issues, and with the war now stretching beyond a year since the start of the conflict, they are projected to climb higher (Foroohar, 2022). Limitations and cancellations in the export of barley, wheat and other essential grains intensify the risks of food shortages and political uncertainty in developing nations across the globe, from Africa to the Middle East and some areas of Asia (Kaviti, 2022). According to the United Nations, Russia and its ally Belarus, also subject to Western sanctions due to its part in Russia's Ukraine invasion, are some of the largest international exporters of nitrogen fertilizer, phosphorus and potassium fertilizers that both developing and affluent nations are reliant on for their crops and yearly yields, which have shrunk as fertilizer prices increase (Kaviti, 2022). Further, Russia's Ukraine invasion has also impacted the prices of natural gas along with international sanctions, driving Europeans' cost of energy to record levels, causing many fertilizer producers and distributors to stop operations (Kaviti, 2022)

The COVID-19 pandemic has exposed some of the prevalent weaknesses of the agri-food system; however, it has also led to the expedited development of citizen-driven alternative food movements and initiatives in response to community needs. In Mboumba, Senegal municipally backed money orders were given to vulnerable newcomers to support food accessibility and reduce food insecurity (FAO, 2020, p. 12). Recipients of the of the money orders included 439 family households, and the money was collected in partnership with French and American Senegalese organizations, who contributed and raised awareness through campaigns and donations (FAO, 2020, p. 12). The key feature that led to the initiative's success was that the entire initiative, from its development, and implementation to evaluation, was done in partnership between the local municipality and international and local migrant associations with a familiarity of the local context and culture (FAO,2020, p. 12).

FAO (2020) as one of their medium to long-term tactics to improve urban food system' resilience includes "supporting the development of the urban food systems analysis, the development of food systems stakeholder maps, retail food environment (formal and informal) maps aiming at

identifying gaps, mobilizing various actors and promoting context-specific strategies in emergencies" (p. 5)

5.4 North American Context

At the beginning of the COVID-19 pandemic, shoppers flocked to supermarkets in droves in the wake of new restrictions and fears of lockdowns. The COVID-19 pandemic has exposed weaknesses of the agri-food system and, in some cases, exacerbated them. In North America's intricate food system, with interdependent export, import, and labour markets, repercussions of the COVID-19 pandemic have been felt universally across Canada, the United States and Mexico. They have put into question the sustainability of the agri-food system (Orden, 2020, p. 13). Thriving small-scale producers and distributors that supply restaurants and direct-to-consumer food purveyors with natural, unprocessed, and unique food products have been particularly affected by the COVID-19 pandemic (Orden, 2020, p. 14). Further, COVID-19 has affected alternative food micro-sectors from extraction, production, distribution, and consumption to disposal (Orden, 2020, p. 14).

At the distribution level, pork, dairy, vegetable, beef and fruit producers and distributors have been detrimentally affected by COVID-19 and its economic ripple effects (Orden, 2020, p. 14). Some issues are related to pre-existing sector formation changes (including the unification of dairy production) and their systemic influences (Orden, 2020, p. 14). COVID-19 interferences within these sectors, at the beginning of the pandemic, were significant and led to many farmers abandoning their crops, dairy products being thrown out or otherwise discarded, and livestock being put down (Orden, 2020, p. 14). Meanwhile, vulnerable citizens had problems accessing food banks' services due to demand, and food banks could barely accommodate the sudden influx of new clientele, including those who were laid off during the pandemic (Orden, 2020, p. 14). Although there were temporary food shortages during the first wave of COVID-19 in spring and summer 2020, the majority of supermarket food shortages were temporary, and shelves were soon restocked (Orden, 2020, p. 14).

In the second and third waves of the pandemic, from mid-July 2020 to mid-January 2020, there were temporary shortages of certain items, such as yeast, flour, pickles, and tofu, due to the compounded stresses of wide-spread droughts, fires and extreme heat in Western Canada and the United States and rising consumer interest in vegetarian and flexitarian lifestyles (Kuta, 2021; Edmiston, 2021; Weston, 2021;). In the fourth wave of the pandemic, the Omicron variant exacerbated current North American supply chain issues, which prompted 21 food distributors in Canada and the United States to issue a joint statement on November 4, 2021, which detailed various current supply chain issues from bottlenecks at ports, produce shortages to escalating prices of container shipping (Jackson, 2021). The food producers who signed the statement noted that without significant cross-industry and governmental interventions, consequences could also include possible bankruptcies, legal issues, industry mergers, inflation to reduced access to certain food products (Jackson, 2021).

Into the second year of the pandemic, although consumerism spending habits returned to pre-pandemic levels, North American food distributors, manufacturers and retailers continue to face the impacts of inflation, supply chain unreliability, reduced seasonal and stable workforces, and inflation, which in turn, has kept food prices high for the public and caused short-term shortages of some food items (Geijer et al., 2022). Figure 5 shows results from a June 2022 Global Consumer Insights Pulse Survey, which shows a cross-sample of consumers from the United States, Canada, Australia, Germany, France, and Spain who had difficulty accessing certain food products on an occasional, frequent, or "always" basis (Geijer et al., 2022).

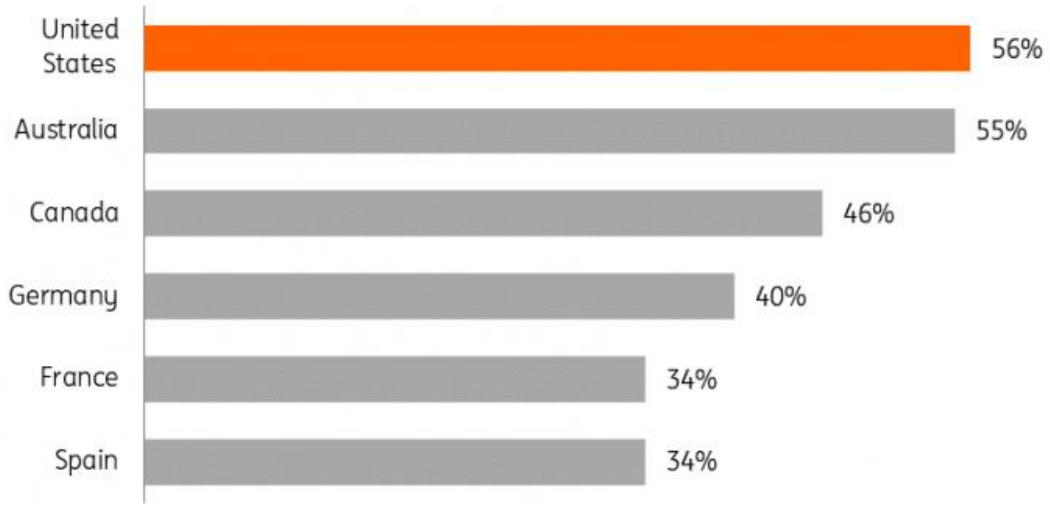

FIGURE 8 " 'PERCENTAGE OF PEOPLE WHO ANSWERED THE QUESTION: HOW OFTEN ARE YOU UNABLE TO PURCHASE A PRODUCT DUE TO IT BEING OUT OF STOCK WITH 'OCCASIONALLY,' 'FREQUENTLY' OR 'ALMOST ALWAYS'" (GEIJER ET AL., 2022 DATA SOURCED FROM PWC JUNE 2022 GLOBAL CONSUMER INSIGHTS PULSE SURVEY, ING RESEARCH)

In the United States, household spending on food 'service' has shifted back to regular consumer levels and is responsible for 52% of all food and beverage consumer spending (Geijer et al., 2022). That said, fluctuating consumer demand and rising inflation is causing some shoppers to purchase off-label, generic goods over label goods (Geijer et al., 2022). Supply chains continued to be impeded and slowed down by fluctuating workforce levels, from food producers and distributors to retailers, although other elements, such as varying consumer spending habits, escalations in raw material costs, and operational delays, have decreased (Geijer et al., 2022). For instance, in the United States, there are two job openings per every job-seeking American (Geijer et al., 2022). Shoppers, however, are still facing shortages of certain food products in greater numbers than in the first wave of the pandemic (Geijer et al., 2022).

5.5 Canadian Context

Britneff (2020) noted that due to physical distancing and isolation requirements, many vulnerable people (including seniors, those with disabilities and low-income populations) had problems accessing grocery stores, food banks and other traditional food purveyors during the pandemic. In

a web survey conducted by Statistics Canada from May 4 to 10, 2020, 14.6% of respondents indicated they lived in a household that experienced food insecurity in the last month (Statistics Canada, 2020). Likewise, the survey results indicated that "Canadians who were absent from work due to COVID-19 were almost three times more likely to be food insecure than those who worked" (Statistics Canada, 2020). Canadian meat manufacturing has also experienced significant disruptions during the COVID-19 pandemic, from difficulties responding to adjusted health procedures and requirements due to the rapidity of meat processing to large outbreaks in meat packing plants, including two outbreaks at an Albertan Cargill meat plant in April 2020 (Rieger, 2020; Orden, 2020, p. 14).

The COVID-19 pandemic has also highlighted how reliant fruit and vegetation production in the agri-food system is on seasonal workers: future workforce reductions may mean farmers can not keep up with global food demand (Orden, 2020, p. 14). In September 2020, Dalhousie University's Agri-food Analytics conducted a study that found that, collectively, the amount Canadians spend at the supermarket had grown by 4% in 2020 (True North Wire, 2020). Further, the impacts of COVID-19, including the discontinuation of benefits such as CERB, physical distancing measures and restrictions and continued layoffs, resulted in an unprecedented increase in national food bank usage, climbing to more than 1.3 million food bank visits in March 2021, which was a rise of more than 20% the number of visits in March 2019 (Food Banks Canada, 2021, p. 2; Harrap, 2021).

In fall 2021, Canadians, organizations, food distributors and communities felt the effects of rising food costs and food product shortages and delays. Canada's food inflation rate sharply grew to 3.8 per cent in October, breaking an 18-year record, after a season of unseasonal wildlife fires, extreme heat, droughts, floods, and rising inflation due to global supply chain problems (Alini, 2021; Pittis, 2021).

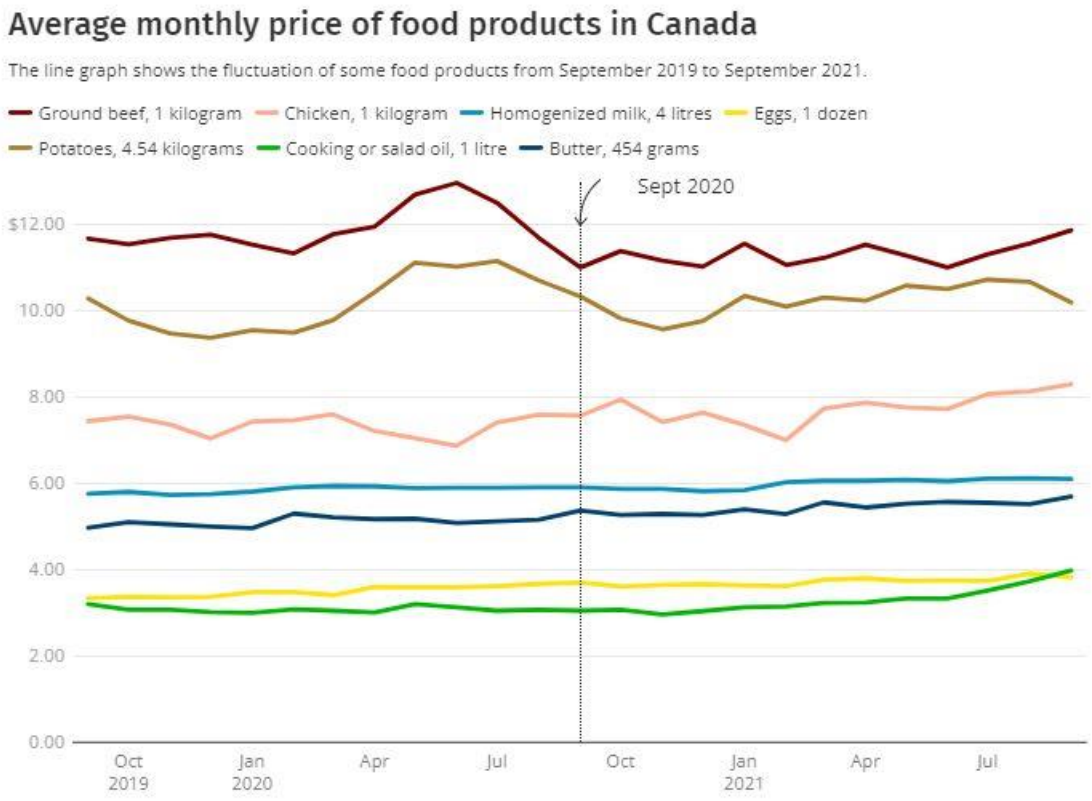

FIGURE 9 AVERAGE MONTHLY PRICE OF FOOD PRODUCTS IN CANADA (HARRAP, 2021 DATA SOURCED FROM STATISTICS CANADA)

As COVID restrictions started to relax in February 2022 following the Omicron and Delta COVID-19 waves, inflation continued to rise, and with it, supermarket prices were on Canadian shelves. Dairy farmers, no longer able to incur the climbing costs of supplies such as feed which have risen up to 30% since 2020, saw their supplier price for milk climb up to 8.4% (Steward & Hill, 2022).

For instance, in Canada's federally regulated dairy industry, provincial dairy prices escalated up to 15% (Stewart & Hill, 2022). Although climbing dairy prices impact all Canadian households, low-income and food-insecure households will be the most adversely affected, predict food pundits (Stewart &Hill, 2022). Further, some food pundits predict that the adverse supply chain impacts and inflation from the pandemic will continue for years after it is over (Lorinc, 2022). Labour shortages in the agricultural and transportation sectors are predicted to continue after the pandemic and cause further inflation and price hikes in Canada's food industry (Lorinc, 2022). According to Statistics Canada, the agricultural industry has seen a decline in 70 800 workers since 2012 (Lorinc, 2022). Further, "Employment in manufacturing has fallen by 200,000 jobs since the financial crisis of 2007-08" (Lorinc, 2022). In July 2022, food producers and suppliers wrote a letter to grocery markets forewarning them that food prices would continue to rise into the fall (Bundale, 2022). For instance, the price of dairy increased after the Canadian Dairy Commission granted permission for prices to increase 2 cents per litre on September 1, 2022 (Bundale, 2022). Price increases to freights and packaging caused by inflation, the COVID-19 pandemic, supply

chain lags, and the Ukraine war caused some suppliers, including Lactalis Canada, Arla Foods Canada, and Saputo Dairy Products Canada, to escalate their base prices by as much as five percent for certain food categories (Bundale, 2022). Statistics Canada announced in April 2022 that Canadians are spending 9.5% more on food purchases than they did in 2022, in contrast to standard hourly wages, which have only increased by 3.3 % (Patterson, 2022). Prices for food staples such as seasonal fruit have escalated by 10%; likewise, pasta prices have increased by almost 20% (Patterson, 2022). In the FP Canada Financial Stress Index Survey, hosted online by Leger from April 12 to 20 to 2,001 Canadians, over two-thirds of respondents indicated that they were anxious over escalating supermarket prices and that it was affecting their financial bottom line (The Canadian Press, 2022). Although Statistics Canada reported in April 2022 that restaurant food and beverage purchases returned to purchase levels before the start of the pandemic two years ago, many Canadian restaurant owners had to raise prices to stay operational due to the impacts of inflation raising food supply prices by 6.6% in April 2022 compared to April 2021 (Egwu, 2022).

Some food policy experts are advocating for taxes and regulations on supermarket prices to deter companies from marking up food prices, as companies such as Loblaws reported that its food and beverage profits grew by 2.4% in the first quarter of 2022 in contrast to its sales in the first quarter of 2021 (Dobby, 2022; Oved, 2022). Inflation-caused price hikes to basic groceries has motivated more Canadians to purchase these staples from the United States, where there are less restrictions on use of coupons, staple food products (including dairy) are less expensive, and there is increased competition to keep prices low (CBC News, 2022).

5.6 Edmonton Context

According to the City of Edmonton Youth Council (2021) in its report *Food Waste and Insecurity Report: A Youth Perspective*, specific COVID-19 challenges Edmonton non-profits and food servicing organizations felt include an onslaught of new users of their services from those who could not access food from their normal public services due to COVID-19 restraints and from people who contracted COVID-19, and therefore, had limited access to food (p.9).

Organizations also had challenges of limited space because of physical distancing requirements, limited room to store supplies, operational changeability that made day-to-day decision-making and planning difficult, requirements to expeditiously change to online service deliveries and models, a variable, unstable volunteer workforce and an inability to host in-person events (CEYC, 2021, p.9). Further, organizations faced challenges stemming from the shutdown of businesses that routinely gave away surplus food and food servicing depots or programs, resulting from COVID-19 physical distancing and health requirements, as public demand continued to rise (CEYC, 2021, p.9). Lastly, organizations faced increased difficulty accessing grants and funding to stay afloat and operational throughout the pandemic (CEYC, 2021, p.9).

Edmonton restaurants, as well, are feeling the impacts of the pandemic, delayed supply chains and escalating inflation prices for basic food staples (Mertz, 2022). Some restaurants, including long-standing 20-year community dining staples, are choosing to institute higher fees for menu items

(i.e., crisis pricing) to stay operational while others (particularly in Edmonton's downtown core) are closing, with a trend of demolishing old buildings housing retailers and food purveyors for multi-unit condominium and apartment complexes (Mertz, 2022).

However, despite the new and escalating challenges faced by food distributors, retailers and organizations during the pandemic, there has been an increase and growth of Edmontonian food citizenship initiatives that have emerged since COVID-19, led by private, non-profit, and community-led groups.

5.7 COVID-19 Trends and Initiatives in Edmonton's Local Food System

Some of the local food citizenship trends and initiatives that were identified in this project's stakeholder analysis include:

- Increased citizen interest in urban agricultural initiatives (such as gardening in vacant agricultural lots and yard sharing and growth in the expansion of temporary and permanent community gardens);
- Development of alternative community food donation systems and organizations (such as community food fridges and community-specific food banks catering to a community's specific needs);
- Local businesses, producers and food donation organizations using more virtual service models in lieu of or along with traditional direct-to-customer (DTC) service models;
- The expansion of informal and formal food hubs (Thilmany et al., 2021; Ngumbi, 2020; Stephenson, 2021; Huncar, 2021; FAO, 2020; City of Edmonton, 2022).

Increased citizen interest in urban agricultural initiatives

The COVID-19 pandemic expanded Edmontonians' interest in urban agricultural initiatives, including Yard Share YEG (self-ascribed as "the Tinder of gardening"), a yard-sharing program which pairs gardeners with homeowners that have underused growing spaces on their property, the City of Edmonton's Pop-Up Community Garden Program Pilot and Veg Instead!-A "Grow What You Eat" Initiative which encourages Edmontonians to use underutilized growing spaces such as their front lawn and balconies to grow food (City of Edmonton, 2022;).

Yard Share YEG, which pairs a gardener with a private citizen member who has an underutilized area for growing food, was started by a social enterprise called Good Worm that "that offers environmental science and urban agriculture education with a focus on vermicomposting, soil science 'and' advocacy, food growing skills, relationship with land and native plants, nat geo climate change lessons and growing as treaty people" (Good Worm, 2022). Yard Share YEG's mission is "we have the resources and space to support each other as neighbours to grow our own food" (Good Worm, 2022). The Yard Share YEG program is now in its second season and

has expanded its services to include an app which matches a gardener with a “yard host” (Good Worm, 2022).

The City of Edmonton’s Pop-Up Community Garden Program started in 2020 and is now in its third season with the objective of increasing citizens’ abilities to access and grow fresh food without the administrative burden or complexity of applying to have a permanent community garden (City of Edmonton, 2022). There were 25 pop-up garden successful applicants in 2022, and currently, are 25 operating within the City of Edmonton, as shown by the below map, figure 10 (City of Edmonton, 2022).

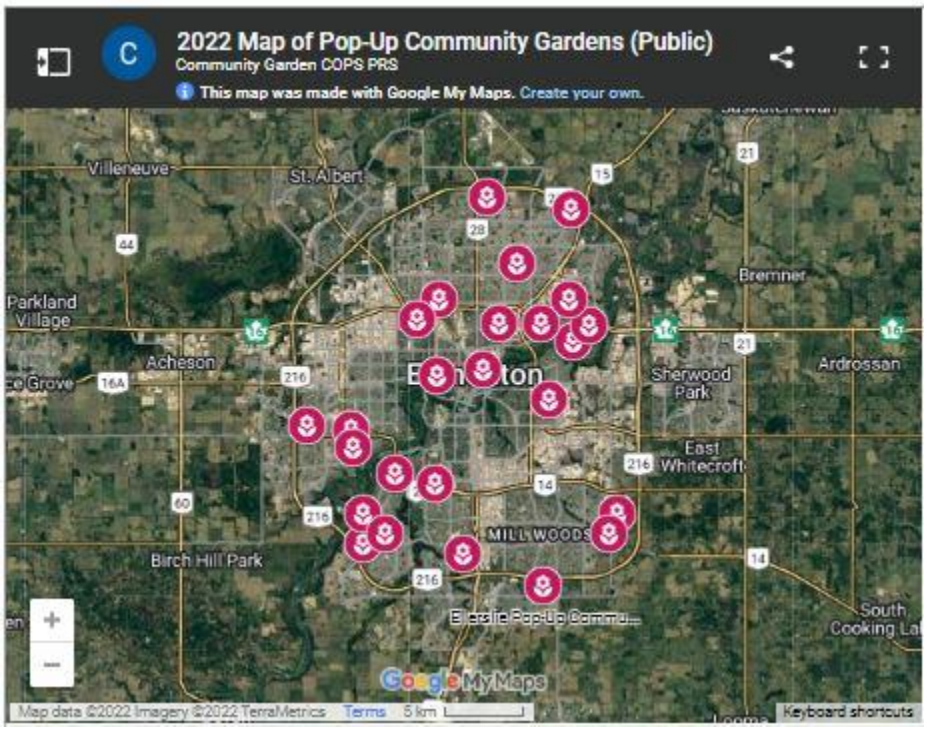

FIGURE 10 POP- UP COMMUNITY GARDENS IN EDMONTON 2022

Veg Instead! is a City of Edmonton and Edmonton Food Council Initiative pilot program that started in 2019 but grew during the COVID-19 pandemic (City of Edmonton, 2022). Veg Instead! encourages citizens to use underutilized or non-traditional growing spaces such as balconies and front lawns to grow their own produce (City of Edmonton, 2022). Veg Instead!, as well, allows citizens to grow food without having to pursue associated permits (City of Edmonton, 2022).

Development of alternative community food donation systems and organizations

The COVID-19 pandemic increased pressure on and overwhelmed traditional food banks and food donation organizations, which prompted the creation of community-specific and alternative food donation models. Some of these initiatives that were found in the stakeholder analysis including the Lovegood Food Exchange Box, the African Diaspora Food Bank and Khair For All Food Boxes (Weisberg, 2021; Weisberg, 2021; Kraus, 2020; Bonnyman, 2022).

The Lovegood Food Exchange Box, a volunteer-run community initiative, started in September 2020 and now is in its third season (Kraus, 2020). Quinn Wade, the founder of the Lovegood Food Exchange Box, named the initiative after his drag group, inspired by the 'little free library of books' through the City of Edmonton (Kraus, 2020). Wade founded the initiative after seeing urgent community need in his neighbourhood: foodbanks were overwhelmed, and his neighbours were going hungry as physical distancing requirements came into place and Edmontonians were laid off (Kraus, 2020). The premise of the Lovegood Food Exchange Box functions on 'a take what you can leave what you can' donation basis, and its first location was in Paul Kane Park in Edmonton (Kraus, 2020). Since its first box was placed in Paul Kane Park, the initiative has expanded to include 9 other community-based boxes throughout the City of Edmonton, with plans to expand further in 2022 (Dion, 2021).

The African Diaspora Food Bank, a food bank specializing in speciality African and Caribbean food donations, was a vital life support for Edmonton's African and Caribbean communities during the COVID-19 pandemic (Weisberg, 2021). The food bank was an initiative run by the Africa Centre in Edmonton, "the largest pan African non-profit organization in western Canada, serving as a community hub that provides programs and services from a place of cultural awareness and competency to the families in 'their' diverse community" (Weisberg, 2021). From when the initiative started in spring 2020 to February 2021, it served at least 90 communities a week with African and Caribbean food in a culturally accessible space for its clients (Weisberg, 2021). The African Diaspora Food Bank, during its course of operations, served more than 5, 000 community members and ceased operations on December 17, 2021, for reasons undisclosed by the Africa Centre (Adeymo, 2021; Adeyemo, 2021).

Khair for All was an initiative that was founded by the Multicultural Health Brokers Co-op, a workers co-operative, in partnership with The Güd Box, an Edmonton-based food box and delivery provider (The Güd Box, 2022; MCHB, 2022). Khair for All was a social enterprise which puts together food boxes at subsidized prices (on average 35 to 50% less than traditional grocery store prices) with culturally specific food essentials such as teff, barley flour and lentils (Bonnyman, 2022). Khair for All appears to no longer be in operation; however, the Multicultural Health Brokers Co-op still runs its Grocery Run program in connection with the Edmonton Food Bank, Leftovers Edmonton, and other local food producers (MCHB, 2022)

Local businesses, producers and food donation organizations using more virtual sales models in lieu of or along with traditional direct-to-customer (DTC) models

As businesses have closed and waves have peaked and subsidized during the COVID-19 pandemic, local businesses, producers, and food operations have had to stay nimble in order to stay operational and serve growing clientele. For instance, food apps such as Too Good To Go and Meal Share encourage food retailers and restaurants to sell discounted, unsold food to Edmontonians or to donate a portion of their profits to a food citizenship cause, such as youth hunger (Galvez, 2021; CBC News, 2021; City of Edmonton, 2021; Bonnyman, 2022).

Too Good To Go, a 'food recovery' phone app, expanded to Edmonton on May 18, 2022, making Edmonton the sixth Canadian company to join after Calgary, Toronto, Vancouver, Montreal, and Quebec City (Bench, 2022). The premise of Too Good To Go is that through it, restaurants are able to sell excess food to users of the app for reduced prices (Bench, 2022). Normally, items listed on the app are one-third of the price listed on the restaurant's menu (Bench, 2022). Too Good To Go approximates that it has 'rescued' over 400 000 meals from going to waste since it was founded in summer 2021 (Bench, 2022).

Mealshare was founded in Edmonton in 2013 (Faulder, 2013). The premise of Mealshare is that restaurants list a specific Mealshare item on their menu, and for each time it is purchased, Mealshare will provide a free meal to food-insecure youth through its food donation partners (Faulder, 2013). During the pandemic, Mealshare's local business partnerships suffered as businesses shut down from physical distancing restrictions; however, it still played a key role in combatting food insecurity at its highest during the pandemic through partnering with national chains such as A&W Canada and creating campaigns such as Mealshare Monday (McQuarrie, 2021). Mealshare is now in several Canadian cities and works with 385 food donation organizations nationally (Mealshare, 2022). Mealshare has also been pivotal in advancing awareness of youth hunger during the pandemic through partnering with SkipTheDishes in the creation of the Food for Thought campaign (now in its second year), which runs from May 3 to May 28 (Upright, 2021). The campaign encourages Canadian youth to complete activities around youth hunger, including colouring and activity sheets; in return, SkipTheDishes and Mealshare donate 5 meals for each activity completed to youth struggling with food insecurity across Canada on May 28, World Hunger Day (Upright, 2021). Local businesses and non-profit organizations also had to stay flexible during the pandemic to stay operational, turning to innovative online campaigns and using more virtual service models in lieu of or along with traditional direct-to-customer (DTC) service models. Some of these initiatives include the Edmonton Food Bank's FEEDYEG campaign, Lift Interactive's Things That Are Open campaign and website, 211 Alberta's COVID-19 Food Resources Directory, and the creation of online farmers markets such as Edmonton's Uproot Food Collective and Cultivatr.

At the start of the pandemic in March 2020, the Edmonton Food Bank asked Edmontonians to donate money rather than food, as the uncertainty of the pandemic and resulting physical distancing requirements and restrictions loomed heavily over administrators and volunteers (McDougall, 2020). As the pandemic continued, demand for Edmonton's Food Bank continued, with a 97% growth in new clients from June 2020 to June 2022 (Panza-Beltrandi, 2022). To address this escalated need, the Edmonton Food Bank had to find additional avenues to secure funding and donations outside of its traditional donation models, such as putting an escalated focus on its FEEDYEG campaign, which runs annually during the Christmas Season. For instance, the Food Bank's key donation event, Edmonton's Canady Cane Lane, moved to a drive-thru model during the pandemic due to physical distancing requirements, which meant the Food Bank had to seek additional ways of fulfilling increasing community need for food (Gibson, 2022). Rather than encouraging in-person donations, the Food bank encouraged monetary donations and cell phone donations to FEEDYEG (Gibson, 2022). Like the Food Bank, 211 Alberta also responded to Albertan's urgent need for food through its COVID-19 Food Resources Directory. 211 is "an essential service that helps Albertans find the right resource or service for whatever issue they need help with at the right time" (211 Alberta, 2022). 211 Alberta launched its COVID-19 Food Resources Directory in response to growing community food insecurity during the pandemic (211 Alberta, 2022). The directory is searchable by list and geographically through its online map and includes several different food donation organizations listing their services, eligibility, application and if there is an associated waiting period to access their services (211 Alberta, 2022).

Although food donation organizations responded to emergent community hunger spurred by inflation and the COVID-19 pandemic, private businesses also responded to Edmonton's escalating food insecurity and local restraint closures through campaigns such as Lift Interactive's Things That Are Open campaign and local business directory. Lift Interactive's Things That Are Open campaign launched at the start of the pandemic in March 2020 with the goal of letting business customers know which local businesses were still open and operational as physical distancing requirements increased and marketing budgets were reduced for businesses to stay operational (CTV News, 2020). The website is still operational into year three of the COVID-19 pandemic, with 2,222 businesses currently listed (Open Things, 2022). Similar to Lift Interactive, many farmers' markets moved online or were created in Edmonton in response to increasing physical distancing requirements. Two of these farmer's markets included Cultivatr and Edmonton's Uproot Food Collective.

Cultivatr launched in 2019 and expanded into Edmonton in July 2022 (Issawi, 2022). Cultivatr is an Alberta-founded company "specializing in local farm-to-table food deliveries" (Issawi, 2022). The business works with a network of Alberta farmers, rangers, and local vendors who sell their products on its website, for their own established prices (Issawi, 2022). Cultivatr has a strict set

of criteria that producers, distributors and sellers have to follow to be listed, including that their food must be organic, natural and that they must follow 'regenerative' farming principles (Issawi, 2022). Uproot Food Collective, similar to Cultivatr, is an online market and 'food collective' which originated with three separate farmers market producers, including Honest Dumplings, South Island Pie Co., and Natural Kitchen Delights (Uproot Food Collective, 2022). These vendors, with the help of other local food vendors, came together to found Uproot Food Collective with the goal of increasing business growth outside of attending traditional farmers' markets, particularly as they became less attended due to increasing physical distancing requirements over the pandemic (Uproot Food Collective, 2022). The COVID-19 pandemic grew interest in Uproot Food Collective, tripling its profits from 2020 to 2021 (Galvez, 2021). Uproot Food Collective is an example of an online food collective which grew and expanded during COVID-19; however, the COVID-19 pandemic in Edmonton also instigated the expansion and creation of informal and formal food hubs.

The expansion of informal and formal food hubs

Informal and formal food hubs and food network and hub organizer organizers flourished during the COVID-19 pandemic in Edmonton's local food system, including the brick-and-mortar food halls The Lot and 5th Street Food Fall, and hub and food network organizers such as The Public. The Lot is a social economy business and collective of food trucks, carts and trailers based at the parking lot located at 12320 107 Ave in Edmonton (The Lot, 2021). The Lot was launched in 2021 by founder Hon Leong, who was inspired to create a community and micro-food hub at the location of The Lot before the pandemic was declared in March 2020 (Lachacz, 2021). Leong's goal originally was to create an indoor food hall or collective; however, the pandemic necessitated that he look at other outdoor options due to financing restrictions (Lachacz, 2021). The Lot is operational year-round and has become a summer destination for Edmontonians interested in mobile restaurants and food trucks at one permanent location (Lachacz, 2021). JustCook Kitchen's Jennifer Keith and Luke Butterworth, like Hon Leong, also saw opportunities for more food hub and collectives to be based in Edmonton (JustCook Kitchens, 2022). Keith and Butterworth created 5th Street Food Hall located at 10344 105 St NW in Edmonton to provide commercial restaurants and up-and-coming chefs with a space to test their concepts and business without the additional barriers of finding their own individual commercial kitchen spaces and brick-and-mortal locations (JustCook Kitchens, 2022). There are now six local restaurants located at their location, including JustCare & Bar, Meat Shack, HOM, Backstairs Burger, Seitans (Vegan), and Tortilla Samurai (JustCook Kitchens, 2022). Although brick-and-mortar food halls emerged during the COVID-19 pandemic, food hub organizers such as The Public also thrived and grew.

The Public, for instance, is a food hub and community organizer whose goal is to "unite food lovers and makers" through "using online and physical retail, combined with neighbourhood

pickups and popup markets" (The Public, 2022). The Public spearheads several physical and online food initiatives, networks, and community hubs, including prominent seasonal farmers markets, including Edmonton's 124 Grand Market, Al Fresco on 104 and Edmonton's Christmas Market at Fort Edmonton (The Public, 2022). Further, it also has community-based "outputs" located at vendors, including Fleisch in Forest Heights and at the former Army & Navy building located on Whyte Ave (The Public, 2022). A brick-and-moral food hub and kitchen will be opening in 2023 located in Edmonton's downtown; it will include retail spaces for local vendors to rent and commercial kitchens to rent and use, amongst other features (The Public, 2022). The Public, during the pandemic, also started online initiatives such as curated local food boxes and educational initiatives, including food and wine tours (The Public, 2022).

5.8 Summary

The COVID-19 pandemic has unveiled weaknesses of the agrifood system at a global, national, provincial, and local scale that have forever changed the landscape of Edmonton's local food system. Food supply chain issues of the agri-food system already weakened during the first three waves of the COVID-19 pandemic were and continue to be disrupted by inflation issues, drought, and the Ukraine war in 2021, leading to increasing food shortages, escalating food prices and seasonal labour shortages into 2022. Private local vendors, restaurants, and food donation organizations have felt the former repercussions of the pandemic and, in response, have turned to new, innovative ways of staying operational. Further, innovative community leaders and organizations have created new business models to address increasing community food insecurity, physical distancing requirements and restrictions, supply chain backlogs and inflation. Some of these trends included: increased citizen interest in urban agricultural initiatives, development of alternative community food donation systems and organizations, local businesses, producers, and food donation organizations using more virtual service models in lieu of or along with traditional direct-to-customer (DTC) service models and the expansion of informal and formal food hubs.

Chapter 6.0: Discussion and Analysis

6.1 Answering the Research Questions

The purpose of this research project was to evaluate the impact COVID-19 has had on food citizenship within Edmonton's local food system. Further, this research project sought to assist in addressing how COVID-19 has affected food citizenship within Edmonton's local food system through the development of Edmonton-specific "food systems stakeholder maps."

The primary research question of this study was how the COVID-19 pandemic has affected food citizenship with Edmonton's local food system. The secondary research questions were:

- What stakeholders have been involved in influencing changes to food citizenship within Edmonton's local food system?
- How has the COVID-19 pandemic influenced international, North American, Canadian and Alberta's food systems?

This section will address the findings of this study in relation to the primary research question and two secondary research questions.

How has COVID-19 has affected food citizenship within Edmonton's local food system?

This Master's project used complex systems theory, the social economy model and food citizenship models to address how COVID-19 has affected food citizenship within Edmonton's local food system (Davies et al., 2019; Patton,2021, p. 76). Additionally, this project's trends, initiatives and events analysis evaluated the development and growth of food citizenship initiatives and trends within Edmonton's local food system, in contrast with trends and initiatives that have grown or developed in Alberta, Canada, North America, and globally. Through both the stakeholder analysis and trends and initiatives analysis, this project also addressed the secondary research questions:

- What stakeholders have been involved in influencing changes to food citizenship within Edmonton's local food system?
- How has the COVID-19 pandemic influenced international, North American, Canadian and Alberta's food systems?

Overall findings

Through the stakeholder analysis, 29 subsystems and 9 suprasystems were identified from 64 food citizenship initiatives. These initiatives, some for the first time, were included in a geographic map shown in Appendix A, showing their food citizenship supra-systems, social economy model status, operational status (temporary, inconclusive, and permanent) and seasonality within Edmonton's local food system. It also included each name, overarching organizations (if applicable), organization type, sub-system, years active during the pandemic, focus area/ interest, initiative

vision, mission, and values (if applicable) and associated political and social movements. The trends and initiatives analysis included pandemic wave timelines in Canada, and trends, initiatives and events that have occurred in international, North American, Canadian and Edmonton's local food system (s). This project broadly addressed and evaluated how COVID-19 has impacted system actors and dynamics within Edmonton's local food system and related food citizenship trends, initiatives, and events. It also took a critical first step in holistically identifying unexplored COVID-19-influenced food citizenship trends, events, initiatives, and stakeholders within Edmonton's local food systems through apply complex systems theory, food citizenship and social economy models.

Future research is required; however, particularly direct data collection from stakeholders, to more fulsomely understand how COVID-19 has impacted food citizenship within Edmonton's local food system and the direct impacts of identified sub-systems and supra-systems on Edmonton's local food system.

What stakeholders have been involved in influencing changes to food citizenship within Edmonton's local food system?

This project's stakeholder analysis of food citizenship actors in Edmonton's local food system used the social economy model and complex systems theory to shed light on how different stakeholders have influenced changes in food citizenship in Edmonton's local food system during the pandemic.

The stakeholder analysis included 29 sub-systems and 9 supra-systems from the 64 identified food citizenship initiatives from this project's document review of 94 documents. They include, as further defined in Appendix B, the sub-systems pop-up/ seasonal markets, yard sharing, community gardens, private citizen gardens, community fridges, cultural food banks, food halls, food rescues, mobile food vendors/ food delivery organizations, independent and community grocers, non-profit gardens, street food/community outreach, food network and hub organizers, hydroponics gardens, community food kitchens, food hampers/ pantries, online farmers markets, online food donation directories, food subscription services, community subscription services, seed libraries, non-profit groceries, ghost kitchens, curated food boxes, non-profit/ subsidized food boxes, online donation campaigns, food apps, and online business directories.

The nine identified supra-systems, also further defined in Appendix B, included food recovery organizations, gardens, food collectives, food donation/ subsidized food organizations, educational food resources, food boxes, alternative restaurant spaces, subscription services and online directories. Stakeholders were analyzed geographically (location-specific initiatives and overarching Edmonton initiatives), by initiative supra-system and subsystem and by initiative socio-economy model identification, status, years-active and seasonality. This section will interpret and analyze the results of the stakeholder analysis.

Geographic findings

After mapping the 64 initiatives identified in the stakeholder analysis, 46 initiatives were found to service all of Edmonton, and 18 were location specific. Location-specific initiatives were mostly situated in central and southcentral Edmonton, with a few initiatives outlying in northwest, northeast and southwest Edmonton.

The geographic centralization of location-specific food citizenship initiatives in Edmonton's central and southcentral core could be attributed to that these are Edmonton's centers of dining, festivals, and recreation, particularly Edmonton's downtown, Jasper area and Whyte Ave area. These location-specific initiatives are also prominently located in areas identified as food 'oases' by Edmonton-based researchers where residents are more educated and earn bigger salaries, where there are low unemployment rates and where more community members own a private vehicle in contrast to the Edmonton neighbourhood average (Yang et al., 2019, p. 148). Figure 11 highlights a side-by-side comparison of the two maps, first as shown in Figure 5, and the second as highlighted by Yang et al. (2019) in their research in Figure 2.

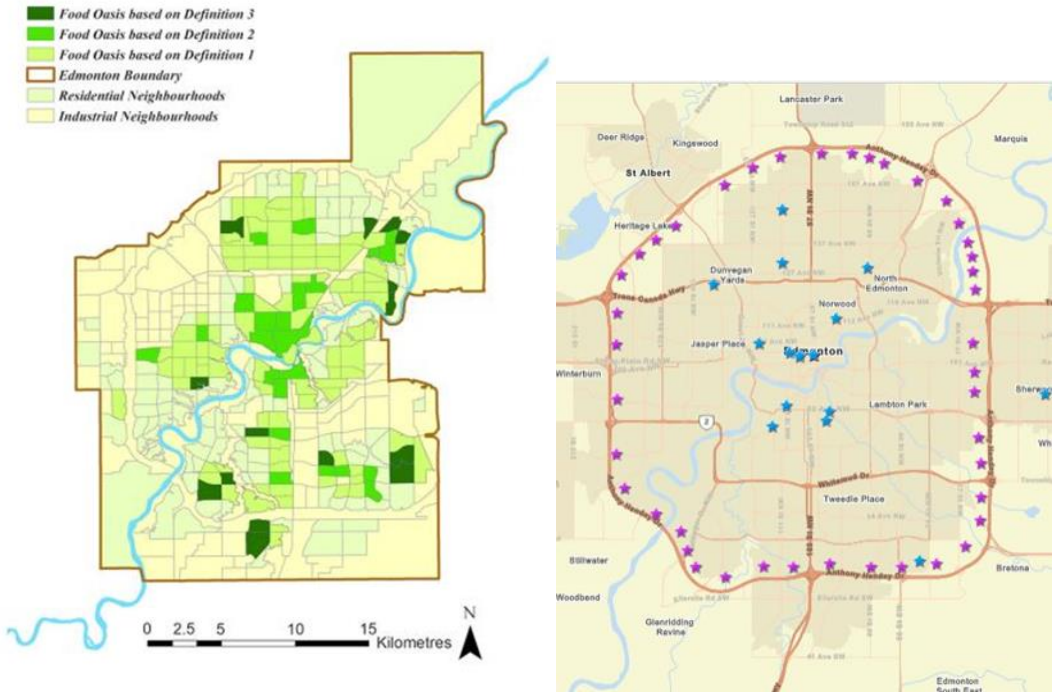

FIGURE 11 CONTRAST OF FOOD OASES VS LOCATION-SPECIFIC FOOD CITIZENSHIP INTIATIVES DURING COVID-19

46 initiatives identified in the stakeholder analysis were overarching initiatives or initiatives that serviced the entire Edmonton region, either because they were online or mobile. This breakdown of overarching versus location-specific initiatives echoes COVID-19 trends which emerged in

this project's stakeholder analysis and trends, issues, and events analysis, which substantiated trends identified in this project's literature review of existing academic research on COVID-19. These trends include, but are not limited to, local businesses, producers and food donation organizations using more virtual service models in lieu of or along with traditional direct-to-customer (DTC) service models and increased prevalence of mobile and impermanent grocery and restaurant spaces and food donation models (Thilmany et al., 2021; Ngumbi, 2020; Stephenson, 2021; Huncar, 2021; FAO, 2020).

The prevalence of overarching initiatives versus location-specific initiatives could also be attributed to the need for businesses and organizations to stay flexible to stay operational during the COVID-19 pandemic with unexpected, fluid changes to physical distancing requirements and guidelines as COVID-19 waves peaked and subsidized. Physical distancing requirements and regulations changed from banning indoor dining and gathering at restaurants at the onset of the pandemic in March 2020 to limiting gathering to family 'cohorts,' to reducing the number of patrons allowed at a table, to the introduction of Alberta's proof of vaccination status program on September 20, 2021, to reintroducing restrictions into December 2021 to gradually removing restrictions to no restrictions by summer, 2022 (Government of Canada, 2022; CBC News, 2022; Government of Alberta, 2022).

Initiative Supra-Systems and Sub-Systems

Edmonton's food system is comprised of several groups, who each have unique traits, values, and interests. These groups are both sub-systems, systems within larger, overarching systems, and supra-systems whose boundaries contain several smaller systems (Keshavarz et al., 2010, p. 1468). Therefore, individual groups within CASs are nested systems with intersecting, converging boundary lines (Auspos & Cabaj, 2014, pp. 4-5; Hurst & Zimmerman, 1994, p. 341). Through understanding the sub-systems and supra-systems of Edmonton's local food system, this project evaluated the interconnections, relationships, and intersecting interests of food citizenship stakeholders in Edmonton's local food system.

Appendix B Stakeholder Analysis Sub-System and Supra-System Category Definitions numbers the 29 sub-systems and 9 supra-systems which were identified from the 64 food citizenship initiatives, including the definition of each system as they were used in this project for coding. Appendix A geographically highlights where sub-systems and supra-systems have overlapping system boundaries: many food citizenship initiatives fall within several sub-systems and subsystems. Appendix C Sub-System and Supra System Summary highlights what sub-systems fall within each supra-system and the number of initiatives and percentage of total initiatives that fall within each sub-system and supra-system.

Edmonton's local food system, although assembled of several nested systems, has order-generating rules or established patterns of behaviour observable at each level of the system, various interdependent actors, nested systems, intersecting system boundaries and complicated behavioural patterns (Auspos & Cabaj, 2014, p. 4; Keshavarz et al., 2010). For instance, as shown in Appendix C, most initiatives fall within the supra-system food donation/subsidized food

organizations, with 39 out of 64 initiatives. The prevalence of food donation/ subsidized food organizations over other initiatives could be attributed to prevalence of Edmontonians' need for food throughout the pandemic, with traditional donation organizations such as Edmonton's food bank overwhelmed, with a 97% escalation in new clients from the period of June 2020 to June 2022 (Panza-Beltrandi, 2022). This could also be attributed to as a case of perpetual novelty in CASs; when one system's function is filled, another opens (Waldrop, 1991, p. 147 as cited in Hurst & Zimmerman, 1994, p. 339). Otherwise, traditional food donation systems were not meeting the system demand or Edmontonians' need for food, and new, less developed initiatives and groups filled the system need to provide communities with food, such as culturally specific food banks, community hampers/ fridges, mobile food donation delivery services and non-profit, subsidized food boxes. These initiatives were pivotal in helping bridge the gap between overwhelming community demand for food and overwhelming traditional food donation organizations, such as the Edmonton Food Bank.

These new initiatives developed new 'order generating rules' when the traditional food donation system was overwhelmed, and COVID-19 systems changes were longer manageable (Burnes, 2005, p. 80). Otherwise, seemingly balanced systems still require partial destruction to continue to grow and evolve (Hurst & Zimmerman, 1994, p. 349). Order-generating rules of the supra-system food donation organization systems, prior to the COVID-19 pandemic, were that vulnerable, food-insecure individuals had to go to certain (often central) spots to access food hampers or a food bank, food banks accepted donations primarily through events (with online donations a secondary donation medium) and food banks accepted mostly North American food items versus culturally specific food.

The pandemic, however, disrupted this traditional donation model. Initiatives like:

- mobile food donation vendors deliver directly to food-insecure, immune-comprised, and other vulnerable people
- culturally specific food banks cater directly to their communities and provided traditional foods in a culturally safe, accessible space
- online donation initiatives increase monetary donations to food banks when events and drop-in donation centres were closed
- community food hampers and fridges help address Edmontonanians' increasing food insecurity in community-specific, accessible food locations
- and subsidized and non-profit food boxes provide delivery packages to vulnerable Edmontonians as an alternative to more expensive food-box alternatives.

Order-generating rules, as well of traditional restaurant inside dining, also changed over the course of the pandemic, where diners would seek out one brick-and-mortar restaurant, pay for their meal and leave. Over the course of the pandemic, models such as ghost kitchens, where restaurants have an impermanent location and change locations as others become available, and food halls, where several vendors share one location, emerged (Curio City, 2021; The Lot, 2021; Lachacz, 2021; JustCook Kitchens, 2022). Although these models existed in places such as Portland, Montreal,

Miami, and other bigger cities, they were new to Edmonton's local food system (Curio City, 2021; The Lot, 2021; Lachacz, 2021; JustCook Kitchens, 2022).

The least initiatives fall within the supra-systems educational food resources, food subscription services and online directories at 2 out of 64 initiatives each. Although food subscription services and online directories were fewer in number than other initiatives, online directories, including the business directory Things That Are Open and 211's COVID-19 Food Resources Directory, were pivotal in marketing and providing clientele for other initiatives, with 2,222 businesses listed on Things That Are Open in 2022, and 19 food donation organizations listed on 211's COVID-19 Food Resources Directory in 2022 (211 Alberta, 2022; Things That Are Open, 2022).

Further, as shown in Appendix C, the average amount of initiatives in each of the 29 sub-systems is 2 initiatives at 3% of overall initiatives, with the least number of initiatives per sub-system at 1 and the highest at 8 initiatives falls within mobile food vendor/ food delivery at 13% and, following that, 6 initiatives within food hampers/ pantries at 10%. Mobile food vendor/ food delivery services were vital to those with accessibility issues or those who could not afford a private vehicle to access food donation services or traditional grocery stores (De La Canal, 2021; Bonnyman, 2022; Kraus, 2020). For instance, during the first wave of the pandemic in April 2020, Men with Kilts, a private window-washing company, created a free grocery delivery service for seniors and immune-compromised Edmontonians (Kraus, 2020). Men with Kilts first received a person's grocery list, then purchased the items at a grocery store and received payment via e-transfer or cash: their time and delivery service, however, was complimentary (Kraus, 2020). Another example is CANAVUA (Canadian Volunteers United in Action), a francophone organization, which launched a free food truck: food for the food truck was donated, with meals changing on a weekly basis (Bonnyman, 2022).

Community hampers such as the Islamic Relief Food Hamper and community fridges, such as Millwood's Community Fridge, helped address increasing food insecurity in their communities, and provided food in community-specific, accessible locations (Rosove, 2020; Wiebe, 2019; Grace Martin School, 2022). The Islamic Circle North America (ICNA) helped establish a community fridge in Grace Martin School located in Edmonton's Millwoods community, which functions on a take-what-you-want, leave-what-you-can donation methodology; the Islamic Relief Food Hamper was established by Islamic Relief Canada, who created community hampers for immunocompromised and vulnerable members of their community (Rosove, 2020; Wiebe, 2019; Grace Martin School, 2022).

Social Economic Identification, Status, Years-Active, Seasonality

Within the stakeholder analysis, 47 out of 64 or 73% of food citizenship initiatives were identified as permanent, whereas 16 out of 64 or 25% of initiatives are identified as temporary. 16 temporary initiatives comprise 25% of the total 64 food citizenship initiatives, and 47 year-round initiatives comprise 73% of the total 64 initiatives. The percentage of year-round initiatives over seasonal initiatives could be attributed to the changing physical distancing requirements that occurred over the course of the COVID-19 pandemic. However, this also could be attributed to Edmonton's short

growing season and long winters. Without a conclusive before-after comparison of permanent versus temporary and seasonal versus around year-round initiatives prior to the pandemic, it is hard to conclusively discern which elements of the COVID-19 pandemic influenced these percentage breakdowns.

55% of initiatives have public sector organizations involved in an initiative at 35 out of 64 identified food citizenship initiatives, followed by social economy businesses at 14 out of 64 or 22% of the total initiatives identified. The large percentage of public sector organizations could be attributed in part to the prevalent food insecurity which has occurred throughout the course of the COVID-19 pandemic in Edmonton and to the sizeable percentage of initiatives that belonged to the supra-system food donation/ subsidized food organizations with 35 out of 64 initiatives.

Several initiatives have multiple types or combination types of social economy model organizations involved in an initiative. This could be attributed in part to new emerging sub-systems created that were run in partnership volunteer and other civil society organizations due to system gaps created by the COVID-19 pandemic, such as unfulfilled community demand for food. This could also be in attributed in part to large organizational capacity to meet increasing, changing system demands; civil society and volunteer organizations helped bridge this capacity gap during a time of emergent, fluid demand and resource strain throughout the COVID-19 pandemic.

How has the COVID-19 pandemic influenced international, North American, Canadian and Alberta's food systems?

COVID-19 highlighted the susceptibilities of agri-food systems internationally, nationally, provincially, and locally. Food supply chain issues that were already vulnerable after the first three waves of the COVI9 19 pandemic continue to be significantly impacted by inflation issues, drought, and the ongoing Ukraine war. Some of the problems include food shortages, increasing food prices, and fluctuating seasonal labour availability to fulfill seasonal needs by food producers and distributors.

All organizations (from private, social economy organizations, civil society organizations, and public-sector non-profits) have felt the ripple impacts of these problems on their daily operations. In response, businesses have developed new sales and donations models to stay operational throughout the COVID-19 pandemic. Some of the trends and models include increased citizen interest in urban agricultural initiatives, development of alternative community food donation systems and organizations, local businesses, producers, and food donation organizations using more virtual service models in lieu of or along with traditional direct-to-customer (DTC) service models and the expansion of informal and formal food hubs.

6.2 New Themes and Ideas (Unexpected Findings)

This research project applied complex systems theory, food citizenship theories and models, and the social economy model to evaluate how COVID-19 has impacted food citizenship within Edmonton's local food system. Through using these conceptual models, this project has unveiled

new, emergent themes and initiatives that have not been explored in previous literature in terms of understanding how COVID-19 has impacted food citizenship in local food systems.

New food citizenship trends and initiatives

Some of the emergent food citizenship trends identified in the literature review for COVID-19 identified included themes such as:

- including increased citizen interest in urban agricultural initiatives
- development of alternative community food donation systems and organizations
- local businesses, producers and food donation organizations using more virtual service models in lieu of or along with traditional direct-to-customer (DTC) service models

Existing literature, however, has not explored the expansion of informal and formal food hubs during the COVID-19 pandemic or the development of culturally specific food banks (Thilmany et al., 2021; Ngumbi, 2020; Stephenson, 2021; Huncar, 2021; FAO, 2020; City of Edmonton, 2022).

Culturally specific food banks, which offered traditional foods to their specific communities, were critical during the COVID-19 pandemic for those who could not access their traditional (often small) grocers due to expense or physical distancing requirements (Weisberg, 2021). These food banks were a lifeline for BIOPIC (Black, Indigenous, People of Color and other marginalized groups and other communities) who could access food in a safe, culturally accessible space (Weisberg, 2021).

The emergent development of informal and formal food hubs, such as The Public, 5th Street Food Hall and The Lot, during the COVID-19 pandemic within Edmonton's local food system, was an unexpected finding of this study. The Public, a food network and hub organizer, expanded its services during the COVID-19 pandemic to include catered food boxes and neighbourhood outposts despite ever-changing physical distancing changes and requirements (The Public, 2022). In-person food halls, such as 5th Street Food Kitchen and The Lot, emerged in Edmonton during the pandemic, where restaurants could share a space without the expense of setting up their own business and commercial kitchen space (The Lot, 2021; Lachacz, 2021; JustCook Kitchens, 2022).

6.3 Strategic or Research Implications

This project, based on existing research and literature explored in this project, has been the first project to apply the social economy model and complex systems theory holistically to a local food system during the COVID-19 pandemic.

Through defining and understanding the 29 sub-systems and 9 supra-systems identified within this project's 64 initiatives, this project sought to further understand relationships and dynamics between food citizenship trends, stakeholders, and initiatives during COVID-19 in Edmonton's local food system. This project's findings have expanded on existing theoretical findings of research that has explored one food citizenship initiative or trend within local food systems and

civic food networks, such as the growth of community gardens, emergency food community assistance initiatives, urban agriculture and food sharing initiatives (Booth & Coveney, 2015; Petetin, 2020; Adelle, 2019; Bornemann & Weiland, 2019; Thorton, 2020; Thilmany et al., 2021; Cranfield, 2020; Reed & Keech, 2019; Davies et al., 2019; Welsh & MacRae, 1998; Prost, 2019). It has also added to existing theories and research by showing how COVID-19, in particular, has influenced the development, growth and change of food citizenship trends and initiatives.

Further, it has put 'theory into practice' of evaluation experts that have espoused the use of complex systems evaluation and research frameworks over traditional reductionist frameworks to understand local food systems (Patton, 2021, p. 61; Reisman & Fairbairn, 2021, p.688). Specifically, through applying complexity concepts such as emergence, nonlinearities, dynamics, adaptation, co-creation and path dependence and systems concepts such as boundaries, perspectives, relationships and dynamics to Edmonton's local food system during the COVID-19 pandemic, this project has furthered understanding of how COVID-19, holistically, has impacted specific stakeholder groups and how they have adapted to fluid, abrupt systems change (Patton, 2021, P. 76).

6.4 Limitations of Analysis

Limitations of this project's analysis, results and findings come from its case study research design, document review methodology and content data analysis. Results and findings of this study are based on documents within the public domain, which may or may not be current. For instance, defining "years-active" and whether the initiative was temporary, permanent, seasonal, or year-round was based on publications where an initiative did not have its own website. Relying on public domain material inherently means that some information at the time of analysis may be outdated. Likewise, results and findings from this project's stakeholder analysis and trends, initiatives and events analysis are based on grey literature versus academic literature due to lack of current research on COVID-19's impacts, specifically on food citizenship and location food systems.

Further limitations of the content analysis of this study are that documents were based on what the researcher was able to find within the public domain, and the analysis likely did not capture all relevant initiatives and trends which have occurred in Edmonton's local food system within the last two years of the COVID-19 pandemic. For instance, community-based trends that may not have a website, social media, or associated media coverage but grow through word-of-mouth and neighbour-to-neighbour networking were not captured within this research study.

Also, using a case-study research design cannot confirm cause-and-effect relationships between systems variables. However, it can bring further context and explore potential relationships between system variables and relationships. Further, this project's stakeholder analysis is specifically focused on food citizenship trends and initiatives within Edmonton during the pandemic; the results of the study cannot be reliably generalized to other jurisdictions at a broader level (University of Southern California, 2022).

6.5 Areas for Further Research

The intent of this study was to evaluate COVID-19's broad impacts on food citizenship trends, initiatives, and stakeholders within Edmonton's local food system. Areas for future research stemming from the results and findings of this study could be an in-depth exploration of each sub-system and supra-system highlighted and defined within this project or could include a comparative case study design between the results of this study and another municipality's local food system.

Further research could also focus on collecting qualitative and quantitative data directly from individual stakeholders and stakeholder groups identified in this project to conclusively explain how these individual trends, initiatives and stakeholders are impacting system components, relationships, and dynamics within Edmonton's local food systems.

Results and findings from this project's trends, initiatives, and events analysis on COVID-19's impacts on international, North American, Canadian, provincial and Edmonton's local food system could also be further explored and defined in future research. For instance, trends such as increased citizen interest in urban agricultural initiatives and development of cultural food banks could be evaluated individually and compared internationally, within North American, Canada and Alberta.

6.6 Summary and Revisiting the Conceptual/Analytical Framework

This research project used features of and expanded on Hassein (2008)'s broad food citizenship model, Petetin (2020)'s COVID I9-specific food citizenship model, the social economy model and Davies et al. (2019)'s stakeholder analysis chart to evaluate how COVID-19 has impacted food citizenship within Edmonton's local food system.

These models were broadly useful in evaluating what stakeholders have been involved in influencing changes to food citizenship within Edmonton's local food system and how the COVID-19 pandemic has influenced international, North American, Canadian and Alberta's food systems. Further qualitative and quantitative research gathered directly from stakeholders in subsequent studies, however, would lead to a more refined and developed evaluation model to specifically understand how COVID-19 has impacted Edmonton, North America, Canadian and international food systems.

Chapter 7.0: Conclusion

The COVID 19 pandemic exposed preexisting issues of the agri-food system and multiplied the impacts of the Anthropocene. The pandemic exacerbated the cracks in global food supply chains, distribution systems and production, including direct system impacts such as rising inflation, labour shortages and supply chain backlogs, and wider systems problems such as climate change, food insecurity and food waste.

Researchers and food policy pundits have recognized the urgent need to better understand how COVID 19 has impacted complex-adaptive food systems, and the transformational impact of emerging and growing food initiatives on local food systems since the start of the pandemic in March 2020 (Williams et al., 2021, p.91; FAO, 2020; Petetin, 2020)

The objective of this study was to evaluate how COVID-19 has affected food citizenship within Edmonton's local food system through analyzing and identifying what stakeholders have been involved in influencing changes to food citizenship within Edmonton's local food system and how the COVID-19 pandemic has influenced international, North American, Canadian and Edmonton's food systems. Further, through better understanding Edmonton's food citizenship trends and actors that have been impacted by COVID-19, this project hoped to help address the accelerating impacts of both the COVID-19 pandemic and Anthropocene on local, North American, Canadian and Edmonton's local food systems,

Previous academic literature in the area of food citizenship and COVID-19's impacts on local food systems has not utilized complex adaptive systems theory and social economy models to identify and map stakeholders within local food systems to explore the concept of food citizenship (Booth & Coveney, 2015; Petetin, 2020; Adelle, 2019; Bornemann & Weiland, 2019; Thorton, 2020; Thilmany et al., 2021; Cranfield, 2020; Reed & Keech, 2019; Davies et al., 2019; Welsh & MacRae, 1998). This project has been the first research study to use complex systems methodology and the social economy model to fulsomely evaluate and identify Edmonton food citizenship systems actors and components that the COVID-19 pandemic has impacted. Further, it is the first research study to produce a specific, interactive online Edmonton map to analyze these initiatives.

Critical findings of this study include the identification of sub-systems and supra-systems of stakeholders that have been impacted by the COVID-19 pandemic, including but not limited to pop-up/ seasonal markets, yard sharing, community gardens and food collectives. Further, this project was essential to identifying and analyzing broad food citizenship trends and initiatives that have developed or grown during the COVID-19 pandemic, including:

- an increase in Edmontonians' involvement in urban agricultural initiatives
- emergent development of non-traditional community food donation systems and organizations
- local businesses, producers and food donation organizations using more online service models in lieu of or along with traditional direct to customer (DTC) service models

- evolution and creation of informal and formal food hubs (Thilmany et al., 2021; Ngumbi, 2020; Stephenson, 2021; Huncar, 2021; FAO, 2020; City of Edmonton, 2022).

Transferable results from this study include informing non-profit, public, and private governance, strategies, programming and policies, from strategy formation, resource allocation, locations for future programs to partnership opportunities. Specially, it provides food citizenship stakeholders with context to better understand where individual initiatives fit across systems and within systems, and their potential individual and collective impacts. Further, it provides a comprehensive understanding of how organizations, communities and individuals came together during the pandemic to address gaps in Edmonton's local food system, which can be used to inform transformational-change tactics for future pandemics and emergency responses. The sub-systems and supra-systems identified, although created and organized from an Edmonton perspective, could be broadly transferable to other municipalities to provide a more comprehensive understanding of local food landscapes and systems.

Additionally, the geographic map of food citizenship stakeholders and initiatives could be used by Edmonton-based researchers to better understand food system gaps, areas of food insecurity and disparity, with opportunities to cross-analyze the map's data with socioeconomic statistics, such as population density, income level and food insecurity level.

Former, unidentified initiatives and trends can now be studied independently, and their impacts can be analyzed across and within sub-systems and supra-systems. Subsequent, detailed research on individual stakeholders with direct qualitative and quantitative data from those stakeholders is needed to better understand how COVID-19 has impacted food citizenship within Edmonton's local food system.

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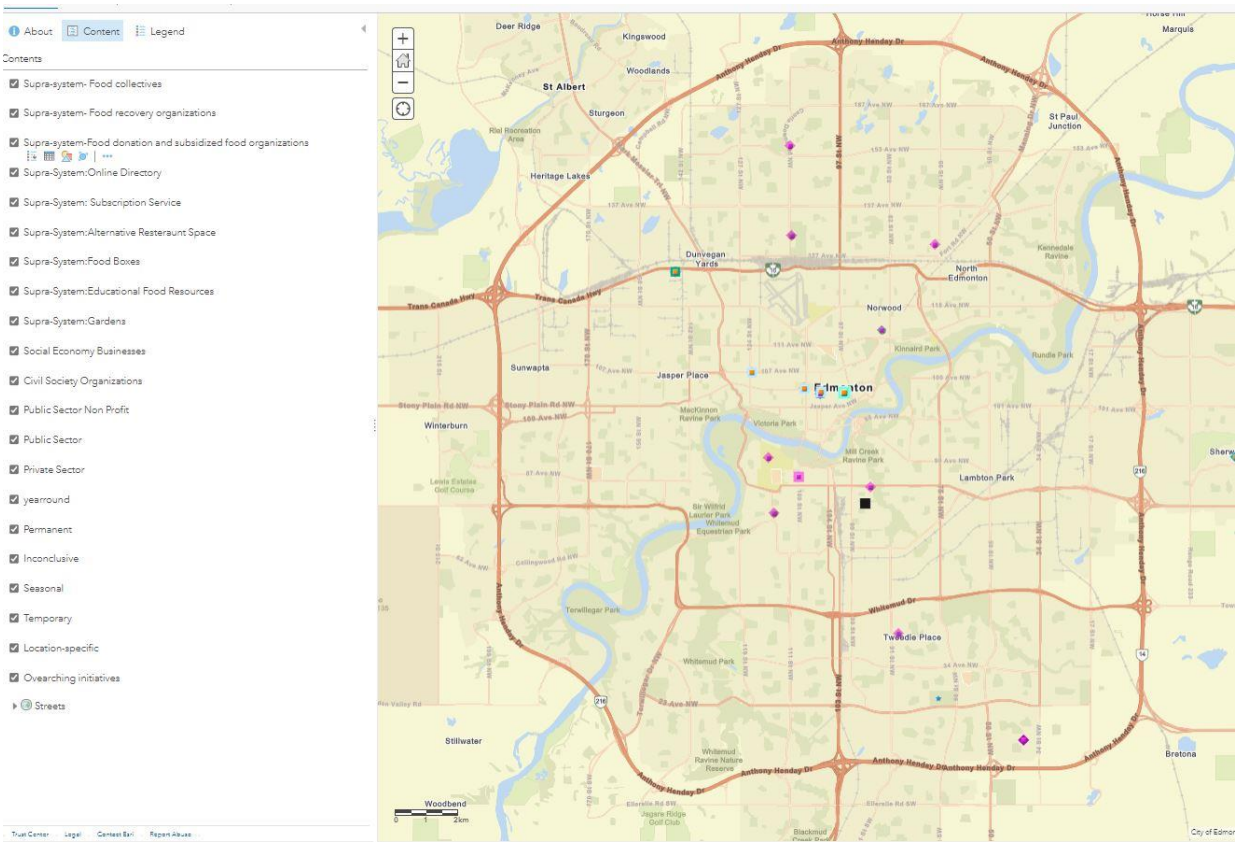
Appendix A COVID-19 Food Citizenship Initiatives in Edmonton's Local Food System

Link: https://arcg.is/0v1101



Appendix B Stakeholder Analysis Sub-System and Supra-System Category Definitions

Sub-Systems	Supra-Systems
Pop-up/ seasonal markets: Markets of food vendors and local businesses that are offered seasonally or on a "pop" up temporary basis (NOSH Food Fest, 2022).	**Food recovery organizations:** Organizations that collect unused or surplus food from restaurants, grocery stores and farms/ gardens for resale or for donation (Food Not Bombs Edmonton, 2022; Leftovers Foundation, 2022).
Yard sharing: Citizens or communities that share unused, vacant gardening spaces with other gardens who would like to use the space (CBC, 2021).	**Gardens:** A place where either community members or organizations grow vegetables and fruit for the purposes of consumption (City of Edmonton, 2022; CBC, 2021).
Community gardens: Gardens used collectively by community members that are located in community-specific or owned areas (City of Edmonton, 2022).	**Food collectives:** Food collectives are groups of local food vendors that join together to offer services at one location or through one initiative/ organization (The Lot,2022; Taproot Edmonton, 2022; Uproot Food Collective, 2022).
Private citizen gardens: Gardens owned by private citizens.	**Food donation/ subsidized food organizations:** Food donation/ subsidized food donations either sell food products or services at a reduced value for low-income or food insecure populations or offer donations to these communities.
Community fridge: A fridge in a community location, which community members and organizations donate to, that follows a "take what you want, leave what you can" donation method (Food Not Bombs, 2022; Wiebe, 2019).	**Educational Food Resources:** For the purposes of this study, educational food resources are where citizens, organizations or communities offer services or resources related to their food expertise or skills to teach others about food-citizenship practices
Cultural food bank: A food bank that offers culture-specific, specialized food for certain communities as opposed to more standard North American donation items (Africa Centre, 2021)	**Food boxes:** Food boxes are boxes of food products assembled for donation or sale Cummings, 2021; Box'D, 2022; CBC, 2020; CBC, 2022).
Food hall: Food halls are comprised of a group of local vendors or restaurants and chef-led food initiatives (Taproot Edmonton, 2022; The Lot, 2022).	**Alternative Restaurant Spaces:** Alternative restaurant spaces are where food vendors offer their services at in-person locations that are different than the traditional model of one food restaurant in a permanent location (Curio City, 2022)
Food Rescue: Organizations or a group of community members/ volunteers that collect unused or surplus food from community and	**Subscription Services:** Subscription services are where community members subscribe to

private gardens to reduce food waste (Food Not Bombs Edmonton, 2022; Leftovers Foundation, 2022).	receive food or community services (Richie Community League, 2022. WECAN, 2022).
Mobile food vendor/ food delivery: Private and non-profit organizations that deliver food to specific custom locations or are mobile and set-up their operations in various locations (Fresh Routes, 2022; Grocery Run, 2022).	**Online Directories**: Online directories for the purposes of this study list services available during COVID-19 including donation services and local business services (211 Alberta, 2022; Things That Are Open, 2022).
Independent and community grocer: Independent or community grocers which are not a part of Big Food chains or larger food conglomerates, often with independent local vendors, distributors, and farmers (The Grocery People, 2022; Uproot Food Collective, 2022).	
Restaurant donation initiative: COVID-19 prompted restaurant donation initiatives where restaurants either donated surplus food or staff time to local food charities or non-profits (CBC News, 2020).	
Non-profit garden: A garden that produces all of its yield and crops for a non-profit organization or charity (Pandemic Planting Project, 2022).	
Street food/community outreach: Teams of community members or organizations that offer on-street services, including food donations and meals, to vulnerable populations (Food Not Bombs, 2022; Our Initiative, 2022).	
Food network and hub organizer: An organization that organizes food networks and communities that range from neighbourhood-based food communities and hubs and social enterprises (The Public, 2022; Food Not Bombs, 2022; Leftovers Foundation, 2022).	
Hydroponics garden: "Hydroponics, also called aquaculture, nutriculture, soilless culture, or tank farming, the cultivation of plants in nutrient-enriched water, with or without the mechanical support of an inert medium such as sand, gravel, or perlite" (Britannica, 2022; chrysp, 2022).	
Community food kitchen: A community kitchen operated by a non-profit, community organization or individual that produces meals	

for a particular community or non-profit (Common Thread Community Kitchen, 2022;	
Food hamper/ pantry: A pantry or hamper set up for donations within a community space by a non-profit organization, social enterprise, or institution (Taproot Edmonton, 2022).	
Online farmers market: A farmers' market with online, local vendors (Steve and Dan's Online Market, 2022; Cultivatr, 2022; Uproot Food Collective, 2022).	
Online food donation directory: Directory that highlights where food donation organizations are available and lists their services, eligibility, and location (211 Alberta, 2022).	
Food subscription service: A subscription service citizens or community members pay a fee or a subsidized fee for in order to access food items or packages (WECAN, 2022).	
Community subscription service: A subscription service for community-specific services, including restaurants and independent grocers, that goes towards funding a community league (Richie Community League, 2022).	
Seed library: A 'library' of seeds that citizens and organizations donate to that citizens can access for free at a community location (Edmonton Public Library, 2022)	
Non-profit grocery: A non-profit that gives away free or donated groceries to community members (Sikhs For Humanity, 2022).	
Ghost kitchens: Restaurant providers that do not use permanent brick-and-mortar locations but use any empty/ available commercial kitchen space or building for their operations (Curio City, 2021).	
Curated food boxes: Food boxes assembled of local products from Edmonton businesses or specialty items that a local business sells or brings in (Cummings, 2021; Box'D, 2022).	
Non-profit/ subsidized food boxes: Food boxes created by non-profit organizations or by community organizations for vulnerable or food-insecure populations, with any	

associated profits going in part or full towards a non-profit or charity organization (CBC, 2020; CBC, 2022).	
Online donation campaign: Online marketing campaigns organized for non-profits or charities asking for money or donations towards food charity and non-profit organizations (Griwkowsky, 2020)	
Food apps: Food 'citizenship' apps that encourage citizens to either share food, buy excess food from restaurants and grocery stores or purchase food, with a portion of the profits going towards a food citizenship initiative, such as youth hunger (Mealshare, 2022; Too Good To Go, 2022).	
Online Business Directory: A directory of businesses open during COVID-19 (CTV, 2020; Things That Are Open, 2022).	

Appendix C Sub-System and Supra System Summary

Name of Supra-System	Sub-Systems within Supra-System
Alternative Restaurants	Ghost kitchens Food halls Food network and hub organizers
Food Recovery Organizations	Food rescues Food network and hub organizers Community fridges Food apps Independent/ community grocers
Gardens	Yard sharing Community gardens Non-profit gardens Hydroponics gardens Private citizen gardens Seed libraries
Food collectives	Online farmers markets Food halls Independent/community grocers Food network and hub organizers Pop-up seasonal markets Food halls
Food donation/subsidized food organizations	Food hamper/pantries Mobile food vendors/food deliveries Non-profit food boxes Restaurant donation initiatives Street food community outreach Non-profit gardens Food hamper/ pantries Community food kitchens Food trucks Independent/community groceries Non-profit groceries Community gardens Community fridges Food rescues Online food donation directories Food network/hub organizer Food apps Online food donation campaign
Educational food resources	Community food kitchen toolkit Independent/community grocers

Food boxes	Non-profit/ Subsidized Food Boxes Curated Food Boxes Emergency food kits
Food subscription Services	Community subscription services Food subscription services
Online directories	Online food donation directories Online business directory

Name of Sub-System	Number of Initiatives	Percentage of Total Initiatives
Alternative Restaurants	4	6%
Food Recovery Organizations	8	13%
Gardens	9	14%
Food collectives	12	19%
Food donation/subsidized food organization	39	61%
Educational food resources	2	3%
Food boxes	5	8%
Food subscription services	2	3%
Online directories	2	3%

Name of Supra System	Number of Initiatives	Percentage of Total Initiatives
Pop-up/ seasonal markets	1	2%
Yard sharing	1	2%
Community gardens	4	6%
Private citizen gardens	1	2%
Community fridge	2	3%
Cultural food bank	2	3%
Food Hall	2	3%
Food Rescue	2	3%

Mobile food vendor/ food delivery	8	13%
Independent and community grocer	4	6%
Restaurant donation initiative	2	3%
Non-profit garden	1	2%
Street food/community outreach	2	3%
Food network" and hub organizer":	4	6%
Hydroponics garden	1	2%
Community food kitchen	3	5%
Food hamper/ pantry	6	9%
Online farmers market	3	5%
Online food donation directory	1	2%
Food subscription service	1	2%
Community subscription service	1	2%
Seed library	1	2%
Non-profit grocery	1	2%
Ghost Kitchens	1	2%
Curated Food Boxes	2	3%
Non-profit/ subsidized food boxes	3	5%
Online donation campaign	2	3%
Food apps	3	5%
Online Business Directories	1	2%