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IN THIS ISSUE

This issue does not contain a themed section. And yet, one has emerged over the editorial and production process. Youth, food and education—and the various sectors and players engaged in modeling that relationship—are the focus of several research articles. Part of this conversation is the sense of momentum for a national school food program that both Debbie Field of the Coalition for Healthy School Food and Carolyn Webb of Sustain Ontario Education Network observe and unpack for us in their editorial.

And there is more besides. Joyce Slater et al. examine the impact of the first wave of COVID-19 on the Manitoba charitable food sector. Andre Magnan et al. investigate the implications of changing land tenure relations in the Prairie Provinces, where over 70% of Canada's farmland is located. Food sovereignty activists Jessie MacInnis and Roz Corbett share a conversation with Annette Aurelie Desmarais about the good, the bad, and the ugly of COP26. And finally, Kathleen Kevany reviews Jessica Fanzo's *Can Fixing Dinner Fix the Planet*?

Readers will note a few changes to the articles. These have been refreshed, if you will, with a new format. Each also contains abstracts in both French and English. We wish you a stylish and substantial read.

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Editorial

Momentum is building for a school food program for Canada

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School food programs are increasingly being recognized around the world as a valuable health promotion policy and essential to the health, well-being and education of students. Research is also showing that school food programs can support a wide range of population-level impacts relating to education, community, economic development, domestic agriculture, families, and the environment.

Over 388 million children in at least 161 countries (83 percent of all countries globally) receive free or subsidized school meals at school. While Canada is one of the only industrialized countries still without a national school food program, we're at a critical tipping point in terms of seeing the federal government, as well as provinces and territories, advance school food policies and invest in children and youth across the country.

The Coalition for Healthy School Food was established in 2014 to work towards the goal that every child and youth in Canada would access a healthy, affordable and culturally appropriate meal or snack, in a non-stigmatizing manner, at school every day. We do this through advocacy at the federal level, strengthening commitments from provinces and territories, local governments and school communities, and supporting replication, networking and sharing of best practices for the thousands of diverse school food programs and models across Canada. The Coalition has grown to over 200 member organizations from every province and territory and over 100 endorsers.

Through consultation with members and supported by global best practices and researchers across the country, particularly the article in this Journal by Hernandez, Engler-Stringer, Kirk, Wittman, and McNicholl "*The case for a Canadian national school food program*" - Vol 5 No 3 (2018), the Coalition has developed 8 guiding principles that we advocate for as critical for a thriving school food program: (1) health promoting; (2) universal; (3) cost-shred; (4) flexible and locally adapted; (5) committed to Indigenous control over programs in Indigenous communities; (6) a driver of community economic development; (7) promoting

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of food literacy; and (8) supported by guidance and accountability measures. These principles have formed a common basis of unity among our members and have informed all of our recommendations to government.

Through our central coordination and the efforts of our members, we have seen significant movement at the provincial and federal levels. In September 2021 the Liberal Party of Canada committed to "develop a National School Food Policy and work towards a national school nutritious meal program with a $1 billion dollar investment over five years (...) to help children grow and learn". In December 2021 the Minister of Agriculture and Agri-Food Marie-Claude Bibeau and Minister of Families, Children and Social Development Karina Gould's mandate letters included to work together and "with provinces, territories, municipalities, Indigenous partners and stakeholders to develop a National School Food Policy and to work toward a national school nutritious meal program."

It is also a very exciting moment for school food around the world. Last year, the global School Meals Coalition was formed to advocate for "A healthy meal for every child, every day" everywhere in the world by the year 2030. Our Canada-wide Coalition signed the School Meals Coalition declaration and Canada has just recently signed on, becoming the 61st country to add their voice to this crucial commitment.

We're at a tipping point towards our goal of ensuring that all children and youth can access healthy food at school. With momentum building for a Canada-wide school food program, and with many provinces and territories making their own investments and developing programs, we have a collective and unprecedented opportunity to influence the design and direction of school food programs, policy and funding for Canada and impact the lives of children and communities across the country.

The Coalition for Healthy School Food is very excited to welcome this edition of Canadian Food Studies / La Revue canadienne des études sur l'alimentation, which includes four articles on the issue of youth and food. We're so pleased to see research on this theme that will inform the development of school food initiatives across the country.

We thank all of those who have contributed to the current body of knowledge, and we encourage more contributions. If you are inspired to examine and support recommendations relating to school food programs, we've identified a number of research areas that could use further study, including:

- What are the benefits and risks of a pay-what-you-can vs. a model that is free for users?
- Which sectors and players should be involved in program implementation and how could different models be successfully put into practice?
- How can federal and provincial governments work together to ensure the quality of programs?
- How can effective monitoring and assessment take place?
- How can federal and provincial governments provide appropriate guidance relating to nutrition, donations, and other program aspects?
- How can a Canada-wide Program avoid food and packaging waste?
- How do we ensure that a program does not include brand or product marketing to children?
- What costing models should we explore to inform a program for Canada?
- How can we encourage local food procurement?

- How can food literacy education complement and build on the provision of meals and snacks?
- How can a Program support openness, inclusion and equity?

It's an exciting time for school food programs across the country. We encourage you to join the momentum.

Debbie Field is the **Coordinator of the Coalition for Healthy School Food.** Debbie has been involved in promoting and improving school food programs for decades. A longstanding community activist in a variety of social movements, Debbie believes passionately in the power of grassroots campaigning. Debbie is also an **Associate Member, Centre for Studies in Food Security**, Toronto Metropolitan University. Debbie has an honour's B.A. in Sociology from Trent University, a Masters in Adult Education from the Ontario Institute for Studies in Education and an Honorary Doctorate of Laws from York University.

Carolyn Webb is the Coordinator of Sustain Ontario's Edible Education Network and supports communication and animation with the Coalition for Healthy School Food. She has spent the last 10 years facilitating knowledge sharing, resource development and advocacy relating to school food across the country. Carolyn has a BSc in Environmental Sciences from the University of Guelph and a Master's degree in Adult Education and Community Development from OISE at the University of Toronto. She is passionate about enabling collaboration and collective efforts that support people and the planet.

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Field Report

The good, the bad, and the ugly of COP26: A conversation with two food sovereignty activists

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Abstract

The 26th UN Framework Convention on Climate Change (UNFCCC) COP (Conference of Parties) took place in Glasgow, Scotland in November 2021 amidst intersecting global crises. The rising number and intensity of unprecedented extreme weather events in many countries, increased knowledge about industrial agriculture's significant emission contributions to the climate crisis, and the vulnerability of the global food system in the wake of COVID-19 shocks should have positioned food and agriculture as priority items on the agenda. Yet, agriculture and food systems played only a minor role in COP26 negotiations, and vaccine apartheid limited the presence of the food sovereignty movement and broader grassroots voices in Glasgow. Corporate co-optation and flagrant greenwashing via net zero and false solution narratives dominated, yielding watered-down outcomes instead of the bold actions needed to tackle the climate crisis. In this report from the field, two food sovereignty activists dissect the accessibility of the official COP26 spaces and demonstrate how the negotiations failed to meaningfully integrate grassroots demands related to ecologically and socially just food and agriculture policy. They also reflect on their experiences in civil society-led spaces that fostered social movement building outside the doors of the official UNFCCC conference. It was in these interactions that activists wove threads of hope across sectors, social groups, and movements seeking climate justice.

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Résumé

La 26e Conférence des Parties (COP) de la Convention-cadre des Nations Unies sur les changements climatiques (CCNUCC) a eu lieu à Glasgow, en Écosse, en novembre 2021, dans un contexte de crises mondiales entrelacées. L'augmentation du nombre et de l'intensité des évènements météorologiques extrêmes sans précédent dans plusieurs pays, la reconnaissance croissante de la contribution des émissions de l'agriculture industrielle dans la crise climatique ainsi que la mise au jour de la fragilité du système alimentaire mondial sous le choc de la COVID-19 auraient dû rendre l'alimentation et l'agriculture prioritaires dans l'ordre du jour. Pourtant, l'agriculture et les systèmes alimentaires ont occupé une place mineure dans les négociations. De plus, l'apartheid vaccinal a restreint la présence à Glasgow du mouvement de la souveraineté alimentaire et des voix citoyennes. Ont dominé la cooptation d'entreprises et l'écoblanchiment flagrant au moyen de narrations sur la consommation nette zéro et les fausses solutions, ce qui a donné lieu à des résultats dilués plutôt qu'aux actions ambitieuses requises pour combattre la crise climatique. Dans cette étude de terrain, deux activistes de la souveraineté alimentaire décortiquent l'accessibilité aux espaces officiels de la COP26 et démontrent comment les négociations ont échoué à intégrer de manière significative les demandes citoyennes en matière d'alimentation écologique et socialement juste, et de politiques agricoles. Les auteurs illustrent aussi leurs expériences dans les milieux civils qui ont permis la construction d'un mouvement social en dehors des murs officiels de la conférence de la CCNUCC. C'est dans ces interactions que les activistes ont tricoté des mailles d'espoir entre les domaines, les groupes sociaux et les mouvements pour la justice climatique.

Keywords: Food sovereignty; climate justice; COP26; climate crisis; social movements

Introduction

The 26th UN Framework Convention on Climate Change (UNFCCC) COP (Conference of Parties) took place in Glasgow, Scotland in November 2021 amid intersecting global crises. The ongoing global pandemic coupled with unprecedented extreme weather events in many countries have tipped the globe off its axis, clearly pointing to the need for swift and comprehensive action by policymakers. Nature was yelling *Basta!* and hundreds of thousands of people involved in climate change marches around the world, along with hundreds of scientists, were making their voices heard. Many hoped that, at COP26, government representatives would no longer deny that immediate and meaningful climate action was acutely necessary. The vulnerability of the global food system in the wake of COVID-19 shocks combined with increased knowledge about industrial agriculture's significant emission contributions to the climate crisis positioned it as an important feature of the UNFCCC proceedings. Yet, agriculture and food systems played only a minor role in COP26 negotiations, and vaccine apartheid limited the presence of the food sovereignty movement in the official and alternative conference spaces. COP26 was a conference of exclusion, opening the doors to

heightened corporate co-optation and flagrant greenwashing via net zero and false solution narratives. Ultimately, the negotiations did not yield the bold actions needed to tackle the climate crisis.

This report from the field discusses the grassroots experiences of two representatives of La Via Campesina (LVC) member organizations at COP26. Jessie MacInnis, a small-scale farmer from Unceded Mi'kma'ki (Nova Scotia), attended the conference with a delegation from the National Farmers Union of Canada (NFU), a founding member of LVC. Roz Corbett is also a small-scale farmer in Scotland and attended as both a coordinator and member of the Landworkers' Alliance (LWA), a United Kingdom (UK)-wide movement that acted as host for fellow LVC member organizations. In this conversation, Jessie and Roz dissect the accessibility of official COP26 spaces and demonstrate how the negotiations failed to integrate meaningfully grassroots voices and demands related to ecologically and socially-just food and agriculture policy. They also reflect on their experiences in civil society-led dialogues and resistance actions that fostered social movement building outside the doors of the official UNFCCC conference. It was in these spaces that threads of hope were woven together across sectors, social groups, and movements seeking climate justice.

Annette: What prompted you to participate in the COP26? What were your goals and hopes in participating in this conference?

Jessie: As an agroecological farmer, I was driven to advocate for farmer-led agriculture policy change in Canada and bring to the attention of policymakers and civil society alike that current dominant food systems must undergo radical transformation to minimize agriculture's impact on global climate change. I am not alone in having my farm affected by an increasing frequency of extreme weather events, nor in the grief I feel when I see the impacts of the climate crisis on peasants, farmers, and Indigenous Peoples around the globe. I wanted to attend COP26 to help raise the alarm about industrial agriculture's role in the climate crisis and to highlight that within agriculture, we must turn to agroecological solutions to protect both our communities and ecosystems and grow resilience from the ground up.

I also wanted to participate in shedding light on the distinct lack of attention being paid to food systems in UNFCCC negotiations. When food/agriculture is discussed, the narrative is overwhelmingly based on productivist agriculture models, led by corporate-led false solutions and market-based net zero schemes. Since its inception, LVC has been struggling against the corporate capture of food systems, globalized markets, and some UN processes. COP26 is not the only UN process infiltrated by corporate capture, as evidenced earlier this year when we witnessed the UN Food Systems Summit (UNFSS) unfold as a caricature of a truly democratic process. Corporate stakeholders and their allies are aggressive in pushing market-based policies ahead of rights-based ones: public-private partnerships are on the rise, while core human rights mechanisms are being underfinanced and weakened (TNI, 2019).

I wanted to be at COP26 to bear witness and call attention to the unraveling of democratic processes in the UN, which threatens not only to break down the fragile democratic, rights-based institutions we do have, but also, more specifically, to increase struggles for food sovereignty. We must keep a critical eye on how corporate narratives are hijacking what little space agriculture occupies in UNFCCC negotiations. Transnational corporations are fearful of how real climate solutions would impact their bottom lines, so they co-opt concepts like agroecology to give their

narratives more legitimacy with governments. We need to understand their strategies and platforms in order to mobilize effectively on the ground in our own regions as well as at global conferences like this one. We need to advocate for multilateralism.

Roz: From a young age, I've been interested and actively engaged in how people can work together collectively with, and as an integral part of, their ecological systems. My upbringing has given me a deep love for and interconnection with my surrounding environment, and my climate activism comes from this—from seeing how climate change has impacted my local environment and is also exacerbated by dynamics of power and capital. I came to be a farmer as a powerful way to manifest my climate activism, following the philosophy of being the change that you want to see. Building local food systems based on agroecological principles is a solution to the climate crisis in many ways. This locally based work only fully makes sense to me when it's situated within a global and internationalist context. The food and farming system that we have in the UK is built on a legacy of colonialism and exploitation, which continues to this day (Lang, 2020). This history must be a central part of how we think about climate change and how we build a climate justice movement.

Glasgow has been my home for nearly ten years now, and much of my analysis of COP26 is based on this place-based knowledge and interest in how the geographic location impacts and is impacted by a roving international conference. The announcement that COP26 was to be held in Glasgow made participating an obvious choice, and it felt important to use the opportunity strategically to strengthen grassroots climate justice and food sovereignty organizing in Glasgow and Scotland. The opportunity to make meaningful connections between movements in Glasgow and Scotland and globally was an important goal for me because this is how I understand you can strengthen solidarity and build effective resistance to corporate control of our lives and livelihoods. The last two years have been isolating for many people; meeting and connecting with international food sovereignty activists gave a strong boost to our organizing in the UK.

Annette: For nearly fifteen years, LVC has actively engaged in climate change debates and processes. Can you describe La Vía Campesina's presence in Glasgow?

Jessie: This was my first COP experience. My vaccine status, white privilege, English-speaking abilities, and country of origin played an integral role in my ability to attend COP26, as these attributes allowed for easier access in all stages of the conference application process. That these characteristics allowed for easier access to a UN event is deeply problematic: everything we discuss in this interview must be understood in the context of that exclusivity.

With COVID-19 still wreaking havoc around the globe, ongoing vaccine apartheid, and restrictive border access to the United Kingdom, LVC decided for political reasons not to send a formal delegation of peasant leaders. Members of LVC organizations who attended did so via their member organizations. Our small group of fourteen international delegates—representatives from the NFU, Organización Boricua (Puerto Rico), AbL (Germany), Confédération Paysanne (France), and COAG (Spain)—plus nearly 100 local members from LWA, organized together in Glasgow to advance food sovereignty and agroecology. LWA leaders and staff were key in facilitating logistics, renting an event space for the duration of the conference to ensure all in LVC and the wider food

sovereignty movement had a place to organize, gather, share meals, strategize, plan actions, and debrief daily. We also shared this space with other movement activists, such as It Takes Roots and a delegation of Zapatistas as part of their Europe-wide speaking tour.

Despite the size of our group, the food sovereignty movement played a significant role in broadening the climate justice narrative within social movement spaces during the conference. In the context of climate justice, LVC posits that peasant agroecology and food sovereignty together can reduce emissions, while realizing the rights of all peoples and the planet; food systems based in food sovereignty and localized markets and fed by peasant agroecology can offer transformative societal change, while reducing carbon emissions, moving through a just transition to "real zero" instead of net zero (LVC, 2021). Food sovereignty and agroecology cannot be imposed from above, as they are inherently grassroots-led, democratic concepts. These foundational pillars of LVC are what brought our group together in Glasgow and form the basis for LVC's wider global struggle against global capitalism, colonialism, and patriarchy.

Climate justice is only one theme with which LVC engages at the UN. Peasants' rights, youth agency, Indigenous rights, agroecology, the rights of women, gender diverse, and LGBTIQ+ peoples are among others that come to mind. It's easy to become fatigued with UN processes like the COP, where so much passion and effort is exerted to push for actionable change and justice. But having LVC presence in UN spaces is critical. Social movements are most influential in advocating for human rights and social and political narrative shifts when they speak with their own diversity of voices.

Roz: It is difficult for me to compare COP26 with previous COPs, having only attended COP25 in Madrid, where convergence spaces were held in universities and social centres with the capacity for thousands of people to gather. It was a rich experience for me in Madrid, learning from Indigenous leaders, activists, and researchers alike. The quality of meeting, exchange, and ability to be vocal in debates and discussion with many different organizations was much easier in these physical spaces. In Madrid, I also had the opportunity to meet LVC members from Africa and Asia who brought critical experiences to COP25 negotiations. It impacted the power of our voice not to be able to have such in-person attendance in Glasgow.

In Glasgow, the People's Summit and other movement spaces were spread across the city at many different, smaller venues. This was partly a decision by the organizers to help minimize COVID risks, partly logistical because some of the larger key community venues in Glasgow were closed for renovations for over a year and delayed reopening because of supply chain problems in the construction industry exacerbated by COVID and Brexit; and also partly political, with some venues choosing not to host "radical" groups or experiencing thinly veiled pressure from the police and the local council. Since the Peoples' Summit venues were organized by theme—Trade Unions, Indigenous People, Agroecology, and so on—we became a bit siloed as a result. I spoke to many organizers afterward who lamented never being able to leave their venue, and I shared that same sense of frustration, knowing that there is so much to learn from different groups across the climate justice movement, from trade union tactics to deep understanding of reparations campaigns by Indigenous groups. However, having an agroecology hub at COP26 did mean that members of LVC and other food sovereignty activists had a space to meet and learn and strategize, which was invaluable for the LVC members who attended, as it allowed us to organize

collectively and effectively helped to strengthen LVC's voice.

It's also important to understand COPs not as annual events, but rather as ongoing processes. Each year the conference moves to a different country, so a different climate justice movement takes up the baton of organizing. LVC's presence and visibility in the preparations always depends on the strength of the local organizations, their capacity to organize, and assessment of political importance of engagement in establishing social movement spaces. For example, COP21 in Paris was a very strong moment for LVC because Confédération Paysanne was able to mobilize many of its members in a powerful way. Organizing in the run up to COP26 in Glasgow and in the context of COVID was extremely challenging, confusing, and tiring. Dealing with a constant high level of uncertainty was hard. COP25 in Madrid was pre-COVID, and I was able to meet some key organizers of what would become the COP26 Coalition back then to help build initial relationships. We met again in December 2019 and January 2020 in Glasgow and London to build the work of the coalition and the Peoples' Summit, but, after that point, all our organizing moved online. This move impacted those who participated, excluding many without digital access, and affected important processes of trust building. Waves of digital fatigue were palpable at times, and we couldn't engage in some LVC practices, such as *místicas* and sharing food, that are so central to building understanding and solidarity.

Annette: Over the years, LVC has adopted various strategies depending on what global institution it is dealing with. At times, it works exclusively on the outside. For example, with the WTO, LVC opted not to negotiate and instead mobilized resistance out on the streets. At other times, it works from both the outside and inside. Can you tell us about what it was like to work on the inside at COP26? Did you see any potential in working in the Blue Zone, the main COP26 venue?

Roz: Once inside the huge conference centre where the official COP26 was held, there is the task of navigating the different areas—state exhibition areas, side event rooms for press conferences, plenary areas, negotiation areas closed to most attendees, media hubs. It's interesting to spend time walking around all the different areas and witnessing what the overall conference was like. Many spaces were dominated by corporate sponsorship and advertising opportunities, including display stands with F1 electric racing cars, Virtual Reality tasters, and vertical farms with wilting microgreens. The whole conference has a very corporate feel with thousands of corporate sector attendees. It's important to note that many corporate sector attendees were given access by their governments as "Parties" rather than observers. As Anthony So (2021) explains, "Participants from individual countries ('Parties') can take part in negotiations, while *observers* are permitted to make statements, hold side events and exhibits, provide written submissions on various issues under negotiation, and provide informal expert advice during workshops and intersessional meetings." Examining the attendee list after the event shows how several corporate bodies in the food industry, including Unilever, that attend as official state representatives are given preferential access and greater power in the negotiation process.

To navigate it effectively, we decided on some strategies, including raising the profile of agroecological farming within the Farmers Constituency—a group that is recognized by the UN and able to give formal statements in some negotiations. But, even with this focus, it was still challenging and chaotic. Some constituency meetings couldn't proceed because people

were stuck in queues outside. We were able to nominate an LWA person to deliver the statement of the Farmers Constituency in the opening plenary, which we expected to be at 3:00 pm but was delayed until 10:00 pm.

The possibility of influencing the negotiations directly during COP is really limited, with considerable influence being wielded and decisions happening before the conference, or well out of the way of direct observation. LWA attended for other objectives—both longer-term and wider ones—than influencing the immediate negotiations. These were effectively to disrupt norms and push at the edges with the intention of opening space in the future for food sovereignty positions to gain more traction. This was in part the logic behind investing more time in the Farmers Constituency—to disrupt the dominance of the World Farmers Organization (WFO) in the organization of the constituency group and push at the edges of how it works from the inside. This was felt strongest with Marissa's speech, to which she brought a political analysis to her personal experience as a peasant farmer and challenged whether it is possible for all farmers to speak with one, albeit heterogenous, voice.

Jessie: Let me add to Roz's comments about the challenges of working within the Farmers Constituency. In theory, it has the potential to be an effective forum in which farmers of all scales and production types may participate, since it is one of several observer-led spaces where different sectoral and/or cultural groups organize to deliver shared analysis and input toward UNFCCC negotiations and initiatives. The Farmers' Constituency was created in 2015 and was key to pushing the terms "food security" and "food production" into the final negotiation of the Paris Accord. However, the WFO has controlled the chair since then. At COP26, the WFO continued to organize this space and ensure all statements made on behalf of the constituency maintained a food security narrative. According to the constituency's terms of reference, the focal point role (effectively, the chairperson) will always be elected by the WFO, leaving little room for LVC or other members of the food sovereignty movement to play a leadership role.

Our involvement with this constituency provided at least one major opportunity for voicing the shared struggles of peasants in LVC. On November 11th, a people's plenary in the main plenary hall was organized to bring together all the active constituencies. LWA nominated Marissa Réyes-Diaz to deliver an address on behalf of the Farmers' Constituency. Marissa spoke eloquently about her personal experience as a peasant farmer working to uproot colonial structures and demand land back for farmers in Puerto Rico. She emphasized that, within the Farmers Constituency, there are many different types of farmers with varying practices, and that, for peasant farmers, agroecology and food sovereignty are the real solutions in addressing climate change and food insecurity (Réyes-Diaz, 2021). She informed a packed plenary hall that the "agrifood system needs to be in the hands of the people, and not a handful of agribusiness corporations" (Ibid, 2021). The constituency speeches were followed by a mass civil society walk out, demonstrating our displeasure with the state of negotiations and lack of meaningful commitments by states.

Feeling both drawn to the Blue Zone out of necessity to give voice to food sovereignty, while feeling grief-stricken by the power of corporate co-optation and greenwashing of climate solutions, we sought creative ways to give visibility to LVC demands. On November 9th, we organized a direct action to call out false solution narratives, drawing the attention of a significant number of busy delegates and observers. During the action, we all wore Xs made of black tape

on our face masks to demonstrate how we were being silenced by COP26 processes, while corporate agribusiness took centre stage. We also attended as many corporate-led initiative launches and side events as we could, drafting statements during the panels to present critical interventions during question-and-answer periods. We engaged with the media as much as possible and cornered our respective national government delegates at every opportunity to inquire about how grassroots voices and human rights are being included in climate policies and initiatives. We felt a collective responsibility to challenge COP26 processes and disrupt the many branches of power from within.

Annette: What do you see as some of the key dynamics and challenges that are making it increasingly difficult for food sovereignty movements to engage in UN spaces? Were any of these clearly evident at COP26?

Jessie: Prior to COP26, many civil society organizations and movements voiced dismay at the lack of governments' political will—a will that is necessary to drive actionable change. I certainly understand civil society's frustration with UN processes, especially as of late. A rise in "multistakeholderism" could have something to do with this: it is essentially the allowance of donor-led philanthropic organizations and corporations to play major roles in what is an evolving form of global governance (TNI, 2019). It allows stakeholders to become central actors in policy processes without any clear procedure defining who these stakeholders are and differs from multilateralism, whereby governments make final decisions on global issues (Ibid, 2019). Because there are no agreed upon definitions for stakeholders at the UN, in theory any person or entity has a right to involvement, regardless of power imbalances or questions of legitimacy (Ibid, 2019). The bottom line is that the greater the number of stakeholders around the table, the weaker the influence of elected governments will be.

Of course, this is not to say that multilateralism has been necessarily successful in achieving outcomes—it also requires a deep rethinking. Multilateral processes—and the non-binding nature of UN negotiations—have struggled to achieve the implementation of basic human rights, solve global challenges, and invoke political will to act. However, in the absence of viable alternatives, multilateralism must be protected.

Although unfolding behind closed doors and via soft power channels for years, this shift to multistakeholderism has become more visible since 2019, with the formation of a World Economic Forum-UN partnership prior to the UNFSS. I recently read a very interesting paper by scholar activists in which they argue that, in calling for this "inclusive" summit "in which philanthropies, transnational corporations, and civil society were invited to participate on equal footing," the UN Secretary General used his power to move away from a multilateral process to initiate a restructuring of international governance, whereby states lose power and legitimacy while the position of corporate and philanthropic interests is strengthened (Montenegro de Wit et al., 2021, p. 154). This raises profound concerns from civil society about the impossibility of "equal footing" when power imbalance is severe (Ibid, 2021). Clearly, we need to challenge multistakeholderism to preserve the integrity of UN processes and ensure human rights—not capitalist markets—are the foundation of negotiations.

Following the UNFSS, it is unsurprising that private-public partnerships led the few food and agriculture-related pledges and initiatives launched during COP26. Two that stood out were the Agriculture Innovation Mission for Climate (AIM4C) and ClimateShot: both are led by powerful neoliberal

states, financed by mega-philanthropies, and guided by agribusiness innovations. AIM4C is a joint $4 billion initiative created by the United States, United Arab Emirates, fossil fuel corporations, and agri-chemical corporations that seek to "address climate change and global hunger by uniting participants to significantly increase investments in, and other support for, climate-smart agriculture and food system innovation" (AIM4C, 2021). Their intention is to accelerate investment in "technological breakthroughs" for agriculture. The initiative includes "innovation sprints," fast-tracked investments in collaborations between players like CropLife International, Gates Foundation, PepsiCo, McDonald's, and more. The AIM4C is a renewed commitment by oil-producing states and philanthropic organizations to fund research and development of "climate smart" agriculture (CSA). They frame increasing investment in "climate smart" technological innovations as the ultimate solution to the climate crisis in the agriculture sector. ClimateShot follows a similar narrative to AIM4C with respect to a focus on CSA-based objectives and funding initiatives. Led by the United Kingdom, Australia, World Wildlife Fund, Syngenta Foundation, Bayer, and CGIAR (Consultative Group on International Agricultural Research), among others, it bills itself as an "agricultural innovation race to save our planet" (ClimateShot, n.d.).

However, CSA, a term first promoted by the World Bank in 2009 and championed by the Food and Agriculture Organization and agribusiness corporations, is a top-down buzzword rooted in the idea that technological innovation is the only way forward, ignoring the demands and knowledge of Indigenous peoples, small-scale farmers, family farmers, peasants, migrant workers, and landless peoples. By putting more power in the hands of private investors, resources are being diverted away from grassroots-led agroecology initiatives and solutions that both lower emissions and work toward food sovereignty (ETC Group, 2021).

Annette: Often, the counter-conferences are where the most interesting work occurs. New alliances are formed, there is much creativity and many solutions being explored, and so on. What did you find most interesting about the People's Summit at COP26?

Jessie: I found hope and resilience at the People's Summit. It was a space for movement building, not only within LVC, but also across other social movements gathered in Glasgow. The counter-conference was a unique space for a whole lot of cross-sectoral pollination, where movements and organizations had opportunities to learn from one another horizontally, march together, and share collective strategies for challenging current dominant economic and political systems from different perspectives. It was fascinating and inspiring to see these movements—from Indigenous land defenders and disability rights advocates to climate science researchers—converge under the banner of climate justice. It may seem obvious, perhaps idealistic, but the power in this convergence is palpable. When we understand one another and gather a deep and collective understanding of how marginalized peoples face multiple forms of discrimination via the structures of colonialism, imperialism, and patriarchy, and then we commit to working together to dismantle these structures, the strength and power of grassroots movements multiplies.

To combat narratives related to net zero and false solutions, we must have a shared understanding of how to halt the climate crisis from multiple, intersecting angles. A just transition rooted in solidarity requires

food systems transformation rooted in food sovereignty, but it also requires broader transformation of political economies that are structured to marginalize social groups, steal land, and take advantage of human labour. Cross-sectoral movement building is key for climate justice, and LVC already engages in movement building with allied organizations. However, these relationships constantly evolve, and prior to the next COP we must evaluate how to best use our strengths as a movement to contribute to the wider struggle against the corporate capture of climate solutions through a collective strategizing process.

It was interesting for me to see, first-hand and for the first time, how the food sovereignty movement is recognized in the wider climate justice movement. Some say that LVC differs from other social actors (namely environmental and development non-governmental organizations and urban social movements), as it gives voice to many on the frontlines of climate change while framing climate justice discourse and struggles through food sovereignty (Claeys, Delgado, 2017). This may have been true a few years ago, but my impression from COP26 was that diverse, grassroots social movements are giving voice to their own distinct frontline experiences, many approaching cross-movement spaces with their own framing. There was a distinct emphasis on LVC's framing of food sovereignty as the pathway to food systems transformation within the climate justice narrative, but simultaneously, workers' movements were advocating for a just transition, and Indigenous movements approached climate justice through an Indigenous rights frame. The coalescence of these frames and how different movements adopt one another's demands into their strategies are a testament to the fluidity and strength of civil society's approach to climate justice.

Roz: One of the most positive aspects of the social movement work has been around strengthening migrant justice and racial justice as an essential part of climate justice. Glasgow has a strong migrant justice and asylum seeker movement, partly because the UK Home Office (Scottish branch) is based here, and the only detention centre in Scotland is just south of the city. So many asylum seekers are housed in Glasgow. It is also the most ethnically diverse area of Scotland. This context and strength of local movements was important to the shaping of alliances and exploration of solutions. Both in the run up to and during COP26, an incredible amount of work was done with and by some of the grassroots migrant justice groups in Glasgow to explore what climate justice means for them, platform their campaign work, and bring a stronger anti-racist element into climate justice organizing. LWA also organized a session as part of the Peoples' Summit on migrant justice in agriculture and found it a valuable opportunity to build our campaign work in this area at a critical time for migrant agricultural work because of changing immigration and visa systems as a result of Brexit. To this day, some of the relationships with migrant justice groups and climate justice groups in Glasgow continues as a legacy of COP26—with climate activists joining migrant justice groups on December 20, 2021, to lock themselves onto the Home Office building in Glasgow to protest the Nationality and Borders Bill passing through the House of Commons.

Annette: To conclude, what are the key lessons learned from your experience at COP26? How do we prepare for the next COP?

Jessie: The spaces where social movements converged and overlapped at COP26 is what stays with me the most, particularly in relation to navigating climate justice at home. Advocating for better agriculture

policies that help farmers better adapt to and mitigate the climate crisis is key, but our efforts are fraught if we don't engage with wider discussions of racial justice and Indigenous rights here on Turtle Island (for Indigenous Peoples, Turtle Island refers to the continent of North America). We can't hope to fight the climate crisis within our own issues, in our own sectors—broad-based, cross-sectoral collective struggle is the only way forward, and this was consolidated for me after COP26. For farmers, this means self-education about settler farmer responsibility in relation to Indigenous rights. It means solidarity as a verb, not a noun. It means having challenging conversations about our definitions of land and food sovereignty compared to Indigenous land and food sovereignty, and incorporating those conversations into our movement work, our farms and communities. This is not easy work, but necessary, and ultimately, I think it's our only path forward. If we, as farmers, consider ourselves people of the land, we must fundamentally understand and uplift the land-based relationships and traditional knowledge of Indigenous peoples.

Something LVC can bring to its preparations for the next COP is incorporating a peasants' rights frame into the climate justice movement. As a piece of international human rights law, the UN Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP) is not only a tool with which communities can make rights claims, but also something we need to activate in policy-making spaces to strengthen food sovereignty objectives. Human rights are a key missing piece from many of the initiatives and pledges we saw announced at COP26: rights-based policies inherently counter market-based profiteering and do not fit into stakeholder approaches to governance systems. Through UNDROP, LVC can and is holding governments accountable not only for their human rights obligations and responsibilities as related to peasants and rural peoples, but also for their roles in democratic, multilateral policy processes in the UN system.

Roz: As the geography shifts again to another place, different people with different local struggles will come on board to organize for COP27 scheduled to take place in Egypt in November 2022. It will be a challenge to organize in Egypt—the spaces for social movements will be tightly regulated, and this will be exacerbated by ongoing waves of COVID-19. What this shifting geography means when organizing is increasingly done online is a huge question for the climate justice movement. The North Africa and Middle East region of LVC is emergent, and so this may be an important point to add strength to organizing for that region. Deciding how LVC will prepare for the next COP is a collective process of analysis and discussion that takes place within LVC, honouring solidarity and the decision-making processes of the international collective and local organizations.

One major positive in COP26 was how many organizations put aside differences to organize together. It was an important moment of unity. That is not to say that differences were not hotly debated, but rather that they were done so within the context of a wider goal. And we saw some wins of the strength of this unity as a result—for example, the First Minister of Scotland removing her support for the new Cambo oil field in Scotland shortly after the conclusion of COP26. Resourcing the work of social movement building is critical and was a huge struggle for COP26 given postponement; it is a place where academic institutions could have added more support. The bridge between academia and activism provides many opportunities to build solidarity with people who are on the forefront of the climate crisis. So, I pose a question for academics and students reading this—how might academia

challenge corporate capture of climate negotiations, and/or strengthen solidarity with and within the climate justice movement? Many things still seem obscure to me in relation to COP26—how did Glasgow City Council benefit financially and what impact did this have on residents? How can we increase scrutiny and transparency of corporate representatives often acting as "parties" in the negotiations, and what impact does this have on state positions in the negotiation processes? Research must play a strong role in increasing transparency and understanding the impact of the operations of corporate power and flows of capital around COP processes.

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Original Research Article

COVID-19: First wave impacts on the Charitable Food Sector in Manitoba, Canada

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Abstract

The first wave of the COVID-19 pandemic led to significant socioeconomic changes in Canada due to business and school closures, and related job losses. This increased food insecurity among vulnerable populations, as well as many who had not been previously food insecure, placing unprecedented demand on charitable food organizations. This study documented the pandemic's impact on charitable food organizations in Manitoba, Canada during the first wave in spring 2020. Using a multi-method design, data on pandemic-related program challenges and newly implemented policies/procedures were collected from: food bank organization websites and Facebook pages; online news media outlets; and semi-structured interviews with food organization leadership. Inductive thematic analysis was used to identify emerging patterns and themes. Second level coding was used to integrate data from different sources. Six challenge themes emerged: *increased need for services; acquisition and distribution of food supply; staff and volunteer resource management; emotional vulnerability of staff, volunteers, and clients; difficulties with internal and external communications; and lack of structural supports.* Five policy/procedure themes emerged: *program and service delivery changes; finance and administrative changes; safety protocols; advocacy for resources and community engagement; and changes to paid and volunteer staffing.* The first wave of COVID-19 had a significant impact on the Manitoba charitable food sector. Food banks re-configured programs

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to meet client needs amid shifting public health directives, with diminished resources, rising demand, and insufficient government support. Despite the resiliency of community food organizations during the pandemic, the status quo with respect to addressing food insecurity is inefficient and inadequate.

Résumé

La première vague de la pandémie de COVID-19 a mené à des changements socioéconomiques considérables au Canada en raison des fermetures de commerces et d'écoles et des pertes d'emplois concomitantes. Cela a augmenté l'insécurité alimentaire pour les populations vulnérables ainsi que pour plusieurs personnes qui n'avaient jamais été dans cette situation auparavant. La demande auprès des organismes d'aide alimentaire en a été sans précédent. Cette étude a documenté l'effet de la pandémie sur les organismes d'aide alimentaire au Manitoba, Canada, durant la première vague, au printemps 2020. À l'aide d'une méthode multiple, les données sur les défis des programmes liés à la pandémie et les nouvelles stratégies et procédures mises en place ont été collectées à partir des sites Web et des pages Facebook des banques alimentaires, des sorties dans les nouvelles des médias en ligne et des entretiens semi-structurés avec des responsables d'organismes alimentaires. L'analyse inductive thématique a été utilisée pour repérer les tendances et les thèmes récurrents. Le codage de second niveau a été utilisé pour intégrer des informations de différentes sources. Six motifs de défi en sont ressortis : *l'accroissement des besoins vis-à-vis des services*; *l'acquisition et la distribution des denrées*; *la gestion du personnel et des bénévoles, la vulnérabilité émotionnelle du personnel, des bénévoles et de la clientèle*; *les difficultés de communication interne et externe*; et *le manque de soutien structurel*. Cinq thèmes concernant les stratégies et les procédures ont aussi émergé : *les changements dans les programmes et les services de livraison*; *les changements sur les plans administratifs et financiers*; *les protocoles de sécurité*; *la revendication de ressources et l'appel à l'engagement de la communauté*; et *les changements sur le plan du travail payé et bénévole*. La première vague de COVID-19 a eu un effet important dans le secteur alimentaire caritatif. Les banques alimentaires ont reconçu leurs programmes pour répondre aux besoins de leur clientèle tout en s'adaptant aux directives changeantes de la santé publique, et ce, avec des ressources réduites, une demande accrue et un soutien gouvernemental insuffisant. Bien que les organismes communautaires à vocation alimentaire aient fait preuve de résilience durant la pandémie, en matière de gestion de l'insécurité alimentaire, le statu quo est inefficace et inadéquat.

Keywords: COVID; pandemic; charitable food; food security; food banks

Introduction

COVID-19 was declared a pandemic by the World Health Organization (WHO) on March 11, 2020. This coincided with the advent of the first wave in Canada, which peaked mid-April 2020 (Government of Canada, 2021b). Swift public health responses, including lockdowns (for example, business and school suspensions and closures), physical distancing, and other measures were introduced to mitigate the spread of the virus during the first wave (Canadian Public Health Association, 2021), triggering unprecedented social and economic upheaval. Between February and April, Canada's unemployment rate more than doubled to 14%. Labour force participation fell to 60% over the same period, indicating not only mass job loss (primarily in the hospitality, service, and retail sectors), but also thousands of workers who stopped their search for employment (Beland, Brodeur, Mikola, & Wright, 2020b).

These measures, along with public fear and anxiety, led to significant, rapid changes in food acquisition and distribution patterns. Two main trends emerged: first, grocers saw a marked increase in the purchase of food staples (for example, rice, pasta, canned foods) and other items (for example, toilet paper, cleaning products), as some consumers who could afford to do so stockpiled provisions (Statistics Canada, 2020a). Despite governments advising against these practices, the sight of empty store shelves because of supply chain disruptions sparked alarm (Moran, 2020). At the same time, Charitable Food Organizations (CFOs), such as food banks and meal programs ("soup kitchens," for example), were impacted through increased demand from the newly unemployed as well as vulnerable families whose children were no longer receiving meals/snacks at school once schools closed (Annable, 2020).

Despite Canada's food wealth, many citizens face financial challenges in accessing food. Between 2017 and 2018, 12% of Canadian households were considered food insecure, having "inadequate or insecure access to food due to financial constraints" (Tarasuk & Mitchell, 2020). Food insecurity negatively impacts physical, mental, and social health, thereby increasing healthcare costs (Men, Gundersen, Urquia, & Tarasuk, 2020). Vulnerable groups include low-income and single-parent households, renters, northern communities, Indigenous and Black Canadians, and newcomers (Tarasuk & Mitchell, 2020). Notably, many of the same populations have been found to be disproportionately affected by COVID-19 (Statistics Canada, 2020c, 2021). Despite systemic risk for food insecurity, Canada's response has been largely marshalled from a patchwork of services from the charitable sector, in the form of food banks, soup kitchens, and community/school-based meal/snack programs. Consequently, most CFOs rely heavily on donations from consumers; organizations and businesses (food hamper drives and money); and food and other corporations (surplus or unsellable food stocks; tax credits). CFOs represent a continuum of responses to food insecurity in Canada. Some organizations are heavily reliant on corporate charity, which is arguably highly beneficial to corporations in terms of tax breaks and image, and which may obscure problematic labour practices (Mendly-Zambo, Raphael, & Taman, 2021; Riches, 2018). Others are more grassroots, such as Mutual Aid organizations, which rely on more community-based responses (Bettens, 2020; Guthrie, 2020) . Other CFOs are somewhere in between, and some engage in advocacy to address systemic causes of food insecurity (Food Banks Canada, 2019; Harvest Manitoba, 2021). Whatever the source of financial and other resources, this dominant charitable model is

considered a woefully inadequate response to growing food insecurity in Canada (Riches, 2018). Nonetheless, given the lack of structural supports to ensure food security for all, these organizations must be considered key players in the emergency response to COVID.

Donations to CFOs, and their ability to purchase food, are sensitive to external market factors, such as food prices and economic uncertainty, the latter of which has been abundant during the COVID-19 pandemic (Beland, Brodeur, Mikola, & Wright, 2020a; Tarasuk et al., 2014; The Canadian Press, 2016). This is expected to create a vicious cycle, whereby charitable food demand increases as potential donors shift to becoming needy recipients, further reducing food and monetary donations. Additional challenges related to anxiety about, and risk of, contagion and "social distancing" also impact staff, volunteer labour, and programming. This was especially prevalent during the first wave, when COVID-19 transmission dynamics were uncertain (Merow & Urban, 2020). During this period, food banks continued to rely on web and social media platforms to communicate the rapidly evolving changes with their respective communities (Immel, Sipos, Khan, & Errett, 2021).

While food products and packaging were eventually deemed to be unlikely sources of viral transmission (Government of Canada, 2021a), the increased need for charitable food underscores the importance of organizations, such as food banks, as both potential areas of contagion and essential services for growing numbers of Canadians during the pandemic. Food Banks Canada found a significant increase in visits during the spring of 2020, with one quarter of food banks seeing an increase of 25% in March, compared to 2019 (Food Banks Canada, 2020). Major food banks in Ontario and Manitoba reported significant and unprecedented usage during this period (Daily Bread Food Bank & North York Harvest Food Bank, 2021; King & Stewart, 2020). However, how CFOs responded to the pandemic remains unexamined in Canada, to our knowledge. Consequently, there is an urgent need to examine the impact of COVID-19 on CFOs and their organizational responses. For this research CFOs were deemed non-government charitable organizations with a mission to provide food and/or meals to citizens in need, either directly or through a network of agencies, through food banks or other initiatives such as meal programs (for example, soup kitchens). Distinctions were not made between those organizations receiving corporate donations and those reliant solely on community-based resources, or a combination thereof.

Using news media articles, CFO communications (websites and Facebook), and key informant interviews, we sought to do the following: 1) identify the challenges encountered by the charitable food sector during the first wave of the pandemic; and 2) document the policies/procedures *newly* implemented in the charitable food sector in response to these challenges.

Methods

Design

The study employed a multi-method qualitative design (Bryman, 2004). Data was collected from three sources: 1) organizational communications (websites and Facebook posts); 2) news media articles; and 3) key informants (CFO management). A multi-method design was chosen as a means of contextualizing data derived from the interviews with the larger dataset from media sources. This provides a richer, more trustworthy dataset, which allowed the researchers a more in-depth immersion in the topic (Roller, 2016). Analysis was shaped by the policy analysis framework developed by the National Collaborating Centre for Health Public Policy (National Collaborating Centre for Health Public Policy, 2010) to document challenges that arose for organizations and their programming, and corresponding policy/procedural responses to the pandemic. Data were collected concurrently.

Data collection

Organizational communications

We conducted a search for organization communications related to COVID-19 between March 9 and June 5, 2020, using websites and Facebook pages. Organizations were included if they met the following criteria: national umbrella organization supporting food banks; a provincial or territory-level food bank organization; a Manitoba-specific local or regional food bank; and a website or Facebook page with COVID-19-specific communication (Table 1).

Table 1: Food bank websites and Facebook pages included in data collection, by region.

Region	National Food Bank Supporting Organization (n = 1)	Provincial or Territory-level Food Bank Organization (n = 8)	Local or Regional Food Bank Organization (n = 12)
Canada	1		
Atlantic Provinces		1	1
Quebec, Ontario		2	3
Alberta, British Columbia, Saskatchewan		2	3
Manitoba		1	5
Northwest Territories		2	

News media

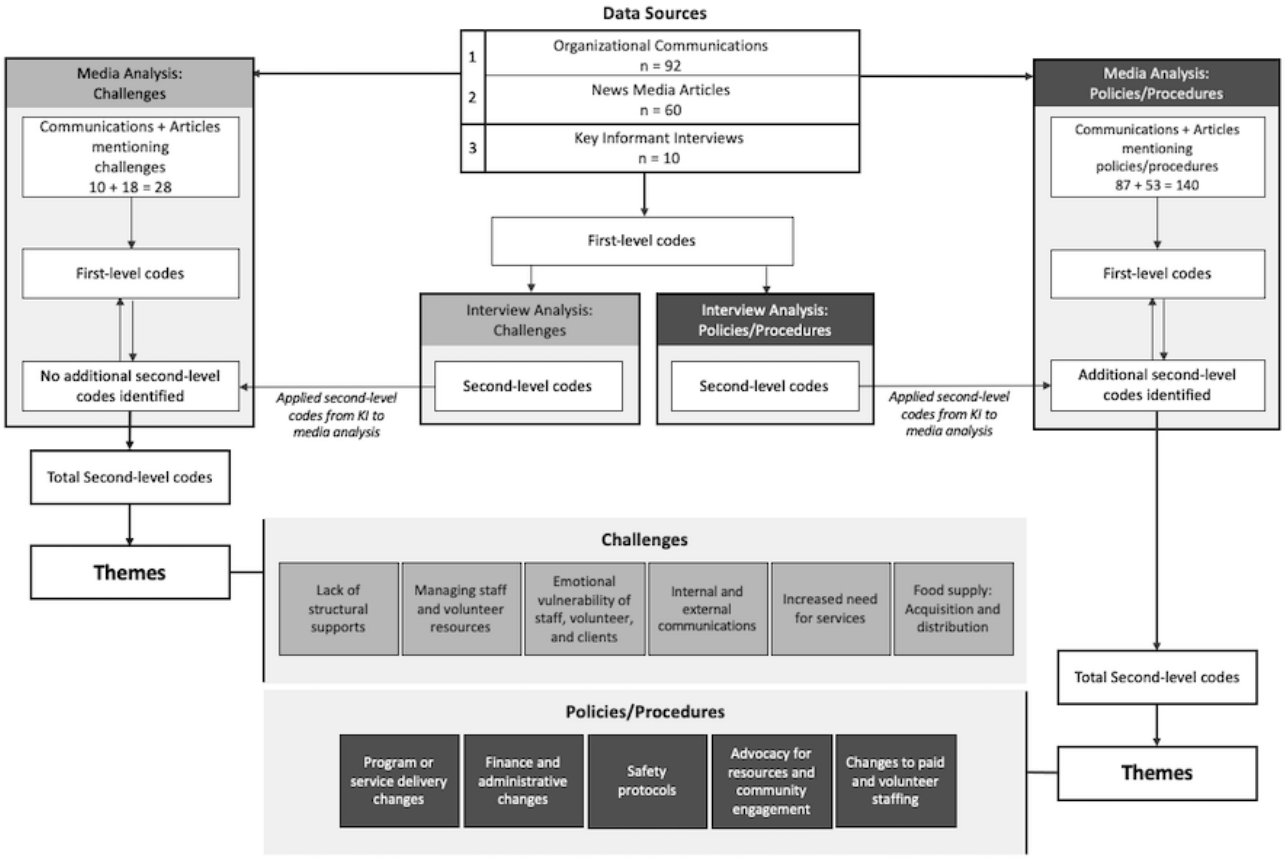
We conducted a systematic search for news media articles related to the charitable food sector and COVID-19 from CBC News, CTV News, Global News, *The Globe and Mail*, and the *Winnipeg Free Press* between March 9 and June 5, 2020. These sites were included because of a national presence and their public availability, with the exception of the *Winnipeg Free Press*, which was included to provide a more local perspective as it is Manitoba's main daily newspaper. We obtained a subscription for the *Winnipeg Free Press*. Each website was scanned daily from March 9, 2020 to March 29, 2020, then twice a week during the rest of the data collection phase. The main page of the website was first examined for articles relating to

COVID-19 and the charitable food sector (COVID-19 pandemic impact on food security, food shortages, food availability, policies, and public opinions). Next, key terms were used in the publication's search function to find additional articles. Key terms used were "food security," "food bank," "charitable," and "meal programs." Candidate articles were then saved and organized according to date.

Key informant interviews

We conducted ten semi-structured interviews with directors/coordinators working in CFOs (nine food banks and one school meal program). Guiding questions focused on operations prior to the pandemic; how prepared they were when COVID started; challenges they faced (for example, how donations were impacted and how public health directives impacted operations); what policies/procedures were implemented; and recommendations they made for the charitable food sector and government. Purposive sampling was employed to recruit individuals working in rural and urban areas of Manitoba. Eligible individuals were contacted by email and/or phone and invited to participate. Phone interviews took place during May and June of 2020 and were recorded digitally, then transcribed verbatim. This data collection was approved by the University of Manitoba Joint-Faculty Research Ethics Board (HS23899 J2020:030). See Figure 1 for a schemata of data collection and analysis.

Figure 1: Data collection and coding summary



Data analysis

All documents and interviews were analyzed thematically, guided by the Framework Method in multi-disciplinary health research proposed by Gale and colleagues (2013). A framework matrix designed in Microsoft Excel was used to manage the media data and assist analysis (Table 2). First, all organizational communications and news media articles were reviewed by two research assistants. A matrix of structured summarized data was created to document the policies, procedures, and challenges identified in the media texts. Each row in the matrix represented a challenge or implemented policy/procedure, and each column represented the data source, including date of publication, organization name, source (social or news media), and description extracted verbatim from text. A first-level code was assigned by the researcher to each entry. Data from organizational communications and news media were added concurrently to the framework. At the end of the data collection phase, each reviewer screened a randomly selected 10% of documents to ensure agreement and consistency in data extraction and reporting. Any disagreement was resolved by consensus with the primary researchers.

Table 2: Framework matrix example

Category	First-level code	Geography	Food Bank	Date (mm_dd)	Description	Reference
Policy	Recruiting younger volunteers	Provincial or Territory	Winnipeg Harvest	03_31	We are actively recruiting younger, healthy individuals, unable to go to university or work, to help keep our warehouse open and food flowing. Be part of one of the most important action groups in the province. If you can help, please fill out an application.	Social media
Challenge	Food supply shortage	Local or Regional	Unemployed Help Centre Food Bank	03_20	June Muir of the Unemployed Help Centre (UHC) in Windsor and the president of the the WEFBA said the region's food banks—including the food bank at the UHC —only have enough supplies to last another ten days. That's cause for concern, especially since Muir said her organization served approximately 190 families on Thursday—approximately 100 more than usual.	News media

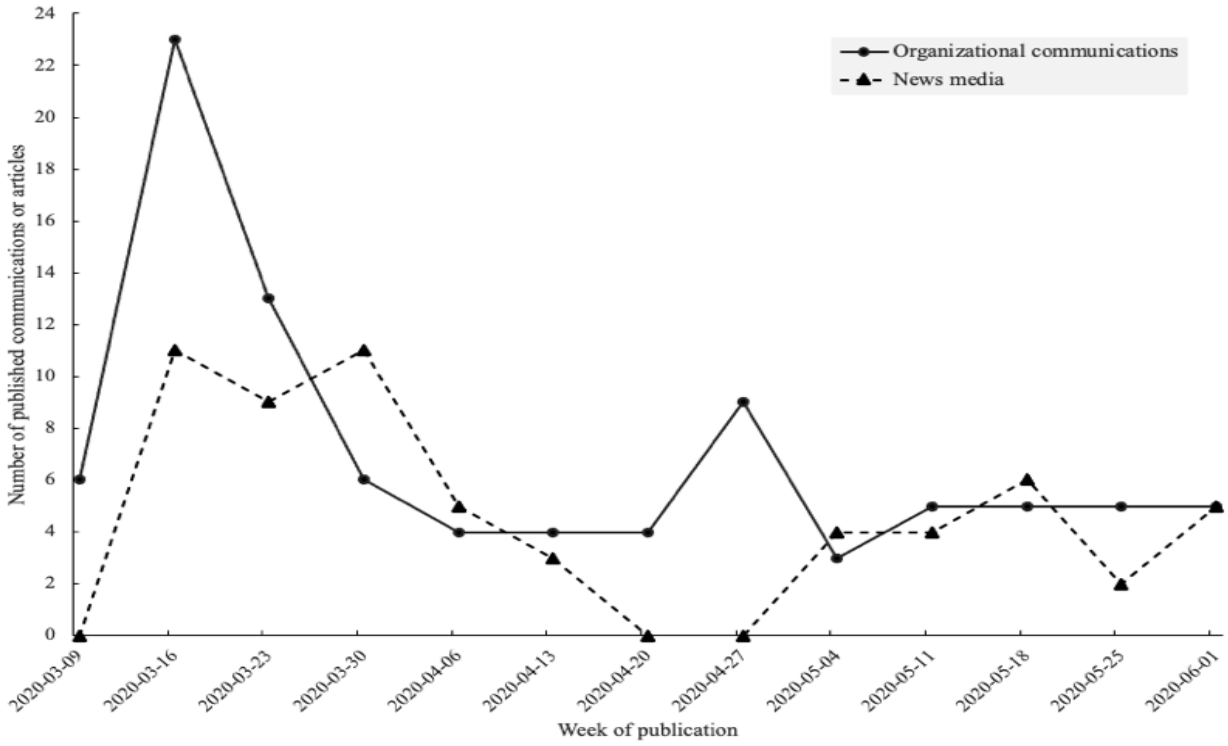
Clarke and Braun's (Clarke & Braun, 2012) thematic analysis method was used to analyze the key informant interviews in order to identify the challenges and newly implemented policies/procedures in response to these challenges. Interviewers independently reviewed the interview transcripts, summarized and extracted relevant statements, and assigned first-level codes. The three interviewers met

regularly to describe and refine code descriptions to ensure consistency in application across the transcripts. The three interviewers and primary researchers met to group first-level codes into second-level codes through discussion and consensus. Second-level codes related to challenges (objective one) were applied to the media analysis framework to explore the need for any additional second-level codes. A similar step was performed for policies/procedures (objective two): first-level codes from interviews were grouped into second-level codes, which were then applied to the media analysis framework to generate any additional codes. The final set of second-level codes for both challenges and policies/procedures were then used to form themes for each study objective. Theming was completed through discussion and consensus-building with the interviewers and primary researchers.

Results

We collected and reviewed a total of 152 social media (Facebook) pages, organizational website communications, and news media articles related to COVID-19 (Figure 2). The majority of new media articles were published in the early weeks of the first wave. Exemplar quotations from media or communications are presented according to date published.

Figure 2: Number of published articles or communications collected weekly from organizational communications (websites and social media) (n = 92) and news media (n = 60) from March 9 to June 5 2020.



We conducted ten key informant interviews, including eight from urban and two from rural CFOs in Manitoba. Interviews averaged approximately 46 minutes (ranging from 25 to 68 minutes).

Challenges

Challenges were defined as disruptions to normal organizational practices prior to the pandemic, including those which impacted staff, volunteers, and clients. Six themes were identified: 1) Increased need for services; 2) Food supply: Acquisition and distribution; 3) Managing staff and volunteer resources; 4) Emotional vulnerability of staff, volunteers, and clients; 5) Internal and external communications; and 6) Lack of structural supports

Increased need for services

Most food banks experienced increases in the number of new clients accessing services. Organizations needed to adjust their operating procedures quickly to account for the increased demand.

> When everything first started to happen, we saw panic. We saw an increase. When the layoffs started happening, we saw families coming to us. They were spending their last paycheques on things like rent and car payments to keep a semblance of normality, not knowing when the next paycheque would come. Then they were turning to the food bank for meals. [News media, April 16, 2020]

> In the first two weeks, our numbers were jumping and, at that rate, we were able to forecast that by the end of our first month of COVID, we would see a 30% increase of food bank users, and that was true. [Participant 4, Urban]

Food supply: Acquisition and distribution

Most organizations experienced significant challenges with maintaining a sustainable food supply. This was in part because of a reduction in donations from retail grocers (for example, donation bins). Additionally, several CFOs regularly purchased additional food items for hampers directly from grocery stores; however, there were restrictions on how many items could be purchased in one shopping trip, as grocers saw demand outstripping supply. Several CFOs also had large annual fundraising events that had to be cancelled, thereby diminishing their revenue significantly.

> 'Most of our food comes through our retail program and through our [Tin for the Bin program]. Unfortunately, because of the consumer panic and buying a lot of things in bulk, we're finding a lot of shelves are bare as a result,' she said. 'People are not remembering the food bank, and our normal retail programs are not able to supply us with food.' [News media, March 17, 2020]

> [Food bank] was having trouble at first because they were given money, like donations and cash, but then when they went to the store by this time they're [grocery store] limiting what you can take. And so you might need 7000 cans of beans and you can only buy 3! [Participant 8, Urban]

Managing staff and volunteer resources

Increased demand for services required more staff resources; however, safety restrictions limited the number of staff members working at the same time. These difficulties were managed by increasing the number of working hours or shifting responsibilities, both of which left staff feeling overworked and burnt out.

> Actually, you know, I guess we kind of lightly had a staffing change in that we had increased hours for our part-time staff, because we had so much work on the go. [Participant 12, Urban]

Some CFOs lost senior volunteers because they felt at risk, while others lost staff and volunteers because of the need to self-isolate or manage childcare. Organizations attempted to cope by recruiting additional volunteer support or scaling back activities.

> Well, our volunteers, like I said, are seniors and they are always cautious about their own health and wellbeing, and people say 'oh, I wouldn't want to do that.'... You see, you have to be safe and that's the big issue, we have seniors who... a wonderful couple who help a lot, but they pulled back because [they were] over seventy. You know on the news Doctor Tam was saying we shouldn't, for those who are higher risk group particularly seniors, so they certainly haven't been volunteering and I don't even know whether they'll come back. [Participant 3, Urban]

> 'More than half of Harvest's food banks run in places of worship, and many of the programs are being run by seniors,' Taylor-Hughes said on CBC's Information Radio Tuesday. 'As a result of that, they're not opening because they are, of course, a very high-risk group and — rightly so — don't want to expose themselves,' she said. [News media, March 17, 2020]

> I'm very proud of our team of very small, some folks were even on vacation, so they came back and had to quarantine. We had a couple that had issues with childcare and some that were afraid. So, our hampers were small, but we had to really retool everything, lock our doors, put up all the safety protocols. We want volunteers to help us because our team is very small, so we couldn't serve all the food banks on our own. [Participant 4, Urban]

Emotional vulnerability of staff, volunteers, and clients

A heightened sense of fear, stress, and anxiety was reported, owing to the pandemic, which negatively influenced staff and client experiences. Staff were stressed when attempting to purchase large quantities at grocery stores, while clients were fearful of attending CFOs or receiving food package deliveries.

> People would sort of shame them [staff] because it looked like they were hoarding. One of them made a sign to say 'I'm shopping for two hundred isolated seniors,' and she was gonna pull that out if she needed. [Participant 2, Urban]

> Our system for delivering the hampers, I would say, is pretty clearly safe. We have social distancing; nobody comes in the building, we're outside. We put the food out and we close the door. There is no direct contact, yet we've got people who are very fearful or they've got compromised immune systems and whatever as medical conditions, and they're not prepared to take that risk. [Participant 3, Urban]

Social isolation and potential loss of income because of the pandemic exacerbated the emotional stress and vulnerabilities for food insecure clients. Some organizations introduced procedures to enhance client dignity and confidentiality.

> We didn't make it available to everybody, but we just had a procedure in place for those that, for who we knew it was an important part of their dignity. And in the moment, she said, 'could I just come step inside the door and fill up my bag. I really don't want people to see that I'm here.' So, that, it was, it was very public, it became very public for our clients to be having them packing, pack their bags and having food outside. [Participant 1, Urban]

Internal and external communications

At the outset of the pandemic, guidelines were evolving rapidly and CFOs found it difficult to manage and prioritize information to keep operations running. Some relied on technology (for example, Zoom) to keep staff working remotely informed about organizational changes.

> Just the rate of change. You know what you've just figured out is the right way to do it changes the next day. So the rate of change was and you know even just at the management level—questions about what can you do in-person? Can you do in-person counselling, can you—do you have to use—do you have to get special permission to text people, it … you know all kinds of small changes that affected the health care system. [Participant 2, Urban]

Most CFOs relied on social media and signage to inform clients about program changes and availability; however, providing reassurance of safety precautions for clients was challenging. Staff and volunteers also experienced less social connection despite wanting to maintain client interactions.

> Communication is difficult. You know we're on social media, we post things multiple times a week to let people know what we're doing. One of the challenges we're having is that it's a monthly program so you only qualify once a month, but you have to re-register every month…So I would say communicating the details of the program has probably been our biggest challenge. [Participant 6, Rural]

> Newcomer clients, just weren't showing up even though they were, had been regular for like three years coming every other Wednesday and very consistent. And so we don't have their phone numbers so we can't call them to say, are, do you realize that we're still open? One, they might not realize we're open, secondly, they might be concerned about exposure in coming cause they think that we're operating the way that we always did and they don't want to be coming in. [Participant 1, Urban]

Lack of structural supports

CFOs felt they were not prioritized by government as key agencies during the early stages of the pandemic, despite having existing programs and services for vulnerable people. Their services were an important adjunct to emergency financial benefits, which were insufficient for many.

> Community organizations that are addressing food insecurity having the resilience to come to action in a crisis situation or a pandemic, and then having the government aware of those approaches and sort of being able to best direct funding for the most effective approach…having the government be able to support those already effective channels; that might maybe be a better use of funding or might be more effective. [Participant 10, Urban]

While financial supports to individual, eligible Canadians from the federal government (for example, the Canada Emergency Response Benefit, Employment Insurance) emerged to assist the newly unemployed, the funds dispersed were not enough to alleviate food insecurity for many.

> The reality is folks who are using the food bank now because they've lost jobs and they may not have been jobs for them to go back to, the fact that they're either on CERB or EIA or whatever. Think about 2000 dollars a month, if your rent's 1000 dollars, that gives you 1000 dollars left to pay for your food, your bills, entertainment, anything else. That's not a lot. [Participant 4, Urban]

Policies and Procedures

Policies and procedures were examined together, and were defined as guidelines for dealing with the pandemic, as well as specific actions undertaken to carry out the guidelines. Five themes were identified: 1) Program/service delivery changes; 2) Finance and administrative changes; 3) Safety protocols; 4) Advocacy for resources and community engagement; 5) Changes to paid and volunteer staffing.

Program/service delivery changes

These centred around food programs and distribution, hours of operation and location. Several CFOs that ran community food workshops and meal programs had to cancel them.

> So everything from Healthy Baby to senior men learning how to cook, teens, kids in the kitchen, how to cook for diabetes, a number of educational skill building programs... those are all cancelled right now. [Participant 2, Urban]

Many CFOs had to cut back on the amount of food distributed in order to meet increased needs, although others switched to larger hampers distributed less frequently.

> For now, they are looking at cutting back on the amount of food distributed to each family in order to try and make supplies last longer and share them with more people. [News media, March 25, 2020]

Some organizations had to close temporarily to implement new protocols, or because staff became ill. Others had to re-locate from facilities, such as schools, which were closed by public health orders.

> Closing for a week after a staff member became ill. The person doesn't have a fever and isn't thought to have COVID-19, but has been placed in quarantine on the advice of Ottawa Public Health. [News media, March 25, 2020]

All CFOs shifted to pre-packaging food for clients to comply with public health distancing regulations. This practice reduced choice, although it allowed clients to request items outside the given food packages. Portability and client transportation was also a concern. Organizations that ran meal programs shifted to "take-away" hampers, which were time-consuming and costly.

> The other people were not allowed to leave anything that they didn't want. They had to take it all... and so our clients weren't necessarily prepared to carry a big box away. Like they were told you can't unpack the box, just take the box and go. Well, in fact we looked at their situation where it's like, okay, not these, this person is on the bus, they cannot... walk away with this big box, they need to actually be able to unpack it into the- the bags that they brought, in order to carry it more effectively and go home with it. [Participant 1, Urban]

Some organizations had to reduce hours to prepare hampers, while others extended hours to accommodate new protocols. A few CFOs were able to provide home delivery of hampers to meet the needs of clients who could not travel.

> COVID-19 Food Box program is a short-term initiative to provide home delivery of food to Nova Scotians who lack the means to access other forms of food support, largely because they can't leave their home and they don't have the funds, friends, or family to help get food. [Organizational communications, March 30, 2020]

Finance and administrative changes

As the pandemic emerged, along with news of the rapidly growing ranks of unemployed Canadians and the pressure on food banks, private businesses and other organizations started making large donations to CFOs. Furthermore, with public health orders restricting interactions between people, most CFOs shifted to requesting monetary donations over food donations.

> Feed Ontario has received more than $200,000 from caring Ontarians in support of the program, as well as generous financial donations from organizations including Hydro One, Ontario Toyota Dealers and Toyota Canada, Grain Farmers of Ontario, Dairy Farmers of Ontario, National Bank of Canada, and the Elementary Teachers' Federation of Ontario. [Organizational communications, May 6, 2020]

Existing funds were reallocated to priority program needs (for example, purchasing food at higher prices) or new programs to accommodate the increased demand in food bank usage.

> FRESH WEEK is just one of the ways we have been able to pivot our services due to COVID-19 and social distancing guidelines. We have enough fresh and perishable items to distribute and we want them to go to those in need. [Organizational communications, May 28, 2020]

Some CFOs made adjustments to the client screening and registration processes to help minimize barriers to food access and to provide additional supports, if needed.

> Hampers are designed so you only need to come once a week. You do not need to provide any paperwork or identification. We ask your name and how many people are in your family. We will place your hamper on the tables located outside of our front door. [Organizational communications, May 5, 2020]

Safety protocols

Public health measures and fear of contagion led to newly implemented safety measures, including regular sanitization, physical distancing, use of personal protective equipment by staff and volunteers, and frequent handwashing.

> SFBLC [Saskatoon Food Bank and Learning Centre] has taken preventative measures to enhance public safety to the best of our ability: very frequent cleaning of high touch surfaces, staff and public education and awareness of best practices, frequent handwashing, staying home when ill, encouraging social distancing when possible. [Organizational communications, Mar 13, 2020]

> We require people to wear gloves every time they come to serve and sort bags … umm, we have all our volunteers when they're in the building wearing masks, we provide masks for delivery drivers and gloves for delivery drivers, so that when we're going to meet people, they feel safe. [Participant 6, Rural]

All CFOs limited the number of personnel allowed in the building to comply with social distancing measures. This included shifting food distribution processes outside facilities.

> What we're doing is we're serving people right outside. We're putting two tables right outside our front doors on the sidewalk and putting the food on the table and wiping it down in between, in between each client. And as people are coming, we have chairs on the sidewalk that are spaced apart. [Participant 1, Urban]

Some CFOs added organization-specific safety measures after consulting with public health officials (for example, declaration forms).

> In order to continue offering its services safely, Moisson Montreal says it will impose new health measures on employees, volunteers and users, including filling out a form and declaring if they or someone they live with has travelled abroad during the last 14 days. People will also have to disclose whether or not they have contracted COVID-19 and if they have or are living with someone who has symptoms of the virus. [News media, Mar 16, 2020]

Advocacy for resources and community engagement

Food banks are part of Canada's charitable sector and rely primarily on community support and fundraising events for daily operations. The pandemic, which increased need for charitable food while simultaneously presenting organizational challenges such as new safety protocols, led to organizations needing to appeal for community support in novel ways.

> Our annual Spring Food & Fund Drive is still running, with one slight change, we have gone virtual! Canada Helps is an online platform that allows you to donate through the comfort of your own home. We also can accept monetary donations in the form of a cheque. [Organizational communications, May 1, 2020]

With the disruption in the food-supply chain, coordinated efforts were needed between community groups to help facilitate and expedite food distribution between existing sources (for example, grocery stores, restaurants to distribute food surpluses).

> Food Rescue collects food that's still good to eat but can't be sold by Yellowknife's three grocery stores. It then gives it to fifteen local charities and social service agencies to deliver to their clients. Thursday, Speakman and Zheke had four stops to make: boxes of ketchup for the YWCA, and food hampers with meat, fresh produce, and dry goods for Lynn's Place, Hope's Haven, and Housing First. [News media, Mar 20, 2020]

Larger food bank associations launched campaigns appealing to the provincial government for financial aid to support CFOs and vulnerable clients.

> To ensure vulnerable Ontarians have the support they need, and to relieve the demand currently being placed on food banks and social service providers, Feed Ontario is requesting that the Government of Ontario provide immediate financial aid to social assistance recipients so that they may purchase the food and products that they need during this unprecedented time. Create a stabilization fund to provide financial support to non-profits, like food banks, that are providing frontline support during this unexpected pandemic. [Organizational communications, Mar 18, 2020]

Changes to paid and volunteer staffing

Many CFOs had to adjust scheduling of paid and volunteer staff drastically to facilitate physical distancing. In some cases, cutting back on volunteer shifts led to a need to increase paid staffing to keep up with demand. Seniors, who comprised a significant proportion of volunteers, were either requested or chose to stay home in part because of safety concerns.

> In order to reduce the risk of illness in our facilities, we made the decision in March to limit volunteers to one shift each week. This meant that we needed 670 individuals per week to fill our volunteers shifts, all while missing our senior volunteers, who make up a large part of our volunteer base.

[Organizational communications, Apr 28, 2020]

Some CFOs reorganized staff responsibilities and volunteer roles to prioritize safety and food procurement, which became increasingly important as the pandemic progressed.

> We had to start looking for food. So, we checked with our grocery stores and they couldn't help us, so we had to go look for wholesalers across the country who could meet our ... help us purchase food. So that's something we've never done before. So, that would become a full-time person's job just to source food items because we didn't have any, or were running low on anything. [Participant 4, Urban]

Discussion

This multi-method qualitative study contributes to our understanding of the challenges experienced by CFOs, and subsequent policy/program responses, during the first wave of the COVID-19 pandemic in Canada. The rapid economic downturn, fostered by mass business closures and related unemployment, coupled with school closures and unprecedented public health measures, increased food insecurity in Canada (Statistics Canada, 2020d). Results of this study indicate that CFOs experienced significant challenges during the first wave, when need for emergency food dramatically increased (Daily Bread Food Bank & North York Harvest Food Bank, 2021; Food Banks Canada, 2020; King & Stewart, 2020), for which they required rapid policy and procedural responses. Thus, the impact of COVID-19 on CFOs is a critical area of research to inform Canada's ongoing responses to food insecurity during the pandemic as well as future emergency responses. Finally, results of this study may be of interest to other high-income countries that experienced rapid increases in food insecurity during the pandemic

Organizations experienced significant challenges that arose primarily from increased needs for their services, while having to meet new public health safety measures rapidly, including physical distancing, enhanced sanitation, use of personal protective equipment, and screening for COVID symptoms (Government of Manitoba, 2021). These were underpinned in the first wave by a lack of financial support, limited direction from government regarding public health recommendations for essential organizations, and overall limited knowledge regarding COVID-19. Organizations adapted to the rapidly evolving socio-economic environment as their resources allowed. They developed policies and programs to continue operations in order to serve existing and new clientele. While many CFOs were able to "pivot" during the crisis to continue operations, their reliance on volunteers, many of whom are seniors, impacted their resiliency (Gerwing, 2020). Older adults were, and continue to be, severely impacted by COVID-19, experiencing severe outcomes disproportionately (Miller, 2020).

At the same time, during the first wave of the pandemic, organizations struggled with lack of coordination at the community level, in a vacuum of government support. This contributed to inefficiencies in operations as CFOs tried to maintain services, albeit in new ways. It was not until after the first wave that Manitoba CFOs began to receive dedicated funding and food resources from different levels of government

(Reimer, 2020). For example, while the $100 million Emergency Food Security Fund was announced by the Government of Canada to support food banks in April 2020 (Government of Canada, 2021c), many organizations did not receive support until well into or after the first wave (Reimer, 2020). The Manitoba provincial government did not provide any direct funding to CFOs during the first wave, but created a food hamper program for families of students no longer receiving meals because of the cancellation of in-person classes (Annable, 2020). This was not rolled out until May 2020; however, school divisions and individual schools had been providing food to vulnerable student families from the onset of school closures (Samson, 2020).

A key strength of this qualitative study is that it allowed in-depth exploration of a new phenomenon: operation of CFOs during a pandemic. We undertook to interview CFOs personnel and collect media data in real time during the first wave of the pandemic. Rigour was enhanced by the use of verbatim text (news media, organizational websites, social media, and interviews), triangulation of the three data sources, and the use of multiple coders. Data saturation was reached with media reports/communiques and interviews during the time frame of the study.

There are some important limitations to the study. First, while the document and media analysis were national and Manitoban in scope, our interviews with key informants were limited to Manitoba. Manitoba experienced a much smaller first wave of COVID-19, particularly when compared to B.C., Ontario, and Quebec. However, the broader public health policies and economic impacts were similar between provinces. Pre-pandemic, Manitoba had a higher prevalence of food insecurity compared to most other provinces (Tarasuk & Mitchell, 2020), but fewer job losses resulting from COVID-19 compared to other provinces (Statistics Canada, 2020b). We did not, however, observe incongruencies in our findings between the three data sources (media reports, organizational communications, interviews), suggesting that transferability of our findings to other provinces is enhanced. Another limitation is the choice of media sources for data collection. Less mainstream media sources may have reported more critically about the limitations of charitable food responses to COVID. Further research is warranted to assess the efficacy of policy/procedural changes presented in this research, as well as operations of CFOs in Canada during subsequent waves, in particular the impact of direct government funding (Government of Canada, 2021d) and indirect support in the form of surplus food redistribution schemes (Government of Canada, 2021c), a strategy that further obfuscates the underlying causes of food insecurity (Riches, 2021).

Conclusion

This study offers important perspectives on the impact of COVID-19 on charitable food providers and organizations in Canada. The pandemic has brought into stark relief problems with food insecurity in this wealthy nation, and how we respond to these inequities. Long-standing social policies that do not adequately address poverty, racism, colonialism, and other forms of inequality were brought to the forefront, and reliance on the charitable food sector to deal with food insecurity proved woefully inadequate during the

COVID pandemic. At the very least, future pandemic planning (and indeed, other crisis planning) should take into account food security measures to ensure all citizens, and the organizations that serve them, are adequately supported in times of crisis and, of course, in non-crisis times as well. These must be part of systemic policy responses, which can include, but are not reliant exclusively on the charitable sector. This must be approached carefully, however, as the goal is not to "legitimize" CFOs as appropriate responses to inequity through direct government funding. A number of policy responses and frameworks to address food insecurity have been proposed by others, which deserve further research and discussion (Desouza & Flanery, 2013; James et al., 2021). Some authors suggest that the pandemic has provided a "wake-up call" for our entire food system. They challenge the existing corporate food regime as inadequate for responding to food insecurity, and propose redistributive policies and actions that would increase food equity post-pandemic (James et al., 2021). Others still see the pandemic as compelling evidence for a Canadian guaranteed income scheme that would substantially reduce poverty in vulnerable populations (Forget, 2020; Segal, Banting, & Forget, 2021). Whatever the pathways forward, the pandemic has clearly demonstrated that the status quo, which relies almost exclusively on charitable supports to mitigate food insecurity, is inefficient and inadequate.

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Original Research Article

"It is the Wild West out here": Prairie farmers' perspectives on farmland investment and land concentration

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Abstract

This research builds on the emerging body of literature investigating the implications of changing land tenure relations in the Prairie Provinces, where over 70% of Canada's farmland is located. Through an analysis of survey data collected in 2019 from 400 grain farmers, we address the following research questions: How are farmers experiencing changing patterns of land tenure and control at the local level? What challenges and opportunities do farmers face in these changing farmland markets? And, how has the entry of new actors (farmland investors) changed relationships between landlords and tenants? Our findings suggest that those farmers who are witnessing the financialization of farmland in their regions view this phenomenon with alarm. Furthermore, we show that those who rent from corporate investors are more often subject to landlord influence over production practices and pay higher rental rates than those who rent from other landlord types. Concern about farmland concentration is widespread among Prairie farmers, with a variety of negative effects identified, including increased competition over land and the decline of local communities. We recommend that future research probe how different investor types (individual vs. corporate and/or institutional) engage in land markets, examine the gender dimensions of landlord-tenant relations, and engage in analyses that challenge the current iteration of the private property regime.

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Résumé

La présente étude s'appuie sur les nouvelles publications scientifiques étudiant les répercussions de l'évolution des relations foncières dans les provinces des Prairies, où se trouvent plus de 70 pour cent des terres agricoles du Canada. Notre analyse des données d'enquête recueillies en 2019 auprès de 400 céréaliculteurs nous a permis de soulever les questions de recherche suivantes : Comment les agriculteurs vivent-ils l'évolution des régimes et du contrôle fonciers au niveau local ? Quels sont les défis et les possibilités auxquels les agriculteurs sont confrontés dans les marchés changeants des terres agricoles ? Et comment l'entrée en scène de nouveaux acteurs (les investisseurs fonciers) a-t-elle modifié les relations entre propriétaires et locataires ? D'après nos résultats, les agriculteurs qui assistent à la financiarisation des terres agricoles dans leurs régions voient ce phénomène avec inquiétude. Nous montrons aussi que ceux qui louent auprès d'investisseurs corporatifs sont plus souvent soumis à l'influence des propriétaires sur les pratiques de production et paient des taux de location plus élevés que ceux qui louent auprès d'autres types de propriétaires. Nous avons également constaté que les agriculteurs des Prairies sont généralement préoccupés par la concentration des terres agricoles. Et pour cause : nous avons identifié toute une gamme d'effets négatifs qui y sont liés, incluant une concurrence accrue pour les terres et un déclin des communautés locales. En définitive, nous recommandons que les recherches futures examinent comment les différents types d'investisseurs (qu'ils soient des particuliers, des entreprises et/ou des institutions) affectent les marchés fonciers, qu'elles se penchent sur la dimension sexospécifique des relations propriétaires-locataires et qu'elles se lancent dans des analyses qui puissent remettre en question l'itération actuelle du régime de propriété privée.

Keywords: Farmland; financialization; concentration; rural community

Introduction

In recent years, changes to farmland tenure patterns have had a significant impact on the Prairie agricultural sector, benefiting some farmers while creating hardships for others. Since the mid-2000s, farmland prices have increased dramatically across the three Prairie provinces. From 2007 to 2019, farmland prices rose by a yearly average of 9.1 percent in Alberta, 13 percent in Saskatchewan, and 10.6 percent in Manitoba (Farm Credit Canada [FCC], 2020). Farmland ownership concentration has also increased with very large farms now controlling a significant share of all farmland. An analysis of Census of Agriculture data revealed that in 2016, farms with over 5,000 acres controlled 38 percent of all Saskatchewan farmland, 40 percent of Alberta farmland, and 24 percent of Manitoba farmland (Qualman et al., 2020).

Parallel to these trends, a new class of farmland owners—individual and institutional investors—have purchased farmland across the prairies in the hopes of realizing financial returns (Desmarais et al., 2015, 2017; Magnan, 2015; Sommerville & Magnan, 2015). Our most recent analysis of land titles data reveals that in 2018 investors owned about 945 000 acres of farmland

in Saskatchewan, a 13 percent increase from 2014.[1] While many farmland investors fly under the radar, there are some high-profile players. In 2014, the Canada Pension Plan Investment Board (CPPIB) acquired 115,000 acres of Saskatchewan farmland from a private farmland investment company, Assiniboia Farmland Inc., which had been building its land base since the early 2000s (Atkins, 2013). By 2018, the CPPIB had increased its holdings to 157,000 acres.[2] Robert Andjelic, a wealthy investor, is the single largest private landowner in Saskatchewan, with more than 218,400 acres to his name across ninety-one rural municipalities (www.andjelic.ca). The financialization of farmland reveals that, as new players enter the scene and the financial stakes continue to rise, the farmland market is becoming more complex and out of reach for many.

In this context, more farmers face significant challenges accessing farmland, whether to rent or purchase. In a recent national survey of 1326 "new, aspiring, exited, and experienced" farmers, respondents marked affordable land access as their number one obstacle to pursuing agricultural livelihoods (Laforge et al., 2018). Likewise, a study of fifty young farmers in Manitoba found access to land as the key barrier for farms of all scales (Bihun & Desmarais, 2020). Since access to land is a fundamental condition of agricultural production and has broader implications for the economic, social, and ecological sustainability of rural communities, there is a need to better understand the experiences of farmers in farmland purchase and rental markets.

To help fill this gap, we conducted a survey of prairie farmers (N=400) to better understand farmers' experiences buying, selling, and renting land, and their views on farmland markets in their own regions. We also examined rental patterns in more detail, allowing us to shed light on evolving dynamics between landlords and tenants. In this article we analyze the results of our survey, thus providing a snapshot of a rapidly evolving agricultural sector. Our study contributes to an emerging body of scholarly literature examining the "on the ground" effects of land tenure changes. We argue that, while the level of investor activity across the prairies is uneven, those farmers who are witnessing the financialization of farmland in their regions view this phenomenon with alarm. Furthermore, we show that those who rent from corporate investors are more often subject to landlord influence over production practices. Concern about farmland concentration is widespread among prairie farmers, with a variety of negative effects identified, including increased competition over land and the decline of local communities.

In the next section, we situate our research in the context of what we see as the driving forces of changing land tenure patterns on the prairies: farmland concentration and the financialization of land. We also briefly review the literature on landlord-tenant relationships, providing context for our analysis of rental dynamics.

[1] Authors' calculations, data yet to be published.
[2] Authors' calculations, data yet to be published.

Literature review

There is growing interest in analyzing changing land tenure patterns in Canada, including the social and environmental implications of farm consolidation and land concentration, land competition and rising farmland prices, landlord-tenant relations, and investor involvement. As neoliberalization has restructured Canadian agriculture in fundamental ways (Diaz & Stirling, 2003; Epp & Whitson, 2001; Qualman et al., 2020; Skogstad, 2008; Magnan, 2015), it has also opened the door to the driving force of more recent changes—financialization.

The financialization of land

The financialization of the agri-food sector has been on the scholarly radar since the publication of Burch and Lawrence's (2009) seminal article documenting the growing involvement of financial actors in various facets of the sector in the context of a third "food regime". Subsequently, a number of studies have examined financialization across a range of agri-food sectors and geographies (Bjørkhaug et al., 2018; Clapp & Isakson, 2018; Fairbairn, 2020; Isakson, 2014; Ouma, 2020). Following Epstein (2005), Lawrence and Smith (2018) define financialization as the growing importance of financial actors, motives, and markets in capitalist economies. The key markers of financialization are the emergence of new actors (e.g., hedge funds), new financial instruments (e.g., derivatives), and new outcomes (e.g., the transfer of farmland to financial elites) (Lawrence and Smith, 2018, p. 31). In agri-food studies, there has been a particular interest in the financialization of farmland—the process by which financial actors including pension funds, sovereign wealth funds, hedge funds, private investors, and others have acquired large tracts of land, transforming the structure and logics of agricultural production in the process (Ducastel & Anseeuw, 2017; Fairbairn, 2014, 2020; Kuns et al., 2016; Magnan, 2015; Ouma, 2020; Fairbairn et al., 2021).

As the literature on the financialization of farmland has matured, scholars have recognized the need to better understand how it is experienced "on the ground": that is, by real social actors in particular geographical contexts (Ouma, 2014; Geisler, 2015; van der Ploeg et al., 2015; Sippel et al., 2017a). A small number of studies have examined how the entry of financial actors into rural spaces is affecting local actors. Sippel et al. (2017b), for example, report on the activities of the Hancock Company of Canada in New South Wales (NSW), Australia, including community perception of its activities. Based on qualitative interviews, they documented community concerns over the investment company's environmental practices, poor communication, and lack of community engagement. The authors argue that financialization does not happen "in 'empty spaces' but in specific rural landscapes where different groups of people pursue various interests" (Sippel et al., 2017b, p. 5). Similarly, Sippel et al. (2017a) documented interactions between financial actors and local communities in a different region of NSW, Australia. Here, they found that reactions to investor presence ranged from acceptance (dependent on investors behaving as "good corporate citizens"); to accommodation, as some farmers either sold their land to investors or partnered with them to expand their operations; to unease, especially in response to the secrecy of land deals and the perception that power was shifting towards corporate actors. In this way, they demonstrated that financialization "on the ground" is a complex, situated process, one that "is disputed as well as accommodated by rural populations" (Sippel et al., 2017a, p. 3).

A limited number of studies in Canada have examined changing farmland markets from farmers' perspectives. Rotz et al.'s (2019) analysis of a survey and interviews with Ontario farmers on the intersections between financialization, land tenure, and agroecological practices found that farmers, particularly larger ones, are renting land in order to scale up their operations and that rental relations are becoming more precarious and "cutthroat." Some farmers in the study reported that rental rates are no longer justified by the production potential of land—in other words, the financial and productive values of farmland have become de-coupled. Similarly, Aske's (2022) research in rural Alberta found that this de-coupling is especially apparent with land purchase prices, leading to a situation in which many farmers purchase land on a speculative basis.

In the Saskatchewan context, Desmarais et al. (2015) examined local dynamics of investor activity using qualitative interviews with community members in three rural municipalities. The interviews revealed considerable unease among locals regarding the presence of "outside" farmland buyers, particularly as it related to the erosion of community cohesion and trust, the acceleration of farmland consolidation and resulting depopulation of small towns, and the potential for land competition to thwart the entry of younger farmers into the sector. Other studies of the financialization of farmland in Saskatchewan have relied on analyses of land titles data (Desmarais et al., 2017), farmland transaction data (Magnan & Sunley, 2017), and qualitative interviews with investors (Sommerville & Magnan, 2015; Magnan, 2015).

Landlord-tenant relationships and absentee landlords

Tenant farming has been on the rise in Canada for over four decades, with approximately 41 percent of total farm area rented in 2016 (Statistics Canada, 2017). Landlord identities have also been shifting as new financial actors have entered the scene and as the percentage of absentee landowners continues to grow (Davidson, 2021; Holtslander, 2015; Wittman et al., 2017; Desmarais et al., 2017).

In the North American context, there is considerable literature on how renting versus owning land impacts farming practices, particularly the adoption of "conservation," "sustainable," or "agroecological" practices (Rotz et al., 2019; Sklenicka et al., 2015; Carolan, 2005; Soule et al., 2000). In British Columbia, Fraser (2004) found that even long-term tenure was not a substitute for ownership in terms of ensuring soil conservation. Varble et al. (2016) argue that farmers' decision to adopt any given practice depends on a myriad of factors, including tenure. According to Jackson-Smith and Petrzelka (2014), reviews of existing empirical studies did not find significant statistical correlation between tenure types and farmer conservation behaviours. However, other studies involving interviews with farmers suggest that uncertainty around contract renewal, lack of connection to the long-term health of the land, and pressure of annual rental fees can pose challenges for the adoption of conservation practices (Rotz et al., 2019; Aske, 2020).

Much of the literature suggests that, overall, tenants have considerable decision making power over production practices.[3] Writing prior to the financialization of farmland, Gilbert and Beckley (1993) emphasized the autonomy of tenants while

[3] See the review by Ulrich-Schad et al. (2016).

simultaneously painting a rosy picture of relationships between landlords and tenants, who they suggested were often "lifelong neighbours" (p. 578). More recently, Taylor and Featherstone's (2018) analysis of the influence of social capital on rental rates demonstrated that longer tenure relationships (>20 years) can lead to rental rates below the market standard. Jackson-Smith and Petrzelka (2014) write that "there is growing appreciation that the locus of power may lie more in managerial control over land (use rights) than in fee-simple ownership (legal ownership rights)" (p. 52). Gender is another determinant of power dynamics between landlords and tenants. In examining gender differences among absentee landowners, Petrzelka and Marquart-Pyatt (2011) found that female landowners have even less power than male landowners in relation to their (predominantly male) tenants. Carolan (2005) similarly found that female landlords experienced "inequitable power relations between themselves and their male tenants" (p. 402). These studies demonstrate the significance of the sociological dimensions of land ownership.

The literature on landlord-tenant relationships has yet to catch up with the more recent phenomenon of investor landlords, with a few exceptions. Bryan et al. (2015) analyzed rental contract types and cash rental rates across landlord types in southern Ontario, finding that landlords with farming backgrounds—retired farmers, widow(er)s, and active farmers—were more likely to have crop share arrangements[4] than landlords with no farming background. They found some evidence that "investors"[5] actually charge less in cash rent than other landlord types. This is in contrast to recent qualitative research findings in Alberta and Saskatchewan that suggest investor landlords demand higher rent than other landlords (Aske, 2020; Davidson, 2021). Sommerville and Magnan (2015) argued that farmland investment funds were likely to be more involved in tenants' operations than "traditional" landlords through greater contract stipulations and more frequent monitoring. This could lead to changing power relations as "farm operators negotiate with powerful stakeholder interests over rent, late payments, or other leasing terms" (Sommerville & Magnan, 2015, p. 138).

Several studies have examined to what extent investor landlords differ from other landlord types in terms of adopting conservation practices. Nassauer et al. (2011) found that 54.5 percent of investor[6] landowners in Iowa claim to be involved in farm management decisions on a "day-to-day" basis. In comparing farmers' and investors' attitudes towards future conservation agriculture models, they found that investors were more likely to support these initiatives, as farmers viewed them as potentially difficult to implement. The authors conclude that the "adoption of innovative farming practices may be profoundly affected" by investors buying up farmland (Nassauer et al., 2011, p. 23). In Ontario, Rotz et al. (2019) argue that investor farmland buyers are indirectly making it more difficult for farmers to use agroecological practices by contributing to rising land prices and rental rates, increasing the likelihood of renting, and driving farmland consolidation.

In what follows, we present the findings of a survey of prairie farmers, including both quantitative and qualitative data on farmer attitudes towards farmland

[4] An arrangement in which landlords and tenants share in the risks and rewards of production, with the landlord taking a predetermined percentage of the crop in lieu of cash rent.
[5] The authors do not specify if this category refers to individual investors, corporate investors, or both.
[6] They define investors as farmland owners who are not and have never been involved in farming full-time or part-time. These are not necessarily absentee investors, as 45% reported that they lived on or near the land they owned.

concentration and investor activity and farmer reports of changing rental relationships. The survey methodology we have used is rare among existing studies of agricultural restructuring and financialization "on the ground" in rural places.[7] As explained below, a unique feature of our survey was to ask a large number of farmers a detailed set of questions on their experiences in farmland markets and their attitudes towards land ownership and tenure changes in their regions.

Survey methodology and sample characteristics

The survey design was adapted from that used by Bryan et al. (2011, 2015).[8] We contracted Kynetec, a polling company, to administer the survey to its online database of 3,096 agricultural producers in the Prairie provinces, Alberta, Saskatchewan, and Manitoba. To be eligible for the study, respondents had to: be a primary decision maker on the farm; be involved in field crop or mixed field crop and livestock production; and have at least 200 acres[9] in crops. Twenty-five respondents were disqualified from the study based on these criteria and a further seventy-one respondents failed to complete the survey. Respondents who completed the survey received a cash incentive of $25. The data were collected in July 2019.

The survey covered the following topics: 1. Farm characteristics; 2. Local rental rates, farmland prices, and experiences in the farmland market; 3. Rental agreements and land use practices; 4. Attitudes towards rented and owned land; and 5. Attitudes towards farmland consolidation and investor activity. Respondents were asked to answer detailed questions on up to three different rental agreements (representing the largest rented land parcels). As a result, we collected data on a total of 668 unique land rental contracts.

Table 1 summarizes the characteristics of the survey sample, with comparisons to 2016 Census of Agriculture data. The mean age of the farmers in our sample was very similar to that reported in the Census of Agriculture, but males were heavily overrepresented. The mean farm size (including owned and rented land) reported in our sample was 3,832 acres, considerably larger than the 1,439 acres reported in the Census of Agriculture. This is in part because our selection criteria excluded farms with fewer than 200 acres in crops. Table 2 presents the gross farm revenues of respondents in our survey sample versus those reported in the 2016 Census of Agriculture. Farms with revenues under $50,000 are underrepresented in our sample, whereas those with revenues above $250,000 are overrepresented.

[7] But see Rotz et al., 2019 and Bryan et al., 2015
[8] We gratefully acknowledge Dr. Brady Deaton's (University of Guelph) willingness to share his survey questionnaire with us.
[9] This criteria was intended to ensure that our sample captured only farms with a substantial commercial interest in growing crops.

Table 1: Characteristics of the survey sample, with comparisons to 2019 Census of Agriculture data

	Survey sample						2016 Census of Agriculture				
Province	**# of respondents**	**Mean age**	**Male**	**Female**	**# of farm operators**	**Mean farm area (acres)**	**Mean age***	**Male****	**Female**	**# of farm operators*****	**Mean farm area (acres)*****
Alberta	124	54.0	95.9%	4.1%	2.8	3,890	55.7	69.2%	30.8%	1.4	1,237
Saskatchewan	210	56.7	92.2%	7.3%	2.3	3,968	55.0	75.1%	24.9%	1.3	1,784
Manitoba	66	52.9	95.5%	1.5%	2.0	3,288	53.8	76.2%	23.8%	1.4	1,192
All provinces	400	55.3	93.9%	5.4%	2.3	3,832	55.1	72.5%	27.5%	1.4	1,439

* Statistics Canada. Table 32-10-0442-01 Farm operators classified by number of operators per farm and age. DOI: https://doi.org/10.25318/3210044201-eng
** Statistics Canada. Table 32-10-0441-01 Farm operators classified by number of operators per farm and sex. DOI: https://doi.org/10.25318/3210044101-eng
*** Statistics Canada. Table 32-10-0440-01 Total number of farms and farm operators. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210044001
**** Statistics Canada. Table 32-10-0153-01 Total area of farms and use of farm land, historical data. DOI: https://doi.org/10.25318/3210015301-eng

Table 2: Gross farm revenues, all provinces

Gross farm revenues	Census of Ag (2016)*	Survey Sample (2019)
Farms, under $10,000	11.75%	0.3%
Farms, $10,000 to $24,999	12.50%	1.0%
Farms, $25,000 to $49,999	11.71%	1.3%
Farms, $50,000 to $99,999	13.39%	14.4%
Farms, $100,000 to $249,999	18.55%	18.8%
Farms, $250,000 to $499,999	12.88%	24.5%
Farms, $500,000 to $999,999	10.12%	20.4%
Farms, $1,000,000 to $1,999,999	5.76%	12.3%
Farms, $2,000,000 and over	3.33%	7.0%

* Statistics Canada. Table 32-10-0436-01 Farms classified by total gross farm receipts in the year prior to the census. DOI: https://doi.org/10.25318/3210043601-eng

Results

Buying, renting, and selling farmland

One of the objectives of this study was to understand farmers' experiences in the farmland market, including their intentions to buy, sell, or rent land; the opportunities and challenges associated with these activities; and their views of local conditions in the farmland market. Respondents indicated the typical cash rental rate and purchase price of farmland in their local areas (Table 3). For comparison, Farm Credit Canada (FCC, 2019) reported farmland purchase prices in Alberta averaging between $2,119 and $6,157, depending on the region. In Saskatchewan, prices ranged from $1,475 to $1,985, and in Manitoba, from $2,344 to $5,010 (FCC, 2019). The farmland prices reported in our study are closer to the higher end of those reported by FCC.

Table 3: Farmer-reported rental and purchase prices for farmland

	Typical cash rent for average quality farmland ($/acre)	Typical purchase price for average quality farmland ($/acre)
Alberta	94.7*	4,037
Saskatchewan	60.6	1,753
Manitoba	88.5	3,795
All Provinces	70.5	2,773

*This figure includes a small number of respondents who reported unusually high rental rates (between $250 to $500/acre), which may skew the results.

Table 4: Intention to purchase farmland in the next five years by revenue category

Revenue Category	Yes %	No %	Not sure %
Under $250,000	23.1	55.3	21.5
$250,000 to 499,999	23.9	48.0	28.2
$500,000 to 999,999	36.2	33.0	30.9
$1,000,000 to 1,999,999	46.1	26.3	27.6
$2,000,000 to 4,999,999	57.5	8.4	33.8
$5,000,000 or over	66.5	10.9	22.4

Among our survey respondents, 38 percent indicated that they intended to purchase farmland in the next five years. Those who intend to buy land were nearly ten years younger on average than those who did not intend to buy land (50.3 versus 59.8 years of age). The intention to buy land increased steadily with higher total farm revenues, with 66.5 percent of those in the highest revenue category ($5 million and over) expressing a desire to do so (Table 4). Of those who intend to buy land, a very high proportion expected to face challenges in doing so (96 percent of Manitoba respondents and 85 percent in both Alberta and Saskatchewan). The most commonly cited challenges in purchasing land were competition from other buyers, high farmland prices, and difficulty finding land for sale nearby (Table 5

Table 5: Challenges in purchasing farmland, respondents who intend to buy land in the next 5 years

Challenges in purchasing farmland	Alberta %	Saskatchewan %	Manitoba %	All Provinces %
Competition from other buyers	88.8	91.3	93.9	91.8
High farmland prices	84.4	87.8	77.3	85.0
Finding land for sale nearby	75.6	50.0	48.5	57.9
Little land available for sale	51.1	31.8	40.9	42.9
Finding good quality land	33.3	36.2	21.1	27.8
Other	2.2	0.0	10.6	6.0

Table 6: Farmer-reported farmland sales to farmers versus investors

Farmland sales	Alberta %	Manitoba %	Saskatchewan %	All sample %
Farmers	82.3	89.4	76.2	80.3
Non-farmer investors	14.9	10.5	22.5	18.1
Others	2.8	0.1	1.3	1.5

When asked whether they intended to sell land in the next five years, only 4 percent of respondents answered “Yes.” Of these, 61 percent anticipated no challenges in selling their land. These data suggest that prairie farmers are experiencing a “seller’s market” for farmland, where most are more interested in acquiring land than selling it and many face significant obstacles in buying.

We asked farmers to estimate the proportion of farmland purchases being made by farmers versus non-farmer investors in their local area (Table 6). Respondents from Saskatchewan reported a significantly higher proportion of purchases by investors (23 percent) compared to the other province

Analysis of rental contracts

Among our survey respondents, 76 percent reported renting farmland in 2018. The likelihood of renting was highest among younger farmers (under thirty-five), at 89 percent, versus 81 percent for those thirty-five to fifty-four years old, and 72 percent for those over fifty-five. Among the renters, the average number of acres rented was 1,383 in Saskatchewan, 1,250 in Alberta, and 882 in Manitoba. The area rented decreased steadily according to the number of years in farming reported by respondents, suggesting that farmers rely less on renting as their farming careers progress.

To better understand rental patterns and landlord-tenant relationships, we asked survey respondents a series of detailed questions on their rental contracts. The average parcel size across all rental agreements was 438 acres. On average, farmers had been renting from the landlord in question for nearly twelve years. Fixed cash rental agreements were by far the most common type of rental contract, with some variation across provinces (Table 7). Oral agreements were slightly more common overall (53.5 percent) than written agreements (46.5 percent). Only in Manitoba were written contracts more common (51.4 percent) than oral contracts.

Table 7: Type of rental agreement

Rental agreement type	Alberta %	Manitoba %	Saskatchewan %	All sample %
Fixed	74.4	92.4	76.4	**78.3**
Crop share	16.3	4.7	16.1	**14.4**
Flexible cash	4.9	1.0	4.4	**4.0**
Cost share	1.0	1.9	1.1	**1.2**
No cost	1.0	0.0	0.8	**0.7**
Others	2.5	0.0	1.1	**1.3**
Number of contracts	**203**	**105**	**360**	**668**

The average rental rate reported was $65/acre in Alberta, $50/acre in Saskatchewan, and $76/acre in Manitoba. For comparison, a government of Saskatchewan report found that the average cash rental rate per acre in the province was $51.90 in 2019 (Insightrix Research, 2020) while Manitoba Agriculture and Resource Development (2021) reported a rate of $69.29. No comparable information was available on Alberta.

We asked farmers to describe their landlord's identity by choosing from a range of categories (Table 8). The three most common landlord types are retired farmer (38 percent), the spouse or relative of a deceased or retired farmer (20 percent), and non-farmer individual investor (11 percent). Investment corporations represented only 2.2 percent of landlords overall, but 3.8 percent in Saskatchewan. Together, individual investors and investment corporations made up 13 percent of landlords in our sample.

In all, thirteen farmers reported renting land from an investment corporation. These farmers were on average younger than the rest of the sample (forty-eight years old versus fifty-five) and tended to have high gross farm revenues. Indeed, all but one of those renting from corporate landlords had gross farm revenues over $500,000 per year. On average, the land parcels rented from investment corporations were larger than for other renters (551 acres versus 438 acres).

Table 8: Landlord identity

Landlord Identities	Alberta %	Manitoba %	Saskatchewan %	All sample %
A retired farmer	36.9	42.9	36.9	**37.9**
The spouse or relative of a deceased or retired farmer	21.2	9.5	21.9	**19.8**
A non-farmer individual investor	9.4	15.2	10.3	**10.8**
An active farmer	9.3	8.6	10.3	**9.7**
An individual or family using the land for a place of residence	12.8	4.8	6.9	**8.4**
Investment corporation	0.5	3.8	2.8	**2.2**
A family-owned farming corporation	3.0	2.9	1.4	**2.1**
First Nation band	1.0	1.0	2.2	**1.6**
Government or government agency	0.5	3.8	1.4	**1.5**
Others	4.9	7.6	5.0	**5.4**
Don't know	0.5	0.0	0.8	**0.6**
Number of contracts	**203**	**105**	**360**	**668**

Across all rental agreements, 65 percent of landlords were reported to live in the same local area and 87 percent in the same province as the survey respondent. The prevalence of out-of-province landlords was highest in Saskatchewan, at 18 percent of rental agreements. In Alberta and Manitoba, only 4.5 percent and 7.6 percent of agreements, respectively, were with out-of-province landlords. The number of rental contracts reporting a landlord living outside of Canada was very low, at 2.4 percent overall, but 4.8 percent in Manitoba.

To what extent does land tenure affect production decisions? Table 9 reports on farmer attitudes towards rented versus owned land, suggesting that the large majority do not treat rented land differently than owned land. We were also interested in landlord influence over production decisions. Overall, rental agreements included specific guidelines for farming practices in only 10 to 15 percent of cases, depending on the farm management practice in question (Table 10). In terms of decision making, respondents reported that the tenant alone made management decisions such as crop selection, crop rotation, fertilizer and chemical decisions, and the timing of field crop operations in 90 percent or more of cases. The management decision over which landlords have the most influence is the adoption of permanent conservation practices (12 percent reported some landlord involvement).

Table 9: Farmer stewardship of rented and owned land

For each statement below, indicate to what extent you agree or disagree:	Strongly disagree %	Somewhat disagree %	Neither agree nor disagree %	Somewhat agree %	Strongly agree %
I take better care of the land I own compared to the land I rent	63.2	11.3	19.5	5.0	1.0
I use more fertilizer or manure on the land I own compared to the land I rent	60.5	14.5	16.8	6.3	2.0
I use a more complex crop rotation on the land I own compared to the land I rent	63.0	11.2	18.8	5.0	2.0

Table 10: Rental agreement stipulations for farm management

Does the rental contract with this landlord require you to follow specific guidelines related to:	Yes %	No %	Not applicable %
Crop rotation	15.8	79.2	5.0
Fertility management	11.0	83.9	5.1
Soil management	15.3	79.4	5.3
Straw management	15.8	78.4	5.9
Grain storage	11.5	81.0	7.5
Pest management	10.2	84.0	5.7

Differences across landlord types

A key question we explored in this study was: To what extent does landlord identity influence rental contract [10] individual investor, and other landlords—for certain key characteristics. Farmers reported, on average, a somewhat higher average number of years renting from investment corporations compared to both individual investors and other landlords. Farmers were also more likely to report that their rental agreement was renewed every five years or more when renting from corporate characteristics? Table 11 summarizes the differences across three investor types—investment corporation,

landlords compared to other landlord types. The data also show that investment corporations favour fixed cash agreements more strongly than other landlord types. The mean rental rate was highest for contracts involving investment corporations, but lower for individual investors compared to other landlords.

[10] The data for this category should be interpreted with caution since there were only a small number of rental contracts (n=15) reporting an investment corporation as landlord.

Table 11: Rental contract characteristics across landlord types

Rental contract characteristics	Investment corporation %	Individual investor %	All other landlords %
Mean number of years renting from landlord	12.7	11.5	11.8
Mean rental rate ($/acre)	64.2	54.2	61.2
Prevalence of fixed cash rental (%)	86.7	77.7	78.4
Rental agreement renewed every five years or more (%)	33.3	20.8	16.2

Table 12 provides a comparison of the contract requirements with respect to farming practices by landlord type. Investment corporations were significantly more likely to require their tenants to follow specific guidelines related to all of the listed practices. There were few notable differences between the requirements imposed by individual investors versus other landlords. Thus, farmers who rent from investment corporations are more likely to be bound to specific practices than those who rent from other landlord types.

Table 12: Rental agreement stipulations for farm management by landlord type

Contract stipulations	Investment corporation %	Individual investor %	All other landlords %
Crop rotation	33.3	11.1	16.4
Fertility management	40.0	9.7	10.3
Soil management	46.7	16.7	14
Straw management	46.7	13.9	15.6
Grain storage	26.7	9.7	11.4
Pest management	40.0	9.9	9.4

Attitudes toward farmland concentration and farmland investment

We also sought to capture farmers' perceptions of farmland ownership trends in their local areas. When asked whether they thought there had been major changes in farmland ownership patterns in their area in the last ten years, 62 percent of respondents said "Yes." Overall, a strong majority (74.2 percent) of respondents reported that farmland concentration had increased in the last ten years. Among those respondents who indicated that concentration had increased or stayed about the same, 24 percent believed it had become a major problem, 44 percent somewhat of a problem, and 26 percent not a significant problem. Those who considered it somewhat of a problem or a significant problem were asked to identify the issues associated with land concentration (Table 13). The problem identified by the largest proportion of respondents was the ability

for large landowners to outcompete smaller players for land.

Table 13: Problems associated with land concentration

Problems associated with land concentration	Alberta %	Manitoba %	Saskatchewan %	All sample %
Large land owners able to outcompete smaller players for land	57.3	60.1	61.4	60.0
Less land available for sale	43.5	43.9	39.0	41.3
Less land available for rent	44.4	40.9	31.4	37.0
Fewer farmers in the area	40.3	39.4	45.2	42.3
Negative impacts on the local community	36.3	27.3	40.5	37.0
Other	6.5	0.0	7.6	6.0

When asked to indicate whether they thought that non-farm investors had taken an increased interest in buying farmland in their local area, farmers' answers differed across the provinces. In Saskatchewan, a strong majority (63 percent) of farmers believe investor activity has increased whereas the comparable figure was 39 percent in Alberta and 29 percent in Manitoba. We asked further questions of those who indicated that investor activity had increased. Table 14 reports on respondent attitudes toward the impact non-farmer investors have had on the local farmland markets and communities. A large majority view these trends as negative for both the local community and the local farmland market. There were some modest differences in attitudes based on age. The percentage of farmers under thirty-five who believe that investor activity has had a negative or very negative effect on the local farmland market was 76 percent, compared to 55 percent for farmers thirty-five to fifty-four years old, and 59 percent for farmers older than fifty-five. By contrast, older farmers were more likely to indicate that investor activity has had a negative or very negative impact on the local community (83.2 percent) compared to farmers aged thirty-five to fifty-four (68.4 percent) and farmers under thirty-five (71.1 percent).

Table 14: Attitudes toward non-farm investors

Impact of non-farmer investors purchasing farmland	Local community %	Local farmland market %
Very positive	0.5	6.5
Positive	5.6	10.4
Neutral	12.6	15.9
Negative	39.4	31.8
Very negative	38.4	27.4
Unsure	3.5	8.0

Open-ended questions

In response to open-ended questions, farmers expressed a number of concerns with recent trends in farmland ownership and rental patterns. Respondents cited challenges they face in local farmland markets, including high prices, lack of available land, increasing competition, and land ownership concentration. Several respondents commented that prices had risen higher than what is justified by the income-generating potential of the land, confirming findings by Aske (2020) and Rotz et al. (2019).

When it comes to competition, respondents named large-scale local farmers, investors, out-of-province or foreign buyers, corporate farms, developers interested in converting farmland into acreages, supply-managed farmers (i.e., dairy, chicken, and egg farmers), potato farmers, and Hutterite colonies. In many cases, respondents suggest that these players are able and willing to pay higher prices for local land as a result of their financial resources:

> Outside investors are paying too high prices making it impossible for local farmers to expand or for new farmers to start.

> Land is super expensive and with commodity prices where they are, you either need to cut corners or keep doing what you're doing, but understand you're sort of just coasting, and probably won't be able to buy land soon. There's been a number of large (40,000 acres +) farms moving into the area who seem to have endless financial backing.

Several respondents commented on the negative implications of high prices and increased competition for younger farmers:

> We have many younger farmers in our area all looking to expand. There is not nearly enough land that will be for sale to satisfy local farmer demand.

> There is no question that land concentration has fueled the escalation of land prices/rent in this area. There are far fewer farmers, and very little opportunity for younger farmers.

In addition to the above concerns, several suggested that land sales have become increasingly secretive, happening between private parties before local farmers even know the land is for sale.

A few respondents noted connections between very large operations or absentee owners and a decline in good land stewardship:

> People who have come in the area treat the land like a garbage dump, bigger farmers are more concerned about grabbing more land than taking care of it properly. For example, leaving out corners because equipment [is] too large. Spraying out road allowances and other neighbours' crop.

> It is now more a mining industry. All trees are removed from hundreds of thousands of acres (no exaggeration), wetlands destroyed and wildlife habitat wiped out. Land ownership is the cornerstone of family farms. Massive amounts of money leave SK when non-residents/corporations gobble up the land ownership. Large corporations have trespassed/damaged my fields by bulldozing forest on my land that they thought was theirs, dug large illegal drainage ditches onto my field, made large rock piles on my field to avoid making piles on their own etc. It is the Wild West out here.

Those respondents who indicated that land concentration has been an issue in their area provided

further details on the impacts this has had. The responses were overwhelmingly negative: farmers suggest that increasing concentration has a harmful effect on community wellbeing and viability. Several noted that as land ownership becomes more concentrated, people leave the local area, leading to a decline in the local population that affects the viability of schools, businesses, and other local amenities. Many also suggested that the largest farmers tend not to buy farming and other supplies locally, making it more difficult for local businesses to stay afloat. The following comments capture some of these concerns:

> It's ruined rural farm life and damages the provincial economy. Previously, any money made in agriculture stayed in SK. The big landowners don't live here so the money leaves the province. It is like living beside a mining company that breaks as many laws as it can get away with. The environment is now suffering from desertification.

Several respondents pointed to a breakdown in social cohesion and social capital in communities affected by increased concentration:

> Farmers don’t know their neighbours or who to contact with problems.

> The market has become cut-throat pitting neighbour against neighbour.

Those farmers who indicated that they had seen increased investor activity in their area consistently reported concerns with this trend: inflated land prices, higher land rental payments, concerns with land management and environmental issues, and little or no contribution to the local community. On this latter point, the following comments were typical:

> With less active farmers we have seen ag retailers shut their doors and move out. We have lost fuel suppliers as well, have seen multiple businesses close their doors as there is not the demographic to support them anymore. Big investors don't care about small towns and villages.

> The investors usually have very little to do with the community. Very rarely do these groups or individuals take part in the community.

> Non farmers have only driven the price of land up and have not brought anything to the table in the small communities. Which in turn is destroying our small towns.

Others commented on how investor activity has eroded trust and cooperation among farmers:

> They have created bad feelings between producers bidding to rent the land and have put absolutely nothing into the community.

> Promotes the get big or get out mentality. Smaller operators just don't count. Large very rich players don't have time of day for smaller operators. No neighbours, only competitors.

> You only see a big fleet of equipment come by our town to farm the acres they possess. And they are gone in a few days and not support any businesses.

Concern about investor impacts on rising land prices and rental rates was common: “First, they drive the price of land up and then charge a fortune to rent the land driving up the rental rates in the area.”

> There seems to have been a strong and steady increase in farmland prices. Non- farmer investors led to increased land prices, but they have (along with large operators) made it difficult for small farmers to expand.

There were some mixed or neutral comments, recognizing the differential impacts of investor

ownership on farmers at different stages of their careers, and placing the trend into the wider context of structural change in the industry: "If you are a young farmer beginning, land prices and rent have skyrocketed, putting you in a tough position right off the bat. For a retiring or small operation looking at stopping, it is a godsend."

> Non farmer investors have given new people the opportunity to farm this land. It didn't automatically go to the nearest neighbour.
>
> The effects of non-farmer investors on the local land market have been inflationary, but not as much as the competition amongst farmer owner-operators. The local community has not been noticeably affected by investor landlords; the land is still being farmed by area farmers. Rural depopulation will continue whether land is owned by local farmers, or by landlords or companies that don't live in the area.

Several respondents suggested policy changes that they wish to see including tax incentives for transferring land between family members; further restricting land ownership; tax disincentives for absentee landowners; and prohibiting farmland purchases for investment purposes. One respondent commented on the urgency of stricter regulations around corporate ownership:

> SK needs to take immediate action to restrict massive corporate ownership (e.g., largest company now owns over 200,000 acres). It is strip mining not farming therefore they need to be environmentally regulated like mining. People who live in the city would be shocked if they understood how much environmental damage has occurred. There is some awareness of this with illegal drainage flooding small towns. Loss of wildlife habitat will also put many species at risk. Ten to fifteen acres of wildlife habitat on each quarter supports a strong population of wildlife. The large corporations bulldoze it all.

Others opposed further restrictions on land ownership, preferring a liberalized market to a more regulated one.

Discussion

"On the ground" experiences of land concentration and financialization

A strong majority of farmers in our sample agree that farmland tenure patterns have changed significantly in the past ten years. Generally speaking, farmers view the predominant trends—farmland concentration and investor involvement in the farmland market—with serious concern, citing increased competition, higher land prices that no longer reflect land's income-generating potential, the decline of social cohesion and rural communities, barriers for younger farmers trying to get established in the sector, and damage to the environment. Younger farmers expressed the most concern about investor activity, possibly suggesting that they find competition from investors more limiting as they seek to expand, and are the least able to benefit from the rising tide of farmland prices. However, older farmers were the most likely to see that investor activity was having a negative or very negative impact on the community, perhaps because of their longer view of community transformation. Our study suggests that age and career stage are important factors in shaping farmers' experiences of and attitudes toward land concentration and financialization. Indeed, generational effects should

be considered a key dynamic in understanding the differential interests (Sippel et al., 2017b) of local actors vis à vis these trends.

Compared to studies of the "on the ground" impacts of financialization in rural Australia (Sippel et al., 2017a; Sippel et al., 2017b), our study suggests that farmers on the Canadian Prairies view these trends more negatively than their Australian counterparts. As we have reported, a large majority of respondents who said that investment activity in their areas had increased, saw these developments as harmful to local land markets and communities. While direct comparisons are difficult given the different methodologies used, the Australian studies reported more mixed reactions to financialization. By contrast, our data included little evidence of "acceptance" or "accommodation" towards financial actors (except for a small number of qualitative comments), and a great deal of "unease." These differences across geographical contexts might be explained in part by institutional and policy differences. Whereas both countries have undergone substantial neoliberal restructuring in recent decades, Australia has proceeded more rapidly and further down this road (Lawrence & Campbell, 2013). By comparison to the Canadian Prairies, for instance, Australia's land ownership rules are more liberal (Magnan, 2015). Under these conditions, Australian farmers may feel relatively more comfortable with corporate or investor ownership of farmland.

Notwithstanding differences in the degree of unease, the types of negative effects of investor activity reported in our study are quite consistent with concerns raised in other contexts (Fairbairn et al., 2021; Sippel et al., 2017a; Sippel et al., 2017b). Qualitative data from our survey suggested that some farmers view investors as having little to contribute to local communities—indeed, several suggested that the net effect of investor activity is to undermine social cohesion, a finding consistent with Desmarais et al. (2015). Furthermore, our respondents cited concerns with the environmental neglect and destructive farming practices of both investor landowners and very large farming operations in general. The idea that relations among and between land owners—fuelled by concentration and financialization—have become a "Wild West" signals a breakdown in norms around social cooperation, land stewardship, and neighbourliness.

Landlord-tenant relations

The percentage of rental contracts involving individual investor landowners (10.8 percent) and investment corporations (2.2 percent) in our sample was lower that what Bryan et al. (2011) found in Ontario a decade ago (15.8 percent for "owner investors" and 5.1 percent for "investment companies")—suggesting that southwestern Ontario remains a key site of study for farmland financialization. Among the Prairie provinces, our findings suggest that investor activity has been highest in Saskatchewan, with respondents reporting that nearly 4 percent of rental contracts involved an investment company landlord. The government of Saskatchewan's *Land Lease Survey*, by contrast, reported that 1 percent or fewer of landlords were "financial institutions" in 2019, depending on the lease type (Insightrix, 2020).[11] In our survey, Saskatchewan respondents also reported the highest level of perceived investor activity, at 23 percent of recent farmland purchases, and the data revealed absentee land ownership is considerably higher in Saskatchewan (18 percent) than the other two provinces (4.5 percent in Alberta and 7.7 percent in Manitoba).

[11] The discrepancy may in part be because our category "investment corporation" is somewhat broader than "financial institution." It could also be due to sampling differences between the two surveys.

These findings validate the notion that, on the prairies, Saskatchewan continues to attract the most investor activity.

Our findings suggest that tenants still hold most of the decision making power over production practices. It might seem to follow that our data confirms existing research (Gilbert & Beckley, 1993; Jackson-Smith & Petrzelka, 2014; Petrzelka & Marquart-Pyatt, 2011; Carolan, 2005) emphasizing tenant dominance in land tenure relations. However, control over production decisions is only one locus of power influencing landlord-tenant dynamics. Our data show that farmers are facing an increasingly competitive farmland market, one in which financialization has exacerbated the challenge of accessing land. This, we argue, provides landlords with considerable power—particularly deep-pocketed corporate investor landlords and absentee landlords with few ties to tenants. In a competitive land rental market, landlords are likely to exercise more power over rental rates, contract stipulations, and the selection of tenants. As Rotz et al. (2019) and Aske (2022) found, most farmers do not see themselves in a position of security when it comes to land access, and many find themselves unable to expand at all. In short, Jackson-Smith and Petrzelka's (2014) suggestion that "the locus of power may lie more in managerial control over land (use rights)" does not fully reflect the current picture of land tenure relations on the Prairies (p. 52).

In comparing across landlord types, corporate investors showed the highest preference for fixed cash rental agreements, which is consistent with Bryan et al.'s (2015) finding that landlords with a farming background are less likely than other landlords to enter into cash rental agreements. Investment corporations seem to favour longer rental contracts and had, on average, a longer relationship with the tenant farmer. This is consistent with Aske's (2020) finding in Alberta that investment corporations often employ "rolling leases," wherein every year the farmer meets the company's stipulations, another year is added to the end of their lease.

Notably, investment corporations were reported as having by far the most control of any landlord type over tenants' production practices. Investors are motivated by financial returns and are more likely to have strict reporting requirements, environmental responsibility commitments, and financial targets. This could, in turn, help explain why corporate investors, compared to other landlord types, exercise more control over production decisions. This increased control comes at some cost to tenant autonomy. As Sommerville and Magnan (2015) noted, "monitoring mechanisms exercise a disciplining effect on tenant farmers, who must comply with the investor-landlord's standards or risk losing the lease" (p. 136). Our study suggests that farmers who rent land from investor landlords face trade-offs: they may benefit from longer lease terms, providing some security, but may give up some autonomy with respect to farming decisions and practices. We have provided evidence that farmers who rent from corporate investors are younger and have high farm revenues. This reinforces the narrative promoted by some farmland investors that they are partnering with younger, expansion-oriented farmers.

Conclusion

Our survey provides clear evidence that prairie farmers recognize farmland concentration and financialization as important drivers of land tenure change and that there is great unease about how these trends are affecting rural communities, the environment, and the future of farming. Clearly, farmers are differently positioned with respect to these trends. Some may witness their effects indirectly, others have experienced them in their own communities, and still others may be contributing to them by expanding their own operations and/or partnering with investor landlords.

It is worth reiterating Sippel et al.'s (2017a) observation that the interests of farmers and rural communities are not monolithic. In our survey, for instance, farmers who intend to purchase farmland in the near future were younger than those with no intention to purchase. Increased competition for land is thus more likely to pose a significant challenge for younger, expansion-oriented farmers, than for those who don't plan to expand. Meanwhile, we found that intention to buy land increased with gross farm revenues, suggesting that it is larger farmers who are in a better position to acquire more land. Given that most of our survey respondents view increased land competition negatively, it is notable that many nonetheless participate in the race to accumulate more land, based on their capacity to do so.

Our study also points to a number of questions for future research. A key limitation of our study was that only 5.4 percent of our survey respondents were women, which is significantly lower than the 27.5 percent of female farm operators reported in the 2016 Census of Agriculture. More research reflecting the differences between the experiences of men and women farmers (as landowners and/or tenants) would help inform public debates and equitable policy development in rural Canada (Roppel et al., 2006). This would complement existing studies that have examined landlord behaviour by gender (Carolan 2005; Petrzelka and Marquart-Pyatt 2011).

Our analysis reveals differences between individual investor landlords and corporate investor landlords that deserve further exploration. Individual investors are much more common than corporate investors in our sample. Farmers reported that individual investor landlords set rental rates lower, on average, than other landlord types, and that investment corporations charged the highest rates. Future research on landlord-tenant relationships could include qualitative studies to explore the experiences of farmers involved with different landlord types.

As Rotz et al. (2019) point out, much of the existing literature on landlord-tenant relations "seems constrained to an either/or comparison between rental and ownership" (p. 3), and more recently, between landlord types. The assumption in much of the literature (Nassauer et al., 2011; Ulrich-Schad et al., 2016; Varble et al., 2016) appears to be that the current neoliberal iteration of the private property regime represents the bounds within which, for example, conservation programs can be implemented. Future work would benefit from analyzing land markets and tenure relations from a perspective that recognizes the potential (and arguably, the necessity) for alternative land tenure systems in light of the climate crisis and the challenges facing farmers and rural communities.

Finally, our research confirms that many farmers are concerned about the land question in the Prairie provinces—that is, "who gets how much of what kind of land, and why" (Borras et al., 2015, p. 610), and what they are able to do with it depending on the conditions of access. Further, our findings show how the ongoing

neoliberal restructuring and financialization of the sector are contributing to insecurity, rural decline, and farm differentiation. To date, there is little evidence of organized resistance to the dominant trends shaping the sector, reflecting the relative depoliticization of the land question on the Canadian Prairies. There is a need for farm organizations, rural publics, and farmers to engage critically and creatively with these challenges. As a start, we argue that it is necessary to call into question the inevitability of farmland concentration and financialization. This could lead to a more robust discussion of ways of tempering or reversing these trends, a process that should include public consultations to inform land legislation, policies, and programs that would enhance long-term ecological, social, and economic sustainability on the Canadian Prairies.

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Original Research Article

Food providers' experiences with a central procurement school snack program

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Abstract

Universal, government-funded school food programs (SFPs) offer many benefits not only to the children they serve, but also to the communities that support them. To date, Canada does not have a national SFP. Thus, if one is to be considered, evaluations of current SFPs in a Canadian context are necessary. This study explored food providers' experiences with the Centrally Procured School Food Program (CPSFP) in Southwestern Ontario, Canada. Twenty interviews were conducted with individuals involved in the production, procurement, and delivery of food to schools. Successes included improved economies of scale, increased profile and awareness of local food systems, and enhanced reach into schools. Challenges included inconsistent delivery times and unexpected food volumes that placed additional burdens on program implementation. Recommendations for program sustainability included enhanced engagement of partners, sustained funding to build capacity (including paid personnel), and more learning opportunities for students. Food providers gave insights on how the CPSFP can be improved and sustained into the future, as well as its potential to provide new opportunities for all stakeholders and have a positive impact on the local food system.

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Résumé

Les programmes universels d'alimentation scolaire (PAS) financés par le gouvernement offrent de nombreux avantages non seulement aux enfants qu'ils servent, mais aussi aux communautés qui les soutiennent. À ce jour, le Canada ne compte aucun PAS national. Ainsi, si l'on veut en créer un, il faut procéder à l'évaluation des PAS existants dans un contexte canadien. La présente étude s'est donc penchée sur les expériences des fournisseurs de nourriture avec le Programme d'alimentation scolaire centralisée (*Centrally Procured School Food Program*/CPSFP) du sud-ouest de l'Ontario, au Canada. Ainsi, vingt entrevues ont été menées auprès de personnes impliquées dans la production, l'approvisionnement et la livraison de nourriture aux écoles. Parmi les réussites du programme, on compte une amélioration des économies d'échelle, une visibilité accrue des systèmes alimentaires locaux, une sensibilisation plus grande à ces derniers et, enfin, une plus grande portée dans les écoles. Par ailleurs, des délais de livraison irréguliers et des volumes de nourriture imprévues ont imposé des fardeaux supplémentaires à la mise en œuvre du programme. Nous avons formulé les recommandations suivantes pour assurer la durabilité du programme : un engagement accru des partenaires, un financement soutenu pour renforcer les capacités (incluant du personnel rémunéré) et davantage de possibilités d'apprentissage pour les élèves. En définitive, les fournisseurs de produits alimentaires nous ont donné un aperçu de la façon dont le CPSFP peut être amélioré et maintenu à long terme. Ils nous ont aussi éclairés sur son potentiel à offrir de nouvelles opportunités à toutes les parties prenantes et à avoir un impact positif sur le système alimentaire local.

Keywords: School children; snack program; fruit and vegetables; food procurement; food providers

Introduction

Universal school food programs (SFPs) are widely implemented in Western countries and have demonstrated numerous positive impacts not only on the children they serve (Hector et al., 2017; Ismail et al., 2021a, 2021b; Olsho et al., 2015; Ovrum & Bere, 2014; Te Velde et al., 2008; Tussing-Humphreys et al., 2012), but also on their communities, by supporting local economies and food systems, and fostering volunteerism (Croom et al., 2003; Upstream-Oregon, 2011). Programs such as the Fresh Fruit and Vegetable Program in the USA (Coyle et al., 2009; Olsho et al., 2015) and the European School Fruit Scheme in Norway (Bere et al., 2006), Italy (Roccaldo et al., 2017), and Britain (Horne et al., 2004; White, 2006; Yeo & Edwards, 2006) have all reported improvements in children's dietary intake (with a focus on fruits and vegetables). Furthermore, they also share a common aspect in that they are part of a national, government-funded program that involves the universal provision of foods (i.e., the program is offered and accessible to all school-aged children) through a centralized food procurement system (Bateman, et al., 2014; Jamelske & Bica, 2014; Potter et al., 2011; Roccaldo et al., 2017).

Centralized food procurement means that one organization is responsible for all food purchasing decisions for its customers (Purchasing and Procurement

Center, 2021). In the case of SFPs, the customers are typically individual schools or school boards. This centralized food procurement is often a more efficient process, as it eliminates the need for individual customers (e.g., school personnel or volunteers) to purchase their own food and/or related supplies. It also has many benefits, including increased purchasing power, improved consistency of products, and more efficient administrative processes (e.g., invoicing and inventory management) (Purchasing and Procurement Center, 2021).

Despite the known benefits of these universal, government-funded SFPs, Canada currently does not have such a program. Provinces that do implement SFPs rarely use a centralized food procurement and delivery system (Colley et al, 2019; Ruetz & McKenna, 2021). Rather, and as is the case in Ontario, organizations and/or schools use a variety of approaches based on individual capacities (Ruetz & McKenna, 2021). This traditionally means relying on staff and caregivers to volunteer their time to plan, procure, purchase, prepare, and serve food items (Ontario Student Nutrition Program [OSNP], 2018). This poses many challenges and potential risks, primarily concerning food procurement practices, and leads to many inconsistencies in SFP implementation. For example, food safety issues may arise as volunteers independently procure and transport perishable foods to schools in private vehicles. Furthermore, by purchasing foods on a piecemeal basis (e.g., from multiple independent grocers), the purchasing power of programs is reduced. This can often result in i) foods being offered that do not adhere to nutritional guidelines; ii) limited reach and universality of programs (e.g., number of communities or students participating); and iii) a lack of program impact because the quantity of food offerings is too low to alter students' dietary intake (Valaitis et al., 2014). Therefore, if a national program is to be considered, these challenges will need to be addressed, and central procurement models relevant to a Canadian context explored.

In 2017, the Ontario Student Nutrition Program (OSNP), in partnership with the Ontario Ministry of Child and Youth Services (MCYS) and thirty elementary schools in three Southwestern Ontario communities, implemented a novel Centrally Procured School Food Program (CPSFP). The primary goals of this centralized food procurement and delivery model were to address the challenges and potential risks in existing Ontario programs around food procurement and delivery, while continuing to improve their mandate to provide elementary school-aged children with universal access and exposure to healthy foods.

The purpose of the present study was to explore the experiences and perspectives of food providers—CPSFP partners directly involved in the planning, production, centralized procurement, and delivery of food to schools using a pragmatic and exploratory approach in the hopes that insights provided may help to provide new information to guide a national SFP.

Methods

Overview of the CPSFP Model

The CPSFP was a ten-week pilot snack program that included the central procurement of foods (with an emphasis on fruits and vegetables, 20 percent of which was to come from local sources) for thirty elementary schools. A four-week pre-set menu was developed by OSNP personnel, including Registered Dietitians, with the intention of providing one serving of fruit or vegetables and at least one additional food item per child per day. The program was offered three to five days a week in schools (which was also a condition for participation).

The CPSFP included the following partners: a group purchasing organization (primarily involved in publicly funded health care), a food wholesaler/distributor, and local food producers (e.g., produce farmers), collectively referred to hereafter as External Partners (EPs). The CPSFP also included OSNP personnel (referred to hereafter as OSNP). These included a Regional Coordinator (RC), a Food Logistic Coordinator (FLC), and Site Coordinators (SC). The RC was responsible for general oversight of the CPSFP. This involved providing leadership and support to the FLC and SCs, liaising with funders, building partnerships between school boards and public health units, and collaborating with program leads across lead agencies to share information about effective practices. The FLC was responsible for securing contracts with external organizations (i.e., group purchaser, wholesaler/distributor, and producers) and liaising with SCs to manage any issues that arose during the program (e.g., substitutions for unavailable items, correcting errors in deliveries, and/or addressing food quality issues). SCs also played an active role in ensuring accurate food orders (e.g., quantity and quality of foods) were received at schools. They were also responsible for assessing program adherence, building capacity in schools, sharing knowledge and effective practices with program volunteers, supporting fundraising activities, and building partnerships with other local, regional, and provincial SCs across the province (OSNP, 2018).

On a biweekly basis, and on behalf of schools, the FLC placed food orders with external organizations based on the pre-set menu, the number of students, and food servings required per school. The group purchasing organization was then responsible for securing contracts for non-produce food items (based on the food order). Local food producers (farmers) provided produce directly to the wholesaler/distributor. The wholesaler/distributor was responsible for securing both non-produce food items and produce from all participating partners and for delivery of food items to schools. At times, however, they also independently secured additional food items for the program through their independent partners. Deliveries occurred weekly, and each school was responsible for receiving the deliveries and storing the food items.

Overview of the study

Theoretical perspective

This study examined the CPSFP using a pragmatic and exploratory approach (Goldkuhl, 2017; McInnes et al., 2017; Nowell, 2015), and focused on the realities and experiences of CPSFP participants involved in the production, procurement, and delivery of food to schools (Aarestrup et al., 2014; Bouck et al., 2011). The perspectives of school-level personnel—who provided the food to the students—have been reported elsewhere (Ismail et al., 2021a). A pragmatic approach was chosen

because in adopting a pragmatic philosophy, knowledge is understood as being constructed based on the reality of the world we experience and live in and encompasses not only the reality of the past but also what is possible to create for the future (Nowell, 2015). Therefore, the overall goal was to understand participants' context-specific experiences with the CPSFP that might lead not only to the improvement and enhanced sustainability of the CPSFP (Goldkuhl, 2017; Nowell, 2015), but also to add new knowledge for researchers, program stakeholders, policy makers, and the public about current and future Canadian SFP practices and the impacts these programs may have on broader community stakeholders.

Participant Recruitment

Near the end of Phase I (May/June 2017) of CPSFP implementation, researchers contacted the FLC via email to obtain a list of CPSFP partners, as potential participants. Of these potential participants, those with an email address were sent the study's Letter of Information and asked to contact research personnel if they were interested in participating. An interview time was then arranged. While no a priori commitment was made regarding the recruitment of previously interviewed participants, following Phase II (November/December 2017) and III (May/June 2018), previous participants were contacted again via email to determine their interest in completing a follow-up interview to discuss any additional insights they might have on the program. Additional potential participants were identified by snowball sampling (e.g., new food producers; OSNP staff) and contacted as described above. Any potential participant who was contacted and expressed interest in the study was interviewed. Verbal informed consent was obtained from all participants. This study was approved by Western University's Non-Medical Human Research Ethics Board (#108549) and the research and evaluation offices of the Thames Valley District School Board and the London District Catholic School Board.

Data Collection

Interviews were conducted over the phone following each phase of implementation. To maximize reliability and consistency, the same researcher facilitated all interviews. Two semi-structured interview guides were developed with different participant roles in mind—EPs or OSNP. Following Phase I, revisions were made to specifically target individual participants according to their role and to capture any longitudinal changes over the course of program implementation. The interview guide for EPs is presented in Table 1. To ensure accuracy, all interviews were audio recorded, transcribed verbatim by trained undergraduate student research assistants, and verified by the researcher who conducted the interviews. Although a high level of congruency was achieved on some aspects of the data, due to the the limited number of participants in certain roles and the diversity of participant roles, overall data saturation was not achieved.

Data Analysis

Data were analyzed using inductive content analysis described by Braun and Clarke (2006). To increase reliability, transcripts were independently coded by three researchers, one who conducted the interviews and two others who have experience with qualitative research methods and analysis. The research team then met to discuss their findings. Any issues that arose during this initial analysis were resolved through discussion and consensus until a common theme template was developed.

To enhance the trustworthiness of the data, a few strategies were used. Member checking was conducted during all interviews in "real-time" to verify that

researchers were accurately interpreting participants' perspectives. After the first few interviews, debriefing discussions among the researchers helped to confirm the reliability of the data being collected. An audit trail was also kept as documentation of decisions made during the analytical processes. Finally, credibility was enhanced by using a team approach to data analysis, through investigator triangulation (Merriam, 2009; Patton, 1990).

Results

Of the twelve participants invited for interviews, all agreed to participate in the study (100 percent response rate). In total, twenty interviews (range: thirty to forty-five minutes) were conducted over the three phases of program implementation. The number of interviews conducted during each phase were as follows: Phase 1 (five interviews: one EP, four OSNP), Phase II (seven interviews: one EP, six OSNP), and Phase III (eight interviews: four EP, four OSNP). Two participants were interviewed over all three phases (two OSNP), four were interviewed over two phases (one EP, three OSNP), and six were interviewed once (four EP, two OSNP). While the intent of this study was to get a longitudinal understanding over all phases of the CPSFP, not all participants could be interviewed in all phases due to unforeseen circumstances, such as scheduling issues, time constraints, loss of interest, or a change in position.

Data analysis revealed three main themes: 1) perceived opportunities with participation; 2) successes and challenges to the CPSFP; and 3) recommendations for program sustainability. Representative quotes are identified by participant and Phase (e.g., EP3_Ph III refers to External Partner, participant three, Phase III). Due to the limited number of participants in certain participant categories, some data are presented simply as OSNP or EP, to maintain anonymity.

Perceived Opportunities with Participation

When asked about the CPSFP, all study participants reported that program participation came with anticipated opportunities. One such opportunity was that central procurement allowed nutritious foods to be procured at the best value, in greater volumes, and with a focus on local foods. One of the OSNP personnel summarized the multifaceted potential of this model, "Under central procurement, we are hoping to leverage better pricing with economies to scale, to add better quality standards around the nutritional value of food served, and [we] wanted to focus on looking at opportunities to purchase more local food" (OSNP7_Ph II).

In addition, most participants highlighted opportunities for the program to build valuable partnerships and to enhance connections with the community. This was especially important for food producers who wanted to grow and diversify their business in an increasingly competitive global market. One of the EPs explained it this way, "For our local food to be sustainable, we need to build valuable connections in our community. I think the program is an important step in that direction. A lot of produce is globally traded so it's hard for us to compete on a global scale, but I think there is value in local food, and I think this program is great start for us to kind of work on that" (EP4_Ph III).

Finally, all participants expressed that the CPSFP presented an opportunity to support the universal provision (i.e., all students participate regardless of need) and access to safe and healthy foods to children in school. Most participants, including both EP and OSNP, also believed that programs like the CPSFP supported children in making healthy dietary choices that may carry forward into adulthood, and potentially increase awareness about the local food system that may, in turn, translate into future customers. One OSNP personnel stated that "The overall goal would be to ensure that students have access to healthy food at school in a non-judgemental, universal non-stigmatizing way" (OSNP4_ Ph I), while an EP explained that "We're dealing with the younger generation and encouraging them to make better eating choices. Those younger folks grow up into adults and will continue those choices hopefully for them and their family" (EP3_Ph III).

Successes and Challenges to the CPSFP

All participants viewed the program as successful in some way, with most stating that the CPSFP addressed some of the planning, procurement, and delivery concerns of the current traditional model. While most agreed that the CPSFP contributed more successes than challenges, some challenges were revealed, but tended to improve over the three phases of program implementation. The planning and development of the pre-set menu was generally deemed successful by all participants, but for different reasons (according to their role). With respect to food procurement, most participants stated that the pre-set menu aided in forecasting volumes, which helped with economies of scale, and allowed increased opportunities to incorporate more local foods. One OSNP described this benefit as, "We can forecast those numbers because it is a preset menu. So, it's easier to source from those Ontario producers" (OSNP6_PhII). From a group purchasing and wholesaler/distributor perspective, the purchasing power was improved for all their existing customers, as the addition of the CPSFP food items resulted in higher and committed volumes. Also mentioned by these participants was that the diversity of available food items for all customers increased due to the CPSFP's pre-set menu requests. As stated by one EP, "It has added volume to our pile [all customers], which helps with pricing for everyone, and this student nutrition volume boosts that pile. There is a lot of similarities between health care food items and students' nutrition food items, so there has been some real benefit to everyone" (EP2_Ph II). From a food producer perspective, the pre-set menu and subsequent increased volume led to greater efficiencies to prepare orders, for example getting one order ready for multiple schools instead of one order per school. One EP expressed that "Sometimes its difficult to deal with schools individually, but with this program we were able to reach a bunch of schools, so the volume was big, and it was easy for us to do" (EP4_Ph III).

In contrast to the successes of the pre-set menu, participants discussed some challenges it posed on food procurement due to food volume and types of foods requested. Those directly involved with food procurement and distribution noted that, at times, insufficient lead time or lack of past information to secure and forecast food volumes led to some inconsistencies in food quality (e.g., underripe produce and spoilage), inaccurate food volumes (e.g., less than one serving per student), and/or the need for last-minute food item substitutions. Some seasonality issues were mentioned by a few participants which led to the inability to secure certain menu items and contributed to food substitutions. For OSNP personnel, these inconsistencies were similarly noted as they caused some confusion and frustration for school-level program volunteers. All participants commented, however, that

these issues tended to improve over time, "We have some challenges because the kinds of products are sometimes different from what is in stock with our distributors, so there has been a bit of miscommunication around how much time is required. How much lead time we need to react but I think we've ironed those out" (EP2_PhIII).

At the school-level, OSNP personnel noted that, while the pre-set menu met their goals of increasing access to a variety of nutritious foods to children, the food volumes and types may have unintentionally placed additional burdens on school staff and volunteers with respect to food handling, preparation, and adoption. Most OSNP personnel mentioned that the amount of food initially received by schools was overwhelming, as it tended to be more than their typical purchasing volume. For example, one OSNP stated, "I think that some of the schools were a little bit overwhelmed with how much food comes because when they shop, they're not used to getting that much" (OSNP5_ Ph III).

A few participants commented that this excess volume led to food waste, primarily due to limited volunteer/staff time to prepare items, but also due to infrastructure limitations. OSNP personnel mentioned that some schools lacked the appropriate storage facilities (e.g., refrigerators, freezers), preparation space, and utensils to prepare and serve certain food items, and that funding was inadequate to acquire the resources needed to fully implement the menu as planned. Regarding this challenge, one OSNP expressed that "I know some of the schools have an issue just with sheer storage of where to put it all" (OSNP1_ Ph III).

All participants stated that the CPSFP's procurement and delivery practices alleviated concerns over food safety and supported the maintenance of cold chains. For example, one EP commented, "It preserves the food chain…I'd hate to have someone get sick because they had the yogurt in the trunk. It makes me feel good that the food that gets to students have maintained their cold chains from produced to consumed and I know that these kids are getting safe, good food at a good price" (EP2_PhII).

With respect to delivery, most food distributors and producers noted how well organized and seamless the delivery processes were to implement. One minor challenge mentioned by all participants was an inconsistent delivery times to schools. While food distributors aimed for consistent delivery times and personnel, it was challenging to work around bus schedules (e.g., school bus drop-off times). One OSNP detailed these challenges as, "I try and keep the same face going to the schools just so the schools get used to the same delivery person. Unfortunately, everyone wants their order to be delivered by nine, but that's just not possible. We are also trying to work around bus schedules because we are trying not to tie up any more space in bus lanes and parking lots" (OSNP 6_Ph II). These inconsistent delivery times also posed challenges to school volunteer capacities to receive and store items.

Recommendations for Sustainability of the CPSFP

All participants noted the continuous improvement of the CPSFP across all phases of implementation. Many lessons were learned, with participants noting several aspects that would aid in the sustainable implementation of the program, particularly with respect to the planning and procurement practices. From a planning perspective, all participants expressed the need for continued use of a pre-set menu to drive purchasing power and economies of scale; however, other aspects were identified that could help with procurement and implementation. Most participants noted the importance of collecting input from key stakeholders (e.g., procurement groups, distributors,

individual schools) prior to program implementation to aid in the planning of the menu. From a procurement perspective, some participants commented that this may alleviate issues around certain foods not being available for purchase and may help to balance the weekly menu to ensure it includes both high and low preparation food items (e.g., whole pineapples vs. apples), as well as dry goods and perishable items. For example, one EP stated that "I think we just keep lugging forward trying to improve delivery and products that don't need a lot of prep. Everybody is looking for different products right because they don't just want fruits and vegetables" (EP1_PhI). Participants noted that this may help eliminate last-minute substitutions, potential food quality issues, and limited school-level resource capacities.

While OSNP participants shared this need to decrease the school's burden regarding resource capacities, a few participants mentioned that, by allowing individual schools to provide input into the menu, it would ensure that their students' food preferences and appropriate volumes (e.g., smaller servings for younger children) were taken into consideration. As suggested by one OSNP personnel, "The quantity of food we're providing, just how better to efficiently meet the needs of what the school would use versus just delivering what we expect them to use (OSNP 4_Ph II). This, in turn, may also help reduce waste and build some flexibility into the menu to allow more creative and appealing food options for students (e.g., celery and hummus vs. celery and melba toast). This flexibility was expressed by another OSNP personnel in the following way, "They would like to have more choice. There are certain products that they just feel that their students don't like and therefore they would like to not have those products" (OSNP7_ Ph II).

All participants involved in the procurement of food stated that they would like to see a continued investment in expanding and diversifying their partnerships. All participants stated that they wanted to see the CPSFP expand to include more schools, thereby increasing their businesses, purchasing power, and economies of scale, while reaching more children. "I would like to see more volume, more coordination among coordinators because I really think if they put their volume in one basket, they could see some incredible value for their procurement" (EP2_Ph II). Food procurers further commented that the diversification of partnerships with food producers would not only increase food item offerings (e.g., local foods), but also enhance the profile of local farmers. As stated by one OSNP personnel, "We're learning more ways to sustain this type of program. Reaching out to more vendors, companies, and businesses. Just being able to branch out and expand our network" (OSNP3_PhII).

Finally, some OSNP personnel noted the need to expand their distributor pool to avoid any unforeseen changes in contracts (e.g., changes in fee structure) and to maximize customer service contracts. As expressed by OSNP personnel, "Working with multiple vendors so that we don't get in that situation where we're really dependent on one vendor" (OSNP7_ Ph III).

In terms of program sustainability, one aspect of the CPSFP deemed invaluable by all participants was the presence of dedicated, paid OSNP staff. From a procurement perspective, food distributors valued the role of the FLCs to provide timely communication about volume forecasting and food item needs, including problem solving when menu items were unavailable. Food producers also appreciated this role, as it alleviated the strain placed on them to coordinate and deliver produce from their individual farms to schools. All participants commented that this position

provided an opportunity for the program growth previously mentioned. One EP summed it up as such,

> What I liked most about the program is [FLC] takes care of all the logistics. We work with some schools, just more one-on-one, and sometimes it's very difficult to coordinate all the logistics. It was nice to have that taken care of. It was really simple and especially when farmers are really busy, it can't be too much work for them, otherwise they're not going to be able to participate (EP4_Ph III).

All participants recognized the importance of committed, continuous, and flexible funding for the sustainability of the CPSFP. Participants highlighted that costing of food is often variable and associated with seasonality, which can lead to changes in forecasting and availability of items. This was expressed by one EP as follows, "Funding obviously. Funding with the freedom to look for the best value is required. With donations, there's a requirement to spend it within the store that donates it and that does not allow for aggregated volumes and contracting product when you're dealing with gift cards" (EP2_ Ph III). While the CPSFP did increase the food cost per student per day, it did not address the current financial restrictions imposed by government funding regarding physical resources (e.g., storage, utensils, equipment). Therefore, some participants mentioned the importance of having flexible funding to support these infrastructure needs to fully meet CPSFP goals and implementation. For example, this flexibility was addressed by one OSNP as, "I know that every school is different, so some schools have storage, and some don't. Some have a lot more fridge and freezer space... a school has to apply for infrastructure and there's minimal funding that goes towards that... so I would hope that with this project there would be some extra funding for that" (OSNP2_Ph I).

Finally, some participants commented that if the CPSFP is to be sustainable, greater engagement and learning by students and program volunteers is needed. Participants commented that the CPSFP could benefit schools further by enhanced food literacy components. For students, some participants noted providing opportunities for involvement in the program and more integration into classroom activities. As mentioned by one EP, "It kind of enriches their learning. I know a lot of the schools have kind of gone off into other directions incorporating some of that stuff into some of their science lessons days" (EP1_Ph I). For program volunteers, access to best practice guidelines (e.g., delivery models to classrooms, ideas for leftovers, recipe guides) were suggested. To improve program implementation, more dedicated and consistent support during initial program implementation was mentioned by OSNP. "Our role is around delivering the food to the school and once it gets to the school there's a lot that can be done under that best practice framework that would really enhance the quality of outcomes" (OSNP7_ Ph III).

Discussion

This study highlighted the perspectives of an often-overlooked group of SFP participants, namely those non-school personnel involved in the planning, procurement, and distribution of foods in a SFP in Canada. Although some challenges were identified with the new central procurement model, most participants focussed their comments on the numerous benefits and strengths of the CPSFP, with opportunities to expand and ensure the program's sustainability for the future.

One key aspect mentioned by all participants was the collective benefits experienced by their involvement in the CPSFP. Participants entered the partnership as a community engagement opportunity with the goal to enhance and/or promote their businesses, while simultaneously supporting healthy eating habits in school-aged children. From food producers' perspectives, more product was sold, and the diversification of their consumer base may provide more support in an increasingly competitive global market. From a food procurer/distributor perspective, the CPSFP was an opportunity not only to grow their business, but also to improve economies of scale, a perspective shared by OSNP personnel. These findings are in concert with previous literature indicating the collective value of school food programming beyond that experienced by the students that serve them (Aarestrup et al., 2014; Gregoire & Strohbehn, 2002; Izumi et al., 2006; Izumi et al., 2009; Izumi et al., 2010; Joshi et al., 2008; Watson et al., 2018).

Although the primary intention of the new central procurement model from an OSNP perspective was to address current challenges in traditional, ad hoc school snack programming, OSNP personnel also saw the program as a way to extend their existing public funding to increase the reach of the program and to ensure that greater quality, quantity, and variety of foods were offered to children. This benefitted the consumer base of EPs, in that synergies between different customers (including health care institutions) allowed everyone access to previously unavailable food options. Taken together, the addition of the CPSFP not only improved economies of scale for a public funded school snack program, but in this case, for publicly funded health care as well, which ultimately increased the affordability of highly perishable fruits and vegetables or speciality food items (and stretched limited tax dollars).

The primary motivations for farmers (producers) to participate in SFPs included enhancing economic incentives (e.g., diversifying their marketing strategies) (Izumi et al., 2010; Joshi et al., 2008), fostering healthy eating habits among children (Izumi et al., 2010; Joshi et al., 2008), supporting the local economy (Izumi et al., 2010; Joshi et al., 2008), and solidifying good public relations (Gregoire & Strohbehn, 2002; Izumi et al., 2006). While this was true for the current study's participants, they were also motivated by their desire to increase awareness about their produce and farms, and to make connections with their community. Although Canadians place high trust in farmers, 91 percent know little about farming or the challenges farmers face (The Canadian Center for Food Integrity, 2019). Therefore, school food/snack programs present another avenue to raise public awareness of the value of farming and agricultural practices, which is an important aspect of food literacy that is associated with healthier eating habits (Kalkan, 2019; Libman, 2007; Triador et al., 2015).

Although the CPSFP's pre-set menu was successful at improving economies of scale and alleviating burdens on snack volunteers to plan and procure foods for their schools, some unintended consequences emerged due to the volume and types of food requested. Participants noted that short lead times, seasonality, and lack of availability of certain food items led to some issues with the quantity and quality of foods delivered and may have resulted in last-minute food substitutions. OSNP personnel stated that snack volunteers were overwhelmed and, at times, struggled with preparing and storing certain menu items. All participants agreed that these issues improved over time and that moving forward, input from all stakeholders into the pre-set menu and development of best practice guidelines could help to alleviate most of these issues. Situational assessments are invaluable tools for any program

implementation as they not only allow potential challenges to be circumvented, but they also promote a sense of agency among stakeholders (Ontario Agency for Health Protection and Promotion et al., 2015). For example, previous evaluations conducted on similar initiatives have indicated that support for their programs would have been enhanced if personnel had been more involved in the planning stages (Bouck et al., 2011; Clarke et al., 2009; Jorgensen et al., 2014).

All participants stated they looked forward to the CPSFP continuing in the future, with most commenting that they wanted to see not only expansion of the program, but also greater engagement of all stakeholders. Previous studies have reported the essentialness and benefits of engaging partners to school food programs that create synergies between education, agriculture, and the community, while also contributing to the local economy (Bateman et al., 2014; Joshi et al., 2008). From an economics perspective, food distributors in Wisconsin reported that their participation in a farm-to-school program had the potential to increase interest and demand for local foods by their customers and potentially created a market advantage for themselves (Bateman et al., 2014). In Ontario, one of the targets of the Local Food Act (Bill 216, 2020), is to increase the provision of local foods in public funded organizations. Therefore, the inclusion of the CPSFP into the customer base of food procurement groups may increase local food procurement for all existing customers (including publicly funded health care) which would further the targets set by the province and support the local food economy as well (Ruetz & McKenna, 2021).

To ensure the CPSFP's feasibility, fidelity, and sustainability, all participants identified committed and flexible funding as a necessary aspect. Participants stated clearly that any future funding model should continue to support paid personnel that were deemed invaluable to the CPSFP to ensure timely communication with EPs (e.g., orders, substitution of food items, delivery times) and the maintenance of the newly established central procurement and delivery practices. Furthermore, any future funding model would also need to ensure that a variety of high-quality food items—including local, seasonal, fresh produce—be more readily available. Enhanced and flexible funding to support fluctuating costs for food procurement (e.g., seasonality), infrastructure, and possibly human resource needs, were also considered necessary to ensure that economies of scale, food safety standards, and program reach are maximized. Adequate and committed funding to support food procurement and delivery practices, food costs, infrastructure, and human resource needs have been identified in previous evaluations of school food programs as a necessary component to the success and sustainability of such programs (Bouck et al., 2011; Gates et al., 2016).

While the present study was conducted prior to the publication of two recent reviews examining Canadian SFPs (Everitt et al., 2020; Ruetz & McKenna, 2021), the experiences of the CPSFP's food providers aligns well with the collective findings of both reviews. Of particular interest, the scoping review by Everitt and colleagues (2020) identified some promising practices for future SFPs in Canada, which were also identified by participants in the present study. Everitt and colleagues (2020) suggested that SFPs are well positioned to support local food systems, which was confirmed by EP involved with the CPSFP. Furthermore, the economic sustainability of the CPSFP was clearly identified by all participants as a way to ensure that the CPSFP could achieve its full potential of universality, reach, and effectiveness (Everitt et al., 2020). This, too, was identified as a key component of Everitt et al.'s (2020) proposed framework for SFPs to ensure that sufficient resources are invested to support

program implementation and evaluation. Interestingly, while most current SFPs focus on nourishing children (Everitt et al., 2020; Ruetz & McKenna, 2021), participants in the present study perceived the CPSFP as a means to move beyond simply providing healthy food to children, to supporting multiple attributes of food literacy (e.g., food preparation, awareness of eating for health). This idea of moving beyond mere nourishment was also included in Everitt et al.'s framework (2020). They propose that SFPs have the potential to address the social determinants of health, including food literacy, health equity, and cultural diversity, to name a few (Everitt et al., 2020).

There are several strengths and limitations of this study. A strength was including participants with diverse roles in the food provision aspects of the program, which enabled a broad perspective of program implementation from procurement to distribution. Also, credibility of the data was enhanced by having multiple, independent researchers (i.e., those with no prior relationship to the program) conduct data analysis. Potential limitations include that this study was designed to evaluate the experiences of stakeholders involved in the CPSFP, and while the intent was to inform future SFP, the insights may not be entirely transferable to other school snack program models. Additionally, self-selection bias may have occurred in that participants with a vested interest in seeing the program continue (e.g., enhanced business for food providers) may have provided a more positive assessment of the program.

Conclusion

Participants offered a variety of in-depth insights into the planning, procurement, and delivery aspects of the CPSFP. Inevitably, some challenges were experienced; however, participants collectively highlighted many broad successes of the program. Although partnerships were built to support healthy eating in children, the inclusion of the CPSFP in the local community's food system had a more holistic return on investment. Food procurers and distributors identified benefits to their existing businesses, which not only increased purchasing power and economies of scale for all customers, but also increased the variety of nutritious products available. The CPSFP provided food producers with an opportunity to diversify their businesses, while educating the community (e.g., children, parents, and schools) about their products and practices, and promoting support for local foods. OSNP personnel increased the reach of their existing nutrition programming, while maintaining food safety and nutrition standards. Taken together, the CPSFP presents a promising implementation model for SFPs that is feasible, sustainable, and mutually beneficial to multiple stakeholders within the food system. It may also help inform discussions about a national school food program for Canada.

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Original Research Article

Food insecurity on campus: A community-engaged case study with student-led families at the University of British Columbia

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Abstract

This paper draws from a community-engagement case study conducted at The University of British Columbia (UBC), Vancouver, Canada. The study examines food insecurity experienced by student families. Research data was collected through quantitative and qualitative methods applied in a residence on campus. The study shows that food insecurity ranges between marginal and moderate among surveyed student-led households; while 5% of student families have (at least) one member "go(ing) to bed feeling hungry", 3% declared they "sometimes" and "frequently" do not eat enough. Seemingly, financial, food, and housing insecurities are deeply interrelated in student-led households. A system intervention by UBC stakeholders could be optimal to support student wellbeing.

Résumé

Cet article est issu d'une étude de cas communautaire qui a été menée à l'Université de Colombie-Britannique, à Vancouver, au Canada. L'étude examine l'insécurité alimentaire vécue par des familles d'étudiants. Les données ont été collectées dans une résidence universitaire à l'aide de méthodes quantitatives et qualitatives. L'étude montre que l'insécurité alimentaire survient de légèrement à modérément chez les ménages étudiants interrogés : alors que 5 % des familles étudiantes comptent (au

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moins) un membre qui « va au lit avec une sensation de faim », 3 % ont déclaré que « parfois » et « souvent », ils ne mangent pas assez. Vraisemblablement, les insécurités en matière de finance, de nourriture et de logement sont profondément reliées chez les ménages étudiants. Un système d'intervention par les acteurs de l'Université de Colombie-Britannique pourrait optimiser le soutien du bien-être étudiant.

Keywords: Food insecurity on campus; student-led household food insecure; food affordability; food accessibility; farm on campus

Introduction

Household food insecurity (HFI) has been affecting a steadily widening spectrum of the Canadian population since 2005 (Statistics Canada, 2020; Tarasuk et al., 2019). HFI is no longer primarily experienced among households relying on social assistance, worker's compensation, or employment insurance for income; rather HFI is increasingly prevalent among employed households, particularly those that rent and those led by lone female parents of dependent children under eighteen years (Fafard St-Germain & Tarasuk, 2020; Food Insecurity Policy Research, n.d.; Tarasuk & Mitchell, 2020). Recent evidence indicates a high prevalence of HFI on university campuses that bears substantial burden on the health and wellbeing of university students (Blundell et al., 2019; Entz et al., 2017; Hattangadi et al., 2019). Health Canada defines HFI as the "inability to acquire or consume an adequate diet quality or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so. HFI is often linked with the household's financial ability to access adequate food" (Canada Health, 2010, para. 1). The PROOF[1] research team emphasizes household finances/income as the primary cause of HFI, and succinctly defines it as "the inadequate or uncertain access to food because of financial constraints" (Tarasuk & Mitchell, 2020, para. 1). Since 2005, Statistics Canada (2021) has collected data on the prevalence and severity of household food insecurity using the Household Food Security Survey Module in the annual Canadian Community Health Survey. Measures of severity are categorized as: (1) *marginal*, when households face issues of income-related food access such as worry about running out of food and/or limited food selection due to a lack of money for food; (2) *moderate*, indicates quality and/or quantity of food compromised due to a lack of money; and (3) *severe*, refers to household members missing meals, reducing food intake, and in extreme circumstances going day(s) without food (Polsky & Garriguet, 2022). In 2017 to 2018, over 1.2 million households in Canada (16.5 percent of the population), and over 750,000 people in British Columbia (15.9 percent of the population) experienced HFI (Tarasuk & Mitchell, 2020). Clearly, there is a need to tackle this public health issue at its fundamental root cause: a lack of secure, sustainable and adequate household income (Hattangadi et al., 2019; Riches, 2018, 2020; Tarasuk et al., 2019). Gaining a better understanding of the daily stressors associated

[1] PROOF: A leading food insecurity research team formed to identify and inform policy that effectively reduces household food insecurity in Canada (PROOF, n.d).

with living in food insecure households, how stressors are managed within families, and the effects on the social and physical wellbeing of household members can inform how to direct resources to those most in need. The primary purpose of this case study is to analyze the prevalence and dimensions of HFI experienced by student-led families[2] residing in the Acadia Park residence on The University of British Columbia (UBC) Point Grey campus. To our knowledge, no studies have examined food insecurity among student-led families living in an on-campus residence. A secondary purpose is to understand how the UBC Farm intersects with student-led families' access to fresh produce. UBC Farm is an on-campus organic farm within a twenty-minute walk from the centre of campus, and a similar distance from Acadia Park. To conclude, we provide actionable recommendations directed to university administrators and the community for tackling the issue of HFI among student-led families

Background

Food insecurity on Canadian campuses affects many postsecondary students. Silverthorn (2016) surveyed 4,013 students from five Canadian universities,[3] and reported nearly two in five students (39 percent) experienced moderate or severe food insecurity, with the cost of food and housing, tuition fees, and inadequate income identified as the most common barriers to food security. Compounding known risk factors include belonging to a racialized group, being a first-generation postsecondary student, lacking family support, living in a low-income household, and parenting children. (Bruening et al., 2017; Power et al., 2021).

Food insecurity impacts physical and mental health as well as academic performance (Bruening et al., 2017; Power et al., 2021). A recent Canadian study reported that, "food insecure [postsecondary] students are more likely to have lower grades and to drop out" than their food secure peers (Power et al., 2021, p. 49). The adverse effect of food insecurity on mental health is often referred to as food worry, and described as "the experience of stress or worry about having enough food to meet basic needs"(Han et al., 2022, p. 2; McAuliffe et al., 2021). Food insecurity and food worry interrupt students' full engagement in the social life of postsecondary education, pointing to impacts on multiple dimensions of human health and wellbeing (Kim et al., 2022).

Food insecurity does not stand in a silo of its own; rather it correlates with insecurities of other basic needs. Leung et al. (2021) reported over 11 percent of college student of a large U.S. Midwestern university concurrently experienced food, financial, and housing insecurities. Compared with peers whose basic needs were met, the cumulative burden of these three insecurities on students significantly increased their risk of experiencing mental health issues, fair or poor health, and a lower grade point average (Leung et al., 2021).

[2] Student-led families have at least one parent registered as a student, and at least one dependent child under 18 years.
[3] The University of British Columbia did not participate in this study.

The intersection of food, financial, and housing insecurities may be more challenging to manage for students who must also take care of dependents. In confronting barriers to food access, individuals are known to switch toward cheaper sources of energy that compromise the quality of their food intake (Food and Agriculture Organization of the United Nations [FAO] et al., 2015). In families, this change in dietary intake is particularly concerning given childhood exposure to food insecurity is strongly correlated with long-term adverse physical and mental health outcomes (McIntyre et al., 2017).

Over the past fifteen years, government spending on postsecondary institutions in Canada has been relatively stable. Across the country, the primary response of universities has been to recruit more international students and increase tuition and other compulsory fees for domestic and international students (Usher, 2021). The ramifications are plentiful by making postsecondary education less affordable for domestic students from low- and median-income households, as well as for international students who are forced to pay "at least double the tuition fees of domestics students" (Farahbakhsh et al., 2017, p. 71). The economic situation for a student-led family is likely even more precarious due to the expense of feeding and renting a multi-bedroom home, particularly in a market where the costs of housing and food have been increasing faster than the national inflation rate (Silverthorn, 2016).

In the 1970s, Canada officially recognized the right to food ratifying the International Covenant on Economic, Social, and Cultural Rights (United Nations [UN], 1966). Yet, from 2017 to 2018, one in eight Canadian households were food insecure and 4.4 million people—including over 1.2 million children—lived in food-insecure households (Tarasuk & Mitchell, 2020). More specifically, the highest rates of household food insecurity are found among Indigenous, Black and other ethnic and cultural groups (Tarasuk & Mitchell, 2020).

Food insecurity on campus

Although community resources are available in Acadia Park residence on UBC Point Grey campus, student-led families cope with multiple stressors in their day-to-day lives. Graduate student-parents juggle producing high-quality research output that often requires extended periods of time away from their families, paying high tuition fees, and caring for their families—all of which compromise student health and wellbeing.

Results from the 2016 Acadia Park Residence Association (APRA) survey showed 52 percent of participants living in Acadia Park residence had an annual household income of less than $30,000, and allot nearly 85 percent of their income toward housing costs on campus (Robinson et al., 2017). In 2017, the BC Centre for Disease Control (Kurrein et al., 2018) estimated the monthly cost to feed nutritious food for a family of four to be approximately $1,019.[4] To meet this estimate, families in Acadia Park would be spending approximately one-third of their monthly budget on food costs (Robinson et al., 2017). Comparatively, in 2018 British Columbia households had a median income of $84,850 and food costs

4 Nutritious food is defined as minimally processed, requires preparation, and is considered to be commonly eaten by most Canadians in amounts that provide a nutritionally adequate, balanced diet (BC Centre for Disease Control, 2018).

accounted for approximately 11 percent of household income (Canadian Federation of Students, 2017; Government of British Columbia, 2022).

Several non-peer-reviewed studies conducted by students and faculty on Point Grey campus have revealed that food insecurity among students has existed for many years (Brinkman et al., 2015; MacEwan et al., 2016), and the studies have informed university initiatives, such as the Wellbeing Strategic Framework, the Food Security Initiative, and the Community Food Security Hub (The University of British Columbia [UBC], 2021). In addition, the annual AMS Academic Experience Survey provides insight into the prevalence and degree of food insecurity experienced by UBC students (Yee et al., 2020). In 2019, more than two in five undergraduate and graduate student respondents (N=2,170) were concerned about their ability to feed themselves, including one in five who experienced this challenge at least monthly (Yee et al., 2020). Furthermore, 42 percent of undergraduate respondents and 44 percent of graduate respondents have ever had concerns about running out of food (Yee et al., 2020).

Access to affordable fresh produce on the Point Grey campus presents challenges to students as well, despite the presence of UBC Farm. When comparing the price of UBC Farm organic food[5] to the price of organic and conventional produce from five nearby grocers, the cost of fresh organic produce was similar. However, the cost of UBC Farm organic produce ranged between 1.5 to 2 times the cost of conventional food, thereby limiting the affordability of locally-produced organic food (Lee et al., 2016).

The challenges associated with affordability and procurement of local produce are not isolated to the UBC context. In a national study[6] aimed at identifying the benefits and barriers to local food procurement on Canadian campuses, 56 percent of respondents pointed out high prices as the primary deterrent to purchasing local food on campus, and difficulties in accessing or sourcing local food ranked second (Atkinson et al., 2013).

Like any other campus, Point Grey has a particular food system that Rojas et al. (2007, p. 2) described as a "microcosm of the global food system": issues that are present in the global food system are also present at UBC, and food insecurity is one of the mirrored issues. "UBC community must assume full responsibility for what happens in our own backyard" and this requires that we "improve our understanding of the impacts of the food system currently feeding this community" (Rojas et al., 2007, p. 4). Our case study provides a unique perspective on student-led families living in the Acadia Park housing complex at UBC. The confluence of achieving high quality academic output, raising families with low household income, paying high tuition fees, and the close proximity of UBC farm to family residences propelled us to examine how students cope with the challenge of providing their families with healthy food and fresh produce amidst a sea of plenty.

We used four research questions to frame our study: 1) What level of food insecurity (marginal, moderate, severe) do student-led families experience when living in Acadia Park residence? 2) How does family income impact Acadia Park student-led families' risk of food security? 3) What dimensions of food insecurity influence Acadia Park student-led families' decision making around food purchases? 4) What are student-parents' perceptions about food adequacy and acceptability, and access to local and organic produce, both on and off campus?

[5] The prices for salad greens, kale, carrots, potatoes, and apples were included in the study.
[6] National study with the exception of Prince Edward Island, and Nunavut, Yukon, and the Northwest Territories (Atkinson et al., 2013).

We considered both local and organic produce because UBC Farm is on campus and supplies produce to UBC and its extended communities.

Case study and data analysis

UBC Point Grey is a research-intensive campus situated on the ancestral and unceded territory of the xʷməθkʷəy̓əm (Musqueam) people, in the city of Vancouver, British Columbia, Canada. In 2022, UBC ranked thirteenth globally by Times Higher Education in delivering on the United Nations Sustainability Development Goals, and annually attracts outstanding graduate students from around the world (UBC, 2022b). Point Grey campus is approximately 400 hectares in size and home to 55,780 students with 10,600 graduate students (UBC, 2021). Of the total Point Grey student population, approximately 27 percent are international students, and graduate students alone originate from 119 countries (Mukherjee-Reed & Szeri, 2021).

Acadia Park services over 600 student-led families with approximately 90 percent of households led by a graduate student-parent (UBC AMS Office of VP Academic and University Affairs, 2014). Life in Acadia Park is shaped by a community centre, primary school, childcare services, community garden, coffee shop, and several playgrounds. Acadia Park is administered by Student Housing and Community Services (SHCS), and residents are organized under APRA.

The UBC Farm is a twenty-four hectare farm situated in a ninety-year-old coastal hemlock forest and is operated by the Centre for Sustainable Food Systems (CSFS). Through the farm, CSFS aims to provide a "more sustainable, food-secure future" (Centre for Sustainable Food Systems [CSFS], 2021, para. 1) for all by facilitating teaching, research, and community activities in support of their goal. Over 200 varieties of fruits, vegetables, and herbs are produced on the farm, which is a mosaic of cultivated annual crop fields, perennial hedgerows and orchards, pasture, honey bee hives, egg-laying and open-pasture hens, teaching gardens, and forest stands (Centre for Sustainable Food Systems [CSFS], 2021). From June to October, UBC Farm sells its produce and eggs directly to consumers at weekly farmers' markets, on Wednesday afternoons in the centre of Point Grey campus, and Saturday mornings at the farm site.

Methodology

We used a mixed methods approach to capture both quantitative and qualitative dimensions of HFI experienced by Acadia Park families. We added questions to the online Acadia Park Residence Survey, administered a face-to-face paper survey in Acadia Park, and conducted two focus groups. The research activities with Acadia Park family members were conducted in 2017 and coordinated and developed in collaboration with APRA, SHCS, CSFS and a six-

member student group from a UBC public health nutrition course. [7]

All quantitative results are reported by frequency (percent) of actual responses to each survey item. Qualitative thematic analysis was informed by the methodology presented by Kiger and Varpio (2020) , which involves a widely-accepted six-step process.

We followed four of the Five As of Food Security (Chappell et al., 2011; Rocha, 2007) as a theoretical framework to guide data collection, analysis and interpretation: *(economic) accessibility*, *availability*, *adequacy*, *acceptability* and *agency*. As explained by Chappell (2018) the first two components target sufficient and socially and economically accessible food, while *adequacy* refers to nutritious, suitably diverse, and safe food produced using environmentally sound practices. *Acceptability* refers to the cultural acceptability of food and its production, without compromising the values and rights of both consumers and food providers. And, finally, *agency* concerns the empowerment of citizens to define and secure their own food security supported by policies, processes, and programs that enable the achievement of overall food security. The questions developed for the data collection tools (described below) asked study participants about the first four components of the Five As of food security framework. In the results section, we refer to each of the components in the context of the UBC Point Grey campus. Although *agency* was not measured in this study we do, however, see a place for student-parents to advocate for structural changes by participating on university committees that are creating programs and policies to promote food security, food justice, and overall wellbeing for all UBC community members.

ARPA online survey

In early April, APRA conducted an online survey[8] amongst Acadia Park residents, and our research team was invited to include eight out of thirty-two total questions on demographics, food security, monthly food budgets, food purchases, and food decision making. The set of questions on food security in this population was drawn from the Household Food Security Survey Module (HFSSM) used by Statistics Canada to categorize marginal, moderate or severe food insecurity (Statistics Canada, 2021). We adapted the HFSSM to adjust to the limited number of questions approved to add to the APRA survey, and the relevance of the questions to the *accessibility* and *availability* food security components. Seventy-eight Acadia Park residents responded to the APRA online survey, although not all participants answered every question.

Focus groups

In late April, in the Acadia Park Community complex, eleven residents—ten women and one man—participated across two focus groups to provide a deeper understanding of the responses collected in the earlier online survey, and to further discuss the *adequacy* and *acceptability* food security components. Using a semi-structured interview guide, seven questions were asked about food decision making, food preparation, culturally appropriate food, and organic versus conventional food.

[7] FNH 473, Applied Public Health Nutrition, is a community-based experiential learning course offered by the Faculty of Land & Food Systems at UBC. In January to April 2017, a student group collaborated with the research team to develop data collection tools for the online and face-to-face surveys and the focus groups administered to APRA residents.
[8] The APRA Community Survey 2017 included questions about housing, family composition and size, household income, residence safety, and community wellbeing amongst other topics.

Learning workshop and group conversation

During May and June, we offered two community learning activities held at the Acadia Park community garden and at the UBC Farm. The workshop focused on community gardening and food growing in small spaces, and the group conversation centred on land and culturally appropriate food. These activities were not part of the data collection process but were offered by the research team as a way to reciprocate community collaboration with our study.

Pilot pocket market

On four consecutive Thursdays in September, we ran a pilot series of pocket-markets[9] in the heart of the Acadia Park complex that offered UBC Farm produce at a 15 percent discount. The objectives were to make local and organic produce more affordable and accessible to Acadia Park families, and to assess the feasibility of opening a farm market on a regular basis in the complex.

Face-to-face survey

To explore the first four food security components particular to student-led families and the UBC Farm, we ran a face-to-face survey at the final two pocket-markets in September. The survey included a set of four questions about preferences for organic food versus conventional food, and one question about access to organic produce on campus.

Results

APRA online survey

Seventy-eight Acadia Park residents responded although not all participants answered every question in the survey. The respondents originated from twenty-nine different countries including Canada, and identified as described below in Table 1:

Table 1: Online survey participants' demographics

Participants' demographic	Percentage of participants
Self-identified as a student	53
Self-identified as a student family member	47
Living with one to three dependents between zero to twelve years old	75
Self-identified as a woman	72
Self-identified as a man	27
Self-identified as a non-binary	1

[9] The term "pocket" references miniature versions of urban spaces (Evans, 2010; North, 1969). In this case, the pocket market in Acadia Park references the smaller version of the UBC Farm market in Acadia Park.

Focus groups

Eleven participants attended the focus groups. See in Table 2 some demographics of the group.

Table 2: Focus groups participant demographics

Participants demographic	Percentage of participants
Participants between thirty-one and forty years old	63
Participants between forty-one to fifty years old	18
Participants living in homes with one to two dependents between zero to twelve years old	63
Participants living in homes with three to four dependents between zero to twelve years old	27

Only one participant lived with a teenager, and one participant lived with two seniors.

Face-to-face survey

Sixty-three people responded to the survey, and sixty-two survey sheets were processed as valid. One survey sheet was considered invalid because responses were conflicting (e.g., respondent did not know what UBC Farm is, but in a following question they stated that the access to the farm was "easy").

Impact of household income

For combined household (gross) income, 31.3 percent of the online survey respondents declared an annual household income[10] of less than $20,000, while 23.4 percent placed it between $20,000 and $30,000. Twenty-five percent of households had incomes greater than $50,000 per year.

Table 3 presents the effect of family income on food security. Of particular note, none of the households reported limiting daily meals for children due to lack of money. However, 5 percent of the respondents reported, "go[ing] to bed feeling hungry", indicating some student-led families experience severe food insecurity.

[10] Income expressed in Canadian dollars.

Table 3: Family income and impacts on student family food security

In the last month...				
	Yes (%)	**No** (%)	**N/A**	**Total** (n)
Did you worry that the food in your home would run out before you were able to get more?*	22.22	77.78	0	63
Because of a lack of money, did you or somebody else in your household not eat their preferred food?*	25.40	74.60	0	63
Because of a lack of money, did you or somebody else in your household eat a low diversity of foods?*	25.81	74.19	0	62
Because of a lack of money, did you or somebody else in your household eat unhealthy or low-nutrient foods (e.g., fast food)?^	22.22	77.78	0	63
Because of a lack of money, did you or somebody else in your household have to eat less food in some of your main meals?^	9.52	90.48	0	63
Because of a lack of money, did you or somebody else in your household have to reduce their number of daily meals?•	7.94	92.06	0	63
Because of a lack of money, were children in your household affected by the reduction in the number of daily meals?•	0	87.30	12.70	63
Because of a lack of money, did you or somebody else in your household go to bed feeling hungry?•	4.76	95.24	0	63

* Marginal food insecurity
^ Moderate food insecurity
• Severe food insecurity

Table 4 shows food intake was an issue for one family experiencing severe food insecurity, while the majority of families experienced marginal food insecurity.

Table 4: Eat enough *vs* eat what we want

Which of the following statements best describes what happens in your household regarding food?	
Answer choices	**Responses (%)**
We always eat enough and the kind of food we want	37.5
We eat enough but not always the kind of food we want	59.4
Sometimes we do not eat enough	1.6
Frequently we do not eat enough	1.6

Food insecurity and household food purchase

In descending order, the following four food security components drive Acadia Park families' food purchases: *(economic) accessibility*, *availability*, *adequacy,* and *acceptability* of food. Of the four food security components that drive food purchases, 86 percent of respondents ranked "price" as the most important, followed by availability (supply/location—75 percent), adequacy (24 percent), and acceptability (21 percent).

Economic access to food

In the online survey, 33 percent, 42 percent, and 25 percent of respondents' monthly food budgets ranged between $200-$500, $501-$800, and $901-$1,500, respectively (Table 5). Where a numerical range was given as a response, we took the average. Additionally, as income was frequently reported as a range, the median income was used to estimate the percentage of annual income allotted for groceries.

Table 5: Percentage of annual income spent on groceries based on median income

Estimated percentage of annual income spent on groceries (%)	**Percent of respondents (n=58) (%)**
5-9	1.72
10-14	8.62
15-19	13.79
20-24	25.86
25-30	8.62
>30	41.38

These data provide a general idea of the percentage of Acadia Park residents' incomes dedicated to their monthly food budget; however, it is limited in several ways. Because ranges of income are reported, it is difficult to accurately calculate the percentage of income allocated for groceries. Similarly, ranges were given for amounts spent on groceries and thus accuracy may be further limited.

On-campus food prices are "much higher [than off-campus]" according to the focus group participants. To manage the economic access to food, the participants procure most of their food off campus, and some implement multi-family or community-based coping strategies to afford or procure food at lower prices or reduced costs. For example, one participant highlighted the benefit of periodically buying large quantities of food, "[Going to Costco twice a month] that's sort of a race towards the clock: to eat before it [food] goes off because it's a lot, but I feel like doing that kind of [thing] we like it 'cause it forces us to finish it [food at home], and we don't eat out as much if we consistently go to Costco" (FG2-P4). FG2-P4 refers to focus group #2, participant #4.

This shopping modality presents some challenges such as the need for extra space. In Acadia Park there are restrictions on adding extra electrical appliances at home, such as a second refrigerator to keep food (e.g., meat) fresh for longer. This shopping modality also demands extra storage space. One participant reflected about quantity versus quality as follows: "Since I live here [on campus] I realized that maybe eating less but good quality [food] is better" (FG2-P5).

Food availability on and off campus

Online survey respondents buy food on campus very occasionally and in small amounts during the week. The preferred places to access bigger amount of food are located off campus as described in the table below.

Table 6: Food availability and source

Where do you purchase/get most of the food consumed by your family? Please check all that apply.	
Answer choices	**Responses (%)**
Off-campus supermarket/grocery store(s)	82.81
On-campus supermarket/grocery store(s)	46.88
UBC Farmers' Market	1.56
Other farmers' markets	3.13
Food bank	1.56
We grow our own food	4.69
*Other (please specify)	3.13
Total	100

(*) Two respondents mentioned some current food delivery services to their homes.

Focus group participants mentioned eleven different places where they most often bought food—none of the on-campus grocery stores were mentioned as a primary food source, only as a secondary food source. Students and their families find themselves forced to go off campus to shop for cheaper food, but this requires time and is especially challenging when families do not have a car. Consequently, food availability is impacted by access to transportation that allows an "easy" and "fast" purchase experience as a participant explains: "[Stores] close to the bus [stops] is probably our main factor [that influences food purchases]" (FG2-P3). Another participant describes the convenience of taking just one bus to do the groceries: "I mostly go to Safeway [off campus] because they are across the street on the same Macdonald Street, so just having that as a way of taking one bus going to the groceries at the same time" (FG1-P2).

On snowy days, access to food becomes more limited as the roads and streets around Acadia Park are not cleaned according to the interviewees, "so you want to buy food for 2 weeks, 3 weeks until the snow melts [to avoid accidents because of the ice]" (FG1-P2).

Considering the high number of international students on campus and particularly in Acadia Park, the focus group participants discussed the availability of traditional (culturally acceptable) food that they described as limited on campus. Based on participants' experiences, traditional food includes certain processed foods, spices or ingredients imported from their country of origin. Four international study participants purchase their traditional foods once or twice a month, and must travel for approximately one hour from campus to reach a specific store. They would purchase traditional food more often if it were more easily accessible, "You might be able to find what you are looking for, but it takes you like five places to get your grocery list complete, and that's really time consuming, loading and unloading [from the transportation vehicle]" (FG2-P3).

For instance, living on the east side of the city used to allow easy access to a big store that has abundant food from Central America ("doing a one-stop shop")

for one of the families. After they moved to Point Grey campus, their consumption of culturally acceptable food decreased and procuring traditional foods now (e.g., "tortillas") always requires "an extra special stop to get it" (FG2-P4).

Participants also noticed that the availability of traditional food is not only affected by local conditions but regional conditions as well. One research participant had greater access to Mexican or Latin American food when living in the U.S., but in Vancouver they eat much more Asian food (FG3-P3). Price also affected the consumption of traditional food, one interviewee pointed out the family changed their diet because some food (e.g., cheese) is much more expensive in Canada than in their home country (FG2-P1).

Nutritious produce on campus; acceptable and adequate but not accessible

Statements in the face-to-face survey explored preferences for organic food and conventional food, and then specifically about access to organic produce on campus. Seventy-four percent responded with "agree" and "strongly agree" to the statement, "I prefer organic food over conventional food" while 10 percent "strongly disagree" and "disagree", and approximately 16 percent reported a "neutral" response to the statement.

Focus group participants also had a high preference for organic and local food, but if they had to choose between non-organic and local[11] they would prefer local. Participants perceived organic produce as much more expensive than conventional produce in general, and some research participants pointed out that organic food in Canada is even more expensive than in other countries, notably the U.S. All participants in both focus groups preferred organic food, but because of its higher price, most often they were not able to purchase it, as indicated in this comment, "If you can access easily and affordable [produce], who would not like to eat local and organic [food]?" (FG1-P2).

One participant was willing to purchase local and organic, "but there is a limit [on the price they can afford]" (FG1-P3). To buy as much organic food as possible with a low-income family budget, two participants used a specific criterion to prioritize some organic produce over others, "I feel like the 'dirty dozen' is a big reason [to buy organic produce], but also there are certain organic foods that don't cost a lot more than conventional foods. I do [buy] organics in those two instances" (FG2-P3).

There were also some community initiatives in Acadia Park that helped to cope with higher food prices for organic food, including neighbours grouping together to make bulk purchases of organic eggs and other farm products from a local farm off campus. Also, a group of women in the community shared recipes and cooked large quantities of food together, then froze portions for later. However, group activities can bring extra pressure to the group as some members were concerned about "healthy eating" and avoiding "artificial colours or preservatives" in food that they give to their children. In addition, some families eat gluten free or dairy free, so all group members must be aware of food preferences and dietary restrictions.

Some interviewees from both focus groups considered UBC Farm produce to be expensive, although this perception was not unanimous. Sixty-five percent of online respondents reported a willingness to

[11] Here, the participants refer to "local" as Canadian.

purchase UBC Farm organic food[12] if a market was set up in Acadia Park, while 8 percent expressed no interest and 27 percent selected "I am not sure." Similarly, most focus-group interviewees were conditionally willing to purchase UBC Farm produce if it were sold in Acadia Park, but only if the produce were inexpensive than current prices. If the produce is expensive, they prefer going off campus and buying it from a regular store, "If [the UBC Farm produce] were cheap, similar to other stores, yes, definitely I [would] buy them" (FG1-P1). By cheap the interviewee means, "compared to vegetables in other stores like, for example, Chinese store, Persian store. They sell [conventional] vegetables and fruit and if the price [at the UBC Farm] is similar, I will buy from here [UBC Farm]" (FG1-P1).

One interviewee indicated, "If the price [in Acadia Park] is similar to [the] Whole Foods' organic one, I think I will buy here" (FG1-P4). Another interviewee expressed, "I would even pay extra for quality and convenience of having it here. I would prefer obviously, you know, the lowest value as possible, but I would pay more for having it here" (FG2-P4).

During the four pilot markets that offered a 15 percent discount, respondents' opinions were divided to the statement, "UBC Farm produce is expensive", with 38 percent reporting "agree" and "strongly agree", 33 percent "strongly disagree" and "disagree", and 30 percent felt "neutral." These results differ from the online survey respondents and focus-group interviewees who more decisively described UBC Farm produce as expensive. In response to the statement, "UBC Farm produce has fair prices considering that it is local and organic", 66 percent reported they "strongly agree" or "agree", and only 8 percent chose "strongly disagree" or "disagree". Similar to the first statement, 26 percent of respondents were "neutral". In response to, "I can afford UBC Farm produce at 15 percent off in Acadia Park," 80 percent chose "strongly agree" or "agree," 7 percent chose "strongly disagree" or "disagree," and 13 percent were "neutral."

We were also curious about relationships with UBC Farm, so we asked the buyers if they had been at the UBC Farm site in the last four months.[13] Fifty-seven percent responded "yes" while 42 percent responded "no". Over that time period, 45 percent of respondents had purchased UBC Farm produce "once or 2 times", 31 percent had done it "3 or more times" and 8 percent purchased it "every week". Sixteen percent of those surveyed indicated buying UBC Farm produce for the first time. However, when asked, "what market(s) have you purchased [UBC Farm produce] at?" 51 percent reported "Acadia Park", 4 percent on the UBC farm site, and 4 percent outside of the campus bookstore where UBC Farm runs a market. Other respondents selected two or more places at the same time. The most popular combinations were "UBC Farm market and Acadia Park" at 22 percent, followed by "campus bookstore, UBC Farm site, Acadia Park" at 12 percent.

The four pilot farm markets in Acadia Park averaged lower sales ($841) than average sales at the weekly markets on campus and on-farm markets ($1,100).[14] Despite the lower sales, a subsidy provided by this project to run the four pilot markets covered wages for the farm staff and gas to transport the produce, allowing the UBC Farm to run the markets with no added expenses or economic loss, while giving student-led families access to less expensive local, nutritious, and fresh organic food in their residence complex.

[12] In the online survey, we defined organic food as food produced by methods that comply with the standards of organic agriculture. Standards vary worldwide, but organic agriculture is generally conceived as a chemical-free management system, which avoids synthetic inputs and relies on natural substances instead.
[13] June-Sept 2017, a high season for UBC Farm.
[14] In this particular analysis we do not include the market happening on Saturdays on the farm site. This particular market has always been the most popular one. It is run for 4 hours and is the most advertised among the regular UBC Farm markets.

Discussion and conclusions

UBC Point Grey campus has its own food system, and issues of the global food system are reproduced on campus. Based on the research findings, Point Grey campus food system presents economic and physical barriers to accessing affordable nutritious food for many student-led families living in Acadia Park residence on campus.

Student-parents in food insecure, low-income households shared concern about running out of food to feed their families. In 2017, the Low Income Measure before-tax poverty line was $41,246 for a family of two parents working full-time with two children (Statistics Canada, 2017), and we found 55 percent of the online survey respondents had an annual household income of $30,000 or less. This result is critical considering that 75 percent of the surveyed participants live in households of three to five members and it is well-established that a lack of income is the primary cause of HFI, and food insecurity negatively impacts people's health and wellbeing (Leung et al., 2021; Riches, 2018, 2020). It is also important to note in 2016, that nearly 50 percent of student-led households in Acadia Park allocated approximately 85 percent of their income toward housing (Robinson et al., 2017). In the most optimistic of scenarios, this could be considered "transitional poverty" in anticipation that once student-parents graduate, an increase in household income would lift them out of poverty. In some cases, though, this will not happen for quite some time as students may continue to live in perpetual poverty inherited from their parent households and/or from relying on student loans while pursuing their education. We take the stance that access to education, like access to food, should be viewed as a right and not simply a monetary investment in the future.

Interlocking insecurities

This study corroborates what others have found that many university students juggle multiple and interwoven food, housing, and financial insecurities in their pursuit of higher education (Leung et al., 2021). Postsecondary education is a costly endeavour and exposes students to multiple stressors that can negatively affect their health and wellbeing, but all the while, students add to a university's assets, which in turn heightens the university's global ranking. We found the common issues of (economic) accessibility, availability, adequacy, and acceptability are as relevant to food-insecure students at UBC as elsewhere in North America (Blundell et al., 2019; Bruening et al., 2017; Entz et al., 2017; Hattangadi et al., 2019; Leung et al., 2021; Power et al., 2021; Silverthorn, 2016). We believe there is a need for a coordinated intervention that lifts students out of food insecurity and supports student wellbeing in a holistic way by simultaneously addressing (at least) food, housing, and financial intersecting insecurities; otherwise, addressing each insecurity in a piecemeal way will only provide a partial understanding of a complex and interrelated issue, and a partial solution.

It is also worth asking how the campus food system is integrated into the campus general planning; for example, future university initiatives can ensure fair food prices on campus and the creation of a just food system for all students and their families that live on campus. Childhood exposure to food insecurity is a known potent social determinant of developmental and adult health. To mediate these factors, using the university's capital to build an international hub that provisions culturally significant foods would curtail the need for many students to schedule the necessary time,

and cover the cost to travel off-campus and purchase foods that have dietary significance and could effectively improve diet quality (Martinez et al., 2019).

Relevance of on-campus organic food production

The availability of local and organic food is relevant to student-led families because they are deprived of economic access to it, yet prefer it over conventional foods. We learned the price of organic food is a barrier experienced by Acadia Park residents in purchasing preferred foods. Even if local and organic produce was made available in Acadia Park, price is frequently prioritized over decisions on food adequacy and acceptability. While residents' opinions on the price of UBC farm produce were evenly distributed, most of the student-led families believed the produce is priced fairly considering it is local and organic. Student families appreciate the production of organic food on campus as evidenced by a vast majority of the face-to-face survey respondents selecting the statement, "I can afford UBC Farm produce at 15 percent off in Acadia Park" during the pilot fall farm markets. A university subsidy on UBC Farm produce, food coupons or other similar initiatives could help student-led families afford the kinds of nutritious food they want to eat and nourish their families.

Considerations for future action

UBC describes itself "like a combination of a city and a large, complex corporation" (UBC, 2022a, para. 1). Point Grey campus is located on the University Endowment Lands and is not part of the formal City of Vancouver. Unlike most other universities, the UBC Board of Governors manage, administrate and control the property, revenue, business and affairs of the University (UBC, 2022a). Taking actions toward a just campus for all should be actualized through UBC governance-supported policies and programs. Students living on campus are deeply impacted by UBC governance. Echoing Rojas and colleagues (2007), the UBC Board of Governors must assume full responsibility for effectively addressing challenges that negatively affect large segments of the student population, including the student-led families living in Acadia Park.

This study bolsters the need for sustainable and adequate funds that promote food security and overall wellbeing in the UBC community, and provide ongoing support to initiatives such as UBC Wellbeing Strategic Framework, Food Security Initiative, and Community Food Security Hub. In parallel, a mitigating strategy to address campus HFI is for UBC stakeholders to advocate for a basic income program (provincial and/or national) that would lift segments of the population out of poverty and put into place policies and actions that would build individual, family and community autonomy (Green et al., 2020). Despite British Columbia moving in a positive direction with recently legislating a Poverty Reduction Strategy (Province of British Columbia, 2019), it falls short of recognizing HFI as an issue caused by poverty. Should household income levels rise sufficiently to meet basic needs, a predicted reduction in the prevalence for HFI could happen. As Green and colleagues (2020) propose, food insecurity may be "best addressed by relieving people [and postsecondary students] of the other pressures that lead them to have to cut back on food—housing, health, and income [fair labour market] being among the most central" (p. 36).

Despite the COVID-19 pandemic negatively impacting the bottom line of many institutions, UBC estimates a $100 million surplus for its consolidated 2022/2023 budget (UBC Today, 2022). Coupled with its high worldwide ranking that relies on high quality

graduate student output, the notoriety benefitting UBC lies in stark contrast to the prevalence and degree of food insecurity experienced by student participants in this study, and to respondents of the Academic Experience Survey at large (Yee et al., 2020). The human cost of holding up the market approach to postsecondary education appears to be too high for students and their family members (Canadian Federation of Students, 2017; Power et al., 2021). In our opinion, there is a need for future research that produces direct actions to ameliorate common stressors affecting the health and wellbeing of student-led families. Given inadequate income is well recognized as a cause of HFI, and adequate income must be a part of the solution.

UBC and many other universities around the world have adopted the Okanagan Charter that calls upon postsecondary institutions to embed health into all aspects of campus culture and lead health promotion action and collaboration locally and globally (International Conference on Health Promoting Universities & Colleges, 2015). The considerations proposed here are guided by the Okanagan Charter to specifically address the struggles faced by student-led families juggling multiple interlocking insecurities, while successfully meeting the rigorous demands of higher education. UBC and other postsecondary institutions across Canada would do well to administer a regularly scheduled, standardized Student Wellbeing Index (SWI), or the Canadian Campus Wellbeing Survey (CCWS) as has been proposed by Faulkner and colleagues (2019) that monitors change over time of indicators such as student mental and physical health, housing, food security, and financial conditions. Changes that lead to social and economic justice on campus will sustain the health and wellbeing of the campus community. All stakeholders—students, staff, faculty, administrators, members of local Indigenous Nations, and the wider university community—can partner in developing interventions and policies that mitigate these basic need insecurities, and ensure conditions for maximal student and family wellbeing, and academic performance, while studying at university. A national SWI would encourage institutions to be accountable for future policies and actions that bring benefit to all students without discrimination—including domestic, international Indigenous, Black, and People of Colour (IBPOC) students. And finally, incorporating a report on SWI into university ranking criteria would tell a fuller story about universities than what is told today.

To summarize, we propose that university administrators provide support to: 1) further investigate students' living conditions (especially student-parents) that leads to adequate incomes for students while pursuing higher education and caring for their families, 2) administer a national, standardized SWI or CCWS to monitor student wellbeing and inform responses that ameliorate common stressors, and 3) include results from a SWI or CCWS type of monitoring survey into university ranking criteria.

Future studies

Student-led families and households are currently underrepresented in the scientific and Canadian community health studies on food security and poverty. While we acknowledge the limitations of an adapted version of the Household Food Security Survey Module, and the study sample size to extend the results to the entire population of Acadia Park residence and the campus more broadly, the study provides sufficient information to justify the need to conduct future studies that focus on student-led families at UBC and across Canada. Food preparation is an important

household daily activity, and although children were reported to not be affected by a family's "lack of money" in terms of the number of daily meals consumed, this study did not assess the quality or number of meals children access at their homes. This may be an area for future research specific to the families living in Acadia Park. There is also a need to conduct future studies on Point Grey campus to understand student-led families' "neutral" position about organic or conventional food, and to measure the current and potential impact of UBC Farm in the campus food system and in student-led family diets.

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Original Research Article

Operationalizing sustainable food systems through food programs in elementary schools

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Abstract

Healthy eating supports optimal growth, development, and academic achievement. Yet, the diet quality of school-aged children is poor. Food insecurity and chronic disease are concerns, as are unsustainable agricultural practices. Sustainable food systems have a low environmental impact and can address both dietary and sustainability concerns. This multi-case study was conducted in two Community Schools in a mid-sized Canadian city. Data was collected through interviews, observations, a checklist, and curriculum and policy review. The purpose of this study was to understand the capacity of local elementary schools to implement sustainable food systems strategies in curriculum, policy, and practice. Teachers were doing some cooking and gardening with students, and schools were doing some recycling. There were no specific food policies. Infrastructure challenges varied by school. Insufficient funding and curriculum resources were seen as barriers to implementing sustainable food systems. Staff characteristics and relationships were seen as facilitators.

Schools can be positioned to be strong leaders in the area of school food by prioritizing food literacy and sustainable food system strategies and developing supportive policies, including community members and students in programming, and including experiential food production opportunities for all students.

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Résumé

Une alimentation saine favorise une croissance, un développement et un rendement scolaire optimaux. Pourtant, la qualité de l'alimentation des enfants d'âge scolaire est faible. L'insécurité alimentaire et les maladies chroniques sont également préoccupantes, tout comme le sont les pratiques agricoles non durables. Les systèmes alimentaires durables ont un faible impact sur l'environnement et peuvent répondre à la fois aux préoccupations alimentaires et à celles en lien avec la durabilité. Cette étude de cas multiples a été menée dans deux écoles communautaires d'une ville canadienne de taille moyenne. Les données ont été recueillies au moyen d'entrevues, d'observations, d'une liste de contrôle et d'un examen des curriculums et des politiques. Le but de cette étude était de comprendre la capacité des écoles primaires locales à mettre en œuvre des stratégies de systèmes alimentaires durables dans leur curriculum, leurs politiques et leurs pratiques. Les enseignants faisaient de la cuisine et du jardinage avec les élèves, et les écoles faisaient du recyclage. Aucune politique alimentaire spécifique n'était mise en place. Les défis en matière d'infrastructure variaient selon l'école. Un financement insuffisant et un manque de ressources liées au curriculum étaient perçus comme des obstacles à la mise en œuvre de systèmes alimentaires durables. Les caractéristiques du personnel et les relations entre eux étaient perçues comme des facteurs facilitants. Les écoles peuvent être des chefs de file importants dans le domaine de l'alimentation scolaire en priorisant la littératie alimentaire et des stratégies de systèmes alimentaires durables, en élaborant des politiques de soutien, en incluant les membres de la communauté et les élèves dans la programmation, et en créant des occasions de production alimentaire expérientielle pour tous les élèves.

Keywords: Sustainable food system; school food; school meal program; food literacy; lunch program; snack program; policy

Introduction

Agriculture is one of the most significant contributors to climate change, through greenhouse gas emissions, biodiversity loss, and freshwater use, compromising our future ability to produce food (Willet et al., 2019). At the same time, unhealthy diets contribute significantly to morbidity and mortality worldwide (Willet et al., 2019). There is a direct connection between food, human health, and environmental health. A comprehensive approach to sustainable ways of eating is necessary to promote environmental and human health (Willet et al., 2019). Achieving sustainable eating requires a food system change.

A sustainable food systems (SFS) approach recognizes that the health of humans depends on healthy ecosystems (Loring et al., 2016). SFSs have low environmental impact and protect and respect biodiversity while ensuring nutritional adequacy and food security (FAO, 2012). Food should be accessible, affordable, culturally acceptable, and economically fair, and it should be produced in a way that considers both present and future generations (FAO, 2012). SFS strategies can increase the efficiency of our current food systems, improve health, decrease food system environmental impact, and mitigate impacts on climate

change while supporting the local economy (Rojas et al., 2011).

Schools are an effective place to address system change. Exposing young people to SFS strategies can impact their long-term health by promoting healthy practices and changing our food culture (Rojas et al., 2011). Several initiatives can be implemented in a school setting to improve nutritional intake while promoting food system sustainability: programs that involve growing gardens and fruit trees, composting systems, food programs that offer local foods, and initiatives that reduce the environmental impact of food production (Rojas et al., 2011). The curriculum can support these strategies by incorporating experiential learning components and addressing the impact of the conventional food system on greenhouse gas emissions and climate change (Rojas et al., 2011). Developing relationships between schools and local producers and incorporating local foods into classrooms can increase consumers' understandings of and connections to food (Rojas et al., 2011). Tailoring SFS strategies to fit a school context may include various components.

School food programs in high-income countries were initially set up between 1850 and 1950 to address hunger and focused on providing calories without considering food quality (Oostindjer et al., 2017). Starting around 1970, some schools shifted from addressing hunger to encouraging healthier, more nutrient-dense, lower-calorie foods in response to concerns about poor dietary quality (Oostindjer et al., 2017). The next phase of school food programs involves integrating health and environmental sustainability concerns more closely (Oostindjer et al., 2017). For the most part, Canadian school food programs are in the second phase and have not integrated health with environmental concerns (Everitt et al., 2020a). Understanding the current status, barriers, facilitators, and opportunities associated with incorporating health and environmental sustainability into school food programs will assist with future planning to move towards this goal.

Background

Schools are strategic settings with multiple avenues to address healthy food, food literacy, food security, and food system sustainability through curriculum, policy, and practice (Rojas et al., 2011). We explore these components below and set the stage of the Canadian context for SFS in school food programs.

Healthy food

Healthy eating is vital for optimal growth, development, and academic achievement (Faught et al., 2016; Roustit et al., 2010). However, the diet quality of school-aged children during the school day is poor (Everitt et al., 2020b; Tugault-Lafleur et al., 2017). Fewer than half of Canadian children aged 12 to 19 years consume five or more servings of vegetables and fruit daily (Statistics Canada), and almost one quarter of calories in the diets of nine to 18 year-olds come from minimally nutritious foods (Office of Nutrition Policy and Promotion, 2007). The typical Canadian child's diet (aged two to 18 years) contains 55% calories from minimally nutritious, ultra-processed foods high in salt, sugar, and fats (Moubarac et al., 2014, 2017). Furthermore, 16% of Canadian children experience food insecurity (Tarasuk and Fafard St-Germain, 2022). Additionally, food processing (Schmidt Rivera et al.,

2014) and food packaging (Reisch et al., 2013) contribute to environmental degradation.

Food literacy

According to Cullen et al. (2015), food literacy is understanding food and includes food skills and practices across the lifespan, supporting navigation, engagement, and participation within a complex food system. Food literacy is the ability to make decisions to support personal health and an SFS considering environmental, social, economic, cultural, and political components (Cullen et al., 2015). Within a school setting, teachers can address food literacy and meet curricular outcomes by including cooking, gardening, and composting within the curriculum, and the school can incorporate a recycling program, minimize waste and packaging, procure local foods, and respect cultural diversity (Black et al., 2015; Rauzon et al., 2010; Rojas et al., 2016). Addressing food and sustainability literacy in the school setting improves health and educational outcomes and is necessary to drive social change towards food system sustainability while addressing food security (Rojas et al., 2011). Most countries are beginning to incorporate SFS strategies into schools while addressing the nutritional quality of diets and ameliorating hunger (Oostindjer et al., 2017).

Food security

Food security has been defined in several ways. The Food and Agriculture Organization of the United Nations (FAO, 2006) identifies people as food secure when consistent physical and economic access to sufficient safe, nutritious food meets dietary needs and preferences for an active and healthy life (FAO, 2006). Community food security is "... a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice" (Hamm & Bellows, 2003, p. 37). Both types of food security are essential for school children's healthy growth and development. Community food security includes an SFS, which is critical to consider as we interweave environmental sustainability into school food programs.

Food system sustainability

Sustainable food system strategies are food production practices that protect natural resources and support healthy ecosystems (Tagtow et al., 2014). In the school context, Everitt et al. (2020a) identify the social determinants of health, systems and sustainability, and economic sustainability as essential factors in incorporating SFSs into schools. Determinants of health include diet quality, food literacy, and promotion of health equity and cultural diversity, all done in a non-stigmatizing way. The sustainability aspect looks to conserve and protect the natural environment, which could be done by incorporating local foods, reducing waste, including garden initiatives, and composting. For example, increasing connectedness between farmers and students and promoting local foods through non-traditional supply chains have been accomplished through farm-to-school programs (Powell & Wittman, 2018). Economic sustainability refers to school food and sustainability initiatives having sufficient, secure funding to adequately staff programs and pay workers a living wage. Sufficient and ongoing program support enables programs to build capacity and skill levels while adequately monitoring and evaluating the program.

Curriculum, policy, and practice

School food and sustainability interventions that target curriculum, policy, and practice can impact diet quality, food security, food literacy, and food system sustainability. Incorporating food into existing curricula can enhance the teaching of many subjects. Strategies include teaching practical life skills such as cooking, growing, and composting, teaching math through ratios and fractions found in recipes, and using food as the topic of writing, art, and history (Rojas et al., 2016). Physical education can include gardening and community service, while science can cover topics such as cycles of growth, predator-prey relations, pollination, microorganisms, decomposition, botany, and the carbon cycle (Blair, 2009; Rojas et al., 2016).

Supportive policies at the provincial, school, or district level can promote locally and sustainably produced and locally processed foods and reduce the environmental impact of foods (Rojas et al., 2011). Supportive policies and practices encourage serving minimally processed foods, using less packaging, reducing single-serve packages, purchasing in bulk, and composting and recycling. Table 1 provides an example of curriculum, policy, and practice activities.

Table 1: Incorporating sustainable food systems

Curriculum	**Policy**	**Practice**
Increasing food knowledge Incorporating food into the curriculum	School food policy School sustainability policies: minimally processed, locally sourced, less packaging and single-serve packages, condiments in bulk, reusable dishes	Healthy food choices through universal school food programs (milk program, farm-to-school, breakfast, lunch, food fundraisers, special school days) Helping those that may not have enough to eat Including culturally diverse foods Incorporating local foods Reducing waste Gardening Promoting connectedness to food or the natural environment Composting Including minimally processed, locally grown, organic, seasonal, vegetarian foods Recycling Having environmental sustainability events Reducing GHG emissions and negative environmental impact Having a food garden maintenance and management plan Having sufficient resources to staff programs Building capacity Monitoring and evaluating programs

Canadian context

In Canada, provinces determine education standards and curriculum for kindergarten through to grade 12. For example, in Saskatchewan, the Ministry of Education is responsible for developing the curriculum and determining the outcomes for each grade (Ministry of Education, n.d.). Since 1980, the Saskatchewan Department of Education has designated certain schools in core neighbourhoods as Community Schools to better address poverty and community needs in neighbourhoods with large Indigenous and, more recently, newcomer populations (Saskatchewan Association for Community Education, n.d.). Community Schools' work was so valuable that it was recommended that all public schools in Saskatchewan adopt the Community School Philosophy; however, funding was not allocated to support this recommendation (Saskatchewan Instructional Development & Research Unit, 2001).

Some Community Schools follow the Comprehensive School Community Health framework to assist in planning integrated, holistic health promotion strategies (Government of Saskatchewan, n.d.) and are recognized as such in the health curriculum (Ministry of Education, n.d.). This framework has four components: family and community engagement, high-quality teaching and learning, practical policy, and promotion of healthy physical and social environments (Government of Saskatchewan, n.d.). Schools following this philosophy support the well-being of students, their families, staff, and the community (Government of Saskatchewan, n.d.). Information is available to support schools using the Comprehensive School Community Health philosophy; however, compliance with the recommendations is voluntary.

Like the Comprehensive School Community Health framework, many provinces have developed nutrition frameworks such as the Saskatchewan guidelines, "Nourishing Minds: Eat Well, Learn Well, Live Well" (Saskatchewan Ministry of Education, 2012). However, providing nutrition guidelines does not ensure that they will be followed or that foods brought from home will be healthy. There is little research on food brought from home to school in Canada (Taylor et al., 2012), yet studies from other countries have shown that food from home is not as healthy as what is provided in schools (Caruso & Cullen, 2013; Evans et al., 2010; Hubbard et al., 2014; Hur et al., 2011; Johnston et al., 2012; Stevens & Nelson, 2011). Existing frameworks and guidelines are provincially determined and are therefore not consistent across Canadian school systems, as there is no national policy or strategy. The purpose of this research was to understand the capacity of two local elementary schools to implement SFS strategies in curriculum, policy, and practice.

Methodology

This case study is exploratory and seeks to determine current practices, barriers, facilitators, and opportunities for adopting curriculum-integrated SFS strategies. The findings will be used to document the baseline status of challenges facing schools, inform future intervention research, and provide insights to inform the development of a national school food program.

A case study approach is often used to gain an in-depth understanding of the complexity of a real-life

situation (Creswell, 2014; Creswell & Poth, 2018; Stake, 2006; Taylor & Francis, 2013; Yin, 2014). Case studies can integrate many types of data sources, including interviews, observations, and documents, and may contain both qualitative and quantitative data (Yin, 2014). Data are generated from multiple sources to allow convergence through triangulation (Taylor & Francis, 2013; Yin, 2014). Multiple-case studies contain more than one case, provide more evidence, and are robust (Yin, 2014). A study containing two cases can therefore provide more complete data than a single case study design (Yin, 2014).

The school division selected two sites from eight possible schools. The two schools chosen had meal programs in place, feeding 25-40% of the children in the school, and, therefore, had the infrastructure to prepare food. The justification used by the school division for selecting these schools was that they believed these schools would be good candidates for future school food interventions.

We used multiple data sources**:** interviews, curriculum review, policy review, observations, and the adapted School Food Environment Assessment Tool (SFEAT) checklist (Black et al., 2015). The eleven interview participants consisted of one principal, one vice-principal, four teachers, and five nutrition support staff. All but one of the participants were female. Some teachers cover split classrooms—teaching more than one grade in the same room simultaneously. Nutrition support staff included Nutrition Workers (NW) who help prepare meals and snacks, Community School Coordinators, and Educational Assistants who work in the classroom with students and families and act as community liaisons. These participants (labelled as NW to maintain confidentiality) were selected because they understood food program logistics and knew the students and issues. Both teachers and principals are referred to as teachers. Interviews were arranged according to participant convenience. Participants were interviewed individually, except for the principal and vice-principal, who were interviewed together. Interviews were recorded, transcribed, and thematically analyzed. Table 2 shows the questions that guided the interviews.

Table 2: Interview Questions

1. What are the current practices around SFSs and school food programs in schools?
2. What would school staff like to do concerning SFS strategies?
3. What are the barriers, facilitators, and opportunities for adopting curriculum-integrated SFS and food programs in elementary schools?
4. What supports are required to help schools incorporate SFS strategies and food programs into their practices?

We reviewed each subject included in grades two to eight of the online Saskatchewan curriculum (Ministry of Education, n.d.) to determine learning outcomes identified in the curriculum related to environmentally sustainable food systems or food literacy. These data were considered in determining the degree of curriculum integration of SFS concepts. We conducted a policy search, including provincial, school board, and school-level policy, to check for policies supporting SFS or school food programs. This search was included to determine the level of institutional support for SFS integration and policies related to the types of foods available in schools. Relevant learning outcomes and policies were documented and summarized.

School staff assisted with completing the SFEAT (Black et al., 2015), which records current food

gardens, composting systems, food procurement, use of processing and packaging, recycling and waste reduction strategies, food preparation activities, food-related teaching and learning activities, and availability of healthy food. The SFEAT responses were summarized and sent to the principals to verify accuracy. Site observations took place on the days of the interviews to provide more detail on the components assessed in the SFEAT. Interviews and observations were conducted over four days in each school. Potential or existing gardens, composting programs, food preparation, and school layout were assessed to determine how infrastructure was either a barrier or facilitator to developing SFS strategies and food programs in schools. Photographs and notes were taken to capture details. Specifics regarding how teachers incorporated SFS strategies into classroom teaching were obtained from the teachers during interviews. Ethics approval was obtained from the University of Saskatchewan Behaviour Research Ethics committee (BEH 509) and the Saskatoon Public Schools Division.

Data analysis

Participants reviewed the interview transcripts for accuracy and had the opportunity to remove any comments they did not want to be included in the study. Only one participant removed details from the transcript—details tangential to the purpose of the study and not likely to impact findings.

Interviews were transcribed, and NVIVO 12 (QSR International) was used to organize and inductively code interview data. The first author coded transcripts inductively using open coding and constant comparative analysis following grounded theory practices (Glaser & Strauss, 1967). The first round of analysis broke data up into broad categories. Subsequent coding rounds within each category further articulated themes. Coding decisions were accompanied by memo-writing to help develop and compare ideas (Charmaz, 2006; Mills et al., 2006).

The SFEAT documented the baseline context within each school. Member checking is a process where the person interviewed reviews the data gathered to ensure they are accurate (Creswell & Creswell, 2018; Stake, 1995). As the administrator in a leadership role, the principal was best positioned to evaluate the relevancy of findings. Findings were presented and approved by each principal during an in-person meeting.

Results

One school was in a building that opened in the early 1920s, and the other opened in the early 1960s. Both were in low-income neighbourhoods with students from kindergarten to grade eight. The 210 students in one school included a large proportion of Indigenous children. There were 325 students in the other school, including large Indigenous and newcomer populations. The kitchen was located in the basement of one school and on the main floor of the other. The kitchens in both schools were too small for all students to eat lunch, so students ate in their classrooms or in hallways.

SFEAT and observations

The SFEAT was used to determine current practices around incorporating SFS in schools. In one school, the cooking facilities were used by school staff to provide healthy foods in the breakfast, lunch, milk, and snack programs, and for special food days. There was a recent increase in vegetables and healthier meal items, but no change in less healthy items offered. Many of the food items were acquired through donations, and staff did not control nutritional quality. Respondents indicated that providing environmentally sustainable (minimally processed, locally grown, organic, seasonal, or vegetarian) options was complicated because many foods were donated or ordered through another organization. Some local food was procured through grants and donations. Some students helped with meal programs: the student leadership team (grades seven and eight), the health promotion student team (grade six), and a few other students who helped with breakfast to support in transitioning from the home to the school environment. There were some cooking activities implemented with students in the past. The Little Chefs program (run by a local community organization) taught students cooking skills, but this was not running in the previous year. Recycling in classrooms was limited to beverage containers as there were no sinks in classrooms to rinse recyclables. However, kitchen workers recycled beverage containers, cans, certain plastics, and paper products. The grade seven-eight split class, with the help of parents, were involved with gardening activities. The school had eight four by eight meter garden beds, an Indigenous circle garden bed, and was developing an outdoor classroom. They used the gardens to teach about food, gardening, and healthy eating. There was no composting program.

In the second school, data collected from the SFEAT identified available cooking facilities were primarily used by school staff to provide breakfast, lunch, milk, and snack programs. Food preparation was only taught to a few students, mainly those who needed additional support or learning opportunities outside the classroom. The resource teacher worked with four to five students who cooked as a social activity. Classes were sometimes involved with a kitchen project, such as one teacher who made mini pizzas as a celebration and learning opportunity. Grade eight students sometimes helped with kitchen clean-up activities and transporting food into the school. Healthy food was available through breakfast, lunch, snacks, milk programs, special food days, and special community events. Food fundraisers included a monthly hot lunch and other events. Some unhealthy foods were available—both served to children and used for fundraisers, such as bake sales and concession items. Some minimally processed, locally grown, organic options were available; however, this depended on what donors supplied and the seasonal availability of local and organic products. Some local, organic vegetables were available when the Nutrition Worker made a bulk order through another organization, but school staff were not informed when the foods were local or organic. Additionally, in the fall, the school sometimes received donations of garden produce.

A well-established recycling program included beverage containers, paper, and plastic products. Some classes participated in school gardening activities, but school staff and students were not composting due to a lack of knowledge and vandalism of equipment.

Curriculum and Teaching Practice

The provincial curricular objectives in grades two to eight were reviewed to determine any relationship to environmental sustainability or food literacy. More specifically, we looked for inclusion of learning outcomes that referenced food skill development that would support students in navigating or engaging with a complex food system. We looked for the inclusion of learning outcomes related to SFS concepts as indicated by references to the social determinants of health, systems and sustainability, and economic sustainability. We compared learning outcomes identified in the curriculum to practices reported by teachers during their interviews.

There were components of SFSs found in curriculum documents and reported by teachers in each grade. Teachers were guided by the learning outcomes in the curriculum but could individualize their approaches. There was an opportunity to teach about sustainable food systems and food literacy; the teacher's interest determined the degree to which this happened. As one teacher stated, "if the teacher decides that that's the important aspect ...then the teacher will pull it out. So that's gonna really vary depending on what the teacher's perspective is."

The learning outcomes identified by the health curriculum provided many opportunities to address food and lifestyle choices and SFS practices. Learning outcomes included talking about healthy foods and meals and discussing the importance of harmonious relationships, including the environment. SFS could be covered through the science curriculum. This included outcomes related to understanding plant growth, soil, diversity, ecosystems, lifecycles, interdependence, Indigenous knowledge of ecosystems, and the human impact on natural ecosystems. Social studies covered the role of agriculture and sustainable management and evaluated the human impact on the natural environment. The grade seven and eight art curricula explored the importance of place, including the relationship to land and perspectives on social issues, including sustainability. Physical education included a component on nutrition and habits to support physical activity. Home economics curricula covered kitchen basics, kitchen and food safety, baking basics, and snacks (Saskatchewan Learning, 2006).

Teachers reported several strategies to cover curriculum objectives, such as providing cooking experiences, recycling, indoor and outdoor gardening experiences, and discussing historical agricultural practices. In practice, the grade two-three teacher in one school used the Little Green Thumbs program (Agriculture in the Classroom, 2019) to grow, harvest, prepare, and eat food and engaged in vermicomposting in her classroom.

Priorities

Many participants indicated hunger as the top food-related priority for the school to address. As one teacher noted, "priorities, making sure students have food in their bellies so that they can learn." Another identified the relationship between hunger and behaviour. A close second to addressing hunger was ensuring the food was healthy, "and making sure that obviously that, it's as nutritional as I can get it." As long as students are hungry, focusing on nutritional quality and SFS in schools will be challenging.

Other initiatives, such as outdoor and indoor gardening, composting, and reducing waste, were identified as priorities, demonstrating sustainability thinking. A teacher stated, "It would be amazing if classrooms could take their kids outside to learn in the garden." To address time constraints and competing priorities, an NW suggested "doing it outside of the

school dictated times." This participant also suggested recruiting community members to help with gardening activities. Limited staff time impacts the degree to which staff can support SFS strategies.

Participants identified priorities of increasing food choices, including more culturally acceptable and diverse options, providing new foods, and more hot meals. A teacher indicated, "I think that it's something we can address, especially within our school here, is the diversity of cultures. And I think it would be fantastic to be able to highlight different foods, provided they met certain nutritional values."

Participants reported that students' food skills were lacking, yet this is an essential life skill. Increasing food variety was also seen as supporting the priority of increasing nutrition education, especially if students are involved with cooking and developing food skills:

> I think just educating what healthy meals look like, and if students aren't seeing this at home, this helps them to see what this looks like. . . . It's good for students to see how to actually prep these lunches and breakfasts.

A teacher summarized the ultimate goal as "what matters about all this, is really for them to be life-long healthy eaters."

Developing and implementing widespread nutrition policies to be known, supported, and implemented at all levels was seen as a priority. As one participant indicated, "... we need to integrate food and nutrition and health into everything else we're doing." Participants felt that creating a culture of healthy eating, where children feel comfortable asking for food when they are hungry, helps build relationships in the school.

School Food Environment

School food environment refers to actions that the school staff currently undertake without explicit written policy guidance. Current practice was divided into five themes: program availability, food choices served, meal planning with limited resources, sending food home, and what to do when students bring unhealthy foods to school. These themes are not surprising, given the importance of addressing hunger.

The first theme, “program availability”, refers to the accessibility of meal programs. In both schools, some components of meal programs were universally accessible, and other components were "needs-based.” However, there are no eligibility requirements for the "needs-based" program; all students are theoretically able to access them. According to a principal, most of the food program funding was from donors and community partners based on the school population. The school division provided funding for staff time and some program resources, with amount determined by the average number of students using the program. School staff determine how funding is spent; for example, the NWs decide what food to buy. However, the funding of needs-based programs is determined by the number of participants the previous year, so the amount of funding received does not increase if more students participate on a given day. As a result, the lunch program is not heavily advertised to keep participation numbers low.

Teachers sent children identified as not having enough to eat to get something from the meal program. In one school, a teacher stated that, when she notices students lacking lunch or healthy options, she sends them to the lunch program to supplement what they have. The NW accommodated late children who had not had breakfast by giving them food items they could

carry and eat in their classrooms. Staff reported trying to support hungry children. One teacher stated:

> Yeah, a lot of kids come at the end of the day looking for snacks to take home. And it's never, no. We'll take them to the lunchroom, "Here's one for your pocket- and a couple for your little siblings at home."

The theme "food choices served" refers to the nutritional quality of foods served in meal programs and available in the school. The NWs reported doing their best to include healthy foods and making unhealthier donations, such as sausages or cookies, better by serving them alongside healthier choices. An NW reported that, previously, there were written policies guiding food choices in schools, however, with changes in programs, that was lost over time. This explains why staff could not identify written policies to guide practice; however, there was some memory of these policies. An NW identified the importance of including "the basic food groups" and stated that "the policy is understood." Due to insufficient time, the NW in one school served sandwiches because she did not have enough time to serve a hot meal every day. The NW in the other school tried to serve a hot meal every day, "because I know I have students in my building that the only hot meal they sometimes get is in our school. Sometimes the only meal or food that they get is when they walk into our building."

The third theme, "economic planning", refers to the careful managing of finances and making the most of the foods available. One NW stated: "we get 'x' amount of dollars, and I've gotta make this amount of dollar last for ten months, to serve this many kids." She described doing this by discouraging food waste, reusing leftovers, finding creative ways to use donations, purchasing foods on sale when possible, and trying to make the best use of the food they have. The NW described: "we started changing what the meals were looking like and finding ways to stretch dollars different. I'm a huge believer of reduce, reuse, reduce, reuse." An example she gave of reducing waste was to use food before it went bad: "we froze some of the milk [before it went bad] and then the frozen milk can be used in soups."

The theme "sending food home with students" was important as half the participants—an NW and two teachers in one school and two NWs in the other school—recognized the need for this and reported they had sent food home. Even though there was no formal policy, one NW justified this practice by referring to the absence of food when school is not in session:

> So that's why they [students] get apprehensive on a Friday because there's a weekend where they have no food on the weekends. That's why they [students] get apprehensive before a long break from school. So we just came off a break. We had heightened behaviour Wednesday, Thursday, Friday because the kids knew that they were gonna be without for the week, right? So you see it within the students.

Although several participants had sent food home with hungry students, not all were sure it would be acceptable because there was no policy guiding their decision-making. When faced with a mom asking to take some food for her sick child, one teacher was unsure what to say:

> ...a parent came in and said, "Oh, you're having that, do you mind if I just take a little bit home?" I really didn't know what to say, and I was like, "sure go ahead." I probably wasn't supposed to do that, but. I don't know. The kid was sick. My kid- my student, was sick. I think she wanted to take it home. ...I allowed them to.

Clear, explicit policies would support teachers and help staff to be consistent in practice.

The final theme is "bringing unhealthy food to school". Teachers have a lot of power in determining the types of food in their classrooms; however, there are no policies to guide this. There were no identified policies restricting unhealthy foods in school, but practices included taking sodas brought to school away until the end of the day. If children had unhealthy foods in their lunches, they might be encouraged to get healthy foods from the food program. Sometimes, parents dropped off a fast food meal:

> ...and then our whole classroom smells like McDonald's, whereas these kids are trying to eat their healthy [lunch]- and they look over, and see a kid enjoying a big mac, it's really hard [for the other students to eat healthy when another student is eating fast food].

The lack of clear guidelines or policies made it difficult to support schools in encouraging healthy choices.

Written policy

Provincial documents state that Boards of Education are responsible for developing school policy (Saskatchewan Ministry of Education, 2019). Individual schools are encouraged to use supporting documents, such as the Comprehensive School Community Health Approach (Government of Saskatchewan, n.d.) and Healthy Foods for My School (Public Health Nutritionists of Saskatchewan, 2014), to develop policies. The latter document provides specific guidelines for classifying foods according to the best nutritional choices. No specific food policies existed in the two schools in this case study. There were no specific policies identified that related to environmentally sustainable practices.

Barriers, Facilitators, and Opportunities

The barriers, facilitators, opportunities, and priorities for implementing SFS and food programs in schools are shown in Table 3. These were identified through thematic analysis of the interview transcripts. Funding impacted both sustainability initiatives and food program offerings.

Insufficient funding hindered SFS strategies such as gardening, composting, and reusable dishes. Tools and a lack of indoor and outdoor gardening infrastructure and management plans are included. In some cases, staff used disposable dishes due to insufficient staff time; alternative options, such as including students in washing dishes, had not been explored.

Funding was the most significant barrier impacting program access, food variety, food options, and limits in staff time, leading to lunches being sandwiches instead of a hot meal. An NW explained:

> It's about the manpower issue. Like when you are doing salads, are you going to have enough time to run that through? We used to have more [staff]... but when the cutbacks came a couple years ago... now I have less hours.

In one school, the NW indicated that food variety was limited by cost and donations. Participants in the other school stated that the school purposefully provided an opportunity for students to have foods they might not have at home. Schools do not have a class-wide sit-down meal because teachers take their lunch breaks simultaneously with students, so there are few teachers to supervise. In one school, teachers turn on the television to help manage lunchtime behaviour.

Curriculum resources facilitated incorporating SFS education when teachers had access. According to a teacher, funding cuts to education resulted in

disbanding a central resource centre for the school division. Teachers in both schools reported that curriculum resources were essential to support teaching, especially when it was in an area with which they were less familiar.

Personal attributes of staff, such as being creative, hardworking, and passionate about their work, contributed significantly to the reach of meal programs. An NW identified the importance of being creative: "I'm a budget-shopper, [I've come up with] more creative ways to use donations that are coming in." Staff work hard to complete their assigned work. A teacher described an NW by saying, "the woman we have working in there, honestly, is like a tornado. She hustles, and she's got it all set out." Staff report caring about the work they do. Some staff work extra hours to get their jobs done. One NW indicated that she often gets pulled into the nutrition room because no one is there that day, and she struggles to get her work done. She works overtime to catch up and describes her job as "a paycheck of the heart" and says, "it has to be a bit of a passion."

Relationships with funders, outside school supports, and community members were found to be facilitators. Essential resources for food programs came from organizations providing grants, food, and equipment donations. For example, nursing students helped support community events, and community members helped support garden projects. Many activities supported SFS in schools as well as further opportunities to foster consistencies in practice, as described in Table 3.

Table 3: Barriers, Facilitators, Opportunities & Priorities

Barriers	**Facilitators**	**Opportunities**	**Priorities**

Funding
• Program access
• Food variety
• Food options
• Staff time
• Infrastructure
• Gardening space and equipment
• Composting—safety
• Reusable dishes—time
Curriculum resources
• Disbanding of the central resource centre
Noon-hour supervision
Vandalism
	School staff characteristics
	• Creative
	• Resourceful
	• Budget-shoppers
	• Work hard
	• Staff care
	• Work extra hours
	Relationships
	• Funders
	• Health-promoting staff
	• Nursing students
	• CHEP Good Food, Inc.
	• Community members
		Foster consistency in practice
		• Support healthy food choices—policy
		  ○ Donations
		  ○ Fundraisers
		  ○ Sending food home with students
		  ○ Response to soda pop in school
		  ○ Quality of food brought from home
		  ○ Staff modelling
		• Knowledge/practices when staff leave
			Address hunger
			Nutritional quality
			Gardening
			• Indoor
			• Outdoor
			• Composting
			• Reducing waste
			Increase food access and variety
			Increase food skills
			Policy

Discussion

This research aimed to understand the capacity of local elementary schools to implement SFS strategies in curriculum policy and practice. Both schools were located in low-income neighbourhoods and included large Indigenous or newcomer populations. Findings showed that, although both schools could incorporate some SFS strategies, both schools felt that addressing hunger was the top priority. The food programs in place were considered available to all but not overly advertised, because there were insufficient resources to feed students. School staff spent considerable energy procuring sufficient food and stretching what was available to feed as many students as possible. As a result, there was limited focus on SFS strategies. Staff characteristics, such as being hardworking, skilled, resourceful, creative, and passionate, facilitated supporting SFS strategies. Relationships with donors, funders, nursing students, and community members facilitated program delivery. It is essential to have consistency from year to year in program availability and curriculum components dealing with SFS because staff changes are a regular part of the school environment.

Critical components to consider include curriculum, policy, and practice (Chapman et al., n.d.), as well as facilities and staffing levels, having program continuity plans, and building relationships. For example, the curricula for grades two to eight have several supportive required educational outcomes. However, how teachers address each topic depends on teacher interest and knowledge level. Teachers who were passionate and knowledgeable about an area, such as gardening, felt comfortable including it in the curriculum and used several innovative and experiential strategies. For example, the Little Green Thumbs program (Agriculture in the Classroom, 2019) was used by one teacher to provide students with experiential learning. Incorporating other programs, such as Farm to School, could also be explored to increase food literacy and connection to local food (Farm to Cafeteria Canada, 2021). Curriculum support resources are no longer as readily available due to provincial funding cuts, making it more challenging for teachers to access resources efficiently.

Some curriculum components and practices support food literacy and food system sustainability. Although there is a reference to interdependence in the curriculum, it is up to teachers to explain how food choices relate to environmental sustainability. Most curricula were developed between 2009 and 2011, before the 2015 Truth and Reconciliation Report was published (Truth and Reconciliation Commission of Canada, 2015). How sustainability is addressed should consider appropriateness for schools with a large Indigenous population. Indigenous land-based education that sees land stewardship as a way of life may be more appropriate in these cases (Bentham et al., 2019). Supportive curriculum updates would ensure that food literacy and food sustainability practices are a direct focus.

Although policies are essential for schools to support SFS, policy documentation and support are lacking. Policies could address the quality of food brought from home, nutrition guidelines for food served, class incentives, fundraisers, sustainability, and a plan to communicate these policies. Although staff are motivated to address environmental and nutrition issues, they cannot consistently optimize their efforts due to competing priorities and a lack of prioritization, policy, and financial support. Food programs at Community Schools are driven by the need to address student hunger, and, when resources are tight, food

quantity is valued over food quality. Access to adequate, healthy, nutritious food supports optimal academic achievement and health (Bundy et al., 2013; Ritchie et al., 2015). The suboptimal quality of foods offered can lead to unintended negative consequences and foster unhealthy eating patterns that could have long-term health impacts. Adequate support and training are needed to ensure policy adherence (McIsaac et al., 2015). Schools should provide a healthy food environment for students through policy, support, and prioritizing a healthy food culture within schools.

School policy relating to environmental sustainability may be broad. Beveridge et al. (2019) have identified five domains related to policy and sustainability in the school context: governance, curriculum, facilities and operations, research, and community outreach. Governance refers to the overall vision of the institution, including sustainability, and illustrates how priorities are supported through leadership and management. Curriculum policy emphasizes how sustainability is incorporated into the curriculum. Sustainability in operations refers to how conservation efforts of physical infrastructure manifest, such as through water or energy conservation. Research in school sustainability suggests the types of community or industry research partnerships. Community outreach indicates sustainability collaborations with people or organizations outside the school. Of the many ways of incorporating sustainability into education, the provincial ministry of education in Saskatchewan only incorporates sustainability into the curriculum through cross-curricular competency frameworks (Beveridge et al., 2019). It may be challenging to reach cross-curricular outcomes without additional policies to support sustainability initiatives. Dedicated staff could play a significant role in supporting sustainability initiatives; however, only seven percent of Canada's school divisions have a staff member dedicated to this role (Beveridge et al., 2019).

Practices in schools can support curricular components around sustainability and healthy eating. Including students in composting and recycling programs gives them practical experience and models initiatives they could participate in outside of the school context. Food programs can provide healthy foods, and teachers can model eating practices by providing new foods for students that may not be accessible at home. Enjoying hot meals in a social environment without other distractions would benefit students and help develop social skills, and is consistent with mindful eating as promoted by Canada's Food Guide (Health Canada, 2019). These eating experiences may not be available to some students in their home environments. To include hot, sit-down meals that students help prepare, schools require adequate funding for appropriate supervision. Family-style hot meals in school support healthy growth and development, social skills, and healthy eating practices (Oostindjer et al., 2017).

Adequate and essential facilities and staffing levels are required to operate composting, recycling, gardening, and school food programs. Vital infrastructure includes composting facilities, sinks to rinse recyclables, gardens, an operational kitchen with storage space, equipment to transport food safely, and the ability to keep food safe. Infrastructure can be a challenge in schools. Creative solutions may need to be found, such as sharing or using community spaces like community churches or gardens (Rojas et al., 2016). Infrastructure challenges vary by school. When challenges exist, adequate resources are required to mitigate them. Adequate staffing levels are necessary to ensure relief coverage, personal and program development time, and program evaluation. Incorporating gardens and composting systems into

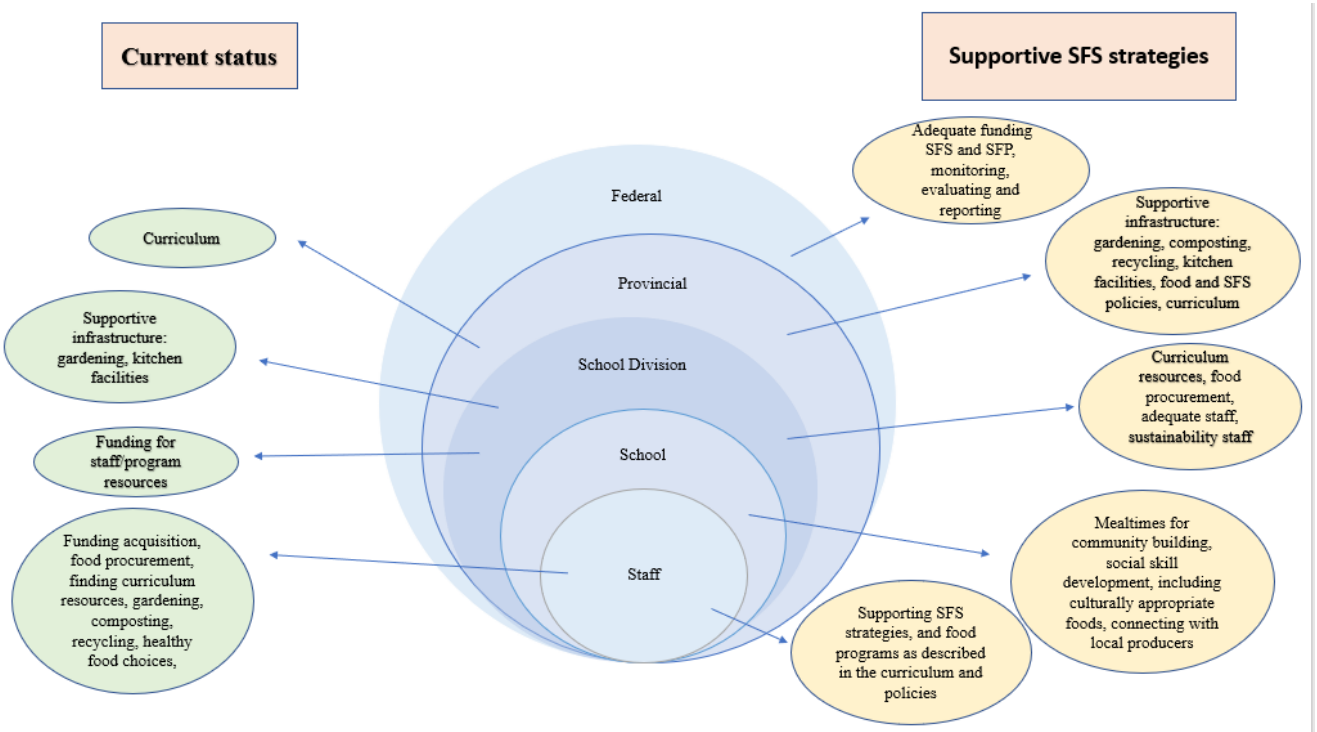
maintenance plans would help support their success. Providing enough staff time to clean dishes or organize students or volunteers would also reduce waste created from disposable dishes.

It is crucial to have continuity in program availability and curriculum components that deal with SFS because changes in staff are a regular part of the school environment. These schools identified many SFS practices. Some initiatives were undertaken previously but had been discontinued. For example, composting was discontinued due to a lack of knowledge and vandalism of equipment. Prioritizing initiatives and providing the necessary support for program continuation would help ensure program sustainability and ensure that efforts to start programs are not lost. The concern about initiatives being lost over time due to a lack of supportive policies has been noted elsewhere (Rojas et al., 2016).

Building relationships in the community and forming partnerships are essential components of SFS strategies (Rojas et al., 2016). Community building may occur at many levels—within the school, or with local community members and parents, volunteers and charities, and local businesses. Respondents indicated that schools would benefit from the support of community members and volunteers, but can also act to bring people together through school-run family meals, events, and gardening.

Schools operate in complex contexts, impacting the capacity to integrate SFS strategies. Viewing support for integrating SFS practices through the Socio-ecological Framework can help identify if supportive factors act across multiple levels (Onwuegbuzie et al., 2013) and assist in determining appropriate actions to move towards SFS in schools. Figure 1 illustrates where the responsibility of incorporating SFS and school food programs currently lies in the schools included in this case study, along with a recommendation for how responsibilities could be shifted to be more supportive of SFS and food programs in schools. This case study analysis demonstrates that the bulk of the responsibility for integrating SFS strategies lies with NWs and teachers. A more supportive environment would shift responsibilities, so that all levels are supportive: from school, school division, and province, through to the minister of education and the federal government. This way, school staff could operate in an environment that is supportive at all levels.

Figure 1: Framework for Sustainable Food Systems in Schools



Schools play an integral role in supporting SFS and food programs. The Comprehensive Community School Health Framework and the philosophy of Community Schools put the schools in this case study in a solid position to become leaders in school food. Staff are motivated, work hard, and care about students' short- and long-term goals. Prioritizing SFS strategies and school food programs, which are foundational to school culture, will provide optimal nutrition and learning experiences with food and sustainability practices that students may not otherwise have.

Policies, developed at the school division level, tailored for the school context, with the input of students and community members, and implemented at the school level, would strike the balance of being appropriate for the school while providing the structure to support consistent practice. Developing partnerships with local producers, both for local food procurement and student engagement through farm visits or work projects, would provide learning opportunities for students to understand where their food comes from.

The diet quality of school-aged children and food system sustainability concerns are national in scope. A national strategy would address these issues across the country. A universal, health-promoting, multi-component, sustainable food program in Canada that respects cultural diversity would address this national concern (Hernandez et al., 2018) and would have the potential to help Canada integrate health and environmental sustainability in the school food context (Oostindjer et al., 2017). Canada will need to be intentional to move towards food system sustainability, because, although there is interest, sufficient supports are not in place. Adequate funding for program delivery and sufficient monitoring, evaluation, and reporting resources are needed to ensure schools meet sustainability goals (Beveridge et al., 2019).

Limitations

Findings from this study may not apply to schools in other contexts. The infrastructure and support for SFS and school food programs may not reflect what is available in all schools. Conclusions developed from the data collected in this study may be missing components or may not be relevant to other contexts. However, school principals approved the research findings. Therefore, we are confident in the case assessment and in the likelihood of similarities across similar schools.

Conclusion

School food programs can address diet quality, food insecurity, and environmental sustainability. Components to consider in environmentally-sustainable school food programs include curriculum, policy, practice, facilities and staffing, relationships within the community, and planning to sustain programming through challenges and changes. Limited resources for school food initiatives make it challenging for staff to consider the consequences of food programs on the environment; subsequently, it becomes more difficult to have food programs for students that consider environmental health. The bulk of the responsibility for integrating SFS strategies lies with school food staff, teachers, and women in this case study. Shifting this responsibility to include all levels, including the school division and provincial and federal governments, would create a more supportive environment. Improved support systems would allow schools to prioritize sustainable food systems and school food programs, which are foundational to school culture and to supporting lifelong sustainability and healthy eating practices.

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Original Research Article

Proposing a framework for school food program evaluation in Canada

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Abstract

Healthy eating in school-aged children supports optimal growth and learning; however, diet quality and food insecurity are a source of concern for many school-aged children in Canada. Canadian school-aged children's diets are a concern. In 2019 the Canadian federal government announced the intention to work towards a National School Food Program. A nationally organized program can evolve and meet the needs of children if there is a national evaluation strategy developed along with the program. A scoping review published in 2019 consisted of reports of school food programs in Canada evaluating nutritional impacts and food system sustainability. Food system sustainability recognizes the full impact that school food programs can have on individual, community, and environmental health by integrating social determinants of health, food systems, and economic sustainability. We conducted a content analysis of the evaluation strategies of these programs. Of the 17 peer-reviewed and 18 grey literature publications in the initial scoping review, 12 peer-reviewed and seven grey literature publications contained an evaluation component. Components assessed social determinants of health, including changes in food intake, knowledge about local foods, educational and behavioural outcomes, general knowledge, intention to eat, and willingness to try new foods. An evaluation template for school food programs including categories for social systems, environmental and economic sustainability would capture elements contributing to program impact.

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Evaluation that includes reach, efficacy, adoption, implementation, and maintenance would capture the complexity of the potential impact of sustainable school food programs.

Résumé

Une alimentation saine chez les enfants d'âge scolaire favorise une croissance et un apprentissage optimaux. Cependant, la qualité de l'alimentation et l'insécurité alimentaire sont problématiques pour de nombreux enfants d'âge scolaire au Canada. L'alimentation des enfants canadiens d'âge scolaire est une préoccupation. En 2019, le gouvernement fédéral canadien a annoncé son intention de travailler à l'élaboration d'un programme national d'alimentation scolaire. Un programme national peut évoluer et répondre aux besoins des enfants si une stratégie d'évaluation nationale est développée conjointement. Un examen de la portée publié en 2019 a rapporté les programmes d'alimentation scolaire au Canada qui ont évalué les impacts nutritionnels et les systèmes d'alimentation durables. Les systèmes d'alimentation durables reconnaissent tous les effets que les programmes d'alimentation scolaire peuvent avoir sur la santé individuelle, communautaire et environnementale en intégrant les déterminants sociaux de la santé, les systèmes alimentaires et la durabilité économique. Nous avons effectué une analyse du contenu des stratégies d'évaluation de ces programmes. Parmi les 17 publications évaluées par les pairs et les 18 publications de littérature grise contenues dans l'examen de la portée initiale, 12 de la première catégorie et sept de la seconde intégraient une composante d'évaluation. Ces composantes ont mesuré les déterminants sociaux de la santé, incluant des changements de l'apport alimentaire, les connaissances sur les aliments locaux, les résultats éducatifs et comportementaux, les connaissances générales, l'intention de manger et la volonté d'essayer de nouveaux aliments. Un modèle d'évaluation pour les programmes d'alimentation scolaire, incluant des catégories pour les systèmes sociaux et la durabilité environnementale et économique, permettrait de capter les éléments qui contribuent à l'impact des programmes. Une évaluation qui inclut la portée, l'adoption, la mise en œuvre et le maintien permettrait de capter la complexité de l'impact potentiel des programmes d'alimentation scolaire.

Keywords: School food program; school meal program; school snack program; milk program; evaluation; sustainable food systems in schools

Introduction

Healthy eating in school-aged children supports optimal growth, development, and learning while establishing significant long-term dietary patterns with positive health impacts (Ballard, 2013; Roustit et al., 2010). However, in Canada, food insecurity affects sixteen percent of all children under 18 years of age, which drastically limits their ability to consume healthy foods (Tarasuk & Fafard St-Germain, 2022). In addition, the diet quality of children while at school is poor, with up to thirty-seven percent of calories coming from minimally nutritious foods (Tugault-Lafleur et al., 2017). Parents can experience many challenges with packing lunches, including time constraints (Russell et al., 2007), lack of lunch ideas that fit school allergy policies, food safety guidelines, and child preferences (Hawthorne et al., 2018), as well as finding foods that fit social norms and that can be eaten in limited time (Bathgate & Begley, 2011). Providing all children with daily access to healthy food at school would positively impact all families, particularly parents who invest a significant amount of time preparing food for school. While schools are responsible for caring for children during school hours, food provisioning is still largely seen as a personal responsibility in Canada (Patico, 2020). The majority of that burden still falls on mothers, who now often do "double duty", commonly working in the paid labour force, but also, on average, performing more hours of housework and childcare than men (Neilson & Stanfors, 2014). Providing healthy foods that are available to all children addresses food insecurity and diet quality, while also addressing the challenges and burden of packing lunches.

Despite concerns over the diets of school-aged children, there is no Canadian national school food program. In response to student need, some jurisdictions have initiated school food programs by providing breakfast, lunch, snack, or milk programs (Everitt et al., 2020a) These schools rely primarily on grants or local or regional charities for support. However, not all schools have the same ability to procure funds, which can be particularly challenging in low-economic areas (Social Research and Demonstration Corporation, 2010). Insufficient funding can reduce program frequency (Edward, 1998) and compromise program effectiveness (Valatis, 2009). Sufficient funding, leading to the institutionalization of programs in schools and communities, can promote program improvement over time (Skinner et al., 2012) and contribute to the strengthening of local food systems (Naylor & Bridgewater, 2007). Therefore, multiple national organizations have called for a National School Food Program that would enable all students in Canada to have access to healthy meals at school every day.

Internationally, school food programs are drivers of improved health, education, and economic growth (World Food Programme, 2016). Nevertheless, Canada is one of the only highly industrialized countries within the Organization for Economic Cooperation and Development without a national school food program (Koç & Bas, 2012). Families struggle to introduce healthy foods for various reasons (Bauer et al., 2012; Daniel, 2016; Engler-Stringer, 2010; Slater et al., 2012). Globally, school food programs help to address many of these challenges. Over 368 million children in 151 countries (seventy-seven percent of all countries) receive free or subsidized school meals supported by state and national governments (Rutledge, 2016). India has the largest school food program, feeding ninety million children, followed by Brazil and China that each feed 40 million, and the United States which feeds thirty million (World Food Programme, 2020). Characteristics of school food programs in other countries may help

inform program development in Canada. For example, in France and Japan, school food programs are seen to address childhood health concerns at a systems-level (Moffat & Thrasher, 2016). In Finland, the lunch program is universal, is incorporated into the education system through the curriculum, and supports environmental, cultural, social, and economic sustainability (Pellikka et al., 2019). According to a review of international literature, integrating school meals with classroom curricula in a healthy and culturally appropriate food environment helps to promote both healthy and sustainable food behaviours (Oostindjer et al., 2017). This is accomplished by taking an education-integrated approach that involves children in growing and preparing food, teaching about food system sustainability, and healthy behaviour.

School food program development in high-income countries has progressed in three phases, as described by Oostindjer et al. (2017). The first phase provides calories to reduce hunger, regardless of food quality. In response to concerns about the impact of poor-quality diets, the second phase shifts to healthier, more nutrient-dense, and lower-calorie foods. The third phase integrates food system sustainability in school food programs to ensure that school meals promote healthy and sustainable eating patterns. Specifically, school food programs in this third phase integrate social determinants of health, the food system, and economic sustainability (Everitt et al., 2020a). From a social determinants of health perspective, sustainable school food programs integrate food literacy, food systems, and environmental and cultural knowledge within the curriculum while also providing healthy sustainable food (Oostindjer et al., 2017). School food programs may also address food systems by targeting environmental sustainability, which includes measures or practices that minimize or reduce environmental impacts. Environmental sustainability may involve focusing on local foods or using reusable, recyclable, or biodegradable dinnerware. Finally, economic sustainability in school food programs means there are sufficient resources to procure food, staff the program, build capacity, and monitor and evaluate the program (Hernandez et al., 2018). School food programs in Canada are currently at the beginning of this third phase, as few schools have incorporated some components of food systems or environmental or economic sustainability in their food programs.

In a recent scoping review, we described a broader perspective on components of Canadian school food programs as they relate to social determinants of health, food systems, and economic sustainability, and identified the extent to which these components were included in Canadian school food programs (Everitt et al., 2020a). Specifically, we found that the social determinants of health component of school food programs focused on improving nutritional intake, contributing to food literacy, supporting educational attainment (i.e., educational outcomes, attention, attendance), promoting health equity, addressing school stigma related to program use, including culturally appropriate food, and increasing cultural knowledge (Everitt et al., 2020a). Of the twenty-four programs described, six described food systems in the school context. Three programs incorporated gardening (Hanbazaza et al., 2015; Triador, 2013; Triador et al., 2015), one incorporated eco-friendly practices (Social Research and Demonstration Corporation, 2010), two incorporated local food systems (Abrey, 2008; Naylor & Bridgewater, 2007), and one discussed the importance of building a community network (Edward, 1998). Several programs included in the scoping review discussed challenges created by having insufficient resources and the importance of having adequate resources to operate the program (Edward, 1998; Naylor & Bridgewater, 2007; Skinner et al., 2012; Social Research and Demonstration Corporation, 2010; Valatis, 2009).

In 2019, the Canadian government announced its intention to work with the provinces and territories to develop a National School Food Program. However, no timeline was set, and no funding was committed (Government of Canada, 2019); this provides a prime opportunity to look at evaluation methods used in Canada to develop a national evaluation framework to inform program planning. A national evaluation framework or template could provide data for provincial and municipal comparisons, to ensure that programs have optimal impact and guide program enhancements toward equitable outcomes. Additionally, giving schools guidance will facilitate completing evaluations even for schools with limited resources. Therefore, the purpose of this paper is to determine how school food programs are evaluated in Canada, including how different components of social determinants of health, food systems, and economic sustainability have been assessed, using the literature incorporated in our previous scoping review.

Methods

Identification and selection of relevant publications

The initial scoping review included peer-reviewed and grey literature publications in English or French published after 1970. Databases searched included OVID Medline, OVID ERIC, PsycINFO and Web of Science. The initial Ovid peer-reviewed search strategy can be found in Table 1. This Ovid search strategy was adapted to optimize the search in other databases and was also the basis of the grey literature search. The search was conducted on June 5, 2018. Publications retained had to both describe a Canadian school food program that provided food to children during school hours for nourishment purposes and include an evaluation component. Publications for this initial scoping review were excluded if they did not have an evaluation component, provided food only for educational purposes, focused on adherence to policy, or discussed foods available for purchase in cafeterias or vending machines. Further details on methods used in the original scoping review are described in detail elsewhere (Everitt et al., 2020a). A total of seventeen peer-reviewed and eighteen grey literature publications were identified and retained for the initial scoping review (Everitt et al., 2020a).

Publications included in the current analysis were drawn from this initial scoping review (Everitt et al., 2020a). Publications were excluded if they only described program implementation (Abrey, 2008), factors contributing to program acceptance (Scott et al.,

2017), perceptions of the program (Russell et al., 2007), or nutrient composition of the school meals (Gougeon, 2008; Gougeon et al., 2011), only reported characteristics of program users (Godin et al., 2018), or only evaluated program delivery (Valatis, 2009). Studies that solely described qualitative self-reported program impacts (Act Now BC, 2008; Edward, 1998; Goss Gilroy Inc., 2013; He et al., 2008, 2012; Policy and Planning Branch, 2006; Prowse, 2011) were also excluded, as the validity of the data cannot be confirmed. Furthermore, issues with the representativeness of findings, heterogeneity of data collection methods, and analysis complexity limit the appropriateness and feasibility of using qualitative data to evaluate school food programs on a national scale. A similar systematic review of peer-reviewed literature published between 1990 and 2017 did not reveal any further studies that fit our inclusion criteria (Colley et al., 2019).

Data synthesis

We scanned the peer-reviewed and grey literature publications included in the original scoping review for evaluation strategies related to the components of social determinants of health, food systems, and economic sustainability in school food programs (Everitt et al., 2020a). Based on the initial scoping review's findings, we specifically identified evaluation strategies in the areas of educational outcomes, behaviours such as attention and attendance, changes in food intake, knowledge, attitudes and preferences, impact on food security or health equity, and assessment of social benefits. We also determined how school food programs evaluated food literacy as well as food systems, environmental, or cultural knowledge. We selected these areas to reflect how a curriculum-integrated sustainable school food program could manifest in Canada.

Results

This analysis included twelve peer-reviewed and seven grey literature publications that evaluated social determinants of health, food systems, or economic sustainability. The publications covered two programs in British Columbia (n = 3 grey literature), two programs in Alberta (n = 3 peer-reviewed, n = 1 grey literature), one program in Saskatchewan (n = 2 peer-reviewed), seven programs in Ontario (n = 7 peer-reviewed, n = 2 grey literature), and one program in Prince Edward Island (n = 1 grey literature), as shown in Table 2. School food programs included breakfast (n = 2), lunch (n = 1), snack (n = 4), milk (n = 3), lunch salad bar (n = 1), gardening (n = 1), and vegetable and fruit offerings (n = 6).

Some publications reported on existing programs (Leatherdale et al., 2016; Muthuswamy, 2012; Ransome et al., 1998; Skinner et al., 2012), while others reported on interventions (Context, 2013; Gates, 2010; Gates et al., 2013a, b; Hanbazaza et al., 2015; He et al., 2009; Saksvig et al., 2005; Sangster Bouck et al., 2011; Social Research and Demonstration Corporation, 2010; Taylor et al., 2003; Triador, 2013; Triador et al., 2015). In terms of food systems, three programs included environmental sustainability within their program, one program included local foods (Context, 2013), one used reusable plates (Social Research and Demonstration Corporation, 2010), and a third considered food waste (Sangster Bouck et al., 2011). As for social determinants of health, nutrition education

was included in the curriculum in five programs (Gates et al., 2013a; Hanbazaza et al., 2015; Saksvig et al., 2005; Sangster Bouck et al., 2011; Triador, 2013; Triador et al., 2015). Six programs focused solely on providing healthy foods to students (Gates, 2010; Gates et al., 2013b; Leatherdale et al., 2016; Muthuswamy, 2012; Ransome et al., 1998; Skinner et al., 2012; Taylor et al., 2003), and two publications focused on interventions aimed at lowering sugar intake from flavoured milk (Henry et al. 2015, 2016). None of the programs evaluated economic sustainability.

Frameworks and study designs used in school food program planning and evaluation

Of the nineteen publications, eight reported using a theoretical or conceptual framework to plan or evaluate their school food program, including Social Cognitive Theory (Bouck et al., 2011; Gates, 2010; Gates et al., 2013a, b; Saksvig et al., 2005; Triador et al., 2015), the Comprehensive School Health model (Gates et al., 2013b), the Centers for Disease Control and Prevention (CDC) framework (Gates, 2010), the Ecological Model (Saksvig et al., 2005) , the Logic Model (Context, 2013), and Ponza et al.'s (1999) framework (Muthuswamy, 2012). Most publications reported using a pre-post study design, either alone (Gates et al., 2013b; Hanbazaza et al., 2015; Saksvig et al., 2005; Taylor et al., 2003; Triador et al., 2015; Triador, 2013) or as part of a mixed-methods approach (Henry et al., 2015; Gates, 2010; Gates et al., 2013b; Muthuswamy, 2012), to assess the program's impact. Experimental designs were used in six studies, including cluster RCT (He et al., 2009; Ransome et al., 1998), non-randomized controlled trial (Leatherdale et al., 2016; Skinner et al., 2012), or cross-over trial (Henry et al., 2015, 2016), while process evaluation was assessed in eight of the publications (Bouck et al., 2011; Context, 2013; Gates, 2010; Gates et al., 2013a, b; Muthuswamy, 2012; Naylor & Bridgewater, 2007; Social Research and Demonstration Corporation, 2010).

Social determinants of health in school food program evaluation

Peer-reviewed publications reported outcomes related to food intake, knowledge, attitudes, and preferences. Food intake was measured using questionnaires or surveys (Hanbazaza et al., 2015; Triador et al., 2015), twenty-four-hour recall (He et al., 2009; Saksvig et al., 2005), web-based twenty-four-hour recall (Gates et al., 2013a, b; Skinner et al., 2012), or a food or beverage frequency questionnaire (FFQ or BFQ) (Henry et al., 2015; Ransome et al., 1998). Food waste was measured using plate waste in two studies (Henry et al., 2015, 2016), while another study used tracking sheets from food preparers to assess the degree of wastage of different vegetables and fruits (Bouck et al., 2011). Food literacy, which included knowledge of vegetables and fruits, self-efficacy, preferences, and intention to eat certain foods, was assessed in five studies (Gates et al., 2013a; Hanbazaza et al., 2015; He et al., 2009; Saksvig et al., 2005; Triador et al., 2015). One study looked at multiple domains of health, including eating behaviours, tobacco use, physical activity, obesity, bullying, and substance use (Leatherdale et al., 2016), and body mass index was measured in two peer-reviewed publications (Gates et al., 2013b; Saksvig et al., 2005). No peer-reviewed publications assessed educational outcomes or behaviours such as attention and attendance.

Grey literature publications reported on measures for several components of social determinants of health. Food intake was measured using web-based twenty-four-hour recall (Gates, 2010) and surveys (Context,

2013; Muthuswamy, 2012; Social Research and Demonstration Corporation, 2010; Triador, 2013). Surveys were also used to identify the number of foods tried (Context, 2013), perceptions of availability as a result of the food program (Context, 2013; Muthuswamy, 2012; Social Research and Demonstration Corporation, 2010), intentions or willingness to try foods (Context, 2013; Gates, 2010; Social Research and Demonstration Corporation, 2010; Taylor et al., 2003), and knowledge of and preferences for certain foods (Triador et al., 2013; Gates 2010). Surveys were used to capture perceptions of the social environment related to vegetables and fruits (Context, 2013) and changes in food system knowledge, specifically by asking what local vegetables and fruits were available (Context, 2013). Qualitative methods in the grey literature included key informant interviews to assess how the school food program strengthened the local food system (Context, 2013). One publication addressed educational outcomes by looking at grades, attendance by looking at attendance rates, and also used qualitative methods to determine the impact on independent work and problem solving (Muthuswamy, 2012). Neither peer-reviewed nor grey literature addressed environmental knowledge, cultural knowledge, attitudes, or practices, nor did they measure improvements in health equity or assess the social benefits of participating in the school food program.

Food system and economic sustainability in school food program evaluation

Although three studies incorporated aspects of food systems and economic sustainability within their program, none of the publications (neither peer-reviewed nor grey literature) assessed the impact of school food programs on these outcomes. However, some publications commented on the importance of sufficient financial resources and support (Bouck et al., 2011; Naylor & Bridgewater, 2007; Skinner et al., 2012), the challenges that insufficient financial resources created (Gates et al., 2013a), and the challenges of fundraising in low-income areas (Social Research and Demonstration Corporation, 2010).

Discussion

This review found that only some components of sustainable school food programs have previously been evaluated in Canada, particularly as they relate to social determinants of health. These included changes in food intake, educational outcomes, attendance and attention, and food literacy. However, these outcome indicators were measured using varied assessment tools, which limits comparisons between programs. Other components, such as food security, health equity, environmental knowledge, cultural knowledge, attitudes and practices, or the social benefits of participating in school food programs, have not been evaluated. None of the programs assessed outcomes related to food systems or economic sustainability. Of the few school food programs that have been evaluated, even fewer have used a framework to guide this evaluation. This review highlights the lack of school food program evaluation in Canada, and demonstrates the heterogeneity of outcome indicators and methods used by the few programs that have been evaluated. This further illustrates the importance of developing a national evaluation framework for school food programs in Canada.

Program evaluation is essential, as it provides valuable information on the program and its effectiveness, as well as on avenues for improvement, that can help inform or guide future program development. Despite the importance of program evaluation, few school food program evaluations have been conducted in Canada. Furthermore, only seven programs' evaluations have been guided by a theoretical or conceptual framework. Most refer to Social Cognitive Theory as the framework used for their program. While theories such as Social Cognitive Theory can help with program development, they do not necessarily provide a framework to assess the impact of a school food program on specific outcomes. Although reporting on program impact is important, additional information is often needed to better understand the outcomes of those evaluations. Evaluating the impact of public health programs, such as school food programs, incorporates many components (Glasgow et al., 1999). Therefore, more robust frameworks should be used. An evaluation template would provide necessary structure while allowing school personnel and community members to determine the most appropriate indicators. Community control over evaluation strategy is important, especially in Indigenous communities. Stakeholder input from students, parents, and caregivers would provide a feedback mechanism to gather information on participants' needs, program acceptance, and factors that discourage participation.

One approach is the RE-AIM framework, which covers the reach, efficacy, adoption, implementation, and maintenance of programs (Glasgow et al., 1999). This process evaluation framework provides a structured approach to program evaluation that can help increase our understanding of how a program is delivered in complex settings. This framework can provide important data on the program's effectiveness and highlight the reasons why it may or may not have had the intended consequences. Reach of a program, for example, is the percentage of the target population who participate in a program or intervention (Glasgow et al., 1999). In the context of school food, a universal program would have a larger impact than a program that targeted those in need. Efficacy considers both positive and negative outcomes of the program, and includes behavioural factors, satisfaction, and achievement of endpoints (Glasgow et al., 1999). Efficacy in the context of school food programs that incorporate sustainable food systems would include indicators related to social determinants of health, food systems, and economic sustainability. Adoption within the RE-AIM framework refers to individuals or settings that adopt the intervention (Glasgow et al., 1999). At the school level, this could be the number of classrooms that participate. At provincial or national levels, this could include the number of participating schools. Implementation considers the degree to which the program is adopted (Glasgow et al., 1999). Some programs, for example, intend to implement several components, but, because of logistical or other challenges, are unable to fulfil that intention (He et al., 2008). Maintenance refers to the long-term maintenance of the program (Glasgow et al., 1999).

Social determinants of health

Outcomes related to social determinants of health comprised the most reported outcomes. Changes in dietary intake were measured in both peer-reviewed and grey literature publications using several methods. Although the methods chosen are appropriate from a research perspective, converting data to reveal nutrient breakdown would require significant resources and expertise for analysis and interpretation. A simplified approach would be more realistic, as schools generally

are not paired with academic departments that can help them with these analyses. One possibility for addressing nutritional intake would be to explore using the healthy eating index adapted for school-time intake. A challenge, however, is that the version of Canada's Food Guide that was the basis for the school-adapted Healthy Eating Index has been replaced by a version that lacks serving-size information. Researchers would therefore need to develop a revised composite measure based on the new food guide and assess it for appropriateness in the school context. One advantage of using a composite measure like the Healthy Eating Index is that it looks beyond health components to consider minimally nutritious foods, sodium, and saturated fat. When looking at school-aged children's diets during the school day, it is important to examine both healthy and minimally nutritious components, because over thirty percent of calories come from minimally nutritious foods (Everitt et al., 2020b; Tugault-Lafleur et al., 2017).

Educational outcomes were evaluated in one grey literature publication by comparing achievement scores between participants and non-participants of school food programs (Muthuswamy, 2012). Authors outside Canada have used grades or standardized test scores to assess the impact of meal programs on educational outcomes (Imberman, 2012; Kleinman et al., 2002; Rampersaud et al., 2005; Rodgers & Milewska, 2007). Using data that schools are already collecting keeps the burden of program evaluation low. The authors who collected data on educational outcomes were also the only ones looking at attendance and attention (Muthuswamy, 2012). Muthuswamy (2012) assessed attendance and achievement by comparing attendance rates and achievement scores between food program participants and non-participants and concluded that the breakfast program improved both metrics (Muthuswamy, 2012). These findings were supported by teacher interviews, which indicated that students who attended the breakfast program did better in terms of achievement scores, independent work, initiative, and problem-solving abilities compared to those who did not participate in the breakfast program (Muthuswamy, 2012). Although conducting interviews strengthened these findings, a less onerous evaluation method would be beneficial for a national evaluation strategy. Researchers outside of Canada have also used attendance rates to indicate program success (Deavin et al., 2018; Imberman, 2012; Kleinman et al., 2002; Rampersaud et al., 2005; Rodgers & Milewska, 2007). Grades, standardized test scores, and attendance would also provide the means to assess the outcomes of meal programs. There are, however, limitations to these measures, as there may be other potentially causative variables acting in the school context that are unknown. Comprehensive evaluation to determine the true impact of school food programs on attendance and attention would require time and money that are not available in many Canadian schools.

Curriculum integration improves food literacy and provides knowledge and skills for health-supporting decisions (Ismail et al., 2021). Food literacy is defined as "a collection of inter-related knowledge, skills and behaviours required to plan, manage, select, prepare and eat foods to meet needs and determine intake" (Vidgen & Gallegos, 2014, p.54). It involves varying levels of skills, from simple to complex. For example, interpreting food labels, understanding how food choices impact health, and having the skills to procure healthy food are entry-level skills, while a critical perspective along with advanced knowledge of the food system to promote action and improvement represent advanced skills (Anderson & Falkenberg, 2016; Azevedo Perry et al., 2017; Robertson & Scheidler-Benns, 2016; Truman et al., 2017). In one study, food literacy was addressed by asking students in grades one

through six to identify familiar vegetables and fruits along with the number of recommended daily servings (Hanbazaza et al., 2015). These measures may not adequately evaluate the complexity of food literacy.

Food literacy is a broad concept that includes developing food skills, having a healthy relationship with food, and being able to navigate the complex food system while supporting personal and environmental health (Cullen et al., 2015). Beyond that, critical food literacy is based on individual values and understanding of the sociopolitical context of sustainable and culturally appropriate foods (Classens & Sytsma, 2020). Practical knowledge and skills extend to learning how to take action for better food (Yamashita & Robinson, 2016). Students' food literacy may best be achieved by integrating it into the curriculum and incorporating gardening, cooking, or social studies within school food programs (Nowak et al., 2012). Farm-to-school programs, for example, can be instrumental in supporting food literacy through classroom learning, tasting new foods, field trips, and eating local foods in meal and snack programs (Joshi et al., 2008). Identifying age-appropriate knowledge and skills is also important to effectively address food literacy within school food programs. Home economics teachers, who are present in many elementary and secondary schools across Canada, contribute considerable expertise in food literacy and can help provide age-appropriate learning opportunities to children and adolescents, and therefore support the implementation of school food programs. Providing professional development opportunities for home economic teachers could help strengthen and expand their knowledge of critical food literacy, particularly with regard to sustainable food systems. By strengthening food literacy early, students will be prepared to challenge the status quo and contribute to a sustainable, just, and healthy food system (Classens & Sytsma, 2020; Yamashita & Robinson, 2016).

Missing Evaluative Components

No publications included in this review measured changes in food security, yet this is paramount in the argument for school food programs (Godin et al., 2018; Roustit et al., 2010; Skinner et al., 2012). There are different definitions of food security. The Food and Agriculture Organization states that food security exists when "all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO Rome World Food Summit Secretariat, 1996, n.p.). As a result, the extent to which a school can provide sufficient, safe, and nutritious food may be an appropriate indicator, but this would be restricted to school days unless schools offered low-cost market items or take-home meals. Household food insecurity, on the other hand, has been defined as "the inadequate or insecure access to adequate food due to financial constraints" (Tarasuk et al., 2014, p.5). In research, food security surveys have been used to assess the impact of school food programs on household food insecurity (Bartfeld & Ahn, 2011; Petralias et al., 2016); however, this may be challenging to administer and interpret in the school context due to the complexity and sensitivity of this issue.

Early childhood experiences influence health and social circumstances throughout the lifespan (Rasali et al., 2016). During the school-aged period, disadvantages can impact school success, thereby determining employment opportunities, socio-economic status, and health later in life (Rasali et al., 2016). Despite its importance, no publications in this review explicitly measured the impact of school food programs on health equity. Extra funding could be contingent on schools

identifying vulnerable populations along with plans of how to address equity issues. A literature review conducted to capture research done outside of Canada also did not identify any measurement methods for changes in health equity resulting from school food programs. This is an area for further development.

Neither peer-reviewed nor grey literature studies addressed environmental knowledge, cultural knowledge, attitudes, practices, or the social benefits of participating in school food programs. These findings reflect Canada's position at the beginning stages of a new paradigm of school food programs that include social and environmental determinants of health (Everitt et al., 2020a). Further work is needed to develop assessment methods in these areas. Addressing the cultural relevancy of school food programs is especially important in Canada, a multicultural country, to ensure that programs are acceptable and appropriate for all students. To cultivate social benefits, school food programs can help foster a sense of community and become part of the school culture (Goss Gilroy Inc., 2013; Policy and Planning Branch, 2006), improve classroom environments (Deavin et al., 2018), and provide meaningful social opportunities for students. School food programs can provide social opportunities through family dinners, cooking classes, sit-down meals, and eating with teacher role models (Chatterjee et al., 2015; Perry et al., 2004). Educators can integrate food systems, environmental, and cultural knowledge into the curriculum, which can be demonstrated through operationalizing the school food program. This may also help students develop their critical food literacy skills, making them more likely to participate in public discourse and adopt food-related behaviours that support socially, economically, and ecologically just food systems (Wever, 2015).

Economic sustainability is an integral part of school food programs; however, the best way to evaluate this is unclear. It is important to have ongoing funds for operational expenses to keep costs low so students can participate (Social Research and Demonstration Corporation, 2010) while also creating jobs that do not exploit school food workers (Gaddis, 2019). Food programs that are economically sustainable can become institutionalized in the community and school, which can support program improvement and increase program impact (Gates et al., 2013a; Skinner et al., 2012). Economic sustainability is also challenging in low-income areas if fundraising efforts are needed (Social Research and Demonstration Corporation, 2010). If Canada's National School Food program is designed to cover operational expenses and funding disbursements reflect the economic means of low-income neighbourhoods, food programs will be better positioned to support their intended purpose rather than staff spending their energy procuring additional resources to meet their students' needs.

Table 3 identifies components to include in a sustainable school food program, evaluation strategies included in the scoping review, limitations and challenges to measuring the indicators, and concluding remarks, along with next steps. We identified suggestions for several indicators needing further development. These evaluation strategies apply to the local school level. Compiling findings will help determine impacts at the local (school division), provincial, and national levels to determine the true impact of school food programs in Canada.

Limitations

This study incorporated publications from across Canada, including those from British Columbia, Alberta, Saskatchewan, Ontario, and Prince Edward Island. However, the breadth and depth of data on school food programs in Canada are lacking. Research-

based peer-reviewed publications that describe extensive data collection may not reflect what is achievable with available resources in practice. As well, some of the nutrition interventions discussed were of short duration (Gates et al., 2013a; Henry et al., 2015, 2016), so they do not address whether the intervention is sustainable in the long term. Drawing conclusions from short study durations fails to recognize the complexity of food choices and the length of time required to elicit behaviour change. Furthermore, details of evaluation strategies were only captured if they were included within the relevant publications. There are likely school food evaluations currently being conducted that were not part of this review. Canada is only beginning to show signs of integrating environmental sustainability into its programs, so few publications have included this component.

Conclusion

School food programs in Canada have been operating independently, and, as such, evaluation methods have been variable to non-existent. With the move towards a national school food program, developing a school food evaluation framework that uses a simplified, standardized evaluation method would support schools in achieving an equitable distribution of resources to maximize program impacts. The shift towards designing and evaluating school food programs to include social determinants of health, food systems, and economic sustainability will help demonstrate the impact of sustainable school food programs. Identifying outcome indicators and considering RE-AIM components can provide a more comprehensive evaluation of sustainable school food programs at regional, provincial, and national levels.

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Appendix

Table 1: ovid medline search strategy

1. canada.ab,ti.
2. canadian.mp.
3. canada/ or alberta/ or british columbia/ or manitoba/ or new brunswick/ or newfoundland/ or labrador/ or northwest territories/ or nova scotia/ or nunavut/ or ontario/ or prince edward island/ or quebec/ or saskatchewan/ or yukon territory/
4. 1 or 2 or 3
5. breakfast/ or lunch/ or snacks/
6. breakfast*.mp.
7. lunch*.mp.
8. snack*.mp.
9. MEALS/
10. (Meal* adj2 (plan or plans or program* or intervention*)).mp.
11. (food* adj2 (plan or plans or program* or intervention*)).mp.
12. (nutrition* adj2 (plan or plans or program* or intervention*)).mp.
13. MILK/
14. (milk* adj2 (plan or plans or program* or intervention*)).mp.
15. fruit*.mp.
16. (fruit* adj2 (plan or plans or program* or intervention*)).mp.
17. (vegetable* adj2 (plan or plans or program* or intervention*)).mp.
18. (garden* adj2 (program* or intervention*)).mp.
19. (cook* adj2 (program* or intervention*)).mp.
20. farm-to-school*.mp.
21. farm-to-fork*.mp.
22. (eat* adj2 (plan or plans or program* or intervention*)).mp.
23. 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22
24. (elementary adj school*).mp.
25. (middle adj2 school*).mp.
26. (high adj2 school*).mp.
27. (primary adj2 school*).mp.
28. (secondary adj2 school*).mp.
29. (grade adj2 (school* or student*)).mp.
30. kindergarten.mp.
31. (kindergarten adj2 student*).mp.
32. ((boarding or private) adj2 (school* or student*)).mp.
33. 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32
34. 4 and 23 and 33

Table 2: Summary of Programs and Publications per Program Evaluation

Province	Program Name	Program Type	Publication	Type of Literature	Theoretical or conceptual framework	Evaluation type/ design	Outcomes and outcome measures
British Columbia	BC Farm to School Salad Bar	**Lunch salad bar**	Social Research & Demonstration Corporation (2010)***	Grey literature	None reported	Process evaluation	**Survey based on the ProChild Questionnaire** with students (Grades four and up): Reported on V&F intake, school eating behaviour, awareness and knowledge of healthy eating and farm-to-school salad, and willingness to try new foods. **Interviews and focus groups** with principals, coordinator, food service staff, volunteers, local food security champion, local producers/farmers: Assessed program motivation, success indicators, practicalities, relationships with stakeholders, community response to the program and unintended consequences.
	BC Fruit and Vegetable Snack Program	**Fruit and vegetable snack**	Context (2013)**	Grey literature	Logic model	Process evaluation	**Survey** with students (Grades three and up): Reported on willingness to try V&F, number of V&F tried at home, acceptability of V&F, knowledge of local V&F, and perception of availability of fresh V&F at school. **Electronic survey** with teachers and coordinators: Assessed perspectives on program implementation, capacity to implement, increased awareness of BC V&F, increased awareness of safe handling practices, enhanced relationships with BC Agriculture in the Classroom Foundation, perspectives on increased availability of V&F at school, and changes in students' willingness to try and accept V&F. **Interviews** with administrators, produce partners: Assessed relationships with local growers and distributors, information and support to deliver produce, increased business for local growers and

							distributors, collaborative relationships among produce partners **Direct observation** by program coordinators: Reported program implementation and the number of children trying and wasting snacks at school.
			Naylor & Bridgewater (2007)*	Grey literature	None reported	Process evaluation	**Survey** with the school administrator or parent advisory committee (PAC) coordinator: Measured stakeholder satisfaction, implementation facilitators and barriers, benefits, drawbacks for the school, and desire to participate again. **Focus groups and interviews** with teachers, administrators, suppliers/distributors, PAC members: Addressed impact in the school, implementation facilitators and barriers, evaluation of the overall program, and key components. **Logs** completed by PAC members: Record of receipt of V&F, product condition, returns from the classroom, distribution of extra product, related issues.
Alberta	School Milk Program	**Milk**	Ransome et al. (1998)	Peer-reviewed	None reported	Cluster RCT	**Food Frequency Questionnaire** with students (Ages six to twelve)**:** Reported usual intake in dairy and alternate food sources of calcium.
	Central Alberta First Nations gardening and snack program	**Gardening and Snack**	Hanbazaza et al. (2015)*	Peer-reviewed	None reported	Pre-post test	**List of V&F** by students (Grades one to six)**:** Assessed students' knowledge of V&F by writing down five V&F they know. **Survey** completed by students: Rated their preferences towards nine vegetables and eight fruits and reported their consumption of these V&F at home (yes/no).

			Triador et al. (2015)*	Peer-reviewed	Social cognitive theory	Pre-post test	**Survey** with students (Grades one to six): Rated their preferences towards seventeen V&F and reported their consumption of these V&F at home (yes/no).
			Triador et al. (2013)*	Grey literature	None reported	Pre-post test	**List of V&F** by students (Grades one to six)**:** Assessed students' knowledge of V&F by writing down five V&F they know. **Vegetable and Fruit Knowledge Survey and Vegetable and Fruit Attitude Survey** completed by students: Rated their preferences towards nine vegetables and eight fruits and reported their consumption of these V&F at home (yes/no).
Saskatchewan	Elementary School Milk program	**Milk**	Henry et al. (2015)	Peer-reviewed	None reported	Cross-over trial Mixed methods	**Plate waste** among students (Grades one to eight): Measured milk consumption as milk sold minus milk discarded. **Beverage Frequency Questionnaire** with students (Grades five to eight): Reported consumption frequency of sixteen different drinks and three calcium-rich foods. **Focus groups** with students (Grades five to eight): Identified benefits/barriers to milk consumption at home and school, attitudes/perceptions when chocolate milk was removed from schools, and suggestions for improving the school's milk program.
			Henry et al. (2016)	Peer-reviewed	None reported	Cross-over trial	**Plate waste** among students (Grades one to eight): Measured milk consumption as milk sold minus milk discarded.
Ontario	Ontario Northern First Nations	**Snack**	Skinner et al. (2012)	Peer-reviewed	None reported	Quasi-experimental study	**Web-based Eating Behaviour Questionnaire (WEB-Q)** completed by students (Grades six to ten): Measured types and amount of foods consumed the previous day (twenty-four-hour dietary recall), participation in the program,

	Snack Program						appreciation of the program, suggestions for improvement, and personal impact of the program.
	Sandy Lake school-based diabetes prevention program	**Lunch**	Saksvig et al. (2005)*	Peer-reviewed	Ecological model Social cognitive theory	Pre-post study	**Anthropometric measurements**: Recorded height, weight, and percentage of body fat (bioelectrical impedance) **Twenty-four-hour recall** reported by students (Grades three to five): Measured foods and drinks consumed. **Health knowledge and behaviour questionnaire** with students (Grades three to five): Measured dietary intention, dietary fat knowledge, behavioural capabilities (label reading skills), dietary self-efficacy, food preferences, knowledge and perceptions about diet, physical activity, and diabetes.
	Feeding our Future	**Breakfast**	Muthuswamy (2012)	Grey literature	Framework from Ponza et al. (1999)	Mixed methods Process evaluation	**Survey** with students (Grades six and up): Assessed participation in the program, eating habits, quality and quantity of foods provided, perceived well-being and program satisfaction. **Focus groups** with students: Assessed participation, program satisfaction, perception of benefits. **Site visits** to schools **Interviews** with school administrators, nutrition coordinators, teachers and educational assistants, school head caretakers, program managers/staff, and volunteers: Assessed program benefits, training and orientation, meal setting, promotion, participation, decision-making, school operations, menu, and resources. **Document review**: Identified participation rates and implementation communication. **System data**: Used to assess achievement, absenteeism, and suspensions.

	First Nations Fruit, Vegetable and Milk Programs	**Fruit and vegetable and milk offerings**	Gates et al. (2013b)	Peer-reviewed	Comprehensive school health Social cognitive theory	Mixed methods (pre-post and qualitative) Process evaluation	**Web-based Eating Behaviour Questionnaire (WEB-Q)** completed by students (Grades six to eight): Assessed intakes of milk and alternatives, calcium and vitamin D (twenty-four-hour dietary recall), and program impressions (open-ended questions). **Anthropometric data** among students: Analog scale and stadiometer were provided to students to record their weight and height; BMI was calculated. **Informal conversations** with program coordinators and school administrators: Provided information on program integrity and program impressions. **Focus group** with teachers: Assessed program impressions.
			Gates (2010)*	Grey literature	US CDC framework Social cognitive theory	Mixed methods (pre-post and qualitative) Process evaluation	**Web-based Eating Behaviour Questionnaire (WEB-Q)** completed by students (Grades six to eight): Assessed intakes of milk and alternatives, calcium, and vitamin D (twenty-four-hour dietary recall), and program impressions (open-ended questions). **Anthropometric data** among students: Height was measured by trained assistants, and participants weighed themselves using an analog scale; BMI was calculated. **Informal discussions** with school administrators and a **Focus group** with teachers: Assessed program impressions. **Knowledge, Self-Efficacy, and Intentions Questionnaire (KSIQ)** completed by students: Assessed knowledge, intentions, self-efficacy for milk and alternative consumption, number of milk and alternatives tried and liked.

							Questionnaire with parents: Assessed parental impressions of the program.
			Gates et al. (2013a)*	Peer-reviewed	Social cognitive theory	Pre-post test Process evaluation	**Web-based Eating Behaviour Questionnaire (WEB-Q)** completed by students (Grades six to eight): Assessed intakes of milk and alternatives, calcium, and vitamin D (twenty-four-hour dietary recall). **Knowledge, Self-Efficacy, and Intentions Questionnaire (KSIQ)** completed by students: Assessed knowledge, intentions, self-efficacy for milk and alternative consumption, number of milk and alternatives tried and liked. **Methods used to assess attendance and program integrity were not described.**
	Northern Fruit and Vegetable Pilot Program	**Fruit and vegetable offering**	He et al. (2009)*	Peer-reviewed	None reported	Cluster RCT	**Twenty-four-hour recall** with students (Grades five to eight): Assessed V&F intake **Survey based on the ProChild Questionnaire**: Assessed students' awareness, knowledge and preferences with regards to V&F consumption, attitude, self-efficacy, intention, willingness, and habit.
	Northern Fruit and Vegetable Pilot Program	**Fruit and vegetable offering**	Sangster Bouck (2011)*∞	Peer-reviewed	Social cognitive theory	Process evaluation	**Qualitative interviews** with food preparers, teachers and principals, local site coordinator, Ontario Fruit and Vegetable Growers' Association: Assessed what worked well, areas of improvement, facilitators, challenges, the overall reaction to the program. **Wastage tracking sheet** kept by food preparers: Used to assess the degree of wastage of different V&F each day.

							Survey with teachers: Checklist to document program implementation (lessons and activities implemented).
	COMPASS Study	**Breakfast**	Leatherdale (2016)	Peer-reviewed	None reported	Longitudinal quasi-experimental	**Questionnaire** with students (Grades nine to twelve): Assessed eating behaviour, tobacco use, obesity, physical activity, substance use, and bullying. **School Programs and Policies Questionnaire (SPP)** completed by school administrators: Assessed presence or absence of relevant programs/policies, changes to school policies, practices and resources related to student health.
Prince Edward Island	Fruit and Vegetable Pilot Program	**Fruit and vegetable snack**	Taylor (2003)	Grey literature	None reported	Pre-post study	**Three-point "schematic faces" questionnaire** with students (Grades one to six): Measured food preferences and willingness to try V&F.

* Indicates the program included a curriculum-integrated or education component.
** Indicates the program included local foods
***Indicates the program used reusable plates.
∞food waste
Abbreviations used: V&F (vegetables and fruits)

Table 3: Evaluating curriculum integrated school food programs that incorporate food system sustainability

Indicator for sustainable school food program	Evaluation strategies identified in scoping review	Limitations and challenges	Conclusion	Next steps
Social Determinants of Health				
Food intake	Twenty-four-hour recall, web-based twenty-four-hour recall, FFQ/BFQ, questionnaire, plate waste	Time-consuming and require expertise to analyze and interpret	Current methods are not feasible to use. Simplified tool is needed.	Develop a composite measure or checklist (Cade et al., 2006) that could be easily administered, analyzed and interpreted in the school context.
Educational outcomes	Grades, achievement test scores	Most standardized tests are determined provincially	Achievable if current data can be incorporated. Math (Imberman, 2012; Kleinman et al., 2002; Simeon, 1998), and reading(Imberman, 2012) scores have been used.	Identify optimal achievement score measure, grades, and timing of measure(Hochfeld et al.,, 2016)
Behaviour: Attendance	School attendance and suspension rates	Other social determinants could impact attendance - it is not specific to meal programs.	Incorporate with data they are already collecting	Determine the best time points to measure and ways to interpret (Ask et al., 2010; Imberman, 2012).
Behaviour: Attention	Interviews	It is difficult to measure attention, and it is not specific to meal programs. A measurable indicator would be easier to interpret than a qualitative assessment.	A broader, observable indicator may be easier to measure.	Design a scale to measure the degree of classroom disruptions (Friedman, 1995)
Food literacy	Survey, questionnaire, listing know vegetables and fruits, food rating	Does not fully address the complexity of food literacy	May best be evaluated through innovative curriculum integration components.	Define food literacy from a sustainability perspective and develop age-appropriate indicators (Anderson & Falkenberg, 2016; Dean et al., 2021; National Collaborating Centre of Determinants of Health, 2016; Robertson & Scheidler-Benns, 2016; Slater et al., 2018; Truman et al., 2017).

Impact on food security	None identified	No direct cause and effect—hard to recognize in a direct way	Determine how often schools had enough food to feed everyone that wanted to eat	Develop a measurement instrument identifying the number of times per week the school had sufficient, safe, and nutritious food (National Collaborating Centre of Determinants of Health, 2016).
Improving health equity	None identified	No direct cause and effect—hard to recognize in a direct way	It may be difficult to find outcome indicators for determinants. Match program funding to the degree of vulnerability.	Identify vulnerable populations and develop strategies to assess the degree to which vulnerabilities are addressed (National Collaborating Centre of Determinants of Health, 2016).
Social benefits	None identified	No direct cause and effect—hard to recognize in a direct way	Design programs to teach about age-appropriate socialization.	Identify social activities, such as family dinners or cooking classes. Track the number of teacher role models (Perry et al., 2004) and participants in attendance.
Food systems knowledge	Survey: knowledge of local vegetables and fruits	Integrate components into the curriculum	Link curriculum to the food program. Determine the degree to which these are reflected in the classroom.	Develop age-appropriate indicators for food systems (Anderson & Falkenberg, 2016; National Collaborating Centre of Determinants of Health, 2016; Robertson & Scheidler-Benns, 2016; Truman et al., 2017), environmental, and cultural knowledge and determine the degree they are reflected in the curriculum, classroom, and school food program.
Environmental knowledge	None identified			
Cultural knowledge	None identified			
Food systems and economic sustainability				
Food System Sustainability	None identified	Many potential components could be measured	Items to evaluate: composting, recycling, gardening, local food procurement, minimizing and diverting waste(Black et al., 2015).	Report on the degree of waste (waste audits) (Cohn et al., 2013; Sangster Bouck et al., 2011) and waste diversion, such as composting. Assess procurement and distribution practices.
Economic sustainability	None identified	Sustainability could refer to government-funded, cost-shared, or cost recovery. The appropriate method would depend on individual school contexts.	Programs should be adequately funded.	Determine if there is a designated coordinator with sufficient time to operate the program and enough resources to provide food to all children who want to participate.

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Book Review

Can fixing dinner fix the planet?

By Jessica Fanzo

John Hopkins University Press, 2021: 240 pages

Review by Kathleen Kevany*

Exposing the strengths and weaknesses driving the complexity of globalized food systems is at the heart of Jessica Fanzo's book, *Can fixing dinner fix the planet?* Throughout, she asks penetrating questions and offers substantial research to back up her analyses. The chapter builds upon Fanzo's decades of field work in immunology and nutrition, and she grounds the book through relevant illustrations, and accessible and personable text. Readers newer to this field may find it practical and compelling, as it underscores the sense of urgency and the need for immediate actions to prevent catastrophic collapses within global food systems.

The book is arranged into six chapters that integrate evidence and identify priority actions. She tackles challenging issues, including the nature of individual food identity and the trade-offs that nations face when balancing food sovereignty and international trade goals with the right to sufficient, nutritious, and diverse foods. Based on a growing body of research on national food guidelines, dietary patterns, and population health, she also raises other penetrating questions like, "How have we gotten ourselves into this ironic situation in which diets meant to nurture us are essentially killing us?" (Fanzo, 2021, p. 15).

In chapter two, launched by the lead-off, *Can cooking curry in Cambodia trigger a tornado in Texas?,* Fanzo describes the circumstances and interconnections in food systems, inviting readers to come to their own conclusions. Her research into and analyses of government policies, and industry and agricultural practices help to explain the quandaries and paradoxes within agriculture that have become significant drivers of destabilizing planetary systems. She effectively describes how greater reliance on global supply chains is fueled by the drive for strong economic and caloric potential, among many other factors. She flags issues of agricultural industrialization, concentration, and intensification and the concomitant social, environmental, and health issues.

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The text also reveals some of the vicious cycles within food systems, such as those producing overnutrition and undernutrition, and issues of inequity and access, affordability, and food insecurity. As one of the authors of the EAT Lancet Health Planet Diet, Fanzo notes that not all reviewers and users of that report supported all the EAT-Lancet findings and recommendations. Based on the evidence, she advises her readers to adjust their meat and dairy consumption by reducing the amounts in developed nations and, affording greater access, where needed in under-developed countries, to help address malnutrition and undernutrition.

The book also adds to the growing inquiry into whether better policies might produce better food. "Diets are shaped by where you live, who you are and what options you have, and are also driven by deep (often unseen) systemic social factors and injustices. Approaches that focus on population health policy rather than on those that require personal agency are more effective, equitable, and enforceable" (p. 114). Here, Fanzo stands with many scholars calling for governments to prioritize system levers for change, and placing needs of citizens over corporations, while also shifting food systems through mandating greater transparency and facilitating improved food systems literacy.

So, *Can fixing dinner fix the planet*? Fanzo thinks so, given that the power of food systems—with—their far-reaching influences, can be humanity's greatest levers for intervening in the interconnected issues of inequality, ill-health, and climate crises. While the focus is on system shifts that need to be orchestrated, she does not shy away from urging the public to do their part as well.

At times, the text reads like a stream of consciousness, as themes linked to previously covered issues are reiterated. Readers might have benefitted more from an elaboration of demonstrated government action and industry innovation, while attention to the circular economy and maximizing resources along the food chain would have added value to the book. The text leaves questions unanswered about the impacts of agricultural subsidies, like supports continuing to be provided for foods that are contrary to national food guidelines, and how best to incentivize sustainable practices. Overall, reading this book is like Fanzo inviting readers into conversations she is having with leading thinkers, food producers, processors, and policy makers. Her analyses underscore the tenuous states of transparency, truth, and trust in neoliberal food systems environments. As the text exposes readers to an array of actors and leverage points, it also could be a guide to accelerate shifts to sustainability. It would be a helpful text to accentuate the learning of those new to the field of food systems but likely would serve as a review or be repetitive for those well-informed on globalized food production and consumption. As the challenges in shifting to more sustainable systems are monumental and pressing upon humanity, a range of educational materials are needed. This book offers a helpful, broad view with practical and engaging examples informed by first-hand experiences.

Statement of no conflict of interest: I am a researcher in the field of sustainable diets and am not positioned to profit from undertaking this review. It is part of my paid work as a professor.

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