



Original Research Article

Characteristics of Canadian school food programs funded by provinces and territories

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Abstract

Given the complex administration of school food programs (SFPs) in Canada and recent federal interest, this research systematically examined provincial and territorial funded SFPs during the 2018/19 school year. Relevant literature and the RE-AIM Framework, a planning and evaluation tool developed by Glasgow et al. (1999), informed the development of an electronic survey sent to program leads in provinces and territories to assess SFP Reach, Effectiveness, Adoption, Implementation, and Maintenance. Results from 17 programs indicate considerable administrative and program variability across Canada. Collectively, provinces and territories contributed over \$93 million which partially funded a minimum of 35% of JK-12 schools to provide free breakfasts, snacks, and/or lunches to a minimum of 1,018,323 or 21% of students in Canada (based on limited data in some jurisdictions). The majority of provinces and territories partner with one or more non-governmental organization (NGO) and rely heavily on NGO staff and volunteers. Program demand often exceeds supply, and program monitoring is inconsistent. This research—which provides much-needed, updated information on SFPs—highlights the need to explore the complexity of the topic further and helps inform discussions about SFP administration and characteristics, specifically program mandates, student reach and universality, program sustainability and resources, and monitoring. Opportunities exist for (1) a closer examination of varied and promising organizational practices, (2) enhanced collaboration and knowledge sharing, and (3) harmonization of key metrics, all of which would assist with developing the National School Food Program proposed in the 2019 federal budget.

Keywords: School food programs; national school food program; mandates, funding, implementation, monitoring; food security; student health; Canada

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Introduction

Internationally, school food programs are one of the most successful drivers of improved health, education, and economic growth (World Food Programme, 2016). School food programs have been shown to pay for themselves through an impressive return on investment: \$3 to \$10 for every dollar spent (World Food Programme, 2016). In 2020, over 388 million children in at least 161 countries—83% of all countries globally—participated in a free or subsidized school food program funded by state and national governments (World Food Programme, 2021). School food programs (SFPs) generally encompass a range of initiatives, including milk, snack, breakfast, and/or lunch served in elementary or secondary schools, and may include the integration of additional food literacy and food skills programming. As children spend a large proportion of their waking hours in school, schools are an ideal setting to improve dietary quality and reduce health inequities (United Nations System Standing Committee on Nutrition, 2017; World Health Organization, 2006). Furthermore, school meals are healthier compared to home-packed meals in many countries, including the United Kingdom (Hur et al., 2011), Denmark (Sabinsky et al., 2019), the United States (Johnston et al., 2012), and Canada (Taylor et al., 2012).

In Canada, the diets of school students need improvement. In 2007, a House of Commons Standing Committee report on childhood obesity found that the pervasiveness of diet-related diseases among Canadian children may make today's youth the first generation to have sicker, shorter lives than their parents (Government of Canada, 2007). Research confirms that the diet quality of Canadian children across the socio-economic spectrum remains poor, with only a small proportion meeting the recommendations of Canada's Food Guide (Black & Billette, 2013; Garriguet, 2004; Health Canada, 2012; Minaker & Hammond, 2016).

Canada rates poorly in providing children with access to nutritious food, ranking 37 out of the 41 wealthiest nations (UNICEF Canada, 2017). Canadian schools could do more to address this problem. Canada is the only G7 country (Bas, 2019) and one of the only industrialized member countries of the Organization for Economic Cooperation and Development (OECD) (Koc & Bas, 2012) without a nationally-funded and harmonized school food program. Instead, municipal and provincial/territorial governments, a few federal government departments/agencies, and non-governmental organizations (NGOs) at all levels support an inconsistent patchwork of programs across Canada (Haines & Ruetz, 2020; UNICEF Canada, 2019). Figure 1 indicates the multiple levels of SFP funding and various types of program partnerships that fund individual schools/districts (this research studied provinces and territories only as indicated in the bolded box).

Figure 1: Levels of SFP Funding in Canada

Level	Examples of Governments that fund schools/SFPs directly	Examples of Government and NGO funding partnerships	Examples of NGOs and charities that fund programs directly
Federal/ National	Unknown	Farm to Cafeteria Canada (with support from 11 partners including the Public Health Agency of Canada) fund farm-to-school salad bar programs in five provinces (Farm to Cafeteria Canada, 2020)	Canadian Feed the Children (funds programs in First Nations communities)
Provincial/ Territorial/ Regional	British Columbia’s Ministry of Education Ontario’s Ministry of Health	Provincial Government + Child Nutrition Council of Manitoba Provincial Government + Kids Eat Smart Foundation, Newfoundland and Labrador	The Grocery Foundation (provides gift cards and coupons to schools in Ontario and Western Canada)
Municipal	City of Vancouver	City of Toronto + Toronto Foundation for Student Success	Fredericton Community Kitchen
School Districts or Individual Schools	Funded by one or a combination of the above, e.g., a school-based SFP could receive municipal and/or provincial government funding and/or funding from one or more national NGOs plus conduct their own fundraising.		

It is within this complex and dynamic SFP landscape—with varied mandates, types of programs, multiple and overlapping sources of funding, and limited program coordination and monitoring—that the Federal Government declared its intention in 2019 to “work with provinces and territories towards the creation of a National School Food Program” (Government of Canada, 2019). While no funding or timeline was announced (Ruetz & Kirk, 2019), this declaration was significant as school food in Canada has received little consideration since after the Second World War (Carbone et al., 2018; Mosby, 2014).

The federal government, SFP funders and other stakeholders could benefit significantly from a clearer picture of current programs. Thus, the aim of this research is to address this knowledge gap by systematically compiling existing data from provinces and territories (P/Ts) about program models, practices, and gaps; including similarities and differences pertaining to program mandates, reach, implementation, and effectiveness. Key questions include: what are the main characteristics of SFPs in Canada, how do they operate, and what is their prevalence?

Bringing greater clarity to the Canadian SFP landscape serves several purposes. First, it provides current data: the last Canada-wide survey occurred in the early 1990s and much has changed since then (McIntyre & Dale, 1992). New funders emerged, new programs started, existing programs expanded, and some organizations, such as the national NGO *Breakfast for Learning*, disbanded. This information provides a baseline for discussions about the current state of SFPs in the country and a point of reference for future programming and research.

Second, it helps identify current strengths and challenges within SFP administration and implementation in Canada. Third, it provides an opportunity to assess current SFPs relative to recommended SFP models, which are universal, comprehensive, and multi-component (Oostindjer et al., 2017). The results may help catalyze future investments in SFPs and widen their ‘value proposition’ beyond food security and other health-related benefits, including increased returns on investment due to local agriculture, and environmental and social benefits (Becot et al., 2017; Powell & Wittman, 2018).

For the purposes of this article, and because they are potential criteria for a nationally-harmonized program, we define SFPs as (1) school-based (or equivalent) breakfasts, mid-morning meals, snacks, and or lunches offered; (2) at no-cost; (3) to JK - 12 students; (4) during the school day; (5) consistently over the majority of the school year. We conducted this pan-Canadian summary of characteristics of SFPs funded by P/Ts during the 2018-2019 school year, the most recent year with complete data and without COVID disruptions.

It is important to note that this research captures data about free provincial and territorial SFPs and their provincial/territorial NGO partners, i.e., a single level of funding. As such, this research excludes programs where most students pay but those in ‘need’ do not, and SFPs funded exclusively by charities, the federal government¹, or municipalities. We made this decision for three main reasons. First, the 2019 federal budget announcement named provinces and territories as partners. Second, collectively, provinces and territories are the largest source of SFP funding in the country. Third, we wanted to avoid double or triple counting the program numbers, participation rates, etc., which would occur if we included other levels of funders, given that individual SFPs frequently receive funding from multiple sources. As such, it is important to note that this resulted in an underestimation of SFP activity in Canada.

Literature Review

Extensive literature on SFPs exists, including research on outcomes of SFPs internationally and in Canada, as well as SFP participation rates, student intakes, and SFP recommendations and guidance. The international literature on SFPs indicates they are one of the most successful drivers of improved health, education, and economic growth (World Food Programme, 2016). A recent international review from the United States and other OECD countries (47 articles, 0 from Canada) found positive associations between student participation rates and the availability of universal free school meal programs (“i.e. meals provided at no cost to all children who wish to participate”) (Cohen et al., 2021, p.2). Lunch programs were associated positively with diet quality, food security, and academic performance; breakfast program results, however, were mixed (Cohen et al., 2021).

¹ This research accounts for cases where federal funding flows through P/Ts (e.g., NU, NT).

Universal SFPs have also been found to have a positive influence on social inclusion (Corter & Pelletier, 2010), gender equity, food literacy, environmental sustainability and stewardship (Rojas et al., 2017), and economic development (Becot et al., 2017).

Results from school lunch and breakfast programs in the United States indicate that school meals make a significant contribution to students' caloric and food intake (e.g., Cullen & Chen, 2017). In Sweden, where lunch is available free to all students, national research found that younger students who ate school lunch every day had higher caloric and nutrient intakes than those who did not (Persson-Osowski et al., 2017). An international review of the impact of school food policies on students' eating (91 articles; 3 from Canada) found that student consumption of vegetables and fruits increased when provided by schools directly (Micha et al., 2018). As well, standards for school meals (mainly lunch) increased student intake of fruit, maintained their caloric intakes, and reduced intakes of total and saturated fat and sodium (Micha et al., 2018).

Research on Canadian SFPs is relatively limited (Everitt et al., 2020; Haines & Ruetz, 2020; Hernandez et al., 2018), with a concentration of studies from Ontario. An evaluation of the multi-component Northern Fruit and Vegetable Program in Ontario found that fruit and vegetable consumption increased somewhat among 1277 students in grades 5-8 participating (He et al., 2009), and students reported positive changes in their preferences for some fruits and vegetables. A small (n=122 students, grades K-5) multi-component intervention in a First Nations community in Ontario found that increased student participation in the school breakfast snack program (part of a larger, multi-component program) was associated with students meeting their daily recommended fibre intakes (Saksvig et al., 2005). Another small program that offered milk, vegetable, and fruit snacks in one northern Ontario First Nations school and a milk program in a second school found positive results within one week; however, the changes were not sustained over a year (Gates et al., 2013). Powell & Wittman (2018) identified that while providing locally grown foods for students is an important goal of the Farm-to-School organization in British Columbia, barriers to scaled-up implementation existed, requiring further research on addressing limitations.

Monitoring of breakfast program availability and participation in a two-year, Ontario-based study in 43 schools with over 23,000 students in grades 9-12 showed widespread prevalence of SFPs but relatively low student participation. Most schools offered breakfast programs (n=38), and of these, 37 were free. In year 1 of the study, 12.3% of students participated in a program one or more times per week, which rose slightly to 13.6% in Year 2, while the number of students who skipped breakfast one or more times per week remained high throughout (54.5% in year 1 and 54.9% in Year 2) (Leatherdale et al., 2016).

A national survey from 2015 of 2,540 students ages 6-17 highlighted a number of dietary concerns regarding students' food consumption at lunch during the school week. Around 68% of students ate lunch at school; approximately 6% reported consuming no lunch (researchers were unable to distinguish if food consumed at school came from the school). Results for all students indicated that lunch provided about 26% of their total daily calories.

Students consumed lower than recommended amounts of dark green and orange vegetables, whole fruit, whole grains, milk and alternatives, vitamin D and calcium, and higher amounts of sodium (Tugault-Lafleur & Black, 2020).

Other researchers have reviewed existing studies, provided recommendations, and examined organizations involved with SFPs. A recent review that examined SFPs and other school food initiatives found that universal, culturally appropriate, and multi-component SFPs positively influence children's nutritional knowledge, dietary behaviours, and food intake (Colley et al., 2019). A second review recommended that SFPs address social determinants of health, food systems, and environmental and economic sustainability (Everitt et al., 2020). Hernandez et al. (2018) recommended six guiding characteristics of a National School Food Program: (1) universal, (2) health-promoting, (3) financially sustainable, (4) respectful of local conditions and diversity, (5) connected to local communities and producers, and (6) multi-component and comprehensively connected to food literacy and food skills development. Godin et al., (2017), reviewing provincial and NGO documents on breakfast programs, found that the documents attributed different meanings to the term 'universality'; and while programs were encouraged to monitor themselves, evaluation results were typically unavailable or inaccessible.

While none of the Canadian research provided national-level information on SFP characteristics, the studies indicate the type of SFP research occurring in Canada and provide useful context for this research. The studies indicate that international studies yield positive outcomes; the existence of programs does not necessarily translate to high student participation rates; at current low levels of participation and funding, programs may have positive but relatively small impacts; students' dietary intakes during the school day are of concern; multi-component SFPs are recommended; and provincial/territorial guidance on SFPs is inconsistent.

Framework

This research was informed by two frameworks: a social policy and program development framework (Oostindjer et al., 2017) and a program evaluation framework (Glasgow et al., 1999). These frameworks were selected as they are complementary for assessing the state and characterization of SFP operation.

Oostindjer et al.'s (2017) social policy and program development framework informed a number of survey questions and provided an opportunity to assess our findings relative to their recommendations. By tracing the historical development of school feeding in high-income countries, Oostindjer et al (2017) found that SFPs typically follow three phases of evolution. In the first phase (roughly 1850-1970s), school food programs (SFPs) emerged in response to malnourishment and high rates of army recruits found to be unfit for war. In response to increased prevalence of diet-related diseases, the focus of the second phase shifted from food security to healthy food (1970s-2000s). The third, emergent, multi-component phase aims to integrate health and environmental sustainability.

This phase, recommended by Oostindjer et al. (2017), prioritizes community and societal impacts of food- and food-related meal activities—integrating health, sustainable food systems, economic development, and education. In this research, the framework informed a number of survey questions and data analysis.

The second is the RE-AIM Framework, an operations framework often used in public health program planning and evaluation (Glasgow et al., 1999) that has informed research on food programs (e.g., Helmick et al., 2020) and school programs (e.g., Dunton et al., 2009). The RE-AIM Framework is used to assess the **Reach, Effectiveness, Adoption, Implementation, and Maintenance** of health programs and policies, although as sequenced, the acronym becomes ARIME. As conceptualized by Glasgow and Estabrooks (2018, p.5), the framework can help address “who, what, where, how, when, and why” questions linked to program planning and evaluation. The RE-AIM framework was adapted to develop the research and survey questions.

Methods

The initial method of data collection was a survey designed to be completed in 30-60 minutes. To develop the survey, we adapted the categories from the RE-AIM framework (see Table 1 for guiding questions and sample indicators). For example, we classified the year provinces and territories adopted programs and the type of program adopted (mandate) as “Adoption”. The number of schools with SFPs (typically classified as Adoption in RE-AIM) was moved to “Reach” because that number is related closely to the number of student participants.

Table 1: Guiding questions and sample indicator for survey

RE-AIM Component	Guiding Question	Sample Indicators
Adoption	WHEN did provinces/territories adopt/initiate SFPs, WHY were they established, and WHAT are their current mandates?	First year of P/T funding Primary program objective All desired outcomes
Reach	HOW many schools operated SFPs and HOW many students participated?	Number of SFPs Number of unique school sites offering an SFP Number of students participating in SFPs Percent of student population participating in individual SFPs
Implementation	WHO offered the programs, WHERE, and WHAT types of programs were delivered, HOW were they	Type of P/T Ministry/Department funder

	delivered, and HOW much funding did provinces/territories contribute?	Amount of funding per P/T Ministry/Department funder Permitted and not permitted uses of funding Number of SFPs by program type (e.g., breakfast, lunch, snack) Funding distribution mechanism
Maintenance	WHAT supports and monitoring practices were in place to sustain programs?	Monitoring survey (schools or school boards) Annual school site visit Nutrition quality verification such as grocery receipt review
Effectiveness	HOW did program provision align with program demand and HOW much per capita funding was expended to assist SFPs with achieving their desired outcomes?	Funding per participating student per school day Funding per student in P/T per school day Number of schools on waiting list for funding Outstanding funding requests from schools

The draft survey consisted of close-ended questions about SFPs (e.g., type of mandate) and requested numerical data (e.g., number of student participants) plus one open-ended question asking participants for comments. Questions were specific and precise to maximize the validity of the data. For example, a question asking for the total number of school-based SFPs specified to include all programs, including multiple programs at a single school and provided an example (a breakfast and snack program at one school counts as two programs). The draft survey was reviewed for clarity and feasibility by members of the Coalition for Healthy School Food (CHSF), the only national coalition dedicated to school food; the final e-survey, created using Qualtrics, was available in English and French. This study was approved by the University of New Brunswick’s Research Ethics Board (#2019-076).

The names and contact information for key provincial and territorial government employees who oversaw SFP funding were obtained through the literature search and from members of the CHSF and prospective participants were sent an email invitation. In some instances, the government participant indicated that their NGO partner was better positioned to respond to some questions, so surveys were sent to them. During analysis, when survey data from government or NGO participants were incomplete or raised questions, the lead author conducted a follow-up telephone interview to review and verify the data, using the survey questions as a guide.

Data from the close-ended and numerical responses from the surveys and interviews were compiled into an excel spreadsheet, categorized using the RE-AIM framework and then summarized. Numerical data were computed and results analyzed descriptively for response variability and in reference to the framework of Oostindjer et al. (2017). All survey data are at the provincial and territorial level and self-reported. In the few cases where participants provided different numerical data for the same question, we used the results from government participants. The number of publicly funded schools in the province or territory reported by Ministries of Education was used as the denominator to calculate SFP prevalence across the country. Data from publicly available websites were used when a jurisdiction declined participation and to augment survey data. Participants and CHSF leaders were sent a draft copy of this article for review.

Results

Data on SFP operation in the 2018/19 school year were collected from November 2019 to June 2020. Some provinces/territories offer more than one program and/or a program may be funded by more than one ministry or department, which meant the total number of surveys (n=24: n=16 government and n=8 NGO representatives) and follow-up telephone interviews (n=15: n=9 government and n=6 NGO representatives) is greater than the number of provinces and territories (n=13). As it is common that SFP administration and monitoring is shared among P/T department or ministries and NGOs, the data on 19 P/T funders were collected. In 2018/19, New Brunswick (NB) did not fund a province-wide SFP, so was ineligible to participate; Alberta (AB) declined to participate, so publicly available data were used (Government of Alberta, 2017; Government of Alberta, 2019b).

Due to overlapping responsibilities, the results from 16 programs (eight provinces and three territories) plus publicly available data from AB resulted in a final sample of 17 provincial/territorial SFPs from nine provinces and the three territories. Seven provinces and two territories funded one program each, the Northwest Territories (NT) funded two programs, and Ontario (ON) and Quebec (QC) each funded three.

Adoption

The guiding questions for program adoption included: when did P/Ts adopt/initiate SFPs, why were they established and what are their current mandates and desired outcomes? As indicated in Table 2, the first wave of P/T funding for SFPs started in the 1990s.

In the wake of growing awareness regarding the prevalence of child poverty and food insecurity, funding was initiated by four Ministries/Departments of Social Services—Saskatchewan (SK) (1990), ON (1995), British Columbia (BC) (1996), QC (2001)—and two in the Territories—Nunavut (NU) (1992) and the Yukon (YK) (1997).

In the mid-2000s, a second wave of investments in SFPs from Ministries of Health and Education began, which coincided with the publication of the Integrated Pan-Canadian Healthy Living Strategy (Canadian Minister of Health, 2005). In 2005, Nova Scotia’s (NS) Departments of Education and Health made a joint investment to fund a provincial breakfast program. In 2006, ON’s Ministry of Health funded the Northern Fruit and Vegetable Program (NFVP).

In response to a Manitoba (MB) taskforce in 2005 that recommended increased access to nutritious foods in schools, three departments started funding SFPs in 2007, 2009, and 2014. Prince Edward Island’s (PE) Department of Education began their support in 2009, and the NT 2013 Anti-Poverty Strategy led to an investment from the Department of Education and the Department of Health and Social Services in 2013. In 2016, AB introduced a “targeted school nutrition program” in select Kindergarten to Grade 6 schools in the province (Government of Alberta, 2017).

Most provincial/territorial programs tied initial funding to a Food Security/Poverty Alleviation mandate that targeted schools based on demographics, geography, and/or socio-economics (data not shown). The most commonly reported primary objective of 2018/19 programs (n=6; 37.5%) was “to provide a social safety net (Food Security/Poverty Alleviation).” The second was “to meet nutrition and/or health goals (Public Health)” (n=4; 25%), and third, “to meet educational goals (Academic Performance)” (n=3; 18.7%), tied with and “other” (n=3; 18.7%) (see Table 2). No participants indicated agricultural or environmental goals.

The outcomes that governments aim to foster through SFPs (data not shown; multiple responses were possible) were: public health (n=16; 100%); food security/poverty alleviation (n=14; 87.5%), academic performance (n=13; 81.2%); and health education (n=11; 68.7%). ON’s Ministry of Health identified agricultural goals (n=1; 6.3%) and MB’s Ministry of Education identified environmental goals (n=1; 6.3%) as secondary outcomes.

Table 2: Adoption

Province / Territory	First Year of Funding	Initial Government Ministry or Department Funder	Funding Government Ministry or Department in 2018/19 ¹	Primary Objective of SFP in 2018/19
NL	2008	Department of Health and Community Services	Department of Children, Seniors, and Social Development	Food Security/Poverty Alleviation
PE	2009	Department of Education and Lifelong Learning	Department of Education and Lifelong Learning	Food Security/Poverty Alleviation
NS	2005	Joint investment between the Department of Education and the	Department of Health and Wellness (Nova Scotia Health Authority completed the survey)	Public Health

		Department of Health Promotion and Protection		
QC	2001	Ministry of Labor, Employment, and Social Solidarity	Ministry of Education (subsidized by the Ministry of Labor)	Food Security/Poverty Alleviation
	2018	Ministry of Education and Higher Education	Ministry of Education	Food Security/Poverty Alleviation
	2017	Ministry of Health and Social Services	Did not participate in survey	Did not participate in survey
ON	(1995) ² 2005 ³	Ministry of Children and Youth Services	Ministry of Children, Community and Social Services, Children with Special Needs Division	Academic Performance
	2016	Ministry of Children and Youth Services	Ministry of Children, Community and Social Services, Child Welfare and Protection Division	Other: To support healthy eating and mental, spiritual, and emotional wellness
	2006	Ministry of Health	Ministry of Health	Other: To increase the consumption and awareness of fresh fruits and vegetables, on and off reserve, in Northern Ontario
MB ¹	2007	Department of Indigenous and Northern Relations	Department of Indigenous and Northern Relations	Public Health
	2009	Department of Health, Seniors and Active Living	Department of Health, Seniors and Active Living [Lead Department]	Public Health
	2014	Department of Education	Department of Education	Academic Performance
SK	1990	Ministry of Social Services	Ministry of Education (transferred in 2009)	Other: three equal objectives – promote good nutrition practices, help develop independent living skills, and provide opportunities for communities to address local food security initiatives
AB	2016	Ministry of Education	Did not participate in survey	Did not participate in survey
BC	1996	The Ministry of Children and Family Development	Transferred to the Ministry of Education and the CommunityLINK (Learning Includes Nutrition and Knowledge) program started in 2002	Academic Performance
YK	1997	Department of Health and Social Services	Department of Health and Social Services (Health Services Division)	Public Health
NT	2014	Department of Education, Culture, and Employment	Department of Education, Culture and, Employment [Lead Funder]	Food Security/Poverty Alleviation

	2013	Department of Health and Social Services (funds the Food First Foundation)	Did not participate in survey	Did not participate in survey
NU	1992	Department of Health and Social Services	Department of Health and Social Services (Health Services Division)	Food Security/Poverty Alleviation

¹The single program in Manitoba is funded by 3 different agencies; otherwise each row corresponds to a separate program for a total of 17.

²The Ontario government contributed \$1 million to launch a ‘child nutrition partnership’ with the NGO Breakfast for Learning to fund individual breakfast programs in the 1995/1996 school year (Legislative Assembly of Ontario, 1994).

³In 2005, Ontario government began (partially) funding programs on an annual basis through the Ministry of Children and Youth Services (Ontario Newsroom, 2005).

Reach

Data on reach (i.e., schools and student participation), which in turn raises questions about availability and access to programs (i.e., universality), were a challenge to compile. For example, P/Ts use different methods to count and report rates of student participation and SFP prevalence. To obtain consistent data, the survey question requested that participants report on the number of unique students and schools that participated in the 2018/19 school year. The results (see Table 3) indicate that student participation rates vary widely among P/Ts, with values ranging from approximately 5% in AB to 83% in YK.

In the territories, close to 100% of schools offer SFPs, with participation rates of approximately 80%. In other regions, Atlantic Canada has the highest program prevalence, with 90-96% of schools running one or more food programs (e.g., breakfast or snack); student participation rates range from 31% to 51%. ON is the next highest at 71% of schools offering one or more SFPs, with its province-wide program (the Ontario Student Nutrition Program (OSNP)) serving approximately 40% of students. ON also offers a First Nations Student Nutrition Program (FN SNP) in 67% of band-operated and federally funded schools and a fruit and vegetable program in the north. In MB, 37% of schools have an SFP, serving 16% of the student population. AB has a lower prevalence—18% of schools and 5% of the student population participating.

The total student reach of SFPs in Canada is difficult to estimate as not all jurisdictions collect data at the provincial level. For example, BC’s Ministry of Education distributes funds directly to school districts as part of a larger funding initiative (the CommunityLINK program funds more than SFPs) and does not collect provincial data. SK pools data across a range of sites, resulting in incomplete school-specific provincial data. In 2018-19, QC’s program was in transition, and data were limited.

Collectively, of the approximately 15,500 JK-12 schools in Canada (Council of Ministers of Education Canada, 2019), a minimum of 5,371 schools offered 6,408 free SFPs funded entirely or in part by P/Ts (no data from BC and only partial data from SK). This figure equates to a conservative minimum of 35% of Canadian schools offering one or more programs. Within these programs, a minimum of 1,018,323 students of Canada's 4,917,438 students² (Statistics Canada, 2019) participate, which equates to a minimum of 20.7% of students (data unavailable from S, K, BC, NT and only partial data from QC and ON) (see Table 3).

Table 3: Reach

Province / Territory	Name of School Food Program	Number of school food PROGRAMS	Number of JK-12 SCHOOLS running an SFP	Percent of SCHOOLS with one or more SFPs ¹	Number of unique STUDENTS Served	Percent of ALL STUDENTS served ²
NL	Kids Eat Smart Clubs	257 programs	237 schools	96%	31,000 students	48%
PE	School Breakfast Program	91 programs	56 schools	90%	10,400 students	51%
NS	School Healthy Eating Program	343 programs	343 schools	91%	37,904 students	31%
QC	Measure 15012: Food Aid in Secondary Schools	165 programs	165 schools	9% ³	unknown	unknown
	Measure 15016: Breakfast Programs in Elementary Schools	45 programs	45 schools		8031 students	
	SFPs in Cree, Inuit and Naskapi nations	19 programs	19 schools	79%	2537 students	unknown
ON	Ontario Student Nutrition Program (OSNP)	4,156 programs	3,433 schools	71%	812,500 students ⁴	40%
	First Nations Student Nutrition Program (FN SNP)	134 programs	87 schools	67% of band-operated and federally-funded schools	Unknown ⁵	unknown
	Northern Fruit and Vegetable Program (NFVP)	449 programs	119 unique schools not served by OSNP (449 schools total)	not applicable, NFVP is a geographically-specific SFP that includes a combination of public and FN schools overlapping with OSNP	20,371 unique students not served by OSNP (82,612 students total)	Not applicable
MB	School Nutrition Programs supported by the Child	415 programs	260 schools	37%	30,500 students	16%

² Students attending regular programming at publicly-funded JK-12 schools in Canada in 2018/19.

	Nutrition Council of Manitoba					
SK	Child Nutrition Development Program (CNDP) Grants	>86 programs	>86 schools	>9%	unknown	unknown
AB	Alberta's School Nutrition Program (Kindergarten to Grade 6 schools)	>400 programs ⁶	>400 schools ⁶	18%	33,000 students ⁷	5%
BC	CommunityLINK (non-specific poverty alleviation funding that includes a food funding stream)	unknown	unknown	unknown	unknown	unknown
YK	SFPs supported via Yukon Food for Learning Association	85 programs	29 schools	94%	4,500 students	83%
NT	(1) Foods for Healthy Learning Program (Department of Education) and (2) SFPs supported via the Food First Foundation (Department of Health)	49 programs	49 schools	100%	Unknown	unknown
NU	Nunavut School Food Program	44 programs	43 schools	100%	7580-8590 students	75-85% ⁸
TOTAL	17 Provincially or Territorially funded SFPs	6,408 programs	5,371 schools	Minimum of 35% of schools in Canada ⁹	1,018,323 students	Minimum of 20.7% Canadian students ¹⁰

¹Percent of Schools with SFPs: Calculations based on school data obtained from provincial and territorial Ministries of Education.

²Percent of Students Served: Calculations based on 2018/19 JK-12 student enrolment data (regular programs for youth attending publicly-funded schools) from Statistics Canada (2019).

³This percentage is calculated based on the total number of schools in QC. During 2018/19, Measure 15012 only concerned secondary schools in disadvantaged areas (socioeconomic background index 8-9-10). If calculated according to this data, there were 165 participating schools out of 170 secondary school in disadvantaged areas (8-9-10), which equates to 97% of the schools targeted by the measure.

⁴This figure from the OSNP is from 2017/18 as it was the last year that the unique number of students served was reported. In 2018/19, Ontario moved to only tracking the average daily participation rates (personal correspondence with Anne Collinson, October 1, 2020).

⁵ON's FN SNP tracks the number of meals served. The ministry representative stated that the 883,799 breakfasts served in 2018/19 could approximate the number of students served. 883,799 breakfasts divided by 194 instructional days equates to approximately 4,556 students, or 32% of the provincial FN student population (Dennis Sithoo, personal correspondence, April 1, 2020).

⁶Government of Alberta. (2019b). Education Annual Report 2018-2019. Retrieved From: <https://open.alberta.ca/dataset/8b226e68-1227-4aec-87a5-b573f3bfb062/resource/fec2c6c0-2fa7-4030-adcc-8f3dbaa1bcf4/download/education-annual-report-2018-2019-web.pdf>

⁷CBC News. (2018, September 26). Alberta grows school nutrition program to feed 33,000 kids across province. CBC. <https://www.cbc.ca/news/canada/calgary/alberta-school-nutrition-program-grows-1.4839368>

⁸Sharma, R. (2020, August 26). Nunavut’s school food programs modified safely alleviate food insecurity. *Nunavut News*, 1–4. Retrieved from: <https://nunavutnews.com/nunavut-news/nunavuts-school-food-programs-modified-to-safely-alleviate-food-insecurity/>

⁹School participation data from BC was not available and only partial data from SK were available.

¹⁰Student participation data from SK, BC and NT was not available and only partial data from QC and ON was available.

Implementation

Data on implementation included: who offered the programs, where and what types of programs were delivered, how were they delivered, and how much funding did P/Ts contribute (see Table 4)? Implementation varies across the country and sometimes within P/Ts, including program funder, funding calculations and distribution, and permissible uses of funding. Within governments, SFPs are most commonly funded by Ministries of Education (n=8; 50%), followed by Ministries of Health (n=7; 43.7%), Ministries of Social Services (n=3; 18.7%), and Indigenous Affairs (n=1; 6.3%). In four P/Ts, funding responsibilities are distributed among more than one department, either supporting the same program (MB) or different programs (NT, ON, QC), with varying degrees of collaboration among departments/ministries and NGO partners.

Table 4: Implementation

Province / Territory	Funding Ministry/Department in 2018/19	Funding (all costs, not just food)	Funding Distribution	Types of SFPs, by prevalence (bold most common)
NL	Department of Children, Seniors and Social Development	\$1,093,700	Kids Eat Smart Newfoundland and Labrador (NGO)	Breakfast; Snack
PE	Department of Education and Lifelong Learning	\$200,000 ¹	Directly to schools	Breakfast
NS	Nova Scotia Department of Health and Wellness (via the Nova Scotia Health Authority)	\$1,700,000	Funding distributed to Regional Centres for Education (i.e., school boards)	Breakfast; Snack
QC	Ministry of Education with subsidy from the Ministry of Labour, Employment and Social Solidarity [Measure 15012 for Food Aid in Secondary Schools]	\$9,747,385 ²	Directly to school boards	Breakfast; Snack; Lunch
	Ministry of Education [Measure 15016 for Breakfast Programs]	\$9,200,000	Breakfast Club of Canada (National NGO)	Breakfast

	Ministry of Health and Social Services	\$142,000	Breakfast Club of Canada (National NGO) to support SFPs in Cree, Inuit and Naskapi nations	Breakfast
ON	Ministry of Children, Community and Social Services [Ontario Student Nutrition Program]	\$27,900,000	14 Regional Lead Agencies (all are NGOs)	Breakfast; Snack; Lunch
	Ministry of Children, Community and Social Services [First Nations Student Nutrition Program]	\$4,300,000	Other: Funding given directly to First Nation communities and NGOs	Breakfast; Lunch
	Ministry of Health	\$5,400,000	Other: Ontario Fruit and Vegetable Growers Association (NGO) & northern health units	Snack (Fruit & Vegetable)
MB	Department of Indigenous and Northern Relations	\$25,000	Child Nutrition Council of Manitoba (NGO)	Breakfast; Snack; Lunch; Snack (Fruit and Vegetable)
	Department of Health, Seniors and Active Living [Lead Department]	\$301,000		
	Department of Education	\$650,000		
SK	Ministry of Education	>\$936,044 - <\$2,337,044	\$936,044 given directly to school districts for SFPs and \$2,337,044 distributed to a combination of school districts and 26 NGOs to support a combination of SFPs, gardens, and other community food security programs.	Snack; Lunch; "Meal Programs Generally"; Breakfast"
AB	Ministry of Education	\$15,500,000	Funding distributed directly to school districts	N/A
BC	Ministry of Education	\$13,231,713 ³	Funding distributed directly to school districts	Lunch; breakfast; and snack
YK	Department of Health and Social Services, Health Services Division	\$116,500	Funds transferred to the Yukon Food for Learning Association (NGO)	Breakfast; snack; and lunch
NT	Department of Education, Culture and, Employment	\$650,000	Directly to schools	unknown
	Department of Health and Social Services	\$25,000	Food First Foundation (NGO)	Breakfast; Snack; and Lunch
NU	Department of Health and Social Services	\$1,945,092	Other: Funds administered by sponsoring agencies such as hamlets or district education authorities (DEAs) via Community Wellness Plans	Breakfast; Lunch; Snack
CA	19 government funders/funding agreements	\$93,061,434	Most common to transfer funding to one or more NGOs for distribution (n=10 / 63%)	Breakfast most common

¹Funding from PE only covers food expenses.

²QC's Measure 15012: \$9,394,285 for public school boards + \$ 190,315 for the Cree school board + \$162,785 for the Kativik school board = total of \$9,747,385 to cover food expenses in secondary schools. \$1.4 million was subsidized by the Ministry of Labour, Employment and Social Solidarity.

³BC's figure does not include any funding that may have been used towards SFPs from the Provincial Vulnerable Students Supplement (VSS) grant as this was not tracked in 2019.

In 2018/19, provincial/territorial governments collectively contributed a minimum of \$93,061,434 to support free, regularly occurring SFPs. The funding distribution illustrates the complexity of SFP administration in Canada, with ten P/T funders distributing funds through one or more regional (e.g., ON and SK), provincial (e.g., NL and MB), territorial (e.g., YK), and/or national (e.g., Breakfast Club of Canada in QC) NGOs. In PE, NS, AB and BC, governments allocate funds directly to schools or school boards. SK, QC and NT use a combination of direct to schools and NGO(s), while NU, ON's NFVP and ON's FN SNP use other combinations.

There was also significant variability in funding criteria, funding formulas, and the allowable uses of funding (data not shown). The majority of P/T funders (n=11; 68.7%) in most jurisdictions (ON, QC, NS, MB, NT, BC, AB) prioritize funding based on socio-economic need. Half the government funders required an annual school grant application (n=8; 50%). Fewer than half the P/T funders permitted schools to fund food literacy activities (n=7; 43.7%) or supplies and equipment (n=7; 43.7%). In SFPs where funding flows directly from the government to school or school boards (QC, PE, BC, and NT), funds were restricted to food purchases. Only three P/T funders (19%) permitted funding for food preparation staff salaries (SK, NU, and ON's FN SNP).

Within jurisdictions, there is also variability (data not shown). In ON's province-wide SFP (OSNP), funds are restricted to food, regional NGO staff, and some supplies and equipment. Provincial funding covers "up to 15% of the program costs," thus other funders are required (Government of Ontario, 2018, p.13). In the First Nations Student Nutrition Program, which is funded by a different department in the same Ministry, funds can also be used to cover the cost of food delivery, food preparation staff, and food literacy activities. Similarly, the fruit and vegetable program in the north receives 100% of the funding procured for snacks for the entire school population from the Ministry of Health. While this program relies on volunteers to prepare food, the budget covers all other aspects, including food transportation, some off-site food processing, and food literacy.

One characteristic where there is little variability is that breakfast or a mid-morning meal is the most common type of program, but lunch is most common in BC. As well, the majority of SFPs are exclusively or heavily volunteer-driven (data not shown). For example, approximately 56,000 volunteers support the province-wide SFPs annually in ON. In NS, approximately 4000 volunteers contribute an average of nine hours (ranging from three and a half to 17 hours) per week.

Maintenance

Program maintenance assessed the types of supports and monitoring practices that were in place to sustain programs. While all P/Ts reported using nutrition guidelines and a program manual, there is a lack of standardized monitoring within and across jurisdictions (see Table 5).

Seven P/Ts verified that programs are universally available to all students in individual schools, and six verified the food’s nutritional quality—four of which (MB, NL, ON, and YK) employed a grocery receipt review process. Annual school site visits, which can provide localized support to review program operations and verify food handling practices, occurred only in NL and ON. Fewer than half the P/Ts confirmed they surveyed each school or school board and/or offered training for safe food handling. The majority of SFP data are collected by NGO partners and are usually aggregated at the provincial/territorial level. SFPs that use a direct funding model, allocating funding to school boards (QC, SK, NT, BC), are associated with collecting less provincial-level data about programs, especially student participation. No participants reported monitoring the amount of money spent on local food or targets for reducing food waste.

Table 5: Maintenance¹

Province / Territory	Nutrition Guidelines	Program Manual	Survey of each school or school board	Annual School Site Visit	Safe Food Handling Training	Verification programs are universally available	Nutritional Quality Verification	Grocery Receipt Review
NL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PE	Yes	Yes	No	No	No	Yes	No	No
NS	Yes	Yes	Yes	No	Yes	No	Yes	No
QC	Yes	Yes	Yes	No	Yes	No	No	No
ON	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes (random audit)
MB	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes (and verification that a minimum is spent on fruits and vegetables)
SK	Yes	Yes	Yes	No	Yes	Yes	Yes	No
AB	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
BC	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
YK	Yes	Yes	No	No	N/A	Yes	Yes	Yes
NT	Yes	Yes	Yes	No	N/A	No	No	No
NU	Yes	Yes	No	No	N/A	Yes	No	No

¹As some participants did not complete this section of the survey, supplementary data from the literature review was used and data was aggregated at the provincial/territorial level.

Effectiveness

As data on SFP effectiveness in Canada are limited (Everitt et al., 2020; Powell & Wittman, 2018), this research used funding level as a proxy measure of program capacity, i.e., how did program provision align with program demand and how much per capita funding was expended to assist SFPs with achieving their desired outcomes? As shown in Table 6, based on student participation rates, provincial/territorial funding ranged from \$0.10/student/school day for breakfast in PE (only food costs) to \$3.45/student/school day in AB (inclusive of all costs); an average of \$0.48/ participating student/school day. If every student in the province, territory, or program catchment participated (universal participation), P/T contributions drop—from \$0.03/student/day in MB to \$1.58/student/school day in ON’s FN SNP, which includes all program expenses; an average of \$0.10/student/school day.

Table 6: Effectiveness¹

Province / Territory	Funding Ministry/Department	Funding per participating student per school day in 2018/19 ²	Funding per student in the province or territory per school day (if universal participation) ³
NL	Department of Children, Seniors and Social Development	\$0.19	\$0.09
PE	Department of Education and Lifelong Learning	\$0.10	\$0.05
NS	Nova Scotia Department of Health and Wellness	\$0.23	\$0.07
QC	Ministry of Education [Measure 15012 – Secondary]	unknown	\$0.11
	Ministry of Education [Measure 15016 – Elementary]	\$1.20 ⁴	
	Ministry of Health and Social Services [First Nations Program]	\$0.31	Not applicable
ON	Ministry of Children, Community and Social Services, Children with Special Needs Division [Ontario Student Nutrition Program]	\$0.18	\$0.07
	Ministry of Children, Community and Social Services, Child Welfare and Protection Division [First Nations Program]	unknown	\$1.58 (based on number of FN students in Ontario)
	Ministry of Health	\$0.34	Not applicable (overlap with OSNP)
MB	Department of Indigenous and Northern Relations	\$0.16	\$0.03
	Department of Health, Seniors and Active Living [Lead Department]		
	Department of Education		
SK	Department of Education	unknown	>\$0.03 - <\$0.07
AB	Department of Education	\$3.45	\$0.17
BC	Ministry of Education	unknown	\$0.10

Province / Territory	Funding Ministry/Department	Funding per participating student per school day in 2018/19 ²	Funding per student in the province or territory per school day (if universal participation) ³
YK	Department of Education, Culture and Employment	\$0.14	\$0.11
NT	Department of Education, Culture and, Employment Department of Health and Social Services	unknown	\$0.37
NU	Department of Health and Social Services	\$1.16 - \$1.32	\$0.94
CA		\$0.48 ⁵	\$0.10 ⁶

¹This table includes funding from jurisdictions that only fund food (i.e. PE) to others that fund a range of items in addition to food, such as NGO administration. Therefore, the figures are not a direct comparison but rather provide insight into SFP funding variability across Canada.

²Funding per participating student was calculated by dividing the total SFP funds by the number of participating students reported by the highest number of school instructional days in 2018/19 as reported by the EdCan Network (except for QC, see note below).

³Funding per student in the province or territory (universal participation) was calculated by dividing the total SFP funds by 2018/19 student enrollment data (regular programs for youth attending publicly-funded schools) (Statistics Canada, 2019) by the highest number of school instructional days in 2018/19 (EdCan Network, 2019).

⁴QC's figure was calculated differently as 2018/19 was the first year of the Ministry of Education funded Measure 15016, which included a one-time \$5000 allowance per school for program start-up expenses in addition to an allowance of \$216 per student enrolled in the breakfast program (Government of Quebec, 2018). Using the \$216 per student allowance, and dividing this by the 180 instructional days in Quebec according to EdCan Network (2019), this equates to \$1.20 per student per day.

⁵Funding per participating student per school day in Canada was calculated by dividing the total P/T funding (\$93,061,434) by number of participating students (1,018,323 students) by the number by the average number of school days in Canada (190 school days).

⁶Funding per student in Canada was calculated by dividing the total P/T funding (\$93,061,434) by the total number of students that attend publicly-funded schools in Canada (4,917,438) by the number by the average number of school days in Canada (190 school days).

Generally, provincial/territorial government funding covers a small portion of program costs. For example, in NS, schools receive government funding for 25% of the cost, which in MB decreased to a maximum of 12% of estimated food costs from government and non-government sources that could be distributed by the NGO partner. In AB, the \$15.5 million contributed to SFPs in 2018/19 was roughly 26% of the government's 2015 campaign promise of investing \$60 million annually for a province-wide school lunch program by 2017/18 (Notley, 2015).

Using funding as a proxy for capacity and hence effectiveness, P/T funding levels are low, and SFP demand outstrips supply. Government and/or NGO partners in NL, NS, ON, MB, SK, and NT reported there were inadequate funding levels to meet the demand for existing programs.

NT's Ministry of Education reported on their insufficient funding: "schools try to provide a type of program that will run for the full year, but... [some schools reported that] the funds they receive from our program are only sufficient to provide daily breakfast for four months of ten." In BC, one estimate is that teachers contributed close to \$4 million per year out-of-pocket to purchase food for students (British Columbia Teachers' Federation, 2015). Participants in SK, MB, and NS reported insufficient levels of funding to establish new programs.

Discussion

The results from this research provide insight into the complexity of Canadian SFP landscape. Despite the absence of a National SFP, over 1/3 of schools (35%)³ in Canada offered one or more free SFPs in which a minimum of 21% of JK-12 students⁴ participated in 2018/19 (conservative figures based on limited data in some jurisdictions, see footnotes). Meals and snacks were provided at no cost to students, made possible, in part, through a collective of \$93,061,434 of provincial and territorial funding; however, government contributions were often one quarter or less of the total costs (e.g., 15% in Ontario and 25% in Nova Scotia). The majority of P/T funders (n=11 of 16; 69%) in most jurisdictions (ON, QC, NS, MB, NT, BC, AB) prioritize funding based on socio-economic need. Fewer than half the P/T funders allowed schools to direct a portion of funding to support food literacy activities (n=7; 44%) or supplies and equipment (n=7; 44%), and it was uncommon to permit the use of funding for food preparation staff salaries (n=3; 19%).

The prevalence of SFPs in schools and student participation rates vary widely, resulting in inequitable access to SFPs across Canada. Program participation rates are the highest in Northern and Atlantic Canada and participation is lowest in Alberta at 5%. A few P/T jurisdictions have prioritized Indigenous communities (i.e., ON, QC, MB), but that practice appears to be inconsistent across the country. Mechanisms for distributing SFP funds vary widely, reflecting complicated relationships within provincial departments; regional, provincial, territorial, and national NGOs; school districts and individual schools; and other partners. The types of supports P/Ts provide to SFPs for their maintenance differ as well; accountability and monitoring measures vary and data are not always compiled at the provincial level (e.g., BC).

Nevertheless, common characteristics of SFPs in Canada include: food security is the most common objective, breakfast remains the most common SFP meal, and programs are predominately, in most jurisdictions exclusively, run by volunteers. Table 7 provides a summary of characteristics that highlight similarities and differences within programs and characterize the current state of SFPs in Canada.

³ School participation data was unavailable from BC and only partial data was available from SK.

⁴ Student participation data was unavailable from SK, BC, NT and only partial data was available from QC and ON.

Table 7: Summary of Findings

RE-AIM Component	RE-AIM Category	Results
Adoption	First Year of Funding	1990 (NFL) – 2016 (AB); 2020 (NB)
	Primary Objective	Food Security/Social Safety Net (n=6) Nutrition/Health Goals (n=4) Education/Academic Performance (n=3) Other/Combination (n=3)
	All Desired Outcomes	Public Health (n=16) Food Security/Social Safety Net (n=14) Education/Academic Performance (n=13) Health Education (n=11) Local Food/Economic Development (n=1) Environmental Outcomes (n=1)
Reach	Student Participation Rates	5% (AB) – 83% (Yukon) A conservative minimum of 1,018,323 students or 21% of Canadian students participate in a free SFP (student participation data was unavailable from SK, BC, NT and only partial data was available from QC and ON)
	Schools Offering SFPs	9% (QC) – 100% (NU and NT) A conservative minimum of 6,408 programs are offered in 5,371 out of 15,500 schools or 35% of Canadian schools offer one or more free SFPs (school participation data was unavailable from BC and only partial data was available from SK)
Implementation	Provincial/Territorial Ministries/Departments	Education (n=8; 50%) Health (n=7; 44%) Social Services (n=3; 19%) Indigenous and Northern Relations (n=1; 6%)
	Models and Administration	1-3 Ministries within a province/territory funding programs 1-3 provincial/territorial, or regional programs per province/territory The majority of P/T funders transfer funding to an NGO administrator (n=10; 63%) It is common for P/T funders to require annual school grant applications to receive funding (n=8; 50%)
	Funding	A minimum of \$93,061,434 from provinces and territories spent on SFPs contributed collectively by 17 unique Ministries/Departments (19 funding agreements in total), supporting 17 SFPs Provincial/territorial contribution is a percentage of total costs, e.g., 15% in ON and 25% in NS. The majority of funders prioritize funding based on socio-economic need (n=11) Fewer than half the P/T funders surveyed (n=7 of 16; 44%) allowed schools to direct a portion of funding to support food literacy activities

		It was uncommon to permit the use of funding for food preparation staff salaries (n=3; 19 %)
	Program Types	Breakfast/mid-morning meal is the most common type of program SFPs are heavily volunteer driven
Maintenance	Support and Accountability	All P/Ts have adopted nutrition guidelines and a program manual
	Monitoring	Provincial/Territorial level data available for 7 provinces and 3 territories Survey of schools or school boards (n=6 P/Ts) Annual School Site Visit (n=2 P/Ts) Safe Food Handling Training (n=6 P/Ts) Verification that programs are universal (n=7 P/Ts) Nutrition Quality Verification (n=6), including grocery receipt review (n=4 P/Ts) Use of local foods (n=0 P/Ts) Food waste reduction targets (n=0 P/Ts)
Effectiveness	Program Demand versus Supply	Program/student demand often outstrips supply NL, NS, ON, MB, SK, and NT reported there were inadequate levels of funding to meet the demand for existing programs (n=6 P/Ts); SK, MB, and NS reported there were insufficient levels of funding to establish new programs (n=3 P/Ts)
	Funding per participating student per school day	\$0.10 in PE (only food costs) - \$3.45 in AB (inclusive of all program expenses); an average of \$0.48 per participating student per school day
	Funding per student in P/T per school day	\$0.03 in MB - \$1.58 in the First Nations SFP in ON (inclusive of all program expenses); an average of \$0.10 per student in P/T (universal participation) per school day

Whereas National School Food Programs in other countries function with a single mandate, a single set of rules for inclusion of schools and students, a single set of regulations for program implementation, and maintenance, and require standardized monitoring, programs within Canada share some common characteristics, but not as a result of operating under the umbrella of a sole program. When analyzed from the perspective of the framework from Oostindjer et al. (2017), Canada—with its continued emphasis on food security as an objective, heavy reliance on volunteers, lack of clarity regarding universality, inequitable and low levels of funding, and limited monitoring and SFP evaluations—is behind in its evolution. While a number of participants also identified health as an objective and desired outcome, only two provinces identified agricultural (n=1; ON’s NFVP) and environmental (n=1; MB) aspects. These results point to several characteristics of SFPs that require closer examination: program mandates, reach and universality, maintenance and sustainability, and monitoring and data.

Program mandates

Currently, SFPs in Canada have adopted a mix of mandates. Most programs were established to reduce child food insecurity (see McIntyre & Dayle, 1992; Rutledge, 2016), similar to the starting point of other countries (Oostindjer et al., 2017). However, SFPs' effectiveness in reducing child hunger has been questioned (Raine et al., 2003). While food security was the most common primary objective of current provincial/territorial SFPs (n=6), health was second (n=4) and is the aim acknowledged by all government respondents (n=16). Given the overall low levels of funding, semi-targeted program reach, and funding restrictions for activities such as food literacy, this research cannot assess the extent to which programs can fulfill a food security or health mandate.

Moving forward, Canada has the opportunity to implement SFPs that are comprehensive and part of an overall multi-component approach to school food, as recommended by several researchers (Everitt et al., 2020; Haines & Ruetz, 2020; Hernandez et al., 2018; Oostindjer et al., 2017). This approach recognizes the potential of SFPs to improve public health, overall child well-being, and educational, economic, and environmental outcomes. Comprehensive SFPs supporting food-related activities such as hands-on food literacy curricula, food preparation, and learning about local foods in a sustainable manner also complement the new Canada's Food Guide (2019). In addition, SFPs have the potential to contribute to a range of positive outcomes across a variety of sectors, including the agri-food sector (Becot et al., 2017; Christensen et al., 2017; Ruetz & Fraser, 2019; Ruetz et al., 2020), provided sufficient and sustained resources are allocated. Most P/Ts already have legislation and/or programs that promote local food (Reynolds et al., 2018) and SFPs could help reach P/T local food procurement targets by prioritizing the use and monitoring of local foods. For example, NB's *Local Food and Beverages Strategy* had a target of 30% local food in public schools (Government of New Brunswick, 2016) and promoted local food in its school nutrition policy. P/Ts without such mandates and local food procurement targets could adopt them.

Reach and universality

SFP mandates influence not only the nature of programs but also their reach. Variable program types and funding levels across the country have resulted in inequitable access to SFPs in Canada (see Table 3). These results raise the question of the goal for SFP reach in Canada, i.e., where are they offered and who is eligible? A significant related concern is the potential for student stigma. *Universal* programs, whereby all students have daily access, have been identified as one approach to help students meet their food and health needs and not single them out or discourage them from accessing programs.

In Canada, many school food practitioners agree that universality is important. However, there is a range of associated understandings that need clarification.

The most common understanding is universal *access*: ““universally accessible programs’ means that all children and youth are eligible to participate... [but it] does not mean that every child or youth enrolled in a school is served by the SNP [student nutrition program]” (Government of Ontario, 2018, p. 5).

The Ministry of Education in NT reported a challenge with this approach: “We have advised schools to offer a program that will not stigmatize needy students, so schools run programs universally and through anecdotal feedback we have been advised that for the most part, it is the students with greatest need that avail themselves of the food provided”. Raine et al. (2003) found that when student participation is low, it discouraged intended recipients from accessing the program due to the fear of stigmatization. As a result, programs reached only a minority of the intended population. Presently it is unclear what level of student participation in universally *accessible* programs avoids or reduces stigmatization -- an important topic for future research.

Internationally, an alternative approach is universal *participation*. The Global Child Nutrition Foundation defines this as when “all students in the whole country are *intended* [emphasis added] to receive school feeding” (Global Child Nutrition Foundation, 2019, p.11). Robert Wood Johnson Foundation’s Healthy Eating Research program (2021, p. 1) define universal participation as when “all enrolled children in a school [receive] a free breakfast or lunch, regardless of their family’s income.” In Sweden and Finland, universal participation is the norm: they provide free, freshly cooked lunches to all students in all types and years of primary school, irrespective of family income (Patterson & Schäfer Elinder, 2015; Tikkanen, 2011). As well, New York City, Chicago, and now California is the first U.S. state to adopt free universal school meals (breakfast and lunch) starting in 2022-2023, made available without any paperwork or eligibility requirements (Bill 364: Free School Meals for All Act, 2021).

In Canada, the dominant approach to universality could be described as *nested universality*: schools in lower socio-economic areas are targeted to receive base funding and/or extra funding, and all students in those schools are eligible to participate. This approach presents challenges. First, from a food security perspective, providing funding only for schools in low-income neighbourhoods leaves vulnerable students in other, non-designated neighbourhoods ineligible (or ineligible in the future if their neighbourhood undergoes gentrification). Second, from a public health perspective, nutrition intakes of Canadian students across every socio-economic stratum need improvement (Tugault-Lafleur et al., 2017).

Maintenance and sustainability

Inequitable and overall low levels of government funding coupled with other factors, such as reliance on volunteer labour to purchase, prepare, and serve food and sometimes deliver auxiliary program components pose significant challenges to sustaining SFPs.

Critical food studies scholars argue that SFPs reliance on contingent labor relations (i.e., volunteers and part-time staff), charitable funding sources, and the devolution of responsibility from the government to communities reproduces neoliberal discourses used to justify SFPs remaining as an NGO service as opposed to a public good and responsibility (Allen & Guthman, 2006; Gaddis, 2019; Koc & Bas, 2012). Thus, the charitable service delivery model still dominates.

Most elementary and often secondary schools in Canada do not have school food infrastructure such as kitchens and gardens, and most teachers are not trained to lead cooking and gardening lessons (Haines & Ruetz, 2020). Many groups, such as medical and health professionals (CODE-COMOH Partnership, 2021) and Canadian school food researchers (Everitt et al., 2020; Haines & Ruetz, 2020; Hernandez et al., 2018), advise that trained teachers, paid food preparation staff, and adequate investments in school food infrastructure are imperative to the delivery of high quality, comprehensive SFPs.

CHSF (2020) is asking for a one-time federal investment of \$200 million for dedicated school food infrastructure, comparable to the United Kingdom's commitment of the equivalent of more than \$295 million (CAD) for school kitchens and dining facilities in 2014 (BBC News, 2014). As a start, conducting school food infrastructure assessments (of kitchens, cafeterias, eating areas, and teaching spaces) and reporting on school food infrastructure spending could assist school boards with capital planning (Haines & Ruetz, 2020).

Although SFPs are often cost-shared with communities and NGOs (i.e., funding not captured in this research), program maintenance requires a minimum threshold of on-going government financial support for program operation, monitoring, and evaluation. As a point of comparison, in 2014, Finland spent 532 €⁵ (euros) (CAD \$918, including inflation⁶) per participating student per school year operating their free school meal service, including ingredients, labor costs, kitchen equipment maintenance, and other fixed expenses (Finnish National Board of Education, 2015) reaching 95% of JK-12 students (Harper, Wood & Mitchell, 2008). If 95% of Canadian JK-12 students⁷ participated in a comparable SFP, an investment of approximately \$4.3 billion (\$4,288,497,588) per annum—less than \$5 per student per day—would be required. 2018/19 contributions by Canadian P/Ts provided 10% of the amount (\$0.48 per participating student per school day of the \$4.83 (CAD) equivalent⁸) Finland provides to cover SFP operations.

⁵ School meals are funded using money generated from taxes. Organising the meals is the responsibility of municipalities, which receive a subsidy of approximately 70% of the costs from the Finnish Government (Roos et al., 2002).

⁶ 532 € (euros) equates to CAD \$832 (1.564 exchange rate), and when inflation is accounted for based on 2021, this equates to \$918 per student/year or \$4.83 per student/school day (190 school days).

⁷ 95% of 4,917,438 JK-12 students (attending regular programming at publicly-funded schools) (Statistics Canada, 2019) equates to 4,671,566 students.

⁸ \$918 (CAD) divided by 190 school days (the average number of school days in Canada) equates to \$4.83 per school day.

Monitoring and data

Overall, the results indicated that SFP monitoring practices vary. Designing and conducting this research illustrated challenges, including obtaining province-wide data, comparable data based on clear and consistent indicators among programs, the presence of multiple sources of data about a single program, data discrepancies from different sources, and balancing the need for data validity and accounting for multiple funders of individual programs.

Positive monitoring practices in some jurisdictions could inform the expansion of monitoring in others. For example, as practiced in ON and NL, annual school site visits can help ensure safe food preparation practices and provide direct support and oversight of programs. Nutrition verification and tracking of program foods, ideally in the form of a receipt review or audit, can assist with quality control and provide valuable feedback to individual programs. Overall, more research that assesses outcomes associated with SFPs in Canada is needed (Everitt et al., 2020; Haines & Ruetz, 2020, Powell & Wittman, 2018).

With the promise of a National SFP, it is more important than ever to establish consistent definitions, equitable funding, nationally-harmonized metrics and monitoring practices, which includes monitoring SFP program outcomes. SFP terminology and monitoring practices within and between jurisdictions were sometimes not well defined, agreed upon, or utilized. For example, it was not always clear how much funding was allocated to food versus other program costs, making it difficult to compare data. Adopting QC's practice of setting a minimum food budget per student and reporting on this sub-total of funding (\$216 per student/year, equating to \$1.20 per breakfast) would yield more accurate and comparable data and could support more equitable access to healthy food in SFPs.

Assessing program reach is another problematic area. Current practices for tracking and reporting include: the total number of students that had "access" to an SFP which in some cases is the total enrollment of a school with an SFP as opposed to the number of students that actually participated; the unique number of students who participated throughout the school year (as collected by this research); and average daily participation⁹ within a program. In some jurisdictions, only the number of meals served is tracked in lieu of the number of students served, a method that may not be an accurate proxy if multiple types of meals are served at one school.

⁹Average Daily Participation: "the number of meals served for month divided by the number of program operating days per month" (Government of Ontario, 2018: 21).

In the future, obtaining more accurate data will require standardized program-level data collection. The definitions and data reporting requirements outlined in ON's *2018 Student Nutrition Program Guidelines* (Government of Ontario, 2018, pp.19-23) may provide a useful starting point for developing nationally-harmonized definitions and metrics related to SFPs and P/T school food program databases (i.e., ON's Student Nutrition Program sites database [Government of Ontario, 2017]). Statistics Canada's *Elementary-Secondary Education Survey* could also be expanded to collected SFP-related data to create a *Canadian School Food Program Database and Monitoring System*. The RE-AIM Framework, as used in this research, could inform the selection of SFP indicators and SFP administrators and researchers could use this system to better understand gaps in program access and evaluate program funding and expenditures.

In general, improved monitoring can assist with the tracking of the dynamic nature of SFPs. For example, this research collected data from 2018-19; however, a number of additional investments were made after this time period, which a monitoring system could capture. For example, AB announced an increase of \$3 million for a total of \$18.5 million in the 2019/20 school year (Government of Alberta, 2019b). QC's Ministry of Education increased their funding for Measure 15012 by \$11 million to expand program reach to all schools regardless of its socioeconomic index for the 2020/21 school year, bringing the total investment to \$30.3 million (Government of Quebec, 2020). In November 2019, the Council of Yukon First Nations received \$4.4 million to launch the rural SFP (Council of Yukon First Nations, 2019). NB became the last province to adopt a provincial SFP, with an initial \$200,000 for an SFP pilot in 2020/21 and proposed expansion to \$1 million in 2021/22 (Government of New Brunswick, 2020).

Conclusion

Considerations for the future

This research provides clearer insights into the complex patchwork of SFPs that exists in Canada. While not a complete picture, it updates SFP information from the provinces and territories: the largest funder of SFPs in Canada. The results illustrate the varied nature of SFPs and their ongoing evolution—2020 was the first year that all P/Ts funded programs. In doing so, it prompts further discussions about fundamental aspects of SFPs, such as:

- How can Canada evolve to adopt comprehensive program mandates that will provide the most significant benefit to students in Canada (Oostindjer et al., 2017), strengthening the capacity of SFPs to offer multi-component programs; and how can SFPs contribute to achieving the United Nations' Sustainable Development Goals (Food and Agriculture

Organization of the United Nations, 2019) and implement the 2019 Canada's Food Guide.

- Drawing on Canadian and international examples, how can Canada clarify definitions and goals regarding student reach and universality and how can they be achieved.
- How can current practices vis-à-vis program implementation, maintenance, and sustainability inform future planning about infrastructure, funding and other resources to support programs, addressing the current reliance on volunteers.
- How can a nationally-harmonized monitoring and evaluation system that obtains essential data be established and coordinated to better facilitate tracking programs' reach, implementation, maintenance and effectiveness (including funding, expenditures, and outcomes) while having the least burden on those working within the school food system.
- Ultimately, how will the federal government as a new partner interface with the existing SFP landscape, specifically given jurisdictional implications with the P/Ts and Indigenous communities?

The status quo, reflected by these results, indicates an overall insufficiency of resources to achieve the type of comprehensive and multi-component program recommended by Oostindjer et al. (2017) or to achieve universal student access or participation. Where will a new mandate aim: improved delivery of the current types of programs or ambitious development of multi-component programs recommended by the CHSF and other groups?

Given the variable nature of current SFPs, a related question is how much variation is acceptable within a national program? One option is *laissez-faire*; to permit SFPs to augment or strengthen existing programs as they choose. A second is a hybrid model that would establish minimum base requirements (such as harmonized food and nutrition standards based on Canada's Food Guide (2019), specifications regarding universality, and essential indicators for monitoring) while maintaining considerable local autonomy. A third is a nationally-harmonized model with standardized food procurement, food and nutrition standards, funding, eligibility, program components, infrastructure provision, monitoring and evaluation.

Jurisdictional planning will benefit from increased collaboration and coordination from a cross-section of ministries and agencies at the federal, provincial-territorial, and municipal levels, including but not limited to: Health, Social Services, Children and Youth, Education, Agriculture, Industry, Finance, and Indigenous Services, along with the many NGOs working in this field. The CHSF, with its significant member base across the country, is well-positioned to assist with fostering greater collaboration and coordination.

While the existing variability of SFPs in Canada poses a challenge, it also provides an opportunity to learn from best practices to move towards a more comprehensive approach to SFPs. The key strength of this article is that it compiles characteristics about SFPs to serve as a point of reference of pre-COVID practices and identifies key considerations for next steps.

A weakness is that the inclusion criteria resulted in an under-estimation of SFPs in Canada. To that end, a closer examination of SFPs in Canada is warranted, including the focused examination of individual SFPs, implementation models, and outcomes. Canada would also benefit from research that explores various types of SFPs (e.g. pay-what-you-can lunch programs, farm-to-school programs, Indigenous-led programs, programs funded solely by NGOs, and funding from other levels of government), and additional research on universality and stigma, effective monitoring indicators and program effectiveness, including research on economic and environmental benefits of local food procurement. Better understanding of these types of SFP models for food preparation, education, and other program elements will yield important insights to inform options for implementing SFPs that are comprehensive and responsive to the diverse needs of communities across Canada.

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References

- Allen, P., & Guthman, J. (2006). From “old school” to “farm-to-school”: Neoliberalization from the ground up. *Agriculture and Human Values*, 23, 401–415.
<https://doi.org/10.1007/s10460-006-9019-z>
- Bas, J. A. (2019). School food in the G7 - the time is ripe for Canada to catch up. *Coalition for Healthy School Food*.: <https://www.healthyschoolfood.ca/post/school-food-in-the-g7-the-time-is-ripe-for-canada-to-catch-up>
- BBC News. (2014, September 4). Q&A: Free school meals for infants. *BBC*.
<https://www.bbc.com/news/education-28981684>
- Becot, F., Kolodinsky, J. M., Roche, E., Zipparo, A. E., Berlin, L., Buckwalter, E., & McLaughlin, J. (2017). Do farm-to-school programs create local economic impacts? *Quarter CHOICES*, 32(321), 2–9.
http://www.choicemagazine.org/UserFiles/file/cmsarticle_565.pdf
- Bill 364: Free school meals for all act (2021). *California Legislature 2021-2022 Regular Session*.
https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB364#

- Black, J. L., & Billette, J. M. (2013). Do Canadians meet Canada's food guide's recommendations for fruits and vegetables? *Applied Physiology, Nutrition and Metabolism*, 38(3), 234-242. <https://doi.org/10.1139/apnm-2012-0166>
- British Columbia's Teachers' Federation. (2015). *Poverty and Education Survey: A Teacher's Perspective*. [https://www.bctf.ca/uploadedFiles/Public/SocialJustice/Issues/Poverty/Research/BCTF Poverty and Education survey--Chapter 3.pdf](https://www.bctf.ca/uploadedFiles/Public/SocialJustice/Issues/Poverty/Research/BCTF%20Poverty%20and%20Education%20survey--Chapter%203.pdf)
- Canadian Education Association. (1989). Food for thought: School board nutrition policies for hungry children (pp. 1–19). *Canadian Education Association*.
- Canadian Minister of Health. (2005). The integrated pan-Canadian healthy living strategy. *Health Canada*. <https://www.phac-aspc.gc.ca/hp-ps/hl-mvs/ipchls-spimmvs/pdf/ipchls-spimmvs-eng.pdf>
- Carbone, S., Power, E., & Holland, M. R. (2018). Canada's missed opportunity to implement publicly funded school meal programs in the 1940s. *Critical Public Health*, 30(2), 191-203. <https://doi.org/10.1080/09581596.2018.1524849>
- Christensen, L., Jablonski, B.B.R., Stephens, L., & Joshi, A. (2017). Economic impacts of farm to school: Case studies and assessment tools. *National Farm to School Network*. <http://www.farmentoschool.org/Resources/EconomicImpactReport.pdf>
- Coalition for Healthy School Food. (2020). *Written Submission for the Pre-Budget Consultations in Advance of the 2021 Budget*. <https://www.healthyschoolfood.ca/post/submission-to-the-pre-budget-consultations-in-advance-of-the-2021-budget>
- CODE-COMOH Partnership [Council of Ontario Directors of Education-Council of Ontario Medical Officers of Health]. (2020). Priority and proactive steps to ensure universal access to student nutrition programs: A letter of recommendations sent to the Ontario Premier, the Ontario Minister of Education, the Ontario Minister of Health, and the Ontario Minister of Children, Communities and Social Services on January 28, 2021. *Jointly prepared by the Council of Ontario Directors of Education & Ontario Dietitians in Public Health*. <https://sustainontario.com/2021/03/16/code-comoh-letter-to-ontario-premier-on-the-importance-of-school-food-programs/>
- Cohen, J.F.W., Hecht, A.A., McLoughlin, G.M., Turner, L., & Schwartz, M.B. (2021). Universal school meals and associations with student participation, attendance, academic performance, diet quality, food security, and body mass index: A systematic review. *Nutrients*, 13(911), 1-41. <https://doi.org/10.3390/nu13030911>
- Colley, P., Myer, B., Seabrook, J., & Gilliland, J. (2019). The impact of Canadian school food programs on children's nutrition and health: A systematic review. *Canadian Journal of Dietetic Practice and Research*, 80(2), 79-86. <https://doi.org/10.3148/cjdpr-2018-037>
- Corter, C., & Pelletier, J. (2010). Schools as integrated service hubs for young children and families: Policy implications of the Toronto first duty project. *International Journal of Child Care and Education Policy*, 4(2), 45-54. <https://doi.org/10.1007/2288-6729-4-2-45>
- Council of Ministers of Education Canada. (2020). "Schools and enrollment." <https://www.cmec.ca/299/Education-in-Canada-An-Overview/index.html>

- Council of Yukon First Nations. (2019). Yukon First Nations launch nutritional meals program in rural communities. *Council of Yukon First Nations*. <https://www.cyfn.ca/yukon-first-nations-launch-nutritional-meals-program-in-rural-communities/>
- Cullen, K. W., & Chen, T. A. (2016). The contribution of the USDA school breakfast and lunch program meals to student daily dietary intake. *Preventive Medicine Reports*, 5(C), 82-85. <https://doi.org/10.1016/j.pmedr.2016.11.016>
- Dunton, G. F., Lagloire, R., & Robertson, T. (2009). Nutrition using the RE-AIM framework to evaluate the statewide dissemination of a school-based physical activity and nutrition curriculum: “Exercise your options.” *American Journal of Health Promotion*, 23(4), 229-232. <https://doi.org/10.4278/ajhp.071211129>
- EdCan Network. (2019). 2018-2019 School Calendar. *EdCan Network*. Toronto. https://www.edcan.ca/wp-content/uploads/EdCanNet_2018-2019-School-Calendar_v1.pdf
- Everitt, T., Engler-Stringer, R., & Martin, W. (2020). Determining promising practices for Canadian school food programs: A scoping review. *Journal of Hunger and Environmental Nutrition*, 1–20. <https://doi.org/10.1080/19320248.2020.1823925>
- Farm to Cafeteria Canada. (2020). Farm to school: Canada digs in! Report 2020. *Farm to Cafeteria Canada*. <http://www.farmtocafeteriacanada.ca/f2scdi-report-2020/>
- Finnish National Board of Education. (2015). Cost application 2014 for basic education: Operating costs by teaching organizers (Euro/Student) without hospital and disability education. *Finnish National Board of Education*. <https://vos.oph.fi/rap/kust/v14/k05z6yos.html>
- Food and Agriculture Organization of the United Nations. (2019). School food and nutrition framework. <http://www.fao.org/3/ca4091en/ca4091en.pdf>
- Gaddis, J. E. (2019). *The labor of lunch: Why we need real food and real jobs in American public schools*. University of California Press. <https://doi.org/10.2307/j.ctvr00xpk>
- Garriguet, D. (2004). Overview of Canadians’ eating habits. *Statistics Canada*. <https://www150.statcan.gc.ca/n1/en/pub/82-620-m/82-620-m2006002-eng.pdf?st=dtO0rEDB>
- Gates, M., Hanning, R. M., Gates, A., McCarthy, D. D., & Tsuji, L. J. S. (2013). Assessing the impact of pilot school snack programs on milk and alternatives intake in 2 remote First Nation communities in northern Ontario, Canada. *Journal of School Health*, 83(2), 69-76. <https://doi.org/10.1111/josh.12000>
- Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: The RE-AIM framework. *American Journal of Public Health*, 89(9), 1322–1327. <https://doi.org/10.2105/AJPH.89.9.1322>
- Glasgow, R. E., & Estabrooks, P. E. (2018). Pragmatic applications of RE-AIM for health care initiatives in community and clinical settings. *Preventing Chronic Disease*, 15(E02), 1–7. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5757385/pdf/PCD-15-E02.pdf>
- Global Child Nutrition Foundation. (2019). Glossary. *2019 Global Survey of School Meal Programs*. <https://gcnf.org/wp-content/uploads/2019/01/Glossary-English-12.17.2019.pdf>

- Godin, K., Kirkpatrick, S., Stapleton, J., Hanning, R., & Leatherdale, S. (2017). Examining guidelines for school-based breakfast programs in Canada: A systematic review of the grey literature. *Canadian Journal of Dietetic Practice and Research*, 78(2), 92–100.
<https://doi.org/10.3148/cjdpr-2016-037>
- Government of Alberta. (2017). *Alberta education school nutrition 2016/17 pilot*.
<https://education.alberta.ca/media/3704342/school-nutrition-2016-17-pilot-summary.pdf>
- Government of Alberta. (2019a, November 28). School nutrition program funding boost. *Government of Alberta*. Accessed August 26, 2020:
<https://www.alberta.ca/release.cfm?xID=66199FDB1055A-04A4-301A-B164932EC8EE2668>
- Government of Alberta. (2019b). *Education annual report 2018-2019*.
<https://open.alberta.ca/dataset/8b226e68-1227-4aec-87a5-b573f3bfb062/resource/fec2c6c0-2fa7-4030-adcc-8f3dbaa1bcf4/download/education-annual-report-2018-2019-web.pdf>
- Government of Canada. (2019, March 19). Budget 2019. Introducing a food policy for Canada. *Government of Canada*. <https://budget.gc.ca/2019/docs/plan/chap-04-en.html#introducing-a-food-policy-for-canada>
- Government of Canada. (2019). *Canada's Food Guide*. *Government of Canada*. <https://food-guide.canada.ca/en/>
- Government of Canada. House of Commons Standing Committee on Health. (2007). Healthy weights for healthy kids. *Government of Canada*.
<https://www.ourcommons.ca/Content/Committee/391/HESA/Reports/RP2795145/hesarp07/hesarp07-e.pdf>
- Government of New Brunswick. (2020). Budget 2020/2021. *Department of Finance and Treasury Board*. <https://www2.gnb.ca/content/dam/gnb/Departments/fin/pdf/Budget/2020-2021/BudgetSpeech2020-2021.pdf>
- Government of New Brunswick. (2016). Local food and beverages strategy: Increasing awareness, availability, and support for the New Brunswick food and beverage sector 2016-2018. *Department of Agriculture Aquaculture and Fisheries*.
https://www2.gnb.ca/content/dam/gnb/Departments/10/pdf/Agriculture/BuyLocal_AchetezLocal/LocalFoodandBeveragesStrategy.pdf
- Government of Ontario. (2017). Ministry of Children and Youth Services student nutrition program sites. *Ontario Open Data Catalogue*. Accessed on October 20, 2020.
<https://data.ontario.ca/dataset/ministry-of-children-and-youth-services-student-nutrition-program-sites>
- Government of Ontario. (2018). Ontario's student nutrition program nutrition guidelines. *Ministry of Children and Youth Services*. https://studentnutritionontario.ca/wp-content/uploads/2018/03/2018_SNP_Program_Guidelines_ENG.pdf
- Government of Quebec. (2018). Commissions scolaires: Règles budgétaires de fonctionnement pour les années scolaires 2018-2019 à 2020-2021. *Ministry of Education and Higher Education*.

http://www.education.gouv.qc.ca/fileadmin/site_web/documents/PSG/ress_financieres/rb/RB_Fonctionnement_Commissions-scolaires_18-19.pdf

- Government of Quebec. (2020, August 25). Tous les élèves vulnérables auront accès aux services d'aide alimentaire dès la prochaine rentrée. *Ministry of Education and Higher Education*. Accessed on August 28, 2020: <http://www.education.gouv.qc.ca/salle-de-presse/communiqués-de-presse/detail/article/tous-les-eleves-vulnerables-auront-acces-aux-services-daide-alimentaire-des-la-prochaine-rentree/>
- Haines, J., & Ruetz, A.T. (2020). Comprehensive, integrated food and nutrition programs in Canadian schools: A healthy and sustainable approach. *Arrell Food Institute*. https://arrellfoodinstitute.ca/wp-content/uploads/2020/03/SchoolFoodNutrition_Final_RS.pdf
- Harper, C., Wood, L., & Mitchell, C. (2008). The provision of school food in 18 countries. *School Food Trust*. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.654.9233&rep=rep1&type=pdf>
- He, M., Beynon, C., Sangster Bouck, M., St Onge, R., Stewart, S., Khoshaba, L., Horbul, B. A., & Chircoski, B. (2009). Impact evaluation of the northern fruit and vegetable pilot programme: A cluster-randomised controlled trial. *Public Health Nutrition*, 12(11), 2199–2208. <https://doi.org/10.1017/S1368980009005801>
- Health Canada. (2012). *Do Canadian Adolescents Meet Their Nutrient Requirements through Food Intake Alone?* http://www.hc-sc.gc.ca/fn-an/alt_formats/pdf/surveill/nutrition/commun/art-nutr-adol-eng.pdf
- Helmick, M., Yaroch, A. L., Estabrooks, P. A., Parks, C., & Hill, J. L. (2020). A thematic analysis on the implementation of nutrition policies at food pantries using the RE-AIM framework. *Health Promotion Practice*. <https://doi.org/10.1177/1524839920945250>
- Hernandez, K., Engler-Stringer, R., Kirk, S., & Wittman, H. (2018). The case for a Canadian national school food program. *Canadian Food Studies*, 5(3), 208–229. <https://doi.org/10.15353/cfs-rcea.v5i3.260>
- Hur, I., Burgess-Champoux, T., & Reicks, M. (2011). Higher quality intake from school lunch meals compared with bagged lunches. *ICAN: Infant, Child, & Adolescent Nutrition*, 3(2), 70-75. <https://doi.org/10.1177/1941406411399124>
- Johnston, C. A., Moreno, J. P., El-Mubasher, A., & Woehler, D. (2012). School lunches and lunches brought from home: A comparative analysis. *Childhood Obesity*, 8(4), 364-368. <https://doi.org/10.1089/chi.2012.0012>
- Koc, M., & Bas, J. A. (2012). Canada's Action Plan for Food Security. In E. Anne & R. John (Eds.), *Health and sustainability in the Canadian food system: advocacy and opportunity for civil society* (pp. 173–203). UBC Press.
- Leatherdale, S. T., Stefanczyk, J. M., & Kirkpatrick, S. I. (2016). School breakfast-club program changes and youth eating breakfast during the school week in the COMPASS study. *Journal of School Health*, 86(8), 568–577. <https://doi.org/10.1111/josh.12408>

- Legislative Assembly of Ontario. (1994, June 16). School breakfast program. *35th Parliament, 3rd Session*. https://www.ola.org/en/legislative-business/house-documents/parliament-35/session-3/1994-06-16/hansard#P355_125021
- McIntyre, L., & Dayle, J. B. (1992). Exploratory analysis of children's nutrition programs in Canada. *Social Science and Medicine*, *35*(9), 1123–1129. [https://doi.org/10.1016/0277-9536\(92\)90224-E](https://doi.org/10.1016/0277-9536(92)90224-E)
- Micha, R., Karageorgou, D., Bakogianni, I., Trichia, E., Witsel, L., Story, M., Peñalvo, J., & Mozaffarian, D. (2018). Effectiveness of school food environment policies on children's dietary behaviors: A systematic review and meta-analysis. *PLoS One*, *13*(3), e0194555. <https://doi.org/10.1371/journal.pone.0194555>
- Minaker, L., & Hammond, D. (2016). Low frequency of fruit and vegetable consumption among Canadian youth: Findings from the 2012/2013 youth smoking survey. *Journal of School Health*, *86*(2), 135-142. doi:10.1111/josh.12359
- Mosby, I. (2014). *Food Will Win the War: The Politics, Culture, and Science of Food on Canada's Home Front*. UBC Press [British Columbia].
- Notley, R. (2015). *Alberta's 2015 NDP election platform*. https://d3n8a8pro7vhmx.cloudfront.net/themes/5538f80701925b5033000001/attachments/original/1431112969/Alberta_NDP_Platform_2015.pdf?1431112969
- Ontario Newsroom. (2005, October 7). *McGuinty government helping thousands more students arrive at school ready to learn*. https://news.ontario.ca/archive/en/2005/10/07/mcguinty-government-helping-thousands-more-students-arrive-at-school-ready-to-le.html?utm_source=search&utm_medium=rss_click&utm_campaign=rss_feed
- Oostindjer, M., Aschemann-Witzel, J., Wang, Q., Skuland, S. E., Egeland, B., Amdam, G. V., Schjøll, A., Pachucki, M. C., Rozin, P., Stein, J., Lengard Almli, V., & Van Kleef, E. (2017). Are school meals a viable and sustainable tool to improve the healthiness and sustainability of children's diet and food consumption? A cross-national comparative perspective. *Critical Reviews in Food Science and Nutrition*, *57*(18), 3942–3958. <https://doi.org/10.1080/10408398.2016.1197180>
- Patterson, E., & Schäfer Elinder, L. (2015). Improvements in school meal quality in Sweden after the introduction of new legislation—a 2-year follow-up, *European Journal of Public Health*, *25*(4), 655–660. <https://doi.org/10.1093/eurpub/cku184>
- Persson-Osowski, C., Becker, W., Enghardt Barbieri, H., & Lindroos, A.K. (2017). Energy and nutrient intakes of Swedish children in relation to consumption of and habits associated with school lunch. *Scandinavian Journal of Public Health*. *25*(4), 655-660. <https://doi.org/10.1177/1403494816680796>
- Powell, L. J., & Wittman, H. (2018). Farm to school in British Columbia: mobilizing food literacy for food sovereignty. *Agriculture and Human Values*, *35*(1), 193–206. <https://doi.org/10.1007/s10460-017-9815-7>
- Raine, K., McIntyre, L., & Dayle, J. B. (2003). The failure of charitable school- and community-based nutrition programmes to feed hungry children. *Critical Public Health*, *13*(2), 155–169. <https://doi.org/10.1080/0958159031000097634>

- Reynolds, J., Bas, J. A., Hunter, B., & Hsu, C. (2018). Nourishing the future of food in health care: A pan-Canadian policy scan 2018.
https://foodsecurecanada.org/sites/foodsecurecanada.org/files/policy_scan_report_full_may12_pages.pdf
- Robert Wood Johnson Foundation's Healthy Eating Research program. (2021). 7 Key Findings on The Benefits of Healthy School Meals for All. *Healthy Eating Research*.
https://healthyeatingresearch.org/wp-content/uploads/2021/06/HER_UniversalSchoolMeals_Infographic_07022021-1-1.pdf
- Rojas, A., Black, J., Orrego, E., Chapman, G., & Valley, W. (2017). Insights from the Think&EatGreen@School Project: How a community-based action research project contributed to healthy and sustainable school food systems in Vancouver. *Canadian Food Studies*, 4(2), 25. <https://doi.org/10.1111/j.1600-051X.1988.tb01553.x>
- Roos, G., Lean, M., & Anderson, A. (2002). Dietary interventions in Finland, Norway and Sweden: Nutrition policies and strategies. *Journal of Human Nutrition and Dietetics*, 15(2), 99–110. <https://doi.org/10.1046/j.1365-277X.2002.00340.x>
- Ruetz, A.T., & Fraser, E.D.G. (2019, March 26). National School Food Program a short-term opportunity for jobs creation and economic growth. *Canadian Science Policy Centre*.
<https://sciencepolicy.ca/posts/national-school-food-program-a-short-term-opportunity-for-jobs-creation-and-economic-growth-2/>
- Ruetz, A.T., Fraser, E.D.G., Smithers, J., & Haines, J. (2020, October 6). A national school food program should be part of Ottawa's stimulus package. *Policy Options*.
<https://policyoptions.irpp.org/magazines/october-2020/a-national-school-food-program-should-be-part-of-ottawas-stimulus-package/>
- Ruetz, A.T., & Kirk, SFL. (2019, March 21). Federal budget pledges a Canadian school food program but recipe requires funding. *The Conversation Canada*.
<https://theconversation.com/federal-budget-pledges-a-canadian-school-food-program-but-recipe-requires-funding-112789>
- Rutledge, J. G. (2016). *Feeding the Future: The Emergence of School Lunch Programs as Global Social Policy*. Rutgers University Press.
- Sabinsky, M. S., Toft, U., Sommer, H. M., & Tetens, I. (2019). Effect of implementing school meals compared with packed lunches on quality of dietary intake among children aged 7-13 years. *Journal of Nutritional Science*, 8(3), 1–9. <https://doi.org/10.1017/jns.2018.29>
- Saksvig, B. I., Gittelsohn, J., Harris, S. B., Hanley, A. J. G., Valente, T. W., & Zinman, B. (2005). A pilot school-based healthy eating and physical activity intervention improves diet, food knowledge, and self-efficacy for native Canadian children. *Journal of Nutrition*, 135(10), 2392-2398. <https://doi.org/10.1093/jn/135.10.2392>
- Sithoo, D. (2020, April 1). Personal correspondence.
- Statistics Canada. (2019). *Table 37-10-0109-01. Number of students in elementary and secondary schools, by school type and program type in 2018/19*. Accessed May 6, 2021.
<https://doi.org/10.25318/3710010901-eng>

- Taylor, J. P., Hernandez, K. J., Caiger, J. M., Giberson, D., MacLellan, D., Sweeney-Nixon, M., & Veugelers, P. (2012). Nutritional quality of children's school lunches: Differences according to food source. *Public Health Nutrition*, 15(12), 2259-2264.
<https://doi.org/10.1017/S1368980012000699>
- Tikkanen, I. (2011). Nutritionally balanced school meal model for a comprehensive school. *British Food Journal*, 113(2), 222-233. <https://doi.org/10.1108/00070701111105312>
- Tugault-Lafleur, C. N., Black, J. L., & Barr, S. I. (2017). Examining school-day dietary intakes among Canadian children. *Applied Physiology, Nutrition, and Metabolism*, 42(10), 1064-1072. <https://doi.org/10.1139/apnm-2017-01>
- Tugault-Lafleur, C. N., & Black, J. L. (2020). Lunch on School Days in Canada: examining contributions to nutrient and food group intake and differences across eating locations. *Journal of the Academy of Nutrition and Dietetics*, 120(9), 1484-1497.
<https://doi.org/10.1016/j.jand.2020.01.011>
- UNICEF Canada. (2017). *Oh Canada! Our kids deserve better: UNICEF report card 14, Canadian youth companion*. https://www.unicef.ca/sites/default/files/2018-05/UNICEF-RC14-YouthPerspectives_EN.pdf
- UNICEF Canada. (2019, May 7). *UNICEF Canada Supports Calls for a National School Food Program*. <https://www.unicef.ca/en/press-release/unicef-canada-supports-calls-national-school-food-program>
- United Nations System Standing Committee on Nutrition. (2017). Schools as a system to improve nutrition (Issue September). Retrieved From:
<https://doi.org/10.4324/9780429053788-2>
- World Food Programme. (2016). Cost-Benefit Analysis School Feeding Investment Case: The Cost-Benefit Analysis Methodology (Issue January). Retrieved From:
<https://www.issuelab.org/resources/12943/12943.pdf>
- World Food Programme. (2021). State of School Feeding Worldwide 2020. *World Food Programme*. Retrieved From: https://docs.wfp.org/api/documents/WFP-0000123923/download/?_ga=2.239191236.670107737.1614261065-2030481276.1614261065
- World Health Organization. (2006). What is the evidence on school health promotion in improving health or preventing disease and, specifically, what is the effectiveness of the health promoting schools approach? Retrieved From:
https://www.euro.who.int/_data/assets/pdf_file/0007/74653/E88185.pdf