



SCHOOL FOOD ENVIRONMENT SURVEY IN CANADA

Final Report

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EXECUTIVE SUMMARY

Background

Poor diet quality is among the leading causes of morbidity and mortality in Canada and globally. Food environments, comprised of the structural, economic, political, and sociocultural factors that influence food choices, play a major role in shaping diets at a population level. School food environments have been identified as a key point of intervention to support healthy dietary patterns among students of all ages.

Methodology

The primary objective of this study was to benchmark and evaluate school food environments in Canada in 2023-2024 using an internationally adapted framework. A random sample of 112 schools from small, medium and large population centres participated in an online self-reported survey of school food environments completed by one administrator or teacher. The online survey included six sections: 1) School demographics; 2) Food services available in schools; 3) Foods and beverages available in schools; 4) Food and beverage marketing in schools; 5) School food policies; and 6) School food programs.

Results

Most schools in the sample (89%) either developed their own school food policy or adhered to their province's or school board's food policy, and 63% of all schools indicated that they followed standards that defined what foods and beverages were allowed to be sold in their school. Despite these policies, nearly all schools (82%) reported selling or serving at least one beverage option containing free or added sugar on a regular

basis (\geq one time/week). Schools offered on average 2.1 (SD 1.9) of 9 possible sugary drink options and 2.4 (SD 2.1) of 10 possible less healthy food options, and there was no significant difference in the number of options available between schools with and without food and beverage standards. It was common for schools to report using less healthy foods and beverages for special occasions, such as fundraising activities (57%) or to reward students (49%). Most schools (83%) reported they did not have less healthy food marketing in their school, and schools that had a policy restricting less healthy food marketing less frequently reported unhealthy food marketing than schools that did not have a policy ($p=0.034$). Most schools had at least one type of school food program in place (93%), and 63% had a school food program that was free and universally available to all students daily.

Conclusion

Results from this study highlight current strengths and gaps in Canadian school food environments. Although most schools reported that they had a written school food policy and/or had a policy that restricted what foods and beverages were allowed to be sold in their school, these policies may not always translate into the provision of fewer less healthy food and beverage options.

Implication for policy

Schools should consider developing a comprehensive school food policy that addresses all aspects of the food environment, and that includes stronger nutrition criteria to determine what foods and beverages are allowed to be sold or served on school grounds.

BACKGROUND

Diet-Related Noncommunicable Diseases

Unhealthy diets are among the leading risk factors for noncommunicable diseases (NCDs).¹ Globally, almost one in five deaths are attributable to diet-related NCDs, including heart diseases, strokes, diabetes, obesity, and some cancers.²

Dietary risk factors are also apparent among children and youth in Canada. National data indicate that 72% of children aged 4 to 13 years consumed more sodium than the daily recommended amount in 2017.³ Although a nationally representative sample of children under 17 years had a slightly higher diet quality score (Heathy Eating Index-2015) in 2015 compared to 2004 (increasing from 52.3 to 57.3 out of a maximum 100 points), children's diet remained nutritionally poor, and significant inequities existed between socioeconomic groups⁴.

In order to protect Canadian children from the short- and long-term consequences of unhealthy diets, it is important to explore public health interventions that address the broad, upstream factors that influence dietary patterns among children and youth.

School Food Environments in Canada

Dietary intake is strongly influenced by the food environment.⁵ The food environment comprises the social, economic, and policy factors that shape food access and quality,

and includes the food supply, nutrition information, food marketing, cost of food, retail environments, and other environmental influences on dietary intake.⁶ Since children and adolescents spend about half of their waking time at school, school food environments have been identified as a key point of intervention to support healthy eating patterns among students of all ages.^{7,8} Dietary patterns established during childhood and adolescence are known to track into adulthood, making this a key time to establish healthier dietary patterns.⁹ Evidence has shown that adopting healthy eating patterns at a young age can have lifelong health benefits, including a reduced risk of developing metabolic syndrome and heart disease in adulthood.^{10,11}

This study is informed by the research and monitoring framework proposed by the International Network for Food and Obesity Research, Monitoring and Action Support (INFORMAS).⁶ The INFORMAS network was founded in 2013 and has since expanded to include dozens of researchers and non-governmental groups with expertise in food environments from more than 80 countries. INFORMAS aims to 'monitor and benchmark food environments and policies globally to reduce obesity, diet-related noncommunicable diseases and their related inequalities', in alignment with overarching efforts of the United Nations and the World Health Organization to prioritize monitoring of NCDs and associated risk factors to improve population health.¹²⁻¹⁷

INFORMAS has developed an internationally-adapted set of monitoring tools and strategies for food environments across a variety of policy areas, including school food environments.¹⁸ In adapting the INFORMAS methods, we have identified five key areas of school food environments that we examined in this study: the types of food services in and around schools; the quality of foods available in schools; the marketing of less healthy foods, beverages and brands in schools; school food environment policies; and school food programs. In adapting the INFORMAS methods, we have identified five key areas of school food environments that we examined in this study: the types of food services in and around schools; the quality of foods available in schools; the marketing of less healthy foods, beverages and brands in schools; school food environment policies; and school food programs.

Research Objective

The primary objective of this study was to benchmark and evaluate the food environments in public schools in Canada in 2023-2024. To achieve the above research objective, the research team conducted an online self-reported survey examining school characteristics, school food policies, foods available in schools, food marketing in schools, and school food programs in randomly selected schools from across Canada.

This report has not undergone peer review at the time of publication. The results will be submitted for peer-review in a scientific journal in the near future.

METHODOLOGY

Sampling

A randomly selected sample of population centres (populated area with a minimum population of 1,000 people and a population density of at least 400 people per square kilometer) that included at least one small, medium and large population centre (as defined by Statistics Canada) in each province/territory was established.¹⁹ Among provinces with proportionally larger population sizes, additional population centres were included, aiming such that the sample of schools be approximately proportional to the overall Canadian population in each province. A list of all public schools at each school level (e.g., elementary/middle/high school) according to the structure of the education system within each province/territory was assembled for each selected population centre. From this list, schools were randomly selected using the 'RAND' and 'INDEX' function in Microsoft Excel. If a school declined to participate, another school within the randomly selected population centre was selected as per the process above. If no schools within the selected population centre participated after the initial contact, a new population centre was then randomly selected. In some instances where participation rates were particularly low, we contacted school boards where we already had established research networks to identify additional schools who might be interested in participating.

Schools were eligible to participate if they were an anglophone or francophone institution, an elementary/middle/high school part of the public system, and had at least one cafeteria,

vending machine, snack shop, systems for families of students to order food (e.g., catering services) or school food program through which foods or beverages were sold or served. The survey respondent also needed to be able to read or write in French or English to complete the survey.

Recruitment

The research team first established contacts within the Department/Ministry of Education in each province/territory to understand the process for conducting school-based research in each jurisdiction. The approach for recruitment was tailored to the requirements in each province/territory. For most provinces, permission to conduct research needed to be granted by the concerned school districts or school boards, as relevant. Nova Scotia declined to participate in the study, as they had already planned to conduct their own surveys related to school food environments. In Newfoundland and Labrador, the 2 main school districts did not respond, resulting in the exclusion of schools from this province in the recruitment process. Across the other provinces, multiple school districts declined to participate because of over-solicitation to participate in research studies and other reasons. After discussions with our contacts in the Canadian territories, we concluded that the survey was not appropriately tailored to the territorial context and we did not have the necessary research networks to conduct research in these jurisdictions, and therefore decided not to conduct the survey in the territories.

Once approval was obtained by the respective provincial Ministries or Departments of Education and the concerned school district to contact schools, a recruitment email and information letter were sent each school principal via email, identified using school websites or publicly available online lists. Schools were asked to identify the most appropriate school representative(s) to complete the survey. Only one representative per school was needed to complete the survey, but schools could select multiple representatives to complete specific sections of the survey according to their areas of expertise. Possible representatives included the school principal, administrators, food program coordinators, and/or teachers. School representatives were targeted for this study as they can have intimate knowledge of the school's functions, policies, and environments, including food environments. It was expected that the survey would take between one to one and a half hours to complete per school.

A reminder email was sent to each school after seven days, 10 days and 14 days if they did not accept or decline the invitation. If a school did not respond after 14 days, or declined the invitation, an alternative school was contacted. All communications were conducted in English or French, as appropriate given the jurisdiction and type of school (e.g., English or French school board). A total of 1124 schools from across Canada were solicited to participate in this study, and 121 schools agreed to participate. Of those, a total of 112 schools completed the survey, resulting in a

participation rate of 10% and a survey response rate of 93% (for schools who were sent a survey link).

After obtaining approval to conduct the study by the school's principal, the survey link was sent via email to the principal, and the principal was asked to share the survey link with their selected representative(s) to fill out the survey. Participants provided electronic consent as part of the online survey after reading through the information screen on the first page of the survey (i.e., before any data were collected). Participation in this study was voluntary, and schools could also withdraw their participation at any time up until data analyses (two weeks after survey submission). Participating schools were offered a \$50 Interac e-transfer or gift card of their choice for completing the survey, if permitted by the school district. Schools who only partially completed the survey or who withdrew at any point during the study were not remunerated. If requested, schools also received an individualized report that compared their results to all other participating schools.

Given that the data collected were administrative in nature and that the individuals that completed the surveys were not the focus of the research, this research was classified as exempt from ethics review by the five involved research ethics boards, including Université Laval (file number: 2022-102), University of Calgary, University of Alberta, University of Toronto, Dalhousie University.

Data Collection and Tools

The nature of this cross-sectional survey was an environmental scan and inventory of key aspects of food environments within schools. The survey contained six sections: 1) School demographics; 2) Food services available in schools; 3) Foods and beverages available in schools; 4) School food policies; 5) Food marketing in schools; and 6) School food programs. Information on postal code for each school was also collected.

Schools sampled were asked to report whether they sold or served a list of 38 food and beverage options on a regular basis (\geq once/week). A total of 33 food and beverage options were included in the analysis, which were characterized as *healthier options* if they aligned with Canada's food guide²⁰ recommendations (e.g., have plenty of vegetables and fruits, choose whole grain products), or as *less healthy options* if they did not meet this broad definition. 'Sugary drinks' were described as beverages containing free or added sugars (including soft drinks, fruit drinks, chocolate milk, and 100% fruit juices), while 'Healthier beverages' were classified as beverages containing little to no added or free sugars, sweeteners, sodium, saturated fats or caffeine. 'Less healthy foods' were classified as foods that are ultra-processed, fried or that have high levels of sodium, sugar and/or saturated fat (including fries, poutine, potato chips, chocolate bars, or frozen desserts), while 'Healthier foods' were classified as minimally processed or whole foods, with limited amounts of added sodium, sugar and/or saturated fat, and/or whole grain options. Five food options were excluded from

analysis on the availability of healthier and less healthy food items due to their somewhat ambiguous nutrition quality. These food options include 'Fruit flavoured yogurt' (sugar content not known), 'Hamburger/Cheeseburger/Hot dogs/Burritos' (could be healthier or less healthy depending on their composition and ingredients), 'Sushi' (could contain fried ingredients and no vegetables), 'Regular pasta dishes' and 'White bread sandwiches and wraps' (not whole grain, but can still contain vegetables and lean protein).

Data collection was conducted online, and took place during two time intervals over 2023-2024, from April 2023 to June 2023, and from September 2023 to February 2024.

Statistical Analyses

Statistical analyses were conducted using SAS On Demand for Academics.²¹ For responses of "don't know" or "refuse to answer", these were considered missing values and were excluded from all calculated proportions.

Simple descriptive analyses (frequencies and percentages) were used to describe the sample of schools. School postal codes were used to determine area-level socioeconomic deprivation using the 2021 version of the *Material and Social Deprivation Index (MSDI)*²², which uses data from the 2021 Canadian Census to determine area-level social and material deprivation based on small area units (dissemination areas). The index was not assigned to all schools, as some were located in dissemination areas that were excluded from the index (n=6) or did not provide a valid postal code (n=3).

Descriptive analyses were used to examine the prevalence of schools with various types of food policies, the presence of less healthy food marketing, food and beverage availability, and characteristics of school food programs in place.

Mann-Whitney U tests were performed to compare the average number of less healthy food and sugary drink options sold in schools with and without food and beverage standards, and in schools that developed their own written school food policy and schools that did not. Chi-square tests were used to compare the prevalence of schools that sold fruits and vegetables on a regular basis in schools that had and did not have food and beverage standards, and in schools that developed their own written school food policy and schools

that did not. For the purpose of this study, a written school food policy was defined as a broad policy that demonstrates a commitment to support healthier school food environments, whereas food and beverage standards were defined as specific nutritional criteria that outline what products can be offered in the school. This means that food and beverage standards could have been part of a school's written school food policy or other broader policies in place.

Chi-square tests were also used to compare outcomes related to the prevalence of marketing, fundraising activities and food rewards in schools that had or did not have policies addressing these specific issues.

RESULTS

School Description

A total of 112 primary and secondary schools, recruited from small (n=31), medium (n=42) and large (n=39) population centres across Canada, completed the online self-reported School Food Environment Survey. More information describing the school sample can be found in Table 1.

All participating schools had one or more types of food services available, including cafeterias, snack shops, vending machines, food order-in systems, school food programs, or other types of food services. The prevalence of schools that reported having these types of food services in place can be found in Figure 1. The most common type of food service in place was school food programs, with almost all schools (80%) reporting having at least one breakfast, lunch or snack program.

Table 1

Description of the school sample

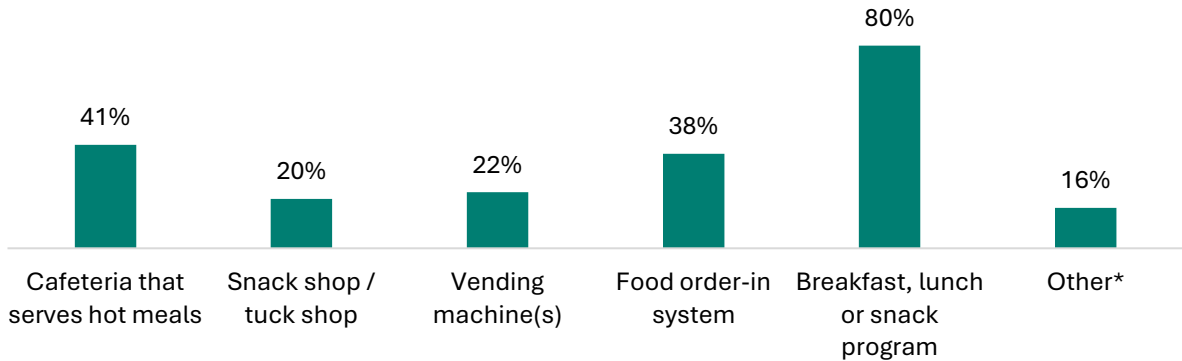
Indicator	N	%
School level		
Elementary schools ¹	74	66.1
Secondary schools ²	38	33.9
All schools	112	100.0
Province		
Alberta	17	15.2
British Columbia	19	17.0
Manitoba	6	5.4
New Brunswick	14	12.5
Ontario	26	23.2
Prince Edward Island	9	8.0
Quebec	15	13.4
Saskatchewan	6	5.4
Language		
English	76	67.9
French	36	32.1
Religion		
Catholic (public school system)	17	15.2
Not affiliated with a religion	95	84.8

¹ Schools that taught at least one elementary grade (Kindergarten to 6th grade).

² Schools that only taught secondary grades (7th to 12th grade) and did not teach any elementary grades (Kindergarten to 6th grade).

Figure 1

Prevalence (%) of school with the following types of food services in place



*Includes after-school food programs (e.g., backpack program), emergency food aid (e.g., snack cupboard or emergency lunches if needed), and occasional food sales or catering for special events

Schools with valid postal code data (n=103), were classified in five groups of area-level material and social deprivation. The prevalence of schools in each group, ranging from 1 (most materially and socially privileged dissemination area) to 5 (most materially and socially deprived dissemination area) can be found in Table 2. Approximately one-third of schools were from dissemination areas that were classified as materially and socially deprived, and one third were either material and socially privileged or had a tendency towards privilege.

Table 2

Prevalence of schools (n=103) in each material and social deprivation groups

Material and social deprivation index	N	%
1 (Materially and socially privileged dissemination area)	14	13.6
2 (Dissemination area with a tendency towards privilege)	18	17.5
3 (Dissemination area privileged on one dimension but deprived on the other)	13	12.6
4 (Dissemination area with a tendency towards deprivation)	25	24.3
5 (Materially and socially deprived dissemination area)	33	32.0

School Food Policies

Out of the 112 schools that completed the survey, a total of 95 schools (89%) reported having a written school food policy, meaning any general policy or strategy that demonstrated a commitment to support and promote healthy eating in the school environment.

Some schools developed their own written school food policy (54%), and others followed a food policy developed by their province and/or school board (35%). More information on these written school food policies can be found in

Table 3 below. For the remaining 12 schools that did not adhere to a written school food policy, most (n=11) reported that they still somewhat followed the provincial food policy or guideline in their province, and one school reported that it did not follow a school food policy at all.

Overall, many schools (84%) reported using Canada's food guide as a resource to promote healthy eating, and 20% of all schools reported having a healthy eating committee or working group in place to promote healthy eating in their school.

Table 3

Prevalence of schools that had a written school food policy

	All schools (n=112)		Elementary (n=74)	Secondary (n=38)
	N*	%	%	%
Developed or followed a written school food policy	95	88.8	90.0	86.5
Developed its own written school food policy	58	54.2	60.0	43.2
Followed provincial/school board's food policy or guideline	37	34.6	31.4	40.5
No written school food policy	12	11.2	10.0	13.5
Somewhat followed provincial food policy or guideline	11	10.3	8.6	13.5
Did not follow provincial food policy or guideline	1	0.9	1.4	0.0

*Schools (n=5) that answered "don't know" or "refused to answer" to questions measuring the indicators above were excluded from calculated proportions (%)

Among schools that had developed their own school food policy (n=58), 47% reported that their policy aimed to provide foods that reflected the cultural diversity of their student population. Schools' food policies were mainly developed based on the provincial food policy or guideline in place in their province (68%), but many schools also based their policy on other resources, including their school board's food policy and Canada's food guide (see Table 4 for more details). Among the schools that used a provincial food policy to develop their own written food policy (n=39), 22% of them mentioned that the school policy was stricter or went beyond the requirements in the provincial policy.

Schools also reported on various types of policies and strategies related to food. Such

policies could have been part of a school's written food policy or other broader policies in place. Of all schools, 63% indicated that they followed standards that defined what foods and beverages were allowed to be sold in their school (specific nutritional criteria that outline what products can be offered). Some schools also had policies that restricted the use of less healthy foods and beverages during special occasions, including fundraising activities (38%) and school functions/events (61%) like holiday celebrations, classroom parties or parent-teacher nights. Additional information on the specific types of food-related policies in place is shown in Table 5. About half of schools reported they had food preparation classes (50%) and nutrition-related classes (49%) as part of their curriculum.

Table 4

Characteristics of food policies developed by schools

	All schools (n=112)			Elementary (n=74)	Secondary (n=38)
	N	%	DK/R*	%	%
School policy mainly based on:					
Provincial food policy or guideline	39	68.4	1	71.4	60.0
School board's food policy or guideline	32	56.1	1	47.6	80.0
Canada's food guide	28	49.1	1	45.2	60.0
Policy aimed to provide foods that reflect the cultural diversity of the student population	24	47.1	7	50.0	38.5
School food policy included standards defining what foods and beverages are allowed to be sold	40	72.7	3	69.1	84.6

* Schools that answered "don't know" or "refused to answer" to questions measuring the indicators above, excluded from calculated proportions (%). Schools could select all that applied.

Table 5

Prevalence of schools that reported having the following types of food-related policies or strategies

	All schools (n=112)			Elementary (n=74)	Secondary (n=38)
	N	%	DK/R*	%	%
Schools that reported having:					
Standards defining what foods and beverages were allowed to be sold	68	63.0	4	64.4	60.0
Strategies that made healthier foods and beverages more affordable or accessible	77	69.4	1	68.5	71.1
Policy that restricted price promotions for less healthy foods and beverages	46	46.9	14	55.6	31.4
Policy that restricted fundraising activities to healthier or non-food items only	40	37.4	5	40.3	31.4
Policy that restricted the use of less healthy foods as a reward for good behaviour or performance	47	44.3	6	53.5	25.7
Policy that limited less healthy foods and beverages at special functions or events	65	61.3	6	69.0	45.7
Policy on staff role-modelling of healthy eating behaviours	24	22.2	4	27.4	11.4
Purchasing policy or strategy that supported healthier food provision	53	50.5	7	52.2	47.2
Purchasing policy or strategy that supported local and sustainable food provision	37	36.3	10	37.9	33.3

* Schools that answered “don’t know” or “refused to answer” to questions measuring the indicators above, excluded from calculated proportions (%).

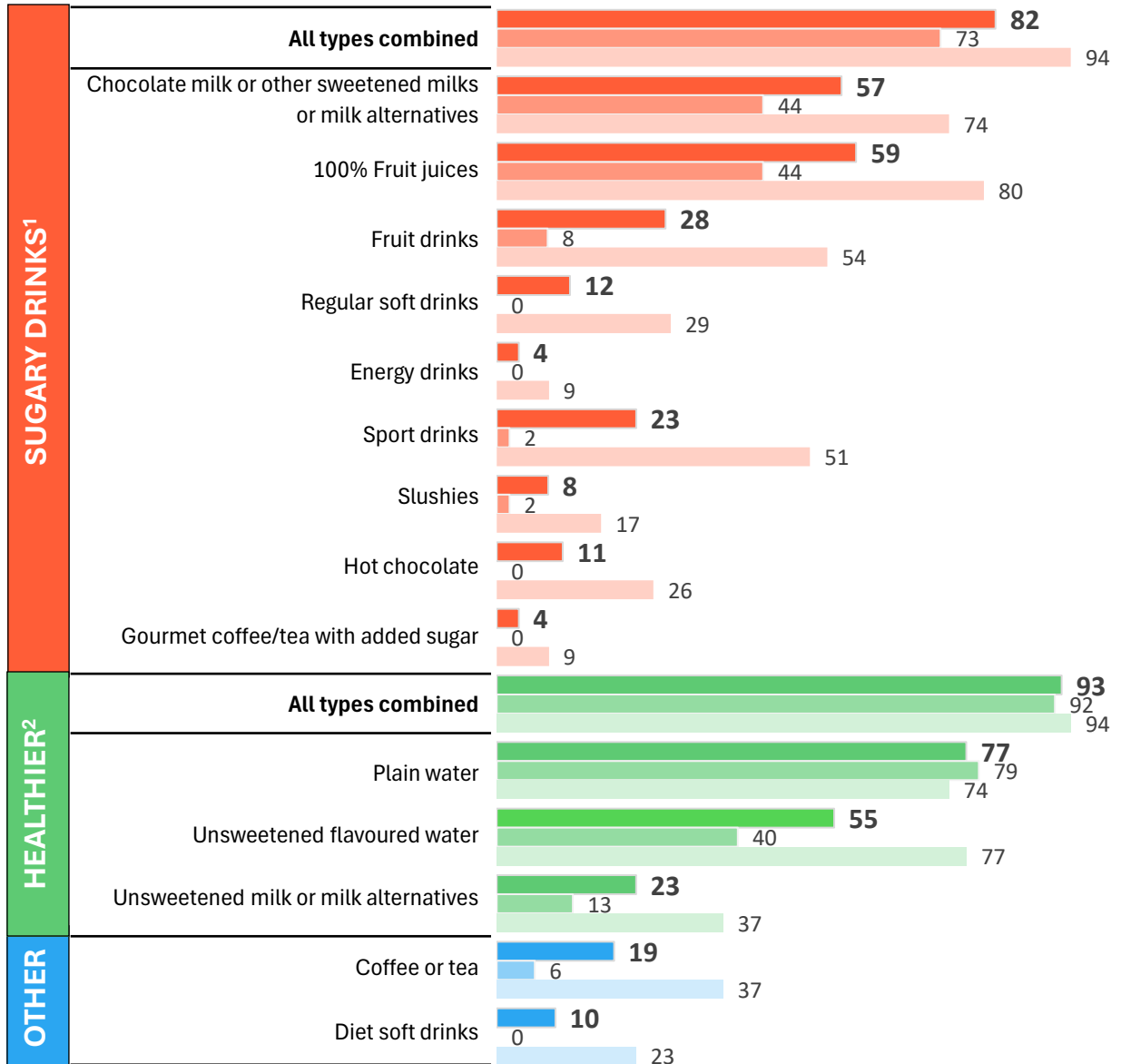
Foods and Beverages Available in Schools

Among the schools that reported selling or serving **beverages** on a regular basis (n=83), only 14 % sold or served exclusively healthier options (e.g., water, unsweetened flavoured water, unsweetened milk/milk alternatives). Schools offered on average 2.1 (SD 1.9) sugary drink options (See Table 6 for more detail). There was no statistically significant difference in the number of sugary drink options sold between schools that had food and beverage standards (1.8; SD 1.5) and schools that did not have standards (2.7; SD 2.6) ($p=0.233$). Yet, schools that developed their own school food policy reported selling significantly fewer ($p=0.006$) sugary drink options (1.3; SD 1.1) compared to schools that did not develop a school food policy (2.7; SD 2.3). The full list of beverage options sold or served in elementary and secondary schools can be found in Figure 2. In terms of beverage availability, only 20% of schools reported offering $\geq 75\%$ of healthier beverage options in their beverage fridges or areas.

Among the schools that reported selling or serving **foods** on a regular basis (n=92), only 14% sold or served exclusively healthier options. Just over half (51%) of schools offered whole grain products, and only about 55% offered both fruits and vegetables on a regular basis. There was no statistically significant difference ($p=0.868$) in the prevalence of schools offering fruits and vegetables regularly between schools that followed food and beverage standards (56.7%) and schools that did not (54.8%). However, a larger proportion of schools that developed their own school food policy reported offering fruits and vegetables regularly (66.0%) compared to schools that did not develop a policy (43.2%, $p= 0.029$). Schools sold on average 3.9 (SD 2.5) healthier food options and 2.4 (SD 2.1) less healthy food options, but there was no statistically significant difference in the number of options sold between schools that followed standards or not, nor between schools that developed a policy or not. The full list of food options sold and served in elementary and secondary schools can be found in Figure 3.

Figure 2

Prevalence (%) of elementary and secondary schools that sold or served the beverage options listed below on a regular basis (≥once/week)



Legend

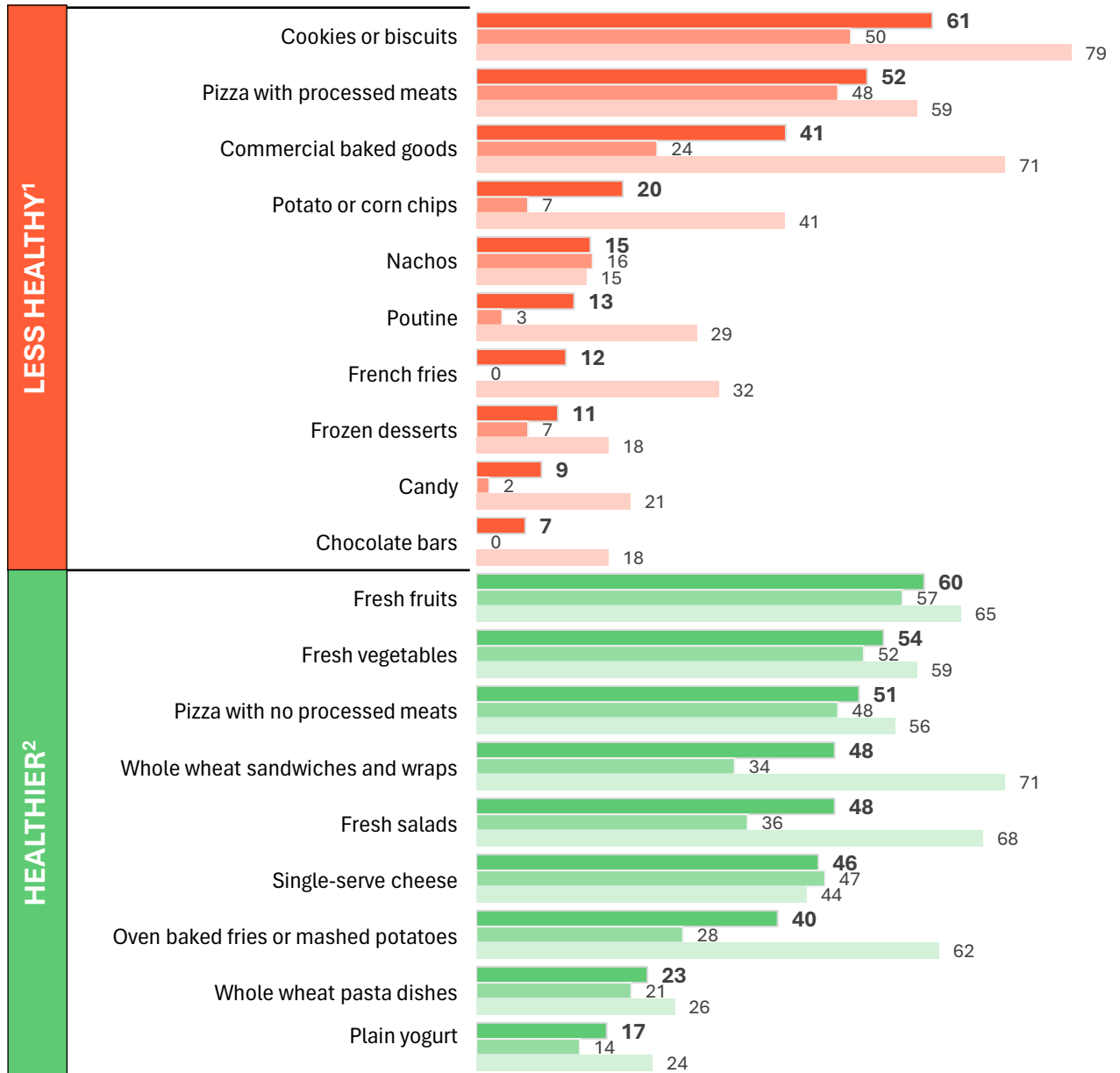
All schools combined ■ Elementary schools ■ Secondary schools ■

¹Beverages containing added or free sugars.

²Beverages containing little to no added or free sugars, sweeteners, sodium, saturated fats or caffeine.

Figure 3

Prevalence (%) of elementary and secondary schools that sold or served the food options listed below on a regular basis (≥once/week)



Legend

All schools combined ■ Elementary schools ■ Secondary schools ■

¹Foods that are ultra-processed, fried or that have high levels of sodium, sugar and/or saturated fat.

²Minimally processed or whole foods, with limited amounts of added sodium, sugar and/or saturated fat, and/or whole grain options.

Table 6

Average number of less healthy food and sugary drink options sold or served in schools on a regular basis (\geq once/week)

	N observation	Average # of options	SD	P-value
SUGARY DRINK OPTIONS¹				
All schools offering beverages	83	2.1	1.9	
Follow food and beverage standards				
No	25	2.7	2.6	0.233
Yes	58	1.8	1.5	
DK/R*	0	-	-	
Developed a school food policy				
No	39	2.7	2.3	0.006**
Yes	43	1.3	1.1	
DK/R*	1	-	-	
LESS HEALTHY FOOD OPTIONS²				
All schools offering foods	92	2.4	2.1	
Follow food and beverage standards				
No	31	2.6	2.4	0.407
Yes	60	2.3	1.9	
DK/R*	1	-	-	
Developed a school food policy				
No	44	2.5	2.5	0.884
Yes	47	2.3	1.7	
DK/R*	1	-	-	

¹Beverages containing added or free sugars.

²Foods that are ultra-processed, fried or that have high levels of sodium, sugar and/or saturated fat.

*School that answered “don’t know” or “refused to answer” to question asking if it followed food and beverage standards, excluded from group comparison.

**Statistically significant ($p < 0.05$).

Food and Beverage Marketing

More than half of schools (58%) reported having a policy that restricted or banned advertising of less healthy foods, beverages, and brands on school grounds. For this section of the survey, 'Less healthy drinks' were described as sugary drinks or drinks with artificial sweeteners (like diet or regular pop), fruit drinks, sports drinks or energy drinks, while less healthy foods were described as ultra-processed foods (like potato chips, chocolate bars, or ice cream), foods that are fried (e.g., fries that are deep fried), foods that have higher levels of salt, sugar and/or saturated fat. 'Less healthy brands' were described as companies that sell mostly less healthy foods and beverages, but that may also sell some products that are considered healthy (e.g., Coca Cola sells mostly sugary drinks, but also sells water).

Schools seldom reported advertising of less healthy foods, beverages, and brands on school grounds. Overall, 17% of schools reported the presence of such advertising in or outside their school during the last 12 months prior to filling out the survey (see Table 7 for more details). Only 11% of schools that had a policy restricting advertising of less healthy foods, beverages and brands reported the presence of such advertising in their school, compared to 28% for schools that did not have a policy ($p=0.034$).

However, schools still reported other instances of food and beverage marketing. Less healthy foods, beverages or brands were commonly used on special occasions. Almost half of schools (49%) reported using less healthy foods, beverages or brands to reward good student behaviours or academic performance, while 57% of schools reported using these less healthy products during fundraising activities. When comparing schools that had or did not have a policy restricting fundraising activities to healthy or non-food items, 30% of schools that had a policy reported using less healthy foods during fundraising activities, compared to 73% of schools that did not have a policy ($p<0.001$). Similar results were found for the use of less healthy foods as a reward for good student behaviour, which was reported by 32% of schools that had a policy related to this issue, compared to 63% of schools that did not have such a policy ($p=0.002$). Furthermore, several schools (23%) also reported using educational materials that were sponsored by corporate entities associated with food or beverage, such as a food or beverage company, or groups like Dairy Farmers of Canada.

Table 7

Prevalence of schools that reported the presence of advertising for less healthy foods, beverages or brands in their school, for different locations

	N	%	DK/R*
Reported presence of advertising on school grounds <i>(in at least 1 of the locations below)</i>	19	17.0	0
In the cafeteria	6	5.5	3
In the school outside the cafeteria	5	4.5	1
On vending machines	6	5.5	3
On recycling bins or garbage cans	5	4.5	0
Around athletic fields, on sports uniforms or gym equipment (e.g., banners, scoreboards, gym bag, etc.)	6	5.4	1

* Schools that answered “don’t know” or “refused to answer” to questions measuring the indicators above, excluded from calculated proportions (%).

School Food Programs

Almost all schools (93%) had at least one type of school food program, with breakfast programs being the most prevalent (see Table 8 for more information). Overall, many schools (63%) reported having at least one type of free and universal school food program (program that is free for all students, and available daily for the entire school year). Although most breakfast programs (81%) and snack programs (67%) were free and universal, this was only the case for 34% of lunch programs.

Specific characteristics of the breakfast, lunch and snack programs in place in schools sampled can be found in Table 9.

Among schools that reported having a school food program (n=104), 88% indicated that at least one of their programs followed nutrition guideline, and 78% measured the impact of at least one of their programs (e.g., participation rates, number of meals served, academic performance).

Table 8

Prevalence of schools that had various types of school food programs

	N	% of all schools (n=112)	DK/R *
Schools that had at least one school food program	104	93.3	0
Breakfast program	81	72.3	0
Lunch program	67	59.8	0
Snack program	70	62.5	0
Schools that had at least one program that was:			
Available to all students in all grades	99	88.4	0
Free for all participating students	95	84.8	0
Offered 5 days a week for the entire school year	88	78.6	0
Free and universal¹	70	62.5	0

¹Program that is free for all students from all grades, and available daily for the entire school year.

*Schools that answered “don’t know” or “refused to answer” to questions measuring the indicators above were excluded from the calculated proportions (%).

Table 9*Characteristics of reported breakfast, lunch and snack programs*

	N	%	DK/R*
Breakfast program (n=81)			
Available to all students	76	93.8	0
Free	76	93.8	0
Subsidized	0	0	0
Available 5 days per week for the entire school year	70	87.5	1
Free and universal ¹	66	81.5	0
Follows nutritional guideline	69	89.6	4
Impact of the program is measured	62	77.5	1
Lunch program (n=67)			
Available to all students	51	76.1	0
Free	28	41.8	0
Subsidized	4	6.0	0
Available 5 days per week for the entire school year	51	76.1	0
Free and universal ¹	23	34.3	0
Follows nutritional guideline	58	89.2	2
Impact of the program is measured	47	70.2	0
Snack program (n=70)			
Available to all students	64	91.4	0
Free	60	85.7	0
Subsidized	1	1.4	0
Available 5 days per week for the entire school year	57	81.4	0
Free and universal ¹	70	67.3	0
Follows nutritional guideline	55	82.1	3
Impact of the program is measured	45	65.2	1

¹Program that is free for all students from all grades, and available daily for the entire school year.

*Schools that answered “don’t know” or “refused to answer” to questions measuring the indicators above were excluded from the calculated proportions (%).

CONCLUSION

Main Findings

Results from this study highlight current strengths and gaps in Canadian school food environments. First, most schools sampled commonly reported having policies that promoted healthy eating environments. Most schools (89%) developed their own school food policy or mentioned that they followed nutrition guideline developed by their province or school board, and 63% of schools indicated that they followed standards that defined what foods and beverages were allowed to be sold in their school. Many schools (69%) were also using strategies to increase the availability and affordability of healthier foods and beverages. Despite the existence of these food policies, nearly all schools offered at least one sugary drink option, and only one-half of schools offered fruits, vegetables and whole grains on a regular basis. This evidence suggests that the food environments in Canadian schools might not support healthier food and beverage choices. This trend can also be observed in other countries, such as New Zealand²³ and Australia²⁴, where studies have shown that many foods and beverages sold in schools are of poor nutritional quality

This study found no statistically significant difference in the availability of healthier and less healthy foods and beverages between schools with and without food and beverage standards (specific nutritional criteria that outline what products can be offered). These findings suggest that current nutrition standards and nutrition criteria used in schools

may not translate to the provision of healthier foods and beverages that align with Canada's food guide²⁰. In Canada, most provinces and territories (with the exception of Nunavut and the Northwest Territories) have their own school food policy or guideline, with 7 provinces (British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario and Prince Edward Island) having mandatory nutrition standards²⁵. Nonetheless, evidence suggests that the implementation of these standards is not universal. One study assessing the readiness of schools to implement Ontario's School Food and Beverage Policy PPM 150 (Program and Policy Memorandum No. 150) found that many schools were lacking resources and support to effectively implement the provincial policy and nutrition standards²⁶. On the same note, a performance audit conducted in 2022 by the Office of the Auditor General of Nova Scotia revealed that most schools audited were not complying with Nova Scotia's provincial School Food and Nutrition policy, which includes specific nutrition standards for foods and beverages that can be sold in schools²⁷, and that the policy was still based on the 1992 version of Canada's food guide²⁸.

The findings further suggest that schools that developed their own written school food policy had slightly healthier food and beverage availability, regardless of whether or not they followed nutrition standards. This could suggest that schools that establish their

own school food policy might be more committed to offer healthier food and beverage options, compared to schools that simply follow a “one-size fit all” food policy developed by their province or school board. Since many groups (e.g., school boards, school administrators, teachers, support staff, parents, students) actively engage and contribute to each school’s specific food environment and culture²⁶, their involvement in the development of food policies has the potential to improve policy implementation and effectiveness^{29,30}. This is an important aspect of the internationally recognized Comprehensive school health (CSH)^{31,32} approach, also known as Health-Promoting Schools (HPS)^{33,34}, which recognizes the importance of schools’ social environments in the successful implementation of health policies and initiatives³¹. Highlighting the importance of strong social environments, one study conducted among²⁵ school in Ontario found that most schools did not consider healthy eating a high priority during the implementation of Policy PPM 150, and suggested that involving staff members in discussions surrounding healthy eating in the school could potentially increase uptake of the policy³². This also aligns with research suggesting that factors such as school leadership, school culture and a health-promoting school ethos can play major roles in the implementation of health policies and initiatives in schools³⁴⁻³⁶. Shared attitudes, values and norms regarding healthy eating have been known to significantly influence their narrative in supporting and complying to school

food policies³⁶. Establishing a healthy food culture within schools and a sense of ownership for school food policies may thus encourage healthier food environments.

Results also show that the marketing food environment in schools sampled have certain strengths and limitations. Overall, only a small proportion of schools (17%) reported having advertising of less healthy foods, beverages or brands in their school, but many schools used less healthy foods, beverages or brands during fundraising activities (57%) or to reward good student behaviour (49%). This proportion is somewhat lower than a previous study conducted in schools in Canada in 2016 which found that 26% of schools reported the presence of food advertisements on school property, and that 64% of schools used less healthy branded foods (e.g., chocolate, pizza, fast food) during fundraising activities.³⁷ In another study where researchers conducted direct observations of food promotion and advertising in Vancouver schools, almost all schools sampled had some sort of food advertising, and nearly 25% of products promoted were prohibited for sale by BC’s provincial nutrition guideline³⁸. Differences in findings may be a result of different methodological approaches. Our survey exclusively examined less healthy food, beverage and brand marketing instead of general food and beverage marketing. Second, participation bias from our small sample and desirability bias might have played a role in our lower rates of self-reported advertising compared to direct measure. Nonetheless,

our results suggest that schools that had policies that restricted advertising or that limited the use of less healthy foods, beverages and brands during fundraising activities or to reward students reported fewer of these activities compared to schools that did not have such policies. As children are particularly vulnerable to unhealthy food marketing practices^{39,40}, it is important for schools to implement comprehensive policies to limit children's exposure to all forms of unhealthy food marketing^{37,41,42}.

Our results showed that almost all schools (93%) surveyed had at least one type of school food program, while 63% of schools reported having at least one type of free and universal school food program (program that is free for all students, and available daily for the entire school year). However, these results should likely be interpreted with caution. It is important to note that participation rates for this study were low (10%), and that participation bias may play a role in these favourable outcomes, as schools that already had more school food initiatives and programs might have been more inclined to participate in this study. Furthermore, our evaluation did not allow us to assess the nutritional quality or the cultural appropriateness of foods and beverages offered through these programs. Also, some of these programs might have been available upon demand only (e.g., free snacks available for all students if they do not bring a snack from home), as this detail was not examined in the survey, and further research on this subject is required.

Moreover, while most schools (63%) reported having at least one type of free and universal school food program, this was only the case for 34% of school lunch programs. Results suggest that in most cases, school lunch programs were only free or subsidized for underprivileged students, but full price for all other students. It is increasingly acknowledged that a universal approach can introduce stigma and cause harm to the individuals receiving free or subsidized meals⁴³, while free and universal access to school meals could reduce harm and protect the health and well-being of students from all socioeconomic backgrounds⁴⁴. Further in-depth research on school food programs implemented in Canadian schools is warranted.

Strengths and Limitations

The data collected through this study can provide a better understanding of school food environments in Canada and will contribute to our national efforts to benchmark and evaluate school environments across Canada. While a very small sample size, the results provide a glimpse into the current situation in select schools in Canada, and may help to inform future research in this area.

Schools that participated in this study received an individualized report on their school food environment compared to results from all schools across Canada, which can help inform strategic planning, program implementation, and school food environment improvements. Results from this study can also help schools and school districts in Canada to create healthier food environments, which can improve the overall school climate for student learning and academic success.

It is also important to mention that this study has several limitations. First, participation rates were low, and only 10% of all solicited schools completed the survey. One of the reasons for this low participation might be the time required to complete the survey. Some school districts and administrators mentioned that schools are already highly solicited for research and can therefore be reluctant to participate in new studies. Future work should consider how to build partnerships and buy-in to improve response rates.

While most schools in our sample mentioned that their school had its own school food policy and had at least one school food program in place, participation bias may overestimate the prevalence in schools in Canada more broadly⁴⁵. Schools that were already aware of the importance of healthy school food environments and were already taking actions towards improving their own school food environment (in the form of policies, school food programs and initiatives) might have been more inclined to participate in this type of survey. Also, all data collected were self-reported, which may increase desirability bias.

During the elaboration phase of the study, we planned to examine relative differences in school food environments between schools located in areas of higher and lower deprivation using INSPQ's *Material and Social Deprivation Index*.²² Given our small sample size and low statistical power, relative differences in school food environments between schools located in dissemination areas of higher and lower deprivation were not compared.

Implications for Policy

In 2024, the Government of Canada announced a \$1 billion commitment to fund a National School Food Program⁴⁶, and launched its first National School Food Policy⁴⁷, which describes the government's long-term vision and objectives related to school food programming in Canada. The policy puts emphasis on universal and equitable access to programs and suggests that meals offered should be available and free at the point of participation for all students, with a focus on reducing stigmatization⁴⁷. The National School Food Program is expected to start at the beginning of the 2024-2025 school year, with agreements between the federal government and provincial and territorial counterparts who will implement the policies in their jurisdictions.

The results from this study may help inform future efforts to implement or update school food policies and nutrition standards. Food policies and strategies set a standard for, and demonstrate a commitment to, supporting healthier food environments⁴⁸. They can also help establish a common understanding of what constitutes healthy dietary patterns and the role that school staff, students and the broader community can play in creating an environment that supports healthy eating. While most schools told us they had their own written school food policy and/or a policy that restricted what foods and beverages that were allowed to be sold in their school, these

policies were not entirely effective in limiting exposure to foods and drinks that would be considered foods and drinks to limit in Canada's food guide.


This evidence shows that supporting schools to establish school food policies that are tailored to their unique context may support healthier school food environments. The forthcoming changes to school environments with the National School Food Policy and subsequent provincial and territorial updates may provide a unique opportunity to improve school food environments in Canada.

REFERENCES

1. World Cancer Research Fund, American Institute of Cancer Research. *Food, nutrition and physical activity, and the prevention of cancer: a global perspective*. 2007.
2. Qiao J, Lin X, Wu Y, et al. Global burden of non-communicable diseases attributable to dietary risks in 1990–2019. *Journal of Human Nutrition and Dietetics*. 2022;35(1):202-213.
3. Health Canada. *Sodium intake of Canadians in 2017*. 2018.
4. Olstad DL, Nejatnamini S, Victorino C, Kirkpatrick SI, Minaker LM, McLaren L. Trends in socioeconomic inequities in diet quality between 2004 and 2015 among a nationally representative sample of children in Canada. *The Journal of Nutrition*. 2021.
5. Atanasova P, Kusuma D, Pineda E, Frost G, Sassi F, Miraldo M. The impact of the consumer and neighbourhood food environment on dietary intake and obesity-related outcomes: A systematic review of causal impact studies. *Social Science & Medicine*. 2022;299:114879.
6. Swinburn B, Sacks G, Vandevijvere S, et al. INFORMAS (International Network for Food and Obesity/non-communicable diseases Research, Monitoring and Action Support): overview and key principles. *Obesity Reviews*. 2013;14(S1):1.
7. World Health Organization. *School policy framework: implementation of the WHO global strategy on diet, physical activity and health*. World Health Organization; 2008.
8. Gugglberger L. A brief overview of a wide framework—Health promoting schools: a curated collection. *Health Promotion International*. 2021;36(2):297-302.
9. Birch L, Savage JS, Ventura A. Influences on the development of children's eating behaviours: from infancy to adolescence. *Can J Diet Pract Res*. 2007;68(1):s1-s56.
10. Jääskeläinen P, Magnussen CG, Pahkala K, et al. Childhood nutrition in predicting metabolic syndrome in adults: the cardiovascular risk in young finns study. *Diabetes Care*. 2012;35(9):1937-1943.
11. Kaikkonen JE, Mikkilä V, Magnussen CG, Juonala M, Viikari JSA, Raitakari OT. Does childhood nutrition influence adult cardiovascular disease risk?—Insights from the Young Finns Study. *Annals of Medicine*. 2013;45(2):120-128.
12. Assembly UG. Political declaration of the high-level meeting of the general assembly on the prevention and control of non-communicable diseases. *New York: United Nations*. 2011.
13. World Health Organization. *Report of the commission on ending childhood obesity*. 2016. 978 92 4 151006 6.
14. World Health Organization. *Global strategy on diet, physical activity and health*. Geneva2004.

15. World Health Organization. Global action plan for the prevention and control of noncommunicable diseases 2013-2020. 2013.
16. World Health Organization. Set of recommendations on the marketing of foods and non-alcoholic beverages to children. 2010.
17. World Health Organization. *WHO acceleration plan to stop obesity*. Geneva 2023.
18. L'Abbé M, Schermel A, Minaker L, et al. Monitoring foods and beverages provided and sold in public sector settings. *Obesity Reviews*. 2013;14:96-107.
19. Statistics Canada. Population centre and rural area classification 2016. 2017; <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>.
20. Government of Canada. Canada's food guide. 2019; <https://food-guide.canada.ca/en/>. Accessed 2024-06-03.
21. SAS Institute Inc. SAS OnDemand for academics. 2024; https://www.sas.com/en_ca/software/on-demand-for-academics.html.
22. Institut national de santé publique du Québec (INSPQ). Index of material and social deprivation compiled by the Bureau d'information et d'études en santé des populations (BIESP) from 1991, 1996, 2001, 2006, 2011, 2016 and 2021 Canadian Census data. <https://www.inspq.qc.ca/en/deprivation/material-and-social-deprivation-index>. Accessed 2024-04-16.
23. D'Souza E, Vandevijvere S, Swinburn B. The healthiness of New Zealand school food environments: a national survey. *Australian and New Zealand Journal of Public Health*. 2022;46(3):325-331.
24. Haynes A, Morley B, Dixon H, et al. Secondary school canteens in Australia: analysis of canteen menus from a repeated cross-sectional national survey. *Public Health Nutrition*. 2021;24(4):696-705.
25. INFORMAS Canada. Food-EPI Canada 2023 - Evidence documents. 2023; <https://informascanada.com/methods/food-epi-canada-2023>.
26. Chaleunsouk L, Kutsyuruba B. Ontario schools' readiness for school food and beverage policy implementation. *Journal of Educational Policies and Current Practices*. 2014;1(1):13-29.
27. Nova Scotia Department of Education, Nova Scotia Department of Health Promotion and Protection. Food and beverage standards for Nova Scotia public schools. In:2006.
28. Office of the Auditor General of Nova Scotia. *Healthy eating in schools: Department of Education and Early Childhood Development and Nova Scotia Health - performance audit*. 2022.
29. Critch J. School nutrition: Support for providing healthy food and beverage choices in schools. *Paediatrics & Child Health*. 2020;25(1):33-38.

30. Ronto R, Rathi N, Worsley A, Sanders T, Lonsdale C, Wolfenden L. Enablers and barriers to implementation of and compliance with school-based healthy food and beverage policies: a systematic literature review and meta-synthesis. *Public Health Nutr.* 2020;23(15):2840-2855.
31. Pan-Canadian Joint Consortium for School Health. Comprehensive School Health. n.d.; <https://www.jcsh-cces.ca/en/concepts/comprehensive-school-health/>. Accessed 2024-09-26.
32. Orava T, Manske S, Hanning R. Support for healthy eating at schools according to the comprehensive school health framework: evaluation during the early years of the Ontario School Food and Beverage Policy implementation. *Health Promot Chronic Dis Prev Can.* 2017;37(9):303-312.
33. Senior E. Becoming a health promoting school: key components of planning. *Glob Health Promot.* 2012;19(1):23-31.
34. McIsaac JD, Read K, Veugelers PJ, Kirk SFL. Culture matters: a case of school health promotion in Canada. *Health Promot Int.* 2017;32(2):207-217.
35. Penney TL, McIsaac JD, Storey K, et al. A translational approach to characterization and measurement of health-promoting school ethos. *Health Promot Int.* 2018;33(6):980-989.
36. McIsaac JD, Spencer R, Stewart M, Penney T, Brushett S, Kirk SFL. Understanding system-level intervention points to support school food and nutrition policy implementation in Nova Scotia, Canada. *Int J Environ Res Public Health.* 2019;16(5).
37. Potvin Kent M, Velazquez CE, Pauzé E, Cheng-Boivin O, Berfeld N. Food and beverage marketing in primary and secondary schools in Canada. *BMC Public Health.* 2019;19(1):114.
38. Velazquez CE, Black JL, Ahmadi N. Food and beverage promotions in Vancouver schools: A study of the prevalence and characteristics of in-school advertising, messaging, and signage. *Prev Med Rep.* 2015;2:757-764.
39. Fedewa AL, Davis MC. How food as a reward is detrimental to children's health, learning, and behavior. *J Sch Health.* 2015;85(9):648-658.
40. Smith R, Kelly B, Yeatman H, Boyland E. Food marketing influences children's attitudes, preferences and consumption: a systematic critical review. *Nutrients.* 2019;11(4).
41. Turner L CJ, Terry-McElrath Y. *School fundraisers: positive changes in foods sold, but room for improvement remains.* Durham, NC: Healthy Eating Research;2016.
42. World Health Organization. *Policies to protect children from the harmful impact of food marketing: WHO guideline.* Geneva2023.
43. Gagliano KM, Yassa MO, Winsler A. Stop the shame and the hunger: the need for school meal program reform. *Children and Youth Services Review.* 2023;155:107245.

- 
44. Zhong A, Yin L, O'Sullivan B, Ruetz AT. Historical lessons for Canada's emerging national school food policy: an opportunity to improve child health. *Health Promot Chronic Dis Prev Can.* 2023;43(9):421-425.
45. Cheung KL, ten Klooster PM, Smit C, de Vries H, Pieterse ME. The impact of non-response bias due to sampling in public health studies: A comparison of voluntary versus mandatory recruitment in a Dutch national survey on adolescent health. *BMC Public Health.* 2017;17(1):276.
46. Prime Minister of Canada. A National School Food Program to set kids up for success. 2024; <https://www.pm.gc.ca/en/news/news-releases/2024/04/01/national-school-food-program-set-kids-success>. Accessed 2024-06-02.
47. Employment and Social Development Canada. National School Food Policy. 2024.
48. World Health Organization. *Implementing school food and nutrition policies: a review of contextual factors.* Geneva 2021.

INFORMAS (International Network for Food and Obesity / Non-communicable Diseases Research, Monitoring and Action Support) Canada is a network of food environment researchers conducting research to understand current Canadian food environments and searching for innovative ways to help create healthy and supportive environments.

This research was informed by the research and monitoring framework proposed by INFORMAS to measure food environments across a variety of areas, including school food environments.



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