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Food procurement in English language Canadian public schools: Opportunities and challenges

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Abstract

This paper examines the changes to procurement for school food environments in Canada as a response to changes to nutrition regulations at the provincial level. Sixteen interviews with seventeen people working in school food environments in seven provinces and one territory revealed how changes to the nutrition requirements of foods and beverages available on school property presented opportunities to not only improve the nutrient content of the items made available in school food environments, but also include local producers and/or school gardens in procuring for the school food environment. At the same time, some schools struggle to procure nutritionally compliant foods due to increased costs associated with transporting produce to rural, remote, or northern communities as well as logistical difficulties like spoilage. Although the nutrition regulations have facilitated improvements to food environments in some schools, others require more support to improve the overall nutritional quality of the foods and beverages available to students at school.

Keywords: procurement; school food environments; nutrition regulation; Canada

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Introduction

Each of the ten provinces and the Yukon Territory in Canada has recently developed or revised regulations (either policies or guidelines) that outline which foods and beverages can be made available to students while on school property. Formalizing the removal of, or restricting, the frequency with which less healthful foods and beverages are permitted in internal school food environments created a market for re-formulated products from large-scale food producers and processors and created an opportunity for those who procure for school food environments to purchase from less conventional producers.

The objective of this research was to identify the opportunities and challenges to procuring food for internal school food environments as a consequence of the nutrition regulations. The changes made in school cafeterias and other on-property school food and beverage vending across Canada as a result of the subnational jurisdictional nutrition regulations led to changes in how products for these spaces were procured. The research presented in this paper used semi-structured interviews with those involved with the development and the implementation of the school nutrition regulations to identify the objectives of the regulatory documents, as well as the opportunities and challenges that arose in terms of procuring for the internal school food environment under the new or revised regulations.

Procurement is often used in the literature without being operationalized (Morgan & Sonnino, 2008; Poppendieck, 2010; Winson, MacRae, & Ostry, 2012). Raine et al. (2018) define procurement specifically within the context of healthy food for public facilities as "the process of procuring, distributing, selling, and/or serving food to facilitate healthier dietary behaviours" (p.7). Adapting their definition for this paper, procurement refers only to the process of obtaining foods and beverages for the internal school food environment, as this meaning is most relevant to what the school nutrition regulations address.

The internal school food environment refers to those spaces on school property where food and beverages are purchased and/or consumed (Vine & Elliot, 2014). These spaces include but are not limited to cafeterias, canteens, vending machines, tuck shops, gymnasia, classrooms, and outdoor dining spaces on school property (e.g., quads). Vine and Elliott (2014) distinguish internal school food environments from external school food environments, the latter being those off of school property that are still accessible to students during the school day. Many studies have found students do access fast food outlets and convenience stores during the school day because they are close enough to schools to be accessed during breaks and lunch hours (Austin, Melly, Sanchez, Patel, Buka, & Gortmaker, 2005; Davis & Carpenter, 2009; Vine & Elliott, 2014; Winson, 2008). Although the external school food environment is not a significant factor in procurement for schools per se, recognizing an immediate challenge to implementing school nutrition regulations when research shows these unregulated spaces are used is important for context.

The current provincial and territorial nutrition regulations were implemented in an effort to align the messages about nutrition and health taught in the curriculum and the foods and

beverages that are sold on school property. Research has shown that many schools are obesogenic environments because of the proliferation of shelf-stable, nutrient-poor foods supplied by food service providers sold to students on school property (Winson, 2008; Winson et al., 2012). It is these calorie-dense, nutrient-poor products, or pseudo foods (Winson, 2013), that the new and revised school nutrition regulations from the various subnational jurisdictional governments across Canada are attempting to remove, or at least reduce, in school food environments.

These regulations do not, however, apply to food brought from home, purchased in spaces off of school property during the school day, and food given away (Alberta Government, 2012; BC Ministry of Health & BC Ministry of Education, 2013; Government of Manitoba, 2014; New Brunswick Department of Education, 2008a; Government of Newfoundland and Labrador, 2008; Government of Nova Scotia, 2006; Ontario Ministry of Education, 2010; Prince Edward Island Eastern School District, 2011; Quebec Ministère de l'Éducation, du Loisir, et du Sport (MELS), 2007; Saskatchewan Ministry of Education, 2009; Yukon Education, 2008). There have been examinations of the impact of school nutrition regulations in Canada; however, these studies tend to focus on one province or school district/division/board (Winson, 2008; Mullally et al., 2010; Taylor et al., 2011; Fung, McIsaac, Kuhle, Kirk, & Veugelers, 2013; McIsaac et al., 2015; Orava, Manske, & Hanning, 2016). This research seeks to provide a national perspective to procuring the desired products for these environments, highlighting the importance of institutional food purchasing in the larger agri-food sector while recognizing the need for subnational jurisdictional governments to provide adequate support to those implementing such regulations

School food and procurement of the products for schools in the United States (Levine, 2008; Poppendieck, 2010), United Kingdom (Nelson, Lowes, & Hwang, 2007; Vernon, 2005), and Italy (Morgan & Sonnino, 2008; Simonetti, 2012), among others (Holthe, Larsen, & Samdal, 2010; Perez-Rodrigo & Aranceta, 2001; van Ansem, Schrijvers, Rodenburg, Schuit, & van de Mheen, 2013) have been well researched. This is largely due to the research centering on the public school lunch programs offered to students. Canada, however, is an emerging area for research in this field, in part because lunch programs like those offered in other countries are non-existent or in a nascent stage. This is the case in Alberta, which expanded its school nutrition program pilot to all schools in the province for the 2017/18 school year (Alberta Government, 2017).

A key point of consideration from this body of literature is the politics of food procurement for a public program, like school lunches. The public plate–food procured for state-run institutions such as prisons, hospitals, and schools–are sites to further political agendas (Morgan & Sonnino, 2008). The scale at which these institutions purchase food means products compliant to regulations can have a significant impact on food production and distribution as producers and processors change to comply with regulations. (Morgan & Sonnino, 2008). Public institutions also lend themselves well to integrating support from multiple sectors, bringing together private, public, academic, and nongovernmental organizations to support health and

wellness initiatives (Carlsson & Williams, 2008). Initiatives for healthy and sustainable food procurement currently taking place do so on a smaller scale and would benefit from greater political and financial support (Carlsson & Williams, 2008). Where countries have a state-funded school lunch program, such as the United Kingdom, United States, and elsewhere, schools and school meals are sites for change as per the agenda of the government of the time (Morgan & Sonnino, 2008; Nestle, 2007; Pérez-Rodrigo & Aranceta, 2001; Poppendieck, 2010; Simonetti, 2012; Vernon, 2005). In Canada, without such a program, the influence of nutrition regulations is diminished.

Pseudo foods (Winson, 2013) are consumed by people of all ages across North America; this is not a problem exclusive to schools. The popularity of these products can be explained, in part, by challenges accessing fresh foods. Rural areas may not have access to the same quality and variety of fresh fruits and vegetables in grocery stores and supermarkets as their urban counterparts (Pouliot & Hamelin, 2009), although other research suggests that residents in rural Canada have ample access to fresh produce (McPhail, Chapman, & Beagan, 2013). Changes to global food production and distribution in the last fifty years have increased corporate concentration in the sector, pushing out local producers and/or alternative approaches to food procurement (McMichael, 2009). There are areas across Canada that struggle to produce their own fruits and vegetables, making importing a necessity, but it comes with logistical challenges. Research suggests these changes have contributed to high food costs and distribution issues in northern parts of the country (Rudolph & McLachlan, 2013).

Distribution aside, school nutrition regulations are attempting to remove pseudo foods from schools. The efficacy of the school nutrition regulations in Prince Edward Island (Mullally et al., 2010; Taylor et al., 2011), Ontario (Orava et al., 2016) and Nova Scotia (Fung et al., 2013; McIsaac et al., 2015) has been researched, although again, these studies do not address procurement. Instead, these investigations had a public health focus and attempted to learn what effects the regulatory levers were having on student health and success. Of these evaluative studies, only Taylor et al. (2011) discusses difficulty procuring compliant foods as a factor reducing the effectiveness of the regulatory lever. The results of this research also found procuring compliant foods as a challenge to effectively implementing school nutrition policy.

Public school meals have also presented opportunities to engage with, and support, alternative food networks in the United States and elsewhere. Morgan and Sonnino (2008) dedicated a book to looking at schools or school districts with programs that aim to participate in an environmentally sustainable food network in London, Rome, and New York City. Returning to Poppendieck's (2010) work, she highlighted the local heroes who, through hard work and innovation, have partnered with local producers to source for the school, begin school gardens, or make healthful school food more appealing in general. Farm-to-school programs are, perhaps, the most popular of the alternative food networks for schools since they are not only a way of obtaining fresher produce for students and providing a buyer for often smaller scale suppliers who do not always have access to large contracts like this, but also teachable moments for

students who otherwise may not be aware of the link between the food they eat and the farm it comes from (Allen & Guthman, 2006; Poppendieck, 2010).

While Morgan and Sonnino (2008) and Poppendieck (2010) laud the efforts of those who are improving the foods in their local schools, these alternatives are not without their challenges. The former concludes their examination of these sustainable school initiatives with an optimistic overview of what needs to be done in order to turn independent initiatives into regular practice (Morgan & Sonnino, 2008). Poppendieck (2010) does address the difficulties of having parents, teachers, school administrators, students, and community members organize and maintain these programs, and meet their typical responsibilities as well. It is easy to become burnt out trying to build and maintain a program while the conventional one receives systematic support (Poppendieck, 2010). Many alternative food networks struggle with finding adequate, sustained, financial support for enough time to become self-sustaining, in addition to other policy and infrastructure challenges (Carlsson & Williams, 2008; Mount, et al., 2013). Additionally, these programs tend to occur in more affluent areas where people have the time and resources to dedicate to an alternative lunch program, frequently leaving those most in need without the benefits of an alternative program (Poppendieck, 2010).

There is further suggestion that these well-intentioned programs support the increasing neoliberalization of schooling by relying on the strengths and resources of small groups of individuals, which demonstrates that it is possible to run these programs without institutionalized support (Allen & Guthman, 2006; Mount et al., 2013). The efforts made by community organizers to address the concerns are admirable; however, for a program providing school food the alternative needs to become the conventional to appropriately address the concerns related to the program. The only way to ensure that the benefits of such a program are available to everyone is to have government infrastructure to maintain it. Requiring a local group to run such programs means that only those who have the resources will be able to have one, and not every community has those resources.

Learning about the opportunities and challenges of procuring compliant foods and beverages in other countries provides a larger context for studying food procurement in English-language Canadian public schools. Discovering the opportunities and challenges for schools in each subnational jurisdiction of Canada required speaking with those involved in the development and/or implementation of these documents. The following section outlines the data collection process and analytical method for this study.

Methods

Data collection

Each of the ten provinces and the Yukon Territory had some documentation pertaining to the regulation of the nutrition of foods and beverages that can be made available by the schools

themselves. Yukon Territory, Ontario, New Brunswick, Nova Scotia, Prince Edward Island (PEI), and British Columbia have policies. Alberta, Saskatchewan, Manitoba, Quebec, and Newfoundland and Labrador have guidelines, although the amalgamation of the English-language public school boards in Newfoundland and Labrador has meant all schools in the province have adopted the guidelines as policy. This information is summarized in Appendix A. The Northwest Territories and Nunavut were excluded from this research because the territorial governments have not issued a policy or guideline pertaining to school nutrition.

To learn about the development, implementation, and impact of the school nutrition regulations, those responsible for such tasks in all ten provinces and Yukon Territory were invited to participate in a semi-structured interview. Permission to conduct the interviews was obtained from the Research Ethics Board of the University of Guelph. Recruitment was guided initially by contacting the department within the subnational jurisdictional government from which the document was obtained. In some instances, the author or authors of the documents were named in the document itself or on the website the document came from, providing the researcher with a contact to begin investigating potential interview participants.

Where authors were not given, the department was contacted by telephone or email, depending on the contact information given in the document itself or the document website, asking to be directed to the person with knowledge of the development and/or implementation of school nutrition regulations for that subnational jurisdiction. Some snowball sampling was also used when participants suggested people they were aware of who may be able to contribute to this research. Participants were not compensated for their participation. Ultimately, seventeen people agreed to participate in sixteen interviews: two from Yukon Territory, one from British Columbia, two from Alberta, two from Saskatchewan, three from Manitoba, three from Ontario, two from New Brunswick, and two from Newfoundland that participated in the interview together. Participants were sought from Quebec, Nova Scotia, and Prince Edward Island, however the researcher was unable to obtain participants from these provinces.

Two interview schedules were developed: one with questions about the development process for those who were primarily involved with the development of the regulations, and another one designed for those who are primarily involved in the implementation of the regulations in schools (Galletta, 2013). The primary difference between the two was the inclusion of questions specific to the position held by the participant.

The interview schedules included questions about changes to the internal school food environment and procurement that occurred as a result of the regulations. Examples include: “Have there been noticeable results since the regulations were implemented?” and “What changes, if any, have the regulations had on how food and beverages are sourced for schools?”. Although the participants were asked directly about changes to the internal school food environment as a result of the new or revised nutrition regulations, because the interviews were semi-structured, interview participants were able to discuss changes to the internal school food environment at any point during the interview.

Telephone interviews were conducted between April and September of 2015 and each one lasted between twenty and ninety minutes. The interviews were recorded and the recordings were deleted after being transcribed by the researcher.

Analytical strategy

With the assistance of NVivo 10 for Mac, a manifest textual content analysis of interview transcripts was conducted (Denscombe, 2010). The interview transcripts were initially open-coded, where each line was classified according to the idea contained within it, referred to as a node. Following the initial coding process, the nodes were reviewed and refined for consistency and validity by ensuring each unit of data categorized to the node represented the same idea (Charmaz, 2007). Any data that was inconsistent with the node it was initially coded to was uncoded and, where appropriate, recoded. Where a unit of data contained more than one idea, it was coded to each appropriate node.

Results

Those involved in the development of the regulations were asked about the rationale for the creation of the nutrition documents to provide context for the impacts on the internal school food environments they have been applied to. The semi-structured nature of the interviews meant that interview participants were able to discuss ideas or experiences without necessarily being prompted.

The spaces for food and beverage sales in schools vary tremendously across the country, which partially explains differences in the content of the regulations, recognizing that there are different facilities in different schools (Alberta Government, 2012; BC Ministry of Health, & BC Ministry of Education, 2013; Government of Manitoba, 2014; Government of Newfoundland and Labrador, 2008; Ministère de l'Éducation, du Loisir, et du Sport (MELS), 2007; New Brunswick Department of Education, 2008; Nova Scotia, 2006a; Nova Scotia 2006b; Ontario Ministry of Education, 2010; Prince Edward Island Eastern School District, 2011; Saskatchewan Ministry of Education, 2009; Yukon Territory, 2008). Schools are not required to sell foods or beverages, so any sales that take place do so at the discretion of the school administration. In many schools at the elementary level, food and beverage sales are restricted to one or two times a week, where the school partners with a restaurant to bring in outside food and beverages. Schools above the elementary level often have vending machines and/or tuck shops with a small selection of food and beverage items, and some have full service cafeterias with a range of hot and cold food items for students to purchase (British Columbia School Board Official, New Brunswick School Board Official, Newfoundland and Labrador two Provincial Officials, Ontario School Board Official).

Like the spaces themselves, the models for funding vary as well. Some schools operate dining services through a catering company, like Sysco or Aramark. In these instances the food services operate for profit, and often the school receives a portion of this (New Brunswick Provincial Official; New Brunswick School Board Official; Ontario School Board Official; Saskatchewan Dietitian). Other schools offer cafeteria services that provide foods and beverages at cost, and in some cases, using the sale of less nutritious foods and beverages to subsidize the cost of the more nutritious items (British Columbia School Board Official; Manitoba Dietitian; Saskatchewan Cafeteria Manager/Educator). These services are different from the school nutrition programs that are run by nongovernmental organizations within schools. These programs provide breakfast before school and snacks and/or lunch to students at no cost to them. These programs are typically excluded from the regulations because the foods and beverages are given away, though it is worth noting that because the objective of these programs is to provide nutrition to students who might not otherwise be getting enough at home or during the school day, they aim to provide nutritionally balanced meals and snacks (Manitoba NGO Director; Ontario NGO Director; Saskatchewan Dietitian).

Table 1 presents a summary of the topics discussed with interview participants that pertain to the opportunities and challenges that arose out of implementing new or revised school nutrition regulations with the intent of increasing access to healthful food. The squares filled in black indicate at least one participant from that subnational jurisdiction made reference to the category listed in the far left column.

As seen in Table 1, one of the few consistencies between subnational jurisdictions was that at least one participant from each subnational jurisdiction mentioned increasing access to healthful foods as being an objective of implementing the nutrition regulations (Alberta Provincial Official; Manitoba Dietitian; Manitoba NGO Coordinator; New Brunswick School District Official; New Brunswick Provincial Official; Ontario School Board Official; Saskatchewan Dietitian; Yukon Territorial Official). Some example statements from participants include:

> "The mission…at the outset, back in 2006…was to increase access to nutritious foods in school" (Manitoba School District Official)

> "I also work with our dietitian from the hospital who helps our centralized kitchen and our individual schools ensure that they are providing nutritious breakfast, nutritious lunches and that we meet the standards that the province put out for what can be sold in schools" (British Columbia School District Official).

> "There was a push from an outside group to…make it easier for kids to make healthy choices when they went to school" (Newfoundland and Labrador 2 Provincial Officials)

Acknowledging increasing access to healthful foods as a desired outcome of the school nutrition regulatory documents provides necessary context for understanding the opportunities and challenges experienced by schools in procuring compliant products. The new, or revised, regulations require schools to remove or restrict the frequency with which these products are sold to students on school property (Alberta Government, 2012; BC Ministry of Health, & BC Ministry of Education, 2013; Government of Manitoba, 2014; Government of Newfoundland and Labrador, 2008; Ministère de l'Éducation, du Loisir, et du Sport (MELS), 2007; New Brunswick Department of Education, 2008; Nova Scotia, 2006a; Nova Scotia 2006b; Ontario Ministry of Education, 2010; Prince Edward Island Eastern School District, 2011; Saskatchewan Ministry of Education, 2009; Yukon Territory, 2008).

The interviews with participants delved into many areas of the school food environment that were impacted in some way by the nutrition regulations and how the effects contributed or hindered student access to healthful foods.

Table 1: Summary of Interview Nodes Pertaining to Procurement

	AB	**BC**	**MB**	**NB**	**NL**	**ON**	**SK**	**YT**
Access to Healthful Foods	✓	✓	✓	✓	✓	✓	✓	✓
Alternative Food Networks			✓	✓		✓	✓	
Challenges to Success*	✓	✓	✓	✓	✓	✓	✓	✓
External School Food Environment (SFE)	✓	✓		✓	✓	✓	✓	
Impact*	✓	✓	✓	✓	✓	✓	✓	
Nutrition Criteria	✓	✓	✓	✓	✓	✓	✓	
Problems to be Addressed in SFE	✓	✓	✓	✓	✓	✓	✓	✓

*Indicates the node was analyzed further

Table 2 presents the impacts the new or revised school nutrition regulations had on procurement for the internal school food environments, as identified by the interview participants. When describing the impacts of the new or revised school nutrition regulations, some participants explained how they were opportunities to make positive changes to the school environment, while other participants identified negative changes to their internal school food environments as a consequence of the regulations, including challenges to becoming compliant. "Changes in Food and Beverage Options" was noted as a theme by participants in each subnational jurisdiction with interview participation, with the exception of Yukon Territory.

This result shows those who work in schools have observed changes to what is available to students during the school day since the school nutrition regulations have been implemented. This includes increases in healthful food and beverage options, "there's a been a huge increase in buying fresh produce" (Manitoba NGO Coordinator); decreasing the number of times less healthful food and beverages are offered, "let's say a cafeteria was offering hamburgers five days

a week, and then they might have reduced it to twice a week, and maybe with time then, reducing it even more to only being once a week" (New Brunswick Provincial Official); and removing certain food and beverage options, "we don't have chocolate bars or chips in our vending machines, they're gone. We don't have any sugared pop. We don't have vending machines at the elementary level" (Alberta School District Official).

Table 2: The Types of Impacts School Nutrition Regulations Have Had on the Procuring Food

	AB	BC	MB	NB	NL	ON	SK	YT
Change in Food Service Provision			✓	✓	✓	✓	✓	
Change in Food/Beverage Options	✓	✓	✓	✓	✓	✓	✓	
Change in External SFE Use						✓		
Positive Impact			✓	✓		✓	✓	

The changes to the food and beverage options made available to students at school and how they pertain to procurement will be discussed in greater detail in the next section. It has not been easy for all schools to make the necessary changes required by the new or revised school nutrition regulations. Many interview participants identified challenges they experienced, or are still experiencing, and some of them pertain to procuring the required food. Table 3 presents the challenges to successful implementation of the school nutrition regulations that pertain to procurement as indicated by interview participants.

Table 3: Challenges to Successful Implementation of School Nutrition Regulations Pertaining to Procurement

	AB	BC	MB	NB	NL	ON	SK	YT
Affordability		✓						
Appeal of Compliant Foods				✓	✓	✓	✓	
Availability of Compliant Foods	✓	✓	✓	✓		✓		
Costs		✓				✓	✓	
Food service providers	✓	✓		✓	✓	✓	✓	
Insufficient resources		✓	✓	✓	✓		✓	
Misconceptions				✓	✓		✓	
Rural/remote/north		✓	✓		✓	✓	✓	✓
Size of Jurisdiction	✓					✓	✓	

Most notably for procurement, "Food Service Providers" and "Availability of Compliant Foods" were nodes identified by interview participants as challenges to successfully making the necessary changes. Food service providers, including producers, manufacturers, and caterers who supply for school food services, are key to successfully implementing the changes to the food and beverages available to students at school.

The success of an internal school food environment's ability to continue to sell foods and beverages is largely dependent on the ability and willingness of food service providers to comply with the changes in nutrition regulations. As Table 3 shows, participants in Alberta, British Columbia, New Brunswick, Newfoundland and Labrador, Ontario, and Saskatchewan experienced reluctance, resistance, and inability to comply with the regulations from food service providers. "Availability of Compliant Foods" is similar to, but distinct from, the challenges presented by food service providers. This refers generally to difficulty obtaining compliant foods, with or without the assistance of an external food service provider. Finding compliant foods and beverages was a challenge experienced by participants in Alberta, British Columbia, Manitoba, New Brunswick, and Ontario.

Related to "Availability of Compliant Foods" is the node "Rural/Remote/North". Participants making references coded to this node indicated that schools located in areas that are rural, including those in the northern areas of their subnational jurisdiction, or that are remote, struggle to acquire foods and beverages that are compliant to the nutrition regulations set by their respective subnational jurisdiction. Schools in urban, or otherwise accessible, areas have also struggled due to insufficient resources. The participant from British Columbia specifically mentioned that their cafeteria could not afford some of the compliant products; however participants from Manitoba, New Brunswick, Newfoundland and Labrador, Saskatchewan, as well as British Columbia made reference to lacking the resources necessary to provide compliant foods.

Clearly, there are many challenges to successful nutrition regulation implementation identified by the interview participants. In the next section of this paper, the impacts highlighted in Table 2 are unpacked, as participants provide details of both the opportunities and challenges to successful regulation compliance relative to the new or revised school nutrition regulations and internal school food environments across the country.

Impact: Opportunity to improve nutrition within conventional food networks

The development and implementation of the school nutrition regulations in each of the ten provinces and the Yukon Territory enacted in the last ten years provided an opportunity for regulators and those who work in schools to consider what they would like to accomplish with regards to food and nutrition. Interview participants from each of the subnational jurisdictions that participated in interviews shared "increasing access to healthy food" as being the main objective of these regulations (Table 1). Because of this, it is logical that the changes in nutritional requirements in the provincial and territorial school food regulations required many

school administrators to re-evaluate the way the foods and beverages are procured for schools. The responses from the participants have suggested the items present in the internal school food environment have changed since the introduction or the revision of the school nutrition regulations.

According to the content analysis of the interview transcripts, "change in food and beverage options" was a theme found in interviews in each subnational jurisdiction. Given the emphasis placed on nutrition and health in the regulatory documents this is not necessarily surprising. One participant noted:

> I think the food retailers, like the pizza companies, the you know, the sub shops, … they all found other or created versions of their products that would be compliant so I think the school's food connection through that industry was important enough that they were prepared to do that [comply with the nutrient requirements] (Ontario School Board Official).

There may have been some assumption that the addition, or revision, of regulations would result in a need to change suppliers or caterers. Instead, the purchasing power of school boards/districts/divisions, combined with the implementation or revision of school nutrition regulations, resulted in changes to the products offered by food processors and caterers rather than school boards/districts/divisions needing to change suppliers. One participant explicitly mentioned the impetus for the nutrition regulations was to keep fast food out of schools (New Brunswick, Provincial Official), however many of the food companies responsible for fast food type items found in schools prior to the implementation or revision of the school nutrition regulations were more than willing to change their recipes to comply with them. Food processors and caterers are finding ways to keep favourite items like French fries and pizza on the menu by changing the cooking method or adding ingredients to meals to make them compliant with nutrition criteria (New Brunswick School Board Official; Newfoundland and Labrador two Provincial Officials; Ontario School Board Official). Food service providers have been more than willing to find alternatives to pseudo foods or to change their recipes so that the products comply with the nutrition regulations.

Having food service providers alter their recipes and change their offerings may not be the desired outcome of the school nutrition regulations, but it does mean that the products that students are buying from the internal school food environment are less unhealthful than previous versions. There are foods and beverages from these food service providers that are not compliant with the newly implemented or revised school nutrition regulations and are no longer permissible for sale on school property; however, by becoming compliant with the nutrition regulations, many offerings of processors and caterers became healthier.

Impact: Opportunity to engage with alternative food networks

Though school boards/districts/divisions were able to continue working with their existing food service provider, for others the nutrition regulations required changing suppliers. Within this group, the need to change suppliers was an opportunity to engage with alternative food networks by incorporating local products, producers, and processors in the school food procurement process.

There were at least two examples given of schools using the opportunity to embrace local suppliers. A school board official noted: "I do know that there are some schools that are looking towards [using] local foods and vendors, like local suppliers" (Ontario School Board Official). An official in the provincial government of New Brunswick observed schools across districts combining their purchasing power to create the Réseau des Cafétérias to purchase from local suppliers at a cost that keeps food at a price point affordable to students (New Brunswick, Provincial Official).

A participant from an anglophone district in New Brunswick had further insight into the creation of the cafeteria network by the francophone district. In addition to including more local venders, this district opted to take control of its own school food provisioning. The "francophone district, the district that shares our [anglophone School District] boundary, had moved away from Chartwells and they set up their own company, a non-profit and there was starting to be great buzz about what they were doing" (New Brunswick School District Official). In Saskatchewan, an individual school was able to embark on a similar venture as the francophone school district in New Brunswick.

In conjunction with the hiring of a commercial cooking instructor for a course that supplies the school cafeteria with foods and beverages, more foods were now being made from scratch rather than from frozen, as was the case when it was supplied by a private caterer (Saskatchewan Cafeteria Manager/Educator). In addition to the educational opportunities afforded by bringing in this instructor, controlling what goes into the final products allowed the school to provide similar products to those sold previously, like hamburgers and sandwiches, but with more nutritional value (Saskatchewan Cafeteria Manager/Educator). Though local suppliers may not provide the products, the school nutrition regulations did provide an opportunity to move food production internally so less healthful products were removed; students can purchase more nutritious foods and receive education about nutrition and food preparation.

The change in nutrition regulations created opportunities for school administrators to go above and beyond what was required by the new or revised school nutrition regulations in their subnational jurisdiction. Returning to New Brunswick, inspired by the francophone district they share a border with, the anglophone school district in the province used the change in school nutrition policy, and the expiration of the contract with their food service provider, to request a "gold standard in district food services" (New Brunswick School District Official). In the request for proposals (RFP), in addition to needing to be compliant with the provincial school nutrition

policy, the school district also requested fresh, local, and/or organic products from the food service provider (New Brunswick School District Official).

Though the provision of foods and beverages for the internal school food environment did not move entirely in-house for the anglophone district, the implementation and revision of the New Brunswick school nutrition policy provided the opportunity for this district to find food service providers willing to consider farm-to-school procurement programs and even include an educational component for high school students (New Brunswick School District Official). At the time of the interview, the outcome of the request for proposals was unknown, but the participant was confident they would find a food service provider to meet most, if not all, of the requests (New Brunswick School District Official).

Moving food service provision in-house, where facilities exist, gives schools a significant amount of control over what is served and ensures that it is compliant with the nutrition regulations from their respective subnational jurisdictional governments. It also offers schools and school boards/districts/divisions an opportunity to engage with the alternative food networks in their areas and find local producers to supply their schools.

Impact: Challenge regarding the unavailability of compliant foods

There are food producers and processors willing and able to comply with the new or revised school nutrition regulations; some have also been willing and able to go beyond the immediate scope of the regulations and include local and/or organic products in what they have to offer school food environments. Other schools have used the change in nutrition regulations as an opportunity to move food service provision in-house. Many schools, however, have struggled to find foods and beverages that comply with the new or revised nutrition regulations.

According to several interview participants, the unavailability of compliant foods is the result of the lack of compliant products from food producers and processers, and the lack of infrastructure on school property. Where some schools have been able to take advantage of the reformulations of foods from food service providers, others lack the resources to do so. Many vending machines, tuck shops, and smaller canteens are limited to selling shelf-stable products, a large number of which contain high levels of sugar, salt, and fat, and do not contain significant amounts of nutrients. These products are no longer permissible for sale on school property according to the nutrition regulations (Manitoba NGO Coordinator; Newfoundland and Labrador two Provincial Officials; Saskatchewan Dietitian). For instance, a participant shared: “it’s much easier to get, like, soda pop and juice boxes than to get milk and storage and…it’s perishable, right? So it’s harder” (Saskatchewan Cafeteria Manager/Educator).

For schools with cafeterias and kitchens, many of these spaces are designed to deep-fry or reheat processed foods. The spaces for refrigerating fresh produce and meat and employing alternative cooking methods is limited, and making changes to the infrastructure is often too expensive to be undertaken. One participant observed: “the original concept for schools was not that they would be feeding kids and…ensuring they have a daily nutrient intake” (Manitoba

NGO Coordinator). Schools in Newfoundland and Labrador received financial support from the province to upgrade kitchens and dining spaces to support changes to the school food environment that came as a result of the school nutrition guidelines (Newfoundland and Labrador two Provincial Officials) but not all subnational jurisdictions have received this.

In other cases, the challenge has been finding a sufficient number of products to make maintaining the spaces that sell foods and beverages worth keeping. Many of the school nutrition regulations have 50/50 or 80/20 rules that allow for foods and beverages with higher fat, sugar, and salt contents to be sold as long they make up no more than fifty or no more than twenty percent (depending on the regulation) of the options available to students (Alberta Government, 2012; BC Ministry of Health & BC Ministry of Education, 2013; New Brunswick Department of Education, 2008; Ontario Ministry of Education, 2010). Several participants expressed difficulty procuring enough healthy options for their food and beverage vending spaces to balance the moderately nutritious items that make up half or the minority of options (Alberta School District Official, New Brunswick School District Official; Ontario School Board Official). Two participants spoke generally about the challenge of finding compliant foods, regardless of what else is sold (Manitoba Dietitian; Manitoba NGO Coordinator).

Each subnational jurisdiction introduced its school nutrition regulations at a different time, which means some schools previously struggled, but managed to overcome the challenges, while other provinces are still early in the adjustment phase. For New Brunswick, for instance, which first introduced their school nutrition policy in 2005, there has been time to make the necessary changes. One participant acknowledged that it took several years for food service providers to adjust their offerings, menus, and recipes so they were compliant with the requirements of the policy (New Brunswick School District Official). Recognizing that the challenges exist, but can be overcome, can be useful for those in subnational jurisdictions that have more recently begun implementing nutrition regulations to strategize solutions to the challenges being experienced.

Impact: Challenge regarding procurement in rural, remote, and northern communities

Over the course of the interviews, those with rural and remote areas in their jurisdictions shared issues they witnessed or experienced while attempting to procure foods and beverages that comply with the school nutrition regulations. A school in British Columbia that runs a lunch program most of the students participate in has experienced some difficulty procuring compliant foods (British Columbia School District Official). This program originally used the services of a food distribution company that specializes in institutional food procurement.

Although the food distribution service was well suited for the needs of the school's lunch program, the remote location of the school proved to be problematic for the service. The participant explained that, in addition to the expense of having fresh produce delivered, she also

experienced difficulties with suppliers delivering pallets of produce with multiple boxes of a product where:

> the top box looks great, but by the time you get to the fourth box, they're all rotten and the problem is they've already left. They will take it back and they will refund us, but on that day we need the food so then we're forced to go to the grocery store and pay higher costs because we're also buying it at the last minute (British Columbia School District Official).

This happened frequently enough that this school district stopped purchasing from this supplier and instead has arrangements with a local Safeway and Overwaitea, two supermarket chains with stores within a short distance to the school (British Columbia School District Official). The participant elaborated further on the partnership with Safeway. When Safeway first began supplying produce for the food program, it was still an American-owned grocery chain. Since being acquired by Sobeys in 2013, the grocer has been more willing to offer discounts and alert the program to when products are going on sale so they can be incorporated into the menu (British Columbia School District Official). Purchasing retail can still be expensive, even with sales, and the supermarkets are cautious in supplying the program as they want to maintain sufficient inventory for their regular customers, but the partnerships have helped the program survive (British Columbia School District Official).

Finding an alternative food distribution service was not an option because "you don't have the big companies" (British Columbia School District Official) to request services from. A school district in Alberta with schools in small cities also had difficulty procuring appropriate foods because "you can't find food contractors everywhere in the city" (Alberta School District Official). Access to companies that provide food services is limited in areas with smaller populations as these areas do not create enough business to support multiple food service providers. If the food service provider is unable to provide compliant products or is too expensive for the school to contract with, there are few alternatives for the school to maintain the school food environment.

The climate of Canada, as well as the school year typically ending as the growing season begins, makes school gardens unrealistic for most of the country. According to the interview participant, the location of their is not conducive to agriculture, which contributes to the difficulty obtaining fresh produce (British Columbia School District Official). Even those that are able to have school gardens are unable to grow sufficient produce to supply the school cafeteria with any regularity (Ontario School District Official).

A participant from Ontario who organizes nutrition programs for a school board expressed difficulty getting fresh foods to remote schools. She mentioned that it is more difficult for the schools "up north" to access the same fruits and vegetables at the same price as the schools "in the city" because the price is the same but the transportation costs are greater for the remote schools (Ontario NGO Coordinator). The organization was working with those schools to

develop a distribution program that would reduce the transportation costs for these schools; however, they are still at a disadvantage compared to their counterparts in the urban areas of the board.

Further, northern British Columbia and Newfoundland and Labrador also experience times of food scarcity, which impacts both personal and institutional food procurement. The majority of the provinces' fresh produce is shipped in and inclement weather can cause shipments to be missed (Newfoundland and Labrador two Provincial Officials). This results in empty store shelves, which in addition to the problems this causes for households purchasing food, also impacts food procurement for the internal school food environment (Newfoundland and Labrador two Provincial Officials). Since this is a province-wide issue, the Food Security Network in Newfoundland and Labrador is working with rural and remote communities on the island and especially the north shore of Labrador to create strategies to improve access to food (Newfoundland and Labrador two Provincial Officials). The participants in British Columbia and Newfoundland and Labrador indicated access to food is not a problem exclusive to procuring for internal school food environments. When food procurement is a problem elsewhere in the agri-food complex, it is unrealistic to expect school boards/districts/divisions to overcome this challenge internally.

Discussion

The implementation of school nutrition regulations has impacted how food is procured for these spaces. Many conventional food suppliers have made their products compliant to the regulations, making it possible for schools to make more nutritious foods available to their students. This means the school nutrition regulations are addressing the concerns highlighted by those who have studied Canadian school food environments (Winson, 2008; Winson et al., 2012; Vine & Elliott, 2014), including those who have been studying the impacts of the nutrition regulations on student health and wellness (Fung et al., 2013; McIsaac et al., 2015; Mullally et al., 2010; Orava et al., 2016; Taylor et al., 2011; Veuguelers & Schwartz, 2010). Additionally, conventional food producers, processors, and caterers supplying schools with reformulated products that conform to the nutrition regulations support the public plate as a way of influencing industry and furthering a political outcome, in this instance, improving the nutritional quality of foods and beverages available in schools (Morgan & Sonnino, 2008).

The nutrition regulations also acted as a catalyst for some schools to procure foods from alternative food networks, working with local growers and suppliers to provide the products for the internal school food environment. The opportunity to support local economies, while procuring fresh produce into schools in the interest of nutrition, has generally been received positively by those who were interviewed. It is important to consider that in most of the examples given by interview participants, procuring from alternative food networks has been done on a voluntary basis, and is not available at all schools. This requires the capacity building

of individual teachers, administrators, producers, and community members, which is not something that each school has access to. Further, it is difficult to find sustained funding and maintain the infrastructure to support long-term procurement arrangements. This would suggest that the schools that have been able to procure from alternative food networks may find that the capacity to grow is limited, and the programs unsustainable as the individuals involved experienced burnout, as has been the case for other similar programs (Allen & Guthman, 2006; Carlsson & Williams, 2008; Mount et al., 2013).

These changes in the supply chain have not necessarily been easy. Some interview participants shared that there was a difficult transition period before finding enough compliant products to sell in the internal school food environment. For schools that have only recently begun changing their menus, they are experiencing the challenges of procuring sufficient compliant products. In some cases, this is due to a lack of infrastructure to accommodate perishable items and schools do not have the resources to make those changes to accommodate fresh products. In other cases, location is a challenge to procuring compliant food and beverage products for internal school food environments. The results of this research showed schools in rural, remote, and northern locations are struggling to procure compliant foods and beverages for their cafeterias, canteens, tuck shops, vending machines, and special-occasion days. A limited body of research examines the contents of those retail outlets in rural locations and what they have to offer the people living in them (McPhail et al., 2013; Pouliot & Hamelin, 2009). When food distribution problems exist elsewhere in the retail sector, it is not surprising to see the same problems experienced in some schools.

Some schools have received financial assistance so the internal school food environments were better equipped for fresh products and others have found partnerships with nutrition organizations to improve distribution of products to their schools. But the research revealed there are many schools across the country that still require more support with implementing the school nutrition regulations to overcome the challenges faced when procuring compliant foods. Schools and school boards/districts/divisions that are not getting sufficient support from the subnational jurisdictional government could look to other examples such as those outlined in this research. In those countries with a state-funded lunch program, such as the United States, the infrastructure to provide those meals, for better or for worse, has to be available to all students. In Canada, where no such program exists, the infrastructure is lacking.

Conclusion

Introducing or revising school nutrition regulations for foods and beverages available on school property has led to changes in what is being procured for the internal school food environment. According to those working in school food environments, many of the changes have been positive. Large-scale producers have changed their recipes and offerings so their products comply with the regulations. In other cases, the nutrition regulations opened the doors for local

vendors to sell their products in the internal school food environment. In both situations, the nutrition regulation has had an impact on the nutritional quality of food procured for schools and changes have been made throughout the agri-food complex. The difficulties experienced by others in procuring compliant foods and beverages for schools indicate that many schools require additional support, financial or otherwise, to procure the same quality of foods being procured elsewhere and to have the infrastructure to do so. It also points to gaps in food distribution across Canada, something that needs to be addressed for household, as well as institutional food security.

There are several key areas for future research from these results. Where this research attempts to examine school nutrition regulation nationally, there is more to be done to add to the examinations of school nutrition that have taken place within provinces, and there are further opportunities to examine what the situation for school food in Canada looks like in terms of what is available, where it is served and what students are eating. More research can be done into how to make the most of the ability of the conventional food network to deliver reformulated products to schools at a price that schools can still afford to purchase and resell. Regulators can use the examples where provincial governments have provided financial support to schools to facilitate the building of infrastructure and how that, in turn, supports the nutritional changes. For those schools that are engaging, or wish to engage, with alternative food networks, research can also be done into how provincial, territorial, and federal governments can partner with nongovernmental organizations and producers to support these initiatives. Lastly, the logistical challenges that currently exist in Canada's food system need to be addressed, as they impact the ability of schools to procure nutritious food just as they do for households. Continued research into this area has value in terms of improving food security at all levels.

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Appendix

Table summary of the documents used for the content analysis

Region	Administrative Body	Document Title	Year Published	Policy/Guideline
Alberta	The Government of Alberta	Alberta Nutrition Guidelines for Children and Youth: A Childcare, School and Recreation/Community Centre Resource Manual	2012	Guideline
British Columbia	Healthy Families BC (Division of Ministry of Health) in conjunction with Ministry of Education	Guidelines for Food and Beverages in BC Schools	2013	Guideline from Ministry of Health mandated but not Legislated
Manitoba	Healthy Child Manitoba	Moving Forward with School Nutrition Guidelines	2014	Guideline
New Brunswick	Department of Education	Policy 711	2005 (Revised 2008)	Policy
		Healthier Eating and Nutrition in Public Schools: A Handbook for Policy 711	2008	Handbook for Policy
Newfoundland and Labrador	Healthy Students Healthy Schools (A portfolio under Departments of Education and Seniors, Wellness and Social Development)	School Food Guidelines For Administrators and Caterers	2009	Guideline has been adopted as policy

Nova Scotia	Department of Education and Department of Health Promotion and Protection	Policy Directives and Guidelines	2006	Policy
		Executive Summary	2006	Policy
Ontario	Ministry of Education	School Food and Beverage Policy: Resource Guide PPM 150	2010	Policy
Prince Edward Island	PEI Eastern School District	Eastern School District Administrative Regulation School Nutrition for all Grade levels – K-12	2011	Policy
		Policy Statement: School Nutrition	2011	
Quebec	Ministry of Education, Leisure, and Sports; Ministry of Health and Social Services	Going the Healthy Route at School	2007	Guideline
Saskatchewan	Ministry of Education (In partnership with the Ministries of Health and Social Services)	Nourishing Minds Towards Comprehensive School Community Health: Nutrition Policy Development in Saskatchewan Schools	2009	Guideline
	Saskatchewan School Boards Association (written by Kathy Berlinic)	Food for Thought: School Nutrition Policy	n.d.	Guideline
Yukon Territory	Yukon Education	School Nutrition Policy	2008	Policy