

AN EVALUATION OF FOOD ENVIRONMENTS IN  
SASKATCHEWAN PUBLIC RECREATION FACILITIES

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By

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## ABSTRACT

The impact of food environments (FEs) on eating behaviours is gaining recognition as the health of our population continues to deteriorate. Food environments in public recreation facilities (PRFs) have been of particular interest as they are a preferred gathering place in communities for families. Although FEs in PRFs have been studied in other Canadian provinces for over a decade, this study was the first of its kind in Saskatchewan (SK). A convergent/parallel mixed methods study design used quantitative methods to determine the healthfulness of FEs and qualitative methods to examine barriers, facilitators and future opportunities. Results were organized and converged using a socio-ecological framework.

Similar to other provinces, results indicated that concession and vending services in SK PRFs are mostly unhealthy and unsupportive of health. This contradicts the national recreation priority to have *Supportive Environments* where healthy choices are the easy choices. Barriers far exceeded facilitators for healthy eating, resulting in a current state that is difficult to change even though there appears to be organizational readiness. Key barriers included a lack of guidelines, resources, capacity, funding, incentives and direction, a lack of healthy options and promotion of healthy options, a lack of infrastructure to store or prepare healthy options, a lack of consumer readiness and economic risk. Several future opportunities emerged some of which included the need for policy, nutrition guidance, strategy, direction, stakeholder engagement, knowledge exchange platforms, increased availability and promotion of healthy options, decreased availability and promotion of unhealthy options, infrastructure to store and prepare healthy options and incentives.

A participatory action research approach engaged practitioners and policy makers from health and recreation sectors at a provincial advisory level to design our study, as well as, recreation leaders and food service providers at a facility level to participate in our study. This approach increased awareness and capacity to address concerns related to unhealthy FEs in SK PRFs. The role of the provincial advisory committee goes beyond the life of this study; it will continue to support, monitor and re-evaluate changes to FEs in SK PRFs.

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## **DEDICATION**

This thesis is dedicated to those who supported me the most through the joys and hardships of this journey, my family. To my husband, Wayne, and to our children, Noé, Anna, Rowan and Ryker, who accepted the time and energy it took to take on this academic experience. My wish is that this experience has shown you that learning can happen at any stage of life, and that if you desire to achieve a goal that you too can remove the obstacles to make it happen. To my parents, Paul and May, who have continually supported me in achieving my goals. I could not have completed this process without all of you. I love you all. I am forever grateful.

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## LIST OF ABBREVIATIONS

AB	Alberta
AC	Advisory Committee
BC	British Columbia
CPRA	Canadian Parks and Recreation Association
EHPH	Eat Healthy Play Healthy
FE	Food Environment
HFFMRS	Healthy Foods for my Recreation Setting
HSF	Heart and Stroke Foundation
MoH	Ministry of Health
MoPCS	Ministry of Parks, Culture and Sport
NEMS	Nutrition Environment Measures Survey
NEMS-V	Nutrition Environment Measures Survey - Vending
PAR	Participatory Action Research
PC	Practice Committee
PHN	Public Health Nutritionist
POP	Point-of-Purchase
PRF	Public Recreation Facility
RA	Research Assistant
RD	Registered Dietitian
RFP	Request for Proposal
rNEMS-R	Nutrition Environment Measures Survey - Restaurants reduced item audit
SAEH	Stay Active Eat Healthy
SARM	Saskatchewan Association of Rural Municipalities
SHA	Saskatchewan Health Authority
SK	Saskatchewan
SPRA	Saskatchewan Parks and Recreation Association
SUMA	Saskatchewan Urban Municipalities Association
USask	University of Saskatchewan
UofV	University of Victoria
VNEL	Vatanparast's Nutritional Epidemiology Lab

# CHAPTER 1 : INTRODUCTION

## 1.1. Population Dietary Patterns and Behaviours

Experts predict that this generation of children will live a shorter and a less healthy life than that of their parents (Daniels, 2006). Eating behaviours are one of the primary behavioural risk factors for premature death globally (Danaei, et al., 2009). Dietary patterns, including those of children, have shifted due to macro-environmental factors such as an increased production of processed food, rapid urbanization and changing lifestyles (World Health Organization, 2015). Eating behaviours are also highly influenced by policy and micro-environmental factors including the availability, accessibility, placement, pricing and promotion of foods and beverages in places where people live, learn, work and play. These macro- and micro-environmental factors have resulted in people consuming more food and beverages associated with negative health outcomes (World Health Organization, 2015).

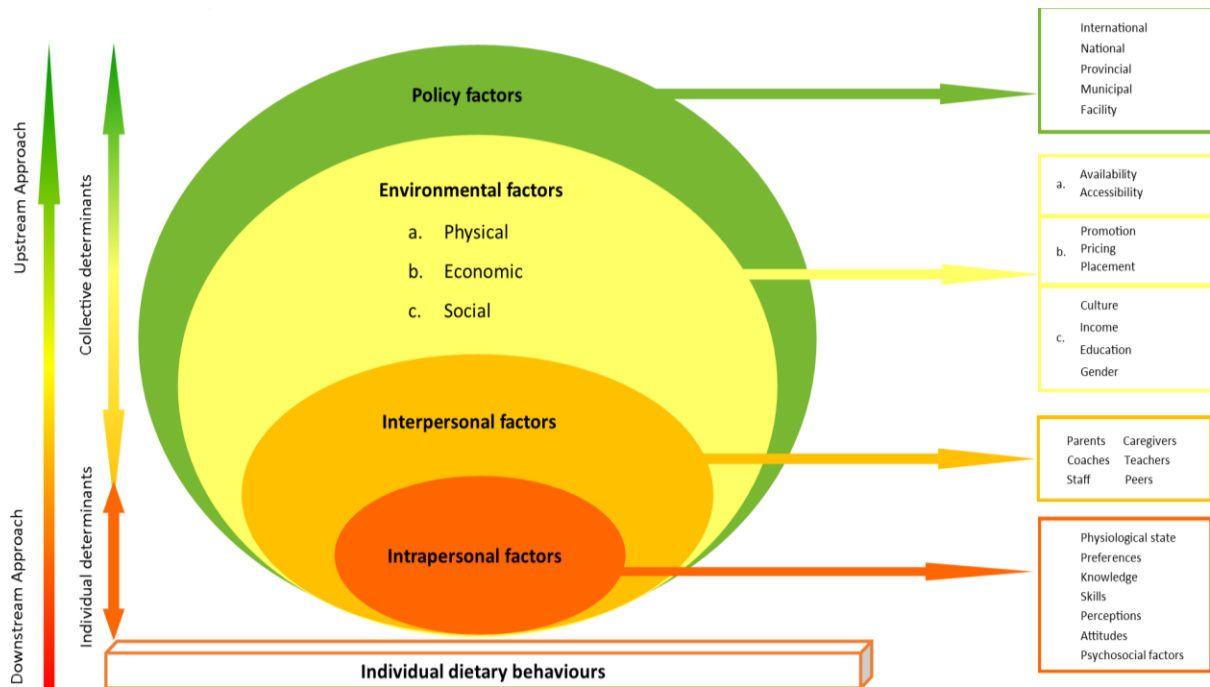
Vegetable and fruit consumption patterns are an important indicator of eating behaviours in Canada due to their micronutrient and fibre density. Depending on age and sex, it is recommended that Canadians (2 to 51+ years) consume 4 to 10 servings of vegetables and fruit per day for optimal health (Health Canada, 2011). Less than one-third (28.6%) of Canadians 12 years and older reported consuming vegetables and fruit five or more times per day (Statistics Canada, 2017). Similarly, intakes for younger Canadian children, ages 4 to 8, were last reported from the 2004 Nutrition Survey, which indicated that 7 out of 10 (70%) consumed less than five servings of vegetables and fruit per day (Garriguet, 2007). Inadequate intakes of fibre and micronutrients including calcium, magnesium, zinc, potassium, and vitamins C, A and D are prevalent across many age and sex groups in Canada (Garriguet, 2007). In addition, it is estimated that one-third of our total calories come from foods high in fat, sugar or salt (Garriguet, 2007). With about 28% of the average food budget spent outside the home, Canadian families are also purchasing more meals, snacks and beverages from food outlets (Statistics Canada, 2017).

Deteriorating eating behaviours and rising rates of obesity, in particular in children, is a population health burden as children are at an increased risk for emotional, social and physical health problems (Public Health Agency of Canada, 2017). “A poor start in life can lead to poor

health, nutrition, and inadequate learning, resulting in low adult earnings, as well as, social tensions” (WHO, UNICEF, & World Bank Group, 2016, p.2). In addition, childhood is a critical period in the life cycle where eating behaviours are being established (Northstone & Emmett, 2010; Lioret, McNaughton, Spence, Crawford, & Campbell, 2013). The evidence reinforces a need for more population-based strategies, especially those targeting children, to improve eating behaviours and population health outcomes; strategies need to go beyond intrapersonal factors, such as an individual’s knowledge level, to include policy and environmental factors.

## **1.2. Collective Determinants of Eating Behaviours**

To support healthy eating behaviours, we need to move beyond an individual’s knowledge. First, people need to have physical access to safe, acceptable, affordable, and healthy food and beverages where they live, learn, work, play and rest (Health Canada, 2013). Availability and accessibility of healthy options are influenced by policy factors. Policy can exist at multiple levels from national to municipal, and it can exist in different forms from mandatory to voluntary. Once healthy options are available and accessible, people also need to be positively influenced by environmental factors such as product placement, pricing and promotion to make a healthy choice. People’s choices are also highly influenced by interpersonal factors such as their social support networks. Raine (2005) labelled this complex set of influencing factors as the collective determinants of dietary (or eating) behaviours. For our study, we added Raine’s labels to a popular socio-ecological framework to illustrate the complexity of the factors on individual eating behaviours as outlined in Figure 1.1 (Centers for Disease Control and Prevention, 2018). Using a framework helps emphasize the key factors that influence individual eating behaviours, and how the factors align or differ under particular circumstances. A framework can provide insight into target areas for potential intervention (Hawkes, Bibeau, Steckler, & Glanz, 1988; USC Libraries, 2019). It also supports connection “... between research and practice by providing the structure that can be used to spread evidence-based approaches that prevent disease, promote health, and improve health services” (Centers for Disease Control and Prevention, 2018; Eccles & Mittman, 2006).



**Figure 1.1: Socio-Ecological Framework for Factors Influencing Individual Eating Behaviours in Canada**

It was not clear in current literature which of these collective determinants is of most importance to improving eating behaviours and health outcomes. Therefore, a comprehensive approach that considered all of the collective determinants from policy to interpersonal factors is recommended as they all constitute the consumer’s food environment (FE) (Olstad, Poirier, Naylor, et al., 2014; Rideout, Mah, & Minaker, 2015). For the purposes of this study, upstream and downstream descriptors were added to the framework to signify the potential impact of addressing each determinant from a population to an individual level. Even though it is important to evaluate all of the determinants, prioritizing an upstream approach to improving eating behaviours, ensures that our approach and our recommendations remain primarily population-based.

### **1.3. Food Environments in Saskatchewan Public Recreation Facilities**

While action to support healthy FEs in school settings has occurred across Canada for several years, other public settings such as recreation facilities, have received limited attention (Olstad D. L., et al., 2019). To date, no such data has been collected in Saskatchewan (SK); however, public

recreation facilities (PRFs) in SK are a preferred gathering place in communities for families to socialize, be active and participate in sports and cultural activities. Between arenas, curling rinks, swimming pools and community centres, there are approximately 1393 PRFs throughout SK (SPRA, 2006). Seventy-four percent of households with children in SK reported accessing a PRF in the last 12 months, making families the largest user group (SPRA, 2017). Considering our climate and the geographical distribution of communities in SK, it is also important to note that households from small towns and cities (with populations between 5,000 to 20,000) reported more usage of indoor PRFs at 91% compared to those living in large cities (population over 20,000) at 70% (SPRA, 2017). Because PRFs are highly accessible in SK communities and that the foods and beverages available, and how they are promoted, support positive health outcomes.

#### **1.4. Public Recreation in Canada – Creating Supportive Environments**

In 2015, a *Framework for Recreation in Canada: Pathways to Wellbeing* was released, which includes a national priority for *Supportive Environments* where healthy choices are the easy choices (CPRA). The Framework acknowledges that recreation has a leadership role to play in community building. Priority 4.7 specifically states a goal to develop and use standardized assessment tools that will help communities assess, measure, and develop a common understanding of community well-being (CPRA, 2015, p.27). Priority 4.8 also specifically states a goal to adopt strategic approaches in collaboration with other community initiatives, such as Community Food Centres (CPRA, 2015, p.27). These priorities confirm an awareness, and potentially a desire, by national and provincial recreation leaders to work collaboratively with other key influencers in making healthier choices easier for consumers. This is also evidenced by a national online hub of information and resources called *Stay Active Eat Healthy* (SAEH) that was developed by the British Columbia Recreation and Parks Association to build awareness and capacity for healthy change in communities across Canada (BCRPA, 2019). It was an opportune time to collaborate with SK recreation stakeholders to discuss how to support healthy eating behaviours and health outcomes.

#### **1.5. Connections between Practice, Policy and Research**

Although research on FEs is relatively new, in particular with recreation, it is a promising area as there is potential for a sustained impact on health outcomes (Health Canada, 2013).

Although public health nutritionists (PHNs) are an enabling force for FE change through practice, a mutually dependent and collaborative approach that also connects nutrition policy and research stakeholders, internal and external to the health sector, would be most effective (Rideout, Mah, & Minaker, 2015; Jansen, Van Oers, Kok, & De Vries, 2010). Also including stakeholders from the recreation sector early on in the process is vital to supporting and sustaining change in their sector.

A collaborative effort between practitioners, policy makers and researchers from both health and recreation sectors, would help to build reliable evidence and create higher quality work standards (Jansen, van Oers, Kok, & de Vries, 2010). While practitioners organize programs, services and policies to protect and promote the health of a population, policy makers have legislative or executive responsibilities to develop policies, such as statements or strategic actions, to protect and promote the health of a population (Government of Canada, 2008; National Collaborating Centre for Healthy Public Policy, 2010). Policy makers' statements or strategic actions derive from federal, provincial, regional or municipal public administration (National Collaborating Centre for Healthy Public Policy, 2010). On the other hand, the intent of researchers is to produce generalizable knowledge to improve practice (Centers for Disease Control and Prevention, 1999). Generalized knowledge is collected through systematic methods to reduce bias and findings are relevant beyond the participant group studied (Centers for Disease Control and Prevention, 1999). A qualitative descriptive study by Jansen et al. (2010) described the connections between the work cycles of practitioner, policy maker and researcher groups as four steps: 1) problem recognition; 2) program, policy or research formulation; 3) implementation; and 4) evaluation and interpretation. Although there have been universal calls and proven benefits for mutually dependent and collaborative efforts as such, it is also important to acknowledge the numerous disconnections that can exist between practitioners, policy makers and researchers (Jansen, van Oers, Kok, & de Vries, 2010).

## **1.6. Disconnections between Practice, Policy and Research**

Jansen et al. (2010) describes numerous disconnections between practitioners, policy makers and researchers, starting with how each group might view the problem differently. While practitioners are likely to view the problem practically from perceived clients' needs, policy makers are more likely to view the problem socially with influence by their current political



ideology and public opinion (Jansen, van Oers, Kok, & de Vries, 2010). On the other hand, researchers are likely to view the problem scientifically in terms of relevance to existing theories, existing evidence and their own research interests (Jansen, van Oers, Kok, & de Vries, 2010). Another disconnection worth noting is around work attitude. While practitioners may prefer quick, action-oriented and creative work, policy makers may prefer more administrative control with work, and researchers may prefer a more cautious, systematic approach that takes time (Jansen, van Oers, Kok, & de Vries, 2010). While practitioners and policy makers may pay less attention to theories and more attention to practical implementation, researchers may focus their attention to theories and less attention to practical implementation (Jansen, van Oers, Kok, & de Vries, 2010). To improve such disconnections between these three groups, face-to-face encounters were recommended as an efficient way to build awareness of such differences, leading the groups towards mutual understanding and respect for successful collaborative work (Jansen, van Oers, Kok, & de Vries, 2010). Improving disconnections between practitioners, policy makers and researchers from both health and recreation sectors would be a beneficial approach to gain more evidence in recreation FEs, as well as, to support and sustain healthy change to FEs in SK PRFs.

### **1.7. Formation of an Advisory Committee to Connect Practitioners, Policy Makers and Researchers from Health and Recreation Sectors in Saskatchewan**

After noting a national movement and a growing body of evidence to improve recreation FEs in other jurisdictions, representative PHNs with the Saskatchewan Health Authority (SHA) reached out to Dr. Hassan Vatanparast from the Vatanparast's Nutritional Epidemiology Lab (VNEL) in the College of Pharmacy and Nutrition at the University of Saskatchewan (USask) in 2015. After some preliminary discussions that identified a lack of, and a need for SK data to help inform and ignite future change, both groups launched this journey by identifying and contacting key stakeholders from both health and recreation sectors. With an apparent interest and readiness, a range of practitioners, policy makers and researchers from both the health and recreation sectors collaborated to form a provincial Advisory Committee (AC). The intention of forming an AC was to engage vested stakeholders in a Participatory Action Research (PAR) approach thereby

determining *what is* and *what could be*, otherwise known as current and future states (Mayan, 2009).

After some initial discussions, the AC determined their role as to provide direction and guidance to the provincial initiative, now called the Eat Healthy Play Healthy (EHPH) initiative. Due to geographical distances between members, regular face-to-face encounters were not realistic or feasible; rather, regular teleconferences were organized for members to support knowledge exchange and the progression towards a common vision. Roles and responsibilities of the representative member organizations were discussed, and a Terms of Reference was developed, as outlined in Appendix A and B respectively. It is also important to acknowledge the contributions of PHN representatives with the SHA, referred to as the Practice Committee (PC), who also provided much direction and guidance to the EHPH initiative. The roles and responsibilities of the PC are also outlined in Appendix A.

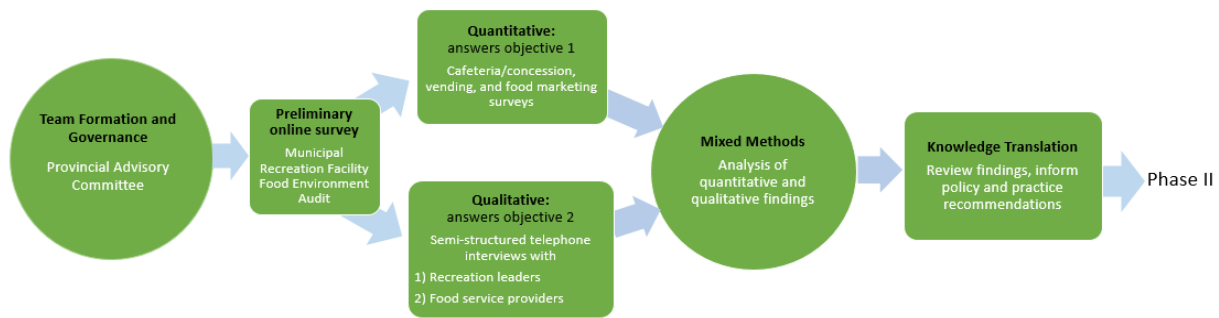
Soon after determining roles and responsibilities and drafting a Terms of Reference, the EHPH AC and PC conducted a preliminary online survey using the *Municipal Recreation Food Environment Assessment Tool* (MRFEAT) (Naylor, Bridgewater, Purcell, Ostry, & Vander Wekken, 2010). The MRFEAT survey was disseminated to the recreation sector by a member organization, the Saskatchewan Parks and Recreation Association (SPRA). From the results outlined in the literature review section below, the EHPH AC confirmed a need for a more comprehensive baseline evaluation of FEs in SK PRFs. Members agreed that a baseline evaluation that included both quantitative surveys and qualitative interviews would be ideal. While the quantitative surveys would provide a comprehensive picture of the current state of FEs in SK PRFs, the qualitative interviews would help to understand the reasons for the current state as well as identify future opportunities for improvements.

In this process, Dr. Vatanparast identified an opportunity for a graduate student to support the research process. As a PHN with the SHA, I was in a unique position as I had a desire to complete a Master's level degree. I received approval from my SHA director to apply this graduate research opportunity to practice under the supervision of Vatanparast and the EHPH AC. Together, Dr. Vatanparast and I also accepted co-chairing responsibilities for the AC until it further evolved. This experience allowed me to have an active role not only as a graduate student, but also as a PHN, in the formation of the AC and our research approach. Establishing a collaborative AC including members from practice, policy and research, strengthened our ability

to apply a PAR approach whereby, we would produce research and change in a real-life context (Stoecker & Brydon-Miller, Action Research, 2013).

## **1.8. Research Purpose**

The purpose of our study was to conduct a comprehensive baseline evaluation of FE in SK PRFs. In consultation with a lead researcher in this area of study, Dr. Patti-Jean Naylor from the University of Victoria (UofV), the EHPH AC proposed a convergent/parallel mixed methods study to achieve our purpose. Convergent/parallel mixed methods design "... involves collecting and analyzing two independent strands of qualitative and quantitative data in a single phase, merging the result of the two strands, and then looking for convergence, divergence, contradictions, or relationships between the two databases" (Creswell & Plano Clark, 2010, p.116; Mertens, 2013, p.140). Mixed methods can be beneficial in rationalizing and interpreting links between theories and results; it can also build new theory (Ostlund, Kidd, Wengstrom, & Rowa-Dewar, 2011). Quantitative methods would determine the healthfulness of FEs, while qualitative methods would examine the barriers and facilitators for the current state as well as future opportunities. The baseline findings would not only build on an existing body of scientific evidence on FEs, but they could be used to build awareness and capacity in the recreation sector to support healthy FEs in SK PRFs and to inform practice and policy recommendations in SK as described in Figure 1.2.



**Figure 1.2: Overview of Mixed Methods Study Design Governed by the Eat Healthy Play Healthy Advisory Committee**

### 1.8.1. Research Questions and Objectives

The following research questions guided our study and helped us to achieve our purpose:

1. What is the frequency and the healthfulness of food and beverages available through concession and vending operations in SK PRFs, and how are they promoted?
  - 1.1. Are there differences between northern and southern SK?
  - 1.2. Are there differences between urban and rural communities?
  - 1.3. Are there differences between publicly, privately and volunteer operated services?
  
2. How do collective determinants impede or facilitate healthy food environments in SK PRFs?
  - 2.1. What solutions do key stakeholders such as recreation leaders, food service providers, and local food suppliers, have to overcome existing barriers?
  - 2.2. Where in SK is there a state of readiness for healthy change?
  - 2.3. What information or resources do organizations need to implement healthy change?
  - 2.4. What would they like to see in a written resource?

The following objectives were created from the research questions:

1. Through quantitative methods, measure the frequency and the healthfulness of food and beverages available in cafeteria/concession and vending operations in SK PRFs, and how they are promoted through equipment, information, placement and pricing. This is referred to as Study I.
  - 1.1. Determine if there are differences between northern and southern SK.
  - 1.2. Determine if there are differences between urban and rural communities.
  - 1.3. Determine if there are differences between publicly, privately and volunteer operated services.
  
2. Through qualitative methods, determine how collective determinants impede or facilitate healthy FEs in SK PRFs. This is referred to as Study II.
  - 2.1. Determine solutions that key stakeholders have to overcome existing barriers.
  - 2.2. Determine where there is a state of readiness for healthy change in SK.
  - 2.3. Determine the information or resources organizations need to implement healthy change.
  - 2.4. Determine what participants would like to see in a written resource.

## **CHAPTER 2 : LITERATURE REVIEW**

### **2.1. Literature Review Process**

A comprehensive literature review process related to FEs in sport and recreation settings was conducted in the summer of 2017. Due to the applied nature of the research topic to practice, it was important to look for both academic and grey literature. An evidence-based model called PICO (problem, intervention, comparison and outcomes of interest) was used to create concept clusters for the academic literature review as outlined in Table 2.1 (NYU Libraries, 2019). Key terms from within the concept clusters were then combined using Boolean operators in four academic databases including MEDLINE, CINAHL, PubMed and Scopus. To ensure that the literature search remained current, criteria were set to only include articles from the past ten years. Search results ranged from 14 to 155 articles in each of the databases. Due to the unique nature of FEs in PRFs, articles focused on other settings such as schools or corner stores were excluded as well as articles related to consumption patterns. After removing these exclusions, duplicate articles, and any articles not relevant to the research question, 42 key articles remained from the academic databases. The articles were from Canada, the United States, Australia and New Zealand.

For the grey literature review process, the websites of credible health organizations were searched such as federal, provincial and territorial governments; provincial, territorial and regional health authorities; and the SAEH website (BCRPA, 2019). The SAEH website hosts information and resources to build awareness and capacity to improve FEs in PRFs across Canada. Thirteen resources were found in a search for grey literature from provinces and territories across Canada including British Columbia (BC), Alberta (AB), Manitoba, Ontario, Nova Scotia, Newfoundland and the Northwest Territories. Findings from one online preliminary study in SK were also included. All of the findings from the literature review process were summarized and categorized chronologically by study design into a table. In August of 2019, another literature review process was conducted to ensure the inclusion of any new publications. Five recent published articles, which included one from each BC and AB, as well as, two new resources from New Brunswick and Prince Edward Island were discovered. The desire by

provincial and territorial health authorities across Canada to support healthy FEs in PRFs was noted.

**Table 2.1: PICO Concept Clusters Used for Academic Literature Review Process**

<b>Concept A – the problem/behavior</b>	<b>Concept B – the intervention/influence</b>	<b>Concept C – the comparison or setting/owner</b>	<b>Concept D – the outcomes of interest</b>
Food (unhealthy, junk, fast, convenience, behaviour)	Food (environment, outlet, retail outlet)	Recreation (event, facility, setting)	Pediatric obesity
Nutrition	Nutrition environment	Sport (event, facility, setting)	Obesity
Diet	Retail (outlet)	Municipal (facility, setting)	Policy (health, public)
Beverages	Restaurant	Community	Health promotion
Eating (unhealthy, pattern, behaviour)	Concession	Public	Disease prevention
Drinks	Vending		Nutrition guidelines
	Food service		Public health
	Marketing		Intervention
	Sponsorship		
	Pricing		
	Placement		
	Promotion		
	Profitability		

## **2.2. Summary of Evidence for Food Environments in Saskatchewan Public Recreation Facilities**

### **2.2.1. Policy Factors**

Although FE research and improvements to policy and practice in PRFs have been happening in other Canadian provinces for almost a decade, the preliminary online survey in 2017 was the first of its kind in SK. Results indicated that 57% of PRFs had no healthy food policies or guidelines in place (Vatanparast, 2017). Fifty-one percent (51%) had no dedicated resources and/or assigned responsibility for the development of such policies or guidelines

(Vatanparast, 2017). In addition, 65% of PRFs did not have any type of healthy food and beverage committee formed to support change (Vatanparast, 2017).

As a PHN and as a regular patron of PRFs in southern SK, the results were surprising; I expected the percentages to be higher. The EHPH AC was still being formed and relationships were still being built between health and recreation sectors when the preliminary online survey was implemented. As a contributing member to this process from the health sector, I question whether we were clear on identifying and reaching our target audience, and how the online survey questions were interpreted. These limitations may have influenced the results. Regardless, the results affirmed the need for a PAR approach with a comprehensive baseline evaluation as a means to build awareness and capacity in the recreation sector and to encourage the uptake of healthy food policies or guidelines to sustain change long-term.

### 2.2.2. Environmental Factors

Results from the preliminary study indicated that over 69% of PRFs in SK have a cafeteria or concession, majority of which were operated by volunteers rather than by public employees or private contractors (Vatanparast, 2017). Further research would explain how different operating models affect the complexity of the situation in SK. Typical items sold in concessions, from highest to lowest, were burgers, fries, beverages, chicken strips, chips, sandwiches, and soup (Vatanparast, 2017). The results however, did not indicate the frequency of these typical items offered, nor was it comprehensive of all items offered in concessions.

Beverage vending machines were also frequently reported at 41%, the majority of which were privately operated by a contractor (Vatanparast, 2017). The most commonly reported beverages in vending machines, from highest frequency to lowest frequency, were water, Gatorade, Pepsi, juice, and pop (Vatanparast, 2017). Snack vending machines were less common at 16%; the most frequently reported foods, from highest to lowest, were chocolate bars, candy, chips, nutrition bars, and gum (Vatanparast, 2017). The results however, similar to concessions, did not indicate the frequency of these typical items offered, nor was it comprehensive of all items offered through vending.

As per the *Nutrition Standards for Saskatchewan*, most of these food and beverage options would be considered *Offered Least Often*, which aligns with research from other provinces (Government of Saskatchewan, 2018). Further research would provide a more



comprehensive understanding of the current state including the frequency and healthfulness of foods and beverages offered through concessions and vending. It would also provide an opportunity for a post intervention comparison.

### 2.2.3. Interpersonal Factors

The SPRA completed a public survey in 2017 that confirmed a high interest by consumers in having healthy food options in SK public recreation settings (SPRA, 2017). In 2018, the survey was repeated and interest grew from 71% to 79% (SPRA, 2018). The results triggered SPRA to set a priority for action; they agreed to work with facilities to ensure that consumers have the choice of healthy food options (SPRA, 2017; SPRA, 2018). The results and the priority for action statements confirm an interest by SK families as well as by the provincial association, to address the current state of FEs in PRFs.

## **2.3. Summary of Evidence for Recreation Food Environments in Canada, the United States, Australia and New Zealand**

To address the problem of unhealthy FEs in SK PRFs, we can learn from, and build on, existing evidence published by other provinces in Canada and similar countries like the United States (US), Australia and New Zealand. In particular, we can learn from a recent systematic review aimed to determine the effectiveness of policy and practice strategies to improve healthy eating behaviours in recreation settings (McFadyen, et al., 2018). The findings of the review suggest that multi-strategic interventions may have the potential to improve the implementation of policy and practice to support healthy behaviours. While the few studies showed improvement in at least one policy and practice measure, further research is warranted. McFadyen et al. (2018) noted that changes to promote health in recreation settings as well as evidence to guide implementation efforts of policy makers and practitioners remains limited.

### 2.4.1. Policy Factors

Similar to the findings from the preliminary survey in SK, academic literature confirms that few PRFs have policies or guidelines to govern healthy food provision (Naylor, Bridgewater, & Purcell, et al. 2010). In school settings, studies have confirmed that children's eating behaviours

improved with the introduction of healthy food policies that encouraged an increase in healthy options and a decrease in unhealthy options (Taber, Chriqui, & Chaloupka, 2013). In Canadian recreation settings, however, there is still a question as to whether it is sufficient to increase the availability of healthier food and beverages, or whether this should be done in conjunction with the restriction of unhealthy food and beverages (Olstad, Poirier, Naylor, Shearer, & Kirk, 2014). Studies have shown that even though consumers want the healthier choice, they still value the freedom to choose in a recreation setting (Lloyd & Dumbrell, 2011). On the other hand, it was noted that expecting individuals to select the healthy option might not be realistic when offering healthy and unhealthy options together (Olstad, Poirier, Naylor, Shearer, & Kirk, 2014).

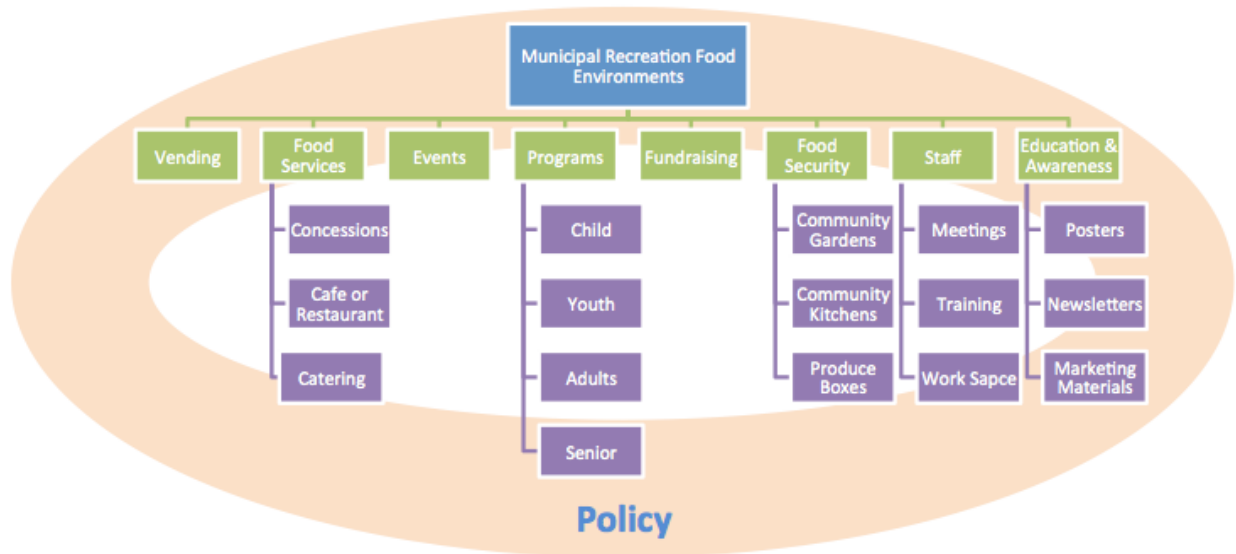
Implementing healthy food policies and guidelines through a voluntary approach has resulted in a relatively poor uptake; researchers recommend a mandatory approach with government incentives to encourage and sustain uptake (Olstad & Raine, 2013; Olstad D. L., et al., 2019). Regardless, research has consistently shown positive results when there is both buy-in from key stakeholders and the provision of appropriate resources and on-going supports for healthy change (Naylor, Bridgewater, & Purcell, 2010; Olstad, Raine, Prowse et al., 2019). In interventions, control groups that did not have buy-in, or that did not receive resources and supports, did not do as well with implementing healthy food policies or guidelines nor with environmental change (Naylor, Olstad, & Therrien, 2015; Olstad, Raine, Prowse et al., 2019). Thus, researchers, policy makers and practitioners across Canada are now collaborating nationally to share resources online through SAEH. They are also advocating for the harmonization of national nutrition guidelines in order to prevent duplication of work amongst provinces and territories (Olstad, Poirier, Naylor, Shearer, & Kirk, 2014).

#### 2.4.2. Environmental Factors

As described in Figure 2.1, other provinces in Canada have found food and beverages to be highly accessible in PRFs through a variety of operational areas (Cejalvo, Donovan, & Naylor, 2014). Saskatchewan is unique from other provinces in that many PRFs are geographically dispersed in rural and remote communities. Reduced availability and accessibility of nutritious foods have been found in some communities (Saskatchewan Food Costing Task Group, 2017). This adds complexity to the situation in SK.

The food and beverages available in PRFs have also been described as unhealthy and unsupportive of health outcomes which contradicts mandates to support health (Naylor, Bridgewater, & Purcell, 2010; Chaumette, Morency, & Royer, 2009). Research that describes the impact of environmental interventions designed to improve healthy food and beverage access in recreation settings, on consumers' purchasing and consumption patterns, is limited. One Australian randomised control trial found a significant increase in the availability of, and the promotion of, vegetables and fruit in post-intervention groups as compared to control groups; they also found a significant increase in the the proportion of consumers reporting the purchasing of vegetables and fruits (Wolfenden L. , et al., 2015). They concluded that the intervention enabled recreation organizations to overcome perceptions that consumers will not purchase healthy food and beverages if made more available (Wolfenden L. , et al., 2015). More research is needed to confirm this phenomenon.

Although stakeholders from parents and other patrons, to municipalities, vendors and industry, agree that there is a need for change, there is hesitancy due to perceived economic factors such as short-term revenue loss because healthier options do not sell (Wolfenden L. , et al., 2015; Olstad, Raine, & McCargar, 2012; Thomas & Irwin, 2010). Research describing the impact of healthy food environment change on sales and revenues is limited and with mixed results (Green, Glanz, & Bromberg, 2020; McFadyen, et al., 2018). However, a few studies specific to concession operations have found that food sales and revenues were maintained with the introduction of healthier options as long as the intervention included placement, promotion and/or pricing strategies, such as traffic light menu labelling (Olstad, Vermeer, McCargar, Prowse, & Raine, 2015; Olstad, Goonewardene, McCargar, & Raine, 2015; Oxford County Public Health, 2016). More research is needed to fill this gap. Due to a perception that healthier food and beverages will not sell, researchers recommend a collaborative approach with appropriate support and resources to build community awareness and capacity.



**Figure 2.1: Operation Areas in Public Recreation Facilities Where Food and Beverages are Commonly Available**

### 2.4.3. Interpersonal Factors

Consumers’ eating behaviours are influenced by unhealthy FEs in PRFs. One US study actually found that children and youth involved with sports consumed more calories, fast food and sugary beverages than those who did not participate, as the environment in PRFs does not enable the healthy choice as the easiest choice (Nelson, et al., 2011). An Australian study compared consumption rates of different foods and beverages by patrons, including children, from a recreation concession; 55% of the items consumed by all patrons were higher in Calories, fat, sugar, salt and lower in nutrients, increasing to 92% when considering just children (Boelsen-Robinson T, 2017). Children are also highly influenced through marketing exposure and power of unhealthy food options due to supplier contracts, corporate incentives and sponsorships (Carter, Signal, Edwards, et al., 2013; Lindsay, Thomas, & Lewis, 2013; Prowse, Naylor, Olstad, et al., 2018). It is noted, however, that this current state has evolved unintentionally, through “... a desire to improve access to affordable physical activities by using food service revenues to partially subsidize lower user fees” (Olstad & Raine, 2013).

## CHAPTER 3 : RESEARCH DESIGN AND METHODOLOGY

### 3.1. My Research Paradigm

Although many of the decisions relating to this research study were authorized by the EHPH AC, my own personal paradigm as a co-chair of the AC, as a PHN and as a student researcher, would have influenced the outcomes. Understanding one's personal paradigm is an essential step in the research process as it provides justification for use of methodologies that guide and frame the work (Graue & Karabon, 2013). It supports the researcher in identifying subjectivity and continuing reflexivity (Graue & Karabon, 2013).

With a *constructivism position*, rooted in a *relativist ontology* and *subjective epistemology*, I see value in a research approach that can be applied to a real-life context, such as practice and policy even though disconnections exist (Graue & Karabon, 2013; Jansen, van Oers, Kok, & de Vries, 2010). In return, I see value in using a real-life context to build on existing scientific evidence. As a PHN in SK with a regional mandate, I have felt a general lack of support to work on population health issues that could be addressed more effectively from a broader provincial and/or national level. At a regional level, I have been overwhelmed with supporting the complex nature of community FEs. I have also felt frustrated with a lack of measurable indicators at a regional and provincial level to demonstrate the effectiveness of public health nutrition practice. This constructivism position motivated me to accept and to apply this provincial research opportunity to practice. It supported the application of a PAR approach where various stakeholders, in particular the EHPH AC at a provincial level, were engaged throughout the study to lead into a more desirable and sustainable outcome.

As a practitioner and a researcher with a *relativist ontology*, I believe multiple versions of truth exist and that it evolves and changes over time (Graue & Karabon, 2013). For example, I believe that a consumer's knowledge influences what they perceive to be true, which in turn influences their behaviours. Knowledge can change over time as lived experiences allow. However, socio-ecological determinants, such as food marketing tactics, can also inadvertently influence what people perceive to be true. With the existence of a popular socio-ecological framework, we took an inductive approach where we added terminology from related current

literature related to the framework. The framework was used to organize key variables that influence individual eating behaviours. This supported us in looking beyond consumers' knowledge levels to evaluate the deeper complex issue of recreation FEs. It supported us to study the collective determinants that influence consumers' eating behaviours and their interactions in a recreation environment.

A relativist ontology has shaped my subjective epistemology where interacting with participants is essential in discovering their version of truth – what is going on and what is needed (Graue & Karabon, 2013). Hence, including a qualitative component to this study was an important approach to going beyond understanding the current state of FEs in SK PRFs; it identified underlying reasons for the current state, which then led to ideas for future supports and interventions. Interacting with interested participants also provided a means to building awareness and capacity for positive changes in practice and policy.

### **3.2. Participatory Action Research Approach**

To encourage a PAR approach, members of the EHPH AC and PC were engaged in designing and governing this mixed methods study. Members helped to choose the data collection tools that best met our research objectives. They also provided feedback to ensure that the tools were most appropriate for a SK context. Members provided feedback on various communications to the recreation sector, including invitations to participate in our study and a final report summarizing the findings. They were also invited to support processes like quantitative data collection in some participating communities and coordinating opportunities to share our findings. Moving forward, it is our hope that the EHPH AC will continue to have a leadership role in implementing the recommendations that arise from this study. In addition, we hope that they will consider a post intervention comparison to measure the long-term impact of our overall initiative on FEs in SK PRFs.

### **3.3. A Convergent/Parallel Mixed Methods Study Design**

After consultations with Dr. Naylor from the UofV, the EHPH AC and PC decided that a convergent/parallel mixed methods study design would best meet our research objectives. Quantitative methods would help meet objective I (Study I) while qualitative methods would help meet objective II (Study II). Table 3.1 includes a summary of the mixed methods including key

implementation partners, tools, analysis systems and variables of interest for each study. Our target group for both studies were recreation leaders and food service providers involved in food service operations in SK PRFs.

**Table 3.1: Summary of Convergent/Parallel Mixed Methods Study Design**

<i>Method</i>	<i>Objective</i>	<i>Implementation Partners</i>	<i>Tool</i>	<i>Analysis System</i>	<i>Variables of Interest</i>
Quantitative (Study I)	I – frequency and healthfulness of food and beverages available in concessions	PHNs/ Community RDs/ NUTR 531 students/ AC members	Nutrition Environment Measures Survey – Restaurants reduced item audit (rNEMS-R)	SPSS 25	Nutrition Standards <ul style="list-style-type: none"> <li>• Offer Most Often/ Offer Sometimes and Offer Least Often food and beverages</li> </ul> Geographical Location <ul style="list-style-type: none"> <li>• Urban and rural</li> <li>• North and south</li> </ul> Type of Operation <ul style="list-style-type: none"> <li>• Private, public and volunteer operated</li> </ul>
	I - frequency and healthfulness of food and beverages available in vending	PHNs/ Community RDs/ NUTR 531 students/ AC members	Nutrition Environment Measures Survey - Vending (NEMS-V)	SPSS 25	Nutrition Standards <ul style="list-style-type: none"> <li>• Offer Most Often/ Offer Sometimes and Offer Least Often food and beverages</li> </ul> Geographical Location <ul style="list-style-type: none"> <li>• Urban and rural</li> <li>• North and south</li> </ul> Type of Operation <ul style="list-style-type: none"> <li>• Private, public and volunteer operated</li> </ul>
Qualitative (Study II)	II - how collective determinants impede or facilitate healthy eating	Primary Researcher/ AC members	Semi-Structured Telephone Interview Guide	NVivo 12	Geographical Location <ul style="list-style-type: none"> <li>• Urban and rural</li> <li>• North and south</li> </ul> Type of Operation <ul style="list-style-type: none"> <li>• Private, public and volunteer operated</li> </ul>

### **3.4. Ethics Approval**

A proposal outlining our research purpose, objectives and methods was submitted to the USask Behavioural Research Ethics Board who operate in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2, 2014). The original proposal submitted for the preliminary survey was approved as Ethics Number 16-314 on September 22, 2016. Annual renewals and amendments to include the baseline mixed methods study were also submitted in a timely manner and will expire on August 21, 2020.

### **3.5. Participant Recruitment and Consent**

Participant recruitment took place between October 2017 and August 2018. With various communication channels reaching a vast recreation membership base in SK, the SPRA was an important partner for reaching our target audience. Their membership base includes municipal, facility and program leaders from across SK. Their communication channels include a website, social media and an e-newsletter, all of which provided an efficient way to share study information and invitations with our target audience. The EPHH AC also provided incentives to attract voluntary participation including access to resources and supports based on best available science to promote healthy food and beverages in facilities, a certificate of participation for display in facilities, and an entry to win a tablet valued at \$200, thanks to the generosity of the VNEL.

*Convenience sampling* was used to recruit interested recreation leaders and food service providers. During the interview process, *snowball sampling* was also used where participants were invited to forward EPHH recruitment information to other key informants who may have had interest in participating. Upon receiving study information through the SPRA communication channels and/or existing participants, recreation leaders and food service providers could voluntarily register to participate through an online form that asked for basic contact information. Once registered, each interested participant received a phone call and an email with information pertaining to the two studies of our mixed methods approach. If they chose to proceed, they were asked to complete and return the consent form, including their choice to participate in Study I (quantitative methods) and/or II (qualitative methods) as outlined in Appendix C. Once consent was received, each participant received another phone call and email to gather information about



the number of facilities in their municipality with food service, and the number of food outlets and/or vending machines in each facility. All information was compiled into an excel sheet. Participants and facilities were assigned unique identifiers to protect anonymity. All such files were stored on a password protected, secured server maintained by the SHA and the USask.

During recruitment, we aimed for fair distribution by size and geographical location of the communities in SK with at least one community per each of the nine Sport, Culture and Recreation Districts in SK (Sask Sport Inc., 2017). Recruitment remained open during the data collection period, until it needed to be closed to proceed with data analysis. As outlined in Figure 3.1, consent forms were received by 17 recreation leaders and/or food service providers from 16 communities in SK, five from urban (large and small cities) and 11 from rural (towns and villages) communities. Participants from 15 of the communities provided written consent to participate in Study I. This equated to data collection in 45 municipally funded PRFs. Due to the seasonal nature of PRFs and the timing of data collection, summer seasonal facilities were excluded from Study I. All 17 participants consented to participate in Study II.

Participating communities were categorized by size as per reported population in the 2016 Census and by types as per the Cost of Healthy Eating in SK (Statistics Canada, 2016; Saskatchewan Food Costing Task Group, 2017). Urban large cities were defined as having a population greater than 100,000, urban small cities as 5,000 to 99,999, towns as 500 to 4,999 and villages/hamlets as less than 500. Because of a lower number of communities with a population size defined as villages/hamlets, this participant group was combined with the towns' participant group and defined as *rural* to protect anonymity. Participating communities were also categorized as either northern or southern SK as per the Cost of Healthy Eating in SK, where northern communities were defined as being 100kms north of Prince Albert (Saskatchewan Food Costing Task Group, 2017). Because of an unfair distribution of communities in the north that compromises anonymity, we were unable to make northern and southern comparisons with the data. Each PRF was also categorized by facility type based on information shared with us by the SPRA in July of 2018; facility types included in our study were arenas, multipurpose facilities, curling rinks and community centres.

All participants were entered into a random draw for a tablet valued at \$200, which was ordered and shipped by the VNEL team. Participants were also emailed certificates of participation that they could print for display in their facilities as demonstrated in Appendix D.

As promised to participants, results from our study were shared with the EPH AC to inform the development of resources and supports for the recreation sector in SK and to inform planning for a healthier future state. Participants will also receive a copy of the results once published.



**Figure 3.1: Communities with Recreation Leaders and/or Food Service Providers Who Consented to Participate in Study I and/or Study II**

### 3.6. Data Collection Tools

To further encourage a PAR approach, members of the EHPH AC and PC helped choose the quantitative and qualitative data collection tools that best met our research objectives for Study I and II respectively. Tools proposed to the EHPH AC were chosen based on consultation with Dr. Naylor from UofV. This would potentially allow for comparison of findings to other jurisdictions in close proximity to SK. Members of the EHPH AC and PC also provided minor feedback to ensure that the tools were most appropriate for a SK context. Ethics approval was received for the adapted tools.

For Study I, the EHPH AC and PC chose the widely known Nutrition Environment Measures Survey (NEMS) tools, originally developed and validated by the University of Pennsylvania, which intend to measure consumer nutrition environments in food outlets through direct observation. As disclosed in Appendix E, the NEMS – Restaurant reduced item audit (rNEMS-R) tool for fast casual and fast food versions was chosen to evaluate concessions in SK PRFs (Partington, Menzies, Colburn, Saelens, & Glanz, 2015). The reduced item audit tool does not differ significantly from the full valid and reliable NEMS-R and it reduces burden on surveyors and researchers (Saelens, Glanz, Sallis, & Frank, 2007). The rNEMS-R is also the same tool used to evaluate concessions in the national Eat, Play, Live study by Olstad et al (2018). It measures attributes of food outlets like concessions including the availability of healthy and unhealthy options, the availability and types of side dishes, and the availability of nutrition information and labelling (Lesser, et al., 2012). For vending in SK PRFs, the NEMS - Vending (NEMS-V) was chosen as disclosed in Appendix F. The NEMS-V tool measures the availability of foods and beverages specifically in vending machines and has also shown high inter-rater and test-retest reliability (Voss, Klein, Glanz, & Clawson, 2012).

One disadvantage to using the NEMS tools is that they do not comprehensively evaluate food marketing, which has recently been highlighted as a key barrier to healthy FEs in PRFs (Prowse R., et al., 2018). This gap was discussed with the EHPH AC who then supported, with ethics approval, approaching the two urban large cities who participated in our study to also participate in a more comprehensive evaluation of food marketing in their PRFs. The *Food and beverage Marketing Assessment Tool for Settings* (FoodMATS) was chosen as the most appropriate tool to achieve this purpose, which was facilitated by a practitioner outside the realm of this study (Prowse R., et al., 2018).

For Study II, the EHPH AC and PC chose semi-structured interview questions used in related research activities in BC (Cejalvo, Donovan, & Naylor, 2014). Similar to BC, the EHPH AC defined our target audience as recreation leaders and food service providers involved in food service operations in SK PRFs. The interview questions were open-ended to encourage participants in responding with their own thoughts; the questions explored barriers, facilitators and future opportunities for healthy FEs in PRFs with these key stakeholders. Probing questions and prompts were also included to allow for in-depth exploration of some questions (Stuckey, 2013). To support a consistent methodology, opening and closing statements were added before and after the interview questions to form an interview guide as disclosed in Appendices G and H. The guide provided participants with consistent information such as the members of the EHPH AC, intended outcomes and timeline of the study, our research objectives, participation benefits, confidentiality and ethics approval.

To ensure accuracy and to estimate the time required to complete the data collection, all tools and protocols were piloted in my own municipality, Moose Jaw, SK, where I live and work as a PHN, in February and March of 2018. According to the pilots in Moose Jaw, SK, I estimated that each rNEMS-R would take approximately 90 minutes to complete, while the NEMS-V would take approximately 30 minutes to complete per machine. I also estimated that each semi-structured telephone interview would take approximately 30-45 minutes to complete.

### **3.7. Study I – Quantitative Methods**

#### **3.7.1. Implementation Partners**

To continue fostering a PAR approach, we first invited PHNs to support the quantitative data collection process for participating communities in their practice areas. Public health nutritionists are important health influencers with local municipalities. They also have an important role in knowledge exchange and supporting municipalities to implement and sustain healthy change. Where capacity was limited by a PHN, an invitation was then extended to local Community Registered Dietitians (RD) covering the practice area. Similar to PHNs, Community RDs are also influential in knowledge exchange and supporting change. We felt this was an important part of our process as it could potentially bridge relationships between health and recreation practitioners at local levels. However, in two participating municipalities, there were concerns of capacity by

the PHN, so one EPHH AC member from the recreation sector offered to help collect data in those municipalities. To cover data collection in the 45 facilities in the 15 participating municipalities, we had a total of 10 surveyors and the additional support of four nutrition students who were completing public health practicum placements during the data collection period, September 2018 to January of 2019.

To support inter-rater and test-retest reliability through standardized data collection methods, surveyors were provided a toolkit containing systematic procedures to follow, as well as, a three-hour online training session that was recorded and shared in follow up. After the training, each surveyor received the pertinent participant information, including signed consent forms, for their respective communities. Surveyors contacted the participant to arrange a date and time to travel to the location to conduct the surveys on site.

Majority of the surveyors preferred to use paper copies of the survey tools to collect the data. To ease the sharing of results electronically, excel Data Spreadsheets were created that mirrored the survey tools. Once a surveyor returned to their office, they were instructed to transfer the results from their paper copy to the Data Spreadsheet, which took about another 60 minutes for each rNEMS-R and 30 minutes for each NEMS-V. Data validation was used in excel to support the partner in accurately completing the required fields. Surveyors were instructed to only record unique identifiers in the Data Spreadsheet or on paper copies to help ensure anonymity and to reduce risk of bias with data analysis.

All completed documentation was returned to myself via email for analysis. Surveyors were instructed to encrypt Data Spreadsheets before submitting them by email. They were also instructed to email in scanned copies of their completed paper survey tools for cross checking. Surveyors were instructed to email me photographs of menus, food and beverage products, equipment and marketing materials so data could be also be checked to the photographs. All data and documentation were saved and stored on password protected, secured servers managed by the SHA and the USask, which were only accessed by myself, my research supervisor, research assistants (RAs) and other pertinent members of the AC involved in checking the data and data entry.

### 3.7.2. Statistical Analysis of Quantitative Data

Once all the documentation was received by surveyors by email, it was saved in folders by facility. Data was then checked and cleaned as per protocols from the VNEL at the USask. The first protocol was to check data accuracy and inclusion/exclusion criteria. As documentation was received, data entered into the Data Spreadsheets was compared to the scanned paper copies to ensure it was reported and transferred accurately. Based on the number of questions received by surveyors during data collection, careful consideration also went into checking parts where variance between surveyors could have occurred. For example, due to the complexity of the scoring process to determine the healthfulness of main dishes, all scores were checked, and corrected if needed, to ensure a consistent scoring process between surveyors. Another example was in regards to alcoholic beverages; if they were listed as an item in the packaged food audits, they were removed as this specific data did not appear to be collected consistently between surveyors.

After the data had been thoroughly checked, three RAs from the VNEL transferred data from each Data Spreadsheet into a master data file. All data entry into the master data file was cross checked by a different RA or by myself to ensure accuracy. The RAs received training prior to this task of data entry so they were familiar with the NEMS tools, the Data Spreadsheets and the data collection procedures. Once data entry was completed in the master data file, a data dictionary was created to track the coding and definitions of variables. In preparation for data analysis, derived variables were created, which were also tracked in the data dictionary.

The second protocol was to handle any missing data so it would be quantified as missing values and not potentially deleted by the statistical program. During data cleaning and entry, the RAs and I coded empty vending slots in the vending packaged food audits as '9999' and all non-food products like throat lozenges and recreation supplies in both the cafeteria/concession and vending packaged food audits as '99999'. All other missing data was coded as '999'. Due to difficulties in determining the healthfulness of chewing gum, it was coded as a non-food product for the purpose of this study. The third protocol was to handle any outliers in the data; no outliers were found in reviewing the data.

NEMS criteria were used to define main dishes and main dish salads as captured in the rNEMS-R. Main dishes were defined as having a significant protein source and one other food group such as a vegetable or carbohydrate serving. Main dishes also had to be distinctly different

either in ingredients, proportion of ingredients, or preparation methods and differ in ways other than just size or quantity. Main dish salads were defined as having significant sources of protein and vegetables, of sufficient size and priced similarly to other main dishes. Several examples of popular main dishes were provided in the data collection toolkit to support surveyors with consistent protocols.

NEMS criteria were also used to score main dishes and main dish salads as captured in the rNEMS-R. Main dish and main dish salad scores ranged from -1 (least healthy) to +3 (most healthy). One point was awarded if the dish included a whole grain or if there was no grain product; zero points were awarded if the dish included a refined grain product. One point was awarded if the dish included a quality protein such as egg, falafel, tuna, turkey, roast beef, steak or chicken. All quality proteins had to be prepared using healthier cooking methods such as baked, broiled, grilled or roasted. Zero points were awarded if the protein was battered, fried, or deli versions of the quality sources previously mentioned. With a lower protein content, cheese did not count as a significant protein source to define a main dish (e.g., cheese pizza, grilled cheese). One point was awarded if the dish included at least one serving of vegetables; Canada's Food Guide from 2007 was used to define one serving of vegetables as this is a familiar reference point for RDs in SK (Health Canada, 2007). As per the NEMS criteria, potatoes, fries or onion rings were not included in this definition for vegetables. Lastly, one point was subtracted if the dish had any source of added fat such as the inclusion of a high fat side dish like fries, high fat sauces like mayonnaise or ingredients like cheese, and deli meat in addition to another protein source. As mentioned above, because the scoring process was complex, scores calculated by surveyors were checked for consistency to ensure accurate results.

To determine the healthfulness of all *packaged* foods and beverages for both the rNEMS-R and NEMS-V, *Healthy Foods for my Recreation Setting - Nutrition Standards for Saskatchewan* were used (Government of Saskatchewan, 2018). Classifications, ranging from most to least healthy, included *Offer Most Often*, *Offer Sometimes*, and *Offer Least Often*. Generally, *Offer Most Often* foods and beverages contain a variety of nutrients, are higher in fibre, and are lower in fat, sugar and salt (Government of Saskatchewan, 2018). *Offer Sometimes* foods and beverages are often processed with some nutrients, have lower fibre and have higher amounts of fat, sugar and salt as compared to *Offer Most Often* foods and beverages (Government of Saskatchewan, 2018). *Offer Least Often* foods and beverages are often highly processed with

few nutrients, with lower amounts of fibre, and higher amounts of fat, sugar and salt as compared to *Offer Sometimes* foods and beverages (Government of Saskatchewan, 2018). To ensure accuracy, a fellow PHN who was also a member of the EHPH PC, and I verified each classification together. For items that did not fall clearly into the Nutrition Standards for SK, we referred to a more comprehensive set of guidelines, the *Healthier Choices in Vending Machines in BC Public Buildings* (Province of British Columbia, 2014). When it was still not clear as to where an item would fit, we used professional judgement to make a collaborative decision.

After completing the above protocols, the master data file was imported into SPSS Statistics Version 25 (IBM) for analysis. For categorical variables, frequency distributions were calculated. Chi-square tests were used to test the significance of difference in the distributions of some categorical variables by the size of the municipality and/or the operational model. For continuous variables, measures of central tendency were calculated. Mann-Whitney tests were used to test the significance of difference in the healthfulness scores of concession main dishes, as well as, concession and vending packaged products, by urban and rural. Alpha was set at 0.05.

### **3.8. Study II – Qualitative Methods**

To ensure validity and reliability, the COREQ Checklist describing three main domains was used to organize and to guide reporting of qualitative methods (Tong, Sainsbury, & Craig, 2007). The first domain includes questions about personal characteristics of the research team and their relationship with participants (Tong, Sainsbury, & Craig, 2007). The second domain of the COREQ checklist includes questions about study design, in particular, the theoretical framework, participant selection process, the setting, and the data collection process (Tong, Sainsbury, & Craig, 2007). The third domain of the COREQ checklist includes questions about data analysis and findings. Answers to all of these three domains have been integrated throughout this thesis (Tong, Sainsbury, & Craig, 2007).

With vast geographical distances between communities in SK, telephone was the most efficient and consistent medium of choice to conduct the interviews. Telephone interview guides were piloted in February and March of 2018 with both a recreation leader and a privately-contracted food service provider who I was acquainted with professionally prior to the study as they both reside in the region that I cover as a PHN. Like all participants, they both provided consent. Each telephone interview took approximately 45 minutes to complete which was longer



than I had originally anticipated likely due to my pre-established relationships with these two pilot-participants. Because of the timing of a nutrition undergraduate student placed with me, the one pilot-participant was also approached and consented to the student observing the telephone interview; this may have also extended the pilot interview time slightly. I was not acquainted with the other participants in this study and the majority of the other interviews took approximately 30 minutes.

To schedule the telephone interviews, I phoned each participant and then followed up with an email to confirm details. Details of the study, benefits and compensation for participating, confidentiality and consent were discussed and shared with each participant prior to each interview. The core interview questions were also shared with participants prior to their scheduled interview, in order to support the participant in formulating quality answers ahead of time. All other telephone interviews besides the two pilot interviews, took place between June and September 2018.

As a RD who works as a PHN with the SHA based out of Moose Jaw, I was supported by my employer to conduct the semi-structured interviews using a speakerphone in a private room in my workplace. A speakerphone allowed me to audio-record the interview using a Voice Memo app on my personal mobile device. Immediately following the completion of the interview, each file was renamed using a unique identifier code and saved. My personal device was password protected to protect confidentiality. The audio file was then uploaded to ownCloud, a virtual file storage centre secured by the USask at that time. Passwords to ownCloud were set to protect access to the stored data. Once the audio-recordings were successfully uploaded to ownCloud and transcribed by myself, they were deleted from my personal mobile device. Field notes were also taken and stored on ownCloud to capture details during the interview experience in relation to the physical environment, internal and existential conditions.

Recruitment for Study II remained open during the interviewing and transcription processes, and until no further representatives stepped forward to participate. After consultation with my research advisor, we agreed saturation had been reached as no new themes or points in need of further explanation surfaced during this time (Corbin & Strauss, 2008). Recruitment was then closed in order to proceed with thematic analysis.

### 3.8.1. Thematic Analysis of Qualitative Data

Each audio recording was manually transcribed into a Microsoft Word document following the same transcription protocols for consistency. During transcription, all names were replaced with unique identifiers to protect confidentiality and to minimize researcher bias during analysis. The transcriptions were saved and stored on password protected, secured servers managed by the SHA and the USask, which were only accessed by myself, the research supervisor and other pertinent members of the AC. The files were then uploaded to NVivo 12 for analysis.

With the availability of a socio-ecological framework that looks at collective factors that influence health behaviours, we took an inductive approach to analyzing the qualitative data. Using an analytical framework to manage and analyze qualitative data has become a popular approach in health research, especially when used by research teams where not all members are experienced researchers (Gale, Heath, Cameron, Rashid, & Redwood, 2013). A framework can also help to facilitate constant comparative techniques and build on pre-existing theory, all of which benefits our study (Gale, Heath, Cameron, Rashid, & Redwood, 2013; Colorafi & Evans, 2016).

For existing barriers, facilitators and future opportunities, parent nodes were created for each layer of the socio-ecological framework including policy, environmental (physical, economic, social) and interpersonal factors. Parent nodes were also created to capture statements around generalizability of data. As each transcript was reviewed, segments of meaningful data were coded into the parent nodes based on its intention. Child nodes were created as patterns emerged repeatedly in the data. Once the data was coded into the parent and child nodes, a summary was downloaded, saved and stored on password protected, secured servers managed by the SHA and the USask. The summaries were only accessible to myself, the research supervisor and other pertinent members of the AC. To ensure accuracy of coding, a fellow PHN in SHA who is also a member of the EPHH AC, acted as a primary reviewer. She read the transcripts and summaries independently and documented any discrepancies in coding on the summaries. We then reviewed the discrepancies and made adjustments to the coding based on consensus. Based on the number of files and references for each of the nodes, tables were then created to prioritize, theme and conceptualize the data. Sample quotes from the interviews were also included as evidence. Key statements were generated to summarize the themes. The tables and key

statements were also shared with primary and secondary reviewers from the EHPH AC for additional verification. The descriptors outlined in Table 3.2 were added to the key statements to describe the number of participant references.

**Table 3.2: Descriptors Used to Describe the Number of Participant References**

<b>Descriptor</b>	<b>Number of Participants</b>
One	1
Few	2-4
Many	5-8
Majority	9-16
All	17

## **CHAPTER 4 : STUDY I - QUANTITATIVE RESULTS**

The widely known NEMS tools founded many quantitative results. Results from the rNEMS-R tool include some general characteristics of facilities and concessions in SK. Results from concessions specifically included the frequency of food storage and preparation equipment, the frequency of nutrition information and labelling, and the frequency and healthfulness of menus, main dishes, main dish salads and packaged products. Results from the NEMS-V tool specifically include the frequency of labelling of healthy options, and the frequency and healthfulness of packaged products in vending in SK PRFs.

### **4.1. Characteristics of Facilities Sampled**

For Study I, rNEMS-R and NEMS-V surveys were conducted in 45 PRF from 15 SK communities. As outlined in Table 4.1, majority of the PRFs surveyed are located in urban large cities at 25/45 (56%), with fewer located in urban small cities at 9/45 (20%) and rural at 11/45 (24%). Majority of the PRFs surveyed were arenas at 23/45 (52%) and multipurpose facilities at 20/45 (44%); lesser amounts of the PRFs surveyed were curling rinks or community centres at 1/45 (2%) each. Sixty percent (60%) of concessions operated seasonally (e.g., winter seasonal), where as 40% operated year round. Because of the timing of data collection, summer seasonal PRFs were excluded from our study; therefore, the percentage of seasonal facilities in our study is likely an under representation. Even though some surveyors did not submit the facility's hours of operation, the majority of PRFs appear to operate a greater number of hours on weekends than on weekdays.

**Table 4.1: Characteristics of Participating Public Recreation Facilities in Saskatchewan**

Facility Characteristics	N (total)		n (sub-samples)	%
<b>Size of Community</b>	45	Urban Large Cities (>100,000)	25	55.6
		Urban Small Cities (5000-99,999)	9	20.0
		Rural (0-4999)	11	24.4
<b>Type</b>	45	Arena	23	51.1
		Multipurpose	20	44.4
		Curling Rink	1	2.2
		Community Centre	1	2.2
<b>Months of Operation</b>	45	Seasonally	27	60.0
		Annually	18	40.0
<b>Hours of Operation on Weekdays (Monday to Friday)</b>	21	>8 hours/day	8	38.1
		<8 hours/day	9	42.9
		Events only	4	19.0
<b>Hours of Operation on Weekends (Saturday to Sunday)</b>	21	>8 hours/day	13	61.9
		<8 hours/day	1	4.8
		Events only	7	33.3

## 4.2. Characteristics of Concessions and Vending Machines Sampled

In the 45 PRFs sampled, 42 concessions and 452 vending machines were surveyed using the rNEMS-R and NEMS-V tools respectively. This equated to a mean of 0.93 ( $\pm 1.90$ ) concessions and 10.04 ( $\pm 10.591$ ) vending machines per PRF in SK demonstrating that they are an important part of FE in SK PRFs. Concessions ranged from 0 to 12 per PRF, while vending machines ranged even more widely from 0 to 36 per PRF.

As outlined in Table 4.2, the majority of concessions surveyed were in urban large cities and privately operated. The distribution of operating models was significantly different in communities based on their size ( $p < 0.01$ ). Concessions in urban large cities were all privately operated, whereas those in urban small cities were split between privately and publicly operated, and majority of rural were volunteer operated.

Results indicated that the majority of concession profits went to either municipal operational budgets or to private contractors. Note that four surveyors indicated that profits went to *other*. Only two of the four surveyors provided written details; one indicated that profits were split between the municipal general revenue budget and the contractor, while the other surveyor indicated that profits were split between the municipal operational budget and fundraising. The distribution of where profits go was significantly different in concessions based on their

operating model ( $p < 0.05$ ). Majority of the profits from privately operated concessions went to the contractor, whereas profits from publicly operated concessions went to the operational budget. Similarly, the majority of profits from volunteer operated concessions went to operational budgets but was unique in the distribution of profits to fundraising.

**Table 4.2: Characteristics of Concessions Surveyed**

Characteristics	N (total)		n (sub-sample)	%
<b>Size of Community</b>	42	Urban Large Cities (>100,000)	21	50.00
		Urban Small Cities (5000-99,999)	10	23.81
		Rural (0-4999)	11	26.19
<b>Operating Model</b>	42	Private	29	69.05
		Public	5	11.90
		Primarily Volunteer	8	19.05
<b>Where Profits Go</b>	25	Contractor	8	32.00
		Operational Budget	11	44.00
		Fundraising	2	8.00
		Other	4	16.00
<b>Months of Operation</b>	42	Year Round	25	59.52
		Seasonally	17	40.48
<b>Hours of Operation on Weekdays (Monday to Friday)</b>	38	>8 hours/day	6	15.79
		<8 hours/day	11	28.95
		Events only	19	50.00
		Closed	2	5.26
<b>Hours of Operation on Weekends (Saturday to Sunday)</b>	39	>8 hours/day	15	38.46
		<8 hours/day	2	5.13
		Events only	22	56.41
<b>Eating Area</b>	42	Dedicated seating	19	45.24
		No dedicated seating	23	54.76
<b>Where Food is Prepared</b>	42	On site	34	80.95
		Contracted and brought in	1	2.38
		Both	7	16.67
<b>Negotiability of Private Contracts</b>	12	Negotiable	11	91.67
		Unsure	1	8.33
<b>Length of Private Contracts</b>	10	Annual	8	80.0
		<Annual	2	20.0

Concessions that operate year round at 59% versus seasonally at 41% were comparably distributed. The length of operation was significantly different in communities based on their size

( $p < 0.01$ ). Almost all (20/21 or 95%) of the concessions in urban large cities operated year round, whereas all (11/11 or 100%) of the concessions in rural communities operated seasonally.

Concessions in urban small cities were equally represented between year round and seasonal operations. In terms of hours of operation, majority of concessions are only open on weekdays and weekends for events, and similar to facility hours of operation, majority of concessions operate a higher number of hours on weekends than on weekdays.

There was also a comparable distribution of concessions with dedicated seating for eating at 45% versus no dedicated seating for eating at 55%. The distribution of concessions with or without dedicated seating was significantly different in communities based on their size ( $p < 0.01$ ). Concessions in urban large cities were less likely to have dedicated seating at 5/21 (24%) than those in rural areas at 9/11 (82%). Concessions in urban small cities were equally represented.

The majority of concessions only prepared food on site. The distribution of where food was prepared was significantly different in communities based on their size ( $p < 0.05$ ). While all concessions in urban small cities (10/10 or 100%) and rural areas (11/11 or 100%) only prepared food on site, most concessions in urban large cities reported either preparing food on site (13/21 or 62%) only or a combination of preparing food on site and contracting it in (7/21 or 33%).

For privately operated concessions, majority of contracts are renewed annually and are negotiable. There was no significant difference between contract details and the size of the municipality.

As outlined in Table 4.3, cold beverage, dry snack, hot beverage and candy machines were the most frequent food vending machine types found in SK PRFs. Ninety-eight percent (98%) of facilities had at least one cold beverage machine. Eighty-three percent (83%) of facilities had at least one dry snack machine, 48% had at least one hot beverage machine and 45% had at least one candy dispenser. In general, urban cities had a much higher frequency of vending machines than rural areas. A significant difference was found in the proportion of dry snack and hot beverage machines reported for urban and rural areas ( $p < 0.01$ ) and a significant difference in the proportion of cold beverage machines reported for urban and rural ( $p < 0.05$ ).

As outlined in Table 4.4, candy machines had the highest mean of food vending machine types in SK PRFs at  $4.80 \pm 6.19$  and with a high range of 0 to 20. The high variability of candy machines in PRFs was also confirmed by a median of 0.00 and a high interquartile range of 13.50. Cold beverage machines had the second highest mean at  $1.78 \pm 1.31$  and with a range of 0

to 8. The frequency of cold beverage machines in SK PRFs was more consistent with a median of 2.00 and an interquartile range of 1.00. Dry snack machines had the third highest mean at 0.93  $\pm$ 0.53 and with a range of 0 to 2 per facility. The frequency of dry snack machines was also more consistent with a median of 1.00 and an interquartile range of 0.00.

**Table 4.3: Frequency of Facilities with Vending Machine Types**

Vending Machine Type	Yes n <sup>1</sup> (%)	Urban n (%)	Rural n (%)
<b>Dry snack</b>	33 (82.50)	31 (93.94)	2 (6.06)
<b>Refrigerated</b>	6 (15.00)	6 (100.00)	0 (0.00)
<b>Frozen snack</b>	1 (2.50)	1 (100.00)	0 (0.00)
<b>Cold beverage</b>	39 (97.50)	33 (84.62)	6 (15.38)
<b>Hot beverage</b>	19 (47.50)	19 (100.00)	0 (0.00)
<b>Other</b>			
<b>Candy</b>	18 (45.00)	16 (88.89)	2 (11.11)
<b>Toy</b>	18 (45.00)	16 (88.89)	2 (11.11)

**Table 4.4: Central Measures of Tendency for Vending Machine Types**

Vending Machine Types	n	Mean $\pm$ SD	Median	Range	IQR
<b>Dry snack</b>	37	0.93 $\pm$ 0.53	1.00	0 to 2	0.00
<b>Refrigerated</b>	8	0.20 $\pm$ 0.56	0.00	0 to 3	0.00
<b>Frozen snack</b>	1	0.03 $\pm$ 0.16	0.00	0 to 1	0.00
<b>Cold beverage</b>	71	1.78 $\pm$ 1.31	2.00	0 to 8	1.00
<b>Hot beverage</b>	19	0.48 $\pm$ 0.51	0.00	0 to 1	1.00
<b>Other</b>					
<b>Candy</b>	192	4.80 $\pm$ 6.19	0.00	0 to 20	13.50
<b>Toy</b>	124	3.10 $\pm$ 4.24	0.00	0 to 15	8.00
<b>N</b>	<b>452</b>				

Vending machine profits were reported per product item. As outlined in Table 4.5, majority of where vending profits go were reported as *other*. Although many surveyors left the description blank for *other*, a few provided a written description. The written description

<sup>1</sup> Total sample (N) is 40 PRFs with 33/40 (82.50%) in urban cities and 7/40 (17.50%) in rural areas.



indicated that profits are most often split between the municipal general revenue budget and the contractor.

**Table 4.5: Frequency of Vending Profits**

<b>Where Vending Profits Go</b>	<b>n</b>	<b>%</b>
<b>To the contractor</b>	140	5.49
<b>To the operational Budget</b>	166	6.51
<b>To fundraising</b>	39	1.53
<i>Other – described as:</i>		
<b>Split general revenue and contractor</b>	957	37.54
<b>Split city operations and contractor</b>	30	1.18
<b>Left blank - no description</b>	1217	47.74
<b>N</b>	<b>2549</b>	<b>100.0</b>

### **4.3. Concession Equipment**

Table 4.6 outlines the frequency of food storage and preparation equipment found in concessions. Rotisseries, blenders, croc pots and toasters were found least frequently, while sinks, storage fridges, microwaves and freezers were found most frequently. Rural areas had a significantly higher frequency of croc pots at 7/11 (64%) than urban cities at 5/30 (17%) ( $p < 0.05$ ). Rural areas also had a significantly higher frequency of grills at 10/11 (91%) than urban cities at 14/30 (47%), as well as, display fridges at 9/11 (82%) compared to urban cities at 14/30 (47%) ( $p < 0.05$ ). Sinks were only reported in 88% of concessions, which may be explained by a higher number of privately operated, portable concessions in urban large cities that only sell single, prepared menu items like shaved ice, cotton candy and mini donuts.

Deep fryers were only reported in 56% of concessions; however, rural areas had a significantly higher frequency of deep fryers at 9/11 (82%) than urban cities at 14/30 (47%) ( $p < 0.05$ ). This may also be explained by a higher number of concessions in urban cities that only offered cold items on their menus like fruit-based smoothies, shaved ice and cotton candy. No other significant differences were found in equipment type between urban and rural areas.

**Table 4.6: Food Storage and Preparation Equipment in Concessions**

<b>Equipment Type</b>	<b>Yes n<sup>2</sup> (%)</b>	<b>Urban n (%)</b>	<b>Rural n (%)</b>
Rotisseries	2 (4.88)	1 (50.00)	1 (50.00)
Blenders	3 (7.32)	3 (100.00)	0 (0.00)
Croc pots	12 (29.26)	5 (41.67)	7 (58.33)
Toasters	14 (34.15)	11 (78.57)	3 (21.43)
Refrigerated display cases	16 (39.02)	13 (81.25)	3 (18.75)
Heat lamps	17 (41.48)	12 (70.59)	5 (29.41)
Display fridges	23 (56.10)	14 (60.87)	9 (39.13)
Deep fryers	23 (56.10)	14 (60.87)	9 (39.13)
Ovens	24 (58.54)	16 (66.67)	8 (33.33)
Grills	24 (58.54)	14 (58.33)	10 (41.77)
Freezers	29 (70.73)	19 (65.55)	10 (34.55)
Microwaves	32 (78.05)	22 (68.75)	10 (31.25)
Storage fridges	32 (78.05)	22 (68.75)	10 (31.25)
Sinks	36 (87.80)	25 (69.44)	11 (30.66)

#### **4.4. Nutrition Information, Signage and Promotions in Concessions and Vending**

Table 4.7 outlines the frequency of nutrition information and labelling of healthy options in both concessions and vending, as facilitators for healthy eating. Only 15% of concessions had nutrition information on site for consumers, with only 10% being near the point-of-purchase (POP); POP was defined as within five feet of the cash register and/or directly in sight line behind the cash register. While 10% of concessions had nutrition information on their in-concession menus, none (0%) included a healthy choice label. Only 3% of concessions had nutrition information and healthy choice labels on their take-away menus. Likewise, only 3% had signage, table tents or displays with nutrition information. None (0%) of the vending machines had healthy options labelled to facilitate healthy eating. Likewise, none (0%) of the PRFs had nutrition information on their websites. All concessions that had such facilitators were large franchises only found in urban large and small cities.

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<sup>2</sup> Total sample (N) is 41 concessions with 30/41 (73.17%) in urban cities and 11/41 (26.83%) in rural areas.

**Table 4.7: Facilitators for Healthy Eating in Concessions and Vending**

<b>Facilitators for Healthy Eating</b>		<b>Yes n<sup>3</sup> (%)</b>
<b>Nutrition Information in Concessions</b>	On site	6 (14.29)
	On site near the point-of-purchase	4 (9.52)
	On in-concession menus	4 (9.52)
	On concession take-away menus	1 (2.38)
	On facility websites	0 (0.00)
	On signs/table tents/displays	1 (2.38)
<b>Labelling of Healthy Options in Concessions and Vending</b>	On in-concession menus	0 (0.00)
	On concession take-away menus	1 (2.38)
	On facility websites	0 (0.00)
	On vending machines	0 (0.00)

Table 4.8 outlines the frequency of indicators on concession menus or through signage, table tents and displays that could be a barrier to healthy eating. Very little to no barriers were found. While this is encouraging, these results are limited by the use of only four indicators that were collected through observation and that were restricted to concession areas only. Signs/table tents/displays in the rest of the facility environment were not considered.

**Table 4.8: Barriers for Healthy Eating in Concessions**

<b>Barriers for Healthy Eating in Concessions</b>	<b>Yes n<sup>3</sup> (%)</b>
Menus that discourage special requests	0 (0.00)
Menus that encourage large portions	1 (2.38)
Menus that encourage over-eating	0 (0.00)
Signs/table tents/displays that encourage over-eating	0 (0.00)

#### **4.5. Frequency and Healthfulness of Concession Menus**

Table 4.9 indicates the frequency of various food and beverage markers on concession menus; the markers were grouped as facilitators or barriers for healthy eating based on NEMS protocols. Examples of facilitator markers were low fat or skim plain milk, whole grain products, baked fries and potato chips, fresh fruit and non-fried vegetable side dishes. Examples of barrier

<sup>3</sup> Total sample (N) is 42 concessions and 328 vending machines.

markers were white or sourdough grains, deep-fried fries and potato chips, high fat side dishes and alcohol. When grouped, barrier markers were much more frequent on concession menus at 61% than facilitator markers at 19%. Concessions in urban cities had a higher frequency of facilitator and barrier markers. Rural concessions had a higher frequency of menus with white/sourdough grains at 11/11 (100%) than urban concessions at 22/31 (71%) ( $p < 0.05$ ). Rural concessions also had a higher frequency of menus with fries listed at 9/11 (82%) than urban concessions at only 13/31 (42%) ( $p < 0.05$ ).

**Table 4.9: Frequency of Food and Beverage Markers on Concession Menus**

	<b>Food and Beverage Markers on Concession Menus (N=42)</b>	<b>Total n (%)</b>	<b>Urban n (%)</b>	<b>Rural n (%)</b>
<b>Facilitators for healthy eating</b>	1% low fat, skim or non-fat plain milk	10 (23.81)	8 (80.00)	2 (20.00)
	100% fruit juice	24 (57.14)	18 (75.00)	6 (25.00)
	100% whole wheat or whole grains	8 (19.05)	8 (100.00)	0 (0.00)
	Baked fries	2 (4.76)	2 (100.00)	0 (0.00)
	Baked potato/corn chips	3 (7.14)	3 (100.00)	0 (0.00)
	Fresh fruit without added sugar	5 (11.90)	5 (100.00)	0 (0.00)
	Non-fried vegetables without added sauce	8 (19.05)	8 (100.00)	0 (0.00)
	Low fat salad dressing	5 (11.90)	4 (80.00)	1 (20.00)
<b>N</b>		<b>65 (19.35)</b>	<b>56 (86.15)</b>	<b>9 (13.85)</b>
<b>Barriers for healthy eating</b>	White or sour dough grains	33 (78.57)	22 (66.67)	11 (33.33)
	Regular deep-fried fries	22 (52.38)	13 (59.09)	9 (40.91)
	Regular deep-fried potato/corn chips	26 (61.90)	17 (65.38)	9 (34.62)
	High fat side dishes	26 (61.90)	18 (69.23)	8 (30.87)
	Alcohol is sold within facility	22 (52.38)	19 (86.36)	3 (13.64)
<b>N</b>		<b>129 (61.43)</b>	<b>89 (68.99)</b>	<b>40 (31.01)</b>

When the size of the community was further categorized as urban large cities, urban small cities and rural, significant differences were also found in the frequency of the following food and beverage markers: fruit juice, white or sourdough grains, regular deep-fried fries, baked fries, regular deep-fried potato/corn chips and alcohol. The frequency of fruit juice was significantly higher on concession menus in urban small cities at 10/10 (100%) than urban large cities at 8/21 (38%) and rural areas at 6/11 (55%) ( $p < 0.01$ ). The frequency of white or sourdough grains was significantly higher on concession menus in urban small cities at 9/10 (90%) and rural areas at 11/11 (100%) than urban large cities at 13/21 (62%) ( $p < 0.05$ ). The frequency of regular deep-fried fries was significantly higher on concession menus in urban small cities at 6/10 (60%) and

rural areas at 9/11 (82%) than urban large cities at 7/21 (33%) ( $p<0.05$ ). The frequency of baked fries was only available on concession menus in urban small cities at 2/10 (20%) ( $p<0.05$ ). The frequency of regular deep-fried potato/corn chips was significantly higher on concession menus in urban small cities at 9/10 (90%) and rural areas 9/11 (82%) than urban large cities at 8/21 (38%) ( $p<0.01$ ). Lastly, the frequency of alcohol was significantly higher on concession menus in urban large cities at 18/21 (86%) than urban small cities at 1/9 (11%) and rural areas at 3/10 (30%) ( $p<0.01$ ). No significant differences were found in the frequency of other food and beverage markers based on the size of the community.

The frequency of two markers on concession menus, plain milk and baked fries, were significantly different based on the concession operating model. The frequency of plain milk was significantly higher on menus of publicly operated concessions at 4/5 (80%) versus privately operated at 5/29 (17%) and volunteer operated at 1/8 (13%) ( $p<0.01$ ). Baked fries were only available on menus of publicly operated concessions at 2/5 (40%) ( $p<0.01$ ). No significant difference was found in the frequency of the other food and beverage markers based on the concession's operating model.

In addition to the frequency markers, continuous variables were collected and analyzed for three of the markers including fresh fruit, non-fried vegetables and high fat side dishes as outlined in Table 4.10. For concessions that offered fresh fruit, a mean  $\pm$ SD of  $1.4 \pm 0.89$  options were available and with a range of one to three options per menu. Similarly, the median was 1.00 with an interquartile range of 1.00. The sum of fruit options was 7. In addition, for concessions that offered non-fried vegetable side dishes, a mean  $\pm$ SD of  $5.13 \pm 3.60$  options were available with a wide range of one to nine options per menu. Similarly, the median was 5.00 with a higher interquartile range of 7.50. The sum of non-fried vegetable options was 41. For barrier markers, high fat side dishes were much more frequent in concessions with a mean  $\pm$ SD of  $6.81 \pm 3.54$  and with a range of three to six options per concession. Again, the median was similar to the mean at 6.00 and with a higher interquartile range of 5.00. The sum of high fat side dishes was 184.

**Table 4.10: Measures of Central Tendency for Concessions Offering Food and Beverage Markers**

	<b>Food and Beverage Marker</b>	<b>n</b>	<b>Mean ±SD</b>	<b>Median</b>	<b>Range</b>	<b>IQR</b>
<b>Facilitators for healthy eating</b>	Fresh fruit without added sugar	7	1.4 ±0.89	1.00	1 to 3	1.00
	Non-fried vegetables without added sauce	41	5.13 ±3.60	5.00	1 to 9	7.50
<b>Barriers for healthy eating</b>	High fat side dishes	184	6.81 ±3.54	6.00	3 to 16	5.00

Children’s menus were only present in 12% of the concessions surveyed. Of those, 80% were privately operated franchises in urban large and small cities. Table 4.11 includes menu markers that are either facilitators or barriers for children’s healthy eating behaviours as per NEMS protocols. Majority, if not all of the children’s menus had nutrition information, healthy side dishes and desserts, and low fat or non-fat plain milk on the menu as facilitators. All of the children’s menus also indicated that assigned unhealthy side dishes could be substituted with a healthy side, which also facilitates healthy eating.

**Table 4.11: Children’s Menu Markers in Concessions**

	<b>Children’s Menu Markers in Concessions</b>	<b>n<sup>4</sup></b>	<b>% Yes</b>
<b>Facilitators for healthy eating</b>	Healthy eating is promoted on the menu	0	0.00
	Nutrition information is on the menu	4	80.00
	Healthy dishes are on the menu	0	0.00
	Has dishes with an assigned healthy side	4	80.00
	Healthy side dishes are on the menu	5	100.00
	Healthy desserts are on the menu	4	80.00
	Low fat or non-fat plain milk is on the menu	1	20.00
	100% fruit juice is on the menu	5	100.00
	Assigned unhealthy sides can be substituted with healthy sides	5	100.00
<b>Barriers for healthy eating</b>	Unhealthy eating is promoted on the menu	0	0.00
	Unhealthy desserts are included with childrens meals	0	0.00
	Free refills on unhealthy drinks is on the menu	0	0.00

<sup>4</sup> Total sample (N) is 5 concessions.

## 4.6. Frequency and Healthfulness of Concession Main Dishes

Nine hundred and eighty-four (984) main dishes were recorded from 42 concession menus and scored using the NEMS criteria described in the quantitative methods. As per Table 4.12, a large majority of the main dishes were from concessions in urban cities at 914/984 (93%) as compared to rural areas at 70/984 (7%). Majority of the main dishes scored 0, +1 or +2. Main dishes that scored 0 and +1 were significantly higher in urban cities as compared to rural areas ( $p < 0.01$ ). Main dishes that scored +2 were significantly higher in urban cities as compared to rural areas ( $p < 0.05$ ). Only 49/984 (5%) of main dishes scored a +3 and were therefore defined as healthy. Healthy main dishes were reported in six urban and two rural concessions with 7/8 (88%) being privately operated. No other significant differences were found.

As shown in Table 4.13, main dishes that scored a 0, +1 and +2 had the highest means  $\pm$ SD at  $9.03 \pm 9.39$ ,  $9.85 \pm 17.38$  and  $6.36 \pm 16.24$ , respectively; however, only main dishes that scored 0 and +1 had higher medians. All had high ranges. Scores 0 and +1 also had high interquartile ranges demonstrating a high variability amongst concessions. Main dishes that scored +3 and defined as healthy, had the lowest mean  $\pm$ SD at  $1.48 \pm 3.67$ , median of 0.00, range of 0 to 12 and interquartile range of 0.50.

**Table 4.12: Frequency of Concession Main Dishes by Health Score**

Main Dish Health Scores	Total n (%)	Urban n (%)	Rural n (%)
-1	102 (10.37)	93 (91.18)	9 (8.82)
0	298 (30.28)	255 (85.57)	43 (14.43)
+1	325 (33.03)	310 (95.38)	15 (4.62)
+2	210 (21.34)	209 (99.52)	1 (0.58)
+3 (healthy)	49 (4.98)	47 (95.92)	2 (4.18)
<b>N</b>	<b>984 (100.00)</b>	<b>914 (92.89)</b>	<b>70 (7.11)</b>

**Table 4.13: Measures of Central Tendency for Concession Main Dishes by Health Score**

Main Dish Health Scores	n	Mean $\pm$ SD	Median	Range	IQR
-1	102	$3.09 \pm 6.43$	1.00	0 to 25	2.50
0	298	$9.03 \pm 9.39$	6.00	0 to 41	8.50
+1	325	$9.85 \pm 17.38$	3.00	0 to 57	9.00
+2	210	$6.36 \pm 16.24$	0.00	0 to 51	1.00

+3 (healthy)	49	1.48 ±3.67	0.00	0 to 12	0.50
<b>N</b>	<b>984</b>				

Table 4.14 outlines the data gathered about side dishes of the 984 main dishes, which can either facilitate or impede healthy eating. Side dishes may also encourage over-eating. Forty-four percent (44%) of the main dishes did not come with a side dish, whereas 37% of main dishes came with a fried side dish and only 8% came with, or had the option for, a non-fried vegetable side dish. Only concessions in urban cities offered vegetable side dishes; however, no significant difference was found in main dish side dishes for urban and rural areas.

**Table 4.14: Side Dishes of Concession Main Dishes**

<b>Concession Main Dishes with:</b>	<b>Yes n<sup>5</sup> (%)</b>	<b>Urban n (%)</b>	<b>Rural n (%)</b>
Vegetable sides	83 (8.43)	83 (100.00)	0 (0.00)
Fried sides	365 (37.09)	353 (96.71)	12 (3.39)
No sides	434 (44.11)	377 (86.87)	57 (13.13)

As shown in Table 4.15, main dishes with no side dishes had the highest mean ±SD at 10.33 ±15.53, a median of 5.50, a high range of 0 to 56 and interquartile range of 8.25. Main dishes with fried side dishes also had a high mean of 8.69 ±17.35, a high range of 0 to 52 and interquartile range of 5.00; however, the median was 0.00. This was because the few concessions that reported fried side dishes, reported a high variety in selection. The mean of main dishes with vegetable side dishes was much lower at 1.98 ±6.10, a median of 0.00, a high range of 0 to 26 and an interquartile range of 0.00.

**Table 4.15: Measures of Central Tendency for Side Dishes of Concession Main Dishes**

<b>Concession Main Dishes with:</b>	<b>n<sup>5</sup></b>	<b>Mean ±SD (Number)</b>	<b>Median</b>	<b>Range</b>	<b>IQR</b>
Vegetable sides	83	1.98 ±6.10	0.00	0 to 26	0.00
Fried sides	365	8.69 ±17.35	0.00	0 to 52	5.00
No sides	434	10.33 ±15.53	5.50	0 to 56	8.25

<sup>5</sup> Totals sample (N) is 984 concession main dishes with 914/984 (92.89%) from urban cities and 70/984 (7.11%) from rural areas.



## 4.7. Frequency and Healthfulness of Concession Main Dish Salads

As per Table 4.16, only 8/42 (19%) of concessions offered main dish salads and only 5/42 (12%) offered healthy main dish salads that scored +3. Although there was no significant difference ( $p < 0.05$ ), all of the concessions that reported main dish salads and healthy main dish salads were in urban cities. As shown in Table 4.17, the mean  $\pm$ SD of main dish salads on concession menus was  $2.69 \pm 7.70$  with a high range of 0 to 26. The mean  $\pm$ SD of main dish salads defined as healthy (+3), was lower at  $0.43 \pm 1.21$  and with a lower range of 0 to 4.

**Table 4.16: Frequency of Concession Main Dish Salads**

Main Dish Salads on Concession Menus	Yes n <sup>6</sup> (%)	Urban n (%)	Rural n (%)
Concessions menus with main dish salads	8 (19.05)	8 (100.00)	0 (0.00)
Concessions menus with <u>healthy</u> main dish salads (scored +3)	5 (11.90)	5 (100.00)	0 (0.00)

**Table 4.17: Measures of Central Tendency for Concession Main Dish Salads**

Main Dish Salads on Concession Menus	n <sup>6</sup>	Mean $\pm$ SD	Median	Range	IQR
Concessions menus with main dish salads	113	$2.69 \pm 7.70$	0.00	0 to 26	0.00
Concessions menus with <u>healthy</u> main dish salads (scored +3)	18	$0.43 \pm 1.21$	0.00	0 to 4	0.00

## 4.8. Frequency and Healthfulness Packaged Products in Concessions and Vending

As outlined in Table 4.18, information was gathered for 663 and 1205 packaged food products from 42 concessions and 328 vending machines in SK PRFs, respectively. Similar to other studies, the packaged food products were grouped into 11 types based on major ingredients and/or professional judgement with how they are commonly recognized (Olstad, Poirier, Naylor, Shearer, & Kirk, 2014). The most commonly found packaged foods for both operational areas were potato/corn chips, chocolate bars and candy.

<sup>6</sup> Total sample (N) is 42 concessions.

**Table 4.18: Types of Packaged Foods in Concessions and Vending**

Type	Concessions		Vending	
	n	% Yes	n	% Yes
Potato/corn chips	150	22.6	385	32.0
Chocolate bars	126	19.0	290	24.1
Candy	121	18.3	167	13.9
Baked goods	80	12.1	51	4.2
Popcorn	54	8.1	24	2.0
Other salty snacks	40	6.0	132	11.0
Ice cream and frozen yogurt	31	4.7	32	2.7
Granola and protein bars	23	3.5	42	3.5
Other protein-based snacks	21	3.2	13	1.1
Nuts and nut mixes	9	1.4	27	2.2
Fruit products	8	1.2	42	3.5
<b>N</b>	<b>663</b>	<b>100</b>	<b>1205</b>	<b>100</b>

As outlined in Table 4.19, information was gathered for 906 and 2002 beverages from 42 concessions and 328 vending machines in SK PRFs, respectively. Similar to packaged foods, the beverages were grouped into 8 types based on major ingredients and/or professional judgement with how they are commonly recognized (Olstad, Poirier, Naylor, Shearer, & Kirk, 2014). The most commonly found beverage types in concessions were soft drinks, hot drinks (e.g., coffee, tea, hot chocolate), juices and smoothies. In vending, the most commonly found beverage types were soft drinks, hot drinks and sports drinks.

**Table 4.19: Types of Beverages in Concessions and Vending**

Type	Concessions		Vending	
	n	% Yes	n	% Yes
Soft drinks	403	44.3	680	34.0
Hot drinks	217	23.9	314	15.7
Juices and smoothies	102	11.2	76	3.8
Sports drinks	89	9.8	431	21.5
Water	37	4.1	244	12.2
Dairy and soya beverages	29	3.2	79	3.9
Flavoured water	23	2.5	94	4.7
Energy drinks	6	0.7	84	4.2
<b>N</b>	<b>906</b>	<b>100</b>	<b>2002</b>	<b>100</b>

As mentioned in quantitative methods, a fellow PHN, who is also a member of the EHPH PC, and I classified each packaged food and beverage product according to *Healthy Foods for my*

*Recreation Setting - Nutrition Standards for Saskatchewan* (Government of Saskatchewan, 2018). As per Table 4.20, 80% of products in concessions and 84% of products in vending were classified as *Offer Least Often* products. These products tend to have higher amounts of fat, sugar and sodium, and lower amounts of nutrients including fibre. The frequency of such products is a barrier for healthy eating. Although there was no significant difference was found between urban and rural areas, the frequency of foods and beverages through concession and vending, in particular vending, are generally higher in urban cities.

**Table 4.20: Healthfulness of Packaged Foods and Beverages in Concessions and Vending**

SK Nutrition Standard	Concessions			Vending		
	Yes n (%)	Urban n (%)	Rural n (%)	Yes n (%)	Urban n (%)	Rural n (%)
<b>Offer Most Often</b>	89 (5.67)	63 (70.79)	26 (29.21)	264 (8.23)	258 (97.73)	6 (2.27)
<b>Offer Sometimes</b>	232 (14.79)	175 (75.43)	57 (24.57)	252 (7.86)	244 (96.83)	8 (3.17)
<b>Offer Least Often</b>	1248 (79.54)	850 (68.11)	398 (31.89)	2691 (83.91)	2593 (96.36)	98 (3.64)
<b>N</b>	<b>1569 (100.00)</b>	<b>1088 (69.34)</b>	<b>481 (30.76)</b>	<b>3207 (100.00)</b>	<b>3095 (96.51)</b>	<b>112 (3.49)</b>

## CHAPTER 5 : STUDY II - QUALITATIVE RESULTS

### 5.1. Barriers, Facilitators and Future Opportunities by Collective Determinants

For Study II, all 17 recreation leaders and food service providers from the 16 SK communities participated in semi-structured telephone interviews. As mentioned under methodologies, an inductive approach was used; data was coded and thematically analyzed by the collective determinants of the socio-ecological framework: policy, environmental (physical, economic, social) and interpersonal factors. Table 5.1 includes a summary of the number of participant files and references made regarding existing barriers and facilitators during the interview process for each determinant. Overall, references to barriers were more than double the references to facilitators. In addition, the references to barriers were also higher than facilitators for each determinant. Economic environmental factors had the highest number of files and references for existing barriers, followed by interpersonal and physical environmental factors (Olstad & Raine, 2013). For existing facilitators, physical environmental and interpersonal factors had the highest number of files and references.

**Table 5.1: Number of Participant Files and References for Existing Barriers and Facilitators by Each Collective Determinant of the Socio-Ecological Framework**

	Existing Barriers		Existing Facilitators	
	Files	References	Files	References
<b>Policy</b>	15	89	8	41
<b>Environmental</b>				
<b>Physical</b>	16	128	16	117
<b>Economic</b>	17	308	13	54
<b>Social</b>	13	46	8	24
<b>Interpersonal</b>	17	132	16	102
<b>Total</b>		812		354

To gather ideas for future opportunities, a core question was included in the interview process with participants. Additional ideas emerged for future opportunities from the barriers and facilitators documented during the analysis process; my role as a PHN facilitated this process and the reality of applying the ideas to policy and practice in SK. The following sections outline the

key themes that emerged for barriers, facilitators and future opportunities by each collective determinant of the socio-ecological framework. Sample participant quotes from the interview transcripts were included as evidence of the emerging themes.

#### 5.1.1. Policy Factors

Table 5.2 outlines the key themes that emerged for barriers and facilitators related to policy factors. For policy barriers, a key theme that emerged by a majority of participants, was a lack of established formalities like policies, guidelines, contract requirements and programs. Other key policy barriers were a lack of definitions or criteria to guide healthy food and beverage decisions and that policies have been, or are perceived to be, restrictive for revenue-generating businesses. It was felt that policies will further interfere with the recruitment of potential vendors as too many restrictions will deter them from submitting a proposal; recruitment is already difficult. It was also felt that having guidelines may restrict the sale of popular foods that consumers desire and expect, which may result in negative economic outcomes. With a lack of healthier options for vending services, it was also felt that meeting healthy guidelines could be difficult. Lastly, a few participants mentioned that public health policies prohibit volunteer operators who intend to sell food, from preparing it at home. They felt that this limits the options available because volunteers have limited time and capacity to prepare food at the PRF. However, one of the participants also acknowledged the importance of this established policy to protect the public.

For policy facilitators, a key theme that emerged by a few participants in urban large cities was the inclusion of supportive language and criteria for healthy options in master plans, requests for proposals (RFPs) and contracts. Another policy facilitator mentioned by these same participants was that proposals including healthy options were awarded higher grades, and that they have also worked with their vendors to determine the options to offer in order to adhere to contract requirements. One participant mentioned that their vendor was very responsive and compliant with adhering to their new requirements even though it resulted in a small revenue loss for both the municipality and the vendor. These examples demonstrate a readiness and desire to have supportive FEs in SK PRFs. Because the participants reporting these policy facilitators were representing PRFs in urban large cities, the results may not be representative of all operations in

SK. Participants who mentioned existing policy facilitators currently in practice were all from urban large cities.

**Table 5.2: Barriers and Facilitators Related to Policy Factors**

	<b>Emerging Theme</b>	<b>Sample Participant Quotes</b>
<b>Barriers for healthy eating</b>	There is a lack of policies, guidelines, contract requirements and programs in place to support people in making healthy food and drink choices. (expressed by majority of participants)	<p>“It’s actually kind of embarrassing that we have no policies and guidelines that even discuss what we have in the building for healthy choices or choices at all.” (RLI1)</p> <p>“When it comes to our policy book ... there’s nothing. There’s nothing that guides me as the rec director. There’s nothing that we do to promote healthy eating.” (RLI8)</p> <p>“... the concessionaires are making those choices based on their own um, business sense and budgeting and that kind of thing. Um, there’s no policies really governing that.” (RLI11)</p> <p>“It’s a volunteer board so depending on who’s on the board at the time, it’s kind of up to them how they want to ... so I can’t really say that they would have any specific policies in place.” (RLI2)</p> <p>“They have some say in what’s sold in the arena and right now my contract, although my contract is dated, it says that I must sell hamburgers, hotdogs, fries, popcorn and hot chocolate.” (FSPI2)</p>
	There are no definitions or criteria to guide healthy food policy development in Saskatchewan. (expressed by many participants)	<p>“What’s hindering us a bit is not knowing exactly the guidelines of what is healthy ...”(RLI6)</p> <p>“I am not a nutritionist. I don’t know, you know the best guideline to follow...”(FSPI2)</p> <p>“Everybody has an opinion on what is healthy and what is not, um, I feel even silly talking with you naming some of these things because I know that from a nutritional stand point what I ... what we may consider healthier, will not be the case.” (RLI13)</p> <p>“We’d be happy to come with a healthier policy if we knew [what] that would be. And not what the policy would look like. What is the healthier food?” (RLI13)</p>
	Policies have been, or are perceived to be, restrictive affecting business and revenues.	<p>“We try not to limit them [food service contractors] on the business they conduct there, how it’s done, or we try not to provide too many restrictions for them.” (RLI10)</p>

	(expressed by a few participants)	<p>“... because for so long there’s been no restrictions, any restriction we put on would be seen as a barrier.” (RLI10)</p> <p>“... they need to do what they need to do in order to continue operating it because if we put too many requirements, or too many restrictions on them, and they cannot successfully operate it ...” (RLI10)</p> <p>“I don’t know how far we would push it because like I said, we are looking for a new um booth person, like we kinda ... we get who we get and we don’t want to push to hard because if we push too hard, I think I fear that we wouldn’t have anybody.” (RLI7)</p>
	Public health policies prohibit volunteer operators from preparing healthier foods that they intend to sell to the public, at home. This limits the options available because volunteers have limited time and capacity. (expressed by a few participants)	<p>“... there’s plenty of volunteers even within those parenting cycles that are willing to say on the day of their child’s tournament prep a bunch of energy balls or something for examples but technically you are not allowed to sell it, because it’s not prepped in that proper commercial kitchen. So, a lot of it comes down to time and the value of people’s time and ... there’s plenty of things that I could see selling particular on those days that are tournament based where there’s an influx of people spending the day, however when it comes to prepping it, or um taking the time to plan it out, or to do it appropriately with SHA guidelines, it may not happen.” (RLI12)</p> <p>“... the policy is not being able to bring and that comes from public health, like that’s mandatory that we can’t bring food in from outside. Like we don’t have great capabilities within our booth. We have a deep fryer, and we have a grill but we don’t have ... and we have a frying pan ... but we don’t have a stove top for making a bowl of chili or a [inaudible text] where there’s perogies sold, sausage and kind of ... we don’t have those capabilities.” (RLI13)</p>
<b>Facilitators for healthy eating</b>	Requests for proposals (RFP) and contracts in large urban cities include criteria for healthy options. (expressed by a few participants)	<p>“... recommendation number thirty-two in our rec and parks master plan says the city will ensure that healthy food and beverage options are provided in recreation facilities and parks wherever possible.” (RLI10)</p> <p>“In our RFPs, what’s changed over the last fifteen years, is that we actually have ... as one of our criteria within our RFP is they will get graded on their healthy choices ...” (RLI10)</p>

		<p>“Our leadership is “okay, we want more healthy vending options” so we put a clause in there to implement like 25 percent healthy vending options in our machines ... that’s where we wanted to start ... like, let’s start with 25 percent ... see how that goes.” (RLI6)</p> <p>“I know with our concession services contract, that’s definitely something we are putting a focus on too is that they need to offer healthier options.” (RLI6)</p>
	<p>Proposals in large urban cities are graded higher for inclusion of healthy options. (expressed by a few participants)</p>	<p>“... there’s a 100 points that they can acquire during their evaluation of their RFP and 30 points go towards healthy foods so if you are offering more healthy foods then others, then you will then get the full 30 points. It’s actually even graded higher ... like you get more points for healthy food. It’s the highest points you can get ... You will get more points if you have healthier choices. That does kind of let the proponents that are bidding on our concessions know that um, that we even want that, and ... and now, that vending even has healthy options. Um, even they have to follow that same criteria. They’d be graded the same ... under the same criteria as someone running a food concession.” (RLI10)</p> <p>“I know its in there as one of our scoring matrix’s like they get 10 percent of their rating is based on their ability to offer healthy food choices.” (RLI6)</p>
	<p>Staff from large urban cities work with their vendors to determine the foods and beverages that meet contract requirements and/or guidelines. Vendors have been very compliant with adhering to the contract requirements set by the city. (expressed by a few participants)</p>	<p>“... when we decided that we wanted to do that, we called our vendor in and they have been really, really great. They changed all of the machines and products like the next day when we asked them to do some of that. So they were really effective even though it results in some loss of revenue for both of us. They were still really supportive and letting implement those changes and doing relatively quickly.” (RLI6)</p> <p>“... they provided me a list of what they thought were healthy choices. I then went to the two schools and I worked with um my partners at the two school boards to say so out of this what would fall within your healthy guidelines.” (RLI10)</p> <p>“... we go through with the vendor um what um, is allowed to be put in and what’s not allowed to be in.” (RLI10)</p>



Three key themes emerged for future opportunities related to policy factors. The first future opportunity is for municipalities and governing boards to develop or revise policies, guidelines or contract requirements to include language and actions that support healthy eating. This would promote, support and sustain positive changes at a facility level, such as the removal of caffeinated energy drinks, through attrition and time. Secondly, national or provincial recommendations, templates and samples would be beneficial to guide municipalities and governing boards through this process successfully. Lastly, municipalities and governing boards also require national or provincial nutrition guidance that defines, classifies and lists healthier foods and beverages.

#### 5.1.2. Physical Environmental Factors

Table 5.3 outlines the key themes that emerged for barriers and facilitators related to physical environmental factors. A physical environmental barrier that emerged by a majority of participants was the low access to healthy options and the high access to unhealthy options in SK PRFs. Another barrier that emerged by many participants was that the low access to healthy options in PRFs may be a result of some communities having low access to quality, healthy options in their local community or by food suppliers. Majority of the participants also mentioned the lack of infrastructure, specifically the lack of space or equipment, for healthy food preparation, safe food storage and/or vending as a physical environmental barrier. Lastly, many participants also brought forward the challenge of having other food outlets, especially popular franchises, in close geographical proximity to the facility; this competition also affects economic factors. The food and beverages offered are based on what consumers expect and demand. As noted in social factors, majority of the participants felt that consumers expect unhealthy options; they believe that if they do not meet this expectation, consumers will just leave the facility and go to a different food outlet in close geographical proximity, thereby resulting in negative economic outcomes.

**Table 5.3: Barriers and Facilitators Related to Physical Environmental Factors**

	<b>Emerging Theme</b>	<b>Sample Participant Quotes</b>
<p><b>Barriers for healthy eating</b></p>	<p>Consumers have high access to unhealthy options and low access to healthy options. (expressed by majority of participants)</p>	<p>“... just ended up with the idea that people needed to bring their own healthy snacks to the rink. We have joked about the irony of those ... those kids not eating (laughter) ... the rink food ... that moms prepare. Make sure you bring your own lunch not something your mom makes you in the kitchen at the rink.”                      “What?” (FSPI1)</p> <p>“My kids have played hockey their whole lives and going to any rink, it’s the same thing. Deep fried this or deep fried that, or burger, your chips or chocolate bar.” (RLI8)</p> <p>“... it’s the ... just the tradition of what a small town rink is and what it serves, and um is less healthier options ... what makes easy to serve and expected is often the things that are traditionally popular which are fries, deep fried items, candy, pop, chips, and things like that right.” (RLI12)</p> <p>“... there is candy machines there as well ... the twenty-five cent machines and once a year during the [inaudible content] convention, they do offer um a booth with popcorn, cotton candy, freezies type stuff.” (RLI7)</p>
	<p>Rural and remote communities have low access to quality, healthy options in the local community or by food suppliers. (expressed by many participants)</p>	<p>“I think purchasing um groceries, driving into the City would be typical of small towns, [inaudible text], and I do ... I think that’s a culture across the board as far as um, people wanting stuff quickly.” (FSPI1)</p> <p>“But even going through all of that [food show], it was so much of the same thing just different shapes. Of the different French fries, of the pickles, of the ... it was ... it was pretty crazy actually. Like there wasn’t a whole lot of different options that I could bring into a rec center.” (RLI1)</p> <p>“... we gotta shop ... shop locally or the shipping is the most cost costly around here so we have to figure out a way ... how we’re ... on our travels to go get our food and with the nearest city just 3 and a half hours away ... and also the quality of it.” (RLI14)</p> <p>“You can but through GFS [Gordon Food Services] they give you huge portions of it. We would never sell that much. And again, if we were to buy smaller portions at the coop in our local grocery store as an example, um we might be able to sell a better number of what we buy but what we don’t sell is almost guaranteed to spoil before we can sell the remainder of it ...</p>

		<p>freshness is just not there. And we are not open every single day.” (RLI9)</p>
	<p>There is a lack of infrastructure, specifically a lack of space or equipment for healthy food preparation, safe food storage and/or vending. (expressed by majority of participants)</p>	<p>“Our kitchen is very much set up with a massive grill for hamburgers and double deep fryers or chicken fingers and French fries and onion rings, and all those deep fried things.” (FSPI3)</p> <p>“ ... the deep fryers are owned by the City ... so very ... of course, the items that are going to utilize the equipment that they have in there. So they are the only ones that can remove them or make changes in that facility because they own that.” (FSPI2)</p> <p>“We don’t have great capabilities within our booth. We have a deep fryer, and we have a grill but we don’t have ... and we have a frying pan ... but we don’t have a stove top for making a bowl of chili or a [inaudible text] where there’s perogies sold, sausage and kind of ... we don’t have those capabilities.” (RLI13)</p> <p>“ ... maybe the types of vending machines that we have ... like we can’t offer fresh food choices like sandwiches or things like that that are perishable. That would ... if we had different machines that could offer choices or if we had enough turnover maybe that would help people make better choices but we don’t offer any of that right now.” (RLI6)</p>
	<p>Close geographical proximity of other food outlets, especially popular franchises, negatively affects success (sales) of concession operations inside PRFs. Therefore, they feel pressured to sell what consumers expect and</p>	<p>“... if we have a tournament weekend, its really dependent on how the games fall and where the teams come from because we are so close to the City, sometimes teams leave the rink and go to the City and maybe eat there, and um, so we will be ready with our chocolate milk and people won’t stay at the rink ... and then other times, we will have people that spend the day at the rink.” (FSPI1)</p> <p>“I guess our other challenge is that there are a few restaurants in town so if people want to go for sit down meal and choose a healthier option, they’re probably gonna go to a restaurant or to Subway.” (FSPI3)</p> <p>“If I’m not providing what they’re looking for, they are going to get in their car and go through a drive thru two blocks away or a block away or across the street from my facility and get what they want.” (RLI10)</p> <p>“ ... another hard thing for her over at the [facility name] is that she has lots of outdoor food coming in so that kinda weighs ... so she’s going to sell what she knows works to sell to make her</p>

	demand. (expressed by a majority of participants)	money. And whether it's healthy or not healthy because she knows that people will bring it in otherwise ..." (RLI4)
<b>Facilitators for healthy eating</b>	There have been attempts to increase the availability of healthy options and reduce unhealthy options; in particular, when/where, there are higher traffic volumes. (expressed by majority of participants)	<p>"Like it's a balancing act. Start by adding a few things and taking a couple things away and seeing what happens." (RLI12)</p> <p>"... on those weekends, we do try to supply, you know ... a lot of parents will bring in chili or you know, something homemade, some homemade soups and stuff to kinda give people other choices." (FSPI3)</p> <p>"... on a busy weekend, is that she'll make a little homemade cups of cut up veggies with a little bit of dip in the bottom just to grab quickly." (FSPI3)</p> <p>"... so for tournaments we'll often allow the option for healthy food choices whereas the parents of that group could choose you know, ask us to bring in a few healthy choices which would be fruit, we often have a bowl of fruit. We'll bring in um, um milk if they request it but typically they're not; they'll ask for chocolate milk but not white milk." (RLI13)</p> <p>"... during tournaments, then they do offer those types of things because they know they are gonna have a lot of ... umm ... clientele during that day so they will have ... you know, homemade soups and uh veggie trays, and fruit trays, and muffins, and things like that offered during that day because they know they are going to use it up." (RLI2)</p>
	Actions have been taken to remove caffeinated energy drinks. (expressed by a few participants)	<p>"... trying not to offer um you know outrageously unhealthy things. For example, we don't offer things like um energy drinks. It's just something that myself and our kitchen manager are just not comfortable offering just because of the nature of what those products are and who's the one going to be buying them." (RLI9)</p> <p>"One thing and just totally based on what we read, we did get rid of like the Monster drinks and that sort of thing. Um, we still sell Gatorade, we still sell pop, we still sell juice and water, and on occasion milk. You know, definitely the want is there to go in a healthier direction." (RLI13)</p>
	There is a recognition for, and attempts made to improve, infrastructure for healthy	"... the only thing that we do do, is when we build a new facility now, we do not um put a deep fryer in ... it was a conscious decision not to put in ... we did put in a convection oven. So, there's an opportunity for whomever running the concession to um, make healthier options fresh ... for the consumers." (RLI10)

	food preparation and storage. (expressed by majority of participants)	<p>“We always liked that idea of providing healthier food options so we’ve talked about bringing in an oven. We actually wired in a spot for it.” (RLI13)</p> <p>“We don’t have a deep fryer ... so we don’t have any of that stuff. We just have the you know, the burgers ... but we don’t have fries or deep fried anything so ... that’s one plus ...” (RLI2)</p> <p>“I’ve invested in you know, croc pots ... I bought soup pots ...” (FSPI2)</p> <p>“... we’re in talks about it right now ... about even getting ... blenders.” (RLI14)</p>
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For physical environmental facilitators, a key theme raised by the majority of participants was the thought, or the attempt to, increase the availability of healthy options, while reducing the availability of unhealthy options. Some participants attempted these changes when, or in places where, traffic volumes were higher such as at tournaments, competitions or in multi-sport facilities; they expressed that traffic volumes were an important factor to a successful outcome. In terms of healthier main dishes to offer at concessions, a few participants brought forward the suggestion to add trendy options like ethnic main dishes. One concession in rural SK stated that they have been offering butter chicken on their concession menu and it has become a best seller. In terms of removing unhealthy options from food service operations, a few participants took action to specifically remove caffeinated energy drinks because of information they had read on their harmful effects.

Another physical environmental facilitator mentioned by majority of participants was having adequate infrastructure in place such as equipment and space to prepare and store healthy food and beverages. One participant stated that their municipality made a commitment to replace deep fryers with healthier cooking equipment with new builds; however, like with the above examples, the commitments were not documented in the form of a policy, thereby risking the sustainability of the commitment.

Three key themes emerged for future opportunities related to physical environmental factors. The first future opportunity is for recreation leaders and/or food service providers to create a level playing field by slowly adding healthy options while decreasing unhealthy options. Similar to existing evidence, there appears to be a desire for slow change, versus rapid change, to the food and beverage options available in SK PRFs (Lloyd & Dumbrell, 2011). Healthy options must first

be available in order for consumers to make a healthy choice. An opportune time to trial such change is when and where traffic volumes are higher such as during tournaments, competitions and/or in multi-sport facilities.

The second future opportunity to emerge is for municipalities and/or governing boards to invest in infrastructure that facilitates healthy eating. This could mean a commitment to install healthier cooking equipment with new builds or the gradual replacement of aging infrastructure like deep fryers, as they expire with existing builds. This could also mean seeking out vendors who can supply healthier vending equipment, or it could mean seeking out and applying for funding opportunities that help cover costs for new infrastructure. However, there is a need to ensure that verbal commitments by municipalities and/or governing boards, such as to remove caffeinated energy drinks or deep fryers are documented in a written form to promote, support and sustain positive changes through time and attrition.

The third future opportunity to emerge for physical environmental factors is to work with food suppliers in SK to improve access to healthy food options. A few specific ideas that emerged was for recreation leaders or food service providers to be able to order smaller quantities and/or to qualify for cost savings through programs like group purchasing. Other specific ideas that emerged was for food suppliers to have a greater inventory of healthier alternatives to choose from, as well as, to share marketing materials and strategies for healthier alternatives during their routine visits.

### 5.1.3. Economic Environmental Factors

Table 5.4 outlines the key themes that emerged for barriers and facilitators related to economic environmental factors. Seventeen (17) participants made 308 references to economic environmental barriers, making this the greatest area of concern. An economic environmental barrier that emerged by majority of participants was reduced or inconsistent traffic volumes and/or limited operating hours of a PRF. Common examples provided were facilities in rural areas where they mainly operate on weekends (e.g., tournaments) and/or seasonally (e.g., ice user groups) versus year round. On the contrary, participants felt that facilities with higher or more consistent traffic volumes, as well as, those that operate year round would be more likely to receive the support they need in order succeed with healthy change.

**Table 5.4: Barriers and Facilitators Related to Economic Environmental Factors**

	<b>Emerging Theme</b>	<b>Sample Participant Quotes</b>
<b>Barriers for healthy eating</b>	<p>Reduced or inconsistent traffic volumes, and reduced participation in programming, are barriers to healthy change. (expressed by majority of participants)</p>	<p>“We actually did offer a lot of healthy things like um, veggie trays, fruit trays, milk, all of those kind of things that don’t ... like that don’t have a long shelf life ... And we had those things but now that we only have very few teams, it’s hard to keep those things stocked because you might have a game one week and not have another one for a week and a half or two weeks. So it’s (sigh) difficult.” (RLI2)</p> <p>“... its based on how many people are there right, so on a year when we can’t put together teams at every level, we’re open less therefore making less. Um, so it’s sort of top to bottom thing right. Less five year olds playing hockey, means less teams when they’re twelve and potentially those kids are going to play elsewhere, not in [rural community] ... And so we have fifteen less games right. That could potentially be bringing in x hundreds of dollars. So, so, ya ... there’s a linkage to the user ...” (RLI12)</p> <p>“... no funding available for a seasonal recreational facility that doesn’t have ... we have a very minimal amount of traffic through there so it doesn’t make sense money wise for them make the change in something that is only open five months of the year.” (FSPI2)</p>
	<p>Facilities and programs rely on profits from food and beverage sales to offset operating costs or user fees. Taking risks could compromise revenues and profits. (expressed by many participants)</p>	<p>“... the time committed by our volunteers and the dollars potentially that the rink makes, or not makes ... the least amount it loses (group laughter), goes to offset so that our local fees and our local users get a reduced rate.” (RLI2)</p> <p>“Our kitchen is a huge revenue for our operations to keep the doors open and then in our arena ... they would be more than willing to do it provided that they knew that those numbers were still going to stay.” (RLI5)</p> <p>“... it’s a large profit for us as an operator at the end of the year again pays our power bills and our energy bills and kind of all that stuff. So, it’s important that, again we just don’t have it as a service that breaks even for people, like it has to help support our facility.” (RLI9)</p> <p>“I guess that’s part of the problem too, again back to the volunteers, and it needing to be a fundraiser for our organization, um, you know we are cautious of how much we bring in and honestly like as a volunteer, um, we’ve invested a ton of money into that facility.” (FSPI3)</p>

		<p>“... but I also have a responsibility to make choices based on the um, if they’ll be you know ... if it’s going to put us behind financially, and if people aren’t going to buy it, they are going to buy their fries anyways.” (RLI13)</p> <p>“To be honest with you, it’s all about cost. If it made us money, we would do it, but unfortunately it doesn’t and it costs us.” (RLI3)</p>
	<p>Implementing healthy options will have little to no influence on customer’s purchasing patterns and/or result in increased food waste; therefore, implementing healthy changes will negatively affect revenues and profits from food and beverage sales. (expressed by majority of participants)</p>	<p>“This last couple of years we have done chocolate milk and cheese strings as a couple of quote on quote fresher items, and we did throw out quite a bit of chocolate milk. It was just too hard to predict.” (FSPI1)</p> <p>“I’ve actually did two seasons where we said “okay, we are gunna go totally brown. We are gunna have brown buns, brown wraps.” I still only do brown wraps, if they don’t want it, then they don’t have it but nobody questions it anymore. But the buns were a huge issue. We actually had people return a burger because they didn’t want it on a brown bun or not buy a hotdog because they don’t eat hotdogs on brown buns. At first, it was gradual. I did half and half but then the ... we were always left with brown so it’s just not feasible to carry that when you’re not going through enough volume.” (FSPI2)</p> <p>“I’m trying to go more of the fresh route, and I’ve like ... I’ve had fresh fruits sitting and, um, veggie cups and whatever ready for people to ... purchase, but again nine times out of ten I’m throwing that stuff away and people are opting for the junk food over a banana or a granola bar or something a little bit better.” (RLI1)</p> <p>“Ya people weren’t buying it and the second part of it was just the um, product on- the shelf life on a lot of the product was costing us quite a bit.” (RLI3)</p> <p>“I feel like the hardest part is that the keeping the food and actually continuing to make money without throwing things out when it’s all healthy options ... they just they don’t ... to keep right.” (RLI5)</p>
	<p>There are competing priorities and a lack of funding to support healthy change. (expressed by</p>	<p>“It’s always the cost. I think that ... I don’t think there is any other barriers. I think that any of the barriers could be moved if you have proper funding and support to do it.” (FSPI2)</p> <p>“I’d like to have a much healthier menu but, um, I guess my direction on cost and if it’s gonna result in a- in a tax increase for the res- residents of [small city] uh, it’s a tough decision for our council to make especially when times are tough right now when we seem to keep getting more and more downloaded onto</p>



	majority of participants)	<p>the taxpayers here so it's uh ... have to rely on this other revenue source at our department.” (RLI3)</p> <p>“Really not a whole lot we can do unless we wanna pay for it. To be honest with you, it's all about cost. If it made us money, we would do it, but unfortunately it doesn't and it costs us.” (RLI3)</p> <p>“Our kitchen is a huge revenue for our operations to keep the doors open and then in our arena ... they would be more than willing to do it provided that they knew that those numbers were still going to stay.” (RLI5)</p> <p>“It sounds like something that I should be able to do but just with limited time and hours in a week, it may not be ... it may not work.” (RLI2)</p> <p>“I have to ... you know ... look out for our bottom line and make sure that you know we can keep the doors open first and foremost. If that means that people who are here don't eat as healthy, unfortunately that's how it has to be.” (RLI9)</p>
	There are little to no promotional strategies to support the sales of healthy options. (expressed by majority of participants)	<p>“... we don't really promote healthy eating at all actually ...” (FSP1)</p> <p>“... they [concession contractors] don't always have the resources so whether it's financial or um, time wise, they just don't have the resources.” (RLI10)</p> <p>“I think it's just hard to ... with all of the choices that there, it's usually cheap and easy to make ... the bad choices and somehow, I don't know how, I'd like to see the healthier choices be cheaper and easier to make.” (RLI10)</p> <p>“... the [small city] doesn't do any type of promotion around that, but if ever uh, public health or anybody wanted to promote it um, they would have full access ...” (RLI3)</p> <p>“we thought of putting the stickers on the healthier choice options to kind of draw people's attention there and ... to make better choices.” (RLI6)</p>
<b>Facilitators for healthy eating</b>	Increased traffic volumes strengthen opportunities for infrastructure, as well as, the provision and the sales of	<p>“... on a busy weekend, is that she'll make a little homemade cups of cut up veggies with a little bit of dip in the bottom just to grab quickly.” (FSP13)</p> <p>“... we always make sure at our tournaments that the fruit is front and center. It's sitting out so you can see it. It's the first thing you can see when you come into the booth.” (RLI13)</p> <p>“... if we did start having more frequent games ... we were busier, then that would def ... I would definitely push for</p>

<p>healthy options. (expressed by majority of participants)</p>	<p>healthy food options. I would be ... I am very much into that ...” (RLI2)</p> <p>“... we also offered different meal choices during larger events say like a hockey tournament or a curling bonspiel when we know we are going to have a larger number of people come through our facility.” (RLI9)</p>
<p>Having healthy food options portioned and packaged for consumer convenience will support sales. (expressed by many participants)</p>	<p>“I think the only reason we sell lots of grapes and cheese or oranges is because it’s already cut up, nicely displayed in the cellophane, it looks nice and it’s bright and they don’t have to do anything but take it off and eat it.” (FSPI2)</p> <p>“... on a busy weekend, is that she’ll make a little homemade cups of cut up veggies with a little bit of dip in the bottom just to grab quickly.” (FSPI3)</p> <p>“... if I make them ahead of time and have them in the fridge they all sell. But if I don’t make them ahead of time ... they don’t get sold, right.” (RLI1)</p> <p>“... I’m trying to go more of the fresh route, and I’ve like ... I’ve had fresh fruits sitting and, um, veggie cups and whatever ready for people to ... purchase.” (RLI1)</p>
<p>Promoting healthy options through pricing, placement and marketing strategies will support sales. (expressed by many participants)</p>	<p>“... we try to put stuff on special. Sometimes that works well because then it’s new and there’s a sign in your face or you know just something that’s extra that’s new around the facility for someone else is eating ... you know if your sitting watching something and you see someone walk by with a food or drink item walk by that’s new and different and it looks appetizing then there more likely to get that item.” (RLI9)</p> <p>“... everything is out visible and like for my fresh soups and stuff for like \$2.50, which is pretty cheap, barely paying for the soup, I would rather you take that, right? Like it’s my ... the deep-fried stuff is not cheap and the healthy stuff that I was trying to bring in was the cheaper option.” (RLI1)</p> <p>“... we always make sure at our tournaments that the fruit is front and center. It’s sitting out so you can see it. It’s the first thing you can see when you come into the booth.” (RLI13)</p> <p>“... we do have our advertising for like you know Subway which is healthier fast food option. We do have SaskMilk advertised ... um you know so we do have some signage for advertising but its’ minimal.” (RLI7)</p>
<p>Commercial kitchen spaces can be used</p>	<p>“... we bring in different ... different cooking people but like ... I guess they might be chefs, they might not be ... that teaches cooking classes and will have like, my understanding just from a meeting yesterday, like we are doing an Italian class this fall,</p>

	creatively for additional revenue. (expressed by one participant)	we are doing a Greek class and there is another one ... and we do ... 3 or 4 classes that are very successful right now and so we've seen ah a little bit of an intake on those so we are looking to increase them so. It's just something different. People can learn how to like cook themselves." (RLI10)
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Another barrier that emerged by many of the participants was that facilities and programs rely on profits from food and beverage sales to offset operating costs or user fees; therefore, participants are hesitant to take risks that could compromise revenues and profits. This leads into another barrier where majority of participants believe that the introduction of healthy options will negatively affect food and beverage sales, thereby resulting in profit losses. Majority believe that the negative affect will be a result of little to no change in consumers' purchasing patterns and/or increased food waste because of the perishable nature of healthier foods. If these foods are not prepared or sold in a timely manner, they will spoil. Majority of participants stated that competing priorities or lack of funding to support change as another barrier. In order to change, recreation leaders and food service providers want to know that this a priority for their municipality or governing boards, and they would like reassurance that the change will not result in revenue loss thereby affecting their operating budget or user fees. Lastly, majority of participants stated that little to no marketing strategies, such as intentional placement, pricing or promotion for healthy options exists to support their sales.

Comparable to the barriers previously mentioned, a theme that emerged for economic environmental facilitators by majority of participants was that increased traffic volumes support infrastructure for the provision of, and the sales of, healthier options. Another economic environmental facilitator reported by many participants was that they have tried to, or see the need to, market healthy options through pricing, placement and promotional strategies in order to protect revenues and profits. A few promotional examples shared, which resulted in sales, was conveniently packaged portions of healthy snacks such as vegetable sticks and dip or grapes and cubed cheese. Lastly, one participant from an urban large city reported that they used existing commercial kitchen space for a cooking program, for new revenue opportunities.

Five key themes emerged for future opportunities related to economic environmental factors. The first future opportunity is for provincial and municipal governments, governing boards, and food service providers to consider ways to recruit and retain traffic volumes at a PRF. One

example to retain traffic volumes for meals at the local concession is for food service providers to market a healthy menu, take orders and payment, from visiting teams prior to their visit. This will save not only the visiting teams' time during their visit, but it will also help the food service provider estimate numbers resulting in less potential food waste. If food service operations are straining to exist in PRFs due to reduced foot traffic and/or competing food outlets in close proximity, the need for food services in the facility may need to be reassessed. This leads into a second future opportunity for municipalities and governing boards to consider other revenue-generating ideas for existing commercial kitchen spaces such as cooking programs or leasing it to a private operator for catering services. If a commercial kitchen space is no longer deemed beneficial, consider other revenue-generating ideas for the space like a birthday party room.

A third future opportunity to emerge is for national, provincial and/or municipal governments to work towards funding opportunities and/or financial incentives that would help cover costs and potential losses with trialing changes. If changes for health are expected, municipalities, governing boards and food service providers need reassurance that the implementation of healthy options will not negatively affect their operational budget or user fees.

A fourth future opportunity to emerge is the need for cost comparisons. Providing recreation leaders or food service providers with information on the cost of healthy vs unhealthy alternatives, and ways to price them in order to protect profits, would support change. This opportunity could also be discussed with food suppliers once connections are initiated.

Lastly, a fifth future opportunity to emerge was the need to market healthy options through placement, pricing and promotional strategies. This will help make the healthy option an easier choice for consumers. Promotional strategies such as attractive product names and taglines, posters with images, healthy choice labelling or having nutritional information on the menu, are some ways to promote consumer awareness and education, and sales of the healthy options.

#### 5.1.4. Social Environmental Factors

Table 5.5 outlines the key themes that emerged for barriers and facilitators related to social environmental factors. Due to the broad nature of the social environment, this area of the framework was of least concern with only 46 references by 13 participants. For social environmental barriers, a key theme that emerged by majority of participants was the existence of a food culture where consumers expect less healthy options when they come to a PRF in SK.

There is concern with implementing healthy options because participants felt that consumers do not expect or will not look for healthy options in this environment. A few participants also felt that people see rink food as a treat due to an infrequent intake or that their activity at the rink, balances out their unhealthy food intake. Another theme that emerged by a few participants was that our culture is busy and therefore, people do not have the time to prepare meals at home; they seek convenient options such as packaged foods or food outlets while running their children around for evening activities.

For social environmental facilitators, only one theme emerged by a few participants where attempts have been made to improve the social culture through nutrition education programs with those participating in programming and their families. There appears to be an understanding that shifting the social culture will take time. Concentrating on the future opportunities outlined for the other collective determinants of the framework will positively influence social environmental factors in SK PRFs over time.

**Table 5.5: Barriers and Facilitators Related to Social Environmental Factors**

	<b>Emerging Theme</b>	<b>Sample Participant Quotes</b>
<b>Barriers for healthy eating</b>	An unhealthy rink food culture exists where consumers expect unhealthy; they do not expect or look for healthy options. A culture shift needs to occur which will take time. (expressed by majority of participants)	<p>“... the biggest thing um obstacle to overcome is just the ... people’s regular expectation of what to get at a concession such as ours. There’s I think a real culture around getting uh deep-fried foods and hamburgers and those sort of things at this type of concession so to move away from that I think is a ... a steep learning curve for some people ... and that uh would definitely uh affect our profit margins which makes it difficult to go ahead and make major changes.” (RLI9)</p> <p>“I just think they aren’t going to the arena looking for that. People need to change their mindset to ...” (FSPI2)</p> <p>“... you hear all the time how important it is for healthy eating, and healthy lifestyles, and people will like all around me, are making changes to live better, and make better choices, and, you know, even you see it with McDonalds actually happening with some healthy choices on their menu, and it is still shocking to me that those same people come to the rink and still expect to eat everything deep fried.” (FSPI3)</p> <p>“... we did try to implement a few new things and they just weren’t moving. People were still gravitating ... you know, they expect to eat the rink burger and have deep fried French</p>

		<p>fries, and onion rings, and chicken bites or whatever, when they come to the rink. And it's a bit of a mind shift for people I guess to move to something healthier that's being offered ... those are ... those healthier food choices weren't moving as fast and uh weren't making us any money either, so then that comes back to people's mind set about I guess what they wanna eat when they come to the rink." (FSP13)</p> <p>"... what makes easy to serve and expected is often the things that are traditionally popular which are fries, deep fried items, candy, pop, chips, and things like that right." (RLI12)</p> <p>"You can't get rid of these traditional things that are sellers. And you can't get rid of these things that are um expected in a rink and people want and buy, because part of it is the profit that the rink makes as well." (RLI12)</p>
	<p>Rink food is seen as a treat due to infrequent intake or because it balances out with energy expenditure from an activity. (expressed by a few participants)</p>	<p>"... I had a ... a physed teacher and he was out for a skate and then he came after skating and he bought a hot chocolate and a puffed wheat cake and a banana. And he said "oh I had a good skate tonight". And I said "oh that feels good doesn't it". And he said "yep, and now I'm gonna eat this stuff as long as I come back out at zero, I'm still ahead." (FSP2)</p> <p>"I guess it's a treat when they come to the rink." (FSP3)</p> <p>"... if they're just here for one game, say, or whatever, then it seems to be okay for them to grab their deep-fried stuff instead of actually having a decent meal." (RLI1)</p> <p>"... yet when you come to the rec center where you're supposed to be physical active, you go home, you play hard for an hour and you go home with your fries and ... mozza sticks, and whatever else. So it'd be nice to see them walking out the door with something else." (RLI1)</p>
	<p>People lack time to prepare meals at home; we are a busy culture and as a result, we want convenient access to food outlets and/or packaged foods while running children between evening</p>	<p>"... its mostly younger parents that take the easy way to feed their children and it's not always the right way, you know, they are in a hurry to get to dance or whatever's coming up next or the kids need to read a book. They don't have time to go home and make supper, let's just grab this." (FSP2)</p> <p>"... I think they look for the easy way out and fast food is definitely it." (FSP2)</p> <p>"But if they had to go home and cut things up and clean things, I don't think they would. Because there's very few that do." (FSP2)</p> <p>"... it's our culture because people don't have time anymore. Pre-packed everything ..." (RLI10)</p>

	activities. (expressed by a few participants)	“They won’t ... they don’t want to wait 15 minutes ... they don’t want to wait 12 minutes.” (RLI10)
<b>Facilitators for healthy eating</b>	There have been attempts to shift the social culture through nutrition education programs. (expressed by a few participants)	“... there’s a group of us that are trying to change that ... we are trying to change the culture at the rink around Minor Hockey. Which includes folks, people’s perspectives of hockey and youth sport but also around um nutrition and um, like giving kids more better information about how to be a better athlete or how to take care of themselves better.” (FSPI3)  “... our coaches ... I know for figure skating, our coaches do nice little challenges for the skaters, you know try and eat so many fruits and vegetables throughout your day this week and um, they’ve made it like a little bingo game sometimes, and um try a new food ... that type of thing.” (FSPI1)

#### 5.1.5. Interpersonal Factors

Table 5.6 outlines the key themes that emerged for barriers and facilitators related to interpersonal factors. For interpersonal barriers, a key theme that emerged by all 17 participants was that they either have competing priorities or they lacked awareness, readiness, or time to address the current state of FEs in SK PRFs. Another theme that emerged by a majority of participants was that there is a lack of and a need for strategy, direction and resources to support healthy change. A few participants made an additional reference to how this study and the EHPH initiative have created a new awareness and momentum for SK. Many participants felt that they had little or no role in influencing FEs in their PRFs, which validated the lack of awareness by recreation leaders and food service providers in SK PRFs and the need for strategy, direction and resources moving forward. A few participants also said there are little to no incentives, especially financial incentives, to encourage change.

**Table 5.6: Barriers and Facilitators Related to Interpersonal Factors**

	<b>Emerging Theme</b>	<b>Sample Participant Quotes</b>
	There are competing priorities, or a lack	“... you don’t really stop to think about it until something like this comes out.” (RLI1)

<p><b>Barriers for healthy eating</b></p>	<p>of awareness, readiness or time, to address the problem. (expressed by all participants)</p>	<p>“... this is probably our first ... you know this is my first look at going you know we should do this initiative has never been brought forward whether its be from the board or the community ...” (RLI8)</p> <p>“To be perfectly honest, at this point in time, it’s just ... it’s just not that big of a priority ... there just seems to be other things ...” (RLI10)</p> <p>“I have limited ... my time ... I am so busy with everything. For me to go and investigate this stuff, and I just don’t have the time to do it.” (RLI2)</p>
	<p>There is a lack of, and a need for strategy, direction and resources to support healthy change. This study has created a new awareness and some momentum in SK. (expressed by majority of participants)</p>	<p>“I do think this is so valuable and I just want to thank you guys for reaching out to communities and for offering some help.” (FSP11)</p> <p>“... having this study and maybe even some support I think is quite brilliant.” (FSP11)</p> <p>“I think we just have to be creative with how we are doing it. There just hasn’t been someone to take that lead ...” (RLI5)</p> <p>“I do want to stress that I would love to be able to offer more healthy options but I just don’t quite know how to get there at the moment.” (RLI9)</p> <p>“... any kind of neat ideas that come out of it that can help us to move down the path of changing some of the food options for our rink would be great.” (FSP13)</p> <p>“There’s a trick there right. And so whether that is someone new, whether that is someone you guys have access to that actually comes out and says, okay let’s do a trial weekend right, for one of the tournaments, this person has the ... is going to help us in our kitchen, we will get a few volunteers together to prep a weekend for a tournament with a few added items and see what happens. But someone has to coordinate that.” (RLI12)</p>
	<p>There is an uncertainty in how to best proceed with implementing healthy change. (expressed by many participants)</p>	<p>“... just ended up with the idea that people needed to bring their own healthy snacks to the rink. We have joked about the irony of those ... those kids not eating (laughter) ... the rink food ... that moms prepare. Make sure you bring your own lunch not something your mom makes you in the kitchen at the rink. What?” (FSP1)</p> <p>“I honestly don’t know what else I could try to offer ... I don’t even know what other beverage I could even carry to offer (laughter). I don’t know. I don’t know (laughter).</p>



		<p>I don't know. A coupon saying if you buy a brown bun, you get a buck off. (laughter). I don't know." (FSPI2)</p> <p>"I'm not really sure that I have a lot of influence particularly in my role. Um, because our concessionaires are contracted they pretty much offer whatever they would like. Um, for sale in the concessions which also gives them rights to any vending machines they would like to put in the building." (RLI11)</p> <p>"... ideally, I'd like to have a much healthier menu but, um, I guess my direction on cost and if it's gonna result in a ... in a tax increase for the res- residents of [small city] uh, it's a tough decision for our council to make especially when times are tough right now when we seem to keep getting more and more downloaded onto the taxpayers here so it's uh ... have to rely on this other revenue source at our department. Really not a whole lot we can do unless we wanna pay for it." (RLI3)</p>
	<p>There are little to no incentives, especially financial incentives, to encourage change. (expressed by a few participants)</p>	<p>"... the [small city] doesn't really offer any incentives to, (inaudible text) anything ... any kind of incentives I guess." (FSPI2)</p> <p>"I don't think that that they'll ever spend \$20,000 and put ovens in there or change things. There has to be some huge incentive from the province or something ..." (FSPI2)</p> <p>"... one of the other challenges we run into as a community, because we have so many different sport organizations, we kinda have to get together as a big group and decide who's going to go after that specific grant ..." (FSPI3)</p> <p>"... when we do look at the rink, we know as a community, it would work right. Like there are changes that could be made that could work, just getting the right piece and the right people, and dollars. Like you know dollars to sort of trial things right. (RLI12)</p>
<p><b>Facilitators for healthy eating</b></p>	<p>There is a high level of organizational readiness to change; however, this readiness is dependent on time, convenience and/or little to no financial</p>	<p>"... my board is definitely open to that ... they are definitely open but only if it is you know ... quick and convenient or the minimal money loss." (RLI8)</p> <p>"... if I was to discuss this with my board of directors, I'm sure they would be willing to bring new stuff in, but as I mentioned I do a hundred percent of the ordering and whatever happens, and I'm a hundred percent ready to make changes." (RLI1)</p>

	<p>loss. (expressed by majority of participants)</p>	<p>“... we always like that idea of providing healthier food options so we’ve talked about bringing in an oven. We actually wired in a spot for it ...” (RLI13)</p> <p>“... I think we are all under the same boat. We all would like to see healthier options and its just um ... ya, its just finding the way to do it and it to be successful ...” (RLI5)</p> <p>“... I can tell you that my staff would probably buy more from the concession if they could get a greater variety of healthy choices.” (RLI11)</p>
	<p>Organizations and food vendors have a high level of awareness and readiness to change. (expressed by many participants who)</p>	<p>“I can see it coming. I know I’ve had wraps in the concession since 2005, and the last year we sold a significant amount and to date and this year is even better than last year so I think people are becoming more aware of it.” (FSPI2)</p> <p>“... we can appreciate the importance of this, and that we all really want to have healthier communities, healthy children.” (FSPI1)</p> <p>“... it was last year that we started implementing some of the healthier choices and this program ... so prior to last year when we rolled out this program, the program was actually built out of a survey that we had done to all of our Minor Hockey families. And so, it yes, it covered everything from um, you know basic skills in hockey all the way through to nutrition. And, and a lot of the choices that we made in bringing in a vending machine and bringing in some healthier choices was because of the results we got in our survey.” (FSPI3)</p> <p>“Like when we decided that we wanted to do that, we called our vendor in and they have been really, really great. They changed all of the machines and products like the next day when we asked them to do some of that. So they were really effective even though it results in some loss of revenue for both of us. They were still really supportive and letting implement those changes and doing it relatively quickly.” (RLI6)</p>
	<p>Recreation leaders feel supported to, and have the authority to, make decisions on behalf of the organization. (expressed by a few participants)</p>	<p>“I’m kind of the go-to person ... so if I was to recommend to somebody or to a group that this is something we could do, they would seriously look at it. Like, they would um think that I know what I am talking about and maybe (group laughter) and they would try to do, you know, try to make it work.” (RLI2)</p> <p>“... we make the decisions here with our rec board. Um, our recreation board and our ... we actually have a little</p>

		<p>booth committee that we review once a year um, you know if we are going to make any changes and that type of thing so. So we make all the decisions.” (RLI13)</p> <p>“I have no doubt though if the request was put in, that that would be considered because I do feel very, very supported in terms of making those kinds of choices but I also have a responsibility to make choices based ... if it’s going to put us behind financially and if people aren’t going to buy it ...” (RLI13)</p> <p>“... between the two of us, we sort of make all the decisions on what to offer and at what price and how everything runs. We also have an advisory board who will kind of oversees both of our decisions as to how the community centre operates so for the most part we have the expertise and there’s really never been any um ... squabble between the two kind of areas, between the board and ourselves and what we do. So ya, I have a pretty ... pretty free range for changes, or you know, trying new things or whatever it is that we want to do um with our kitchen.” (RLI9)</p>
	<p>Recreation leaders and food service providers recognize a responsibility to enforce, or to encourage, healthy options, specifically with children. (expressed by a few participants)</p>	<p>“You can’t control kids after the game what parents choose to feed them, but you know, for that period of time the coaches, it was their choice ... to decide what could and couldn’t come into the dressing room.” (FSPI3)</p> <p>“... unhealthy choices there will always tempt people, but I do believe that as adults, we have to provide options. It’s our job to provide options. It’s not our job to tell people what they can and cannot eat. And its children we have the ability or the power to enforce or to encourage or to provide healthy choices.” (RLI10)</p>

For interpersonal facilitators, a theme that emerged by a majority of participants was a high level of organizational readiness to support healthy change to FEs in SK PRFs. A few of these participants felt that this readiness would be dependent on minimal to no financial loss. One participant from a large city specifically reported that they were not concerned by the minimal losses that they have experienced with the implementation of healthy changes to vending. A similar theme that emerged by all of the food service providers is that they also have a high level of awareness and readiness for healthy change to FEs in SK PRFs; a few also mentioned that they have gathered feedback from consumers in regards to offering healthier options, which demonstrates their awareness and readiness for change. A few recreation leaders also shared that

the vendors they work with also appear to have a high level of readiness. It is important to note that the convenience sampling methods used in our study may have resulted in a positive sampling bias, thereby influencing these results.

In addition to the themes of readiness, a few participants also brought forward that they feel supported to, and have the authority to, make decisions on behalf of their organization. This could be beneficial when it comes to implementation of specific interventions. A few participants also recognized their responsibility to enforce or to encourage healthy choices with children, which positively aligns with Satter's Division of Responsibility and the role of the parent or caregiver in feeding (1986).

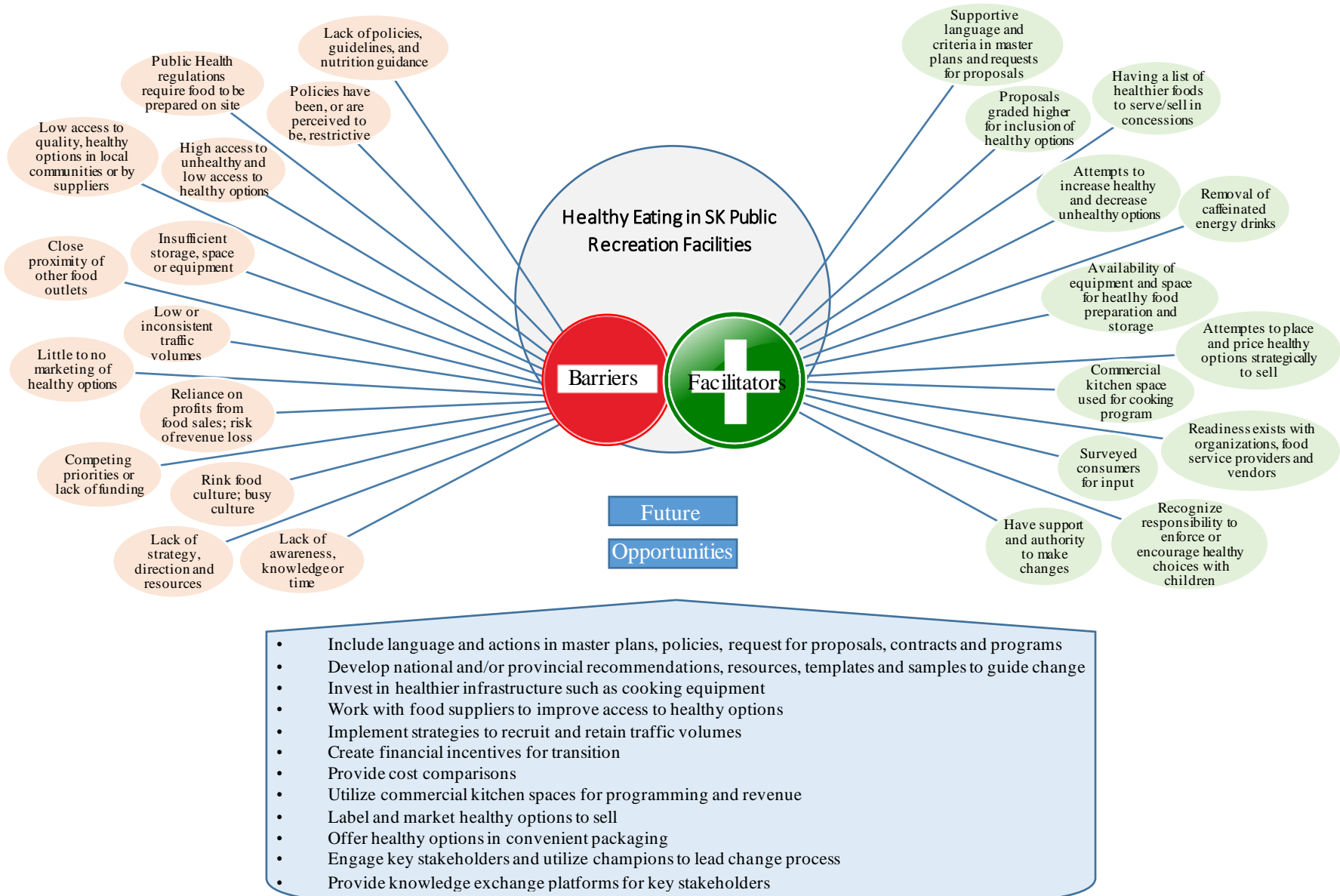
Several themes emerged for future opportunities related to interpersonal factors. The first is the need for ongoing strategy and direction. As mentioned in economic environmental factors, recreation leaders and food service providers want to know that this is a priority for their municipality or governing boards, and they require strategy and direction to protect revenues. In terms of creating change at a municipal or facility level, there is also a need for ongoing stakeholder engagement including those external to the organization, in particular consumers. Consumer engagement has the potential to increase awareness, education and consumer buy-in. A few of the food service providers interviewed, implemented customer surveys as one way to engage consumers; providing samples of customer surveys that food service providers can adapt for this purpose may be helpful. Forming wellness committees, or utilizing staff or parent champions, to help lead change at a municipal or facility level are additional ways to continue a participatory approach to change.

Another future opportunity that emerged was the need to connect municipal and recreation leaders, and food service providers, to exchange knowledge. There is a desire to know what has worked well, and not so well, in other jurisdictions of similar size. Facilitating such opportunities could naturally improve networking, sharing and learning. It could also provide a medium for sharing any new recommendations and resources. A variety of mediums could be used, either in-person and/or web-based, such as conferences, meetings, social media or a mobile app. The SPRA has been an important partner for communications with the recreation sector, such as supporting recruitment of participants for our study. Approaching them as an EPH AC member, may be one way to continue. They have a broad recreation membership base in SK; however, an exception to consider is food service providers, in particular, private contractors, as

they are less likely to be part of this membership base. Connecting with sport and coaching associations in SK is another target audience to consider as they are influential on participants and their families.

#### 5.1.6. Summary of Barriers, Facilitators and Future Opportunities

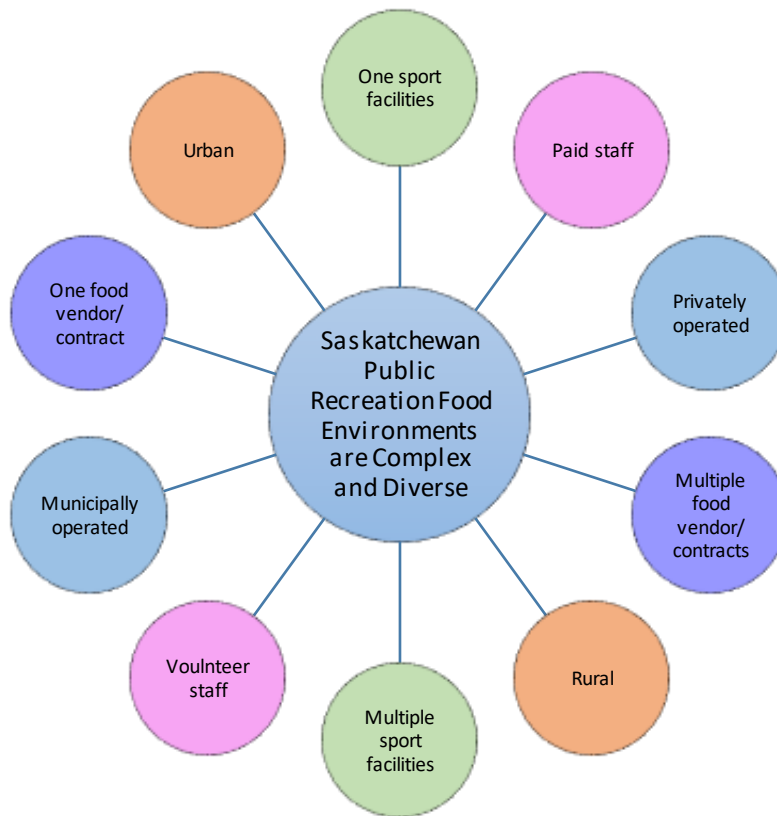
Figure 5.1 represents a summary of the key barriers, facilitators and future opportunities outlined above. It is important to note that the future opportunities included, may not have been brought forward directly by the participants; barriers or facilitators mentioned by participants, may have been translated by myself as both a student researcher and as a PHN, into a future opportunity.



**Figure 5.1: Summary of Barriers, Facilitators and Future Opportunities for Healthy Eating in Saskatchewan Public Recreation Facilities**

## 5.2. Generalizability of Data

Similar to research from other provinces, FEs in SK PRFs appear complex with multiple barriers preventing healthy change. Although some participants have attempted to improve FEs, they have also expressed many challenges and frustrations with the complexity of the situation, which has also been reported in other jurisdictions (Olstad D. L., et al., 2019). Also similar to other jurisdictions, FEs in SK PRFs are diverse (Olstad D. L., et al., 2019). Participants felt that results would be generalizable to others if the municipality and facility were of similar size and location in SK, and if the food service operations were of similar operating model. Figure 5.2 illustrates the factors affecting the generalizability of the data.



**Figure 5.2: Generalizability of Data**

# CHAPTER 6 : DISCUSSION, CONCLUSION AND RECOMMENDATIONS

## 6.1. Discussion

Although FEs in PRFs have been studied in other Canadian provinces, this was the first of its kind in SK. A comprehensive baseline evaluation of FEs in SK PRFs provides an understanding of the current state. A convergent/parallel mixed methods study design included quantitative methods to determine the healthfulness of FEs and qualitative methods to examine underlying barriers and facilitators for the current state as well as future opportunities. As outlined in Figure 6.1, the discussion explores relationships by converging the key findings for barriers, facilitators and future opportunities from both the quantitative and qualitative studies. These key findings are then compared to findings and recommendations from other jurisdictions to form our own recommendations for SK.

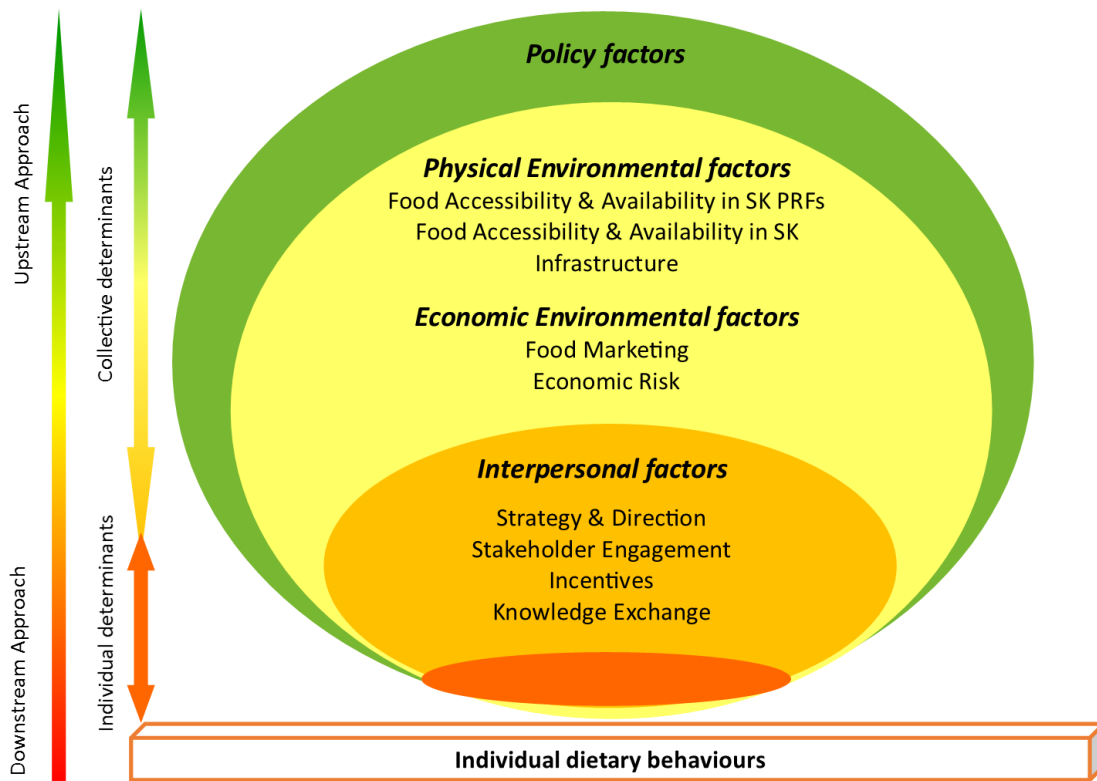


Figure 6.1: Converged Key Findings Using the Socio-Ecological Framework



A PAR approach was a vital component of our study. The EHPH AC, comprised of practitioners, policy makers and researchers from the health and recreation sectors in SK, provided direction and guidance to the mixed methods study and to the overall EHPH initiative. They provided input into elements such as the data collection tools, participant recruitment methods, communications and knowledge transfer. This increased awareness and capacity to address the problem of unhealthy FEs in PRFs in multi-sectors. The role of the EHPH AC will go beyond the life of this study; it is our hope that they will consider the recommendations put forth by this study and continue to support, monitor and re-evaluate changes to FEs in SK PRFs.

#### 6.1.1. Policy Factors

Policy factors were mainly evaluated in the qualitative component of our study. As mentioned in the literature review, I question the accuracy of the results from the EHPH preliminary study that indicated 57% of PRFs had no policies or guidelines in place as I expected the percentage to be higher (Vatanparast, 2017). Based on the interview results, majority (14/17 or 82%) of the participants were clear in their open-ended responses that they had no policies, guidelines or contract requirements in place to support healthy eating. Based on my own experience as a student researcher, a PHN and as a regular patron to PRFs, this latter percentage provides a more accurate picture of the current state.

A future opportunity that emerged that would fill this gap is for municipalities and governing boards to develop or revise policies, guidelines or contract requirements to include language and actions that facilitate healthy eating. Policies can positively change food, social and informational environments (Hawkes, et al., 2015); however, to be most effective, consideration needs to go into *how* the policies are implemented (Olstad D. L., et al., 2019). A recent Canadian study that focused on FE change in PRFs demonstrated that policies alone did not provoke positive change (Olstad D. L., et al., 2019). Including an organizational capacity-building component that mobilized policy into practice is what provoked significant change (Olstad D. L., et al., 2019). Now that there is baseline data in some communities, and a high level of organizational readiness, approaching the recreation leaders and food service providers to participate as champions in capacity-building interventions that implement policy, would be ideal. It provides an opportunity to measure the impact of policy on concession and vending services over time.

Enhancing policy implementation through capacity-building components like municipal/facility champions, technical support, training and resources has demonstrated success (Olstad D. L., et al., 2019). A related future opportunity emerged from our qualitative study where municipalities and governing boards would benefit from recommendations, templates, samples and nutrition guidance that defines, classifies and lists healthier foods and beverages. This future opportunity is already in progress. In the midst of our study, the Government of Saskatchewan collaborated with the SHA and the SPRA, to develop *Healthy Foods for my Recreation Setting (HFFMRS) – Nutrition Standards for Saskatchewan* and *Getting Started* (2018). As part of a series, the *HFFMRS – A Step by Step Guide* is also being finalized to support those leading change at a municipal or facility level. In the fall of 2019, the collaborative partners launched a webinar series to roll out the resources with key stakeholders. Public health nutritionists are also available as a technical support for municipalities; this was communicated during the webinar series and on the EHPH web page on SPRA’s website.

Although a voluntary approach to nutrition policy implementation has shown a slow improvement in other jurisdictions, the improvements have been inconsistent; therefore, a mandatory approach is recommended to support a wider spread uptake (Olstad & Raine, 2013; Olstad D. L., et al., 2019). Participants in our qualitative study expressed a need for consistent implementation across all PRFs. In SK, there has been hesitancy to move forward with a mandatory approach; thus, similar to other provinces, SK has chosen a voluntary approach. This hesitancy may exist because of the current political and economic environment. There is a perception that change will result in negative economic outcomes as brought forward by the participants in our study, even though research from another jurisdiction has shown that proportional sales volumes and proportional revenues per patron can be preserved when the availability of healthy menu items are increased (Olstad, Goonewardene, McCargar, & Raine, 2015). Negative economic outcomes would potentially affect the operational budgets of PRFs and/or user fees.

## 6.1.2. Physical Environmental Factors

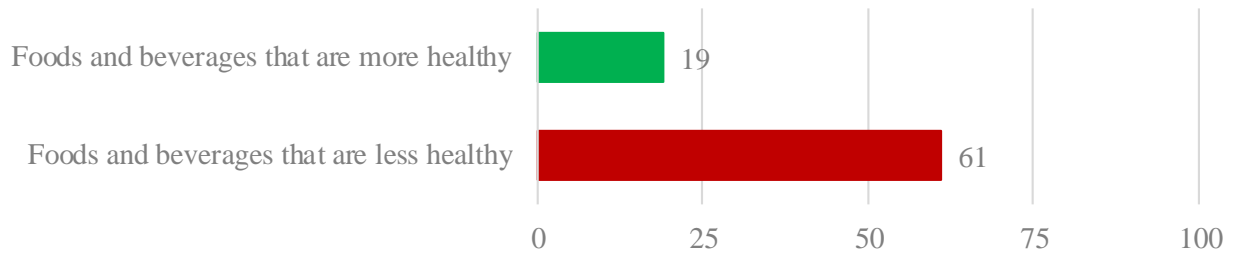
### 6.1.2.1. Food Accessibility and Availability in SK PRFs

Our study evaluated two operational areas for food service, concessions and vending; we did not consider other areas where food and beverages may be available such as programming,

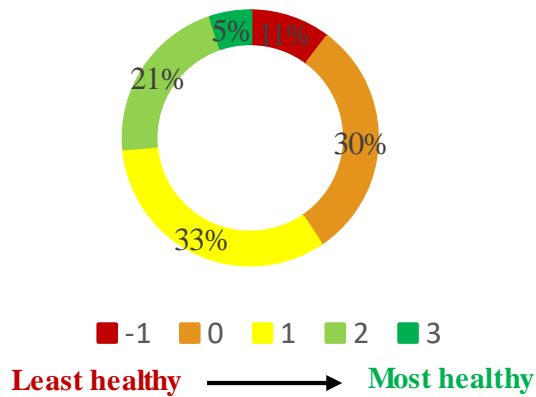
meetings, events and fundraising. Results indicate that foods and beverages are highly accessible through concession and vending services in SK PRFs, especially in urban cities. Similarly, evidence from other jurisdictions has also found food and beverages highly accessible in PRFs through a variety of operational areas (Cejalvo, Donovan, & Naylor, 2014). With such prevalence, FEs in PRFs are an important community setting to support.

Other jurisdictions have defined FEs in PRFs as unhealthy and unsupportive of health outcomes, which contradicts the national recreation priority to have *Supportive Environments* (Naylor, Bridgewater, & Purcell, 2010; Chaumette, Morency, & Royer, 2009; Olstad D. L., et al., 2019). Our quantitative and qualitative results describe a similar current state. The majority of participants disclosed low access to healthy options and a high access to unhealthy options in SK PRFs as a barrier; it is difficult for consumers to make a healthy choice if little to no healthy options exist. However, it is noted in the results for social factors, that the food and beverages offered are highly influenced by what consumers expect and demand. It was felt that consumers expect unhealthy options in SK PRFs, which is similar to other jurisdictions (Vander Wekken & Naylor, 2010).

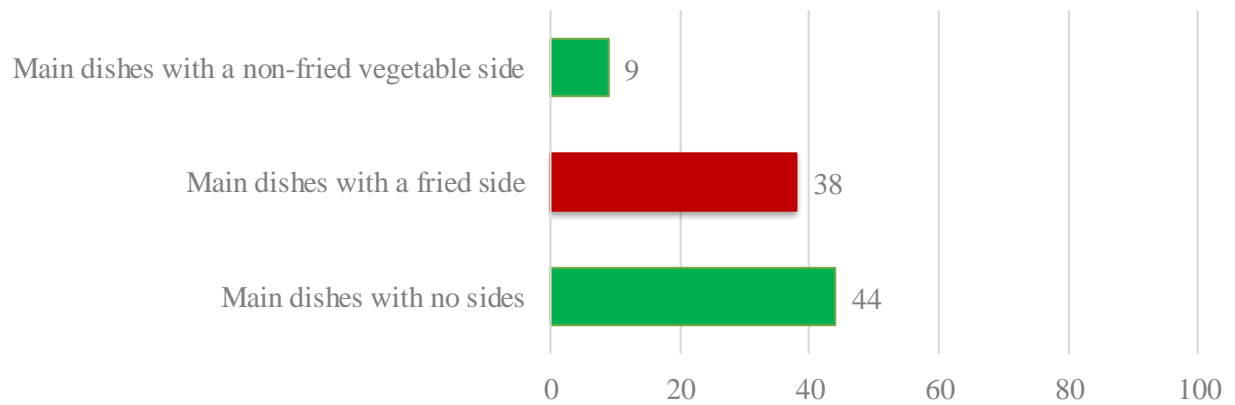
This current state of unhealthy and unsupportive FEs in SK PRFs, especially for rural areas, was also confirmed through various quantitative results with concession menus and packaged products from concession and vending services. As described in Figure 6.2, healthier marker foods were much less frequent on concession menus than less healthy marker foods. In particular, urban concessions had a higher presence of some healthier marker foods than rural concessions. Only 5% of concession main dishes were defined as healthy (scored +3) as shown in Figure 6.3. Most healthy main dishes were found in urban concessions. In addition, only a few concession menus offered healthy main dish salads that scored a +3, all of which were found in urban concessions. As shown in Figure 6.4, majority of main dishes that included a side dish, automatically came with a fried side dish. Very few came with, or had an option for, a non-fried vegetable side dish. Only urban concessions offered non-fried vegetable side dishes. Another interesting indicator to note was the availability of alcohol in 55% of the PRFs sampled due to its association with negative health outcomes.



**Figure 6.2: Frequency of food and beverage markers offered on concession menus (n=42)**



**Figure 6.3: Healthfulness of concession main dishes (n=984)**



**Figure 6.4: Frequency of side dishes with concession main dishes (n=984)**

For packaged products from concession and vending services, the most common food types available were potato/corn chips, chocolate bars and candy as outlined in Figure 6.5; these foods tend to be defined as *Offer Least Often* foods or they do not fall into the five categories outlined in the *Nutrition Standards for Saskatchewan*. The most common beverage types available were soft drinks, hot drinks (e.g., coffee, tea, hot chocolate), sports drinks, juices and smoothies as outlined in Figure 6.6. While soft drinks and sport drinks do not fall into the *Nutrition Standards for Saskatchewan*, hot drinks, juice and smoothies may depending on how they are prepared. Combining foods and beverages, we found that 80% of products from concessions and 84% of products from vending were classified as *Offer Least Often* as demonstrated in Figure 6.7. These indicators from concession and vending operations in SK PRFs, like in other jurisdictions, provide evidence that food and beverages are highly accessible and that they are generally unhealthy and unresponsive of health outcomes.

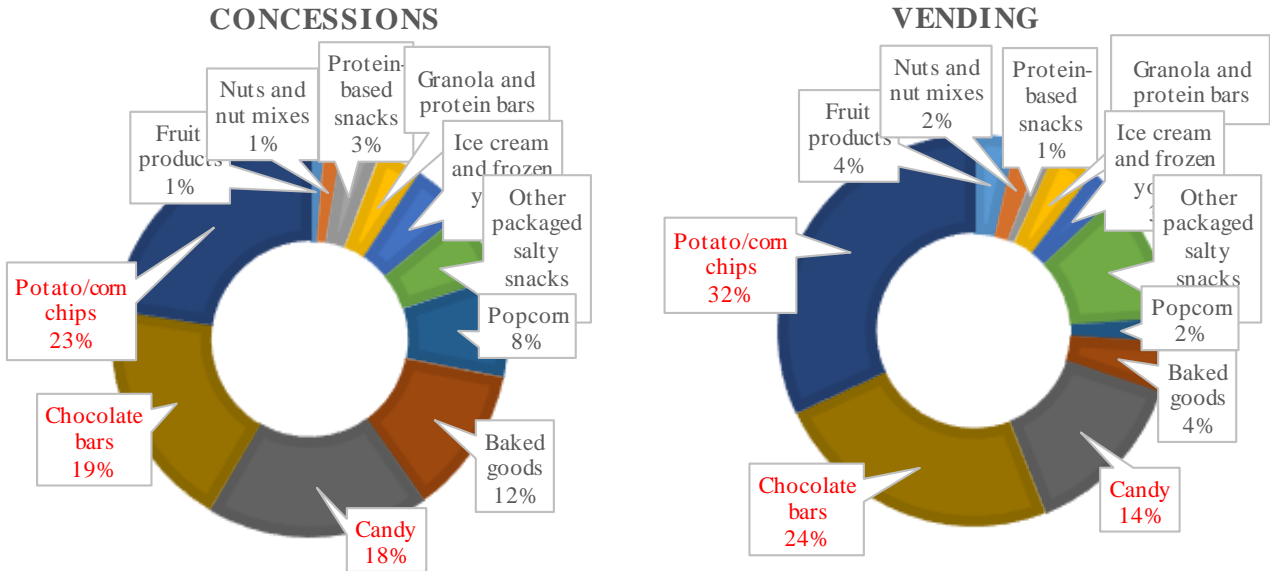


Figure 6.5: Frequency of food types in concessions (n=663) and vending (n=1205)

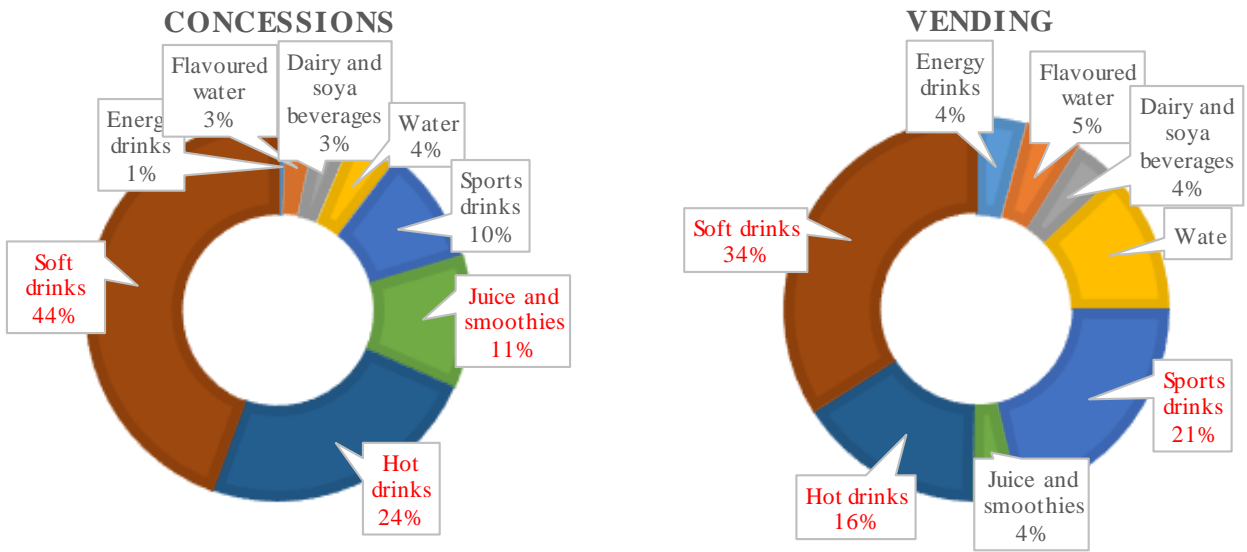


Figure 6.6: Frequency of beverage types in concessions (n=906) and vending (2002)

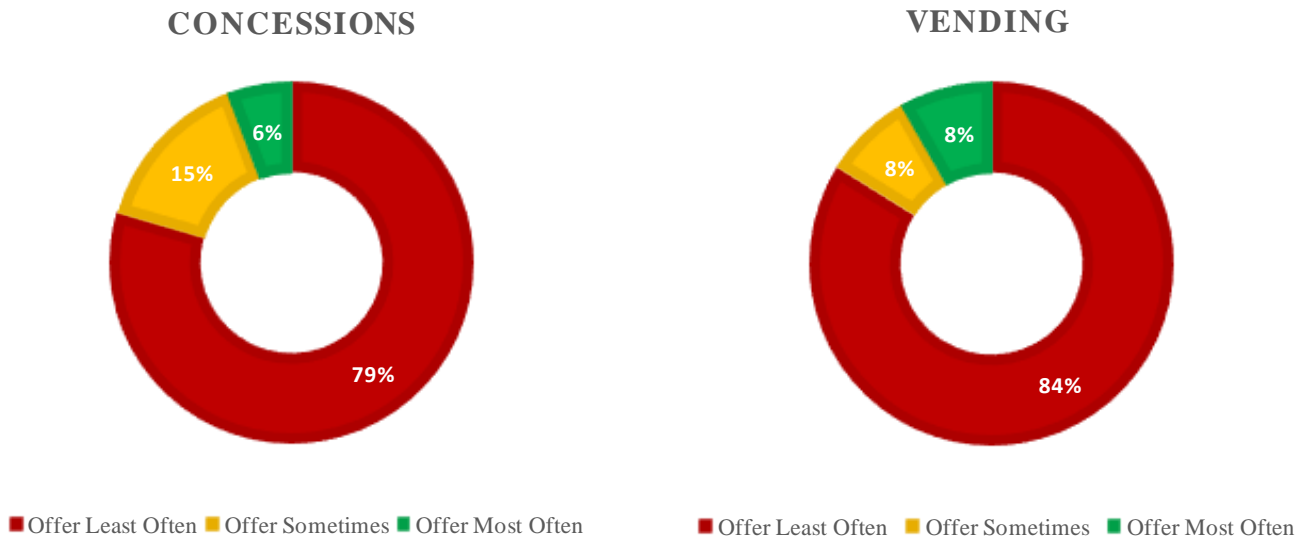


Figure 6.7: Healthfulness of packaged foods and beverages in concessions (n=1569) and vending (n=3207)

High access to unhealthy food and beverages in SK PRFs is a barrier for healthy eating. Encouraging concession and vending operators to slowly increase access to healthy options, while decreasing access to unhealthy options is one way to facilitate healthy eating behaviours in SK PRFs (Lloyd & Dumbrell, 2011). Adding healthy options that are perceived as trendy was suggested by participants in our qualitative study; specifically, fruit smoothies and ethnic foods like butter chicken or fresh rolls were suggested.

Although there is a perception that healthy foods will not sell in PRFs, a few studies have contradicted this perception. A study from a neighbouring jurisdiction found that when made available, healthy options sold in proportion to their availability (Olstad, Goonewardene, McCargar, & Raine, 2014). Likewise, an Australian study found a significant increase in the the proportion of consumers reporting the purchasing of vegetables and fruits after interventions to improve and promote their availability (Wolfenden L., et al., 2015). They concluded that the intervention enabled recreation organizations to overcome perceptions that consumers will not purchase healthy food and beverages if made more available (Wolfenden L., et al., 2015).

Although research is limited, interventions to improve accessibility of healthy food and beverages appear to have a positive impact on consumers' eating behaviours.

It was evident in our qualitative study, similar to studies from other jurisdictions, to attempt such changes when traffic volumes are consistently higher, such as pools, tournaments or events, as there is a greater likelihood of success (Olstad, Goonewardene, McCargar, & Raine, 2014). Competition between food services in the same facility was brought forward as a barrier in other jurisdictions (Vander Wekken, Sorensen, Meldrum, & Naylor, 2012). Surprisingly, this was not brought forward as a barrier in our study; this may be due to the smaller size of facilities and municipalities in SK. However, minimizing internal competition is still something that needs to be considered with change. As discussed in economic environmental factors below, a few of our participants also brought forward ideas to simultaneously market the healthy options as they are implemented, while reducing or eliminating marketing of competing unhealthy options.

In our qualitative study, a positive finding was that some commitments have been made in some municipalities to offer healthier options, remove unhealthy options, and/or install healthier infrastructure; however, there is risk with these commitments, as a majority of them were not captured in written form. As commitments between municipalities, governing boards and/or food service providers are made to implement actions to support healthy eating, it is important to

document them in written materials that communicate changes to other stakeholders such as leadership, collaborating organizations, staff, contractors and the public. Written materials may range between municipalities; examples mentioned throughout our study were master plans, policies, requests for proposals and/or contracts. This additional action would increase accountability to follow through on the verbal commitment and it would ensure the commitment is sustained through attrition and time.

#### 6.1.2.2. Food Accessibility and Availability in SK

Distinct themes emerged in our qualitative study around food access in urban and rural communities. Participants from urban large and small cities reported that the close geographical proximity of other food outlets to PRFs creates competition and is a key physical environmental barrier to implementing healthy change. Economic risk is attached to healthy change for this reason, especially when the food outlets in close proximity are large franchises with strong marketing campaigns and followings. Participants fear that if they do not provide the foods that consumers desire or expect, they will leave the facility to purchase their preference elsewhere. If concerns with external competition persist, urban municipalities or governing boards may want to re-assess the need for food services or the types and/or frequency of food services that they are offering inside the PRF.

Participants from rural communities felt that low access to healthy options in SK PRFs may be a result of some communities having low access to quality, healthy options in their local community or by food suppliers and distributors. These barriers were also reported by other jurisdictions (Vander Wekken, Sorensen, Meldrum, & Naylor, 2012; Olstad, Raine, & McCargar, 2012; Naylor, Olstad, & Therrien, 2015). A few participants from rural communities specifically mentioned a desire to support local grocery stores; however, many stated challenges with inconsistent stock and/or poor quality of fresh produce, especially when the turnaround time to prepare it for resale is not quick. They also stated challenges of accessing healthier options through food suppliers and distributors; they do not always use the volumes required for ordering, making it an unfeasible option for their operation. In addition, participants expressed that there is a lack of healthier products available to choose from, in particular with vending.

In alignment with existing evidence, participants felt that there would be value in collaborating with food manufacturers, suppliers and distributors in SK to share knowledge and discuss future opportunities, especially as we move forward with implementing *Nutrition*



*Standards for Saskatchewan* (Vander Wekken, Sorensen, Meldrum, & Naylor, 2012). In particular, participants deemed this important in order to promote healthy food access in rural and remote communities in SK where access can be limited (Saskatchewan Food Costing Task Group, 2017). Ideas brought forward from participants are to allow orders for smaller quantities and/or to qualify for cost savings through a program like group purchasing; however, it is important to note that these ideas could negatively affect business with local grocers. Only one study in Canada has explored the perspective of the food and beverage industry on the implementation of nutrition policy in PRFs. In this study, industry acknowledged a future trend towards healthier choices (Vander Wekken, Sorensen, Meldrum, & Naylor, 2012). Because food manufacturers, suppliers and distributors have large service areas beyond a single province, these opportunities could also be explored in partnership with other provinces and territories in Canada.

#### 6.1.2.3. Infrastructure

Similar to existing evidence, both our quantitative and qualitative results indicate that infrastructure barriers exist in SK PRFs (HERS Working Group, 2018; Olstad, Raine, & McCargar, 2012; Olstad D. L., et al., 2019). In particular, the high frequency of deep fryers in concessions has been an indicator of interest due to the high number of deep-fried foods on menus (HERS Working Group, 2018). Deep fryers were only found in 56% of concessions; however, this was due to a high number of concessions in urban large and small cities that only sell cold items like fruit-based smoothies, shaved ice and cotton candy. Rural areas had a higher frequency of deep fryers as compared to urban cities. In addition, some equipment that supports healthy food preparation, such as rotisseries, blenders, croc pots and toasters were less frequent. A wider variety of equipment was reported from concessions in rural areas than in urban cities, yet rural areas are not offering some of the healthier options that can be found in urban concessions. In rural areas, healthier menu items tend to be offered only when there are higher traffic volumes such as tournament weeks, which our study may not have captured.

Some participants brought forward that they were working with their municipalities to address this barrier. Purchasing or replacing capital equipment in concessions would support food service providers in storing and preparing healthier food and beverages. A specific example shared by a participant from an urban community was that their municipality made a commitment to install convection ovens rather than deep fryers in concessions with new builds. However, the participant also shared that this commitment was verbal and not documented in written form,

which poses risk. As mentioned above, documenting such commitments in written form, communicates changes to other stakeholders such as leadership, collaborating organizations, staff, contractors and the public.

With vending machines being more prevalent in SK PRFs than concessions, there is an additional concern regarding the types of machines available and the healthfulness of products that they can offer. Majority of the vending machines were of non-perishable nature, including candy, cold beverage and dry snack machines. This is concerning due to a higher level of processing required to extend shelf life of such products, thereby reducing their healthfulness, which was evident in our results with the majority of the foods and beverages in the vending machines being categorized as *Offer Least Often*. Research from other jurisdictions, indicate similar results and concerns with vending infrastructure (Olstad, Poirier, Naylor, Shearer, & Kirk, 2014; Olstad D. L., et al., 2019).

At 43%, the prevalence of candy machines in SK PRFs is worth noting. In general, candy contains little to no nutrition and high amounts of added sugar, and therefore does not contribute to positive health outcomes. It is important to note the range of candy machines, which varied from 0 to 8 per PRF; their existence in facilities was dependent upon the municipality. Targeting those particular municipalities in SK to remove candy machines, or to swap them for non-food machines, such as toys, would be a realistic strategy to support healthy eating in PRFs.

Similar to concessions, there are infrastructure opportunities for vending. To support healthy eating, a few participants have demonstrated their readiness for change by attempting to improve vending infrastructure and the products that are sold within. A participant from an urban small city shared that they attempted a refrigerated vending machine by a healthier vending company in one PRF. However, over time, the healthfulness of the products decreased and the vending company was asked to leave, as it no longer met the municipality's goal to have healthier products available via vending. This experience may have faltered for various reasons including a lack of monitoring, staff/consumer buy-in, product availability, information, marketing, taste-tests and/or incentives (Vander Wekken & Naylor, 2010; Olstad, Goonewardene, McCargar, & Raine, 2014). As described further in physical environmental, economic environmental and interpersonal factors, taking a well-rounded approach to implementing new ideas, including those with infrastructure, will reduce economic risk and increase likelihood of success and sustainability.

Purchasing or replacing infrastructure comes at a cost, which was identified as a barrier to healthy eating in our qualitative study. However, there are ways to incorporate these costs into municipal budgets. All infrastructure has an expiry date. Knowing expiry dates can allow municipal and recreation leaders to forecast and incorporate the replacement cost of old infrastructure into municipal budgets over a period time. Municipalities can also consider fundraising or grant opportunities to support the costs of capital equipment. Also, it is important for municipalities to understand the long-term financial savings with replacing old infrastructure. For example, replacing a deep fryer with a combi-oven can produce a similar product in a quick turnaround time, while reducing the use of energy, raw materials like oil, labour and space (Rational, 2019). The regional hospital in my own community, made this change of infrastructure with its new build in 2015, and our Manager attests to these cost savings as well as the reduced risk of injury to staff having to replace hot oil. Replacing old infrastructure can also reduce maintenance, promote retail sales and a healthy organizational culture (Lawn, 2009; Casali & Day, 2010). Sharing such knowledge between health and recreation stakeholders is a future opportunity to explore.

### 6.1.3. Economic Environmental Factors

#### 6.1.3.1. Food Marketing

Food marketing is an important consideration as it may influence food preferences and behaviours (Prowse R. J., et al., 2018; Olstad, Vermeer, McCargar, Prowse, & Raine, 2015; Cairns, Angus, Hastings, & Caraher, 2013). Research from other Canadian jurisdictions confirms a high prevalence of food marketing in 98% of PRFs (Prowse R. J., et al., 2018). The majority of the food marketing was also found to be of unhealthy options (Prowse R. J., et al., 2018). Although our study did not comprehensively evaluate food marketing as such, we did include some quantitative indicators for concession and vending services. A few related themes also emerged from our qualitative study.

A few indicators measured the availability of nutrition information and labelling of healthy options as facilitators for healthy eating. Very little to no nutrition information or labelling of healthy options existed, which also emerged as a theme in our qualitative results. The concessions that had such information available were operated by large franchises, which speaks to their ability and their advantage over smaller food service operations to provide such

marketing strategies. In our qualitative study, participants felt that there would be value in implementing such strategies to nudge consumers' eating behaviours and to ultimately support the sales of healthy options as they are introduced. However, for sustainability, careful consideration would need to go into a strategy, in particular, for smaller food service operations. This could also help combat the perception that healthy options will not sell in a PRF environment.

Although the evidence on the effectiveness of using nudges like menu labelling, sampling and price reductions to cue consumers' eating behaviours is limited and inconclusive, it can still be part of a comprehensive strategy to support healthy eating behaviours (Olstad, Goonewardene, McCargar, & Raine, 2014; Olstad, Vermeer, McCargar, Prowse, & Raine, 2015). To facilitate healthy eating in SK PRFs, municipalities, governing boards and food service providers require support to market healthy foods and beverage options as they are introduced to consumers. This may include information, labelling, convenient packaging, aesthetic appeal, visibility and/or pricing strategies. There may also be value in offering free samples of new healthy options to increase consumers, in particular children's, selections of unfamiliar foods (Olstad, Goonewardene, McCargar, & Raine, 2014; Birch & Marlin, 1982). More research on the effectiveness of nudges to cue consumers' healthy eating behaviours is needed. Meanwhile, it is equally important to support them as well as food manufacturers, suppliers and distributors, to reduce marketing of unhealthy options as it undermines efforts to support healthy eating.

Food marketing in PRFs goes beyond concession and vending services; other areas such as arena boards, score clocks and billboards need to be considered along with the breadth and intensity of the marketing as outlined in a new Food and beverage Marketing Assessment Tool for Settings (FoodMATS) (Prowse R., et al., 2018). While the EPHH AC agreed to further evaluate food marketing in SK PRFs using the FoodMATS tool, they only included two urban large cities due to a lack of funding and capacity; results are being analyzed. A more comprehensive evaluation of food marketing in both urban and rural areas of SK is recommended. Ideally, it would consider the entire facility premise as well as food marketing through sport sponsorship, which is not included in the original FoodMATS tool. This would provide a more accurate evaluation of food marketing and the potential impact on healthy eating in SK PRFs. It could also be used as a baseline measure for monitoring long-term change in SK and it could support Health Canada in their efforts to restrict unhealthy marketing targeting

children through the Child Health Protection Act (Government of Canada, 2017). Influencing Canadian legislation and the monitoring of the current issue through ongoing data collection would ultimately support the health of all Canadians from food manufacturers to policy makers to consumers.

#### 6.1.3.2. Economic Risk

Economic environmental factors were mainly evaluated in the qualitative component of our study. Economic risk associated with implementing healthy food and beverage options emerged as a key barrier for healthy eating in SK PRFs. Very few economic facilitators were mentioned affirming the complexity of the current state and the difficulty in moving towards a healthier future state. It is important to note that many factors from the other layers of the socio-ecological framework, like food accessibility, availability and marketing, also feed into economic risk. However, to minimize repetition, I will avoid repeating a description of those factors in this section.

Similar to research from other jurisdictions, recreation leaders and food service providers in SK expressed that a lack of capacity due to competing priorities and/or a lack of funding are key barriers for healthy eating (Vander Wekken & Naylor, 2010). When priorities are competing, finding funding and capacity for paid staff to lead a new initiative is difficult. Similarly, a lack of funding to operate PRFs adequately was also commonly reported as a barrier. A few participants said that this was particularly true for PRFs that only operate seasonally, such as arenas, as they are less of a priority than those that operate year round. In addition, many PRFs appear to be aging further stretching existing budgets (The Association of Consulting Engineering Companies Canada, et al., 2019). These factors have created a reliance on the profits from unhealthy food and beverage sales to offset such operating costs and/or program user fees. Participants are hesitant to take risks that could compromise their revenues and profits, and ultimately their operation and the users of the facilities. If facilities were funded adequately, a reliance on the profits for unhealthy food and beverage sales may decrease thereby enabling healthy change. Municipalities and governing boards are seeking reassurance healthy change will not affect the economics of their operations.

Economic risk due to reduced or low traffic volumes to SK PRFs emerged as another key barrier for healthy eating. Similar to other jurisdictions in Canada, the changing landscape of

municipalities and participation in programming may be factors feeding into this barrier (Vander Wekken & Naylor, 2010). Even though SK has seen a population growth above the national average since 2006, the growth has been concentrated in and near urban communities (Statistics Canada, 2017). The population of rural communities in SK has been steadily declining over time, which would negatively affect participation in programming in rural PRFs (Statistics Canada, 2019). This would result in less traffic volumes and purchasing from food services in rural PRFs. Affordability of programming has been reported as a key barrier to participation for many SK households, which may also affect traffic volumes (Saskatchewan Parks and Recreation Association, 2016). Future opportunities for municipalities and governing boards to consider are creative ways to generate new traffic flow and revenue. From a health equity lens, one way to generate new traffic flow is to make recreation programs more accessible by reducing fees for certain population groups like children, youth and seniors (Brophy, et al., 2011). This may increase traffic volumes, thereby increasing revenues and offsetting any potential losses with reduced fees. Another example may be to use existing commercial kitchen spaces in PRFs for food programming like cooking classes or to lease the space out to a private operator for catering services. Another opportunity if vacant land space is available on the premise is to integrate programming like community gardens and farmers' markets.

Economic risk also exists due to a perception that healthy options will not sell. Participants felt that simply offering healthier options would not affect people's purchasing patterns. As noted in the social environmental results, a risk food culture exists where consumers expect less healthy options. In addition, they are concerned that if the healthy options do not sell, it will result in food waste due to their perishable nature, which compromises profits. This emphasizes the need, similar to findings from other jurisdictions, for a comprehensive strategy that includes marketing of healthy options and consumer buy-in (Olstad, Goonewardene, McCargar, & Raine, 2015). A few studies found that having such a strategy in place while increasing the availability of healthy options, resulted in a positive change to consumers' purchasing patterns and little to no economic risk (Olstad, Goonewardene, McCargar, & Raine, 2015; Wolfenden, et al., 2015). More research is needed to confirm this phenomenon. Similar to other jurisdictions, participants also seemed to understand that change will take time, and that any loss in revenue due to change, will recover as consumers adjust and expectations shift (Vander Wekken & Naylor, 2010).

#### 6.1.4. Interpersonal Factors

Interpersonal factors were mainly evaluated in the qualitative component of our study. As described individually below, four key interpersonal themes emerged relating to a lack of, and a need for, strategy and direction, stakeholder engagement, incentives and knowledge exchange. Incorporating these interpersonal factors into a strategy that is comprehensive of all collective determinants will help to facilitate action and sustain healthy change to FEs in SK PRFs.

##### 6.1.4.1. Strategy and Direction

Other jurisdictions have reported mixed results for organizational readiness to support healthy FEs in PRFs (Vander Wekken & Naylor, 2010; Naylor, Olstad, & Therrien, 2015). Interestingly, a majority of our participants reported a high level of organizational readiness to change, as long as it resulted in minimal or no economic loss. The difference in findings could be for a few reasons. The climate for healthy eating may have evolved from the time of the previous studies to ours. The studies and resources developed for other jurisdictions may also have influenced awareness and readiness in the SK recreation sector. Lastly, due to our convenience sampling methods, we may also have a biased sample of participants.

Even though SK participants indicated a high level of organizational readiness to change, they also brought forward several interpersonal barriers that could interfere if not addressed, such as competing priorities and a lack of awareness, time, capacity, funding, resources, strategy and direction. While the launch of this baseline evaluation, and the HFFMRS and the webinar series, have addressed some of these barriers, municipalities, governing boards and food service providers need further direction. They would benefit from a national and/or provincial strategy that is comprehensive of all collective determinants outlined in the socio-ecological framework. Having a national and/or provincial strategy aligned to the national recreation framework, would provide a common agenda for all stakeholder groups and highlight healthy FEs in SK PRFs as a priority to support health outcomes.

##### 6.1.4.2. Stakeholder Engagement

A recent randomized controlled trial in other Canadian jurisdictions showed significant improvements to facility capacity, policy development and to the quality of the FEs in PRFs with the inclusion of an actively delivered capacity-building component (Olstad D. L., et al., 2019). As previously mentioned, approaching and engaging key stakeholders to participate in the EHPH

AC at a provincial level as champions, such as SUMA and SARM, is still needed for a more effective, widespread uptake. This would mirror the approach in other jurisdictions (AUMA & AMSC, 2020).

At a PRF level, results from the EHPH preliminary study, indicated that majority of PRFs did not have any food or beverage committees formed to lead change (Vatanparast, 2017). Identifying and engaging champions from key stakeholder groups at a PRF level is also imperative to influencing a social change process. Key stakeholder groups to consider including at a PRF level include consumers, user groups, parents, coaches, volunteers, contractors, municipal leadership and staff as well as those who manufacture, supply and distribute food to the PRFs. Although our capacity may vary across municipalities, PHNs may also be available as a support at a PRF level; we have the skills and understanding to act as agents of social change to improve FEs (Raine K. D., 2014).

Although our results indicated a high level of readiness with municipal leadership and staff, food service providers and some vendors in SK, majority of participants questioned the readiness of consumers to purchase the healthy options while visiting a PRF. This concern is consistent with qualitative findings from other jurisdictions (Naylor, Vander Wekken, Trill, & Kirbyson, 2010; Cejalvo, Donovan, & Naylor, 2014; Naylor, Olstad, & Therrien, 2015). Specifically engaging consumers in a social change process would increase their buy-in, awareness, and capacity to support change, which would reduce economic risk for municipalities, governing bodies and food service providers (Cejalvo, Donovan, & Naylor, 2014). Other jurisdictions also reported surveys, marketing and education materials, and taste-testing as additional ways to engage consumers in a social change process (Cejalvo, Donovan, & Naylor, 2014; Olstad, Goonewardene, McCargar, & Raine, 2014).

#### 6.1.4.3. Incentives

As discussed under physical and economic environmental factors, participants brought forward that there is a lack of incentive to change. This barrier is also consistent with qualitative research from other jurisdictions who have also taken a voluntary approach to implementing nutrition guidelines; this is another reason a mandatory approach has been recommended (Olstad, Raine, & McCargar, 2012). If changes to support healthy eating are expected, municipalities, governing boards and food service providers also need reassurance that the implementation of healthy options will not negatively affect their operational budget or user fees.



Evidence has also shown that non-monetary incentives can be more influential in behaviour change than monetary incentives (Rajapaksa, et al., 2019). A relatively new non-monetary incentive that a neighbouring jurisdiction facilitates to support healthy FEs in municipal spaces is a Nutrition Report Card (AUMA & AMSC, 2020). The Nutrition Report Card benchmarks strengths and weaknesses of FEs in public spaces over time (University of Alberta School of Public Health & Alberta Innovates, 2018). Their process not only engages stakeholders in collecting data pertaining to FEs, but it can also work as a non-monetary incentive for stakeholders to take action and remain accountable (University of Alberta School of Public Health & Alberta Innovates, 2018). To date, SK has no such report card; bringing key stakeholders together from research, policy and practice to discuss this concept is recommended to support healthy FEs in public spaces across SK. This would support positive health outcomes of our population through supportive FEs beyond PRFs; it could also include public spaces like schools, work places, hospitals, parks and transit. It would also provide a way to measure our progress with FE change over time.

#### 6.1.4.4. Knowledge Exchange

To support and sustain healthy change to FEs in SK PRFs over time, a future opportunity that emerged from our qualitative study was the need for communication platforms amongst key stakeholders. This is also consistent with research from other jurisdictions (Vander Wekken & Naylor, 2010; Naylor, Olstad, & Therrien, 2015). Communication platforms would encourage dialogue, learning and relationship building between key stakeholders as they proceed with collective action. These platforms could be built into existing structures such as an agenda item for groups that meet regularly or into new structures like web- or social media- based Communities of Practice (COP) focused specifically on supportive FEs. Because specific ideas for knowledge exchange were not brought forward in our qualitative study, the EPHH AC may want to further investigate various ideas with the recreation sector so they are most suited for policy makers and practitioners in SK.

## 6.2. Study Strengths and Limitations

Our PAR approach was a strength of our study. It led to the formation of a provincial AC where for the first time, researchers, policy makers and practitioners from health and recreation

sectors collaborated to evaluate and address a real-life problem. Our approach was flexible to allow for tailoring to the local context. My perception is that it increased awareness and capacity to address the problem across both sectors in SK, enhancing the likelihood for sustainable changes. Although my roles as a PHN, student researcher and co-chair of the EHPH AC, required intense time and capacity to complete the study, I was able to build working relationships with members of the EHPH AC as well as allies from other jurisdictions in Canada; this aligns with existing evidence on the value of a PAR approach (Mackenzie, Tan, Hoverman, & Baldwin, 2012). Relationships were strengthened through regular meetings and discussions on study design, methods and communications to the recreation sector. We also encouraged relationship building at a municipal level by inviting PHNs and RDs to collect data in participating communities in their practice areas. Results and recommendations of our study will be shared with the EHPH AC for further consideration. It is my hope that this PAR approach will ensure "... that research continues to form action in the longer term and for the integration of research into practice and improvement" (Mackenzie, Tan, Hoverman, & Baldwin, 2012). With no funding at hand, partners demonstrated their commitment by providing in-kind and minimal cash contributions. The AC appears to be committed to support, monitor and re-evaluate changes as recommendations are set forth to FEs in SK PRFs.

A mixed methods design was another strength of our study. Quantitative methods determined the healthfulness of FEs in SK PRFs, while qualitative methods examined underlying barriers and facilitators for the current state through in-depth discussions with key stakeholders. The results were converged to examine relationships between the two sets of data, and to form future opportunities. For the quantitative component of our study, we used the validated NEMS tools and for the qualitative component, we adapted interview questions from similar research in another province. I conducted and transcribed the telephone interviews myself using standardized protocols; this strengthened accuracy and interpretation of our qualitative data. We intentionally aligned our research tools and methods with research from other Canadian provinces in order to compare findings. This approach builds on existing evidence and supports ongoing momentum to address FEs in PRFs at a national level.

It is important to consider the limitations of our study. Convenience sampling methods were used to voluntarily recruit SK recreation leaders and food service providers to participate. Our sample was selected based on interest and availability and may have resulted in a biased sample.

Due to timing of data collection, some PRFs that operate only in the summer months, like outdoor swimming pools, were excluded from our study. Due to interest by only one community in northern SK, we were not able to compare results to communities in southern SK as it would risk anonymity. Because of a smaller number of communities defined as villages and hamlets, we grouped them with towns and defined them as rural communities to protect anonymity. In addition, our quantitative results may be skewed because of a high number of participating facilities from one urban large city. This was the only municipality to give consent to include privately operated concessions; otherwise, only publicly operated concessions were included. For all of the reasons outlined above, results may not be representative of all recreation leaders and food service providers and generalized to all PRFs in SK.

There were limitations specific to our quantitative study as well. Because of a lack of capacity and the availability of validated tools, we limited our data collection to only concessions and vending operations. Other operational areas where food may be offered in SK PRFs, such as fundraising, events and meetings, were not included. In addition, data was collected at a single point in time and when traffic volumes were lower in an attempt to not disrupt the business; therefore, additional items featured on menus when traffic volumes are higher, such as on tournament weekends, may not have been captured. With limited funding and physical distances between participating communities in SK, ten volunteer surveyors supported the NEMS quantitative data collection process. Although our participatory approach to build relationships between local health and municipal contacts was a strength of our study, it increased risk for variance in how the data was collected and reported. To mitigate risk for variance, precautionary measures were taken, such as the extensive training and a toolkit for surveyors to ensure accuracy of data collection, as well as, data check protocols to ensure accuracy of data reporting. Majority (9/10) of surveyors were PHNs, RDs and/or nutrition practicum students with the SHA. Although the NEMS tools do not require a nutrition or dietetics background to complete, it is important to note that one surveyor (1/10), unlike the others, had no such academic background. Surveyors with a nutrition or dietetics background provided feedback that they were surprised by the complexity of the NEMS tools, in particular the scoring process for concession main dishes. Many precautionary measures were taken to reduce risk of variance with all of the above, including a toolkit and a 3-hour online training session outlining systematic procedures for surveyors collecting data, the use of data validation in the excel Data Spreadsheet for surveyors

reporting data, and systematic procedures to check and clean data before entry into a master file. Also, data entered into a master file was cross checked.

Once data was submitted by surveyors, a fellow PHN who is a member of the EHPH PC, and I classified all packaged foods and beverages according to our Nutrition Standards for SK, which had limitations (Government of Saskatchewan, 2018). We struggled with classifying foods and beverages like protein bars and drinks, vitamin waters, granola bars, nuts and nut mixes. If we were unsure about how to classify a particular food or beverage, we referred to *Healthier Choices in Vending Machines in BC Public Buildings* as it was more comprehensive of foods in our current food supply, and professional judgement was used (Province of British Columbia, 2014). The Nutrition Standards for SK are based on the four food groups from an older version of Canada's Food Guide; revisions need to be considered so it is reflective of new recommendations. Nutrition guidelines also vary from province to province; to increase consistency and decrease confusion, there would be value in having national guidelines, especially since food manufacturers, suppliers and distributors often work across provincial borders.

The NEMS tools also have limitations. First, the rNEMS-R tool was derived from the more widely used, comprehensive NEMS-R tool; it is therefore relatively new and could use more testing to ensure reliability (Partington, Menzies, Colburn, Saelens, & Glanz, 2015). Our EHPH AC also modified the NEMS tools to meet the needs of a local SK context; the modifications were minor and should not have compromised the reliability of the tools. The NEMS tools are also observational in nature; surveyors collected information based on what they saw such as on menu boards. If healthier alternatives were available but not indicated on a menu board, it would not have been captured. Assumptions may have been made during this process such as the addition of fat with the scoring of main dishes. Reported assumptions were compiled and considered during the checking and cleaning of data in order to reduce variance in reporting between surveyors. The NEMS tools are also designed to only measure particular indicators in concession and vending services; they may not have captured a complete picture of the current state. Some indicators, in particular with the rNEMS-R, need updating to reflect current evidence. For example, this tool defines 100% fruit juice as a healthy food indicator; however, as a sugary beverage, Canada's Food Guide now recommends replacing sugary drinks with water (Government of Canada, 2019). Fruit juice contains high levels of sugar and has shown to

contribute to obesity, type 2 diabetes and cavities in children (Government of Canada, 2019). Also, based on principles of supply and demand, we can assume that what is supplied in FEs in SK PRFs is based on what is demanded by consumers. However, these are assumptions. The NEMS tools do not consider what consumers are actually purchasing and consuming. They also do not consider consumer perceptions, preferences, attitudes or satisfaction, which the EHPH AC may want to consider because of concerns with consumer buy-in.

There were also limitations specific to our qualitative study. Although systematic procedures were also followed in our semi-structured telephone interview process, my multiples roles as a PHN with SHA, as a co-chair of the EHPH AC, as a patron to local PRFs and as student researcher at the USask, may have influenced the outcomes of our study. Researchers *inside* a situation as such, may limit their curiosities so they only determine what they think they do not know (Chenail, 2011). This could have influenced how data was collected, analyzed and reported. To minimize subjectivity in data collection, an interview guide was developed and reviewed by the EHPH AC and PC. The guide included an opening statement, semi-structured core questions with prompts and probes, and a closing statement. It prompted me to share information in a consistent manner with each participant, as well as, to ask the interview questions in a standardized fashion. To minimize subjectivity in our thematic analysis, we used a popular socio-ecological framework to organize the data by collective factors. A fellow PHN with SHA who is also a member of the EHPH AC, also acted as a primary reviewer; discrepancies in coding were documented, discussed and adjusted as needed. Key statements were generated to summarize themes, which were then shared with primary and secondary reviewers. Regardless, the qualitative themes that emerged in our study appear congruent with existing evidence from other jurisdictions.

### **6.3. Conclusion and Recommendations**

Our findings align with those of other jurisdictions in Canada. Results indicate that food and beverages are prevalent in SK PRFs through concession and vending services, and that they are mostly unhealthy and unsupportive of health outcomes. This contradicts the national recreation priority to have *Supportive Environments* where healthy choices are the easy choices. Barriers far exceeded facilitators for healthy eating, resulting in a current state that is difficult to change even though there appears to be organizational readiness. Key barriers included a lack of

guidelines, resources, capacity, funding, incentives and direction, a lack of healthy options and promotion of healthy options, a lack of infrastructure to store or prepare healthy options, a lack of consumer readiness, and economic risk. Key facilitators included a desire and readiness by organizations to change, the inclusion of supportive language in master plans, proposals and contracts, attempts to increase the availability of healthy options and to reduce the availability of unhealthy options like caffeinated energy drinks, convenient packaging of healthy options, and educational programs for program participants.

Several future opportunities emerged that form the basis of our recommendations for practitioners, policy makers and researchers in SK as outlined in Table 6.1. Regardless of how these recommendations are appointed, continuing collective action in the form of a provincial AC is a priority for ongoing awareness and capacity building, and sustainability of healthy FEs in SK PRFs. The role of the AC goes beyond the life of this study; it will continue to support, monitor and re-evaluate changes to FEs in SK PRFs.

**Table 6.1: Summary of Key Recommendations**

<b>Target Group</b>	<b>Key Recommendations</b>
EHPH AC	Develop a comprehensive provincial strategy that incorporates capacity building. Consider the recommendations from this study, other research and strategies occurring in similar jurisdictions.
	Maintain provincial collaboration. Identify and engage missing organizations to support a wide spread uptake.
	Support ongoing knowledge exchange between researchers, policy makers and practitioners in SK as well as at a national level.
	Identify program evaluation needs as a means to monitor progress and continue improvements.
Researchers	Create opportunities and incentives with key employers to encourage employees to participate in applied research.
	Review the results and recommendations from this dissertation with the EHPH AC to inform a comprehensive provincial strategy, as well as, with researchers from other jurisdictions to inform a national strategy.
	Conduct community interventions that specifically engage consumers.
	Conduct assessments with food suppliers, distributors and manufacturers.
	Conduct a more comprehensive evaluation of food marketing.

	Implement a benchmark process to measure and monitor FEs in public spaces.
Policy Makers	Build awareness and capacity in municipal governments and governing boards to develop or revise policies, guidelines, requests for proposals and contracts to include language and actions that facilitates healthy eating.
	Support provincial and national governments to develop or revise nutrition guidance and legislation to support municipal governments with clear direction.
	Advocate for a mandatory approach to nutrition guideline implementation to support a wide spread uptake in SK.
	Collaborate with federal, provincial and territorial groups to advocate for improvements to federal legislation that promotes and protects health.
	Consider developing national nutrition standards for all public settings.
	Use long-term cost savings to advocate for the replacement of capital equipment; factor into municipal budgets over time. Consider fundraising or grant opportunities to cover capital improvements if municipal budgets do not allow.
	Create monetary and non-monetary incentives to facilitate healthy change.
	Consider creative ways to generate new traffic flow and revenue.
Practitioners	Build awareness and capacity in key stakeholders at provincial, municipal and/or facility levels.
	Monitor the need for resources and support. Fill the need.
	Identify and engage stakeholders to act as champions of change.
	Increase the availability and accessibility of healthy food and beverage options, while decreasing the availability and accessibility of unhealthy options.
	Collaborate with food suppliers and distributors to exchange knowledge and to explore future opportunities to improve healthy food access.
	Seek community partnerships to increase purchasing power.

### 6.2.1. Recommendations for the Eat Healthy Play Healthy Advisory Committee

With organizational readiness evident, municipalities, governing boards and food service providers need clear direction with how to create *Supportive Environments* where healthy choices are easier. They also need support in monitoring and sustaining change. The EHPH AC collaborated to assume this role in the past by providing direction and guidance to the study in

SK; with recent discussions and planning, it appears that the EHPH AC will continue to collaborate to meet this need. Developing a comprehensive provincial strategy that includes targeted activities for each of the collective determinants in the socio-ecological framework would be of value as the initiative moves from a baseline evaluation into program planning and implementation. Results from one recent study suggested three particular elements for success with an initiative like ours: having a champion and organizational support, internal and external partnerships, and clear communication (Green, Glanz, & Bromberg, 2020). A systematic review also suggested three commonalities in studies similar to ours: education materials, educational outreach visits and monitoring performance (McFadyen, et al., 2018). In conjunction to the results and recommendations from this study, the EHPH AC may want to consider all of these elements as well as strategic plans lead by other jurisdictions such as AB and BC. Aligning provincial strategies to the national recreation framework would continue to highlight healthy FEs as a priority to the recreation sector.

As the EHPH AC moves forward from this baseline evaluation into program planning and implementation, maintaining representation from research, policy and practice from health and recreation sectors, would be ideal. For successful collaboration, it is important to ensure that representatives are clear about their role and responsibilities as a member of the EHPH AC (Green, Glanz, & Bromberg, 2020). Identifying and engaging representatives from missing organizations, such as SUMA and SARM, would potentially support knowledge exchange with SK urban and rural municipalities and thereby support a wider uptake. Including a capacity-building component through program planning and implementation at municipal and facility levels can result in significant improvements in facility capacity, policy development and to the quality of the FEs in PRFs (Olstad D. L., et al., 2019). Since consumer readiness was identified as a concern, organizations like SUMA and SARM may also be able to provide the EHPH AC with insight on how municipalities/facilities can best engage consumer representatives.

Another key recommendation for the EHPH AC is to support ongoing knowledge exchange between researchers, policy makers and practitioners in SK, as well as, at a national level. Using communication platforms that best meets the needs of our target audience, such as recreation leaders and food service providers, will enhance uptake. With geographical distances between stakeholders in SK, suitable platforms may include video or teleconferencing, web or social media. Because various platforms were not discussed in our qualitative study, it is recommended



that the EHPH AC consult with the target audiences to determine the most effective platforms to use. Platforms could be built into existing structures like regular meeting agendas or into new structures like web- or social media- based Communities of Practice (COP). Knowledge exchange platforms would encourage two-way dialogue between the EHPH AC and those leading change at a municipal and facility level. The EHPH AC could use it to share nutrition guidance and resources as they are developed and released, and in turn, the recreation sector could share their experiences, successes and lessons learned back with the EHPH AC. Platforms could also foster two-way dialogue, learning and relationship building between recreation leaders and food service providers from different municipalities. This would also support a wide spread uptake in SK.

As the EHPH AC moves from a baseline evaluation into program planning and implementation, it would be beneficial to identify program evaluation needs. Process and outcome or impact evaluations may be of value. A process evaluation focuses "... on the degree to which the program has been implemented as planned and on the quality of the program implementation" (Issel, 2014, p.20). Whereas an outcome evaluation focuses on measuring short- or medium- term effects and an impact evaluation focuses on long-term effects (Issel, 2014). With varying perspectives, researchers, policy makers and practitioners will need to find common ground on indicators that benefit population health outcomes (Jansen, van Oers, Kok, & de Vries, 2010). Information from the evaluations can be used to plan, revise and improve the implementation of activities over time to maintain accountability and sustainability.

### 6.3.2. Recommendations for Researchers

As leaders of learning institutions, it is important for researchers to create opportunities and incentives with employers that encourage employees, whether it be policy makers or practitioners, to participate in applied research. I have experienced the value in using a PAR to apply research to a real-life context; it is effective in strengthening connections, building reliable public health evidence and creating higher quality public health policy and practice. I have received many inquiries from my colleagues about how this opportunity arose, what motivated me to embark on it, and how my employer supported me in this process. Ensuring that employers are aware that these opportunities exist is a recommendation for researchers. My desire to embark on this experience was largely driven by intrinsic motivation to learn and to enhance my

professional credentials. Otherwise, very few incentives existed. Due to the applied nature of the research to practice, my employer agreed to support some of my time towards the experience, which was greatly appreciated; however, with the intensity of the project, much of it still required to be completed on my personal time. I also recommend that researchers work with employers to demonstrate the value organizations gain by encouraging and supporting employees, possibly with incentives, to participate in such learning opportunities.

As leaders of new scientific knowledge, it is important for researchers to connect with policy makers and practitioners to integrate it into existing policies and practices. In terms of the EHPH initiative in SK, researchers can share the results and recommendations of our study with the EHPH AC to inform a comprehensive provincial strategy. Researchers can continue to build on existing evidence where knowledge gaps exist by supporting the EHPH AC in leading meaningful interventions in SK. For example, researchers may want to support interventions that increase the accessibility and availability of healthy food options in SK PRFs while measuring the impact on consumer purchasing patterns and/or sales and revenues.

Similarly, the results and recommendations of this study can be shared with researchers from other jurisdictions to inform a national strategy. Researchers could explore funding opportunities to support scientific studies that fill knowledge gaps and that involve multiple provinces and territories. Because policy and guideline implementation through a voluntary approach has resulted in a relatively poor uptake, researchers could help build the evidence required to advocate for a mandatory approach with government and for incentives that will encourage and sustain uptake (Olstad & Raine, 2013).

With a need to increase consumer awareness and readiness, which will drive demand, interventions that specifically engage consumers may be beneficial. With a heavy reliance on food and beverage profits to operate PRFs and/or offset user fees, there is a need for more evidence on how consumers' purchasing or consumption patterns are influenced through FE interventions and the impact on profits. Other jurisdictions have also conducted some research involving consumers' perceptions, preferences, attitudes and/or satisfaction with healthy change. Building on this limited evidence could strengthen a case for mandatory implementation of nutrition policy as recommended in former research (Olstad & Raine, 2013; Olstad D. L., et al., 2019).

A need also arose to work with the opposite side of the food supply chain, food industry including manufacturers, suppliers and distributors. More research is needed to identify readiness, barriers, facilitators and future opportunities with food industry. Research can also be used to build relationships, share knowledge and to improve healthy food access, in particular to rural and remote areas, in SK. Because food industry works beyond provincial and territorial borders, researchers and policy makers could support this through a national strategy. Specifically, researchers could help advocate for a greater inventory of healthier options and the development of marketing materials and strategies to increase the uptake of the healthier options by those purchasing foods like recreation leaders and food service providers. These opportunities could also benefit other community settings where food is commonly offered such as schools.

Another need is for researchers to conduct a more comprehensive evaluation of food marketing in SK including both urban and rural areas. Ideally, it would consider the entire facility premise, internal and external, as well as, food marketing through sport sponsorship, the latter of which is not included in the original FoodMATS tool. This would provide a more accurate evaluation of food marketing and the potential impact it has on healthy eating in SK PRFs. It could also be used as a baseline measure for monitoring long-term change in SK and it could support Health Canada in their efforts to restrict unhealthy food marketing targeting children through the Child Health Protection Act (Government of Canada, 2017). Influencing Canadian legislation and the monitoring of the current issue through ongoing data collection would ultimately support population health outcomes of all Canadians.

A relatively new measurement tool that the University of Alberta facilitates to support healthy FEs in municipal spaces is a Nutrition Report Card (AUMA & AMSC, 2020). The Nutrition Report Card benchmarks strengths and weaknesses of FEs in public spaces over time (University of Alberta School of Public Health & Alberta Innovates, 2018). Their process builds awareness and capacity through self-reported data collection on FEs, and it can serve as a non-monetary incentive for stakeholders to take action and remain accountable (University of Alberta School of Public Health & Alberta Innovates, 2018). To date, SK has no such process. Engaging provincial stakeholder groups like the EPH AC in employing this concept would be a valuable way to support healthy FEs in a variety of public spaces across SK. It could go beyond PRFs, to include public spaces like schools, work places, hospitals, parks and transit. It would provide a way to

measure the outcomes or impact of FE changes over time; however, careful consideration would need to go into the process so it acts as an incentive versus a disincentive.

### 6.3.3. Recommendations for Health and Recreation Policy Makers

Policy makers are important collaborators in a comprehensive provincial strategy that supports population health outcomes. Policy makers at a municipal level can build awareness and capacity in their organizations and governing boards to develop or revise policies, guidelines, requests for proposals and contracts to include language and actions that facilitate improvements to practices that support healthy eating. Ensuring that commitments are written, and not just verbal, would increase accountability and sustainability through attrition and time. Majority of concession contracts in SK renew annually, which is positive when it comes to future opportunities to support healthy change. Targeting renewal periods are opportune times to work with organizations and governing boards to make such changes. Based on improvements to practice by a few facilities, policy makers could attain quick improvements by banning caffeinated energy drinks from PRFs. Based on a high frequency in certain municipalities in SK, policy makers could also attain quick improvements by banning candy machines in PRFs, or mandating the conversion of candy machines to non-food machines such as toys. Actions like this would support a wide spread uptake and level the playing field across all facilities in a municipality.

Like at a municipal level, policy makers at provincial and national levels can support their governments to develop or revise nutrition guidance and legislation to support municipal governments with clear direction. For example, provincial policy makers collaborated with practitioners in 2018 to develop the *Healthy Foods for my Recreation – Nutrition Standards for Saskatchewan* and *Getting Started*. One recommendation is to revise the Nutrition Standards so they reflect new recommendations in Canada's Food Guide. The Nutrition Standards could also be strengthened by including a wider range of foods and beverages and by including a longer list of possible examples to make it more practical for users. During our classification process, many foods and beverages did not fit clearly into the Nutrition Standards such as protein bars and drinks, granola bars, nuts and nut mixes. We had to rely on nutrition guidance from other jurisdictions and professional judgement to make some decisions, which decreases the reliability of our results and adherence to the Nutrition Standards.

When sufficient evidence becomes available, policy makers can support a wide spread uptake by advocating for a mandatory approach with municipalities as recommended in existing evidence. They can also collaborate with federal, provincial and territorial groups across Canada to advocate for changes to federal legislation to support provinces and municipalities. They can monitor the desire of federal, provincial and territorial groups to create national nutrition standards. National nutrition standards have also been attempted for school settings (Federal, Provincial, Territorial Group on Nutrition Working Group, 2013). Having one set of national nutrition standards for all public settings would be of value to reduce the duplication of work between provinces and territories and public sectors. It would also send a consistent message to all Canadians regardless of where they live, learn, work or play. Ideally, this work would be done in collaboration with Health Canada to ensure that national standards align with healthy eating recommendations outlined in Canada's Food Guide. Also engaging national advocacy groups like CPRA would potentially support the implementation of the national recreation framework and a wide spread uptake of nutrition standards in PRFs across Canada.

Without any incentives in place, it is recommended that policy makers at municipal and/or provincial levels develop monetary and non-monetary incentives to facilitate healthy change that aligns with policies, guidelines, requests for proposals, contracts and nutrition guidance. This aligns with evidence that interventions to support healthy eating behaviours are more effective when monetary incentives are available (Giles, Robalino, McColl, Sniehotta, & Adams, 2014). In particular, monetary incentives that recover any economic loss with initial change would minimize fears. In addition, monetary incentives that encourage municipalities or facilities to replace capital equipment, like deep fryers with convection ovens, would support food service providers in offering healthier food and beverages. Cost savings and safety benefits of new equipment have been documented and could be used by policy makers to advocate for change. Since capital equipment has an expiry date, policy makers can also consider ways to incorporate such costs into municipal budgets over time. Policy makers can also work with practitioners to identify healthy fundraising or grant opportunities to support the costs of capital equipment. In addition to monetary incentives, policy makers may want to consider collaborating with researchers to look at non-monetary incentives, such as the Nutrition Report Card previously mentioned, along with recognition and rewards.

With economic concerns prevailing throughout this study, policy makers may want to consider creative ways to generate new traffic flow and revenue for PRFs rather than relying on profits from unhealthy food and beverages. It is recommended that policy makers consider reducing fees for certain population groups like children, youth and seniors so participation in recreation programs is more accessible. Increased participation could potentially increase new traffic volumes, thereby increasing revenues and offsetting any potential losses with reduced fees. It is also recommended that policy makers consider using existing commercial kitchen spaces for food programming like cooking classes or leasing it out to private caterers when it is not in use. Lastly, it is recommended that policy makers consider using vacant land space on premises for community gardens or for farmers' markets. This would not only generate new traffic flow but it would also help to make healthy choices more accessible thereby fulfilling the national priority to have supportive environments.

#### 6.3.4. Recommendations for Health and Recreation Practitioners

Practitioners from health and recreation are also important collaborators in a comprehensive provincial strategy that supports population health outcomes. With a high level of organizational readiness to change, practitioners can support change by building awareness and capacity in key stakeholders at a municipal and/or a facility level. In particular, building awareness in municipal decision makers like city and town councillors, may be an effective strategy to advocate for adequate funding and incentives to realize healthy change. Practitioners can provide technical support and training for resources like provincial nutrition standards and they can recommend changes to practice in order to align with healthy policies, guidelines, requests for proposals and contracts. They can continue to monitor the need for resources and support with implementation, and work to fulfill the needs as they arise. For example, needs identified in our study were practical lists for healthy main dishes for concessions and healthy packaged products for vending. Nutrition posters that compare the nutritional content of various options were also identified as a need.

Data from the preliminary survey showed that few facilities have food and beverage committees formed to champion change; practitioners from health and recreation can work together to support this essential component (Green, Glanz, & Bromberg, 2020). Practitioners are in an ideal position to identify and engage internal stakeholders such as municipal and facility

staff, as well external stakeholders who use facilities such as contractors, programmers, coaches, parents, spectators and participants to act as champions. They may also want to consider engaging food suppliers and distributors who supply foods and beverages to their PRF. Beyond a committee, practitioners can also build awareness and capacity for change by engaging consumers through surveys, marketing and educational materials. Engaging key stakeholders through multiple strategies would build awareness and capacity as well as reduce economic risk.

Practitioners have an important role in supporting change to increase the availability and accessibility of healthy food and beverage options, while decreasing the availability and accessibility of unhealthy food and beverage options in SK PRFs. They could work with food service providers to offer more quality proteins, whole grains, vegetables and fruit. Environmental strategies or interventions that nudge healthy eating behaviours could also be implemented such as menu or product labelling, nutrition information, attractive and convenient packaging, sampling, placement and price incentives. Concession menus and practices could be improved by including free healthy substitutions, by automatically including fresh vegetable side dishes rather than fried side dishes, or by removing combos so side dishes are ordered separately. Smaller portion sizes could also be encouraged. Adding healthy menu options that are trendy, such as fruit smoothies and ethnic foods like butter chicken or fresh rolls, could also be encouraged.

Practitioners can help support the success of such interventions. For example, if a change is made in one concession or vending machine in a facility, they can help minimize internal competition by ensuring that the same change is made in all other concession and vending operations in that same facility. They can also ensure that interventions are implemented during higher traffic volumes, such as tournament weekends. When healthy options are implemented, they can support the marketing of those options through placement, pricing and promotional activities while reducing the marketing of unhealthy options. They can also arrange access to sales and revenues data. In continuation of a PAR approach, practitioners can also help support post intervention data collection to measure the impact of such changes in our participating PRFs.

Lastly, practitioners can also collaborate with food suppliers and distributors in SK to exchange knowledge and to explore future opportunities to improve healthy food access, in particular for rural and remote communities. In addition, practitioners could explore future opportunities with food suppliers and distributors to promote healthy food and beverages options,

such as through marketing materials and pricing incentives, with PRFs and schools in SK. If purchasing volumes are low, recreation practitioners may want to seek partnerships with similar organizations in their community, such as schools, to increase their purchasing power.



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## APPENDIX A: EAT HEALTHY PLAY HEALTHY TEAM REPRESENTATIVES, ROLES AND RESPONSIBILITIES

EHPH Teams	Organization and Representative Name(s)	Roles	Responsibilities
<b>Advisory Committee</b>	University of Saskatchewan <ul style="list-style-type: none"> <li>• <b>Dr. Hassan Vatanparast (lead)</b></li> <li>• Dr. Rachel Engler-Stringer</li> <li>• Sarah Finch</li> <li>• <b>Melanie Warken (lead)</b></li> </ul> Ministry of Health <ul style="list-style-type: none"> <li>• Naomi Shanks or Jillian Code</li> </ul> Ministry of Parks, Culture and Sport <ul style="list-style-type: none"> <li>• Melanie Baumann</li> </ul> Public Health Nutritionists of Saskatchewan <ul style="list-style-type: none"> <li>• Tracy Sanden</li> <li>• Melanie Warken</li> </ul> Saskatchewan Parks and Recreation Association (SPRA) <ul style="list-style-type: none"> <li>• Tim Hanna</li> </ul> Heart and Stroke Foundation of Canada <ul style="list-style-type: none"> <li>• Nicole Ferguson</li> </ul>	Overall initiative governance and direction  Funding support for initiative	Ongoing input and guidance into implementation and sustainability of the initiative  Key stakeholder engagement  Support the application of research findings to the field (practice and policy)  Dissemination of information to key stakeholders, public  Troubleshoot barriers to project implementation  Provide input into grant applications
<b>Practice Committee</b>	University of Saskatchewan <ul style="list-style-type: none"> <li>• <b>Dr. Hassan Vatanparast (lead)</b></li> <li>• <b>Melanie Warken (lead)</b></li> </ul> Representative Public Health Nutritionists of Saskatchewan <ul style="list-style-type: none"> <li>• Tracy Sanden</li> <li>• Stacey Wiens</li> <li>• Cathryn Abrametz</li> </ul> Heart and Stroke Foundation of Canada <ul style="list-style-type: none"> <li>• Nicole Ferguson</li> </ul>	Support the study to ensure applicability to practice  Ongoing collaboration and knowledge translation	Assist the AC in developing/ implementing research methodologies, tools, and processes to ensure that they are applicable to practice (e.g., use of SK nutrition standards with survey tools)  Engagement of other PHNs as implementation partners  Build local connections with recreation stakeholders where there is a state of readiness;

			support program planning in communities
<b>Implementation Partners</b>	Public Health Nutritionists of Saskatchewan, Community RDs, and/or EHPH Advisory Committee members	Quantitative data collection implementation	<p>Participate in training to conduct standardized quantitative data collection</p> <p>Conduct concession, snack and beverage vending audits for participating municipalities/facilities</p> <p>Submit data collected to Melanie for analysis</p>

# APPENDIX B: EHPH ADVISORY COMMITTEE TERMS OF REFERENCE

## *Eat Healthy, Play Healthy:*

*First Steps towards Healthy Food Environments in Saskatchewan's Publically Funded Recreation Facilities*

### Advisory Committee Terms of Reference

#### Vision

Healthy food environments exist in recreation settings in Saskatchewan.

#### Goals & Objectives

1. To determine the current state of food environments in Saskatchewan's publically funded recreation facilities using a sequential explanatory mixed methods design.

We will do this by collaborating with key stakeholders to:

- a. Conduct surveys and audits to determine:
  - the food provision in facilities' operational areas including food services (cafeterias, concessions, catering, vending), programs, events, fundraising and food security initiatives;
  - the existence of food related policies or guidelines, supplier contracts, corporate incentive programs and sponsorship, promotions as well as communication and education strategies;
  - the percentage of healthy foods and beverages available to patrons specifically through concessions and vending; and
  - the factors and considerations that influence patrons' food and beverages choices while visiting a facility.
- b. Conduct semi-structured interviews using a [participatory research approach](#) to determine:
  - the facilitators and barriers perceived by municipal recreation managers, facility operators and staff, and food service providers as well as to discuss long term solutions to overcoming existing barriers.

2. To translate research findings into policy and practice recommendations using a participatory action approach with key stakeholders for input.
3. To create supportive food environments in Saskatchewan's publically funded recreation facilities through implementation and evaluation of the policy and practice recommendations so environments contribute to all aspects of health.

We will do this by collaborating with key stakeholders to:

- a. generate dialogue about planning for healthy food environments in Saskatchewan's publically funded recreation facilities;
- b. select potential interventions that can be implemented and evaluated for success; and
- c. support the implementation and evaluation of a pilot intervention(s) where a state of readiness exists in Saskatchewan.

Updated July 10, 2017

## Membership

The EPH Advisory Committee includes representation from the following organizations:

- University of Saskatchewan
- Ministry of Health
- Ministry of Parks, Culture and Sport
- Public Health Nutritionists of Saskatchewan
- Saskatchewan Parks and Recreation Association
- Heart and Stroke Foundation of Canada

## Accountabilities

- Members are accountable to their employers to ensure that time and resources are used effectively and in accordance with the needs of their home agencies.
- Members are responsible for communicating with home agency colleagues and/or managers.
- Members are accountable to the group to complete the work they have agreed to perform. All members are expected to contribute to the work of the group.

## Specific Member Duties

- The University of Saskatchewan will take lead in organizing and chairing Advisory Committee meetings including the booking of a teleconference line, preparation of an agenda, recording of minutes, and act as a key contact point for the committee.
- The University of Saskatchewan will lead progress of the research components related to the EPH project.
- The University of Saskatchewan will manage funds related to the EPH project.

## Meeting Quorum

- Majority of members (50%+1) must be in attendance at a meeting for a decision to be made.

## Meeting Frequency

- The EPH Advisory Committee will meet monthly or as needed depending on the stage of the project.

## Reviewing Terms of Reference

As required.

<sup>1</sup> Bergold, Jarg & Thomas, Stefan (2012). Participatory Research Methods: A Methodological Approach in Motion [110 paragraphs]. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 13 (1). Art. 30, <http://nbn-resolving.de/urn:nbn:de:0114-qs1201302>.

Updated July 10, 2017

## APPENDIX C: PARTICIPANT CONSENT FORM



### Participant Consent Form

- The Eat Healthy Play Healthy (EHPH) initiative has been explained to me. On behalf of our municipality/facility, the \_\_\_\_\_, I, \_\_\_\_\_, consent to participate in the following activities:
  - A 30-minute telephone interview – I understand that the interview will be recorded and that I can request it to be turned off at any time.
  - An assessment of our cafeteria/concession(s) which is:
    - Privately operated
    - Publicly operated
    - Volunteer operated
  - An assessment of our snack and/or beverage vending machine(s) which is:
    - Privately operated
    - Publicly operated
    - Volunteer operated
  - An assessment of food and beverage marketing in/outside the facility
- I understand my participation is voluntary and I can decline participation at any time without penalty.
- I understand that it has been recommended that I communicate to staff or contractors in the facility(ies) of our participation in the Eat Healthy Play Healthy Initiative.

\_\_\_\_\_  
Participant's Signature

\_\_\_\_\_  
Participant's Title (print)

\_\_\_\_\_  
Interviewer/Auditor's Signature

\_\_\_\_\_  
Interviewer/Auditor's Name (print)

\_\_\_\_\_  
Date of Consent

FOR COMPLETION BY INTERVIEWER ONLY.

- I am signing this on behalf of the participant; they have verbally consented by phone. The participant had knowledge of its contents and appeared to understand it.



# APPENDIX D: CERTIFICATE OF PARTICIPATION

## CERTIFICATE OF PARTICIPATION

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THIS CERTIFICATE GOES TO

### NAME OF MUNICIPALITY OR FOOD SERVICE PROVIDER

for successfully participating in the Eat Healthy, Play Healthy  
baseline evaluation of food environments in Saskatchewan  
public recreation facilities

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Dr. Hassan Vatanparast  
UNIVERSITY OF SASKATCHEWAN  
CO-CHAIR



---

*Melanie Warken*  
Melanie Warken  
SASKATCHEWAN HEALTH AUTHORITY  
CO-CHAIR



# APPENDIX E: NUTRITION ENVIRONMENT MEASURES SURVEY FOR CONCESSIONS

Cafeteria/Concession Survey Tool for Saskatchewan Public Recreation Facilities



## Cafeteria/Concession Survey (Nutrition Environment Measures Survey-C)

Facility ID: \_\_\_\_\_ Surveyor ID (initials): \_\_\_\_\_

Baseline: Date: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ (mm/dd/yyyy)

Follow-up: Date: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ (mm/dd/yyyy)

For data entry purposes: _____ checked by _____ entered by _____ date entered
--

### FACILITY INFORMATION

Number of food outlets (cafeterias/concessions) in this facility: \_\_\_\_\_

Facility months of operation:  Year round  Winter seasonal  Summer seasonal

Facility hours of operation:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday



**FOOD OUTLET # \_\_\_\_\_**

Use one form for each cafeteria/concession in the facility; may need to take multiple copies.  
You may have to ask your primary contact or a facility/food outlet representative questions to complete this section.

**A. OPERATIONS**

Cafeteria/Concession description (name): \_\_\_\_\_

Type of food outlet:      Cafeteria/restaurant (has dedicated seating)      Concession/snack bar/café (has no dedicated seating)

How it operates:      Publicly operated      Privately operated      Voluntarily operated

If the food outlet is privately operated by a contractor, include status of the facility's contract:

Name of contractor: \_\_\_\_\_

Time remaining in contract: \_\_\_\_\_

Is this contract negotiable?      Yes      No      Unsure

Food outlet months of operation:      Year round      Winter seasonal      Summer seasonal

Food outlet hours of operation:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday

Profits from this food outlet go to:

Contractor  
 Fundraising

Operational Budget  
 Other: \_\_\_\_\_

**B. FOOD STORAGE AND PREPARATION**

Where are the freshly prepared foods sold at this outlet prepared?

on site      contracted and brought in      both      not applicable (NA)

Which of the following are currently present in this food outlet?

<input type="checkbox"/> deep-fat fryer	<input type="checkbox"/> rotisserie	<input type="checkbox"/> refrigerated display case
<input type="checkbox"/> grill	<input type="checkbox"/> heating box/lamps	<input type="checkbox"/> storage fridge
<input type="checkbox"/> oven	<input type="checkbox"/> blender	<input type="checkbox"/> display fridge
<input type="checkbox"/> toaster	<input type="checkbox"/> sink(s): # _____	<input type="checkbox"/> microwave
<input type="checkbox"/> crock pot	<input type="checkbox"/> freezer	<input type="checkbox"/> other: _____



**C. MENU REVIEW**

\* Please take/attach photos of all menus. Make sure you can read the menu in the photo! \*

- |   |               |       |
|---|---------------|-------|
| 1. Is 1% low-fat, skim, or non-fat plain milk available?  | No            | Yes   |
| 2. Is 100% fruit juice available?   | No            | Yes   |
| 3. Is 100% wheat or whole grain products (e.g., bread) available?   | No            | Yes   |
| 4. Is white or sourdough grain products (e.g., bread) available?  | No            | Yes   |
| 5. Are 'regular' (deep-fat fried) French fries available?   | No            | Yes   |
| 6. Are baked French fries available?  | No            | Yes   |
| 7. Are regular (fried) potato/taco etc. chips available?  | No            | Yes   |
| 8. Are baked chips available ( $\leq 3$ grams fat/serving)?   | No            | Yes   |
| 9. Is fruit (w/out added sugar) available?  | No            | Yes   |
|   | # of choices? | _____ |
| 10. Are non-fried vegetables without added sauce available?   | No            | Yes   |
|   | # of choices? | _____ |
| 11. Are high fat side-dishes (non-entrée, non-packaged foods) available for purchase separately (e.g., as a snack)? | No            | Yes   |
|   | # of choices? | _____ |
| 12. Is low fat or fat-free salad dressing available?  | No            | Yes   |

**MAIN DISH/ENTREES and MAIN DISH SALADS** (Use the primary menu)

13. List all main dishes (must have significant protein source and at least one other food group. It should be considered a meal. Refer to the NEMS rules in the *EHPH Data Collection Toolkit* for more information.)

	1	2	3	4	
List main dish/entrées and main dish salads	Whole grain?*	Quality protein?*	Vegetable serving?*	Added fat? ****	Entrée score (1 + 2 + 3 - 4)

\* Yes=1, No = 0, CT = CT but score as zero (CT = Can't Tell)  
 \*\*\* Added fat is from sauce or fried side dish. Yes = minus 1, No = 0, CT = 0

	- 1	0	1	2	3
# entrees with score =					

Total # CT in columns 1,2 and 3 = \_\_\_\_\_

For instructions, refer to the EHPH Data Collection Toolkit. If additional support is needed, contact the Project Manager, Melanie Warken, at (306) 630-6811 or [eathealthy.playhealthy@usask.ca](mailto:eathealthy.playhealthy@usask.ca). This tool was adapted from the Eat, Play, Live project led by the University of Victoria and funded by the Heart and Stroke Foundation.

14. a) Total number of main dishes/entrees: \_\_\_\_\_  
 b) # of main dish/entrees with vegetable sides? \_\_\_\_\_  
 c) # of main dish/entrees with fried sides? \_\_\_\_\_  
 d) # of main dish/entrees with NO sides? \_\_\_\_\_
15. a) Are healthy options available for main dishes and entrees? No Yes  
 b) # of healthy choices? (score = 3 from previous page) \_\_\_\_\_
16. a) Total number of main dish salads? \_\_\_\_\_  
 b) # of healthy main dish salad choices? \_\_\_\_\_
17. Are healthy entrees identified on menu? No Yes
18. All-you-can-eat or "unlimited trips"? No Yes
19. Menu notations that encourage large portion sizes.  
 (e.g. Super-size items on the menu) No Yes
20. Menu notations that discourage special requests.  
 (e.g. *No substitutions* or charge for substitutions) No Yes
21. Kid's menu? *If no kid's menu, skip to question 22* No Yes
- a) Age limit     10 & Under     12 & Under     Other     NA
- b) Any healthy entrees? No Yes
- c) 100% fruit juice No Yes
- d) 1% low-fat, skim or non-fat plain milk No Yes
- e) Are there any free refills on unhealthy drinks? No Yes
- f) Are there any healthy side items (either assigned or to choose)? No Yes
- g) Can you substitute a healthy side for an assigned unhealthy one? No Yes
- h) Do any entrees that have assigned sides include an assigned healthy side? No Yes
- j) Is an unhealthy dessert automatically included in a kid's meal? No Yes
- j) Are there any healthy desserts (either free or at additional cost)? No Yes
- k) Is nutrition information (e.g. calories or fat) provided on the kid's menu? No Yes
- l) Other unhealthful eating promotion on the kids menu? No Yes
- m) Other healthful eating promotion on the kids menu? No Yes

**D. SIGNAGE AND PROMOTIONS**

- |   |    |     |    |
|---|----|-----|----|
| 22. Is nutrition information posted near point-of-purchase, or available in a brochure?   | No | Yes |    |
| 23. Do signs/table tents/displays <u>encourage healthy</u> eating?  | No | Yes | NA |
| 24. Do signs/table tents/displays encourage overeating? (all-you-can-eat, super-size, jumbo, grande, supreme, king, size feast descriptors on menu or signage)? | No | Yes | NA |

**E. NUTRITION INFORMATION**

- |  |    |     |    |
|--|----|-----|----|
| 25. Is nutrition information available on site?                    | No | Yes |    |
| 26. Is nutrition information on the in-concession menu?            | No | Yes |    |
| 27. Is there nutrition information on the take-away menu?          | No | Yes | NA |
| 28. Are healthier menu items identified on the take-away menu?     | No | Yes | NA |
| 29. Is nutrition information available on the facility website?    | No | Yes | NA |
| 30. Does the facility internet site identify healthier menu items? | No | Yes | NA |
| 31. Is there a venue within the facility that sells alcohol?       | No | Yes |    |

### F. PACKAGED FOOD AND BEVERAGE SURVEY SHEET



Take multiple copies of this sheet to document the packaged foods and beverages available in the cafeteria/concession. Include foods and beverages that would normally be found in a vending machine. Also include fountain drinks and their sizes. Take a photo or two of the areas where packaged foods/beverages are found.

#	POP? (y/n)	Company Name (e.g. Pepsi, Lays, Doritos, etc.)	Product Name & Flavour (e.g. Gatorade-Berry Blast, Doritos Chips-Salsa, Mars Bar)	Size (ml or g)	Price (\$)	Classify as per SK Standards (CMO, C.S. or CLO)

For instructions, refer to the EPH Data Collection Toolkit. If additional support is needed, contact the Project Manager, Melanie Warken, at (306) 630-6811 or [eathealthy.playhealthy@usask.ca](mailto:eathealthy.playhealthy@usask.ca). This tool was adapted from the Eat, Play, Live project led by the University of Victoria and funded by the Heart and Stroke Foundation.



# APPENDIX F: NUTRITION ENVIRONMENT MEASURES SURVEY FOR VENDING

Vending Survey Tool for Saskatchewan Public Recreation Facilities



## Vending Survey (Nutrition Environment Measures Survey – V)

Facility ID: \_\_\_\_\_ Surveyor ID (initials): \_\_\_\_\_

- Baseline: Date: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ (mm/dd/yyyy)  
 Follow-up: Date: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ (mm/dd/yyyy)

For data entry purposes:

\_\_\_\_\_ checked by  
 \_\_\_\_\_ entered by  
 \_\_\_\_\_ date entered

### A. VENDING MACHINE INVENTORY FORM

Machine #	Snack			Beverage		Other (describe e.g. candy dispensers)	Location
	dry snack	refrig-erated	frozen	cold	hot		

1  
 For support, contact the EHPH Project Manager, Melanie Warken, at (306) 630-6811 or [eathealthy.playhealthy@usask.ca](mailto:eathealthy.playhealthy@usask.ca). This tool has been adapted from the Eat, Play, Live project led by the University of Victoria and funded by the Heart and Stroke Foundation; it was originally adapted from the NEMS-V tool created by the University of Pennsylvania <http://www.nems-v.com/NEMS-VTools.html>.

Tally up the number of snack and beverage machines in the facility that fall into each category:

Total # of dry snack machines	(number as 1ds, 2ds, 3ds, etc.)	=	_____
Total # of refrigerated snack machines	(number as 1rs, 2rs, 3rs, etc.)	=	_____
Total # of frozen (ie. Ice cream) machines	(number as 1fs, 2fs, 3fs, etc.)	=	_____
Total # of cold beverage machines	(number as 1cb, 2cb, 3cb, etc.)	=	_____
Total # of hot beverage machines	(number as 1hb, 2hb, 3hb, etc.)	=	_____
Total # of other food/beverage machines	(designate as 'other')	=	_____ (describe _____)
<b>Total # of vending machines</b>		<b>=</b>	<b>_____</b>

**B. PRODUCT STOCK LIST FORM** (page 1 of 2)

Use one form for each vending machine in the facility; may need to take multiple copies.

Vending Machine #: \_\_\_\_\_ (transferred from Step A)

Vending Machine Profits:  Contractor  Fundraising  Operational Budget  Other: \_\_\_\_\_

Vendor Company Name: \_\_\_\_\_

Advertising on Machine (describe): \_\_\_\_\_



photo included

Slot Location (e.g. A1 or "top left" etc.)	Company Name (e.g. Pepsi, Lays, Doritos etc.)	Product Name & Flavour (e.g. Gatorade-Berry Blast, Doritos Chips-Salsa, Mars Bar, etc.)	Size (ml or g)	Price (\$)	Healthy Choice Symbol (e.g. heart ▼ or check ✓)

For support, contact the EHPH Project Manager, Melanie Warken, at (306) 630-6811 or [eathealthy.playhealthy@usask.ca](mailto:eathealthy.playhealthy@usask.ca). This tool has been adapted from the Eat, Play, Live project led by the University of Victoria and funded by the Heart and Stroke Foundation; it was originally adapted from the NEMS-V tool created by the University of Pennsylvania <http://www.nems-v.com/NEMS-VTools.html>.

## APPENDIX G: SEMI-STRUCTURED TELEPHONE INTERVIEW GUIDE FOR RECREATION LEADERS



### Semi-Structured Interview Script for:

**Recreation Leaders (municipal or facility directors, managers or operators who have influence over the food and drinks available in the facility)**

### OPENING SCRIPT

Hi, my name is *(insert name)*.

I am calling/meeting with you today because you expressed interest in participating in a 30-minute interview which is one part of a provincial initiative called Eat Healthy Play Healthy. This initiative is being conducted by the University of Saskatchewan in collaboration with the Ministry of Parks, Culture and Sport, the Ministry of Health, the Saskatchewan Parks and Recreation Association, the Heart and Stroke Foundation and the Public Health Nutritionists of Saskatchewan.

### STUDY

The purpose of the Eat Healthy Play Healthy initiative is to examine the food and drinks available in public recreation facilities including the factors that influence a person's choice to buy them such as the promotion, placement and pricing of what's available. As part of our initiative, we would like to speak with municipal or facility leaders who have an influence on the food and drinks in these settings. We will include questions about:

- the challenges you face in supplying healthier food and drinks,
- ideas that you have to improve the availability of, and the sales of, healthy food and drinks, and
- resources that you might need to help implement healthy change.

This interview will take approximately 30 minutes to complete. It will be recorded in order for it to be transcribed for analysis.

### BENEFITS

The findings will be compiled and used to support municipalities and facilities to improve the food and drink options available in public recreation facilities so they are supportive of health. Creative ideas will be shared at a collaborative workshop to plan for a healthier future state.

## COMPENSATION

For participating in today's interview, you will:

- be offered resources and support based on best science to promote healthy food and drinks in your facility(ies),
- a certificate of participation to display, and
- be entered to win a tablet valued at \$200. The winner will be notified on how to claim the prize immediately following the draw by the College of Pharmacy and Nutrition at the University of Saskatchewan.

## CONFIDENTIALITY

All of your answers will be kept confidential. You can choose to withdraw your answers from our baseline data collection until it has been summarized into key findings.

Your participation is voluntary. You may refuse to take part in this interview at any time without penalty. You are free to decline to answer any particular question you do not wish to answer for any reason.

This initiative has been approved on ethical grounds by the University of Saskatchewan Behavioural Research Ethics Board. If you have any questions or concerns regarding your rights as a participant in this study, you may contact the Research Ethics office [ethics.office@usask.ca](mailto:ethics.office@usask.ca) toll free (888) 966-2975.

## CONSENT

*If you have already received consent, skip this section and confirm with the participant that you have their written/verbal consent on file. Proceed if you have not yet received consent:*

Do you consent to participate in this interview? *No/Yes*

- ***If No, discontinue the interview.***
  - Thank you for your time; if you change your mind or if have any questions about the Eat Healthy, Play Healthy Initiative, please call the Project Manager, Melanie Warken, at 306-630-6811 or email [eathealthy.playhealthy@usask.ca](mailto:eathealthy.playhealthy@usask.ca).
- ***If Yes, thank them and confirm that you are signing a consent form on their behalf in order to proceed.***

***(start recording)***

## DEMOGRAPHICS

What is your name and position?

How many facilities do you oversee in your role?

What do you have in your facility(ies) for food service? PROBE: cafeteria/concession, snack vending, beverage vending, etc.

Who currently supplies food and drinks to your facility(ies)?

How does your role influence the foods and drinks available in the facility(ies)?

### **CORE CONTENT**

1. What policies, guidelines or programs are currently in place at your facility(ies) that help people make healthy food and drink choices while visiting? PROBE: contracts requirements, financial incentives, corporate sponsorship, vending, fundraising, special events, cafeterias, concessions, children's programs.
2. What policies, guidelines or programs are currently in place at your facility(ies) that make it hard for people to make healthy food and drink choices while visiting? PROBE: contracts requirements, financial incentives, corporate sponsorship, vending, fundraising, special events, cafeterias, concessions, children's programs.
3. Are there any plans underway in your facility(ies) to support people in making healthier food and drink choices?
4. What ideas do you have to improve the food and drinks offered (and purchased) in your facility(ies)? PROMPT: what changes would you really like to see happen?
5. How ready do you think your organization is to make changes to increase healthy choices?
6. What would help you to gain more support internally (municipal or facility staff) or externally (patrons) for healthy food and drink changes in your facility(ies)? PROBE: e.g. resources, fact sheets, evidence summaries, education, success stories, training, funding ideas, etc.
  - a. Would you be interested in gathering feedback from your customers through a survey?
    - **If No**, continue to question 6.
    - **If Yes**
      - Make arrangements to mail/email them paper/electronic links to the EHPH Customer Survey.
      - Completed paper surveys can be emailed to [eathealthy.playhealthy@usask.ca](mailto:eathealthy.playhealthy@usask.ca) or fax (306) 966-6377 for analysis.
      - The EHPH Customer Survey will close March 31, 2018.
7. What would you need to help implement healthy changes? PROBE: e.g. a committee, toolkits (written resources, fact sheets, evidence summaries), sample policies, education, training, etc.

- a. Would a written resource (e.g., toolkit) be helpful? ***If no, skip to 7.***
  - b. If a written resource were to be developed, what would you like to see in it?  
PROBE: nutrition criteria, healthy eating options/ideas for the facility, pricing and placement strategies, posters, steps on how to make changes, weekly activities, etc.
8. Do you think your feedback is typical of other recreation leaders in SK? Why or why not?  
PROMPT: Is there anything unique about your facility(ies) (or customers visiting your facility) that would be different from other public recreation facilities in SK? PROBE: geographical location, population, type of facility.
  9. Is healthy eating promoted in any other ways in your facility? PROBE: display cases, healthy eating flyers, etc.
  10. Is there anything else that you would like to add?

### **CLOSING SCRIPT**

Are you interested in attending a collaborative workshop where we review the provincial results of the baseline data being collected, and plan for a healthier future state? (*goal date fall-winter 2018*)

We are also wanting to connect with other people in your municipality or facility that have an influence over the food and drinks offered. (E.g. recreation leaders, food service providers, volunteers, local food suppliers)

If I send you some information on our initiative, would you pass it along to them?

- *If yes, provide them with paper/electronic copies of the EPHH Recruitment Brochure.*

Thank you for taking time to participate in the Eat Healthy, Play Healthy initiative. If you have any questions at any time, please contact:

- Project Manager: Melanie Warken, 306-630-6811, [eathealthy.playhealthy@usask.ca](mailto:eathealthy.playhealthy@usask.ca), or
- Principal Investigator: Dr. Hassan Vatanparast, 306-966-6341, [vatan.h@usask.ca](mailto:vatan.h@usask.ca).

***(end recording)***

<sup>i</sup>Core content was adapted on October 11, 2017 from Naylor, P.J., Bridgewater, L. & Purcell, M. (2010). Publically Funded Recreation Facilities: Obesogenic Environments for Children and Families? *International Journal of Environmental Research and Public Health*, 7, 2208-2221 ; doi: 10.3390/ijerph7052208

## **APPENDIX H: SEMI-STRUCTURED TELEPHONE INTERVIEW GUIDE FOR FOOD SERVICE PROVIDERS**



### **Semi-Structured Interview Script for: Food Service Providers**

#### **OPENING SCRIPT**

Hi, my name is *(insert name)*.

I am calling/meeting with you today because you expressed interest in participating in a 30-minute interview which is one part of a provincial initiative called Eat Healthy Play Healthy. The initiative is led by the University of Saskatchewan in collaboration with the Ministry of Parks, Culture and Sport, the Ministry of Health, the Saskatchewan Parks and Recreation Association, the Heart and Stroke Foundation and the Public Health Nutritionists of Saskatchewan.

#### **STUDY**

The purpose of the Eat Healthy Play Healthy initiative is to examine the food and drinks available in public recreation facilities including the factors that influence a person's choice to buy them such as the promotion, placement and pricing of what's available. As part of our initiative, we would like to speak with people that provide food and drinks in recreation facilities. We will include questions about:

- the challenges you face in supplying healthier food and drinks,
- ideas that you have to improve the availability of, and the sales of, healthy food and drinks, and
- resources that you might need to help implement healthy change.

The telephone interview will take approximately 30 minutes to complete. It will be recorded in order for it to be transcribed for analysis at a later date; however, you can ask to turn off the recorder at any time.

#### **BENEFITS**

The findings will be compiled and used to support municipalities and facilities to improve the food and drink choices available in public recreation facilities so they are supportive of health. Creative ideas will be shared at a collaborative workshop to plan for a healthier future state.



## COMPENSATION

For participating in a telephone interview, you will:

- be offered resources and support based on best science to promote healthy food and drinks choices with your operation,
- a certificate of participation to display, and
- be entered to win a tablet valued at \$200. The winner will be notified on how to claim the prize immediately following the draw by the College of Pharmacy and Nutrition at the University of Saskatchewan.

## CONFIDENTIALITY

All of your answers will be kept confidential. You can choose to withdraw your answers from our baseline data collection until it has been summarized into key findings.

Your participation is voluntary. You may refuse to take part in this interview at any time without penalty. You are free to decline to answer any particular question you do not wish to answer for any reason.

This initiative has been approved on ethical grounds by the University of Saskatchewan Behavioural Research Ethics Board. If you have any questions or concerns regarding your rights as a participant in this study, you may contact the Research Ethics office [ethics.office@usask.ca](mailto:ethics.office@usask.ca) toll free (888) 966-2975.

## CONSENT

*If you have already received consent, skip this section and confirm with the participant that you have their written/verbal consent on file. Proceed if you have not yet received consent:*

Do you consent to participating in this interview? *No/Yes*

- ***If No, discontinue the interview.***
  - Thank you for your time; if you change your mind or if have any questions about the Eat Healthy Play Healthy Initiative, please contact the Project Manager, Melanie Warken, by phone at 306-630-6811 or by email [eathealthy.playhealthy@usask.ca](mailto:eathealthy.playhealthy@usask.ca).
- ***If Yes, thank them and confirm that you are signing a consent form on their behalf in order to proceed.***

## DEMOGRAPHICS

***(start recording)***

What is your name?

What is your role with food in recreation facilities? PROMPT: What type of food service operation do you oversee in recreation facilities? PROBE: cafeteria/concession (and possibly vending) owner, operator, staff, volunteer, etc.

In how many facilities?

Who currently supplies food and drinks to your facilities?

### **CORE CONTENT**

1. What incentives exist to support you in offering healthy food and drink choices in your cafeteria/concession? PROBE: Request for Proposal (RFP) contract requirements, financial incentives.
2. What barriers exist that make it hard for you to offer healthy food and drink choices? PROBE: competition with food companies near facility, supplier contracts, corporate incentives, corporate sponsorship, budget, storage, skills, knowledge, time, preservability/waste, lack of sales, limited understanding of customer needs, availability through contract.
3. Are there any plans underway (in your own approach or your facility's approach) to support you in offering healthier food and drink choices?
4. What ideas do you have to improve the availability of, and the sales of, healthier food and drinks in your establishment? PROMPT: what changes would you really like to see happen?
5. How ready do you think your organization is to make changes to increase healthy choices?
6. What would help you to gain more support for healthy food and drink changes in your facility(ies) whether it be with your municipality, facility or patrons? PROBE: e.g. resources, fact sheets, evidence summaries, education, success stories, training, funding ideas, etc.
  - a. Would you be interested in gathering feedback from your customers through a survey?
    - **If No**, continue to question 6.
    - **If Yes**
      - Make arrangements to mail/email them paper/electronic links to the EPHH Customer Survey.
      - Completed paper surveys can be emailed to [eathealthy.playhealthy@usask.ca](mailto:eathealthy.playhealthy@usask.ca) or fax (306) 966-6377 for analysis.
      - The EPHH Customer Survey will close March 31, 2018.
7. What would you need to help implement healthy changes? PROBE: e.g. a committee, toolkits (written resources, fact sheets, evidence summaries), sample policies, education, training, etc.
  - a. Would a written resource (e.g., toolkit) be helpful? **If no, skip to 7.**

- b. If a written resource were to be developed, what would you like to see in it?  
PROBE: nutrition criteria, healthy eating options/ideas, recipes, pricing and placement strategies, posters, steps on how to make changes, weekly activities, etc.
8. Do you think your feedback is typical of other food service providers in SK recreation facilities? Why or why not? PROMPT: Is there anything unique about your facility(ies) (or customers visiting your facility) that would make your needs different from other facilities? PROBE: geographical location, population, type of facility.
9. Is healthy eating promoted in any other ways in your facility? PROBE: display cases, healthy eating flyers, etc.
10. Is there anything else that you would like to add?

### **CLOSING SCRIPT**

Are you interested in attending a collaborative workshop where we review the provincial results of the baseline data being collected, and plan for a healthier future state? (*goal date fall-winter 2018*)

We are also wanting to connect with other people in your municipality or facility that have an influence over the food and drinks offered. (E.g. recreation leaders, food service providers, volunteers, local food suppliers)

If I send you some information on our initiative, would you pass it along to them?

➤ *If yes, provide them with paper/electronic copies of the EHPH Recruitment Brochure.*  
Thank you for taking time to participate in the Eat Healthy, Play Healthy initiative. If you have any questions at any time, please contact:

- Project Manager: Melanie Warken, 306-630-6811, [eathealthy.playhealthy@usask.ca](mailto:eathealthy.playhealthy@usask.ca), or
- Principal Investigator: Dr. Hassan Vatanparast, 306-966-6341, [vatan.h@usask.ca](mailto:vatan.h@usask.ca).

***(end recording)***

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<sup>i</sup>Core content was adapted on October 11, 2017 from Naylor, P.J., Bridgewater, L. & Purcell, M. (2010). Publically Funded Recreation Facilities: Obesogenic Environments for Children and Families? *International Journal of Environmental Research and Public Health*, 7, 2208-2221 ; doi: 10.3390/ijerph7052208