

Running head: FRUIT AND VEGETABLE INTAKE AND HEALTH

**A mixed methods study of the factors that enhance and challenge
food security, fruit and vegetable access and consumption, and
the uptake and management of the Ottawa Good Food Box**

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Abstract

Individuals who are disadvantaged by low-income and/ or minority status face a number of barriers to experiencing optimal health and eating well. Twenty Aboriginal and 29 non-Aboriginal participants (N = 49) from Ottawa, Canada took part in a cross-sectional, mixed methods study and completed one questionnaire and single in-depth interview that verified: 1) food security status and household eating habits, 2) fruit and vegetable purchase and consumption, and 3) knowledge about or participation in the Good Food Box [GFB] Program. Ottawa GFB staff (n = 5), site coordinators (n = 6) and steering committee members (n = 3) took part in separate discussion groups to identify challenges and strengths related to program coordination, management and delivery. Within an ecological framework, qualitative data is discussed using a social phenomenological and thematic approach. Using χ^2 analyses, results suggest a medium effect size and association between food security status and Aboriginal identity ($\chi^2_{(1)} = 8.04, p < 0.01; \phi = 0.4$) and satisfaction with how stores meet household food needs and gender ($\chi^2_{(1)} = 5.86, p < 0.05; \phi = 0.36$). A relationship between participation in the GFB Program and food security status ($\chi^2_{(1)} = 11.13, p < 0.01; \phi = 0.48$) is also shown where estimates suggest that GFB customers are 9.9 times more likely to be food secure compared to non-affiliates. ANOVA results and post-hoc tests demonstrate a significant mean difference in frequency of fruit consumption between GFB customers and non-program users ($F(2, 46) = 11.29, p = 0.00$) where 29.6% of the variance ($\omega^2 = 0.296$) is explained by program participation. Results-based and community-driven recommendations to improve access to healthy food, food security and the GFB Program are discussed as shared responsibilities between different levels of government across sectors and the community since these are public and social health issues, determinants of health and economic concerns. Implications of findings are also discussed.

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List of Abbreviations

AHWS – Aboriginal Health and Wellness Strategy

AK – Anisnawbe Kekendazone

ANOVA – Analysis of variance

CAFB – Canadian Association of Food Banks

CBPR – Community-based participatory research

CCHS – Canadian Community Health Survey

CCTB – Canada Child Tax Benefit

CDC – Centers for Disease Control and Prevention

CFI – Country Foods Initiative

CESCR – Committee on Economic, Social and Cultural Rights

CHC – Community Health Centre

CIET – Community Information Epidemiological Technologies Canada

CIHR – Canadian Institute of Health Research

CMA – Census Metropolitan Area

CMHC – Canada Mortgage and Housing Corporation

CPP – Canada Pension Plan

CRC – Community Resource Centre

EUFIC – European Food Information Council

FAO – Food and Agriculture Organization of the United Nations

FFQ – Food Frequency Questionnaire

FMP – Food Mail Program

FNFNES – First Nations Food, Nutrition and Environment Study

GMO – Genetically Modified Organism

IAPH – Institute of Aboriginal Peoples' Health

IFAD – International Fund for Agricultural Development

IFPRI – International Food Policy Research Institute

INAC – Indian Northern Affairs Canada

ITK – Inuit Tapiriit Kanatami

LHAD – Longitudinal Health and Administrative Data

MCSS – Ministry of Community and Social Services

MPP – Minister of Provincial Parliament

NAHO – National Aboriginal Health Organization

NNC – Nutrition North Canada

NWAC – Native Women’s Association of Canada

OCAP – Ownership, Control, Access and Possession

ODSP – Ontario Disability Support Program

OECD – Organization for Economic Co-Operation and Development

OHPRS – Ontario Health Promotion Resource System

Ottawa-NEAHR – Ottawa Network Environments for Aboriginal Health Research

OPH – Ottawa Public Health

OPHA – Ontario Public Health Association

OTB – Ontario Trillium Benefit

OW – Ontario Works

PHAC – Public Health Agency of Canada

PHSA – Provincial Health Services Authority

PRC – Principles of Research Collaboration

REB – Research Ethics Board

SICC – Saskatchewan Indian Cultural Centre

UNICEF – United Nations Children’s Fund

USDA – United States Department of Agriculture

WHO – World Health Organization

Moving Toward Food Security for All: Connecting People, Place, Food and Health

Even in the most affluent countries such as Canada, poor nutrition, poverty and deprivation still occur and are challenging experiences. Although Canada is among the wealthiest and healthiest countries worldwide (Organisation for Economic Co-Operation and Development [OECD], 2014), health is not equally distributed within or across its provinces, territories and jurisdictions (Shields & Tremblay, 2005). The complex interplay of social and individual determinants of health may influence both the severity of illnesses and the conditions that lead to better health. To reduce health inequalities and improve health status, it is vital to understand how social determinants of health and inequality affect and shape the lives of individuals and families living in urban communities (Marmot, 2005). While a serious public health and social issue, economic concern and recognized social determinant of health, food security in general (Health Canada, 2007a; Public Health Agency of Canada [PHAC], 2004; Raphael, 2010) and a nutritious and balanced diet in particular (Satia, 2009) are important conditions that contribute toward a healthier population (Nord, Andrews & Carlson, 2009).

What makes the experience of hunger an atrocity in a developed country like Canada is the frequent debate about the abundance of food production and even surplus (Agriculture and Agri-Food Canada, 2013) and the estimate of food loss and waste which, according to Agriculture and Agri-Food Canada (2015) was \$31-billion dollars in 2014. Meanwhile, on the food system policy side, much debate has centred on food safety and market control by imposing stricter regulations and stringent safety standards of food production, processing and distribution (Caswell, 2003). Collectively, in Canada, we do not suffer from a food shortage but rather a problem of distribution of an abundance of food whereby, many Canadian citizens are forced to

make daily dietary compromises and occasionally resort to creative strategies to access food resources or go hungry.

While there does not exist a comprehensive understanding of the extent to which food insecurity affects Ottawa residents, based on Statistics Canada data collected through the Canadian Community Health Survey (CCHS), Tarasuk, Mitchell and Dachner (2013a) report an equal or higher level of households who indicated a degree of food insecurity ranging between expressing worry about food depletion before having enough money to buy more food supplies to more extreme cases of starvation (from 3.9 million in 2011 to 4 million in 2012; Tarasuk, Mitchell & Dachner, 2013a, 2013b). The annual cross-sectional survey of Canadians in 2012 indicates that one in eight Canadian households experienced food insecurity including 2.8 million adults and 1.15 million children under the age of 18 years. While the prevalence of food insecure households with children differs across provinces and territories, out of the 1.15 million children who are affected by food insecurity, nearly 66% of these experienced moderate to severe food insecurity (Tarasuk, Mitchell & Dachner, 2013b). Although alarmingly high in Canada, the threat of food insecurity and any barrier to one of food security's dimensions, namely food availability, food access, utilization and stability (Food and Agriculture Organization of the United States [FAO], 2006), threatens a fundamental and basic human need for necessary survival.

Although the federal government in general and Health Canada in particular are making strides to better monitor food insecurity and reach Canada's more vulnerable populations at risk of food insecurity, estimates of household food insecurity for the homeless, full-time members of the Canadian Forces, First Nations living on reserve or Crown Lands¹, people currently

¹ see the 10-year study by the Assembly of First Nations along with Health Canada and selected universities across Canada titled 'First Nations Food, Nutrition and Environment Study' (FNFNES) at <http://www.fnfnes.ca/>

incarcerated or in care facilities as well as individuals residing in the Quebec health regions of Nunavik and Terres-Cries-de-la-Baie-James are excluded from the CCHS data estimates.

Although designed to be representative of the Canadian population across its ten provinces and three territories, omitted data of more vulnerable groups to food insecurity mentioned above, indicates that current findings may underestimate the relative severity to which food insecurity affects Canadian households and more vulnerable and at-risk subpopulations (Che & Chen, 2001; Tarasuk, Mitchell & Dachner, 2013b).

Studies suggest that people who report being food insecure (limited physical and economic access to food) are less likely to consume recommended servings of fruits and vegetables (Kursmark & Weitzman, 2009; Nova Scotia Department of Health, 2004; Widome, Neumark-Sztainer, Hannan, Haines & Story, 2009). Many who live in poverty would like to regularly consume healthy and nutritious foods including fresh fruit and vegetable varieties; however, studies support the perception that these foods are more expensive and inaccessible (Mushi-Brunt, Haire-Joshu & Elliott, 2007; Damman & Smith, 2009). Policy change, social action, strong and sustainable community health partnerships and increased access to safe nutritious food as a local priority can make a difference to better meet the broader health and nutrition needs of communities (Dachner, Gaetz, Poland & Tarasuk, 2009; Drevdahl, 1995; Mitchell & Shortell, 2000; Wilkinson & Marmot, 2003). Focusing on structural determinants of health is one approach to improve our understanding of physical, psychological, social and spiritual health under the paradigm of health promotion, illness prevention and poverty relief.

The purpose of this chapter is to introduce social determinants of health and inequality for Aboriginal and non-Aboriginal Canadians and discuss the health outcomes of living a disadvantaged and marginal lifestyle. I will also present and discuss the current state of

knowledge about Aboriginal and non-Aboriginal health and dietary patterns in urban settings. Further, I will discuss concepts that relate to the experience of food insecurity for Canadians in urban environments including current knowledge of barriers and food-related behaviours and strategies to acquire enough food and eat healthy. Finally, I will provide a summary of the gaps in current scientific literature and discuss the contribution of the current proposed studies to research as an extension of knowledge.

Social Determinants of Health and Ill-Health

Understanding the conditions that influence and affect the determinants of health in which people are born, grow, live, work, age, and die will help researchers, academics and policy- and decision-makers confirm their importance, and better address issues that persist in creating unfair and avoidable conditions that result in further health disparities and illness (Commission on the Social Determinants of Health [CSDH], 2008). The challenge remains to know how to best apply evidence-based knowledge to amend agendas, policies, project objectives, and strategies (Mouy & Barr, 2006) and to adopt planning approaches that focus on the root causes of inequities and inequalities in health and health status in order to improve community health (Marmot, 2005).

Income and social status, social support networks, education and literacy, employment conditions, social environments, physical environments, personal health practices and coping skills, healthy child development, biology and genetic endowment, health services, gender, and culture have all been identified by the PHAC as key determinants that, individually and in combination, influence the health status of the Canadian population (PHAC, 2001). Across environments, inequalities including social class, ethnic background, and gender (Baum & Harris, 2006) work together to segregate people. Specifically, incidents of ill-health related to

poor diet and malnutrition are problematic for society as a whole but more importantly, for those who are disenfranchised (Robertson, 2001).

Low-income groups in general and specific groups such as children, teens, pregnant and lactating women, and the elderly, are more likely to have inadequate diets due to challenges in accessing healthy and safe food (Robertson, 2001). Several studies documenting dietary patterns of newcomers in Canada suggest concerns regarding change in diet and health outcomes as many immigrant people and women's lives in particular are characterized by the experience of poverty, marginalization, racism and social processes that reinforce discrimination and relative exclusion and isolation from benefiting from the advantages of living a lifestyle that supports and acknowledges a whole health approach that recognizes the importance of physical, psychological, spiritual and social aspects to health (Hyman, Guruge, Makarchuk, Cameron & Micevski, 2002; Oxman-Martinez, Abdool & Loiselle-Leonard, 2000; Vissandjee, Carignan, Gravel & Leduc, 1998). As not all newcomers adapt and establish themselves quickly in a new country in general or Canadian society in particular, many are left to survive in a state of low socio-economic status upon their arrival which affects the quality and quantity of food intake. This has been observed in Latin American (Kaiser et al., 2002; Kaiser et al., 2003; Kasper, Gupta, Tran, Cook & Meyers, 2000; Quandt, Arcury, Early, Tapia & Davis, 2004) and Asian households (Sudha, Ganganna & Bowering, 1999; Yi-Ling, Dixon & Huffman, 1999) in the United States and in recently arrived Latin American immigrants in Canada (Rush, Ng, Irwin, Stitt & He, 2007; Vahabi, Damba, Rocha & Montoya, 2011) and recent resettled refugees (Healthy Immigrant Children, n.d.). A European study found that "low pay, unemployment and too little social benefits all contribute to the fact that vulnerable groups such as the homeless, large families, single parents and older people cannot afford a healthy variety of safe food"

(Robertson, 2001, p.1372). People who live in impoverished conditions tend to experience poverty more intensely over longer periods and have less disposable income to spend on nutritious and safe food items. Thus, the higher percentage of disposable income spent on food provides an indication of how they may be depriving themselves and their household of other necessities (Kirkpatrick, 2008; Robertson, 2001; Sarlo, 2006).

Aboriginal Determinants of Health and Well-Being

While First Nations, Inuit and Métis populations may experience the same determinants of health, ill-health, and inequality as non-Aboriginal populations, the degree to which these groups experience the abovementioned determinants and other unique determinants such as social exclusion, Aboriginal status, colonization, globalization, migration, cultural continuity, territory, self-determination, poverty and access is not similar (National Aboriginal Health Organization [NAHO], 2001; 2007; Native Women's Association of Canada [NWAC], 2007). Furthermore, these unique social determinants oppose and do not adapt or accommodate traditional activities and more familiar lifestyles (Maher, 1999; Wilson & Rosenberg, 2002) that connect humans to the environment, food and the Creator.

Canada's First Peoples hold an inherent connection to and knowledge about the land and ancestral territories that dates back prior to the arrival of European settlers which suggests a deep reciprocal relationship with the Creator that situates human beings in a position of dependence for physical, spiritual, social, cultural and emotional balance and harmony and environmental health (Cajete, 1999; James, 2001; McKenzie & Morrisette, 2003). The rich community and inherent knowledge supported sustainable systems related to economic, political, social, education, health and other innovative practices (First Nations Health Authority [FNHA], n. d.). In the context of cultural revival and healing, they continue to collectively defend their

traditional cultural practices that have historically governed their reciprocal relationship with and responsibility to nature and the land. While some groups share similarities in culture (e.g., The Dene in Western Canada, for example, speak a variant of the Apachean languages similar to tribes in the circum-Pueblo Southwest (e.g., Chiricahua, Jicarilla, Mescalero, Navajo and Western Apache) and nearby plains (e.g., Kiowa-Apache and Lipan); Saskatchewan Indian Cultural Centre [SICC], n.d.), each group is distinct from one another and share varying degrees of inter-group diversity (Armstrong, 2001) such as unique heritages, languages and variations in cultural practices and spiritual beliefs (Macaulay, 2009). These in turn support and structure their collective and balanced approach to health that differs from ideologies of Western culture.

As Canada's First Peoples and communities continue to advocate strongly for autonomy and self-determination, the recognition of regional cultural diversity in inherent knowledge, wisdom and ways-of-knowing (e.g., values, beliefs, practices and medicines defined by a sacred connection to Mother Earth and the Creator), they have often been ignored, neglected and misunderstood by government representatives, academics and researchers who have 'parachuted' in their communities and have attempted to impose dominant ideologies to coerce them to change their ways of doing and being. Tragically, the people and institutions (government, social, education and health) that supported the near genocide of an entire people and their financial, psychological and physical dependency in colonial, post-colonial and neo-colonial times still fail to adequately address the effects of disruptions that have caused historical trauma, social suffering and oppression, cultural isolation and the dissolve of previously more healthy and cohesive communities:

When one considers the material consequences of Canada's century-long policy of state-

sponsored, forcible assimilation, a simple fact emerges: for generations, opportunities to live well as an Aboriginal person have been actively frustrated. Successive governments, committed to the notion that Aboriginal cultures belong only to the past, have made no provision for the well-being of these cultures in the present and future. In the arrangement of Canada's social affairs, only the assimilated Indian has been offered even the prospect of wellness. For those who resisted or refused the benefits of assimilation, government policies assured a life of certain indignity. That is the essence of life in the colony: assimilate and be like us or suffer the consequences. (Kirmayer & Valaskakis, 2009, p. xi)

Before contact with European settlers, Aboriginal communities experienced better collective health (Health Council of Canada, 2005); a goal they have yet to achieve at rates previously experienced. For many, then and now, research remains tied to colonisation and different levels and forms of injustice, inequality and exploitation that have left communities more vulnerable and resistant to participate because of previous treatment as a mere source of data (First Nations Centre, 2005a; see Mobsy, 2013). Health and community researchers have taken on the conceptual challenge of disputing dominant ideologies that have typically informed the health sciences and shaped programs (Raphael, Curry-Stevens & Bryant, 2008). The health and well-being of Aboriginal Canadians has become a central concern in the project planning and priority setting of health researchers (Reading & Nowgesic, 2002) and implementation of local programs, services and initiatives by government, non-government and Aboriginal organizations (Health Canada, 2008). Many failed Western approaches to research fall short of explicitly recognizing the plurality of knowledge systems and wisdom that exist in different institutions and locations (Kindon, Pain & Kesby, 2007) in order to provide almost exclusive

privilege of their own views. Despite progress to better represent the health needs and concerns of Aboriginal people, researchers have yet to fully examine many important issues that affect the health of First Nations, Inuit and Métis populations (Young, 2003). Older studies assume and describe ‘*Aboriginal*’ peoples as a relatively homogenous group (see Hanselmann, 2001) when they are in fact not. Applying the term ‘*Aboriginal*’ when empirical findings do not pertain to all three main Aboriginal groups (First Nation, Inuit and Métis) and this affects the integrity of data as generalizations are misleading, irrelevant for some groups and perpetuate false information which may have important and sometimes serious consequences on policy and program development.

In contemporary times, to restore health and healing for individuals and communities whose perspectives and practices centre around collective exchanges and activities, an individual-centred or ‘one-size fits all’ approach to intervention development is unlikely to address the unique barriers that challenge cultures with rich traditions, beliefs, philosophies and lifestyles different than the mainstream culture. To improve care and the health of Aboriginal Canadians, the first step is to decolonize and redefine institutional processes to facilitate the inclusion of First Nations, Inuit and Métis perspectives to improve the quality of research and information on which the development of programs, services and policies are based (Royal Commission on Aboriginal Peoples [RCAP], 1996a; Smith, Edwards, Martens, Varcoe & Davies, 2008; Smylie & Anderson, 2006). A key component to the success of interventions with Aboriginal peoples is to investigate the health beliefs, behaviours, and assumptions and discover the unique perspectives that constitute the body of Aboriginal knowledge. From there, it is possible to implement First Nations, Inuit and Métis ways of knowing in the development and reconstruction of health promotion models and theories (Turton, 1997).

Health Outcomes of a Disadvantaged and Marginal Lifestyle: A Demographic Profile

The greater the degree of social inequalities, the more likely marginalized and vulnerable populations will experience higher rates of ill-health, disease, and even death (Link & Phelan, 1996). This is particularly relevant for Aboriginal health issues, since First Nations, Inuit and Métis groups have unique knowledge systems and important elements of cultural diversity that are not generalizable from the concerns of non-Aboriginal peoples (Ontario Health Promotion Resource System [OHPRS], 2007). Few studies have adequately captured the health outcomes of First Nations, Inuit and Métis populations residing in off-reserve areas (Sibbald, 2002) despite the fact that nearly 80% of Aboriginal Canadians live off-reserve (Statistics Canada, 2008). With the majority of First Nations people living in Ontario, the Métis in the Western provinces, and the Inuit in northern and Arctic Canada (Adelson, 2005), one of the obstacles in research is properly identifying, representing, and reporting on issues that affect Aboriginal populations with adequate samples once they have left the homeland and have migrated toward urban and off-reserve areas.

Based on the 2011 National Household Survey, there are 1,400,685 Aboriginal peoples in Canada (Statistics Canada, 2013a). Estimates for Aboriginal residents in Ottawa include 6,495 First Nations (non-registered Indian status), 6 860 Métis and 735 Inuit (for total of 14,090 Aboriginal peoples; Statistics Canada, 2013a). Previously, the integrity of Métis data in reports was questionable because of the difficulty to arrive at a national consensus on how to define the sub-group of Aboriginal peoples. In earlier years, there was also a poorer quality of information about the Métis compared to other Aboriginal groups explained by the federal government's typical control of information and figures on First Nations and the Inuit through registration databases of status- or non-status Indians under the amended *Indian Act* of 1939 (Indian and

Northern Affairs Canada [INAC], 2002). Specifically, there is no recognition of status or inherent rights or privileges exclusively for Métis peoples by the Government of Canada compared to their First Nations and Inuit counterparts. As a result, it is more complex and difficult to specifically identify the Métis based on singular cultural or ethnic affiliations because of centuries of acculturation and mixed-marriages or association of the term based on political boundaries and place of residence alone. It is equally difficult to assert what level of government (federal, provincial, or territorial) is responsible for the health and well-being of this sub-group of the Aboriginal population. Although they represent 32.3% of the total Aboriginal population (Statistics Canada, 2013a), presently, the only way to identify the Métis or, as Loxley and Wien (2003) have coined them, “urban Aboriginal populations without a land base” (p.223), is if surveyed individuals self-report or identify as a member of this sub-cultural group or as having Aboriginal heritage of this kind. Despite the non-existence of a unified definition for Métis people, a broad definition of who comprise this group in the literature may be more representative of people who have Aboriginal ancestry than people who identify as Métis and grew up with traditional Métis culture or whose caretaker or parent was First Nations and/or European. To explain part of the shifting trend in the accelerating rates of self-reporting as or affiliating with Aboriginal people, Guimond and colleagues (2003) suggest that Canada’s multi-cultural character and socio-political events have served to help restore the image and pride of Aboriginal peoples which have in turn heightened the awareness, readiness and self-confidence of individuals to acknowledge and/or embrace their mixed ancestry based on the perceived or actual benefits of affiliating with Canada’s First Peoples.

To better reach the Métis and encourage the use of health services and programs, the inclusion of their needs, preferences and concerns must be more accurately and explicitly

assessed by better capturing their identity to enhance the quality and use of health data. Developing more relevant and meaningful health and social programs and enhancing ways to favour health and social services access will better support the integration and adaptation of Aboriginal people in general in new communities (Adelson, 2005) and allow for more harmonious physical, psychological, spiritual and social health outcomes.

Comparison of Aboriginal and Non-Aboriginal Peoples in Urban Settings

Studies suggest that the health of urban residents is superior to the health status of individuals and families who reside elsewhere such as in remote areas (Shields & Tremblay, 2002), rural settings (Ruel et al., 1998) or on-reserve (Mao, Moloughney, Semenciw, & Morrison, 1992). While this may be the case for non-Aboriginal populations, the disproportionate experience of ill-health for First Nations living off-reserve and Inuit and Métis adults indicates that migratory patterns toward urban areas have had the reverse effect of exposing Aboriginal peoples to unacceptable forms of marginalization, discrimination, racism, oppression, segregation, and acculturation (Durie, 2004; Eades, 2000; Kuhnlein et al., 2006). This has contributed to a state where their former rich learning and knowledge systems and traditional skill sets and seasonal activities of hunting, fishing, gathering, gardening and connecting spiritually with the Creator and Mother Earth are considered less relevant abilities and forms of expertise to surviving in environments where Western-based values and culture dominate (First Nations Centre, 2005a; Kuhnlein et al., 2006; Kuhnlein & Receveur, 1996).

Historically, the daily diet and nutrition of Aboriginal peoples was comprised of natural physical resources that stemmed from Mother Nature on sacred ancestral territories. Subjected to the horrific effects of colonialism including missionary activities, displacement, diminished self-determination and the establishment of residential schools, the cultural traditions and health

practices of First Nations, Inuit and Métis were initially discouraged and then even outlawed (Richmond & Ross, 2009). As a result, many members of these communities experienced the far-reaching downward spiral of poor health that not only affect them as individuals but affected entire communities and disproportionately the population at large. Severing ties through which First Nation, Inuit and Métis cultures are taught (e.g., through oral traditions by Elders and Knowledge Keepers), Survivors demonstrate bravery, courage and resilience despite reeling from a legacy that caused harm, pain and suffering in the form of loss on many levels and in many forms from what some have termed an attempted “cultural genocide” (Claes and Clifton, 1998). Repercussions include the intergenerational loss of languages and traditions, identity, cultures and sense of spirituality (Dion Stout & Kipling, 2003) which have contributed in complex ways to social ills and issues that continue to permeate the health and well-being of communities (Partridge, 2010; Truth and Reconciliation Commission of Canada, n. d.).

In contemporary times, Aboriginal families and communities are still recovering from Canada’s colonial legacy (Adelson, 2005; Partridge, 2010). Although the health status of Aboriginal people appears to be improving (Canadian Institute of Health Information [CIHI], 2004; Ring & Brown, 2003), they still suffer disproportionately from poorer general health than their non-Aboriginal counterparts (Durie, 2004; Stephens, Porter, Nettleton & Willis, 2006; Tookenay, 1996). Based on data from the 2006 Aboriginal Peoples Survey and the 2007 CCHS (Cycle 4.1), Garner and associates (2010) found that First Nations living off-reserve, Inuit and Métis adults are less likely to report being in excellent or very good health and reported poorer health than non-Aboriginal people even when accounting differences in socio-economic characteristics, health care access and lifestyle risk factors. However, while First Nations off-reserve and Métis adults were more likely to be diagnosed with one of several chronic diseases

(e.g., arthritis, diabetes, cardiac issues and cancer), Inuit were either as equally or less likely to receive such a diagnosis (Garner, Carrière, Sanmartin & the Longitudinal Health and Administrative Data [LHAD] Research Team, 2010). Moreover, due to the complicated effects of colonization, Aboriginal people are more likely to suffer from diseases related to malnutrition (Baskin, 2006), obesity (Tjepkema, 2002), non-communicable diseases, and physical and psychological disorders related to the misuse and overuse of prescriptive and illicit drugs (Gracey & King, 2009). These illnesses have the effect of influencing the health and well-being of generations long after those that were initially affected are gone; leading to a state of disempowerment and disenfranchisement in a population that was once healthy by a definition that extends the notion of health and healing to include physical, psychological, social and cultural balance. The often persistent disparities in health status between Aboriginal and non-Aboriginal people suggest that health factors in the general population affect Aboriginal Canadians differently and that there are likely more culturally-relevant health predictors among Aboriginal people (Garner et al., 2010). What is evident in scientific and grey literature is that First Nations, Inuit and Métis people are in a state of healing, reclaiming and cultural revival from the experience of the cultural disconnect and atrocities of a painful not-so-distant past (see Hunter, Logan, Goulet & Barton, 2006; RCAP, 1996b; Ross, 1992; Van Wagner, Epoo, Nastapoka & Harney, 2007).

Connecting People to Food and Health

For First Nations, Inuit, and Métis peoples and other Canadian cultures, food is not only believed to sustain people, it is also a mechanism through which to feed the mind and nourish the spirit. Eating well is a key element to ensure optimal health on multiple levels by experiencing the additive benefits of consuming vitamin- and mineral-rich fruits and vegetables. However,

food not only plays a significant role in asserting individual health but is also a source from which remedies are derived and around which people gather, learn and socialize. For example, country foods such as wild plants and cultivated foods are not only a fundamental source of nutrients, vitamins, and minerals but, for Aboriginal peoples, it is also a channel through which they connect and identify spiritually, culturally, and socially and is a primary feature in traditional medicines (Kuhnlein & Receveur, 1996; Milburn, 2004). It is around food that traditional practices and teachings occur and are transmitted by word of mouth through mutual exchanges, dialectics and important dialogue. Through these practices, social and community relations are strengthened, mores and wisdom are passed on to generations through storytelling and breaking bread and recognition is given for the blessings provided by Mother Earth. Although the consumption of traditional country food continues, the context in which this occurs is occasional and most often during ceremonial gatherings and feasts (Baskin, 2006). Instead, many Aboriginal peoples who move from their homeland or reserve rely on a diet predominantly characterised by store-bought boxed foods (Whiting & Mackenzie, 1998) and processed convenience foods (Ship, 1998).

Literature on Aboriginal dietary patterns and change supports a shift from exclusive reliance on traditional food use and a decline in its consumption (Fediuk, Hidirolout, Madière & Kuhnlein, 2002; Nakano, Fediuk, Kassi & Kuhnlein, 2005) including berries, root food items, and greens for reasons related to food availability (e.g., market and garden food), taste preference, and too little time to harvest (Kuhnlein & Receveur, 1996). Although literature supports that vegetation such as plant-based foods played a less important role in the traditional diet of the Inuit (Aglukark, n.d.; Draper, 1977), Inuit living in urban areas have less access to traditional foods such as raw fish, raw whale skin, and organ meats, and tend to rely more on

market foods for contemporary dietary sources (Fediuk et al., 2002). For Aboriginal peoples, the effects of the shift to a mixed, western diet include observed vitamin deficiencies (Fediuk et al., 2002), and other health problems such as non-communicable diseases, dietary issues, and concerns for cultural safety (Damman, Eide & Kuhnlein, 2008). With each generation, there is a steady loss of traditional food use and depreciation and fragmentation of cultural knowledge, values, and opportunities for dialogue, listening and learning between Elders and youth to enable cultural protection, healing and spiritual health (Ranford, 1998).

There is a growing awareness and literature that focus on building new theories and developing health promotion strategies that include and consider the cultures within which health experiences are practiced (Dutta, 2007). For First Nations, Inuit and Métis peoples, the first step to addressing the challenges and experience of illness is to assess them within a *wholistic* context. Health as a Western ideology is generally the outcome of most physical health measures which fundamentally differ from Aboriginal health and healing concepts since, for Canada's Aboriginal groups and Indigenous groups world-wide, incorporate interconnected concepts of family and community as well as the construct of physical-mental-emotional-spiritual balance (Toth, Cardinal, Moyah & Ralph-Campbell, 2005). Thus, an interconnection and harmony between the social, psychological, physical and emotional aspects of life are intimately affected by their relationship to community, family, nature and the Creator (Anderson, Anderson, Smylie, Crengle & Ratima, 2006; Dieticians of Canada Aboriginal Nutrition Network, 2005; First Nations Centre, 2005a). To put this in the context of '*whole health*':

At the personal level this means each member enjoys health and wellness in body, mind, heart, and spirit. Within the family context, this means mutual support of each other.

From a community perspective it means leadership committed to whole health,

empowerment, sensitivity to interrelatedness of past, present, and future possibilities, and connected between cultures (Mussell, Nichols & Adler, 1993, p.26).

Similar and sometimes identical visions of health and relationships as interconnected, inter-related, embedded and undivided between nature and human kind (including persons, plants, trees, animals, rocks; entities that can be seen and unseen) are notions and metaphors articulated in and across many cultures and societies across the world. Teachings about the sacred connection of man and nature situate the value of self in relation to its connection with others (Kirmayer, 2007). With this understanding, initiatives that seek to maintain health, prevent illness and restore well-being will be successful in doing so to the extent that founding tenets recognize that the more an individual identifies with a traditional heritage, the greater likelihood they will adhere to health and illness approaches that are sensitive to and in synch with their ethnocultural heritage (Spector, 2002).

Food Insecurity: The Aboriginal and Non-Aboriginal Experience

Food insecurity exists on a continuum at many levels in Canada while not reaching the devastation that has permeated developing nations. As a concept, food security was first coined in conference proceedings from the 1974 World Food Summit in Rome, Italy and mainly concerned the availability of food and price stability. Specifically, food security was defined as the “availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices” (United Nations, 1975). Over time, the very multidimensional nature of food security became evident as various definitions evolved to balance the physical and economic access to food with food supply (FAO, 1983).

According to the Ontario Public Health Association [OPHA], “community food security is a strategy for ensuring secure access to adequate amounts of safe, nutritious, culturally appropriate food for everyone, produced in an environmentally sustainable way, and provided in a manner that promotes human dignity”, (OPHA, 2002, p.9). Although Canada is not typically associated with conditions of food shortages or hunger, nearly 4 million of Canadians who are food insecure (Tarasuk et al., 2013b) report economic and sometimes physical barriers to adequate amounts of safe, healthy, and nutritious food (Tarasuk, 2005). With the global recession and Canada’s struggle to bounce back from an economic downturn (Department of Finance Canada, 2009), a growing number of Canadians such as working people, parents, people with disabilities, seniors, students and home owners are seeking assistance from charities and food assistance programs (Canadian Association of Food Banks [CAFB], 2008). Under these turbulent economic conditions, the accelerating price of food, higher energy costs, seasonal and unpredictable hikes in fuel prices, employment insecurity and the loss of hundreds of thousands of jobs, many families and individuals across the country are experiencing desolation and grave uncertainty (Cernik & Spence, 2008).

While the severity of food insecurity varies between cities, among 33 major census metropolitan areas (CMA) examined by Tarasuk, Mitchell and Dachner (2013a), food insecurity was more problematic in urban compared to rural areas in Canada. Pooled results for the urban area of Ottawa-Gatineau suggest that 10.99% of households in 2007-2008 and 10.29% of households in 2011-2012 were estimated to be food insecure. The changes over time of houses reporting a degree of food insecurity in Ottawa-Gatineau were not deemed statistically significant using 95% confidence intervals (Tarasuk, Mitchell & Dachner, 2013a) and exact prevalence for population subgroups (e.g., food secure and insecure households with children)

are not available because of the relatively small sample size for the area; making the prevalence estimates less reliable at this level of data collection (V. Tarasuk, personal communication, July 18th, 2014).

People who are more likely to report being food insecure are low-income households, those dependent on social assistance, lone-parent families headed by women, tenants, children, and First Nations, Inuit and Métis peoples; people with Aboriginal decent living off-reserve were also more likely to report hunger (McIntyre, Walsh & Connor, 2001). For off-reserve Aboriginal households, estimates more than double with approximately 33% reporting at least a minimal degree of food insecurity (Health Canada, 2007b; Office of Nutrition Policy and Promotion, 2007). For First Nations, Inuit and Métis people who move away from the sacred land to urban areas, an issue of contention is the inability to secure affordable housing (Adelson, 2005; Canadian Mental Health Association, n.d.; Pauktuutit Inuit Women of Canada & Inuit Tapiriit Kanatami [ITK], 2006). Costs related to housing in turn affect the food budget since this expense becomes more expendable when financial shortages are experienced (Williams, 2004). Adults and families living on a low-income budget are often forced to choose between food, health care and housing expenditures (for example, opting out of buying much needed but expensive medications in order to pay for rent). In most situations where alternatives are not an option, health care and the quality and quantity of food are compromised to save enough money for less flexible monthly expenses and necessities such as securing a shelter (Bierman & Dunn, 2006).

Barriers to Food Security

Research shows that barriers to accessing healthy and affordable foods decrease the dietary quality for individuals and their families (Pederson, Robertson & de Zeeuw, 2000). For Aboriginal and non-Aboriginal peoples alike, the most important barrier to healthy eating (and

food security) is the household income, which is often considered a primary determinant of food selection and patterns of food consumption (Baskin, 2006; Baskin, Guarisco, Koleszar-Green, Melanson & Osawamick, 2009; Caraher, Dixon, Lang & Carr-Hill, 1998; Che & Chen, 2001; Consumer's Association, 1997; Garriguet, 2007a; Nathoo & Shoveller, 2003; OPHA, 2002; Power, 2005b; Willows, 2005). Other barriers identified in literature include transportation or the distance to stores, having children, the cost of food, the availability of food, lack of time to shop for food and cook and having insufficient cooking equipment or storage space for fresh foods (Chatterjee, Blakely & Barton, 2005; Jetter & Cassady, 2006; Mehak, Lecompte, Leclair, Calhoun & Kristjansson, 2007; Richards & Smith, 2006; Woods, 2003). Restricted mobility and physical disabilities have also been found to exacerbate these challenges by limiting food choice and nutritional intake (Wylie, Copeman & Kirk, 1999).

In particular, it is widely recognized that people who are food insecure have difficulties getting the types of food they want and need in sufficient quantities in good quality (Radimer, Olson & Campbell, 1990; Radimer, Olson, Greene, Campbell & Habicht, 1992). While studies have focused on identifying barriers to food security, it should also be noted that there are particular barriers specific to increasing the consumption of fruits and vegetables.

Strategic Behaviours and Food Insecurity

Because people survive on low-income does not mean they are food insecure but, unfortunately, those who are food insecure are by definition either low-income, have no income at all and/or have limited physical or geographic access to enough safe, nutritious and sufficient quantities of food. When food insecurity escalates in severity, studies show that individuals become resourceful, adept and at times creative in making ends meet (Habicht, Pelto, Frongillo & Rose, 2004; Maxwell, 1996). In their attempts to manage meagre financial and food resources

and get enough to eat, common strategies include seeking charitable assistance through local food bank donations (Teron & Tarasuk, 1999), using cost-effective strategies by compensating the nutritional quality of food for quantity and/or reducing portion size of meals. In more desperate circumstances, some have skipped meals or forgone eating for whole days (Hoisington, Shultz & Butkus, 2002; Lecompte, Mehak, Calhoun, Leclair & Kristjansson, 2007; Maxwell, 1996) while others have sought illegal means such as switching price tags on food (Hamelin, Habicht & Beaudry, 1999; Kempson, Keenan, Sadani, Ridlen & Rosato, 2002) or engaged in illegal activities to acquire more money for food (Petchers, Chow & Kordisch, 1989). Mothers in particular have reported deliberately compromising their food intake to help protect their children from hunger and to help buffer the experience of food insecurity (Berenbaum & Misskey, 2003; Dobson, Beardsworth, Keil & Walker, 1994; Maxwell, 1996; Power, 2005a). One Canadian study on low-income urban First Nations, Inuit and Métis families found that fathers also ration food supplies and sacrifice their dietary intake for the better of their children (Lecompte & McKinnon, 2009).

Gaps in the Literature

While there is an absence of a comprehensive profile of the severity of poverty and food insecurity in Ottawa, a report by the CAFB (2008) provides an outlook on emergency food bank use by province. In Ontario, food banks feed approximately 2.4% of the province's population. This represents approximately 315 000 families where more than 100 000 of these are young children (Cernik & Spence, 2008).

While many studies have focused on the factors that influence health status outcomes such as social determinants of health and inequalities and barriers to food security, a small minority have focused on the barriers and enabling factors related to the consumption of

sufficient amounts of nutritious fruits and vegetables from a qualitative, phenomenological perspective. Despite the fact that the physical and mental health benefits of consuming adequate and high amounts of fruits and vegetables have been sufficiently and widely documented (Bazzano, 2006; Estaquio et al., 2008; Lock, Pomerleau, Causer, Altmann & McKee, 2005; McMartin, Jacka & Colman, 2013), few studies have identified factors that influence fruit and vegetable consumption in a Canadian context and fewer still have yet to include the unique perspectives of First Nations, Inuit and Métis peoples who live in urban areas.

Moreover, little is known about the emotional consequences and lived experiences that affect the lives of Ottawa families when faced with challenges to healthy eating. While many studies have focused on ill health outcomes of not consuming enough fruits and vegetables, little is known about how Aboriginal and non-Aboriginal families benefit from participating in local, community-based fruit and vegetable programs that are tailored to their needs.

Finally, there is an absence of studies that have examined the experiences of urban Aboriginal and non-Aboriginal groups to verify from a phenomenological perspective whether there are different (or similar) barriers that affect the participation of Aboriginal and non-Aboriginal peoples in local fruit and vegetable programs and community initiatives in urban areas like Ottawa. It is relatively unknown whether and how barriers to participating in alternative food purchasing programs affect these groups differently. This study provides Aboriginal and non-Aboriginal urban residents the opportunity to reflect on their household food situation, express how circumstances and different conditions affects them on a daily basis and describe, in their own words, what factors affect their food purchasing behaviours and consumption of fruits and vegetables. Participants are also asked to identify how these in turn affect their personal well-being and household health.

The present research is designed to explore and assess the needs of Good Food Box users and non-users as well as one-time users and propose community-driven recommendations that are generated from study participants that encourage the consumption of sufficient amounts of fruits and vegetables, promote healthy food-related behaviours and increase access to health foods for First Nations, Inuit, Métis, and non-Aboriginal peoples and families living in Ottawa, Canada. This study provides a starting point for understanding what factors determine the purchase and consumption of fruits and vegetables, the level of food security and subsequently their perceived influence on whole health by including the meaning and perceptions of these phenomena that summarize the lived experience in an urban Canadian environment.

The Establishment of an Academic-Community Partnership

Collaboration with project partners and community partners at different stages of the project and the research process was vital to accurately understand and exchange knowledge about the diverse cultural, health, social and food needs of Ottawa's Aboriginal and non-Aboriginal peoples. Because many of the social determinants of health cross the perimeters of access to health care and services, achieving the goal of reducing health disparities and eliminating hunger is an effort that will require non-traditional partnerships but also inter-sectoral collaborations to achieve even the smallest steps toward needed change to assert better community health and broader food security.

An official project partnership between the University of Ottawa and the Ottawa Good Food Box was established over a one year period and the partnership with the Wabano Centre for Aboriginal Health was developed over several months. When the project partnership was established, the Wabano Centre for Aboriginal Health was the only food distribution site based in an Aboriginal setting. Expanding services to their target community was an important

component of the project since program access concerns were previously discussed between the program and site coordinators. The importance of developing this partnership was to allow for joint planning opportunities to further develop and integrate project ideas with the objective of increasing the potential for community change, enabling capacity building, more effectively addressing disparities in health and increasing access to nutritious fruits and vegetables through the use of community organizations in Ottawa. By working with a team of motivated individuals who work in the community, partnering members could contribute their knowledge, experience, skills, and abilities meaningfully and be leaders at different points in the project to help move it forward to accomplish its goals.

The *Healthy People, Healthy Communities Project*², was designed to identify aspects of a community-based food program that would support program participation and lessen attrition from the perspectives of current and former Good Food Box customers and people who do not use the Good Food Box Program to help generate sustainable community-driven recommendations to encourage healthy food-related behaviours and promote better inclusion of people at-risk of food insecurity and poor diet in Ottawa, Canada. Within the project, the establishment of a formal partnership and dialogue between Aboriginal and non-Aboriginal peoples, academics, stakeholders, decision-makers, and community workers were important aspects on which to develop sustainable improvements to the Ottawa Good Food Box Program to help it better meet its objectives and mission.

The Ottawa Good Food Box Program and the Wabano Centre for Aboriginal Health were identified as suitable and interested partners for the *Healthy People, Healthy Communities Project*. Based on the fresh fruit and vegetable distribution system created and operated by

² The project's name was coined by Health Promotion Officer Natasha Beaudin (project partner from the Ottawa Good Food Box who, at the time, was the program coordinator) for the purposes of identifying the project in relation to its activities and goals.

Toronto's FoodShare in February 1994 (FoodShare, n. d.), the Ottawa Good Food Box was implemented in 1996 by community developers and community nutritionists. This non-profit organization is a city-wide food program that reaches out to people in the community who are unable to access adequate amounts of high quality fresh fruits and vegetables that they want and need. The program aims to introduce new varieties of food, encourage the preparation of home cooked meals with fresh and nutritious produce and foster community development, build community capacity and promote healthy eating habits (Ottawa Good Food Box, n.d.).

The Wabano Centre for Aboriginal Health is a well-known, respected, and trusted urban health centre. They are also one of the 28 Good Food Box sites across Ottawa that distribute fresh fruits and vegetables boxes on a monthly basis to First Nations, Inuit and Métis customers. The health centre recognizes that First Nations, Inuit and Métis peoples face unique challenges related to health, health care and participation in community programs and activities. Its mandate states that they strive "to create and deliver services that will prevent ill health, treat illness and provide support and aftercare. Services will be offered in a culturally-sensitive way that welcomes, accepts and represents all Aboriginal people(s)" (Wabano Centre for Aboriginal Health, n.d., paragraph 1). They also envision a world where health disparities cease to exist and where the knowledge and wisdom of First Nations, Inuit and Métis peoples and cultures are recognized, appreciated and seen as invaluable and unique. Staff work to achieve health conditions that will one day permit "pride in ancestry, cultural reclamation, peace, shelter, education, food, income, a stable environment, resources and social justice" (Wabano Centre for Aboriginal Health, n.d., paragraph 3) for Aboriginal communities in Ottawa. Moreover, Wabano also has a mission of better serving the urban Aboriginal population. Specifically, the Wabano Centre for Aboriginal Health provides the following to their clients:

- Provides quality, holistic, culturally-relevant health services to Inuit, Métis and First Nation communities of Ottawa.
- Engages in clinical, social, economic and cultural initiatives that promote the health of all Aboriginal people.
- Promotes community-building through education and advocacy.
- Serves as a centre of excellence for urban Aboriginal health. (Wabano Centre for Aboriginal Health, n.d., paragraph 2).

Based on the Wabano Centre for Aboriginal Health's mandate, vision and mission, these were seen as compatible and attuned with the overall objectives and mission of the *Healthy People, Healthy Communities Project*.

A program logic model was developed by the research team to make the framework of the study explicit by outlining the evaluation components and identifying how to best achieve the desired outcomes of the study (see Appendix A for the program logic model worksheet). Linking decision-making and policies to evidence-based practices by the evaluation of health promotion and prevention models may help better direct healthcare investments (Rycroft-Malone et al., 2004). These types of evaluations have resulted in the identification of more efficient and cost-effective strategies that have lead to a clearer relationship between health care inputs and outcomes (Clancy & Cronin, 2005). This study outlines questions related to the research and assessment components that may be used in turn by community project partners to advocate for changes in program investments and expenditures to improve the delivery, reach and effectiveness of the Good Food Box Program. To declare support for the project and to assert each community organization's role as an active project partner within the context of an academic-community partnership, the Ottawa Good Food Box and the Wabano Centre for

Aboriginal Health each signed letter of support and commitment that details the type of support expected over the project period (see Appendices B1 (Ottawa Good Food Box) and B2 (Wabano Centre for Aboriginal Health) for the letters of support). Meetings with community partners were held regularly and as needed to ensure that decisions were made on a consensus basis.

Theoretical Framework and Conceptual Model

For families who survive on a limited budget or no income, a number of factors, acting alone or in combination, determine the degree to which a household experiences food security or insecurity. Income remains one of the most influential aspects that determine the quantity and occasionally the quality of food that is purchased for the home followed by the availability and cost of food provisions. While issues that affect and influence eating behaviours are highly complex and largely based on the intricate interplay of numerous factors across disciplines and contexts, the two studies included within this dissertation build on the framework of creating healthy food and eating environments by American researchers Story, Kaphingst, Robinson-O'Brian and Glanz (2008). In line with the Aboriginal worldview of interpreting issues within the broader context in which experiences are influenced by direct and indirect interconnected factors, Story and colleagues (2008) proposed an ecological framework and conceptual model that depicts four concentric circles related to individual, environmental (social and physical) and macro-level factors that influence eating behaviours and food choice through different mechanisms. The strength of applying an ecological model to the current research is that it conceptualizes and emphasizes connections between people and their environment and interprets behaviour as an element that affects and is affected by multi-level and complex linkages. The relationship between multiple levels of interacting elements has an influence on health, nutrition and between individuals and the environment (see Figure 1).

The goal of this dissertation is not to explain the tenets of a holistic perspective in detail but to briefly describe the philosophical underpinnings and nature of interpreting and relating to elements in the real world in a circular fashion in order to demonstrate how factors affect other components and how these are inter-related and inter-dependent across different levels from broader social dimensions to a more narrow level that affects individual health and behaviour. An extension of the framework by Story and colleagues (2008), subsequent modifications to this model within the *Healthy People, Healthy Community Project* are proposed to help foster a better understanding of the food environment in Ottawa and provide information on household food and nutrition security by highlighting important contextual and individual factors that support these phenomena and influence individual health (and vice versa) for everyone regardless of culture. As literature suggests food consumption is a function of affordability, access, availability and usage, the current study considers that food security is an outcome based on the complex interplay of socio-political, socio-economic and socio-cultural factors related to food availability, access and sustainability as well as social, economic, political psychological, physical and cultural aspects that influence and determine the purchase and consumption of fruits and vegetables and subsequently perceived or self-rated whole health outcomes. Therefore, this study considers household food insecurity to be a consequence of the barriers or hardships experienced in relation to above-mentioned factors of influence but also a barrier to adequate fruit and vegetable intake and a risk for the experience of ill-health (and vice versa). Adapted to include the individual within the social sphere within which food is bought, prepared and consumed, this model considers Canadian contextual and individual factors that underlie and influence eating behaviours and highlights factors that govern the relationship between food

security and health as well as the relationship between human beings, food and the environment with the integration of distinct worldviews: Western and First Nations, Inuit, Métis perspectives.

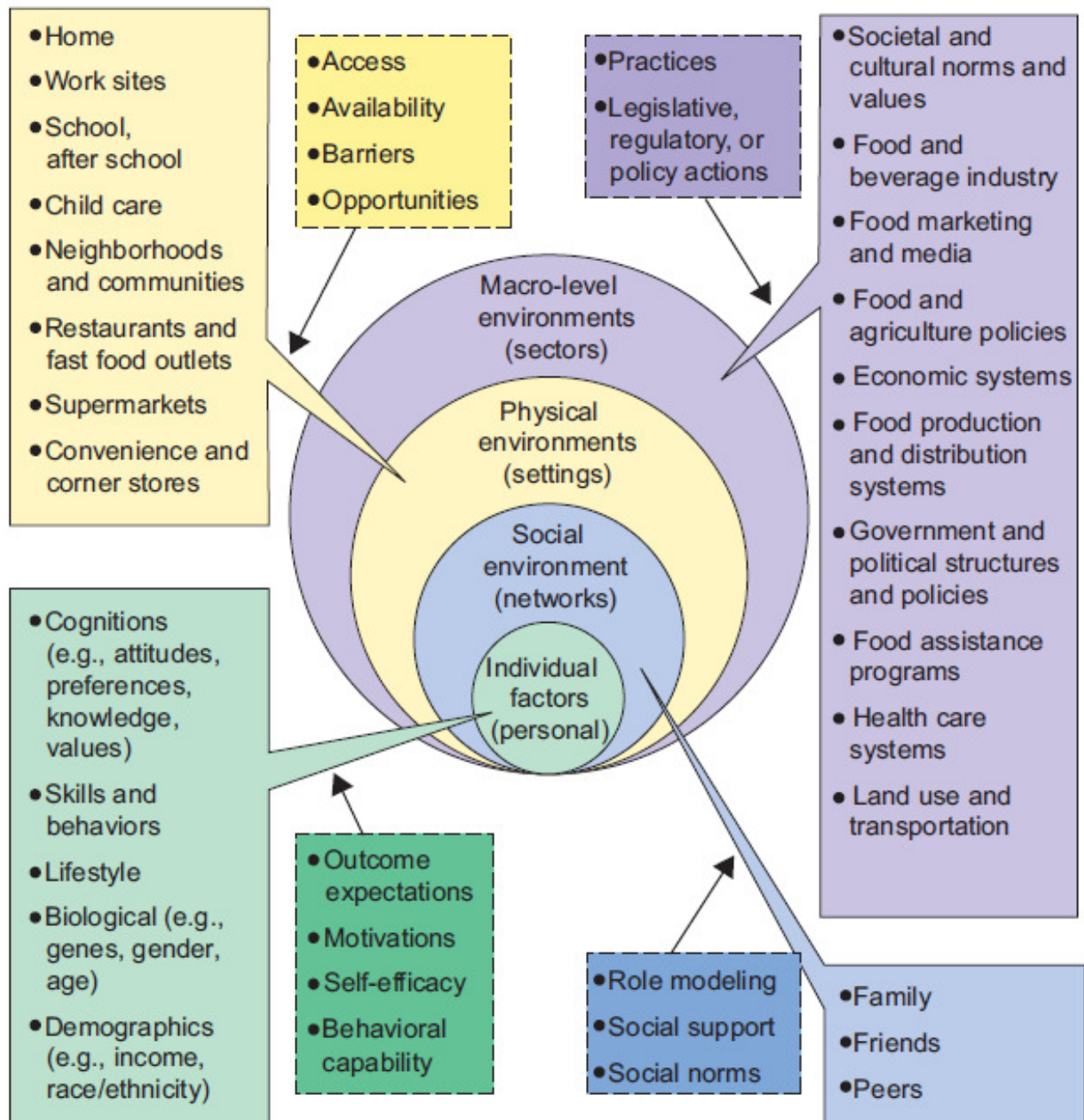


Figure 1. An ecological framework depicting complex influences on food consumption and related behaviours. Adapted from “Creating healthy food and eating environments: Policy and environmental approaches,” by M. Story, K. M. Kaphingst, R. Robinson-O’Brien, and K. Glanz, 2008, *Annual Review of Public Health*, 29, C-1.

Project Design, Research Priorities and Objectives

To help the community-based Ottawa Good Food Box Program evolve to better meet the needs of its customers and expand service delivery to more ethnically and culturally diverse neighbourhoods and households, it is necessary to develop a better understanding of the factors that influence food security, fruit and vegetable purchase and consumption and the adoption of strategic food and financial acquisition and management behaviours (Study 1) and those that may affect the uptake, attrition or exclusion of households from using the Good Food Box Program (Study 2). A program logic model has been developed to make the research framework of the study explicit (see Appendix A) by outlining how an intervention (e.g., a project or program) is understood to contribute toward perceived or actual results (e.g., may include both positive and/ or negative outcomes). To illustrate program activities, processes and outcomes, a results chain (also called a pipeline logic model; Funnell & Rogers, 2011) was used to represent existing program evidence developed through the inclusion of input from the program director, program coordinator and individual site coordinators. The value of the model resides in the explicitness of the project's theoretical framework, program design and components, and the intended shorter-, medium-, and longer-term outcomes of the intervention for community-based initiatives (Kaplan & Garrett, 2005). Further, through discussions, this model represents the perception of how those who oversee and deliver the program understand how it functions.

Intended outcomes of the Ottawa Good Food Box Program include increased access to fruits and vegetables and reduced economic burden. However, there is little information about the barriers and facilitating factors to participation in the Good Food Box Program and the conditions or structures that affect how the program operates and is managed. Findings generated from the present study could be particularly relevant for disadvantaged groups, as this population

might achieve maximal benefit from the program. The importance of linking decision-making and policies to evidence-based practices by evaluating health promotion and prevention models may better direct healthcare investments (Rycroft-Malone et al., 2004). These types of evaluation (e.g., community needs assessments) have resulted in the identification of more efficient, effective and cost-effective strategies that have lead to a clearer relationship between health care inputs and short, medium, and long-term outcomes (Clancy & Cronin, 2005).

The proposed project has outlined a community needs assessment where results could be further used by community partners to advocate for further program support, funding and expansion. The assertion of increased investments may lead to the expansion of the Good Food Box's services across Ottawa in neighbourhoods identified as at-risk for food insecurity or those who are particularly interested in supporting a volunteer-run fruits and vegetable program that increases access to produce that is locally grown to the largest extent possible. Increased funding and investments could help increase program visibility, efficiency and lead toward its sustainability based on increased clients and subsequent revenue, volunteer support and better staff capacity. In becoming more efficient and effective as a community food resource, the Good Food Box can become more widely accessed by people in general who value local, fresh, safe and nutritious produce and but become more accessible to particular at-risk groups (e.g., individuals who have one or more chronic diseases, lower fruit and vegetable consumption or who may have nutrient deficiencies) in particular who would benefit most from program participation.

The aim of this community-based research project is not to make prescriptive recommendations or statements on how community programs should be developed and delivered in this region or across others; it is neither my intention to prescribe or dictate how much

individuals should or should not be eating. Rather, the main objective of this study is to enhance local understandings of the barriers and facilitating factors that subsequently affect household food security, healthful eating and the challenges related to purchasing and consuming enough fruits and vegetables to live a healthy and productive life.

The overall purpose of the present project is:

1. To identify the barriers and factors that enable access to the acquisition, purchase and consumption of adequate amounts of nutritious, safe and affordable fruits and vegetables in the daily diets of culturally and ethnically diverse households in Ottawa;
2. To identify the consequences of household food security and insecurity on '*whole health*' as told by urban residents in their own words;
3. To identify major challenges, barriers and facilitating factors to the monthly use of the Good Food Box Program for lower income households in Ottawa;
4. To quantify the relationship between level of participation in the Ottawa Good Food Box and food security and weekly frequency of fruit and vegetable consumption;
5. To understand the challenges and strengths related to the management and delivery of the Ottawa Good Food Box Program from the perspectives of individuals with differing levels of involvement and decision-making capacity in the program; and
6. To develop culturally sensitive, community-driven survey instruments that communicate respect and the inclusion of First Nations, Inuit, Métis, and non-Aboriginal perspectives while still capturing relevant information on food (in)security and fruit and vegetable acquisition and consumption.

Specifically, the project involves a needs assessment to assist with understanding the major factors that place urban residents at-risk of experiencing food insecurity and prevent the access to fresh varieties of fruits and vegetables for themselves and for their family. The proposed project uses a framework where the first study includes a needs assessment of the factors that enable and challenge food security and access to and consumption of fruits and vegetables in an urban environment. The second study investigates specific barriers and facilitative factors related to the uptake of the Good Food Box by Aboriginal and non-Aboriginal people in low-income households in Ottawa. Because the Good Food Box Program attempts to provide increased access to fruits and vegetables, an assessment of the strengths and weaknesses of the program was conducted to help support recommendations to assist in the expansion of the program to better meet the needs of local residents. Understanding the barriers and facilitating factors to the uptake of a local fruits and vegetable program, the Good Food Box, will be in a position to better identify priority areas to build on factors that make it relatively easy for clients to stay involved in the program and address barriers that prevent households from experiencing the benefits of accessing fruits and vegetables at a lower cost than at most other food retailers. To achieve this, the interview participants for Studies 1 and 2 are the same. The study will inform program and site coordinators about which components lead to the success of the intervention and which elements need to be better addressed to retain and recruit more satisfied customers.

Research suggests that the barriers, concerns, and the experience of lower-income, multicultural households and communities in community programs differ from those of the middle class norm (Johnson, 2000). Therefore, the perspectives of First Nations, Inuit, Métis participants and people with multicultural heritages are integral to help improve the structure of and access to the Ottawa Good Food Box Program for Aboriginal and non-Aboriginal peoples.

To successfully address the barriers that prevent Aboriginal and non-Aboriginal peoples to participate in the Ottawa Good Food Box and to build on the facilitating factors that help increase access to fruit and vegetables, it is important to first identify those barriers by conducting a needs assessment. The objectives of Study I are the following:

1. To better understand the lived experience of surviving on a low-income budget including the creative strategies individuals use to economize and/ or acquire money or food when either is in insufficient quantity;
2. To better understand and assess the needs and consequences of households at-risk of food insecurity, hunger and poverty;
3. To better understand the local barriers to eating enough fruits and vegetables to live a healthy and productive life;
4. To understand the factors that facilitate the purchase, preparation and consumption of enough fruits and vegetables for urban residents; and
5. To identify the ‘whole health’ effects related to consuming sufficient or fewer quantities of fruits and vegetables as part of a balanced diet for Aboriginal and non-Aboriginal peoples;

Building on this assessment, we also want to investigate whether participation in the Ottawa Good Food Box Program helps protect against food insecurity and assists in increasing fruit and vegetable consumption compared to non-program users. We conducted interviews with current and former customers and non-program participants as well as talking circles and focus groups to better understand the strengths and weaknesses of the program as well as the perception that people have about the Good Food Box. By triangulating various perspectives we were able to learn what components work best to achieve the objectives of the program and why

as well as identifying any particular barriers that may make it difficult for certain ethnic and/or cultural groups in participating more readily in the program. The following overall goals are postulated for Study 2:

1. To identify the factors (e.g., social, cultural or familial) that influence participation in the Ottawa Good Food Box, and how they affect program uptake;
2. To investigate the issues that affect program management, delivery and expansion from the perspectives of paid staff and volunteers
3. To investigate claims that the Ottawa Good Food Box Program provides food security and to examine whether a relationship exists between food security and program participation;
4. To communicate community-driven and evidence-based recommendations to help the Ottawa Good Food Box evolve in ways that are consistent with the community norms and values of urban Ottawa residents in relation to the consumption of healthful amounts of nutritious and safe fruits and vegetables. Recommendations will be oriented to improve program effectiveness, efficiency and access. Program staff and volunteers may prioritise recommendations into sustainable program components to build the program and expand delivery; and
5. To ensure that findings are returned to the community and shared with participants prior to being communicated with individuals outside the community or published in any academic or scientific proceedings.

Understanding the barriers and facilitators to the uptake of the Good Food Box Program will help inform the recommendations and potential solutions about which components promote the access to and participation in this local fruits and vegetables program and which elements

need to be further assessed and addressed. Therefore, these objectives are consistent with the Aboriginal Capacity and Developmental Research Environments' (ACADRE) priority of improving access to health services including culturally appropriate services.

Declaration of Research Funding

To conduct both studies, funding was asserted through the Ottawa Network Environments for Aboriginal Health Research (NEAHR) specifically the regional centre of the Anisnawbe Kekendazone (AK) and the Community Information Epidemiological Technologies (CIET) Canada. The regional centre of the Ottawa-NEAHR is one among nine centres across the country established by the Canadian Institute of Health Research (CIHR) – Institute of Aboriginal People's Health (IAPH) in 2007 as part of a project to sustain and evolve the impetus of the former ACADRE initiative developed to assist in the development of Aboriginal capacity in health research, promote and enhance more supportive relationships in research between universities (academics) and First Nations, Inuit, and Métis communities and organizations. Together, the nine NEAHR centres form a national network known as the Aboriginal Health Research Networks (AHRNet Secretariat, 2010; Government of Canada, 2011).

Applying for any research funding is a highly competitive process where many high calibre project proposals are submitted and a small relative proportion of these are funded. Across Canada, Aboriginal communities and organizations are increasingly seeking ways to maximise their participation and control of research that affects them. Similarly, researchers, academics and practitioners are looking toward more participatory or collaborative approaches that respect and incorporate a broader definition of knowledge from different sources including taking account of traditional knowledge and wisdom, the experience of communities and more formal expertise (dichotomised in literature as community- and academic-based knowledge;

Reading & Nowgesic, 2002; Edwards, Lund, Mitchell & Andersson, 2008). Using and adapting more inclusive and participatory approaches with communities (as opposed to reverting to failed Western methods of doing research on communities and people), emerging ways of deconstructing and redefining scientific approaches, theories and methods that are more appropriate, respectful and relevant to different worldviews and experiences including First Nations, Inuit, Métis and different ethnic and cultural groups are increasingly appearing in literature. Moving away from post-colonial research methods, a more celebrated and trustworthy approach that ensures more active opportunities for community inclusion in research as opposed to passive supporters or subjects (despite how loosely the tenets of this orientation are interpreted and applied in practice) is community-based participatory research (CBPR). Theoretically, CBPR projects aim to engage both community members and the researcher in a process defined as more participatory where collaborators contribute, learn, and build capacity of other members included in the process through activities and tasks that seek to balance the needs for action and research (Edwards et al., 2008; Minkler & Wallerstein, 2003).

Because the AK-NEAHR recognizes research projects where collaborating organizations and communities are not simply respondents but rather participants whose involvement is integral to the success of developing meaningful research, seeking funding through this organization by applying for the CIET seed funding grant would further assure that the project's approach, measures and activities coincided with principles Ownership, Control, Access and Possession (OCAP; First Nations Centre, 2007) on which are based the needs of many Aboriginal communities' priorities and the context of Aboriginal self-determination (First Nations Centre, 2005a; Reading & Nowgesic, 2002). Further, equally consistent with the CIHR Guidelines for Health Research Involving Aboriginal People (2007), study questions and project

objectives emerged from discussions with community-based workers in the area as well as with individuals who use food services and programs in Ottawa. Community members have been included in developing the seed funding proposal, designing the project framework and providing input for recruitment sites. While the researcher suggested different methods of data collection, community partners reached consensus to select ones appropriate to respond to questions in ways least invasive and most appropriate for all participants and the community. Further, community partners were consulted to suggest appropriate ways to give thanks to all participants for their efforts, contribution and time to take part in the project. Project partners and a post-hoc guiding committee will also continue to provide support in different ways throughout the knowledge sharing and dissemination phase where results will be shared with the community members, families and friends, stakeholders, decision-makers and academics as well as media (select local newspapers and contributors to community bulletins).

The enclosed draft agreement of the '*Principles of Research Collaboration*' (PRC; Patterson, Jackson & Edwards, 2006) has been amended to reflect the involvement of local community organizations and members in the proposed project (See Appendix C). This document outlines data sharing and access arrangements between project partners. It also serves as a guide to ensure the active participation of the Aboriginal community throughout the project period including the development of activities related to the project framework, data collection, analysis and dissemination to the local and scientific community.

As orientations that draw from the more participatory nature of CBPR tenets, OCAP principles and the CIHR Guidelines for Health Research Involving Aboriginal People assist in promoting inclusion and the establishment of safeguards for communities and participants in addition to ethical standards established by Institutional Review Boards (IRB) that any university

project must meet and follow. However, the importance of integrating the above mentioned principles and guidelines are in consideration of historical ills between the researcher and ‘the researched’. These principles and guidelines promote transparency and help increase project partners confidence in the research process to support trust between parties by explicitly outlining expectations and the appropriate utilization of research methods and approaches throughout the research process until after dissemination. These guidelines can be interpreted as an outline of responsibilities between parties that also include obligations to the community before and after any project. Applying these principles and guidelines framed the project’s collaborative approach to further embrace ideas that are in tune with community norms and ways to better understand, interpret and address community issues with the aims of achieving, maintaining and sustaining proposed improvements related to community health, wellness and empowerment.

To obtain a research grant through a NEAHR centre, my supervisor and I submitted a proposal that successfully met the criteria of scientific rigour and merit, the inclusion of the community as resourceful project partners, the demonstration of commitment to community engagement, ethical conduct and community capacity building as well as the inclusion of a strategy to advance knowledge and translate research findings in ways that are respectful, accessible to and readily understood by participants and the community. To achieve this, the involvement and support from community leaders is critical as they are the most familiar with community norms and best approaches to reach members of the community. Engaging in a community-academic partnership in the context of this project is an ideal way to help the raise the profile of health research and culture in relation to healing and well-being by modelling good research practices in tune with ethical guidelines and community and cultural protocols.

The proposed project collaboration between the University of Ottawa, the Ottawa Good Food Box and the Wabano Centre for Aboriginal Health including the community support of several other Aboriginal and non-Aboriginal organizations across the city (e.g., all Good Food Box distribution sites, the Vanier Community Services Center, Centretown Community Health Centre [CHC], Eastern Ottawa Resource Center, Overbrooke-Forbes Community Resource Centre [CRC], Lowertown CRC, Ottawa Inuit Children's Center, Options Bytown and Gignul Non-Profit Housing Corporation) determined a research topic judged as relevant to advance the health and well-being of Ottawa's urban Aboriginal and non-Aboriginal community and whose proposed approach and measures were attuned and respectful of different worldviews. The major health research themes on which this project focuses that coincide with the Ottawa-NEAHR's and supporting community organization's priorities are issues related to: a) public and community health; b) enhancing the understanding of determinants of health (e.g., food security, income and cultural factors); c) chronic diseases, nutrition and lifestyle; and d) emphasizing primary prevention (enhancing opportunities for individual and community well-being and poverty relief by reducing the risk of health threats including the experience of food insecurity and hunger by promoting access to healthy and fresh fruits and vegetables).

Notification that my supervisor and I were successful in obtaining funding was formally received in May 2012 in the sum of \$50, 000 over one year and money was deposited in a university-controlled account five months later in September. The project budget covers costs related to community capacity building, data collection, the procurement of electronic devices, and printing supplies for the dissemination of results and the organization of a community forum. Consistent with the OCAP principles (First Nations Centre, 2007) to support building community capacity and skills, two community members were hired to provide project support

and gain knowledge and experience related to qualitative data management, transcription and preliminary analyses (see Appendix D for Community capacity building and training strategy and Appendix E for the job description and application criteria). Further, throughout the project, locally owned businesses including Henry's Photography and Elm Printing provided material and technical support. Details about the importance of promoting local business and why these family-run businesses were selected as the project's retail supplier for material and printing needs are provided in Appendix F. Finally, the purpose of organizing the community forum is to share research information with community members, decision-makers, stakeholders, academics, project funders and local media outlets.

Search Strategies for Literature and Inclusion Criteria

The search for content to support the development of material for the *Healthy People, Healthy Communities Project* within the context of a doctoral dissertation was conducted using a variety of strategies. Online and electronic databases were consulted. Searches to identify books, scientific articles and grey literature (e.g., reports or documents in limited circulation) that applied to determinants of health and inequality, food and nutrition security, chronic and communicable diseases, food box programs and community-based research were completed with the assistance of several databases, including PsycInfo, PubMed, Scopus, Science Direct, Scholars Portal; Web of Science, Web of Knowledge, Google Scholar and Google.

Studies were not limited by their date of publication, therefore, each database was searched from its inception through February 2010 (development of project proposal) and again through September 2014 to update the literature. The following key terms relevant to the fields were used in Boolean search and found in either the title, abstract or broader text: food security; food insecurity; food insufficiency; food poverty; nutrition insecurity; social inequality;

inequalities and nutrition; inequalities and health; hunger; poverty and food; poverty and diet; health inequalities and diet; healthy eating and low-income; food behaviour; food selection; food use; food preparation; food consumption; dietary patterns; knowledge and health; health behaviours; health beliefs; fruit and vegetable consumption; Aboriginal health; First Nations health; Inuit health; Métis health; community-based participatory research; academic-community partnership; mixed methods study; social phenomenological methods; Technical search terms included both English and French terminology.

References of select articles, reports, manuscripts or abstracts were further carefully reviewed in case they were otherwise missed by the databases and considered and included where relevant. Searches for relevant books and book chapters (typically not indexed in databases) were identified and accessed through the University of Ottawa library system. Grey literature was most often accessed by direct communication requests to staff or report authors of government and non-government organizations, downloaded from the Internet or identified through a search engine (e.g., Google).

Inclusion criteria was that literature be published in English or French and methodological criteria were a) Methods section required the detailed elaboration of approaches used to conduct the study (identification of study population, sampling strategy, adequate measures, description of how data was collected); b) Analysis section required a detailed description of data analysis and the appropriate use of statistical tests or analytical approach; and c) Interpretation of results needed to be sound and appropriate for the type of data collected as well as the selected theoretical or analytical framework.

Exclusion criteria were a) Commentaries, editorial letters and opinion pieces; b) Book reviews; and c) Documents published in languages other than English and French.

Study One: Barriers and Facilitating Factors to Food Security, Healthful Food Behaviours and Fruit and Vegetable Consumption in Urban Ottawa, Canada for First Nations, Inuit, Métis and Non-Aboriginal Residents and the Effects on Health and Well-Being

Abstract

The goal is to understand the lived experience of food (in)security and to identify factors that affect household food security, fruit and vegetable consumption, and food and financial acquisition and management behaviours when either is in insufficient supply. Recruited by convenience and snowball methods, 13 adult males, 33 females and 3 two-spiriteds (N = 49) participated in a cross-sectional, mixed methods study. An in-depth interview followed the administration of a self-report survey. Questions measured and explored household food security status, weekly frequency of fruit and vegetable consumption, food store satisfaction, determinants of fruit and vegetable selection and consumption, and food acquisition and management strategies. Quantitative analysis was conducted with descriptives and χ^2 ($\alpha = 0.05$). Social phenomenology and thematic analyses were used for qualitative data. Results suggest a medium association between food security status and Aboriginal identity ($\chi^2_{(1)} = 8.04, p < 0.01$; $\phi = 0.4$) and satisfaction with how stores meet household food needs and gender ($\chi^2_{(1)} = 5.86, p < 0.05$; $\phi = 0.36$). Barriers to food security were inadequate income, food and living costs, health issues, and caring for elderly parents. Barriers to eating fruits and vegetables were produce cost, inadequate income and lifestyle. Facilitating factors to consume fruits and vegetables were upbringing, lifestyle choices, avoiding ill-health and store proximity. Behaviours to acquire and manage income and food, and eat fruits and vegetables are described. Perceived effects of food insecurity and fruit and vegetable consumption are detailed. Implications are discussed.

Key Words: *Food (in)security, fruit and vegetable consumption, barriers and facilitating factors*

There is growing empirical evidence that supports the importance of addressing socio-economic determinants of health to ensure better outcomes for individuals, communities and populations at large. Despite many political promises and ill-fated policies to improve the purchasing power of individual consumers by increasing the minimum wage in Ontario for adult workers (with some exceptions) to an historical and national high of \$11.25 an hour (Ontario Ministry of Labour, 2016), many people still face disturbing and unacceptable levels of poverty in this province and throughout Canada. Regardless of the minimum wage increase, many continue to struggle to balance the cost of living with the ability to afford a healthy food basket, putting nutritious food on the table and providing themselves and their families with basic necessities (e.g., housing and clothing). Even social assistance or disability income programs or the establishment of community and emergency food programs or resources do not ensure that all Canadians citizens are fed nor do they assert access to enough nutritious, safe and appropriate foods to meet people's personal food preferences and/or dietary and health needs. This raises complex questions where, even though the pains of poverty and hunger are felt individually, the ramification of the socio-political and socio-economic structures that perpetuate and uphold these conditions (e.g., ill-health; poor and unstable job market) are felt throughout society.

Food Security and Canada

The FAO (1996) defined the broad concept of food security as a state that exists “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life,” (para 13). In response to the FAO's vision voiced at the World Food Summit, Canada adopted this position as described and included it in Canada's Action Plan for Food Security by Agriculture and Agri-Food Canada (1998). This position presupposes a number of conditions that must be met in

order to support and ensure household food security domestically. The Government of Canada's standpoint to support and establish more sustainable food systems and assist in eliminating hunger and poverty are in tune with the two dimensions included in the definition of food security: 1) the assurance of the sufficient production and supply of quality food (dimension of quality and quantity), and 2) reliable access to food (physical and economic access; Beaudry, 1991; Campbell, Katamay & Connolly, 1988; Power, 2000). However, even with the support and adoption of Canada's position on food security, poverty and hunger continue to exist across and within its borders; putting increased strain on the delivery of health and social services and pressure on different levels of government and their constituents to reprioritize efforts to re-analyse and restructure underlying policies and barriers that prevent vulnerable Canadians from having sufficient resources to access the foods they want and need to feel and be well.

To provide conditions that support a state of food security in Canada based on the assumption that environmental conditions, harvesting practices and distribution conventions support an adequate food supply (Power, 2000), access to sufficient quality and quantities of food needs to be achieved from a basic human rights perspective. According to the FAO and United Nations (UN; 1991):

Pour supprimer les problèmes nutritionnels, il ne suffit pas d'accroître les disponibilités alimentaires globales. Il faut, certes, que des quantités adéquates d'aliments sains et nutritifs soient disponibles pour couvrir les besoins d'une population, mais il faut surtout que les ménages aient un accès convenable aux approvisionnements existants. Les denrées doivent ensuite être convenablement préparées et équitablement distribuées entre tous les membres de la famille. Enfin, pour bénéficier pleinement des aliments consommés, il faut que les individus soient en bonne santé et à absorber et métaboliser

efficacement les nutriments. Cela suppose que les gens vivent et travaillent dans un environnement où ils disposent aptes d'une eau propre, d'un assainissement de base et d'un air salubre, qu'ils aient un accès à des services et des soins de santé satisfaisants et qu'ils mènent une vie active et saine. (as cited in Benbouzid, Delpeuch, Maire & de Benoist, 1995, p. 39, para 2)

If food security results from having a reliable supply of and access to sufficient amounts of healthy food, household food insecurity is experienced when people have “the inability to acquire or consume an adequate diet quality or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so,” (Davis and Tarasuk, 1994, p.51).

Food insecurity and at-risk populations

Recognized as a public health issue and social, economic and political problem (Campbell et al., 1988; Food Banks Canada, 2013; 2012; Riches, 1996), a recent study using findings from the CCHS (cycle 2.2) by Tarasuk, Mitchell and Dachner (2013b) reported that 4 million Canadians suffer from varying levels of household food insecurity including 1.15 million children. Because food insecurity plagues the food and health experiences of many Canadian households, the promise to develop or reform policies to make food more accessible to consumers (both economically and physically) have gone unfulfilled as many individuals and families nation-wide still do not have enough to eat (FAO, International Fund for Agricultural Development [IFAD] & World Food Program [WFP], 2013.; Carolan, 2013). This suggests the very conditions required to support food security and optimal health in Canada are threatened and at risk for millions of adults and children.

According to Raphael (2011), certain ethnic groups and populations are at an increased risk of living in impoverished conditions and experiencing the pains of poverty including older

single people, single-parent families, recipients of social assistance, people with disabilities, recently arrived immigrants and Aboriginal people. Supporting these claims, the HungerCount 2012 survey suggested that these individuals were further overrepresented as food bank users where 50% reported social assistance as a primary income and 16% survived on disability-related income and 43% represented single-person households and 25% were single-parents (Food Banks Canada, 2012). Of the staggering 872 379 people who turned to Canadian food banks for assistance in 2012, 11% self-identified as First Nations, Inuit or Métis (which increased to 25% of food bank users in small towns and rural areas) and 11% were immigrant people who had arrived in Canada within the last 10 years (Food Banks Canada, 2012).

While food banks provide emergency sources of food to buffer against food insecurity and hunger or starvation, data from the 2013 HungerCount demonstrate that the problem of poverty and food insecurity affect many as this issue is much deeper than an individual problem but a more complex and often hidden symptom of more significant and unaddressed social ills. Cross-sectional results from the HungerCount 2013 survey indicate that the number of individuals who rely on food banks is still higher compared to pre-recession figures from 2008 (Food Banks Canada, 2013) even though the number of users has decreased by over 39 000 since 2012. A total of 833 098 people sought assistance from Canadian food banks in March 2013 where, contrary to the popular belief that food bank use is reserved for the unemployed, homeless or destitute, 12% of users were employed, 5% had recently found employment, 5% depended on employment insurance (EI) and 7% survived primarily from pension income (this proportion rose to 10% for rural areas and small towns; Food Banks Canada, 2013).

As income inequality continues to grow in Canada (Conference Board of Canada, 2011), any emergency or unexpected expenses comes at the threat of hampering the monthly food

budget, putting an even tighter squeeze on any savings an individual or family may have for the future and put further pressure and stress on individuals and the family unit. The findings by Food Banks Canada (2013) suggest that the working poor are attempting to survive on inadequate incomes and inadequately adjusted social assistance, employment insurance, child benefits and old age security pension that fail to reflect the rising costs of living (e.g., cost of shelter, a food basket, transportation and energy and utility bills) or inflation. The important question to ask when framing healthy eating is not what people are consuming but why they eat the types and quantities of food that they do (Polivy & Herman, 2005).

Canadian dietary guidelines for a healthy lifestyle

Many countries have recommended quantities of different types of food and established guidelines on healthy food-related behaviours. General recommended food-based consumption guidelines have been published using different approaches to understanding nutrition, food consumption and health. Many national guidelines in different countries use graphic representations in the form of food pyramid guides, circles (wheels, plates or compasses), tabulated lists and other visual cues (European Food Information Council [EUFIC], 2009) to inform, educate and support the consumption of healthy quantities of different food groups, achieve and maintain a healthy weight, minimize risks related to dietary conditions and prevent ill health (see United States Department of Agriculture [USDA] & United States Department of Health and Human Services, 2010; National Health and Medical Research Council, 2013).

Based on rigorous, evidence-based research, the Canada Food Guide (Health Canada, 2007c) was established to provide Canadians with guidelines to healthy eating in consideration of nutrition science and its relation to the prevention of chronic illnesses, the management of these diseases and derived health benefits. This guide provides a benchmark of food groupings,

serving sizes and recommends the number of daily servings of each food category for different age groups, sexes and stages of life (Health Canada, 2007c). Recently, Health Canada (2007d) tailored the food guide to be more in tune with the values, traditions and food choices of its First Nations, Inuit and Métis peoples. This version includes more culturally familiar, traditional and nutrient-, vitamin- and mineral-rich food sources like wild plants (e.g., seaweed), wild rice and bannock as well as traditional meats and wild game (e.g., caribou, seal, moose).

To remain consistent with recommended daily fruit and vegetable servings from the two versions of the Canada Food Guide (Health Canada, 2007c; 2007d), it is recommended that girls and boys between the ages of 2 to 13 consume between 4 to 6 servings per day, adolescents 14 to 18 years of age consume between 7 to 8 servings, and adults from 19 to 50 years can have approximately between 7 to 10 servings. Adults older than 51 years, male or female, are recommended to consume only 7 daily servings of fruits and vegetables. Even with these initiatives, many people still fail to consume recommended daily servings of fruits and vegetables and other food group portions to maintain a balanced diet in macro- (proteins, carbohydrates, and fats) and micro-nutrients (vitamins and minerals) for optimal health.

Fruit and Vegetable Consumption in Canada

Despite numerous efforts to promote information about the positive protective factors and additive benefits of consuming enough quantities and rich varieties of fruits and vegetables and support healthy eating behaviours and lifestyles, levels of daily intake for a healthy and balanced diet remains low and/ or inadequate for a many Canadians (Garriguet, 2007a; Statistics Canada, 2014a). Based on food frequency data in the CCHS collected by Statistics Canada (2014), less than half of Canadians aged 12 years and older (40.8% or approximately 11.5 million people) consume fruits and vegetables at least five or more times per day; a rate that has remained

unchanged since 2011 (Statistics Canada, 2014a). While the frequency of fruit and vegetable consumption had increased in 2009, it had decreased for the following two consecutive years; the first marked decline since 2001 (Statistics Canada, 2014a). From 2001 to 2013, differences in fruit and vegetable consumption was also characterised by differences between males and females where women were more likely to report eating fruits and vegetables at least five times daily. Alternative forms of fruits and vegetables, such as beverages (e.g., juice), made up slightly more than one serving of fruit and less than one serving of vegetables for adults (Garriguet, 2008a). Quebec was the only Canadian geography to report daily fruit and vegetable consumption in a proportion higher than the national average (46.9%) while the West coast (British Columbia, Alberta, Saskatchewan) and the Northwest Territories were approximately at par with the mean consumption rate (approximately 40% consuming fruits and vegetables five or more times per day). The remaining provinces (Manitoba, Ontario, New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador) and the Yukon and Nunavut territories reported a lower consumption frequency (eating fruits and vegetables fewer than five times daily) than the rest of Canada combined (below 40.8%; Statistics Canada, 2014a).

Based on the cross-sectional CCHS data alone, causality cannot be inferred that respondents of the survey are food secure or insecure based on their responses of frequency of fruit and vegetable consumption. Food frequency questions do not account serving size, portions, quantity of food and produce varieties consumed during the day and cannot be compared to the recommendations of fruit and vegetable intake prescribed by governing health organizations. Other factors that affect fruit and vegetable consumption not measured in the survey's design is food preferences (Azagba & Sharaf, 2011) as well as the assessment of structures that support circumstances conducive to the experience of food or nutrition security or insecurity in different

social contexts and environments. Although the CCHS cycle 2.2 data provides important information on certain health behaviours and conditions that relate to socio-demographic and economic variables, the data that can be derived should be interpreted within the limitations of self-reported daily frequencies of fruits and vegetables while excluding generalizations to specific demographic groups including First Nations on-reserve, individuals in institutional care, residents of remote areas or individuals abroad and less than the full participation rate of private households in all three territories (Statistics Canada, 2014a). These groups are not solicited when collecting CCHS data. Because of this, CCHS data on the frequency of fruit and vegetable consumption may over- or under-represent the real or perceived frequency of consumption of this food category for certain groups.

Food Security Status and Diet

The experience of household food insecurity has important health implications and subsequent consequences that extend beyond the confines of the home. International research suggests that dietary quality and nutritional status is related to age, sex, occupation, education, income (Bouis, Eozenou & Rahman, 2011; Darmon & Drewnowski, 2008; Drewnowski & Darmon, 2005; Galobardes, Morabia & Bernstein, 2001; Gray & Leyland, 2009; Groth, Fagt & Brondsted, 2001; Marko, Edwards, Fraser-Lee, Lightfoot & Spinola, 2004), lifestyle (Marko et al., 2004; Pérez, 2002), marital status (Nepal, Mgbere, Banerjee & Arafat, 2011; Riediger & Moghadasian, 2008) and food prices (Brinkman, de Pee, Sanogo, Subran & Bloem, 2010; Iannotti, Robles, Pachòn & Chiarella, 2012). Cross-sectional studies suggest that a lack of food security is associated with the prevalence of adult obesity, non-insulin dependent diabetes, HIV infection, poor academic performance and development and poorer mental health (American Dietetic Association, 2006; Bhattacharya, Currie & Haider, 2004; Che & Chen, 2001; Heflin,

Corcoran & Siefert, 2007; Kaiser, Baumrind & Dumbauld, 2007; Kim & Frongillo, 2007; Olson, 1999; Vozoris & Tarasuk, 2003).

The consumption of foods that are poor in nutritional and dietary quality typically characterise the food habits and consumption patterns of a larger proportions of individuals who survive on no or low-income (Dubois & Girard, 2001; Kirkpatrick & Tarasuk, 2003; Ricciuto, 2003). Individuals who live and survive in conditions conducive to food insecurity, tend to consume fewer food varieties, less servings of fruits and vegetables and have an insufficient intake of a balanced and nutritious diet (Kirkpatrick & Tarasuk, 2003). Typically, people who survive on low-income cannot offer themselves and their family a balanced and diverse diet with essential rich varieties of vitamins, minerals, fiber and proteins which leads to micronutrient deficiencies, malnutrition (American Dietetic Association, 2006; Kendall, Olson & Frongillo, 1996) and more chronically poor health (Che & Chen, 2001; Tarasuk, 2001).

Correlates to infrequent consumption of fruits and vegetables are primarily high cost of produce versus income (Dong & Lin, 2009; Hendrickson, Smith & Eikenberry, 2006). However, a study conducted in Atlantic Canada found that women are more likely than men to report eating 5 to 10 servings of fruits and vegetables; a trend that also persists throughout the life span (Nova Scotia Department of Health, 2004). As consuming recommended servings of fruits and vegetables is associated to other healthful habits despite income or education levels, this finding may be because people who value eating healthily assign it to a higher priority when budgeting (Nova Scotia Department of Health, 2004). Studies that have measured nutrient intake instead of food consumption have noted that the differences in dietary quality between socio-economic groups is almost negligible due to limited compliance to dietary guidelines across social groups (Galobardes et al., 2001; Roos, Prattala, Lahelma, Kleemola & Pietinen, 1996). Unfortunately,

studies show that, as food insecurity status worsens, households experience disordered eating patterns and tend to consume fewer servings of fruits and vegetables (Kendall et al., 1996).

Inadequate fruit and vegetable consumption and non-communicable disease

Nutrition and health literature on the benefits of consuming a diet rich in fruits and vegetables is extensive (Hung et al., 2004; Lock et al., 2005; Van Duyn & Pivonka, 2000). Although the average recommended consumption rate of fruits and vegetables varies across countries, as a food group that is low in caloric and fat content, a good source for assorted vitamins, minerals, natural fiber and water (Rolls, Ello-Martin & Tohill, 2004), researchers suggest that fruits and vegetables play an important role in the establishment of a nutritious and healthful diet and in the prevention or management of chronic illnesses. It is widely recognised that eating adequate amounts of fruits and vegetables can assist in noticeable health improvements over time and help reduce the incidence of or protect against cardiovascular disease, hypertension, stroke, obesity, non-insulin dependent diabetes and certain cancers (Alonso et al., 2004; Bazzano et al., 2002; Feskanich et al., 2000; Ford, Giles & Dietz, 2000; Fulker, 2001; Haber, 1997; He, Nowson, Lucas & MacGregor, 2007; He, Nowson & MacGregor, 2006; Joshipura et al., 1999; Rolls et al., 2004; Schafer, Nelson & Burton, 2000; Terry, Terry & Wolk, 2001; Tohill, Seymour, Serdula, Kettel-Khan & Rolls, 2004; Van Duyn & Pivonka, 2000; World Cancer Research Fund [WCRF] & American Institute for Cancer Research [AICR], 2007; Zino, Skeaff, Williams & Mann, 1997). A growing body of epidemiological studies also support the protective role of fruits and vegetables against the formation of cataracts, chronic obstructive pulmonary disease and diverticulosis (Van Duyn & Pivonka, 2000).

Dietary factors and eating patterns assume great influence in the prevalence of serious chronic and non-communicable diseases which are persistent over time and pervasive in even the

most affluent societies (Ledrou & Gervais, 2005; Olson, 1999; Power, 2005a; Slater, 2007; Tarasuk, 2005). Public health actions implemented across jurisdictions promote the daily fruit and vegetable intake between 400g to 800g (5 to 10 portions) to help reduce the risk or prevent the onset of certain non-communicable diseases (WCRF & AICR, 2007).

Based on Canada's 2013 health statistics compiled through the CCHS, it is estimated that 2 million Canadians (6.6% of the population) aged 12 years or older have been formally diagnosed with diabetes (including type 1, type 2 and gestational diabetes) where men compared to women (7.2% versus 6%) and obese persons compared to their non-obese counterparts (15.3% versus 5.1%) are disproportionately affected and more at risk to develop this chronic illness (Statistics Canada, 2014c). It is also estimated that 5.3 million Canadians aged 12 years and older have been diagnosed with high blood pressure (17.7% compared to 16.9 in 2009; Statistics Canada, 2014b). As hypertension is a risk factor for stroke, postmyocardial infarction and renal failure (Garriguet, 2007b), one approach in combination with other recommendations (e.g., pharmacological treatment) to help manage this chronic disease and avoid major complications such as the experience of co-morbidities (e.g., diabetes, chronic kidney disease or high risk of coronary disease; United States Department of Health and Social Services, National Institutes of Health & National Health, Lung and Blood Institute, 2003) is lifestyle modifications including the adoption of a healthy eating plan with reduced sodium intake and the consumption of foods rich in calcium and potassium.

Food security also has implications for people living with chronic diseases. Studies have shown that people who live with type 2 diabetes may experience a reduced health-related quality of life (Delamater, 2000; Rubin, 2000; Schafer, 2000; Thommasen & Zhang, 2006) and further health impairments and complications if or when heart disease, stroke or kidney disease are

experienced (Robert, Young, Mustard & Blanchard, 1998). An increase in fruit and vegetable consumption has been shown to protect against the development of a number of chronic diseases and instances of ill health (Herman, Harrison, Afifi & Jenks, 2008; United States Department of Health and Social Services, National Institutes of Health & National Health, Lung and Blood Institute, 2003) and thus may contribute to reduce the burden of nutrition-related diseases on governments and public and private institutions. For example, a Canadian study on the effects of food preparation and consumption in an Ojibway-Cree community found that increasing vegetable consumption to recommended levels had a protective effect against impaired glucose tolerance and diabetes (Gittelsohn et al., 1998); an illness that remained virtually undiagnosed in Aboriginal populations before approximately 70 years ago (between the 1940s and 1950s; Chase, 1937). A change to a more appropriate and culturally familiar diet can be a cornerstone for better health and a way to assist in the management of chronic diseases and other health-related illnesses (Aboriginal Nutrition Network, 2005). Though genetic endowment accounts in part for the heredity of certain non-communicable diseases, one cannot deny the influence that modern economic and social change and urbanization have had on individual and community health (Uauy, Albala & Kain, 2001). However, an increase in consumption of healthy portions of food and a balanced diet rich in vegetable and fruit varieties can assist and support the prevention and management of some chronic disease and improve one's quality of life. What we ingest and digest helps shape the incidence of many nutrition-related illnesses, diseases and issues that, in hindsight, may be avoidable (Kumanyika, 1996).

Perceived health status (self-reported) is a general indication of overall health and reflects aspects of health not necessarily captured by other health measures. A measure that focuses on capturing information on one's physical, mental and social well-being, it captures more than data

on whether illness or injury is present or absent by including different variables related to our ability to function socially, psychologically and physically. Between 2009 and 2013, the proportion of Canadians aged 12 years or older who rated their health as ‘very good’ or ‘excellent’ has remained unchanged (59.4% or 17.7 million people; Statistics Canada, 2014d). Moreover, individuals with a stronger sense of community reported superior physical and mental health (63.6%) compared to those with reported weaker community ties (Statistics Canada, 2014d; Ross, 2002). To support optimal perceived health status levels, getting enough kinds of fruits and vegetables in one’s diet is crucial for better longer-term health outcomes and reducing the risk for chronic illnesses, morbidity and mortality. Equally important and not to be overlooked is the importance to build and strengthen our bonds with the community to improve or maintain our sense of belonging to achieve optimal health and better well-being.

Inadequate diet and the ill effects on family members

Under nutrition or malnutrition can cause disharmony between the holistic elements that ensure overall health in the household (Willows, 2005). Individuals and families with children who survive on low- or no income or under complex circumstances of food insecurity and strain experience periods where multiple aspects of individual and household well-being becomes threatened and at-risk due to natural responses to having a lack of food. Many who are food insecure report poor to fair health, chronic illnesses and adverse whole health effects including poor individual physical health and compromised mental health with a higher rate of psychological suffering and distress (Collins, 2009; Hamelin et al., 2002; Sateia, 2009). For example, a lack of food can influence the manifestations of signs of mood disorders, depression, distress, alienation and stress (Alaimo, Olson & Frongillo, 2001; Che & Chen, 2001; George, Milani, Hanss-Nuss & Freeland-Graves, 2005; Gomez-Pinilla, 2008; Hamelin et al., 2002;

Hamelin, Habicht & Beaudry, 1999; Siefert, Heflin, Corcoran, & Williams, 2001a; Zamecnik, 2009) which can often result in self-blame, preoccupations about food, anxiety, aggression and feelings of degradation, helplessness and loss of control (Collins, 2009; Consumers' Association, 1997; Hamelin et al., 2002; Heflin, Siefert & Williams, 2005; Polivy, 1996; Whitaker, Phillips & Orzol, 2006). Periods of psychological distress and familial chaos due to the high levels of pressure, stress and worry are linked to poverty and differing levels of food insecurity (Hamelin et al., 2002).

The health risks associated with eating too few fruits and vegetables can be detrimental and have irreversible short- and long-term health effects depending on the life stage, duration, intensity and frequency that it occurs (Bhattacharya et al., 2004; Casey et al., 2005; Wilkinson & Marmot, 2003). For example, an American study on low-income, tri-ethnic women in late postpartum found that less than 30% of the 146 participants met recommended dietary guidelines for grains, vegetables, fruits, dairy, fat, and added sugars (George et al, 2005). Living in a food and nutrition insecure household is significantly related to a more complicated pregnancy journey including considerable weight gain during pregnancy and severe pregravid obesity (Laraia, Siega-Riz & Gunderson, 2010). This can have detrimental health effects for women who have yet to or have recently given birth and need to be at their healthiest in order to respond to the needs of their offspring and cope with the new challenges and routine changes that are part of this event in the life cycle for the household.

Cycles of severe food restriction have been shown to lead to noteworthy metabolic changes (lipid storage; Finney Rutten, Yaroch, Colón-Ramos, Johnson-Askew & Story, 2010). This is of particular importance for its implications on child health as parental obesity has been shown to strongly predict obesity in children (Davis, McGonagle, Schoeni & Stafford, 2008;

Janjua, Mahmood, Islam & Goldenberg, 2012; Whitaker, 2004). The experience of nutrient-deficiencies or being undernourished during childhood or at critical developmental stages can influence the experience of ill-health that span into adulthood (Davey Smith, Hart, Blane & Hole, 1998; Hertzman, 1999; Nyström, 1994). Scientific studies demonstrate that the foods we consume and quantities significantly affect cognitive capacity (Cook & Frank, 2008; Gao, Scott, Falcon, Wilde & Tucker, 2009) and physical development (Canadian Population Health Initiative, 2004). In its slightest form, an inadequate diet can have devastating effects by reducing the learning capacity of children (Chilton, Chyatte & Breaux., 2007), the ability to focus attention, concentrate, learn, memorize and perform and limit intellectual development (Gomez-Pinilla, 2008). Poor diet is also linked to stunted growth and development and delayed school readiness (Canadian Population Health Initiative, 2004; Rose-Jacobs et al., 2008) as well as an increased number of hospitalizations (Cook et al., 2008).

Sporadic or chronic cyclical occasions of food deprivation and feasting can have serious and irreversible effects to not only brain function but also mental health (Gomez-Pinilla, 2008). Not having enough healthy and nutritious varieties of food can lead to negative psychosocial outcomes in children (Whitaker et al., 2006). A study by Slopen, Fitzmaurice, Williams and Gilman (2010) suggest that food security is an important and novel risk factor in the etiology of child psychopathology. As diet and health are considered within a much broader and complex context, a study by Zamecnik (2009) found that teenagers in particular who live and develop in these conditions are at risk of depression or social anxiety and attempting suicide. Insufficient intakes, types and frequency of consumption of different foods, under-nutrition and malnutrition may have the undesired effect of vitamin, mineral, and micronutrient deficiencies which can also lead to more complicated and serious physical and mental health problems (Burlingame,

Charrondiere & Mouille, 2008; Cook, 2002; Cook et al., 2004; Tarasuk & Vazoris, 2003).

Increasing access to more healthful food options not only has benefits at the individual and household levels, it may allow for the better distribution of health dollars at a system-level for physical and psychological ailments that cannot be either prevented or managed by dietary and lifestyle changes alone.

Individual Responses to Food Insecurity: Income and Food Acquisition Behaviours

For some households, obtaining food, let alone fresh and nutritious produce varieties, is a common stress and preoccupation that becomes exacerbated when multiple physical and economic barriers are experienced. Barriers are rarely experienced as lone factors but rather, experienced as the product of the interaction of multiple elements that work together to challenge people's abilities to provide for their basic needs. As expressed by Dowler (1998):

Those who cannot afford to eat in ways acceptable to society; who find shopping a stressful or potentially humiliating experience because they might have insufficient money; whose children cannot have a packed lunch similar to their friends'; who do not call on others to avoid having to accommodate return calls – these are people excluded from the 'minimum acceptable way of life' (p.58).

When food or financial resources become scarce, most vulnerable people often engage in behaviours to cope with circumstances, acquire and manage limited food and necessities and stave off periods of hunger until more adequate resources can be obtained to feed the family. They also use carefully planned strategies take maximum advantage of the local resources available for their benefit (Campbell & Desjardins, 1989). Household food characteristics have been shown to play a role in food acquisition behaviours. These household factors may influence the creative behaviours households use to obtain necessities. These characteristics include

household demographics, income and assets (earned and unearned income and sources), non-food expenditures (e.g., housing costs, utilities), food security status, diet and nutrition knowledge (e.g., use of food labels and nutrition information) and participation in food programs and the level of benefit that individuals and families can experience from taking part in these initiatives (Leibtag, 2012).

For low-income households, food purchasing decisions involve real or perceived compromises between what the individual or household prefers to eat and sensory or quality factors (e.g., taste or cosmetic appearance of food) to stay on budget. For some, eating healthily requires them to juggle fixed and flexible household expenses and unexpected or emergency costs with available resources. In an attempt to eat a nutritious diet, Leibtag and Kaufman (2003) found that lower-income households, compared to their more affluent counterparts, spent 11.5% less per pound on vegetables and 9.6% less on fruit by practicing economizing strategies to make the most of their food budget. Specifically, these households purchased more promotional food items, generic or store brand labels, fixed weight items and/ or lower priced fruits and vegetables than high-income households (Leibtag & Kaufman, 2003). Economically challenged households are often skilled at developing a budget, experienced in limiting unnecessary spending and creative in utilizing strategies to help maximise a limited income (Kempson, 1996).

The modification of eating behaviours and patterns in times where food is abundant or in times of food shortage also has adverse health effects. Research on food acquisition behaviours suggests that, to achieve a degree of food security, individual and familial coping strategies differ in certain aspects. Parents who experience physical and/ or economic barriers to food reduce their personal food intake (food quantity and meal frequency) to feed their children, protect them from hunger or shield them social stigma associated to poverty or food bank use (Basiotis,

Kramer-LeBlanc & Kennedy, 1998; Beaumier & Ford, 2010; Campbell & Desjardins, 1989; Dammann & Smith, 2009; Edin et al., 2013; Findlay et al., 2013; Fitchen, 1988; Hoisington et al., 2002; Kempson et al., 2003; Lecompte, 2009; McIntyre, Glanville, Raine, Dayle, Anderson et al., 2003; Tarasuk & Beaton, 1999b; Tarasuk & Maclean, 1990). Other parents have reported restricting their children's access to food in times when food insecurity was severe (Hoisington et al., 2002; Kempson et al., 2003). Other food provisioning practices include borrowing food from or sharing food resources with others who experience hardships as well as participating in national and community food initiatives (Black et al., 2012; Health Canada, 2010; USDA, 2004). Other activities from which people acquired food was through participation in formal meetings (e.g., church gatherings) and social outings organized around opportunities to sample free food or get menu items at a lower cost (e.g., attending 'happy hour'; Kempson et al., 2003).

On a spectrum of social acceptability and less safe food acquisition and coping practices, literature discusses how households may use a succession of strategies when food becomes scarcer, when energy levels are on the decline and when the importance to acquire nourishment to curtail hunger is more severe. In these times, some seek out road kill for consumption and may also engage in 'dumpster diving'; a practice term referred to the attempt to salvage food from garbage receptacles (Hoisington et al., 2002; Kempson et al., 2003; Kempson et al., 2002). More extreme measures to acquire money or food include risk-taking by performing occasionally unprotected transactional sex where, typically women sell sex for resources (Dunkle et al., 2004; Oyefara, 2005; Weiser et al. 2007) or commit petty theft, shoplift or carry out other minor offences to receive a meal while detained or incarcerated. Other reported strategies to acquire money include selling plasma, pawning personal effects, panhandling and borrowing money from others (Ahluwalia et al., 1998; Hoisington et al., 2002; Kempson et al., 2003; Kempson et

al., 2002). Important questions about the social and local appropriateness of food and financial acquisition strategies remain when conditions of food insecurity escalate and become more severe. Not only do people put themselves at risk to acquire provisions for themselves and their family but they may engage in less safe and unhealthy practices so often that it may introduce them to a more dangerous lifestyle that expose their family members to additional hardships and potential further deprivation (e.g., violence, incurred fines, disease or incarceration).

While strategies to acquire supplementary food provisions or more money to survive are not always effective, adequate or adaptive as long-term solutions to household poverty or chronic experiences of food insecurity, some behaviours may offer temporary relief of hunger until more consistent and sustainable resources may be located or until more appropriate policy, program or systems' change are implemented. In many cases, there is no indication that certain shocking behaviours are transitory or that they prevent or postpone hunger.

Barriers to the Purchase and Consumption of Fruits and Vegetables

Environments. Research by Raine (2005) highlights the relationship between food choices, consumption patterns and resulting nutritional health as mediated and moderated by complex and inter-related individual, community and policy-related determinants. In particular, studies show that the socioeconomic composition of a neighbourhood or community has a strong influence on the types and quantities of food provisions (e.g., reduced sugar or fat items, dairy products, fruits, vegetables and whole grains; Beaulac, Kristjansson & Cummins, 2009; Larson, Story & Nelson, 2009) and food stores or markets offered in certain locals. In particular, low-income neighbourhoods tend to be underserved by full-service grocery stores and specialty and fresh food markets resulting in fewer food choices and less selection by social class (Cassady, Jetter & Culp, 2007; Jetter & Cassady, 2006; Larson et al., 2009; Zenk, et al., 2006) and

geographic location (Beaulac et al., 2009; Guy & David, 2004; Lang & Caraher, 1998; Morland, Wing, Diez Roux & Poole, 2002b; Pearce, Witten, Hiscock & Blakely, 2007). This makes it more difficult to purchase foods that are desired by the household and that correspond better with personal or household preference, culture, diet and well-being. For households without access to a reliable mode of transportation, the food shopping experience often becomes limited to smaller food retailers including convenience stores where fresh produce options and low-fat foods are limited in variety (Larson et al., 2009), often more expensive (Drewnowski, 2010; Drewnowski & Specter, 2004; Monsivais & Drewnowski, 2007; 2009) and of poor quality (Andreyeva, Blumenthal, Schwartz, Long & Brownell, 2008; Zenk et al., 2006).

Individual factors. Studies also suggest that personal food preference rather than attitudes toward certain foods increases its likelihood to be consumed at meal and snack times (Beech, Rice, Myers, Johnson & Nicklas, 1999; Treiman et al., 1996; Vereecken, Van Damme & Maes, 2005). This situation may be particularly frustrating for individuals who are responsible for planning and preparing meals for family members who acknowledge their efforts but who demonstrate preferences for other foods that may not be part of the meal plan. Other studies suggest that factors that inhibit the intake of fruits and vegetables include psychosocial and sensory aspects (e.g., food preference, habits and mood), socio-environmental factors (e.g., the influence and persuasion of family members and childhood experiences), situational factors (e.g., availability of fruit and vegetable varieties, lack of food preparation skills, storage, and time), poor or no knowledge and/ or lack of awareness regarding recommended minimum intake for fruits and vegetables and confusion related to serving size definitions (Baghurst, 2003; Baker & Wardle, 2003; Eikenberry & Smith, 2004; Kilcast, Cathro & Morris, 1996; Maclellan, Gottschall-Pass & Larsen, 2004; Yeh et al., 2008; Reicks, Randall & Haynes, 1994). Still, in

spite of the advantages to healthy eating, such as consuming adequate portions and varieties of fruits and vegetables, some studies have shown that internal (e.g., guilt) and external influences (e.g., life events and the adherence to diets) keep people from adjusting their diets to more healthy alternatives (Maclellan et al., 2004). In a UK study conducted by Donkin and colleagues (1998) on the frequency of fruit and vegetable consumption in an age-stratified random sample of 369 men and women aged 65 years and older, for men and women in the 75 years and older age group, as appetite decreased, so did the consumption of food due to lower energy needs and lower taste acuity (Donkin et al., 1998). One European study posits that the consumption of fruit and that of vegetables are unique food-related behaviours that have different factors of influence that should be considered for each type of food group (Reinaerts, de Nooijer, Candel & de Vries, 2007).

Social factors. Several studies support the notion that some subgroups are more affected and limited than others when applying culinary skills and techniques or having the ability to experiment with different foods and dishes. Based on historical changes within the home environment (e.g., women entering the workplace, domestic duties as tasks carried out by both men and women), limited time, food availability, opportunity and the introduction and integration of certain foods in eating habits and cultural norms (e.g., processed or microwavable foods) tends to limit individual food choice and nutritional health (Byrd-Bredbenner & Maurer Abbot, 2008; Caraher, Dixon, Lang & Carr-Hill, 1999; Engler-Stringer, 2010; Lang & Caraher, 2001). A UK study by Donkin and colleagues (1998) discuss how, because women previously occupied more traditional roles of selecting, shopping, preparing and cooking food, they typically have more culinary knowledge and skills taught by others before them. In part because of this socialized knowledge, their study found no significant difference between married or

single women in terms of frequency of fruit and vegetable consumption but they were three times more likely than their male counterparts to be following a dietary plan to assist in weight loss or management. Because elderly men tend to eat less fruit and vegetable portions in general and with age, they may be at-risk for greater deficiencies in vitamins, minerals and fibres provided by natural fruit and vegetable sources (Donkin et al., 1998).

For some families, the lack of enthusiasm shown by children to eat vegetables occasionally diminishes the appeal to buy or serve these items (Kilcast et al., 1996). For women in particular, children and male spouses have been found to be obstacles to attempts to choose and serve healthier food items (John & Ziebland, 2004). For example, a study by John and Ziebland (2004) reported that females indicated children and male partners as obstructive to incorporating more fruits and vegetables in the family diet but men reported their female spouse as supportive to dietary change and increased fruit and vegetable consumption.

For children, strong predictors in the consumption of fruits and vegetables are preference, availability, adult or parent models, family connectedness and media sources (Domel et al., 1996; Glanz & Yaroach, 2004; Granner et al., 2004; Neumark-Sztainer, Story, Resnick & Blum, 1996; Reynolds, Hinton, Shewchuk & Hickey, 1999). Regarding parental models and family connectedness, a study conducted by Skinner, Carruth, Bounds and Ziegler (2002) found that food intake of children is strongly shaped and moderated by the food preferences of their mother. As a result, mothers who do not expose their children to certain varieties of food such as fruits and vegetables, that have an important role in child development, may be limiting the espousal of healthy eating habits of their children. Unfortunately, for individuals (e.g., women) who are low-income, who live marginalized lifestyles, who are in a state of postpartum and/ or who experience food insecurity, adherence to dietary guidelines is somewhat limited and children

often suffer in spite of every effort to protect them from the ill health effects of not getting enough of the kinds of food they need.

Television in particular has been shown to outweigh familial influences and the messages children receive from food advertisements can more strongly persuade their attitudes, influence what they learn (knowledge), affect their ideas and opinions and food requests (Taylor, Evers, McKenna, 2005). Mass media is known to be an effective source to influence social and health behaviours. Though American media have unfairly targeted ethnic groups and children in the marketing of less healthy food behaviours and consumption of high calorie, low-density foods like soda (Berkely Media Studies Group, 2006) with the use of animated characters, media campaigns have also had the effect to stimulate positive changes in attitudes and the consumption of fruits and vegetables in low-income, visible minority populations (Beaudoin, Fernandez, Wall & Farley, 2007). Thus, incorporating more positive messages about the importance of adequate amounts and varieties of fruits and vegetables in diets in different types of health promotion, prevention and education interventions can trickle down into the practice of implementing fruits and vegetables alongside other food groups in meals prepared by parents or guardians and subsequently consumed by children.

Economic factors. While one American study posits that economic constraints contribute to unhealthy selections of food (Darmon, Ferguson & Briend, 2002), it is more likely that individuals are limited to the foods that are within their budget to feed their families and not because they lack the knowledgeable of which foods are healthier. Several studies discuss how economically challenged households typically buy more inexpensive energy-dense foods to further already limited financial resources and avoid experiencing hunger (Basiotis & Lino, 2002; DiSantis et al., 2013; Drewnowski, 2009; Drewnowski & Specter, 2004). While this food

behaviour may appear like a short term solution to episodes of food insecurity or to curtail moments of hunger, patterns of frequently consuming cheap, energy-dense, nutrient-poor foods overtime is related to both weight gain (Bowman & Vinyard, 2004; Pereira et al., 2005) and obesity (Hartline-Grafton, Rose, Johnson, Rice & Webber, 2009; Howarth, Murphy, Wilkens, Hankin & Kolonel, 2006).

Improving Fruit and Vegetable Consumption and our Relationships with Food and Each Other

Facilitating factors to help increase the uptake of fruits and vegetables include individual knowledge about the benefits of fruits and vegetables, developing a taste for them from early childhood (Yeh et al., 2008), living in a household with a female presence and fewer income constraints (living status: married, single, divorced or widowed; Donkin et al., 1998). Studies have associated a higher consumption of fruits and vegetables with individuals reporting increased energy, feeling better and feeling ‘good’ (Maclellan et al., 2004). Other studies also show that people tend to increase their intake of fruits and vegetables to maintain or lose weight, to be in better physical health or to treat or prevent disease (Eikenberry & Smith, 2004). More and more epidemiological investigations point to the significant impact of a single dietary change, such as increasing fruit and vegetable intake, on the prevention of chronic non-communicable diseases and the management or reversal of these incidences (Bazzano, 2006).

To off-set physical and mental health problems and morbidity and to improve the health status and mortality of at-risk individuals, it is vital to improve the nutrition of infants and children and to change poor eating habits in adults and the elderly by introducing healthier alternatives, making healthier foods more accessible (Power, 2005b) and providing practical education on how to rinse, reduce or remove harmful bacteria or lingering dirt from fresh

traditional (wild), locally harvested or store-bought (market) foods (handling; USDA, 2013; Government of Canada, 2011). It is important to make culturally appropriate reference material accessible on safe fresh food preparation and storage techniques (Health Canada, 2011; Dammann & Smith, 2009) to help preserve optimum freshness and sensory quality of all fresh foods, including fruits and vegetables. These promising practices will help increase the odds that fresh, canned or preserved foods will be consumed. When developing and structuring interventions and/ or strategies to help improve the nutritional health of specific at-risk populations or subgroups, it is vital to understand the social and physical environments (e.g., food culture) of food choice and cooking practices which are at the core of food acquisition and preparation behaviours (Engler-Stringer, 2010).

Growing support in academic literature discusses the influence of the household environment or the family context in relation to the transference of food knowledge, food choices, food preparation and cooking skills of young children and adolescents (Byrd-Bredbenner & Maurer Abbot, 2008; Caraher, Dixon, Lang & Carr-Hill, 1999; Engler-Stringer, 2010; Lang & Caraher, 2001). An approach may be to include the family in the planning and preparation process as a way to not only prompt discussions about food and nutrition but also have them engaged in the process of helping to plan healthier meal options and assist in identifying healthful foods and adequate portion sizes while learning cooking skills and health information from parents or guardians. Equally, this approach can help promote communication between family members and necessary dialogue to transfer knowledge and ideas about food and cultures as well as time to promote family togetherness around the delegation of age-appropriate roles and responsibilities that contribute to the preparation of family meals and snacks; a shared activity they can all benefit from within the family and household context. One UK study on fruit

and vegetable consumption, nutritional knowledge and health beliefs in mothers and children recommends that, to be more successful in increasing the intake of fruits and vegetables in the diet of households with young children, intervention strategies should focus on encouraging nutritional education for both parents and children and develop of child feeding strategies for parents (Gibson, Wardle & Watts, 1998).

Finally, the implications of the study by Donkin and colleagues (1998) in a Canadian context can help inform health promotion and prevention campaigns by encouraging the consumption of fruits and vegetables through the distribution of recipe cards with an added information space to inform interested individuals about the health benefits of consuming the fresh ingredients in non-technical, accessible language. As an intervention, strategies can help relatively independent individuals improve their fruit and vegetable consumption, health food intake and quality of life by promoting participation in community engagements focused on hands-on-learning with education components about food and cooking and social opportunities to enhance positive interactions between community members around food. Having scheduled opportunities to engage in social events within the community may also help increase one's sense of belonging within that space and lead to improved diet, confidence in cooking abilities and learned skills and overall improved perception about satisfaction with life (Donkin et al., 1998).

Research Questions and Hypotheses

While the gaps in research have been discussed at length in the previous chapter, the research questions for the current study are as follows:

1. What are the factors that challenge and/ or enhance the selections, purchase, preparation and consumption of fruits and vegetables in an urban environment?

2. What are some of the strategies and behaviours used by individuals who are short on food and/ or money to acquire more?
3. How does consuming too few or sufficient quantities of fruits and vegetables affect perceived whole health effects?
4. Are there any differences in level of satisfaction between men and women with regards to food store characteristics?
5. Are there differences in food security status based on gender or Aboriginal identity for urban Ottawa residents?
6. Are there differences in self-rated health status and individuals who are food secure and food insecure?

The following hypotheses are proposed for each test quantitative test:

1. Based on food store characteristics, we predict no differences in level of satisfaction with fruit and vegetable choice, quantity, quality between men and women;
2. Based on level of satisfaction with how the primary food store meets the household food needs and overall level of satisfaction with the food store from where the household supply is bought, we predict no differences between men and women;
3. We predict a relationship between food security status and gender and Aboriginal identity where more women will report a household status as food insecure compared to men and more Aboriginal peoples will report a household status as food insecure compared to non-Aboriginal peoples;
4. We predict that food security is related to a more positive self rated health status where individuals who are food secure will rate their health as positive and individuals who are food insecure will rate their health more poorly; and

5. We predict that individuals with access to a functional vehicle will report a higher mean weekly frequency of fruit and vegetable consumption (fruit juice, fruit, green salad, carrots, potatoes and vegetables) compared to individuals who do not.

Qualitative results are interpreted and discussed in line with the research questions.

Methods

Recruitment, Participant Eligibility and Setting

Since the *Healthy People, Healthy Communities Project* is rooted in a community-based participatory orientation, as per protocol, all materials and methods were revised and approved by project partners prior to their submission to the University of Ottawa's Research Ethics Board (REB) for further examination (see Appendix G for REB certificate of approval; Ethics file #08-10-11). When the study was cleared by the REB with the receipt of the ethics certificate, a subsequent proposal was developed for consideration by Community Information and Epidemiological Technologies (CIET) Canada for project funding to finance the research activities. The team was successful in the application and project activities were well underway when the grant was received (see Appendix H for CIET funding notification).

Choosing an appropriate sampling strategy is a relatively complex task for novice or experienced researchers conducting mixed method research as there are a variety of sampling approaches described in qualitative literature (see Patton, 2005). Occasionally overwhelming for both the most skilled or neophyte researcher, relative confusion may result in more questions than answers due to vague terminology or the overlap of different techniques that may be better used under certain study conditions than others. For this reason and to follow the recommendations of Creswell (2007), the current study uses more than one sampling strategy to guide the project in answering the research questions mentioned in the earlier chapter.

Because part of this study is phenomenological in nature, to gain a better understanding and insight into the factors that influence the experience of food (in)security and fruit and vegetable consumption (barriers, facilitating factors or structures that challenge food access), Polkinghorne (1989) argues that a study of this kind that seeks to understand an experienced phenomenon should conduct interviews with a minimum of five people per study group. To best assess the accuracy of findings and to adequately interpret results, this study applied the validation technique of information triangulation and verified the lived experience of food insecurity and factors that help and/or hinder fruit and vegetable purchase and consumption by using multiple sources of information to best investigate related experiences and subsequent themes from different perspectives (Aboriginal and non-Aboriginal; Creswell, 2007).

Different levels of sampling strategies were used to inform potential candidates about the study and entice them to find out whether they met inclusion criteria to participate in a single in-depth interview and complete a three pre-interview questionnaires. Sampling approaches allowed the collection of quantitative and qualitative information on the experience of people who participate or once participated in the Ottawa Good Food Box Program and people who purchase or procure their fruits and vegetables from other food stores in the Ottawa area. The sampling techniques used were strategic to recruit groups of participants who were easy to identify and reach (current customers of the Ottawa Good Food Box and non-program participants) and those who were more difficult-to-locate including individuals who were once customers of the Ottawa Good Food Box Program as well as First Nations, Inuit and Métis peoples.

A non-probability technique of purposive sampling was used since most participants were recruited through pre-existing food- and health-related services such as neo-natal programs, community kitchens and food preparation workshops and other community-based drop-in

services at Aboriginal and non-Aboriginal community health, resource and social service centers in Ottawa, Canada. Due to the nature of the study, the research team decided to focus on recruiting participants with particular characteristics of interest (e.g., who experience challenges in getting enough food (including enough fruits and vegetables), is the main household food shopper, is least 18 years of age, and self-identify's as First Nations, Inuit, Métis or non-Aboriginal) to best answer the research questions. Although the sample being studied may not be representative of the larger population of Ottawa, this was not identified as a weakness but rather a methodical choice based on consensus to best capture and include a range of perspectives related to the research topic. Strategically, maximum variation sampling (Patton, 2005) allowed us to identify common and exceptional experiences and features that characterise the lived experience of food (in)security, poverty and the related emotional effects from various angles.

In conjunction with responses to quantitative items, participants were also asked to contribute their thoughts by using their own words to describe their experiences. A mixed sampling strategy (Miles & Huberman, 1994) was used to triangulate information in order to validate and confirm perspectives from individuals who are most affected by social policies and changes to programs and services developed with their interest in mind. Further, a snowball sampling strategy (Miles & Huberman, 1994) was used where, upon the completion of the interview, participants were asked to share study information including how to contact the researcher with others who may share similar characteristics or experiences to them, be interested to know more about the study or be a suitable candidate to contribute toward generating knowledge through a local research project (Black, 1999). Although potential candidates still had to undergo the screening process (to verify whether they met inclusion

criteria), participation in the study for most was facilitated by a referral basis from former participants and was a key method to identify former Ottawa Good Food Box customers.

Discussions with community members was also fruitful to identify more effective recruitment locations for former Good Food Box customers. Based on the initiative of one study participant, an information flyer was posted at a local laundry co-operative in the hopes of garnering attention from local facility users. Not originally identified as a potential recruitment site, this opportunistic sampling method (Miles & Huberman, 1994) afforded the research team to better reach candidates originally identified as a potentially difficult-to-sample group.

Families (at least one parent with a child under 18 years of age) and individuals were recruited from one of the 28 Ottawa Good Food Box distribution sites and from several consenting community health, resource and social service centers and two non-profit housing corporations in urban Ottawa by poster notification. Research posters were displayed in common public areas and pamphlets and single flyers were left if hanging public postings was not permitted. The consenting recruitment locations include the Centretown CHC, the Wabano Center for Aboriginal Health, Gignul Non-Profit Housing Corporation, the Ottawa Inuit Children's Centre (OICC), Options Bytown, the Lowertown CRC, the Vanier Community Services Centre, Overbrooke-Forbes CRC and the Eastern Ottawa Resource Centre. Signed letters of project and recruitment support were provided by the program or service directors or managers of the organization.

To recruit current Good Food Box customers, a promotional flyer about the *Healthy People, Healthy Communities Project* was included with each fruit and vegetable box order over several months in French and in English. The flyer contained an overview about the study and information on how to contact the researcher to express interest and find out more details about

the study. Program managers and coordinators from recruitment sites were encouraged to promote the study to those who visit their respective organization and use certain food, nutrition and health programs.

To participate in the study, it was imperative that candidates meet the following criteria:

- Live in Ottawa;
- Have attained the age of majority (18 years of age);
- Be the primary person (male or female) who selects, buys/ obtains or prepares food for the household (or all three);
- Be a current, former or non-customer of the Ottawa Good Food Box program; and,
- Have the capacity to speak, comprehend and read in English or French and be comfortable conversing in one or both languages.

The ability to speak and comprehend English or French was important to ensure that full consent could be provided and that the participant could actively participate, understand the questions, and share their respective experiences during the interview. Literacy in French or English was seen as important but not mandatory to ensure that participants could complete the pre-interview questionnaire. In the event that a participant experienced literacy challenges, a researcher not involved in the study was on stand-by to assist participants with the questionnaire component of the study. Having a second researcher to collect data when literacy vulnerability was expressed was to assure trust, confidence and transparency from a secondary person who could act in the participant's best interest and was impartial to the project outcomes.

In concert with ethics protocol to guarantee confidentiality of all information shared and to protect participant identity (anonymity), the place of participant recruitment was separate from the location where interviews were hosted. Participants were invited to meet the main

interviewer at the University of Ottawa general campus located at 136 Jean-Jacques Lussier street, Ottawa, ON, in the Vanier Building. From an ethical stand, this location was judged as neutral compared to conducting the interviews near or at recruitment locations or other high traffic, public places where participants could be identified, draw unwarranted attention, be distracted or feel ill-at-ease (e.g., coffee shop or shopping mall setting). The office where most interviews were hosted was relatively small in size but could comfortably fit up to three people. The very first interview was conducted at a student resource centre in a safe, neutral and private room (outside of general view) due to an unanticipated accessibility issue to the researcher's office building that prevented individuals in motorized chairs from entering directly in a considerate and respectful manner. The campus-based student resource centre allowed for more room in which the participant could move around safely and where the individual could enter and exit the building in a way that promotes consideration, respect and human dignity.

While most interviews were hosted on campus, several were were hosted at the participant's home and conducted in the dining room or at a quiet location off-campus where the participant felt more comfortable. Prior to confirming the meeting location with the participant, the researcher verified the proposed location for appropriateness, neutrality (e.g., away from recruitment sites) and safety. If the suggested meeting place met these basic ethical standards, the interview was held at the requested location. In the event that site fell short of meeting these criteria, a second location was recommended (e.g., local library) until a consensus was reached.

Sample

Three core participant groups were studied: 1) current Good Food Box customers, 2) former customers, and 3) non-users. All three groups were further divided by Aboriginal (First Nations, Inuit and Métis peoples) and non-Aboriginal status for a total of six groups. Participants

were minimally 18 years of age, Ottawa residents who self-identified as First Nations, Inuit, Métis or as non-Aboriginal and were either current or former Ottawa Good Food Box customers or had never participated in the program (N = 49). The attrition rate is zero as no one withdrew participation and all study components were completed. Table 1 summarises information about interview participant characteristics.

Identity and age. Thirteen males (26.5%), 33 females (67.3%) and three individuals who self-identified as two-spirited (6.1%) completed a single semi-structured interview and three pre-interview questionnaires within the *Healthy People, Healthy Communities Project* for a total of 49 participants (n = 49). Almost 27% were current Good Food Box customers (26.5%; n = 13), 28.6% (n = 14) were once Good Food Box customers but withdrew from the program and 44.9% never participated in the program (n = 22). Fifty nine percent (n = 29) of the sample were non-Aboriginal while almost 41% (40.8%; n = 20) identified as Aboriginal. Of those who identified as Aboriginal, 11 were First Nations (22.4% of total sample or 55% of Aboriginal participants), four were Inuit (8.2% of total sample or 20% of Aboriginal participants) and five identified as Métis (10.2% of sample or 25% of Aboriginal participants). The age of participants ranged between 18 to 65 years of age where the mean age was approximately 42 years ($\bar{x} = 41.9$; SD = 13.6), the median age was 44 years and the most frequently reported age was 54. The average age of Aboriginal participants was 44.65 years of age (mode = 47 years) and ranged between 25 – 60 years. For First Nations participants, the average age was 48.45 years and ranged between 31 – 60 years while the average participant age for the Inuit was 38.5 years; ranging between

Table 1

Demographic Characteristics of Single Interview Participants by Study Group

Characteristics	Study groups			
	Group 1 ^a	Group 2 ^b	Group 3 ^c	All groups
Gender				
Male	3	4	6	13
Female	9	10	14	33
Two-spirited	1	0	2	3
Age				
Mean age (years)	37 (SD = 17)	39 (SD = 14)	46 (SD = 10)	42 (SD = 14)
Ethnicity				
Aboriginal	3	6	11	20
Non-Aboriginal	10	8	11	29
Living in Ottawa				
Between 10 years and since birth	8	7	15	30
Between 5 to 10 years	0	5	3	8
< than 5 years	5	2	4	11
Household				
Mean months at current address	63 (SD = 81)	43 (SD = 70)	43 (SD = 40)	48 (SD = 61)
Rent home	12	13	22	47
Average residents in home	2	2	2	1
Average children in home ^d	1	3	2	2
Income				
Live on <\$20 000/ yr	9	13	18	40
Main source of income				
Employment	4	4	3	11
Social assistance	6	9	17	32
Other	3	1	2	6
Level of education				
L1	5	3	6	14
L2		3	5	8
L3	6	3	4	13
L4		3	4	7
L5	2	2	1	5
L6			2	2

Note. $N = 49$. Group 1 = Good Food Box customers, Group 2 = Former Good Food Box customers, Group 3 = Comparison group. $n^a = 13$, $n^b = 14$, $n^c = 22$. SD = Standard deviation. L1 = Less than high school, L2 = high school, L3 = some post-secondary school, L4 = community or technical college or CEGEP, L5 = university degree (undergraduate), L6 = Masters, PhD or professional degree.

^dNumber of children within the household is estimated from homes identifying the presence of children ($n = 7$).

a smaller age bracket: 32 – 46 years of age. Métis participants' age ranged between 25 to 54 years and averaged 41.4 years. For non-Aboriginal participants, the mean age was 39.9 years with a mode of 54 years and ranged between 18 to 65 years.

Income characteristics. A bi-modal tendency was observed for reported income where 28.6% of participants (n = 14) reported a household income that was less than \$10 000 per year and the same proportion (n = 14; 28.6%) reported an annual household income that ranged between \$10 000 and \$14 999. Eighty two percent of participants (n = 40) survived on a household income of less than \$20 000. The remaining participants' income ranged between \$20 000 to less than \$50 000 (n = 1, \$20 000 to \$24 999; n = 2, \$25 000 to \$29 000; n = 3, \$30 000 to \$34 000; n = 2, \$35 000 to \$39 000; and n = 1, \$45 000 to \$49 000) with the mode being between \$30 000 to \$34 999 for those with an annual household income higher than \$25 000.

By examining the differences in reported annual income for Aboriginal and non-Aboriginal peoples, almost 80% of participants from each group reported earning less than \$19, 999 (n = 16; 80% for the Aboriginal group and n = 24; 83% for their non-Aboriginal counterparts). Of the total of Aboriginal peoples (n = 16), 10 First Nations participants (91% of all First Nations participants), 2 Inuit (50% of all Inuit participants) and 4 Métis people (80% of all Métis participants) survived on less than \$19, 999. Just as alarming was the proportion who survived on earning less than \$14, 999 a year: 45% of First Nations, Inuit and Métis participants (n = 9) and 65.5% of non-Aboriginal participants. This makes for a very tight budget especially once the cost of housing, utilities and other necessities are factored in.

For 22.4% (n = 11), the main source of household income came from employment while 65.3% (n = 32) relied on social assistance and 12.2% reported 'other' as their source of income. Of the individuals who relied on social assistance, one individual reported senior's benefits or

old age pension as their main source of financial support, 16 participants received finances through the Ontario Disability Support Program (ODSP) and one person relied on child support payments from a former spouse and the Canada Child Tax Benefit (CCTB). Specifically for Aboriginal participants, all Métis respondents ($n = 5$) and 45.45% of First Nations participants ($n = 5$) relied on ODSP. Two individuals relied on the education scholarship assistance from the Ontario Student Assistance Program (OSAP) and one current student reported living off finances provided by family members. One adult, who described his current living situation as ‘transitory’, relied on life savings as financial support until stable employment could be found.

Level of education. Regarding the highest achievement of education, 8.2% ($n = 4$) completed elementary school, 16.3% ($n = 8$) finished high school, 14.3% ($n = 7$) achieved their diploma or certificate from a community or technical college or general and vocational college (otherwise known as a CEGEP in the Quebec education system) and 10.2% ($n = 5$) completed an undergraduate degree. Approximately 4% ($n = 2$) reported achieving a graduate or professional university degree at the level of a Master’s, Doctorate, Medical or other professional degree. Others had not fully completed all requirements of a certain level of education. Findings indicate that one individual left elementary school prior to finishing grade 8, 18.4% ($n = 9$) had pursued some high school and 26% ($n = 13$) had followed some post-secondary schooling (this may include an unfinished college or CEGEP diploma, training or some university-level courses). For non-Aboriginal peoples, having completed some postsecondary schooling was most often reported (37.9%; $n = 11$) and for First Nations, Inuit and Métis participants, a bi-modal trend was observed where 30% ($n = 6$) had completed some high school while 30% ($n = 6$) of other Aboriginal participants had completed CEGEP.

Household living situation. At recruitment, all participants resided in Ottawa. Ten participants (20.4%) lived in Canada's capital since birth while 20 participants (40.8%) lived there for over 10 years. Remaining participants lived in Ottawa less than 10 years. Specifically, 8 respondents (16.3%) lived in the city between 5 to 10 years while 11 interviewees (22.4%) lived there less than 5 years. Forty seven participants (96%) rented their dwelling and one person owned theirs. One participant who chose not to respond to this question indicated afterword that they did not pay rent or a mortgage because they were currently in transition and lived in a shelter or temporarily with friends; they did not have a fixed address. The composition of participant's households ranged between one to four people where most lived alone (60% of Aboriginal participants (n = 12) and 48.3% non-Aboriginal (n = 14)). Ten percent of Aboriginal and 31% of non-Aboriginal households were composed of two people, 15% of Aboriginal and 20.7% of non-Aboriginal households had three and 15% of Aboriginal households (First Nations; n = 3) had four household members.

Materials

To best collect information about individual and familial perceptions and sentiments regarding food (in)security, nutrition, health and the factors that influence the procurement and consumption of fruits and vegetables within and outside the household, a mixed method approach (Johnson & Onwuegbuzie, 2004) was used to explore and illustrate the connections between these phenomena. As our history, cultural context, heritage, economic and social circumstances and individual factors construct and define our relationship with food and influence our food behaviours and practices (e.g., cooking practices, diet and food use), the *Healthy People, Healthy Communities Project* developed qualitative questions and integrated several quantitative questionnaires to examine and verify the factors and structures that shape

and affect our ability to locate enough of the kinds of foods we want and need to achieve optimal health and feel well. The study also followed several guidelines and protocols to ensure community participation and to guarantee that all participants were treated with utmost respect, compassion and dignity and that the information they contributed was safeguarded to protect their identity and was only used in ways outlined in the consent form³.

Protocols, guidelines and principles. In studies that have followed conventional research practices, the use of participant data for alternative purposes has occasionally taken place without the participant's full and informed consent (Glass & Kaufert, 2007; Mosby, 2013). For some communities, participation in academic research has resulted in harm to participants and negative recourse for the broader community (Brant Castellano, 2004). To ensure that participation in the project was a positive experience for both participants, project partners, the researcher, community members and organizations who supported different project activities, the study followed a CBPR approach as well as the CIHR Guidelines for Health Research Involving Aboriginal People (2007) and the OCAP Principles (First Nations Centre, 2007) to inform and support the decision-making processes and to ensure that activities were integrated to involve and empower communities and build capacity.

The draft agreement of the PRC was amended to reflect the involvement of community organizations and members within the context of the *Healthy People, Healthy Communities Project* (See Appendix C). This document outlines data sharing and access arrangements between project partners and serves as a guide to ensure the inclusion and participation of the Aboriginal community throughout the project period (from the development of activities related to the project framework to results dissemination to the local and scientific community). When

³ These include oral presentations to share results with scientific and local communities, Ph.D. dissertation and subsequent defense, peer-reviewed publication and community bulletin.

project funding was secured through CIET, the PRC was subsequently re-discussed with project partners to ensure that everyone was still in agreement with the flexibly outlined roles and responsibilities to help move the project forward within a reasonable timeline.

As a research philosophy, methodology and orientation, the practice of CBPR has the potential to assist in the decolonization of knowledge, the redefinition of academic-community partnerships and the restructuring of relationships between researchers and community members (see Castleden, Garvin & Huu-ay-aht First Nation, 2008). In concert with the tenets of a CBPR approach, the CIHR guidelines and OCAP principles, all materials and methods were reviewed and approved by project partners prior to their submission for review and approval by the University of Ottawa's Review Ethics Board (REB). The certification of approval by the University of Ottawa's REB ensured that the study met the standard of ethical compliance for studies involving human subjects and was necessary to obtain before collecting data.

Research funding. As the declaration for research funding has been detailed in a previous chapter, it suffices to mention that funding financed project partners' salaries based on time invested in the project, data collection, meetings and workshops, office materials, supplies and services, electronic devices, computer software, dissemination of results and travel, accommodations and conference registration (see Appendix I for estimated project budget).

Recruitment posters. Three distinct research posters were developed and displayed at several consenting organizations in Ottawa in both English and French (for the complete list of organizations, see Appendix J). They briefly described the study, outlined inclusion criteria, identified the principle researcher as the interviewer and provided the researcher's contact information. To entice people from the community to call to find out more about the study, the posters also identified that each participant would receive an offering in recognition of their time,

efforts and contribution but that spaces were limited. Each poster included pre-cut strips of paper with the researcher's professional contact information that could be torn off for further consideration when an appropriate time and spaced arose for them to call (see Appendices K1, K2, K3 for recruitment posters). All study advertisements and materials provided to participants were printed in colour to increase their appeal to promote the *Healthy People, Healthy Communities Project* and enhance the pride with which participants would have to pass along study information to other community members.

Pre-interview questionnaires: Participant survey package. A participant package was developed to capture key personal information about the household and eating habits. This component consisted of a three-part survey that asked information related to demographic characteristics, food frequency and consumption, and food (in)security (see Appendix L).

The section capturing demographic information consisted of 13 core items that cover information related to birth year, gender, household composition, socio-economic status, main source of income, ethnicity, Aboriginal heritage or identity and level of education. Based on the research context, it is critical to collect demographic information to further investigate whether certain differences and/or similarities exist between groups of people to support sensitive and appropriate recommendations that consider for potentially unique cultural, social and diverse food needs (Entwisle & Astone, 1994). Food, culture and health are intimately connected and it is important to know how these variables may be affected by certain demographic information as this may influence and shape individual enrollment and experiences in community programs (American Sociological Association, 2003). As Ottawa is a socio-culturally diverse landscape (City of Ottawa, 2010), the sample equally reflects this diversity.

Six quantitative Food Frequency Questionnaire (FFQ) items from the Fruit and Vegetable Consumption Module featured in the CCHS cycle 2.2 were included to assess self-reported dietary behaviour and nutritional exposure in relation to the consumption frequency of foods and beverages (fruits and vegetables) over a one week reference. FFQs are a commonly used dietary assessment tools in epidemiological research (Dehghan et al., 2005). The FFQ items used in this study were developed based on questions asked in the Behavioral Risk Factor Surveillance System (BRFSS) from the Centers for Disease Control and Prevention (CDC) in the US (Health Canada, 2006; 2009a). Validation studies have compared the BRFSS fruit and vegetable module's ability to capture actual fruit and vegetable consumption with other measures including 24-hour dietary recall measures, dietary journaling or longer FFQs. Based on a review of studies that have evaluated measures of reliability and validity relative to the BRFSS fruit and vegetable module, Serdula and colleagues (1993) report 'moderate' reliability and validity scores relative to using this self-assessment tool (e.g., Spearman correlation coefficients between total fruit and vegetable intakes assessed by a brief telephone survey and FFQs were between 0.47 and 0.57 for randomly selected participants in five diverse American study groups). Generally however, researchers are mixed on the quality of shorter versions of fruit and vegetable frequency questionnaires. With more brief surveys, Warneke and colleagues (2001) found that participants overestimate their intake while other studies found that adults underestimate their frequency of fruit and vegetable consumption when responding to more concise assessment tools (Field et al., 1998; Kim & Holowaty, 2003; Thompson, Kipnis, Subar, Krebs-Smith, Kahle et al., 2000).

The six quantitative items in the CCHS cycle 2.2 ask participants to assess how often they consume different foods weekly including the following: fruit juice; fruit (not counting juice); green salad; potatoes (not including French fries, fried potatoes or potato chips); carrots;

and vegetables other than carrots, potatoes or salad. In this study, this information will not be comparable to suggested national minimum food group intakes or the adequacy of nutrient intake because the collected information verifies frequency of food intake (food and eating habits) rather than the number of food items and portion sizes consumed within a reference period (e.g., week, month or year). However, Canadian research has shown that frequency of fruits and vegetables consumption is positively related to other indicators of well-being including choosing more healthful lifestyle habits and overall well-being (Pérez, 2002).

The final section of the questionnaire assessed household food security status or the severity of food insecurity based questions from the USDA Food Security Core-Module Questionnaire (Bickel, Nord, Price, Hamilton & Cook, 2000). Eighteen quantitative items assess the experience of food (in)security based on the recall of access to financial and food resources and eating patterns of household members over 12 months (self-reported). The family version of the questionnaire includes a section composed of seven items (within the 18-item measure) that relate to statements that people have made concerning the eating patterns of children (under the age of 18 years). In the case where children are in the home, the additional items in the questionnaire are filled out according to the parent/guardian's perception and do not directly capture the degree of food (in)security that is experienced by the child. The questionnaire assumes that food insecurity and hunger occur because households do not have adequate food or financial resources to purchase more food to meet the basic human need to eat. For Bickel and colleagues (2000), food security is an essential dimension of household and personal well-being and measuring the degree of food insecurity captures the severity of food deprivation due to the constraint of resources as directly experienced by the participant.

The data collected through the USDA Food Security Core-Module Questionnaire is complimentary to demographic information (e.g., income data) since the level of socio-economic status (e.g., low-income) does not determine the level or degree of household food (in)security that is experienced. As a result, not all low-income people are food insecure and not all people who experience food insecurity are necessarily low-income (Bickel et al., 2000). The assessment of food (in)security provides researchers, evaluators, practitioners and program developers with independent, more specific information on this dimension of well-being than can be determined or assumed from income data alone (Bickel et al., 2000). Even though the 18-item core module survey does not capture individual levels of food insecurity, it does assess the degree of food insecurity for the household as a whole and, according to several measurable levels, is a reliable, robust and stable assessment tool (Bickel et al., 2000). Validated for use with diverse populations (see Derrickson, Fisher & Anderson, 2000; Rafiei, Nord, Sadeghizadeh & Entezari, 2009), Hamilton and colleagues (1997a) report acceptable levels of three types of validity applied to this measure: face⁴, construct⁵ and convergent⁶ validity. In a review of the instrument's reliability (e.g., Spearman-Brown), estimates are 0.89 for all households and 0.90 for households with children (Hamilton, Cook, Thompson, Buron, Frongillo, Olson, et al., 1997b). Further, estimates for internal consistency are 0.86 (all households) and 0.88 (households with children) as indicated by the value of Cronbach's alpha (Hamilton et al., 1997b).

Scored together, the core module items play a significant role in detecting unmet food security needs and, within the broader context of a community needs assessment, can assist in providing evidence to support the need to address issues of hunger and food and nutrition insecurity. In line with several other studies that have used the USDA module to assess food

⁴ Consensus-based measure of validity

⁵ Used for instruments with multiple indicators

⁶ Used when multiple indicators operate in similar ways; indicators are associated to each other.

security and who share similar aims with the *Healthy People, Healthy Communities Study* (e.g., healthful food habits including fruit and vegetable consumption and food security and not on weight loss or weight management; see Lecompte & Mehak, 2007; Lecompte, 2009; Tarasuk & Beaton, 1999; Tarasuk, 2001), one item related to weight loss was omitted in concurrence with research that suggest that food insecurity often relates to a state of excessive weight (obesity).

In-depth, semi-structured interview guides. Three unique interview guides were developed and produced for the purposes of the needs assessment and questions were based on findings and tendencies in the scientific literature and developed to respond to the aims of the project and overall research questions. Questions from each guide were developed to capture the food and health experiences and eating behaviours of 1) current Ottawa Good Food Box customers (see Appendix M1 for the interview guide), 2) former customers (see Appendix M2), and 3) individuals who never participated in the Ottawa Good Food Box (see Appendix M3).

Divided into six sections, the interview items were based on both qualitative and quantitative components to explore the participant's perception of 1) determinants of fruit and vegetable intake, 2) culture and food, 3) participation in or knowledge about the Ottawa Good Food Box (the focus of items (participation or knowledge) depended on the study group with whom the interview was conducted), 4) facilitating factors and barriers to fruit and vegetable intake and food security, 5) current and former eating behaviours and patterns, and 6) fruit and vegetable consumption and health. The interview guide for current and former Good Food Box program customers contained 59 core items each and for non-users, 58 core quantitative and qualitative items. Some open-ended and scaled questions were inspired from findings from several US studies (see Eikenberry & Smith, 2004; Reicks, et al., 1994; Yeh et al., 2008), an

Australian research report (Baghurst, 2003), a UK study (John & Ziebland, 2004), a Canadian study (Maclellan et al., 2004) and a study from south east Asia (Ling & Horwath, 2001).

The interview guides comprised mostly open-ended questions with some items asking a dichotomous response of yes or no. Depending on the response provided, a question probing for further details to any previous question was asked to gain a better understanding about the economic, social, cultural, structural, environmental, psychological, and individual factors that affect access to food programs and the selection, purchase and consumption of fruits and vegetables. Five-point Likert scales were developed to assess: 1) the degree to which certain experiences may be problematic (e.g., financial and food sufficiency); 2) the participant's degree of satisfaction in relation to the main location where they buy or receive food for the household; and 3) their degree of agreement with statements based on a review of literature that reflect the experiences of others in terms of barriers to food security and fruit and vegetable consumption. For current and former Good Food Box customers, open-ended, scaled, and dichotomous questions related to their satisfaction with service delivery and, for former customers, their likelihood of returning to the program. To address the gap in research that suggests the importance of knowing when individuals are more likely to eat certain foods, several interview questions were asked to elicit potentially forgotten or typically less reported foods (Moshfegh, 2009) by asking participants not only to identify and recall the time of day when they are more likely to eat fruits and vegetables but also how likely they are to incorporate fruits and vegetables in meals and snacks. These items allowed the research to further examine issues that influence and relate to individual food choice, food preparation, food use and its subsequent consumption. Finally, two final 5-point Likert-scale questions ask participants to rate their energy level

(responses could range from ‘very much’, ‘quite a bit’, ‘some’, ‘a little’ or ‘barely any’) and overall health status (‘excellent’, ‘good’, ‘fair’, ‘poor’ or ‘very poor’).

Together, the pre-interview questionnaires and in-depth, semi-structured interview guide provided complimentary information that examined issues that affect individual food choice, food purchasing behaviours, food preparation, food use and consumption. The questions in the interview guide also explored behaviours and strategies that may be used when households are faced with insufficient or inadequate food and financial resources. Questions also related to gaining a better understanding of the factors that influence from where food is procured for the home. These products were pre-tested on five individuals (two graduate-level students and three college-educated community members) to assess appropriateness of each item and modifications were made to improve question structure, order, wording and clarity.

Technology. A digital voice recorder was also utilized with the consent of participants to ensure accuracy of the transcription of qualitative responses. If the participant refused to consent to the use of the digital recording device, the researcher would transcribe all responses verbatim onto the questionnaire during the interview. The digital voice recording device proved useful during the process digital playback if participants wanted to listen to information they shared or during the phase of interview transcription and qualitative data analysis (inter-rater reliability). The ability to play back the recordings at slower speeds allowed for better accuracy of data transcription and more organized discussions between the researcher and the individuals selected to provide support for inter-rater reliability when revising, discussing and developing codes and interpreting data.

Honoraria and participant compensation. To compensate and honour the contribution and efforts of respondents, each interview participant received an offering of a \$20 gift

certificate redeemable at one of several large grocery chains, four O.C. Transpo bus tickets to reimburse the cost of transportation to and from the interview location, an information pamphlet on food programs and services (including seasonal farmers markets) in Ottawa and a flyer with the researcher's contact information for them to share with people who may be interested in taking part in the study or finding out more about the project (see Appendix N).

In addition, First Nations and Métis participants were provided a small handmade cloth pouch containing tobacco as a cultural offering in addition to their honoraria. Offered prior to making a request for guidance, counsel, ceremonies or taking from the animal or spirit world, presenting sacred tobacco is a way of giving thanks (Lung Association of Saskatchewan, 2012). Traditionally, in some First Nations and Métis cultures, the use of tobacco was applied for spiritual, prayer and medicinal practices and/or ceremonial purposes (social and political; Haché, 2009; Lung Association of Saskatchewan, 2012; Pego, Hill, Solomon, Chisholm & Ivey, 1995). In contemporary times, it still plays a significant cultural role in Aboriginal communities across Canada (Coleman & Greyeyes, 1999). Offering a quantity of tobacco to First Nations and Métis participants presenting them with something that is meaningful and acknowledges their cultural traditions as distinct in a way that is considerate and respectful. The tobacco pouch was green in colour to symbolise Mother Earth and was fastened by four coloured embroidery threads (white, black, yellow and red). The offering's purpose was to demonstrate cultural sensitivity, respect, appreciation and consideration and to promote well-being, healing, peace and holistic balance (Struthers & Hodge, 2004).

To acknowledge the unique cultural heritage of the Inuit, Inuit participants were presented with an offering that reflected Inuit values of respect and a connection with wildlife and vegetation. The unique history of tobacco use in Inuit communities differs significantly from

its use in more southern First Nations and Métis communities and cultures. Because the natural Arctic climate does not support the cultivation or harvest of tobacco (or any crop), the Inuit were not known to use tobacco, historically, in traditional or ceremonial practices. The use of tobacco (and alcohol) was only introduced as a gift to the Inuit by European-Canadian fur traders and companies to signify the achievement of a trade agreement or new relationship with Aboriginal peoples (e.g., the Hudson's Bay Company and North West Company; Haché, 2009). To acknowledge the unique regional flora of the North and to recognize the cultural differences that distinguish the Inuit from their First Nations and Métis brothers and sisters, Inuit participants were offered two pouches of fine Inuit herbal tea from Northern Delights as a more respectful honorarium. As Northern Delights is an initiative by Avataq Cultural Institute, revenue from tea sales also support a range of linguistic, heritage and cultural programs in Nunavik and employment for the Nunavimmiut peoples (Avataq Cultural Institute, 2015). This acknowledgement from the project team was felt important as it promotes and demonstrates the shared sense and values of community. The herbal tea varieties offered were Arctic Blend (Ukiurtatuq), Cloudberry (Arpiqutik), Ground juniper (Qisiqtutauyak), Crowberry (Paurngaqutik) or Labrador tea (Mamaittuqutik).

Across cultures, tea is a popular everyday commodity to promote health, well-being and healing. To promote personal well-being, balance and tranquility, Non-Aboriginal participants also received any two sachets of herbal, green, white or red tea.

To promote a cultural exchange and learning opportunity, the tobacco pouch and tea were securely fastened by four coloured embroidery threads that symbolised the colours on an Algonquin Medicine Wheel: white, black, yellow and red. The rationale to use the Algonquin First Nations culture as reference was to further acknowledge and honour the unceded Ancestral

Algonquin territory on which all components of the *Healthy People, Healthy Communities Project* were developed and implemented (see Figure 2). Moreover, the information flyer included of a word of thanks in Inuktitut (main language of the Inuit), Michif (main language by Métis people), French and English to extend and foster a sense of consideration and cohesion. The honorarium was considered adequate without being coercive and approved in terms of appropriateness by project partners.



Figure 2. Final products prepared for participants. Inuit Tea (Northern Delights) offered to the Inuit, tobacco pouch offered to First Nations and Métis participants and tea sachets combinations offered to non-Aboriginal participants in addition to other forms of compensation; products were fastened with embroidery thread to symbolise the medicine wheel. Photo courtesy of the author.

Process

Engagement with Aboriginal groups and communities. To make meaningful improvements to a local fruits and vegetables program and to promote healthful food behaviours, the establishment of dialogue with Aboriginal and non-Aboriginal organizations, academics and funders as well as outreach to stakeholders, decision-makers and community members was an integral aspect of the *Healthy People, Healthy Communities Project*. A partnership with the

Ottawa Good Food Box and the Wabano Centre for Aboriginal Health allowed for cooperative opportunities to plan and develop ideas for the study to increase potential for community change to more effectively address disparities in health and increase access to fruits and vegetables through local community organizations in Ottawa. The process also allowed for capacity building opportunities between parties as the project acknowledges and respects different forms of knowledge, expertise and experience; all of which informed each step of the project. By working as a team, partnering members could share their personal and professional experiences, skills and abilities in a meaningful way to make this project more effective and efficient. Further, because some diverse cultural and ethnic groups may have strong accounts of mistrust in scientific studies due to previous atrocious human experiments that fostered individual or group exploitation or put participants physical and psychological health at-risk without their consent or knowledge (see Tuskegee syphilis experiment conducted between 1932 – 1972 (CDC, 2013) and Canada's 10-year nutrition experiments on First Nations between 1942 – 1952 (Mosby, 2013)), the researcher felt it was necessary to take advantage of opportunities to build rapport with different community groups by engaging in volunteer work with various community programs.

Regular meetings with project partners were held to assert that decisions affecting any changes or project implementation be made on a consensus basis and to assess the progress of the study, challenges and any other concerns. Consensus within this project meant that everyone had the opportunity to voice their ideas and concerns and that these were considered when making decisions based on context, circumstances and needs. To enhance communication and to report on progress, e-mail and telephone calls were also used to keep in contact with project partners and members from the community who supported different phases of the project.

Approval of research materials and methods. The approach of having project materials reviewed and approved by partners from the Ottawa Good Food Box and the Wabano Centre for Aboriginal Health prior to seeking ethics certification from the University of Ottawa's REB was in sync with the integration of guiding principles and CBPR tenets that to move away from prescriptive practices that promote the perpetuation of traditional colonial practices. This also provided a better balance of power and control in the decision-making processes to strengthen the academic-community partnership in the context of a complex, multi-study research project.

Individual in-person participant interviews. Participant recruitment started in spring 2012 where posters were displayed at supporting and consenting organizations in Ottawa to advertise the study. Directors and managers of local community health and food programs were encouraged to promote the study to interested community members by encouraging the candidate to contact the researcher before the phase of participant recruitment elapsed. Study pamphlets were also left at each recruitment site to reach potentially hard-to-reach groups of interest.

To support the recruitment of current Good Food Box customers, site coordinators were provided flyers about the study and one copy was included with each food box purchase over three months. The flyers encouraged interested customers to contact the researcher for more information about the study and to potentially participate.

Candidates who called the telephone number on recruitment poster or information pamphlet could anticipate two possible scenarios:

- a) The candidate may reach the researcher directly by phone; or
- b) The candidate may leave a message on the voice messaging system and the researcher would return their call and either contact the candidate directly or leave them a message with a call-back number.

The mobile phone's voice messaging system was checked frequently during the day upon any visual or auditory indication that a message was left. All inquiries about the study were answered and potential study candidates were contacted prior to the end of the day. The messaging system was managed through one of Canada's largest and most dependable mobile phone provider and accessible by numeric code known to the principle researcher (Appendix O for telephone dialogue guidelines). Given the nature of doing field research and related activities most often in an off-campus setting, having a mobile phone device for the study increased the chances that community members could directly reach the researcher, ask questions or express concerns. The cellular phone was charged daily, accessible and in service.

When contact was made between the researcher and the interested candidate, the researcher made sure to thank the individual for their interest in the project and provided them with more brief information about the purpose of the study, its objectives and its potential impact on the community and the Good Food Box Program. The candidate was then asked several screening questions based on the study's inclusion criteria. The candidate's response to these questions determined in which group they would take part in the study (e.g., Current or former Good Food Box customers or and non-users; further subdivided by Aboriginal and non-Aboriginal identity). Prior to ending the conversation with the candidate, the researcher recorded the participant's contact information and determined a suitable date, time and location to conduct the in-person interview and discussed any other particularities about the participant's situation that should be known to the researcher (e.g., preferred interview language). Typically, in-person interviews were scheduled as close as possible to the time the participant contacted the researcher in order to minimize participant attrition. To further support inclusion of successful

candidates, reminder phone calls were offered the evening prior or the morning of the interview to confirm that no changes in circumstances prevented participation at the scheduled time.

In the event that the researcher returned the candidate's call and contacted someone other than the interested individual, a message with the name and contact information of the researcher was left for a call-back. If direct contact was made with the candidate and the person expressed disinterest to further take part in the study, the researcher simply thanked them for their time and initial interest, wished them well and terminated the conversation.

In the event a candidate contacted the researcher after the data collection period or did not meet the study's inclusion criteria (e.g., lived outside Ottawa), the candidate was asked if they would consent to have their contact information kept on file where they could be contacted at a later time in the event of a future study. Candidates who responded after the participant recruitment period were thanked and notified that the phase of data collection was complete. In the event that too few participants were recruited to make meaningful inferences from data, the recruitment phase was extended until more people qualified to take part.

Aware of historical maltreatment of some ethnic and cultural groups at the hand of researchers (see CDC, 2013; Mosby, 2013), the researcher took steps to build rapport with participants and ease any tension or nervousness by meeting participants at a well-known nearby church and community outreach center and walking to campus together prior to the interview. From there, the researcher was able to introduce herself and converse with the participant about trifling issues (e.g., weather or community events) to become better acquainted. This gesture had been practiced in two previous food studies led by the main researcher (see Lecompte & Mehak, 2007; Lecompte, 2009). For the researcher, the joint walk served several purposes:

- 1) It allowed the researcher to foster an atmosphere of trust, safety and respect;

- 2) It permitted the participant to become more at ease and familiar with the researcher;
- 3) It minimized the occurrence that the participant would feel overwhelmed or intimidated by a university campus; and
- 4) It ensured that the participant would find the office where the interview was conducted and that they would not bow out of the study because they could not find their way.

Typically due to personal preference, family obligations, physical limitations or other challenges (e.g., bus scheduling, work hours or feeling uncomfortable or insecure in an academic institution or setting), some participants preferred having the interview elsewhere; at their request, the researcher was sometimes asked to do a home visit or to meet at a location near the participant's residence (e.g., public library). Under these circumstances, to ensure personal safety, the researcher would notify a family member or colleague of her whereabouts, the purpose of the meeting (e.g., research project; while concealing the participant's identification) and give approximate window when to expect subsequent contact to indicate the completion of the interview. This process was done by private text message (via cellphone) moments prior to entering the participant's home or meeting them off-campus and upon safely departing the premises. Regardless where the interview was held and in consideration of the preceding walk (if applicable), the duration of the in-person interview was approximately an hour in length.

Ethics, consent, privacy, anonymity, confidentiality and approach. In concert with the CIHR Guidelines for Health Research Involving Aboriginal People (2007), the OCAP Principles (First Nations Centre, 2007) and to conduct ethically sound and respectful research with human participants, before the commencement of research proceedings (pre-interview questionnaire), the researcher ensured that it was understood that participation in the study or withdrawal at any time was voluntary and that full and informed consent was obtained from all

participants. Based on the general characteristics of interview participants, it was assumed that participants were fully capable of providing consent for participation as the risks associated to the study were minimal (e.g., the experience of some discomfort due to the nature of some questions that focused on the experiences of food insecurity, hunger and poverty). Care was given to ensure that information included in the consent form was written in non-technical/ non-medical/ non-scientific language and included simple definitions or examples for more complicated terms to enhance reading comprehension and appropriateness. Participant compensation and honoraria was not judged as coercive or something that would significantly improve or benefit the participant's life. The purpose of the small offering was to recognize the participant's time, efforts and contribution to the study and to compensate or reimburse them for any additional costs incurred with displacement to and from the interview location (adult bus fair). It was also understood by participants there was no penalty related to the withdrawal or discontinuation of participation and they could rightfully do so at any time without justification and still receive compensation promised to them by the researcher.

Prior to the interview process, the researcher provided the participant with a copy of the consent form and carefully read and reviewed its contents with them. After an initial reading, the researcher provided a summarized version of the study and what was expected of the participant (purpose of the study, procedures, risks, benefits, compensation, withdrawal, confidentiality and other considerations) and the volunteer nature of their participation. Questions, concerns or issues were resolved and addressed before the participant provided both written and oral consent to taking part in the study and having the session recorded with a digital voice recorder (see Appendix P for interview consent forms). The consent form was also signed by the researcher to

ensure compliance with the ethical code of conduct and conformity with the outlined procedures to collect, preserve and share data (post-interview).

After both signatures were applied to the consent form, this indicated that the procedures to follow were amply discussed and understood and that sufficient information was provided to merit the participant's consent to take part in the study. If the participant chose to withdraw from the study, the researcher ensured that any written or audio-recorded information provided up until the interruption of the interview would be shredded or deleted from all electronic devices.

Although the participant's identity had to be disclosed to the researcher conducting the interview, any other identifying information to track data about the participant was replaced with a unique identifier (numeric code) that corresponded to the participant group and permitted more effective and efficient data management. This code did not appear on the consent forms and could not be traced back to the participant to link what they contributed to the study and any personal data. Audio-recordings were subsequently encrypted to avoid the potential of files being accessed by someone other than the researcher or research assistant (R.A.). Several safeguards were also practiced during the transcription process such as being aware of the surroundings under which this done (e.g., office setting with a closed door) and wearing earphones to prevent passersby or third parties from hearing the content of the interview conversation and potentially identifying information. Qualitative data was also subsequently pooled to maintain participant anonymity during the analysis of information. Any identifying information was removed from quotes prior to their inclusion in any written manuscript, report or Power Point presentations. If it was possible to still identify the participant or an individual that may not want to be identified, the technique of reconstruction of the data for descriptive purposes was used or information was simply paraphrased in the report and not quoted.

Upon obtaining both written and verbal informed consent, participant compensation was provided before the administration of the pre-interview questionnaires. To demonstrate knowledge about Aboriginal ways of doing, honoraria is often offered upfront prior to a request to gain the participant's trust and confidence.

The questionnaires were then reviewed with the participant to ensure they understood the questions and where to input their responses. Questions were addressed prior to the researcher leaving the room to allow enough time and space for the participant to reflect and complete the survey. When the participant completed the pre-interview phase, the researcher then retrieved the questionnaire and responded to questions prior to starting the interview. Before explaining the interview process and the types of questions the individual would be asked (dichotomous or scaled questions or some questions asking more details about a topic, issue or experience), the participant was reminded that they could share as much or as little information as they would like and if they had any concerns about what they divulged during the interview, they could review the digital recording to clarify any ideas or retract certain quotes or sections of the conversation if desired. When they were ready to begin the next phase, the researcher set the digital voice recorder in place (on the desk) to begin the interview.

When the interview was complete, the researcher turned off the recording device. If the participant did not have anything further to add or discuss, the researcher thanked them for their time, effort and contribution toward the study. Unless otherwise specified by the participant, the researcher would escort them back to the initial meeting point and wish them well.

Knowledge-sharing and results dissemination. Participants were reminded that a report would be produced with project partners and made available to members of the community. To ensure that results were returned to the community and shared with participants, a report

summary or copy of the manuscript could be provided to them in PDF format by email or a physical copy sent through Canada Post.

In the final project stage, the research team organized a community feast and forum to showcase project findings and encourage dialogue between community members with a vested interest in food, nutrition and health. Elders, community members, project participants, funders and other supporters were invited to share in the celebration. This platform was also used to present and discuss potential next steps based on actionable results from the study. With project partners and supporting organizations, we secured a display area to exhibit project information and results over a longer where the broader community could appreciate some of the outcomes.

Quantitative Data Analyses

Descriptive statistics including frequencies, means, medians and standard deviations as well as cross-tabulations were used to examine questions related to the experience of food insecurity, food consumption and to know particular characteristics of the study sample (demographic questions). Food insecurity status was scored according to guidelines provided in the USDA Household Food Security Core Module (Bickel et al., 2000). Relationships between outcome variables (self-reported overall quality of health, food security, satisfaction with food stores and mean frequency of fruit and vegetable consumption) were assessed in relation to gender (male/female) with parametric and non-parametric tests (t-tests and chi-squares).

Descriptives were used to examine the degree to which decisional considerations about fruit and vegetable selection, purchase and consumption (e.g., personal factors and social influences) and perceived benefits and barriers to fruit and vegetable consumption were an issue. To verify satisfaction with the place from where men and women purchase their fresh produce, the non-parametric test of the chi-square (χ^2) Test for Independence was conducted to investigate

the relationship between satisfaction with food stores and gender. Analyses were computed using the Statistical Package for the Social Sciences (SPSS) for Windows from IBM and significance of data was set at $p < 0.05$.

Chi-square test of independence (χ^2). Based on the χ^2 distribution, the χ^2 test for independence is used to investigate the presence or absence of an association between two or more nominal variables with several categorical levels (Tabachnick & Fidell, 2007b). To study the association between categorical variables with a χ^2 analysis, the following mathematical equation is used to determine the χ^2 statistic: $\chi^2 = \sum_j \sum_k \frac{(f_{ojk} - f_{ejk})^2}{f_{ejk}}$ where f_{ojk} is the observed frequency for variable $A_j B_k$ and f_{ejk} is the expected value for variable $A_j B_k$ (Corder & Foreman, 2009). When conducting a χ^2 analysis for independence, degrees of freedom (df) are determined by subtracting 1 from the number of rows (R) and subtracting 1 from the number of columns (C) and multiplying both products. Mathematically, the df for a χ^2 analysis of independence can be found using the following equation: $df = (R - 1) (C - 1)$ (Corder & Foreman, 2009). The alpha value for this test has been fixed at the 0.05 level of significance unless indicated otherwise.

The χ^2 analysis of independence is based on several assumptions where the data must first be verified to ensure that all critical assumptions are satisfied before continuing with tests for statistical significance. Neglecting the important step of verifying whether data meets the requirements to conduct the test can render invalid and unreliable results. While the non-parametric χ^2 analysis of independence need not meet the typical assumptions associated with parametric tests (e.g., ANOVA and the assumptions of normality, homoscedasticity), there are several underlying assumptions to verify in order to yield valid results. Aron, Aron and Coups (2009) describe and discuss the following assumptions for the χ^2 analysis of independence:

1. Studied variables (typically two or more) are measured at the nominal or ordinal level as categorical data;
2. Each observed frequency must not be associated to other scores (scores cannot be based on the same participants being tested more than once); and
3. Typically, none of the f_{eijk} cells should contain a value of less than 5.

Verification of assumptions. The current study seeks to verify the relationship between several variables through the χ^2 analysis for independence. By conducting several unique analyses, the tests will verify the presence or absence of an association between:

- The level of satisfaction with one's main food store and gender;
- Food security status and gender;
- Food security and Aboriginal identity (Aboriginal and non-Aboriginal);
- Food security status and self-rated quality of health; and
- Mean frequency of fruit and vegetable consumption and access to a functional vehicle.

Level of satisfaction with the food store from which an individual purchases food for their household has two levels (satisfied/ dissatisfied) and food security status (defined by Bickel et al., 2000) is adapted for the purposes of the current analysis with two levels (food secure/ food insecure). Aboriginal identity is defined by two levels and determined by the participant's self-identification as Aboriginal (First Nations, Inuit or Métis) or non-Aboriginal. Gender is based on the participant's self-identification of gender and has two levels (male/ female). Quality of health is determined by one item where the participant self-rate's their health on a 5-point scale (excellent, good, fair, poor or very poor). For the purpose of the χ^2 analysis, this scale has been adapted to a 3-level variable where a positive rating has been assigned to code for responses of either excellent or good health status, fair health status rating (unchanged) and poor self-reported

health status is assigned to code for responses of poor or very poor health. The mean frequency of fruit and vegetable consumption has been adapted into two categories where the assumption is that participant's consume fruits and vegetables at least once per day over one week or more than once per day over a one week period. Access to a functional vehicle is a dichotomous question where participants responded by 'yes' or 'no'.

Because of the generally small study sample and the small number of individuals who self-identified as two-spirited ($n = 3$), the current analysis has excluded these cases since the observed frequencies and expected would be smaller than 5 and have a general impact on the expected and observed frequencies for other variables that conduct analyses with gender. For analyses that verify the relationship between the variables mentioned above and gender, the sample size is $N = 46$. For all other analyses that do not concern gender, the sample size is 49.

Participant scores are independent of each other based on the project's design and because each score refers to a different participant. To ensure that expected frequencies are not inferior to 5 within the contingency table produced by the analysis, the SPSS output will be examined closely to ensure that this assumption is satisfied. In the event that it is not, corrective measures to minimise small sample bias will be applied to ensure the validity of results.

Within the χ^2 approach, the null hypothesis is accepted when differences between expected and observed frequencies are relatively small and the expected frequencies are similar to the observed frequencies (King & Minium, 2003; Tabachnick & Fidell, 2007b). When the discrepancy between expected and observed frequencies is large (associated with a large χ^2 value), the null hypothesis (H_0) is rejected based on statistics that suggest an associated between the studied variables (King & Minium, 2003; Tabachnick & Fidell, 2007b).

The χ^2 value at the .05 probability level will be determined according to the χ^2 distribution and based on the df for each test. The contingency table dimensions and df for each tests are:

- Satisfaction with fruit and vegetable choice at food store and gender: df = 1, 2 X 2;
- Satisfaction with fruit and vegetable quantity at food store and gender: df = 1, 2 X 2;
- Satisfaction with fruit and vegetable quality at food store and gender: df = 1, 2 X 2;
- Satisfaction with how the main food store meets household food needs and gender: df = 1, 2 X 2;
- Overall satisfaction with one's main food store and gender: df = 1, 2 X 2;
- Food security status and gender: df = 1, 2 X 2;
- Food security status and Aboriginal identity: df = 1, 2 X 2;
- Food security status and self-rated quality of health: df = 2, 2 X 3;
- Mean frequency of fruit and vegetable consumption and access to a functional vehicle: df = 1, 2 X 2;

The following hypotheses are proposed for each test:

- Test 1: Satisfaction with fruit and vegetable choice at the primary food store and gender
 - H_0 : There is no difference between men and women on the survey that measures their satisfaction with fruit and vegetable choice from where the household food supply is bought.
 - H_a : The number of men who are satisfied with fruit and vegetable choice is significantly different from the number of women who are satisfied.
- Test 2: Satisfaction with fruit and vegetable quantity at the primary food store and gender

- H_0 : There is no difference between men and women on the survey that measures their satisfaction with fruit and vegetable quantity from where the household food supply is bought.
 - H_a : The number of men who are satisfied with fruit and vegetable quantity is significantly different from the number of women who are satisfied with fruit and vegetable quantity.
- Test 3: Satisfaction with fruit and vegetable quality at the primary food store and gender
 - H_0 : There is no difference between men and women on the survey that measures their satisfaction with fruit and vegetable quality from where the household food supply is bought.
 - H_a : The number of men who are satisfied with fruit and vegetable quality is significantly different from the number of women who are satisfied with fruit and vegetable quality.
- Test 4: Satisfaction with how the primary food store meets the household food needs and gender
 - H_0 : There is no difference between men and women on the survey that measures their satisfaction with how the primary food store meets the household food needs.
 - H_a : The number of men who are satisfied with how the primary food store meets the household food needs is significantly different from the number of women who are satisfied with how the primary food store meets the household food needs.

- Test 5: Overall satisfaction with the primary food store and gender
 - H_0 : There is no difference between men and women on the survey that measures their overall satisfaction with the primary food store from where the household food supply is bought.
 - H_a : The number of men who are overall satisfied with the primary food store from where the household food supply is bought differs significantly from the number of women who are overall satisfied with the primary food store from where the household food supply is bought.
- Test 6: Food security status and gender:
 - H_0 : There is no difference between men and women and food security status.
 - H_a : The number of men who are food secure is significantly different from the number of women who are food secure.
- Test 7: Food security and Aboriginal identity:
 - H_0 : There is no different between non-Aboriginal and Aboriginal peoples and food security status.
 - H_a : The number of food secure non-Aboriginal persons differs significantly from the number of food secure Aboriginal persons.
- Test 8: Food security status and self-rated quality of health:
 - H_0 : Food security status is unrelated to an individual's self-rated health status.
 - H_a : The number of food secure individuals with a positive self-rated health status differs from the number of food secure individuals who self-rate their health as poor.

- Test 9: Mean frequency of fruit and vegetable consumption and access to a functional vehicle
 - H_0 : There are no differences in mean frequency of fruit and vegetable consumption and individual access to a functional vehicle.
 - H_a : The mean frequency of fruit and vegetable consumption is significantly different for people who have access to functional vehicle compared to people who do not.

Qualitative Data Transcription and Analysis

In psychology, what is known about phenomenology as a qualitative method originates from the writings of philosopher Edmund Husserl. Based on Husserl's inclusion of consciousness in his approach and in concepts as part of the scientific method, his contribution helped broaden modern science and served as a guide to assist those in the field of psychology to better investigate human experiences and subsequent behaviours (Husserl, 1962). According to Van Kaam (1966), the richness in qualitative approaches in general and empirical phenomenological research in particular is that it sets the stage for more accurate empirical investigations that are object-centered (as opposed to the imposition of a method-centered design). In this sense, Van Kaam believed that experimental designs and subsequent statistical methods "may distort rather than disclose a given behaviour through an imposition of restricted theoretical constructs on the full meaning and richness of human behavior" (p.14).

To conduct phenomenological qualitative analysis that accounts for the essences and structures of an experience, the summarised method of this comprehensive analytical approach is best described by Giorgi (1979):

- 1) The researcher reads the entire description of the learning situation straight through to get a sense of the whole;
- 2) The researcher reads the same description more slowly and delineates each time that a transition in meaning is perceived with respect to the intention of discovering the meaning (p.83)

Within the context of the current study, to discover the essences of experience related to food security, fruit and vegetable consumption and facilitating factors and challenges to the uptake of the Good Food Box (elucidated through open-ended questions; the latter theme is the context for Study 2; see p.292), the research team was able to move beyond thematic analysis by describing the structures of the experience based on reflective analysis and interpretation of the participant's response and broader story (Giorgi, 1985). According to the teachings of Husserl (1965), "Phenomenology is the 'science of science' since it alone investigates that which all other sciences simply take for granted (or ignore), the very essence of their own objects" (p.23).

To demonstrate transparency, trustworthiness and academic rigour in the analysis, creation and interpretation of reliable and credible knowledge based on qualitative results from raw interview transcripts, the researcher worked with several community members to further analyze the data in terms of its constituents and to elaborate on explanations regarding the discerning characteristics and structures related to the studied phenomena as a way to understand the essences of the experience of food security and insecurity, fruit and vegetable consumption (Study 1) and participation (or not) and knowledge about the Ottawa Good Food Box Program (Study 2). The process of discussing ideas and attitudes about perception, judgements, previous experiences and assumptions (known as 'bracketing') with members from the community who provided support in the analysis of qualitative data and inter-rater reliability (see Appendix Q for

brief biographies of each person who was involved in the different phases) was an important starting point to become more aware of our personal biases (subjectivity) that influence the analysis of data and to achieve trustworthiness.

While the manual task of qualitative transcription and the importance of transcribing each interview file verbatim was taught with relative ease over a short period of time, listening to and typing over a hundred hours of digitally recorded files may not appear interesting based on the mundane and repetitive characteristics associated to this task. However, through the process of manual transcription as opposed to depending on the properties of speech recognition software, the hired staff (R.A. and project support personnel) did more than simply enhance their typing and acute listening skills. By becoming immersed in the interview data and becoming familiar with both the interview protocols and questions, the researcher, R.A. and project support staff became familiar with the different types of issues raised in relation to household food security and the selection, purchase, preparation and consumption of fruits and vegetables.

In some cases, the types of responses or the significance of tangents to questions were not expected and provided the basis of fruitful conversations. After each work period, the researcher established a debriefing sessions with staff members who worked on qualitative transcription and analysis to make sure that they were not left without support or troubling thoughts in cases where participants provided more unsettling responses to sensitive issues like the experience of hunger, poverty, health issues or the types of strategies and behaviours individuals engaged in whether on a sporadic, consistent (daily, weekly or monthly) or emergency basis to make ends meet. These steps were judged as necessary to ensure the establishment of a supportive and positive work environment based on the nature of the work and involvement in the research.

Through transcription work and other tasks, both staff members were trained in concepts related to information management in the context of qualitative data, how to filter larger concepts and themes into categories and how to develop subsequent codes. Based on this activity, both individuals gained a better understanding of the length of time and amount of effort required for data transcription and the discussion processes related to developing qualitative codes and as well as potential errors that can be introduced at this step and why validation (to reduce errors in developing hard data) is necessary to ensure the production of a trustworthy dataset on which to conduct qualitative analysis. These are important concepts to understand which will be an asset for these individuals in a future project that focuses on the work with qualitative components. Engaging two individuals who were involved with Ottawa's Aboriginal community was a capacity building initiative conducted through the *Healthy People, Healthy Communities Project* to help empower not only our local community but our urban Aboriginal community and our First Nations, Inuit and Métis brothers and sisters. This initiative was also consistent with the OCAP Principles (First Nations Centre, 2007).

As the project was developed within the course of a doctoral thesis, project partners and community members also played different roles at various points in the project where, toward the end of writing the thesis manuscript, the research team and community members became a post-hoc advisory committee to help guide the development of the written document.

Results

A total of 49 participants completed the study (N = 49). In total, forty-five (91.8%) questionnaires and interviews were completed in English and four (8.2%) were conducted in French.

Quantitative Results

Descriptive statistics. Almost 86% (n = 42, 85.7%) of participants lived without children and 14.3% (n = 7) were the primary care takers of at least one child. In particular, of the seven participants responsible for the care of children, 42.86% (n = 3) had one child to care for, 28.6% (n = 2) had two children and the same proportion (28.6%) cared for three children. On a regular basis, most participants did not have to buy or prepare food for anyone else but themselves (n = 33; 67.3%). Out of 16 households, 56% (n = 9) bought and prepared food for at least one other person, 25% (n = 4) bought and prepared food for a household of three and 18.75% (n = 3) bought and prepared food for a household of four persons.

While most individuals did not have access to a functional vehicle (n = 42), 14.3% (n = 7) of the sample did. Most participants bought their fruit and vegetables from the same location (n = 28; 57.1%) and spent approximately the same amount of money on fruits and vegetables (n = 19; 38.8%). Sixteen participants (32.7%) reported spending more on vegetables and 12 participants (24.5%) spent more on fruit. The remaining two participants who did not respond to this question did not purchase their fruits or vegetables but depended on the quality of charitable donations.

When asked whether their cultural heritage affected their food choices or how they ate, only 32.7% (n = 16) provided a positive response for an influence on food choice and a slightly higher proportion (n = 19; 38.8%) suggested their cultural heritage did influence how they ate. For 22.4% of participants (n = 11), a diagnosed food allergy, suspected intolerance or sensitivity influenced the types of food consumed regularly and which foods were avoided. Almost 37% of participants (n = 18; 36.7%) were required to consume foods based on a special diet advised by a medical doctor due to health issues (e.g., diabetes, cardiac issues).

When asked to reflect on the foods eaten during their childhood, 69.4% (n = 34) recalled eating fruits and vegetables as snacks and 87.8% (n = 43) reported eating fruits and vegetables with each meal. Of the 43 participants who ate fruits and vegetables at meal time, 46.5% (n = 20) ate fruits at breakfast and/ or lunch and 48.8% (n = 21) ate vegetables at supper time. The remaining six participants who did not respond either did not recall many details of their childhood or did not eat balanced meals complete with fruits and vegetables.

As adults, 61% (n = 30) were likely to eat fruits as a snack and 47% were likely to snack on vegetables (responses ranging from likely to very likely for each item). With meals, 61% (n = 30) of participants were either 'likely' (n = 8) or 'very likely' (n = 22) to serve fruits and vegetables daily. When asked when they were most likely to eat fruits and vegetables, 20. (n = 10) reported at lunch and supper and 27% (n = 13) mentioned any time during the day.

The majority of participants (n = 36; 73.5%) self-rated their health as 'good' (n = 23; 47%) or 'fair' (n = 13; 27%). Four participants (8%) rated their health as excellent, six participants (12%) reported their health as 'poor' and three individuals (6%) felt their overall health was 'very poor'. When asked how much energy they had, on a scale of five possible answers, 38.8% reported having 'some' energy and 33% reported having 'quite a bit' of energy.

Based on household food security status, 42 participants completed the adult module while 7 individuals filled out the family module that considers the diet and eating patterns of children in the home. Overall, 25% of participants were food secure (n = 12), 39% were food insecure without hunger (n = 19), 29% were food insecure with hunger (moderate; n = 14) and 8% were food insecure with severe hunger (n = 4).

When asked about specific barriers to food security, 14% (n = 7) reported difficulties getting to and from the food store and indicated that this was either often (n = 4) or always (n =

3) a problem. For 29% of participants ($n = 14$), transportation was reported as an occasional issue. Cooking was not a barrier to food security for 61% ($n = 30$) and 67% reported having enough cooking supplies to support the household meal preparation and cooking process. Almost evenly divided, not having enough food storage was sometimes, often or always a problem for 49% of participants.

When asked about the perceived barriers to fruit and vegetable selection, purchase and consumption, almost 45% of the sample ($n = 22$) reported that not having enough money to buy fruits and vegetables was either often or always a problem. For 39% ($n = 19$), having enough money to purchase fruits and vegetables was sometimes problematic. For the remainder of participants (16.3%; $n = 8$), it was never a problem. Sixty-five percent (65.3%) of participants reported that not having the fruits and vegetables they wanted available at the food store was sometimes, often or always a barrier to selection, purchase and consumption of fruits and vegetables. Moreover, for almost 88 % ($n = 43$) of participants, food spoilage was a barrier to household fruit and vegetable consumption.

Participants were also asked about the factors that may influence them to select, buy and/or consume more or less fruits and vegetable produce. When asked about decisional considerations about fruits and vegetables, participants could provide a response on a 5-point Likert-type scale where a positive response indicates a degree of agreement with the statement (somewhat or completely agree), a neutral response indicates that the participant neither agrees or disagrees and a negative response signifies a degree of disagreement with the statement (somewhat or completely disagree). Table 2 indicates an overview of the percentages of positive

Table 2

Percentage of Positive Responses to Factors that Influence Individual Perception and the Decision to Select, Purchase, Prepare and/or Consume Fruits and Vegetables by Aboriginal Identity

Questions	Study groups		
	Aboriginal households ^a	Non-Aboriginal households ^b	All households
Q1	80	69	73.5
Q2	45	24.1	32.7
Q3	15	27.6	22.4
Q4	15	24.1	20.4
Q5	17.6 ^c	22.2 ^d	20 ^e
Q6	10	13.8	12.2
Q7	25	20.7	22.4
Q8	10	3.4	6.1
Q9	55	82.8	71.4
Q10	90	100	95.9
Q11	65	65.5	65.3
Q12	90	100	95.9
Q13	55	62.1	59.2
Q14	100	96.6	98
Q15	85	86.2	85.7
Q16	75	75.9	75.5
Q17	90	89.7	89.8

Note. N = 49, ^an = 20, ^bn = 29, ^cn = 17, ^dn = 18, ^en = 35. F = fruits, V = vegetables, F + V = fruits and vegetables. Q1 = Eating more F + V is expensive, Q2 = I would worry about pesticides if I ate more F + V, Q3 = Preparing and cooking V is too time consuming, Q4 = I am confused over the definitions about F + V portion sizes, Q5 = My significant other or children do not like to eat F + V, Q6 = Planning and preparing meals with more V disrupts my routine, Q7 = I get a bad reaction if I eat F + V, Q8 = Others would think I am fussy if I worried about having to eat F + V, Q9 = When I do not eat enough F + V I do not feel good, Q10 = Eating more F + V gives me more vitamins and minerals, Q11 = I would be following the advice of my doctor if I ate more F + V, Q12 = By eating more F + V, I feel good about looking after my health, Q13 = My family and friends would be pleased if I ate more F + V, Q14 = I enjoy the taste of F, Q15 = I enjoy the taste of V, Q16 = Eating more F + V keep me regular, Q17 = Eating more F + V daily means that I am less likely to get sick.

responses to items that assess individual and social factors that affect the selection, purchase, preparation and consumption of fruits and vegetables. Participant responses are sub-divided into two groups (Aboriginal and non-Aboriginal) to verify the proportion of people from each group who are influenced by these factors when making decisions about daily food intake.

Eighty percent of Aboriginal (n = 16) and 69% of non-Aboriginal peoples (n = 20) agreed that cost influences the quantity of fruits and vegetables households buy and that eating more fruits and vegetables than they already do (or do not) would be expensive. Forty five percent of Aboriginal households compared to 24% of non-Aboriginal households agreed that they too would be more preoccupied with pesticides if they ate more fruits and vegetables. Most participants did not agree that the process of preparing and cooking vegetables was time consuming (77.6%) and more disagreed that planning and preparing meals with more vegetables would disrupt their routine (87.8%). Almost eighty percent (79.6%) of participants were not confused about fruit and vegetable portion sizes. For participants who either lived with children or a significant other, 80% reported that members of their household liked to eat fruits and vegetables. While only 10% for Aboriginal peoples and 14% for non-Aboriginal participants agreed that their entourage would think they were fussy if they worried about having to eat fruits and vegetables, 55% of Aboriginal and 62% of non-Aboriginal peoples agreed that their friends and family would be happy if they ate more produce from this food group.

Participants nearly unanimously agreed (96%; n = 47) that by eating more fruits and vegetables, they feel good about looking after their health and are generally less likely to get sick if they eat more fruits and vegetables (90%). Ninety-six percent of participants agreed that eating more fruits and vegetables gives them the vitamins and minerals they need. Nearly all participants enjoyed the taste of fruits (98%) while fewer (85.7%) enjoyed the taste of

vegetables. Twenty-five percent of Aboriginal peoples and almost 21% of non-Aboriginal participants agreed with the experience of adverse effects when fruit and vegetables are eaten and 55% of Aboriginal and 83% of non-Aboriginal participants agreed with not feeling well when they do not eat enough fruits and vegetables. For the majority of participants (75.5%) eating fruits and vegetables was perceived as a dietary habit to support regularity in their digestion. Finally, 65% of Aboriginal and 65.5% of non-Aboriginal persons agreed eating more fruits and vegetables would be in line with their doctor's advice.

Chi-Square test of independence (χ^2). Five items were asked to measure personal satisfaction with the primary food store from where the household food supply is purchased. These items asked participants to reflect on their satisfaction with food choice, food quantity, food quality, how close the food store meets household food needs and overall satisfaction. Forty two participants ($n = 42$; 12 men, 30 women) responded to the item asking them to rate their satisfaction with fruit and vegetable choices, 44 participants ($n = 44$; 12 men, 32 women) responded to the item asking them to rate their satisfaction with fruit and vegetable quantity, 40 participants ($n = 40$; 12 men, 28 women) rated their satisfaction regarding fruit and vegetable quality, 46 participants ($n = 46$; 13 men, 33 women) rated how they felt the food store met their household food needs and 39 participants ($n = 39$; 11 men, 28 women) provided a general level of satisfaction with the place from where they mainly purchase the household food supply.

Based on the χ^2 distribution, the critical χ^2 value for $df = 1$ at the significance level of .05 ($p < 0.05$) is 3.84. To calculate expected frequencies (f_{ejk}) in each cell to populate the 2 X 2 contingency table of expected (f_{ejk}) and observed (f_{ojk}) frequencies (King & Minium, 2003), f_{ejk} is the expected frequency, f_{row} is the total frequency for the row, f_{col} is the frequency for the column and 'n' is the sample size in the following formula:

$$f_{ejk} = \frac{(f_{row})(f_{col})}{n}$$

To obtain the χ^2 value, the following formula is used based on calculating the square of the discrepancy between f_{ojk} and f_{ejk} and divided by f_{ejk} . The sum of the four components in the contingency table is the calculated value of χ^2 :

$$\chi^2 = \sum \frac{(f_{ojk} - f_{ejk})^2}{f_{ejk}}$$

In the event that a f_{ejk} cell has a value less than 5, the Fisher's Exact Test will be interpreted to minimise the small sample bias with regards to the significance of the χ^2 test to maintain the validity of the result.

Test 1: Satisfaction with fruit and vegetable choice and gender. Table 3 provides the expected and observed frequencies to test the potential relationship between satisfaction with fruit and vegetable choice with the primary food store where the household food supply is bought and gender. Since there is one cell with an expected frequency of less than 5, the Fisher's Exact Test is interpreted.

The critical value for rejecting the null hypothesis is set at the alpha level of .05 and the p -value of the Fisher's Exact Test is $p = 0.247$. Because the critical value of the Fisher's Exact Test is greater than the alpha level of significance ($p > 0.05$), data suggests that we do not reject the null hypothesis and conclude that no real difference exists between men and women on the survey that measures their satisfaction with fruit and vegetable choice from where the household food supply is bought.

To test the strength of the association between level of satisfaction with fruit and vegetable choice and gender within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested and ranges between a value of 0 (no association) to 1 (perfect association; King & Minium, 2003). The ϕ value is interpreted according to Cohen's (1988) guidelines where 0.1 indicates a

Table 3

Expected and Observed Frequencies for each Cell in a 2 X 2 Contingency Table Based on Level of Satisfaction with Fruit and Vegetable Choice and Gender

		Satisfaction with fruit and vegetable choices		
Gender		Satisfied	Dissatisfied	f _{row}
Male	Count	11 (9.4)	1 (2.6)	12
	% within Row	91.7 (78.3)	8.3 (21.7)	100
Female	Count	22 (23.6)	8 (6.4)	30
	% within Row	73.3 (78.7)	26.7 (21.3)	100
f _{col}	Count	33	9	42
	% within Row	78.6	21.4	100

Note. $N = 42$. $\chi^2 = 1.711$, $df = 1$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

small effect, 0.3 is a medium effect and 0.5 is a large effect. The formula for the ϕ is the following where χ^2 is the calculated χ^2 value and n is the sample size:

$$\phi = \sqrt{\frac{\chi^2}{n}}$$

$$\phi = \sqrt{(1.711/42)}$$

$$\phi = \sqrt{0.0407}$$

$$\phi = 0.202$$

Based on the calculated effect size of 0.202, the association between level of satisfaction with fruit and vegetable choice and gender is relatively small. Since the association between the two variables is not statistically significant according to Fisher's Exact Test ($p > \alpha$), the effect size is equally weak ($\phi = 0.202$).

Test 2: Satisfaction with fruit and vegetable quantity and gender. Table 4 provides the expected and observed frequencies to test the potential relationship between satisfaction with fruit and vegetable quantity based on the primary food store from where household food is purchased and gender with $df = 1$. As observed, because there is one cell with an expected frequency of less than a count of 5, the Fisher's Exact Test is interpreted.

The critical value for rejecting the null hypothesis is set at the alpha level of .05 and the p -value of the Fisher's Exact Test is $p = 0.241$. Because the critical value of the Fisher's Exact Test is greater than the alpha level of significance ($p > 0.05$), data suggests that we do not reject the null hypothesis and conclude that no real difference exists between men and women on the survey that measures their satisfaction with fruit and vegetable quantity from where the household food supply is bought.

To test the strength of the association between level of satisfaction with fruit and vegetable quantities and gender within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested.

Table 4

*Expected and Observed Frequencies for each Cell in a 2 X 2 Contingency
Table Based on Level of Satisfaction with Fruit and Vegetable Quantity and Gender*

		Satisfaction with fruit and vegetable quantity		
Gender		Satisfied	Dissatisfied	f _{row}
Male	Count	11 (9.3)	1 (2.7)	12
	% within Row	91.7 (77.5)	8.3 (22.5)	100
Female	Count	23 (24.7)	9 (7.3)	32
	% within Row	71.9 (55.5)	28.1 (22.8)	100
f _{col}	Count	34	10	44
	% within Row	77.3	22.7	100

Note. N = 44. $\chi^2 = 1.947$, df = 1. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

$$\phi = \sqrt{(1.947/44)}$$

$$\phi = \sqrt{0.044}$$

$$\phi = 0.21$$

Based on the calculated effect size of 0.21, the association between level of satisfaction with fruit and vegetable quantities and gender is relatively small. Since the association between the two variables is not statistically significant ($p > \alpha$), the effect size is equally weak ($\phi = 0.21$).

Test 3: Satisfaction with fruit and vegetable quality and gender. Table 5 provides the expected and observed frequencies to test the potential relationship between satisfaction with fruit and vegetable quality based on the primary food store from where household food is purchased and gender with $df = 1$. As observed, because there is one cell with an expected frequency of less than a count of 5, the Fisher's Exact Test is interpreted.

The critical value for rejecting the null hypothesis is set at the alpha level of .05 and the p -value of the Fisher's Exact Test is $p = 0.233$. Because the significance of the Fisher's Exact Test is greater than the alpha level of significance ($p > 0.05$), data suggests that we do not reject the null hypothesis and conclude that not real difference exists between men and women on the survey that measures their satisfaction with fruit and vegetable quality from where the household food supply is bought.

To test the strength of the association between level of satisfaction with fruit and vegetable quality and gender within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested.

$$\phi = \sqrt{(1.973/40)}$$

$$\phi = \sqrt{0.04}$$

$$\phi = 0.22$$

Table 5

Expected and Observed Frequencies for each Cell in a 2 X 2 Contingency Table Based on Level of Satisfaction with Fruit and Vegetable Quality and Gender

		Satisfaction with fruit and vegetable quality		
Gender		Satisfied	Dissatisfied	f _{row}
Male	Count	11 (9.3)	1 (2.7)	12
	% within Row	91.7 (77.5)	8.3 (22.5)	100
Female	Count	20 (21.7)	8 (6.3)	28
	% within Row	71.4 (77.5)	28.6 (22.6)	100
f _{col}	Count	31	9	40
	% within Row	77.5	22.5	100

Note. $N = 40$. $\chi^2 = 1.973$, $df = 1$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

Based on the calculated effect size of 0.22, the association between level of satisfaction with fruit and vegetable quality and gender is relatively small. Since the association between the two variables is not statistically significant ($p > \alpha$), the effect size is equally weak ($\phi = 0.22$).

Test 4: Satisfaction with how well food stores meet household food needs and gender.

Table 6 provides the expected and observed frequencies to test the relationship between satisfaction how well the primary food store meets the household's food needs and gender with $df = 1$. As one cell has less than 5 as an expected frequency, the Fisher's Exact Test is interpreted.

The critical value for rejecting the null hypothesis is set at the alpha level of .05 and the p -value of the 2-sided Fisher's Exact Test is $p = 0.018$. Because the 2-sided significance of the Fisher's Exact Test is less than the alpha level of significance ($p < 0.05$), data suggests that we reject the null hypothesis and conclude that the number of men who are satisfied with how the primary food store meets the household food needs is significantly different from the number of women who are satisfied with how the primary food store meets the household food needs.

The strength of the association between level of satisfaction with how close the primary food store meets household food needs and gender within a 2 X 2 contingency table is tested by calculating the phi coefficient (ϕ):

$$\phi = \sqrt{(5.863/46)}$$

$$\phi = \sqrt{0.127}$$

$$\phi = 0.36$$

The calculated effect size of 0.36 indicates a medium level of association between level of satisfaction with how close the primary food store meets household food needs and gender. Since the association between the two variables is statistically significant ($p < \alpha$) and a medium

Table 6

Expected and Observed Frequencies for each Cell in a 2 X 2 Contingency Table Based on Level of Satisfaction with how the Primary Food Store Meets Household Food Needs and Gender

		Satisfaction with how food store meets household food needs		
Gender		Satisfied	Dissatisfied	f _{row}
Male	Count	12 (8.5)	1 (4.5)	13
	% within Row	92.3 (65.4)	7.7 (34.6)	100
Female	Count	18 (21.5)	15 (11.5)	33
	% within Row	54.5 (65.1)	45.5 (34.8)	100
f _{col}	Count	30	16	46
	% within Row	65.2	34.8	100

Note. $N = 46$. $\chi^2 = 5.863$, $df = 1$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

effect size has been found ($\phi = 0.36$), a replication of the study with a larger sample may be worth the effort.

The assessment of relative risk according to Cook and Sackett (1995) is “probability of an event in the active treatment group divided by the probability of an event in the control group,” (p.452). Used extensively in the field of epidemiology, the odds ratio is “the odds of an event in the active treatment group divided by the odds of an event in the control group,” (Cook & Sackett, 1995, p. 453). These estimates of risk provide more information about how the level of satisfaction with how close a food store meets household food needs and gender are related.

Based on the cross-tabulation of the level of satisfaction with how close a food store meets household food needs and gender, by visually inspecting the row percentages, it was estimated that 92.3% ($n = 12$) of males and 54.5% ($n = 18$) of women were satisfied with how closely the primary food store at which they bought the household’s food supply met their household food needs. Based on the odds ratio and relative risk, findings in Table 7 indicate that the odds of being satisfied with how closely the main food store meets the household food needs are 10 times greater for males compared to 0.1 times smaller⁷ if you are female. Further, the relative risk of providing the food store with a satisfactory rating based on how it meets one’s household food needs is approximately 1.69 which is congruent with the ratio of the row percents based on the cross-tabulation of variables. The relative risk of being dissatisfied with one’s food store as a male customer is smaller at 0.17.

Test 5: Overall satisfaction with the primary food store and gender. Table 8 provides the expected and observed frequencies to test the relationship between overall satisfaction with the primary food store where the household food supply is bought and gender with $df = 1$. Since there is one cell with an expected frequency of less than 5, the Fisher’s Exact Test is interpreted.

⁷ Calculated by taking the inverse of 10 (e.g., $1/x$)

Table 7

Risk Estimates Related to Satisfaction with how a Food Store Meets Household Food Needs and Gender

Risk estimates	Value	95% CI	
		LL	UL
OR for Gender (Male/ Female)	10	1.16	86.02
For cohort (Food store meets household food needs = Satisfactory)	1.69	1.19	2.40
For cohort (Food store meets household food needs = Unsatisfactory)	0.17	0.25	1.15

Note. $N = 46$. OR = odds ratio; GFB = Good Food Box; CI = confidence interval, LL = lower limit, UL = upper limit.

Table 8

Expected and Observed Frequencies in a 2 X 2 Contingency Table Based on Overall Satisfaction with the Primary Food Store Where the Household Food Supply is Bought and Gender

		Level of satisfaction with food choices		
Gender		Satisfied	Dissatisfied	f _{row}
Male	Count	11 (9)	0 (2)	11
	% within Row	100 (81.8)	0 (18.2)	100
Female	Count	21 (23)	7 (5)	28
	% within Row	75 (82.1)	25 (17.9)	100
f _{col}	Count	32	7	39
	% within Row	82.1	17.9	100

Note. $N = 39$. $\chi^2 = 3.352$, $df = 1$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

The critical value for rejecting the null hypothesis is set at the alpha level of .05 and the p -value of the Fisher's Exact Test is $p = 0.159$. Because the critical value of the Fisher's Exact Test is greater than the alpha level of significance ($p > 0.05$), data suggests that we do not reject the null hypothesis and conclude that no real difference exists between men and women on the survey that measures the overall satisfaction with the primary food store from where the household food supply is bought.

To test the strength of the association between overall satisfaction with the primary food store from which household food is purchased and gender within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested.

$$\phi = \sqrt{(3.352/39)}$$

$$\phi = \sqrt{0.086}$$

$$\phi = 0.293$$

The calculated effect size of 0.293 indicates that the association between overall food store satisfaction and gender is between a small to medium effect. Since the association between the two variables is not statistically significant ($p > \alpha$), the effect size is relatively weak ($\phi = 0.293$).

Test 6: Food security status and gender. Table 9 provides the expected and observed frequencies to test the potential relationship between food security status and gender with $df = 1$. Since there is one cell with an expected frequency of less than 5, the Fisher's Exact Test is interpreted.

The critical value for rejecting the null hypothesis is set at the alpha level of .05 and the p -value of the Fisher's Exact Test is $p = 1.00$. Because the critical value of the Fisher's Exact Test is much greater than the alpha level of significance ($p > 0.05$), data suggests that we do not

Table 9

Expected and Observed Frequencies in a 2 X 2 Contingency Table Based on Food Security Status and Gender

		Food security status		
Gender		Food secure	Food insecure	f _{row}
Male	Count	4 (3.7)	9 (9.3)	13
	% within Row	31 (28.5)	69 (71.5)	100
Female	Count	9 (9.3)	24 (23.7)	33
	% within Row	27.3 (7.7)	72.6 (71.2)	100
f _{col}	Count	13	33	46
	% within Row	28.3	71.7	100

Note. $N = 46$. $\chi^2 = 0.056$, $df = 1$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

reject the null hypothesis and conclude that virtually no differences exist between observed and expected frequencies for food security status between men and women.

To test the strength of the association between food security status and gender within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested.

$$\phi = \sqrt{(0.056 / 46)}$$

$$\phi = \sqrt{0.001}$$

$$\phi = 0.03$$

The calculated effect size of 0.03 indicates that the association between food security status and gender for this sample is very small. Since the association between the two variables is not statistically significant ($p > \alpha$), the effect size is also extremely small ($\phi = 0.03$).

Test 7: Food security and Aboriginal identity. Table 10 provides the expected and observed frequencies to test the potential relationship between food security status and Aboriginal identity with $df = 1$. Since all cells have an expected frequency of more than 5, the Pearson's chi-square value is interpreted as a valid statistic of significance for the χ^2 analysis. The χ^2 critical value for rejecting the null hypothesis at the alpha level of .05 with $df = 1$ is 3.84 and, at the alpha level of 0.01 with $df = 1$, 6.64. According to Table 11, because the obtained Pearson's chi-square value ($\chi^2_{(1)} = 8.037, p < 0.05; p < 0.01$) is greater than both 3.84 ($p = 0.05$) and 6.64 ($p = 0.01$), data suggests that we reject the null hypothesis and conclude that a real difference exists between number of food secure non-Aboriginal persons and food secure Aboriginal persons.

To test the strength of the association between Aboriginal identity and food security within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested.

$$\phi = \sqrt{(8.037 / 49)}$$

Table 10

Expected and Observed Frequencies in a 2X 2 Contingency Table Based on Food Security Status and Aboriginal Identity

		Food security status		
Aboriginal identity		Food secure	Food insecure	f _{row}
Aboriginal	Count	1 (5.3)	19 (14.7)	20
	% within Row	5 (26.5)	95 (73.5)	100
Non-Aboriginal	Count	12 (7.7)	17 (21.3)	29
	% within Row	41.4 (26.6)	58.6 (73.4)	100
f _{col}	Count	13	36	49
	% within Row	26.5	73.5	100

Note. $N = 49$. $\chi^2 = 8.037$, $df = 1$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

Table 11

Chi-Square Tests of Association for Aboriginal Identity and Food Security

Test of association	Value	df	Asymp. Sig. (2-sided)	<i>p</i> (2-sided)	<i>p</i> (1-sided)
Pearson Chi-square	8.037	1	0.005**		
Continuity Correction ^a	6.28	1	0.012*		
Fisher's Exact Test		1		0.07	0.04*

Note. N = 49. $\chi^2 = 8.037$, df = 1. Asymp. Sig. = Asymptotic significance. Two-sided refers to testing of the the alternative hypothesis (variables can either be positively or negatively associated) versus the null hypothesis of no association.

^aComputed only for a 2 X 2 contingency table.

* $p < .05$

** $p < .01$

$$\phi = \sqrt{0.164}$$

$$\phi = 0.4$$

According to Cohen (1988), the calculated effect size of 0.4 indicates that the association between Aboriginal identity and food security is between a medium to large effect. Since the association between the two variables is significant at the 99% confidence intervals ($\chi^2_{(1)} = 8.037, p < 0.01$), the degree of association between the two is also relatively strong ($\phi = 0.4$).

Based on the cross-tabulation of data, odds ratio and relative risk are the main measures of association for this study. Based on the variables of Aboriginal identity and food security status, the row percentages of observed frequency estimate that 5% of Aboriginal persons and 41.4% of non-Aboriginal persons were food secure and 95% of Aboriginal persons and 58.6% of non-Aboriginal persons responded to items in the Food Security Module (Bickel et al., 2000) that were consistent with eating patterns and behaviours that suggest a state of food insecurity over the last 12 months. For odds ratio and relative risk, findings in Table 12 indicate that, in an urban setting, non-Aboriginal peoples are 0.75 times more likely to be food secure as compared to 1.33 times smaller⁸ if you are First Nations, Inuit or Métis (Aboriginal).

Test 8: Food security status and self-rated quality of health. Table 13 provides the expected and observed frequencies in a 2 X 3 contingency table to test the potential relationship between food security and self-reported quality of health. Since there are two expected frequency counts within the contingency table with an expected frequency of less than 5, the Fisher's Exact Test is interpreted.

According to the χ^2 distribution, critical χ^2 value for $df = 2$ at the alpha level of 0.05 is 5.99. Table 13 illustrates the expected and observed values for each variable and includes the calculated $\chi^2_{(2)}$ value of 3.45. Since the calculated χ^2 value is inferior to the critical χ^2 value, the

⁸ Calculated by taking the inverse of 0.75 (e.g., 1/x)

Table 12

Risk Estimates Related to Aboriginal Identity and Food Security

Risk estimates	Value	95% CI	
		LL	UL
OR for Aboriginal identity (Aboriginal/ non-Aboriginal)	0.75	0.009	0.64
For cohort (Food security status = food secure)	0.12	0.02	0.86
For cohort (Food security status = food insecure)	1.62	1.18	2.24

Note. N = 49. OR = odds ratio; GFB = Good Food Box; CI = confidence interval, LL = lower limit, UL = upper limit.

Table 13

Expected and Observed Frequencies in a 2 X 3 Contingency Table Based on Food Security Status and Self-Reported Health Status

		Self-reported health status			
Food security status		Positive rating	Fair rating	Poor rating	f _{row}
Food secure	Count	10 (7.2)	2 (3.4)	1 (2.4)	13
	% within Row	76.4 (55.4)	15.4 (26.2)	7.7 (18.5)	100
Food insecure	Count	17 (19.8)	11(9.6)	8 (6.6)	36
	% within Row	47.2 (55)	30.6 (26.7)	22.2 (18.3)	100
f _{col}	Count	27	13	9	49
	% within Row	55.1	26.5	18.4	100

Note. $N = 49$. $\chi^2 = 3.45$, $df = 2$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

analysis suggests the result is not statistically significant within 95% confidence intervals ($\chi^2_{(2)} = 3.45, p = 0.178 > p = 0.05$). As a result, we accept the null hypothesis that suggests that the number of individuals who are food secure with an optimal self-rated health status do not differ from individuals who are food insecure with an optimal self-rated health status.

To estimate the strength of association between food security and self-rated optimal health status, Cramer's phi (ϕ ; or sometimes called Cramer's V) is used as an appropriate measure since the chi-square contingency table exceeds the dimensions of a 2 X 2 which uses the phi coefficient (ϕ) to measure the strength of association between variables. The Cramer's phi is an extension of the phi coefficient and uses the same abbreviated symbol. Despite this similarity, the Cramer's phi (ϕ) is calculated differently and uses the following mathematical formula to determine the effect size:

$$\phi = \sqrt{\chi^2 / n(L - 1)}$$

where χ^2 is the chi-square statistic, n is the sample size and L is the minimum value of the row total and column total from the contingency table (Corder & Foreman, 2009; King & Minium, 2003). Based on the data in Table 12, $\chi^2 = 3.45$, $n = 49$ and $L = 2$. To determine the value of Cramer's ϕ :

$$\phi = \sqrt{3.45 / 49(2 - 1)}$$

$$\phi = \sqrt{3.45 / 49 (1)}$$

$$\phi = \sqrt{3.45 / 49}$$

$$\phi = \sqrt{0.07}$$

$$\phi = 0.265$$

Cramer's ϕ can be converted to $\hat{w}$ by multiplying it by the square root of L ($\hat{w} = \text{Cramer's } \phi \sqrt{L}$). By converting Cramer's ϕ to $\hat{w}$, an effect size is obtained and interpreted according to

Cohen (1988) guidelines where an estimate of 0.1 is a small effect, 0.3 is a medium effect and 0.5 and over accounts for a large effect. To determine the value of $\hat{w}$:

$$\hat{w} = 0.265\sqrt{2}$$

$$\hat{w} = 0.375$$

The calculated effect size of $\hat{w} = 0.375$ indicates that the association between food security and optimal health status is a medium effect albeit not significant at the 95% confidence intervals as a likely outcome of a small sample size. Based on the effect size $\hat{w}$, Cohen (1988) computed tables related to the test of independence to calculate the power associated to the test. A small part of Cohen's tables have been reproduced in Table 14 for the purpose of this analysis and interpretation of results with a 2 X 3 contingency table. The power for a test that anticipates a medium effect between food security and self-rated health at an alpha level of 0.05 with $df = 2$, $n = 49$ is approximately 0.46. Therefore, if the null hypothesis was false (and, consequently, the alternative hypothesis that posits that both studied variables are not independent was true), we would have approximately a 46% chance of rejecting the hypothesis.

Test 9: Mean frequency of fruit and vegetable consumption and access to a functional vehicle. To verify whether the mean frequency of fruit and vegetable consumption and access to functional vehicle were related, responses to six items from the FFQ (continuous variable) were coded into a two level categorical variable where the mean frequency of fruit and vegetable consumption was assessed at the minimum consumption of once per day over one week and more than one frequency of fruits and vegetables per day over one week. Table 15 provides the expected and observed frequencies to test the potential relationship between mean frequency of fruit juice intake and access to a functional vehicle. Because two cells have expected frequencies of less than 5, the Fisher's Exact Test is interpreted.

Table 14

The Chi-Square Test of Independence, Effect Size and Power

Test	<i>df</i>	<i>n</i>	<i>P</i>		
			Small effect	Medium effect	Large effect
χ^2	2	50	0.09	0.46	0.90
		100	0.13	0.77	0.99
		200	0.23	0.97	0.99

Note. *df* = degrees of freedom, *n* = sample size, *p* = 0.05.

Adapted from “Statistical Power Analysis for the Behavioral Sciences, 2nd ed.,” by J. Cohen (1988). New York: Lawrence Erlbaum Associates, Inc.

Table 15

Expected and Observed Frequencies in a 2 X 2 Contingency Table Based on Mean Frequency of Fruit Juice Intake and Access to a Functional Vehicle

		Mean frequency of fruit juice intake		
Access to functional vehicle		Consume fewer than once daily	Consume more than once daily	f _{row}
Yes	Count	6 (4.6)	1 (2.4)	7
	% within Row	85.7 (65.7)	14.3 (34.3)	100
No	Count	26 (27.4)	16 (14.6)	42
	% within Row	61.9 (65.2)	38.1 (34.8)	100
f _{col}	Count	32	17	49
	% within Row	65.3	34.7	100

Note. $N = 49$. $\chi^2 = 1.50$, $df = 1$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

The critical value for rejecting the null hypothesis is set at the alpha level of .05 and the p -value of the Fisher's Exact Test is $p = 0.397$. Because the critical value of the Fisher's Exact Test is greater than the alpha level of significance ($p > 0.05$), data suggests that we do not reject the null hypothesis and conclude that no real difference exists between mean frequency of fruit juice consumption and access to a functional vehicle.

To test the strength of the association between mean frequency of fruit juice intake and access to a functional vehicle within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested.

$$\phi = \sqrt{(1.50/49)}$$

$$\phi = \sqrt{0.03}$$

$$\phi = 0.175$$

The responses of 49 participants were examined to determine whether there was an association between mean frequency of fruit juice consumption and access to a functional vehicle. Based on the results of a non-significant chi-square test ($\chi^2_{(1)} = 1.50$, $p > 0.05$), the calculated effect size of 0.175 indicates that the association between mean frequency of fruit juice intake and access to a functional vehicle is relatively small according to Cohen's (1988) guidelines. Since the association between the two variables is not statistically significant ($p > \alpha$), the effect size is also relatively weak ($\phi = 0.175$).

Table 16 provides the expected and observed frequencies to test the potential relationship between mean frequency of fruit intake and access to a functional vehicle. Since there are two cells with expected frequencies of less than 5, the Fisher's Exact Test is interpreted.

The critical value for rejecting the null hypothesis is set at the alpha level of .05 and the p -value of the Fisher's Exact Test is $p = 0.23$. Because the critical value of the Fisher's Exact Test is greater than the alpha level of significance ($p > 0.05$), data suggests that we do not reject

Table 16

Expected and Observed Frequencies in a 2 X 2 Contingency Table Based on Mean Frequency of Fruit Intake and Access to a Functional Vehicle

Access to functional vehicle		Mean frequency of fruit consumption		f _{row}
		Consume fewer than once daily	Consume more than once daily	
Yes	Count	2 (3.7)	5 (3.3)	7
	% within Row	28.6 (52.9)	72.4 (47.1)	100
No	Count	24 (22.3)	18 (19.7)	42
	% within Row	57.1 (53.1)	42.9 (46.9)	100
f _{col}	Count	26	23	49
	% within Row	53.1	46.9	100

Note. $N = 49$. $\chi^2 = 1.97$, $df = 1$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

the null hypothesis and conclude that no real difference exists between mean frequency of fruit consumption and access to a functional vehicle.

To test the magnitude of the association between mean frequency of fruit intake and access to a functional vehicle within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested.

$$\phi = \sqrt{(1.97/49)}$$

$$\phi = \sqrt{0.04}$$

$$\phi = 0.20$$

The responses of 49 participants were examined to determine whether there was an association between mean frequency of fruit consumption and access to a functional vehicle. Based on the results of a non-significant test ($\chi^2_{(1)} = 1.97$, $p > 0.05$), the calculated effect size of 0.20 indicates that the association between mean frequency of fruit intake and access to a functional vehicle is relatively small according to Cohen's (1988) guidelines. Since the association between the two variables is not statistically significant ($p > \alpha$), the effect size is also relatively weak ($\phi = 0.2$).

Table 17 provides the expected and observed frequencies to test the potential relationship between mean frequency of green salad intake and access to a functional vehicle. Since there is one cell with an expected frequency of less than 5, the Fisher's Exact Test is interpreted.

The critical value for rejecting the null hypothesis is set at the alpha level of .05 and the p -value of the Fisher's Exact Test is $p = 0.62$. Because the critical value of the Fisher's Exact Test is greater than the alpha level of significance ($p > 0.05$), data suggests that we do not reject the null hypothesis and conclude that no real difference exists between mean frequency of green salad consumption and access to a functional vehicle.

To test the magnitude of the association between mean frequency of green salad intake

Table 17

Expected and Observed Frequencies in a 2 X 2 Contingency Table Based on Mean Frequency of Green Salad Intake and Access to a Functional Vehicle

		Mean frequency of green salad intake		
Access to functional vehicle		Consume fewer than once daily	Consume more than once daily	f _{row}
Yes	Count	5 (5.6)	2 (1.4)	7
	% within Row	71.4 (80)	28.6 (20)	100
No	Count	34 (33.4)	8 (8.6)	42
	% within Row	81 (79.5)	19 (20.5)	100
f _{col}	Count	39	10	49
	% within Row	79.6	20.4	100

Note. $N = 49$. $\chi^2 = 0.335$, $df = 1$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

and access to a functional vehicle within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested.

$$\phi = \sqrt{(0.335/49)}$$

$$\phi = \sqrt{0.007}$$

$$\phi = 0.08$$

The responses of 49 participants were examined to determine whether there was an association between mean frequency of green salad consumption and access to a functional vehicle. Based on the results of a non-significant chi-square test ($\chi^2_{(1)} = 0.335$, $p > 0.05$), the calculated effect size of 0.08 indicates that the association between mean frequency of green salad intake and access to a functional vehicle is very small according to Cohen's (1988) guidelines. Since the association between the two variables is not statistically significant ($p > \alpha$), the effect size is also very weak ($\phi = 0.08$).

Table 18 provides the expected and observed frequencies to test the potential relationship between mean frequency of potato intake and access to a functional vehicle. Since there are two cells with expected frequencies of less than 5, the Fisher's Exact Test is interpreted.

The critical value for rejecting the null hypothesis is set at the alpha level of .05 and the p -value of the Fisher's Exact Test is $p = 1.00$. Because the critical value of the Fisher's Exact Test is greater than the alpha level of significance ($p > 0.05$), data suggests that we do not reject the null hypothesis and conclude that there is virtually no difference between mean frequency of potato consumption and access to a functional vehicle.

To test the magnitude of the association between mean frequency of potato intake and access to a functional vehicle within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested.

Table 18

Expected and Observed Frequencies in a 2 X 2 Contingency Table Based on Mean Frequency of Potato Intake and Access to a Functional Vehicle

		Mean frequency of potato intake		
Access to functional vehicle		Consume fewer than once daily	Consume more than once daily	f _{row}
Yes	Count	7 (6.9)	0 (0.1)	7
	% within Row	100 (98.6)	0 (0.01)	100
No	Count	41 (41.1)	1 (0.9)	42
	% within Row	97.6 (97.9)	2.4 (0.02)	100
f _{col}	Count	48	1	49
	% within Row	98	2	100

Note. $N = 49$. $\chi^2 = 0.170$, $df = 1$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

$$\phi = \sqrt{(0.17/49)}$$

$$\phi = \sqrt{0.003}$$

$$\phi = 0.06$$

The responses of 49 participants were examined to determine whether there was an association between mean frequency of potato consumption and access to a functional vehicle. Based on the results of a non-significant chi-square test ($\chi^2_{(1)} = 0.17, p > 0.05$), the calculated effect size of 0.06 indicates that the association between mean frequency of potato intake and access to a functional vehicle is very small according to Cohen's (1988) guidelines. Since the association between the two variables is not statistically significant ($p > \alpha$), the effect size is also very weak ($\phi = 0.06$).

Table 19 provides the expected and observed frequencies to test the potential relationship between mean frequency of carrot intake and access to a functional vehicle. Since there are two cells with expected frequencies of less than 5, the Fisher's Exact Test is interpreted. The critical value for rejecting the null hypothesis is set at the alpha level of .05 and the p -value of the Fisher's Exact Test is $p = 1.00$. Because the critical value of the Fisher's Exact Test is greater than the alpha level of significance ($p > 0.05$), data suggests that we do not reject the null hypothesis and conclude that there is virtually no difference between mean frequency of carrot consumption and access to a functional vehicle.

To test the magnitude of the association between mean frequency of carrot intake and access to a functional vehicle within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested.

$$\phi = \sqrt{(0.35/49)}$$

$$\phi = \sqrt{0.007}$$

$$\phi = 0.08$$

Table 19

Expected and Observed Frequencies in a 2 X 2 Contingency Table Based on Mean Frequency of Carrot Intake and Access to a Functional Vehicle

		Mean frequency of carrot intake		
Access to functional vehicle		Consume fewer than once daily	Consume more than once daily	f _{row}
Yes	Count	7 (6.9)	0 (0.1)	7
	% within Row	100 (98.6)	0 (1.4)	100
No	Count	41 (41.1)	1 (0.9)	42
	% within Row	97.6 (97.9)	2.4 (2.1)	100
f _{col}	Count	48	1	49
	% within Row	98	2	100

Note. $N = 49$. $\chi^2 = 0.35$, $df = 1$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

The responses of 49 participants were examined to determine whether there was an association between mean frequency of carrot consumption and access to a functional vehicle. Based on the results of a non-significant chi-square test ($\chi^2_{(1)} = 0.35$, $p > 0.05$), the calculated effect size of 0.08 indicates that the association between mean frequency of carrot intake and access to a functional vehicle is very small according to Cohen's (1988) guidelines. Since the association between the two variables is not statistically significant ($p > \alpha$), the effect size is also very weak ($\phi = 0.08$).

Table 20 provides the expected and observed frequencies to test the potential relationship between mean frequency of vegetable intake and access to a functional vehicle. Since there are two cells with expected frequencies of less than 5, the Fisher's Exact Test is interpreted.

The critical value for rejecting the null hypothesis is set at the alpha level of .05 and the p -value of the Fisher's Exact Test is $p = 1.00$. Because the critical value of the Fisher's Exact Test is greater than the alpha level of significance ($p > 0.05$), data suggests that we do not reject the null hypothesis and conclude that there is virtually no difference between mean frequency of vegetable consumption and access to a functional vehicle.

To test the magnitude of the association between mean frequency of vegetable intake and access to a functional vehicle within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested.

$$\phi = \sqrt{(0.014/49)}$$

$$\phi = \sqrt{0.0003}$$

$$\phi = 0.017$$

The responses of 49 participants were examined to determine whether there was an association between mean frequency of vegetable consumption and access to a functional vehicle. Based on the results of a non-significant chi-square test ($\chi^2_{(1)} = 0.014$, $p > 0.05$), the

Table 20

Expected and Observed Frequencies in a 2 X 2 Contingency Table Based on Mean Frequency of Vegetable Intake and Access to a Functional Vehicle

		Mean frequency of vegetable intake		
Access to functional vehicle		Consume fewer than once daily	Consume more than once daily	f _{row}
Yes	Count	3 (3.1)	4 (3.9)	7
	% within Row	42.9 (44.3)	57.1 (55.7)	100
No	Count	19 (18.9)	23 (23)	42
	% within Row	45.2 (45)	54.8 (55)	100
f _{col}	Count	22	27	49
	% within Row	44.9	55.1	100

Note. $N = 49$. $\chi^2 = 0.014$, $df = 1$. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col} = marginal column frequency, f_{row} = marginal row frequency.

calculated effect size of 0.017 indicates that the association between mean frequency of vegetable intake and access to a functional vehicle is very small according to Cohen's (1988) guidelines. Since the association between the two variables is not statistically significant ($p > \alpha$), the effect size is also very weak ($\phi = 0.017$).

For this analysis, 49 participants responded to six items as per the FFQ that assessed mean frequency of fruit juice, fruit, green salad, potatoes, carrot and vegetable consumption over the course of one week. The once continuous variable was transformed to a 2-level categorical variable where the mean frequency of consumption was assessed at at least one frequency of fruit juice, fruit, green salad, potatoes, carrots and vegetables per day over a week period. Access to a functional vehicle was assessed by the provision of positive or negative response to a single item ('yes' or 'no'). For all six tests, the χ^2 were not significant with an alpha level of 0.05. The Cramer's phi (or Cramer's V) statistic to test the magnitude of association between variables suggested small to negligible associations between each item on the FFQ and access to a functional vehicle. The analysis suggests that there are virtually no differences between individuals who have access or not to a functional vehicle and the mean frequency of fruit juice, fruit, green salad, potatoes, carrots and vegetables consumption.

Qualitative Results

Support for inter-rater reliability for single interviews with First Nations, Inuit, Métis and non-Aboriginal participants was provided by several community members who each worked with and discussed and developed the codes with the researcher. Agreement rates of codes for data with Métis and Inuit participants was 100% and inter-rater reliability for First Nations data was 0.989. With the assistance from a senior graduate student in Clinical Psychology, inter-rater reliability for data from non-aboriginal participants was based on the division of this information

in the three study main groups. Inter-rater reliability for ideas and quotes for current Good Food Box customers was 0.976; 0.965 for former customers and 0.956 for non-users. These rates provide a high rate of confidence in the analysis process of group-based qualitative data.

The following sections detail the factors that influence concerns about health and food as a result of information participants received from media and people. These in turn were said to also influence their perception about food safety and environmental health.

Concerns about food, health and diet. While not a direct focus of the study, participants shared concerns about food safety which affected the perception of foods as good or bad and influenced what individuals fed their families and how food was prepared and cooked. Table 21 summarises major concerns about food and harvesting practices and personal sentiments about food waste. These concerns were described to affect how and what foods individuals consume, their personal and familial health and the environment. Participants expressed concern over added sugar and salt in canned produce while others tried to avoid or minimise the consumption of canned foods due to the presence of preservatives and the perception of nutrient loss compared to fresh or frozen varieties. Others thoroughly rinsed their canned fruits and vegetables with water in order to benefit from the nutrients and satisfy their cravings:

“We try to avoid can foods for the sugar kind that come in can. We buy from time to time. We suppose to eat what is good for our heart but we can’t because it’s a canned thing, so we have to use very moderate[ly].”

“Even though canned has more salt, I rinse out the salt thoroughly.”

“I would rather the frozen than canned. Cans have chemical in them in stuff. Canned has sugars and just too much MSG [explicit word].”

Table 21

Major Themes and Issues Related to Food, Health, Diet and the Environment

Main theme	Concern	Issue
Food safety	Food additives and canned produce	Flavour enhancers (Sugar and salt); Loss of nutrients; Use of preservatives
	Food additives and convenience foods	
	Food additives and fresh produce	Food labelling, Use of pesticides, Use of preservatives
	Food contamination and fresh produce Cooking practices and Carcinogens Ethical harvesting practices and Genetically Modified Organism (GMO)	Salmonella Consuming burnt food Safety of GMOs for human consumption
Ethical harvesting practices and food sustainability	Production of food for mass consumption	Effects of harvesting practices on the environment and health
Effects of transitioning from traditional country foods to Western diet for Aboriginal people	Effects of colonization on diet and health	Location of culturally familiar, nutritious and safe foods

For others, concerns about food safety related to food additives in convenience foods which were perceived as less expensive and more accessible to those struggling to put food on the table. Because convenience foods are typically inexpensive and can feed many, nutrient-poor foods most available to marginalized groups (convenience foods) were not perceived to support or promote optimal health or well-being because of the adverse effects experienced when eaten. For several individuals, this perception led to mistrust in the food industry and food system:

“Junk. They don’t feel good. They eat like Kraft Dinner and they feel then they bloat and they have problems and they have health problems. There’s a direct link and these are like 19 year olds that have severe health problems because they eat Kraft Dinner. You can’t eat Kraft dinner and be healthy.”

“White rice and baloney, for me that’s eating shit. If you eat shit, you’re gonna die. They give them food that makes them closer to death. I can’t eat at the [Church] or [Women’s drop-in centre] or even [Aboriginal health centre] community kitchen [...].”

“The food industry is makin’ us sick and they know it.”

For others still, there were concerns over food additives in and the use of pesticides and preservatives on fresh food produce. Participants were also concerned about the lack of food labeling which affected what could be known about nutrient content and harvest location; which they used to gage food quality but were sometimes confused over the significance of labels (e.g., organic) and how it affects personal perception and consumer behaviours:

“There’s like two messages there from like the health agencies. Like, “*Eat fruits and vegetables... but our fruits and vegetables are all a little tainted.*”

“It’s more of an Ontario driven raspberry opposed to something coming from Chile, Puerto Rico or the U.S. I’m a label watcher. I know what I’m buying. The way that they

treat their fruits and vegetables is based on chemical harvesting and cultivating is totally different than the Canadian regulations. I'm aware of if there are going to be certain pesticides used."

"Organic foods are overrated. I don't like the idea of pesticides in my foods. But I've tried a couple that I thought were interesting in terms of their flavour but for the most part I think it's an excuse to make extra money and often a misnomer. They say things are organic to charge more and what does it really mean? It's not organic."

For others, preoccupation over the potential contamination of produce was expressed in relation to the perception of questionable harvesting practices and different food regulations in foreign countries compared to those practiced domestically:

"The pesticides, the health concerns like salmonella and all that... if it says Chile or Mexico. Whether it's a myth or not, the thought is they don't have the regulations that we do have about spraying and putting stuff on their fruit. It scares. I just go: "I'm not buying that!" Of course I'm missing out sometimes on stuff but, it's just like, if I see blueberries from Mexico, I'm not buying it."

"I've heard of salmonella in lettuces and stuff like that being grown in [foreign country]. You hear these stories [of it] not properly regulated like it is here. It scares you a bit. It's a cheaper way to practice for them; they grow it that way instead of doing it the proper way [like] the way we do it here."

New information about cooking practices and carcinogens influenced the cooking practices of several participants. For those who like to grill their food, how this common practice may be linked to cancer was shared amongst health conscious work colleagues:

“À mon travail, cette semaine quelqu’un... je ne sais pas qui, a fait des photocopies, de faire attention quand on fait du charcoal. [...] si on fait bruler notre viande ou même nos légumes, c’est cancérogène. On travaille... les affaires vite faites sont pas très bonnes pour la santé.”

Finally, for some individuals, harvesting and importing produce for mass consumption was not viewed as a sustainable practice. For others still, concerns about food ethics and the proliferation of genetically modified organisms in our food system had some questioning just how healthy fresh foods may be since information about how what we eat and harvesting practices affects our health remain less clear:

“Fruits are a luxury, right? From ethical and environmental aspects, it’s not a must that we have fruit throughout the year. Promoting to eat fruits throughout the year is not good for the environment. You have to find balance... not bring kiwis from New Zealand.”

“I really disagree with the way food is handled, transported and treated. I don’t think it’s food at all.”

“There’s ethics [issues] around foods right now and it’s based around: *Should you eat genetically modified food? Are you aware that your food is being genetically modified?* I think of things like that. It falls in line as, I would imagine, the people who worry about pesticides on their food probably also worry about it being genetically modified.”

Thirty percent of Aboriginal participants expressed apprehension over the effects of colonisation on the transition from a diet rich in country foods to increased dependence on foods conducive to a Western diet. The observable effects of having increased access to processed foods saw an increase in cases of obesity, diabetes and cardiovascular issues for Aboriginal people living in urban areas and for First Nations on-reserve:

“So those type of choices would be from an aboriginal point of view. *How does somebody stay healthy, lots of energy, watch their heart conditions, diabetes, and the obesity?* I just think that we have been turned on to the so called ‘*fast food life style living*’ in urban centers so much that it’s very easy for us to access that poutine dish. I know at my home reserve there is a lot of obesity, diabetes, lots of heart attacks.”

While it was acknowledged that fruits and vegetables are important dietary components to enhance better health outcomes, the Inuit related having access to country foods with optimal health. As fruits and vegetables were not part of their traditional diet, culturally they had strategies to obtain the vitamins and minerals they needed to be healthy while living in more northern regions. Now living in urban areas, one Inuk woman mentioned having to be resourceful to find alternatives to obtain the high quality nutrients she could still access in affordable ways if she lived near her community of origin (e.g., wild game and fish):

“Up north we don’t have vegetables, trees or gardens or anything like that. It’s not a part of our culture but we’re in the 2000s now. [...] Well, wasn’t a part of our diet.”

“I find substitutes and alternatives to keep our dietary up to par. Health-wise Inuit have low iron because they’re used to eating their own dietary food. We have to substitute it with other iron-filled and protein-filled foods.”

For some Aboriginal peoples, the experience of moving away from the community, familiar foods and traditional ways of harvesting, fishing, trapping and hunting for food meant knowing less about where our food comes from and how healthy it may be:

“You don’t know what you’re eating in the city anymore. It’s processed food, like hamburger meat. Everything’s processed. On the land it’s fresh. It’s not from the farm.”

“When you have cultural heritage as an Inuk from up North eating organic meat and poultry, of course it does. We have substitutes here that we buy.”

Consumer behaviour is influenced in different ways by food safety information from media and/ or word of mouth, idiosyncratic experiences and educated estimates. For First Nations, Inuit and Métis peoples, accessing nutrient-rich country foods at an affordable price and equivalent quality remains difficult in urban settings. As some households modify what they eat in response to what they hear and know concerning the risks of consuming or purchasing domestic or imported fresh food varieties, the result is usually the avoidance of produce perceived as hazardous. However, this avoidance or purchase of fresh produce typically relies on the quality of information perceived as valid from a macro-level (food, agriculture or health sectors), the perceived risk associated to consuming the product, the cost of the product and its health effects. This in turn affects cooking practices, food consumption and health.

The experience of food insecurity: Individual, household and community levels.

Food insecurity has a significant impact on individual and household health and its adverse effects often reverberate at the social level within the community and beyond its confines. Dependence on government support was an experience shared by multiple households within the same community and factors that support the experience of food insecurity often lead toward the collective perception of feeling excluded, having fewer social opportunities and traveling outside the community to access less expensive food options.

At the individual level, former Good Food Box customers and non-users described frequent and even chronic episodes of food insecurity within a 12 month period. For current Good Food Box customers, insufficient access to nutritious food was described as more sporadic and shorter in duration. Former Good Food Box customers and non-users described reducing the

frequency with which they ate daily where they most often did without the items they needed if they could not acquire it from a community or emergency food program (mentioned 16 times). Others described going hungry/starved (mentioned 9 times) and experiencing weight gain and loss (mentioned 3 times) because of compromises made at the dietary level to compensate for insufficient finances to procure sufficient quantities of healthy food:

“À cet heure, je mangeais deux fois par jour, le déjeuner et souper mais là je mange rien qu’une fois. J’ai pas les sous pour manger.”

“After that you do without or you go to a program or you go to a food bank or you go to a soup kitchen to get what you need or you just simply do without.”

“I wasn’t eating and I lost 36lbs in less than 2 months. I’m not saying I was eating fresh fruits and vegetables. My weight went up again. I lost 2lbs last month maybe ‘cause I’m not eating!”

Non-users of the Good Food Box Program described psychological aspects related to living in a state of food deprivation in quantity and frequency of eating. They described feel depressed and helpless when making food-buying decisions because they could hardly afford the items they needed to survive:

“Knowing when I do have to go to the store and buy stuff for meals or to replenish eggs, milk or bread, knowing how much more broke I’m gonna be next day. It’s works on you mentally a lot.”

“I’m depressed. I shut down, don’t wanna go outside, don’t eat. [...] I feel very depressed. Energy is very little.”

Most participants across all groups felt the need to hide their hardships from others in order to not feel “othered”. This often left them feeling socially isolated:

“No, nobody cares! I don’t talk about it. They’d think I was begging if I talk about it.”

For some, trying new foods was risky as it increased the potential of food waste. Even though many were cautious consumers, social assistance was still insufficient to cover the costs of household necessities:

“Living low-income makes it difficult because Ontario Works only provide basics and relying on Child Tax Benefits, I have to be careful what I spend and budget on fruits and vegetables. It doesn’t cut it. If you weren’t here or if food banks weren’t available in town, it would be very difficult.”

Those who struggled to achieve food security often felt excluded and ostracized from events in the community or from gatherings with friends. As an ongoing struggle to get ahead financially or find food sources within their budget, descriptions alluding to isolation and ostracism were mentioned 10 times (twice by current Métis customers and non-users of the Good Food Box) as an aspect that shaped the social, physical and mental health of many who lived in the same community and experienced food insecurity:

“Well, physical and social health, I feel that I’m not able to have people come over for dinner because I can barely feed myself and this affects my friendships.”

“Even though my friends offer to bring food, I just always feel badly. I just always feel like a charity case. I just feel badly about myself. [...] They don’t want to even take an apple from me or a cup of tea and that’s hard on me.”

At the household level, non-users were dissatisfied with the quality of household food. Frustration related to the monotony of food where meals lacked variety (mentioned 12 times), too few or no fruits and vegetables were served (mentioned 6 times) and a mix of canned and convenience foods frequently made up most meals (mentioned 3 times). Food and meal time

were sources of disinterest and indifference for most family members due to tensions over food and already strained finances:

“You notice it’s gone and you have to eat Kraft Dinner for a week straight. What do you want for breakfast? Kraft Dinner!”

“I’ll fall back on purchasing canned vegetables. I’m falling into a pattern where I’m buying the same things like canned corn or green beans but they’re not as flavourful or tasty, you know? I’m frustrated by that.”

As finances were stretched, household food resources went from abundance to depletion. For former Good Food Box customers who depend on social assistance and emergency food resources to survive, meager provisions or bare cupboards were left by the end of the month:

“Sometimes at the beginning of the month I’m stocked and go between frozen and fresh. End of the month, there’s barely any. Right now, I have no fruit which is really bad.”

“And ‘cause I’ve had both lack of food and a lot of food. [...] If I have the money I’ll eat well. And I think that most people that are on OW or ODSP or CPP or Old Age Pension, it’s a matter of money. It comes to down to that.”

Household members were also dissatisfied with the quantity of fruits and vegetables available for consumption (mentioned 3 times by former customers) and could often not eat what they want (mentioned 13 times by non-users and 4 times by current customers (non-Aboriginal)):

“Je me dis que je pourrais toujours faire mieux. Comme je regarde le Guide alimentaire canadien, je mange pas les portions que je devrais. Quand j’ai deux portions par jour, je suis super fière de moi. C’est sure que je me dis que je peux faire mieux.”

“It frustrates me that I can’t afford to get what I want again and again.”

Others were frustrated because of no choice or control over the types of food received through food banks. Participants underscored the receipt of expired food and feeling degraded when acquiring charity:

“They even give you a choice to take home a box of expired food! They said “*Here, you can look through this if you want.*” That shouldn’t be a choice.”

“Knowing I have to go to a food bank and the embarrassment of waiting in line outside for 1.5 hours even in the wintertime. You don’t know what you’re gonna get. [...] It’s embarrassment, lack of energy to go and get it at the food bank.”

Parents and child guardians described psychological components of household food insecurity which resulted in their preoccupation over the child’s diet (mentioned 9 times). Household tension was also reported (mentioned 5 times) because individuals complained of hunger and were frustrated that life could not be different:

“I want to get what they want: my grandchild and my daughter and my son. I watch what they like, what they don’t and then I try to get as much vegetables as I can for them... not always the case, right?”

“He feels weird coming over and seeing me when he opens my fridge and it’s empty. I have canned goods or a bread in the freezer... but it does cause tension.”

When household food insecurity was more severe, parents and grandparents often went without food prior to any child going hungry (mentioned 6 times). Those who struggled to put food on the table would sacrifice their nutrient and caloric intake and blame themselves for monthly food and financial shortages and subsequent suffering. Parents and grandparents claimed the children were oblivious of the household hardships and were healthy as possible:

“I always kept myself last so I don’t really care what I eat. Honest, I’m fine; perfectly healthy. I don’t have no cancer, heart disease and I’m gonna be 50 soon. Whatever it is I’m eating, I’m doing good. I have no health condition at all [...] but I try to do better for my kids. I’m tryin’ to keep ‘em as healthy as I can.”

For those unaffiliated with the Good Food Box, when resources were depleted and no more food or money could be obtained, debt would be acquired to replenish the household food supply. When staple foods (e.g., milk, bread, eggs) and meat (red meat or poultry) were bought on credit, high interest rates often took away money that would have been used the following month just to pay for food the month prior to receiving their bill:

“I’m still putting myself in the hole just to come up with a bit of meat.”

“Getting enough food. Basically living off a credit card... not enough money.”

For others, the experience of poverty and deprivation affected ties with family members over time where some lost touch. Some internalized labels that were used against them as ways to refer to themselves while others felt like no one cared about them and they did not fit in:

“[...] when you’re a bum like me, you just can’t do it.”

“I don’t feel like I fit into society because I don’t feel like the average person that can afford stuff.”

For some, having few financial resources affected their sense of space because they could not afford to buy items at certain places even though it was within proximity:

“The plaza’s right where I live. It’s easy to get there and I can’t go there! I can’t afford to, you know?”

For First Nations peoples unaffiliated with the Good Food Box, several remarks were made about differences in access to fruits and vegetables in on- and off- reserve communities.

Partly due to geographic location and climate, those from a community in northern of Ontario mentioned how the community had little to preserve the fruits and vegetables they received from food producers in more southern regions which affected their food and cooking habits:

“Participant: We didn’t no... no stuff like that vegetables and fruits really up, up North [Attawapiskat].

Interviewer: Do you find that there is a difference with now that you live in Ottawa.

Participant: Oh my God yeah! It’s a difference.

Interviewer: Do you still cook without fruits and vegetables because how you grew up?

Participant: At the beginning [...]”

Experiencing food insecurity and poverty affects individual and household health and well-being. Because of limited finances and few networks for personal and social support in times of need, people who were disenfranchised felt alone and that society and close or extended family members did not care for them. From these claims, food insecurity also negatively affects one’s the sense of place which in turn affect personal and social ties and overall community life.

Barriers to food security in urban Ottawa, Canada. While it is important to understand how food insecurity affects individual, household and community health at different levels and dimensions, it is equally critical to understand the major barriers that vulnerable people and families face that challenge their economic, social, psychological, cultural, physical and nutritional well-being in the environment in which they live and work. Table 22 summarises the major barriers to food security at the individual-, social-, physical- and macro-levels.

Individual factors. In urban Ottawa, the main individual and economic factors that continue to challenge food security status is inadequate income. Whether from employment (mentioned 53 times as inadequate) or social assistance (mentioned 37 times; EI, ODSP or

Table 22

Major Barriers to Food Security as Experienced in urban Ottawa, Canada

Factor	Theme	Example
Individual factors	Inadequate or no income	- Income source and amount (e.g., EI)
	Cost of living	- Cost of rent; utilities
	Lifestyle	- Student and single status; time
	Lack of food knowledge and cooking skills	- Unsure how to cook certain foods
	Lack of storage space and cookware	- No counter space, too few pots and pans
	Physical and mental health issues	- Chronic fatigue and pain; fibromyalgia and physical limitations; depression
	Addictions	- Illicit and legal drugs
Social factors	Household members	- Children, significant other
	Perception of little social support	- Out of pocket costs when caring for elderly/ ill parents
	Food theft	- Roommates take other house members' food
Physical environments (setting)	Cost of food and non-food items	- Cost of staples; fruits and vegetables; gluten-, lactose- and fat-free items; school supplies
	Poor food quality	- Available food does not meet personal food quality standards
	Food store access	- Food store available within a reasonable distance
	Neighbourhood safety	- Perception of personal safety; crime rates
	Transportation access	- Availability of transportation
	Weather	- Climate changes; geography; seasonal harvesting conditions; cold/ hot weather
Macro-level environment	Transportation	- Affordable and efficient public transportation

Ontario Works), little income in relation to the increase of other costs made it difficult for some to buy most basic necessities:

“Source of income would be the only thing [...] The amount of income. I’m fortunate enough to be on EI; you get a bit more money. If people who are on Ontario Works, like that would be really difficult. You hardly get anything at all to live off of.”

“My money pretty well runs out by the third or fourth week in the month from ODSP even if ya’ budget. I hate long months!”

“Living low-income makes it difficult because Ontario Works only provide basics and relying on Child Tax Benefits, I have to be careful what I spend and budget on fruits and vegetables. It doesn’t cut it.”

Income affected the quantity and quality of food and the frequency with which people ate throughout the day. It played a role in changing eating behaviours and peoples’ relationship with food: One person may eat to satiate their hunger and maintain health while another person tries to eat the minimum required to survive. Often, those on social assistance went from a situation where they could afford more food at the beginning of the month to one where they could barely eat in ways conducive to preserving a sense of human dignity:

“When you first get your cheque, you might get fruits and vegetables for this week. Then you have little bit of money and get some for next week. Then there’s about two weeks out of the month where you say: *“I can’t do that and I don’t have perishables I need.”*

“I have dietary restrictions. I need to be gluten free. And I’m concerned for my health. I’ve had chronic health issues for over 20 years. I prefer to eat organic meat and organic dairy and organic eggs and I can barely buy the things in those categories: meat, milk and eggs that’s organic and then afford to buy fruits and vegetables afterwards”

For others, unemployment and dependence on charity was a barrier to food security as many organizations are limited to the donations received and cannot offer fresh produce or other foods conducive to a balanced and nutritious diet. For others, unexpected or emergency expenses took up remaining money which left no money for food:

“J'utilise les banques alimentaires car je travaille pas en ce moment. Des fois on a des légumes mais c'est très rare.”

“Cause things sometimes come up and that's it you know?”

Another major barrier to food security was the cost of living in Ottawa. Mentioned 14 times by former Good Food Box customers and non-users, maintaining a certain standard of life was difficult in part because of high housing, food and transportation costs and parking fees:

“The car sitting there was getting costly to maintain and she wasn't driving, going out.

There's all this cost of parking and gas and insurance...”

For many, lifestyle factors were discussed in relation to socio-economic status, education and housing status. Mentioned nine times by current Good Food Box customers, single status and income were barriers to food security since the selection, purchase, preparation and proper storage of food depended on the efforts and ability of one person to complete a on limited income once the cost of basic necessities was considered. Mentioned six times by current Good Food Box customers, a combination of living single and being a full-time student left little time, energy and money to replenish food provisions after a full day of studies and fixed work hours around one's academic schedule. Working late or long hours left few moments to accomplish little else, especially when factoring in health issues and other household responsibilities:

“As a full time student, living alone, who's poor, with health issues, it's a hassle for me.”

“Sometimes it’s like time constraints like between work and school and everything else. I’m just too exhausted from getting to and from work and then studying. There’s like no energy to go buy things and then to prepare.”

For other students and single persons who struggle to balance household responsibilities with other demands, including studies, children, work or any combination of these, finding ways to transport food home alone is difficult as many did not live near a large food retailer or have access to a personal vehicle. People who did not own a vehicle either took the bus, walked or carpooled with a friend. For single people, lone mothers and students, the return home was difficult and sometimes complicated with bags in tow:

“Being one person, not having a car, not being able to transport a lot of food back home, not living near a grocery store, having health issues that prevent me from walking to the store or carrying the food back.”

Participants discussed the perception that society functions to accommodate families since most cost-effective food or household items are not practical to purchase and carry on your own. Most low-income households voiced wanting to stock up on food when stores held sales but found it impractical due to living in small and/or shared quarters with inadequate storage:

“You spend more money if you live alone. This is capitalism. Economics are scary but beneficial for big families to buy in big amounts.”

“The disadvantage going back to loss of food choices is buying a whole package of snap peas and just not having a large enough fridge to refrigerate them so that we can do a stir fry in two days from ‘em.”

For most participants (mentioned 19 times), little or no food knowledge and skills in combination with an absence of appropriate kitchen appliances, cookware and storage space

made it a challenge for some to achieve food security or prepare and cook food safely to promote health and support the consumption of nutritious meals:

“I don’t have the counter space or money to buy [microwave] [...]. So that makes it hard”

“I’m almost 39 and it’s taken me so long to build having enough decent pots and pans, can openers.”

“I have one sink and as a person who rents, almost everywhere I live is one sink. I don’t have much counter space so I have all dirty dishes in my sink.[...] I don’t feel like taking spinach out of the fridge and rinsing it in a sink that’s full of dishes.”

For participants across all groups, physical and mental health issues were mitigating factors to and an outcome of food insecurity. For several current and former Good Food Box customers, physical health issues often complicated the processes of purchasing, transporting and storing food. Affected by one or multiple health issues, participants discussed how chronic fatigue, chronic pain, and fibromyalgia as well as having clubfoot⁹ influenced their ability to tolerate and perform certain tasks. Their level of activity and pain tolerance fluctuated as a result of the severity of their symptoms, the potential for assistance, community infrastructure and/or weather conditions:

“Chronic pain and chronic fatigue and being born with clubbed feet and finding it more of a hassle to stand and wait for a bus when there’s no bench... especially in winter.”

“We have fibromyalgia. We are from Latin America. We are blessed in that situation, because we help each other. Otherwise I would be by myself and I don’t know how...”

For non-users of the Good Food Box, mental health issues were described as an important challenge to achieving food security. During periods of acute stress and food insecurity, the severity of their condition was heightened:

⁹ Distortion of the ankle and turning of the foot

“I’m depressed. I shut down, don’t wanna go outside, don’t eat. [...] Energy is very little.”

“I’ve been living with my elderly mother and taking care of her. I’m going through a transition. She’s recently moved into a home. I was no longer able to care for her because she’s got the onset of dementia and it’s become a re-parenting thing that’s chronic demanding care. I burned out and ended up having to discontinue employment.”

Finally, for non-users and former Good Food Box customers, addiction to illicit or legal drug use had two effects: 1) it prevented many from having enough money to buy the food they needed, or 2) it induced such a state that prevented them from eating the food they had:

“I have addictions issues and take the money that should be going to fruits for that.”

“I got on taking oxycocet and oxycontin and morphine 10 years ago after I had my daughter. After, they started me on Percocet. It went up from there. I got hooked.”

“I don’t have routines when to eat. I’ll just forget about it. I’m trying to stop that. When you’re using, you’re never eating. I used to be 110 lbs!”

Living a busy lifestyle where money, time and energy are stretched, participants acknowledged the importance of healthy eating and described how physical, mental health and external factors affect their ability to lead healthy lives and be food secure.

Social environment. For former and non-customers of the Good Food Box, factors in the social environment including household members and/or significant others and the perception of little social support available in times of need were challenges to food security. For parents, caring for one or more children limited their ability to shop for, prepare and cook food and share in the process as a family. For a parent, managing and limiting the quantity of food consumed by each household member is not an easy task when dealing with growing children:

“I have to conserve portions. Some days my kids will want that portion that was supposed to be for that evening or next day.”

For single parents who try to accommodate their child's food needs and requests, buying non-food items like school supplies, clothing and toiletries often cut into the food budget:

“I've been a single parent. I didn't have their father beside me. I had no support, nobody. I had to focus on my children and make sure they had what they wanted. Especially they're going to school.”

“You have to buy shoes for the kids and flour to make the bannock or whatever and you have to get the oil. Oil's not cheap anymore! You have to get toothpaste, toothbrush and toilet paper all the time. What I mean by I can't afford this... I can't because there's so many things you have to do when you have a daughter; when you have children.”

The care of an elderly or ill parent was a barrier to food security status because of out of pocket costs for care. Having an ill or dependent parent that required medical attention and care put a strain on personal finances and sometimes an adult child's (guardian) ability to be healthy enough to work outside the home when the sibling support for respite or income relief is modest or absent when dealing with unexpected or uninsured medical costs:

“The last 6 years of being with her and being her primary care giver. [...] We had some extraordinary expenses because of her condition. That put a squeeze on the food budget.”

“I'm bouncing back financially. It cost a fortune to get rid of this place and place my mother into a home.”

For several participants, accommodating the selective tastes and food requests of a significant other was a challenge to food security for the sake of fostering and strengthening relationships around and with food. For some, meat including steak and chicken were perceived

as expensive and planning a precise dish sometimes took time to come up with enough money to purchase condiments and other ingredients to complete a meal for their loved one. Some noted differences in eating habits which was often a source of frustration because, even though the main food buyers (women) made sacrifices to buy the needed food products on a limited budget, they were not benefiting from similar portion sizes compared to their male counterparts:

“He likes to live the high life: T-bone steaks, Caesar salads, balsamic vinegar, black olives and feta cheese. I can’t afford certain vegetables he needs to make dishes. It came to \$20 for the whole salad! He said he was gonna reimburse me but it’s on my tab!”

“I can’t even make a salad and now I gotta buy Caesar dressing. I bought the chicken and I need bacon. Gonna take me 2 or 3 days to come up with them. He eats more than I do.”

For others living with a roommate (friend, colleague, acquaintance or stranger) with whom to divide living expenses and save money on rent, food theft was sometimes a source of frustration when food was taken without permission or notification. These situations not only affected the types of foods one felt comfortable purchasing and storing within their household but also the dynamic of mistrust, doubt and suspicion with others with whom one lived:

“I finally bought some really good stuff this month like treats; special kinds of fish I like. That was all stolen. I don’t know if [roommate] had anything to do with it or someone else came and took it. It’s not a good situation. [...] I suspect he took it and sold it.”

The social context influences what we eat, how much and when. Participants expressed difficulties accessing enough food for themselves and accommodating the growing food, health and material needs of their children which put additional strain finances. Using food to connect with others and facilitate and strengthen interpersonal relationships was identified as personally meaningful and a financial challenge but also a source of both pleasure and frustration.

Physical environment. Several elements in the physical environment challenged a household's food security status depending where people lived or shopped for food. The cost of food was raised 52 times and described as a major source of frustration because the price of food influences dietary diversity, quality and the quantity of food that can be purchase and consumed during a period of time. Fresh foods were perceived as expensive compared to boxed or canned goods. For those on a limited food budget, the desire to eat healthy is often diminished when the cost of fresh food items is contrasted with their caloric value. For most who survive on a low-income budget, money is often prioritised to buy foods that are easy to prepare, more filling and less expensive. Generally, food quality is compromised for the sake of quantity and cost:

“People go to the grocery store and buy something [...] like a box of donuts, because donuts cost 3 bucks. Grapes costs the same and they will say there is more donuts and will feel full eating the donuts than eating little grapes. It's pricing that affects.”

Main food shoppers felt that conventionally grown fruits and vegetables, organic produce (e.g., eggs, dairy and meat) and other household staples were expensive. Buying healthier food options from restaurants came at a higher cost:

“I have dietary restrictions [...] I'm concerned for my health. I've had chronic health issues for over 20 years. I prefer to eat organic meat and organic dairy and organic eggs and I can barely buy the things in those categories: meat, milk and eggs that's organic and then afford to buy fruits and vegetables afterwards”

“Times are tough. My money goes farther buying staple foods. My staples are ground beef and things I can make an easy meal out of it compared to just fruits. I know they're good for you, but to me it's not filling.”

“I usually end up getting the cheapest options which are sandwiches or soup which may have some vegetables. The really good foods, the salads and stuff are more expensive.”

Living in an apartment or condominium meant limited or no access to space for a garden plot. Growing fresh produce privately or collectively was not always feasible downtown as an alternative to curtail high produce costs and eat healthy:

“It irks me how cheap some unhealthy foods are. How expensive in relation to how healthier foods can be. If I had my own green house, I can grow whatever I want to but how practical is that in the city? Not everyone can convert their roof top to green space.”

For newer immigrants to the area, a first trip to the grocery store can be shocking when taking in the cost and quality of staple foods compared to similar items in their native country (Europe). Because immigrants are often used to different food brands and produce quality, it can be a challenge to locate the types of high quality food you want at a price you believed is fair. Less healthy foods (high calorie, high fat, high sodium, little nutrients) were perceived as more accessible which was frustrating and stressful but something they felt they needed to get used to; not fight against:

“My first shock was everything is so expensive and the quality is sometimes very bad. Everything healthy is so expensive, compared to Europe. The staple products, milk or yogurt, I haven’t found good yogurt yet.”

“It is stressful is that it is so expensive. I don’t get the food I want for the money I think it is worth. This is Canada. I have to get use to that.”

“I eat a lot of vegetables and fruits and that is my main food. When I came to Canada I missed it a lot. It’s so expensive! I can’t buy a lot of it.”

The cost of certain dietary products and food alternatives like gluten-, lactose- and fat-free items or foods with reduced salt, sugar and fat quantities were often out of reach for those with specific health conditions or dietary restrictions. Following the dietary recommendations of their family physician, nutritionist or dietician was challenging if not impossible with what foods were most accessible on a limited budget:

“High blood pressure. It has to be low fat, eat more vegetables... that’s all they say. I can’t afford it.”

“Food allergies and food intolerances. My doctor has suggested for over 15 years that I’m lactose intolerant. I cannot afford lactose-free milk. I can’t afford the lactose drops to add that my dietitian has asked me to get. I need my calcium. I buy milk occasionally and just tolerate the upset [...] In terms of my grains and my carbs, buying a \$7 bread that’s really tiny compared to a \$1.50 bread that other people can buy is challenging.”

Mentioned by current Good Food Box customers and non-users, the cost of feminine hygiene products and over-the-counter and prescription drugs (covered or not by insurance companies) put an added strain on finances. Individuals who struggled to pay for fixed and variable expenses often went without paying for one or the other when there was no money left for emergency or unexpected costs or even menstrual products:

“On a jamais les sous. On a 227\$ pour manger, pour le lavage faut payer pis toute c’est ridicule. Les billets d’autobus ou si j’ai besoin des Tylenol, des affaires de même, les pads [serviettes sanitaires], c’est pas free. Faut payer. Chaque mois c’est la même chose. Pas assez de sous, pas assez de sous pour la nourriture. ”

“Worse now because I went to a doctor last [week] and now gotta pay for prednisone and antibiotics.”

For many, a trip to a food retailer that offered more sensibly priced items often required taking one or several buses outside the downtown core to other neighbourhood boundaries. While some individuals liked walking to the grocery store, many tried to get the most savings by traveling to more than one store where they could benefit from different sales even though it meant a more challenging commute home with bags in tow. It was perceived that food was more expensive downtown Ottawa compared to other communities:

“I’d rather walk but the grocery store is at least a 15 minute walk. [...] that store, it’s overpriced. So the store that is more affordable is a 30 minute walk.”

“The cost [...] I find them more expensive. I was living in the south end for a while and I’d often shop at [grocery retailer] which is the cheapest store. The closest one here is St-Laurent. I’d have to take a bus to get there so the savings of that I would save. Instead I’m putting it into bus tickets to get back and forth. I don’t shop there as much now.”

The poor quality of some foods offered in grocery stores was a barrier to food security because individuals did not have access to the high quality foods they needed in sufficient quantities at a price they could afford. With fewer products on the shelves prior to the receipt of produce shipment, people did not want to spend money on food that would not last:

“Between they’re not available versus like aren’t available in good quality.”

“The fresh produce, it’s like soggy within a day or two days in your own fridge. Some stuff is rotting. What’s offered is not good.”

As many First Nations and Inuit returned to their home community throughout the year, they had a chance to reflect and compare aspects of community life to Ottawa. To help reduce the cost of perishable foods in the north, many registered food retailers, suppliers and country

food processors/distributors work with a federally funded subsidy program¹⁰. Registered food retailers and suppliers are subsidized the cost of stocking or shipping perishable foods in the north. Savings from the subsidy are to be passed on to consumers by reducing food cost. However, while the demand for perishable foods in First Nations and Inuit communities is high, the cost of food remains high and the food quality is often poor:

“The fruits and vegetables are usually rotten by the time it gets to the community. There’s a lot of nutrition program [like] Nutrition North Program which replaced the Food Mail Program but other than that, there’s hardly any services or information available to Inuit communities about fruits and vegetable consumption until we see changes in retail mark-ups and ask for more fresh fruits and vegetables.”

Participants often had to deal with aspects that challenged their access to procure enough food for themselves and their household in general. First Nations and Inuit peoples discussed similar barriers to food security on-reserve or in northern communities but these barriers in turn negatively influenced early experiences with and perceptions about the value and role of fruits and vegetables in a balanced diet. A challenge to household and community food security was limited or no food stores within a reasonable distance from residences who offer high quality, fairly priced, safe and culturally appropriate foods conducive to a balanced and healthy diet.

Mentioned across all groups by Aboriginal peoples and one former Good Food Box customer (non-Aboriginal), weather determined food security in two ways: 1) it influences the types of produce can be harvested under specific climate and seasonal weather conditions, and 2) it affects individual ability to get to and from food stores when they needed or wanted to when conditions were deemed too cold and dangerous (ice, snow, slush and wind-chill factor) or unbearably hot, humid or raining:

¹⁰ Nutrition North Canada (NNC) is part of the Government of Canada’s Northern Strategy

“It’s basically transportation and the weather or the season.”

“[Large grocery retailer] is within walking distance but when it’s -30C with the wind chill, slush and snow or it’s over +30C with the humidity, it could be quite the trek.”

“It’s not too bad but if it’s raining most people are on their bikes and I can’t ride a bike. I can do more walking, so if it’s not raining it’s okay.”

Mentioned several times by elderly non-Aboriginal participants (non-users), concerns over neighbourhood safety influenced household food security in relation to when individuals felt it was safe to circulate by foot to run errands. Elderly persons were intimidated to be out in the evening hours and felt that their personal safety was at-risk because of recent incidents involving police intervention:

“I’m afraid to go out at night in my neighbourhood (*Laughs*)! If you can avoid it, don’t go out at night. This city’s getting bad. For anybody, it’s what’s going on the streets. It’s not safe to be out and I’m not scared of nothin’. As I’m getting older, I’m more cautious.”

“A lot of people are old, elderly. People are scared. Lots of problems where they don’t want to go out of the building.”

Macro-level environments. Finding adequate transportation to and from food retailers was problematic mainly due to financial limitations to pay for reliable transportation services in relation to where they lived and where they wanted to go. Participants discussed how they often had to take multiple buses to get to and from more affordable food retailers with heavy and awkward-to-carry items in tow. These factors along with the rising costs of a adult bus fare, reduced bus services and operation hours:

“Because of my health and transportation I can’t get out there as often.”

“Selection because they have things available at [grocery store] that are unavailable elsewhere [...]. It's worth going there once in a while. Not if you don't have time. Lately there's been changes with transportation problems.”

“It's not a problem with money its problem going shopping. I don't have a car so the amount of food I can buy is limited. [...] I cannot buy two big bags of potatoes at a time.”

Public transportation was challenging in the winter due to cold weather and being required to wait outside, exposed to the elements when a bus shelter was unavailable. For those with health issues, not having a place to sit while waiting for the bus added to the complexity:

“Sometimes it's difficult cause it's cold and far away. Transportation in other words.”

“Chronic pain and chronic fatigue and being born with clubbed feet and finding it more of a hassle to stand and wait for a bus when there's no bench. Especially in the winter.”

The infrastructure of public transportation, ensuing policies and scheduling regulations sometimes made for a difficult experience to get to and from food stores. As some individuals were reluctant to use the bus for reasons related to inconvenience and those stated above, some chose to access the food stores within walking distance from their home but highlighted that this too took time and effort. One could not always buy the quantity of items needed since they had to also rely on their own ability and capacity to bring their purchases home:

“Just too much to carry home sometimes. Gets too heavy. If you have more than one, my pull cart gets to full, too heavy and I'm pretty much done for that trip.”

“I started walking [...] You don't get to go to [grocery store] as freely.”

When individuals could get a ride to and from the food store with a friend or family member, they often made sure to buy the types of provisions deemed difficult or awkward to transport singlehandedly (e.g., fragile or heavy items). They were grateful for this gesture that

often provided income relief and convenience since they could get the items they needed and avoid the hardships associated with taking public transit:

“Sometimes it’s difficult cause it’s cold and far away. [...] I was lucky my friend had a car he used to take me when it’s winter and cold.”

“I have a friend drive me once or twice a month. He’s not available more than that. So I buy a lot of canned food or frozen vegetables and things like apple sauce in a jar.”

In urban Ottawa, transportation did not appear to determine one’s food security status but was described as a factor that could potentially mediate this experience.

Barriers to the purchase and consumption of fruits and vegetables. Participants across all groups identified indirect and direct barriers to buying fruits and vegetables. Most barriers associated to macro-level environments (sectors) and physical settings were major challenges to obtaining enough fresh fruit and vegetable produce and other challenges related to individual and social factors. The main factors that challenge the purchase of fruits and vegetables are summarised in Table 23 and the barriers to their consumption are included in Table 24. The factors that facilitate the purchase and consumption of fruits and vegetables are included in these tables but will be discussed in more detail in the next section (see p.198).

The most extensively described determinant of fruit and vegetable purchase was the cost of produce (mentioned 52 times) for both standard and organic produce varieties as well as per unit price points and cost by the pound. Cost as a barrier to the purchase of fruits and vegetables was a seasonal challenge where fresh produce was perceived as more expensive during Canadian winters (from December to March). Participants described how cost varies by produce quality, type and by store. Produce cost had a direct effect on dietary intake since individuals could not always afford the quantities or kinds of fruits and vegetables they wanted:

Table 23

Factors that Influence the Purchase of Fruits and Vegetables

Factors	Main barriers	Main facilitating factors
Macro-level factors	Food cost (e.g., standard/organic produce, unit price, per pound; seasonal; varies by quality, type and store)	Food cost
Physical environment	Poor produce quality Unavailable produce Accessibility to a food retailer Transportation from store	Produce availability Accessibility to a food retailer
Social environment	Parents	Family members
Individual factors	Inadequate income Limited food knowledge Lifestyle	Income Food knowledge Lifestyle

Table 24

Factors that Influence the Consumption of Fruits and Vegetables

Factors	Main barriers	Main facilitating factors
Physical environment	Food retailers (food availability, selection, quality and quantity) Food donations/ charities Changing food environment Lack of storage space	Availability of fruits and vegetables Storage space (access to fridge/ cooler)
Social environment	Workplace etiquette (noise discretion)	
Individual factors	Limited shelf life/ quick expiry Personal preference (taste, texture) Food quality (e.g., caloric value) Lifestyle (e.g., personal schedule) Little/ lack of food knowledge Individual health issues/ medication	Avoid ill-health (Avoid cavities, constipation, dehydration, digestive issues, low blood sugar, diabetes, osteoporosis, sickness/ disease prevention, symptoms of depression) Personal preference and cravings Food quality Lifestyle (childhood upbringing; Vegan/ Vegetarian lifestyle) Food knowledge (e.g., which foods assist with regularity, sources of calcium and iron) Convenience (minimal preparation)

“Le prix. C’est certain si les raisins sont \$3,99 la livre, je vais laisser faire. Je vais choisir d’autres moins dispendieux. C’est plus le prix.”

“We tend to look for the things that are less expensive even though we need many other things but can’t afford because it’s just too expensive. Let’s say bananas are on special and we buy bananas. We [want] the broccoli but it’s \$2.99. Sorry we can’t eat broccoli, it’s too expensive. So we skip it.”

“I buy staples at [grocery store], never vegetables. It’s more and too expensive.”

The environment where people shop for grocery items influences the types and varieties of produce people could buy based on what is available. For most, what they buy is a balance between buying and procuring fresh produce from different places and getting good quality foods at competitive prices often results in trips to multiple stores to buy all items on the shopping list. These may include buying their fruits and vegetables from big box stores, department stores, grocery stores, ethnic food stores, health and specialty food stores, local farmer’s markets, and community food programs (e.g community gardens or the Ottawa Good Food Box). For some, fruits and vegetables are procured through church donations, food banks or grown at home. While fruit and vegetable donations are not consistently received through charity, the most popular locations for Ottawa residents to buy their fruits and vegetables remains grocery stores (mentioned 46 times) and farmers’ markets (seasonally; mentioned 22 times). Main factors that influence from where people buy their fruits and vegetables are one’s personal schedule, store proximity, accessibility, potential discounts and general food prices. These elements were typically considered in relation to the food selection, quality and quantity when deciding from where to buy food.

“If I happened to be downtown in the Byward market and stumble by someone selling corn or such things maybe on a whim I might pick up something but usually it’s from the grocery stores and the Good Food Box.”

“It will be geographically and I shop as I travel, so I kind of save one trip. If I’m on my way home from work and I know [big box store] has specials on; everything fruit-wise per pound is a \$1, I may go and buy 8lbs of 6 items. And cause I pass a [grocery store], they have things on for \$0.89, I may buy 6 different items on for \$0.89 on the same travel home. I try to tie in time management.”

“There’s a market close to my house. It’s a Chinese one. I find they’re pretty good cost wise. If I can’t go there, I go to [grocery store] downtown.”

Regardless of where individuals purchased or procured fruits and vegetables, a significant determinant to fruit and vegetable acquisition is produce accessibility and availability. While most participants expressed the desire to have high quality, affordable fruits and vegetables, some were concerned that too few food stores or markets in their neighbourhood offered fruits and vegetables. Compromised access and availability meant not being able to buy the quantities of fruits and vegetables they wanted because too few good quality items were available for purchase or fresh varieties were not provided from food banks or other charities (e.g., typically non-perishables) or still, none were in the home and they did not have enough money and/ or time to replenish the fruits and vegetable they wanted (mentioned 16 times across all groups):

“I think one thing that they were looking at was how to get more fresh vegetables within Sandy Hill ‘cause there’s just so many little convenience stores.”

“I visit the food bank sometimes and get [fruits and vegetables] there.”

“Si j’en ai, j’en mange. Si j’en ai pas, j’en mange pas. Ne pas en avoir pu en acheter au magasin quand j’ai fait mon épicerie m’influence. C’est juste les avoir dans mon Frigidaire.”

While most participants felt that fresh fruits and vegetables were expensive and outside their budget, several individuals mentioned the perception that other frozen varieties were equally expensive when the food budget was limited:

“I really can’t afford too much like even frozen fruit. I find that too expensive at times. Like \$5, \$6, wham right there.”

While standard fruits and vegetables were perceived as expensive (per pound and/ or per produce unit), organic varieties were less accessible and outside the average participant’s budget:

“If it’s something organic, a little bit higher price, I definitely can’t go for that either...”

“If the price is too high per pound, I just avoid it altogether. I don’t go in that aisle.”

Some of the challenges to buying fruits and vegetables also included the cost of other provisions required to prepare certain recipes since the fruits and/ or vegetables alone were not enough. Individuals often described condiments, spices and other garnishes as necessary for added nutrients and flavour to their meal but often out of reach budget-wise. While some were able to compensate with less costly food substitutions to conjure a similar recipe, others often went without, waited several days until they had more money or found food on sale to buy what they needed to make a meal their family wanted:

“I can’t even make a salad and now I gotta buy Caesar dressing. I bought the chicken and I need to buy bacon. To make that meal it’s gonna take me 2 or 3 days just to come up with the items. He eats more than I do.”

“It costs a lot and it’s never enough. Can you believe this, it’s been a month and a half I’ve been trying to get a bag of apples. I feel the prices are going higher and higher every time I go. I just gave up. I just walk right by.”

Poor fresh produce quality was another barrier to the purchase of fruits and vegetables. Mentioned by former customers of a local fruit and vegetable program and people who did not participate in community food programs, poor seasonal quality of produce limited the quantity and types of produce consumers could buy to feed their families. Perceived as being of inferior quality and expensive, fruits and vegetables were less accessible outside the harvest season:

“In the winter, everything’s more expensive or bruised or I can’t afford it.”

“There doesn’t seem to be a sufficient, affordable supply of good fruits and vegetables, you know?”

From barriers that result from decisions and issues at the macro-level and physical environments, participants also expressed individual factors (personal) that affect fruit and vegetable purchase and consumption. For many, an inadequate income prevented them from buying enough food and a supply of fruits and vegetables they wanted and needed to eat in ways congruent with dietary recommendations by government and health institutions. As many received government assistance at the beginning of the month, it often meant going from a state where food was in abundance to circumstances where food had to be rationed toward the end of the month. Mentioned 25 times by participants in all study groups, fruits and vegetables were not eaten daily; not by choice but because there was not enough money to buy more:

“When you first get your cheque, you might get fruits and vegetables for this week. Then you have little bit of money and get some for next week. Then there’s about two weeks out of the month where you say: *“I can’t do that and I don’t have perishables I need.”*

“I haven’t had enough money to continue buying fresh fruits and vegetables.”

“If I could buy my fruits every day, it would be every day.”

Participants living on low or no income often relied on food donations and other supplies offered through local charities including food banks. Because food banks rely heavily on the quality of individual donations or food contributions by local businesses, the receipt of fresh fruits and vegetables is not always possible at each location:

“The only difficult thing to eat fruits and vegetables is income. I rely on food banks. I’m very grateful for that.”

For others, finding ways to still access fruits and vegetables on a low-income budget was important and mentioned by several persons. For them, they bought produce that was reduced for quick sale because full retail price per item and/ or by the pound was too expensive:

“Ça dépend encore des sous. C’est beaucoup de sous. Je prends toujours 50% si j’en veux. Sans ça, j’en aurai pas.”

Other individual factors related to limited food knowledge about certain fresh food produce. Mentioned only by participants who never participated in their local Ottawa Good Food Box, limited food knowledge prevented many from buying or trying some fruits and vegetables because they would not know how to prepare or integrate these items in recipes or snack ideas:

“If I knew more about how to use vegetables in cooking, I would buy more. I’m still slowly introducing them to my cooking abilities.”

“Or they just don’t know what to do with them. I wouldn’t know how to cook a vegetable.”

For several others, their lifestyle was a barrier to purchasing fruits and vegetables as they had other priorities on which to spend their money:

“Money, what else I need; like if I’m out of Pepsi or, I smoke, so that’s an extra cost.”

“[...] It’s just kind of an accident that I eat vegetables at all. I’m not deliberately putting it in my diet but if it’s there...”

For some people who relied on public transportation to get from the food store, barriers to buying certain fruits and vegetables included limited affordable options to get home with grocery bags in tow. Carrying some fruit and vegetable produce home could be challenging as some produce was described as awkward or heavy to carry across any distance:

“Some foods are heavy. Like potatoes: A bag of potatoes is really heavy so some people wouldn’t be able to carry it home.”

Finally, only mentioned by one participant but an important case to underline is how our social environments can influence the purchase or not of fruits and vegetables. For dependent children, parents or guardians play a vital role in a child’s development and their health status. Children’s diet is influenced by what can be afforded by the family food budget and sometimes the child’s needs take a back seat to the tastes and desires of the person who does the household food shopping or other household members:

“Not as much as we should. Mostly because I’m not a huge fruit and vegetable eater but my kids are. But you know, I’m the one doing the shopping and I don’t always buy as much as I should based on their wants and needs.”

To consume fruits and vegetables, an individual would need to first purchase or procure themselves provisions that qualify in this food group. Even if available and accessible however, some individuals may still choose to not consume different types of fresh food produce. This in turn affects the quality of their diet and potentially their overall health. Participants identified

numerous barriers to fruit and vegetable consumption that relate to individual factors with some elements associated to the physical environments (settings) in which people find themselves.

Nearly all participants wanted access to high quality nutritious fresh fruits and vegetables but a major challenge to fruit and vegetable consumption was limited shelf life and quick expiry (mentioned 11 times). For low-income households, limited shelf life increased its risk for waste which was frustrating when finances to buy more produce are limited or devastating when the food budget is depleted:

“The other day I bought some Vidalia onions at [grocery store] and I thought I’d check them out only to find the onions were stale and some were spoiling. It just frustrates me.”

“As a student, it’s kind of reckless. You don’t know when you eat, so it just don’t last. I don’t buy very a big amount because it don’t last.”

“Normally but not often because I always end up wasting. It goes bad before I can eat it.”

For some Inuit participants, childhood experiences of seeing fruits and vegetables in poor quality tainted the perception of how this produce can be healthy and negatively affected their desire to eat it given the chance. Because fruits and vegetables were not traditionally part of their diet and due to lack of experience on how to prepare and preserve fruits and vegetables, once this produce was available at community food retailers, they were less likely to purchase and consume it since it was usually in poor quality and expensive. It is not viable for most fruits and vegetables to grow naturally in Inuit communities because of their geographic location and arctic-like environment; this makes fruit and vegetable consumption for optimal health a concept tied to colonialism and assimilation:

“The fruits and vegetables are usually rotten by the time it gets to the community. There’s a lot of nutrition program [like] Nutrition North Program which replaced the Food Mail

Program but other than that, there's hardly any services or information available to Inuit communities about fruits and vegetable consumption until we see changes in retail mark-ups and ask for more fresh fruits and vegetables."

For others still, a challenge to fruit and vegetable consumption related to personal preference. Mentioned 10 times mostly by participants who did not participate in the Ottawa Good Food Box Program, several people expressed a bias toward sweeter tasting foods while others described a preference for fruits over vegetables which was reflected in their food habits.

"If I have a choice between a doughnut, fruit or vegetable, I'll take the doughnut. Tastes better and it's quick."

"Sometimes I crave other things. I don't always want to eat fruit even though I know I should."

"Just never did it. I don't really like the taste of vegetables. That's why I won't eat them."

For several current Good Food Box customers, the challenge to consuming fruits and vegetables depended on its quality in the forms of taste and texture. Whether cooked or in its original form, for some, preference was given to softer and more malleable produce:

"Carrots and stuff I can't eat well because I have no teeth. Any raw vegetables, I can't. They have to be cooked."

"It depends on what type it is. Like you can take broccoli or cauliflower and eat them raw, I can't [no teeth]."

For others still, what foods were consumed depended on the types that would provide the most caloric value when the food budget was limited. For them, it was not a preference or desire to not eat fruits and vegetables but simply get enough calories to survive and stave away hunger:

“I don’t experiment in the kitchen. When I eat it’s just to get as many calories. It’s not about getting obese. It’s about not having enough weight. I try to get as many calories that taste good or good enough in a short period.”

For most participants, the way they had established their lifestyle without particular consideration of fruits and vegetables in meals affected their dietary quality and played the role as a barrier to the consumption of items in this food group:

“But, it’s almost by accident, you know? [...] If it just happens to be in there.”

“Just never think of it really, you know?”

For some, this attitude and orientation affected their perception of fresh fruits and vegetables as a luxury and out of reach:

“For most people, it’s seen as a kind of a luxury. That’s the way I see it. It’s a luxury and vegetables are best avoided [...] Unless they come in a jar or a can or something. I can make a meal out of fruit. I would not eat a meal out of vegetables.”

For others, lifestyle meant having a busy and sometimes unpredictable schedule that often made it difficult to pack fruits and vegetables as a snack or part of a meal. Being in less familiar locations meant not always knowing where fruits and vegetables could be bought. Other times it meant not knowing how long meetings or appointments would take which made the transportation of fruits and vegetables less convenient because they most often require refrigeration to keep fresh:

“If I’m unaware what my day schedule is it makes it frustrating for me. If I can, I try and carry a cooler in my vehicle. I have ice packs in it so my fruit and vegetables are refrigerated in my van.”

“Soit que j’ai partit trop vite de la maison ou que la place où je suis, ou mettons j’ai un meeting durant la journée et je me suis pas amené de fruits.”

For students, a hectic exam schedule and time needed to study was a major barrier to eating fruits and vegetables. Knowing the importance of eating enough fruits and vegetables to keep healthy, most student participants described difficulty finding affordable fresh fruits and vegetables on campus as a major barrier to healthy eating:

“If you’re crunched for time or on campus and you have to find something to eat and the things with fruits and vegetables usually cost more.”

“It usually happens around exam time. I know that healthy things, fruits and vegetables, are good things that will help me. I’ve been slacking to put more of these in my body to help me continue to do what I am doing.”

“Au mois de mai, j’ai comme repris parce que là terminé fin avril l’école puis justement j’avais pas vraiment l’exercice pis je mangeais quand même bien mais un petit peu plus vite j’t’ais stressé avec les examens. ”

Other study participants described overall lifestyle of Western culture and orientation of businesses that make eating less healthy foods more accessible, physically and financially, and draw a larger profit margin from the sale of convenience foods. The perception is that the orientation of the majority of businesses is to accommodate these market trends to stay in business; justifying why there may not be enough outlets who sell fruits and vegetables:

“If you want to just grab some, you’re more likely to see like a poutine cart or someone who’s not selling fruits and vegetables because it’s not lucrative.”

For others still, lack of or little food knowledge was a barrier to fruit and vegetable consumption. Several non-users of the Good Food Box Program were often unsure how to

incorporate enough varieties and quantities of fruits and vegetable to maintain a healthy and balanced diet in meals or snacks:

“It’s hard to know how much I’m supposed to eat. There’re probably some guidelines aren’t there?”

“I don’t know what to make with the fruits and vegetables I get. How to put it together as a meal or add meat to it. I can’t afford meat or the sauces to put with fruits and vegetables. I don’t like it always plain.”

Mentioned 19 times across all groups, many felt it was inconvenient to plan ahead to eat certain fruits and vegetables. Less time and preparation to make any meal favoured its consumption at the end of the work day because participants described lacking energy to prepare fruits and vegetables and not enjoying the mess that some varieties left behind:

“I don’t know what to make with it and I can’t have it plain with margarine or planning and preparing meals with more fruits and vegetables disrupts my routine [...] I’m confused about how to prepare it; certain foods like stir-fries, different things.”

“I am way too lazy to peel and cook carrots. I don’t like raw carrots but I don’t have to cook them. I’m too lazy to deal with that.”

“Broccoli, cauliflower,... make a heck of a mess. I also like fruit but not all chopped up.”

For single persons, it was perceived that the energy and effort required to cook with fresh produce outweighed its immediate benefits. For them, convenience foods took less time to prepare and cook which increased the potential spoilage of fresh produce:

“When I’m alone, I tend not to eat as good as I should. [...] When I’m alone too much, I don’t wanna prepare all the foods that are good for me and they’ve [fruits and vegetables] gone bad.”

Finally, health issues were reported as an important barrier to fruit and vegetable consumption. Mentioned 10 times across all study groups, health issues related to digestive issues, food sensitivities and having weak or no teeth to eat more hardy produce. Because of health issues, some participants had to refrain from eating certain fruits and vegetables while others were limited to eating softer or purée types:

“Some tomatoes in stuff they give me, I get heartburn bad. I get a bad reaction. [...] It happens with cauliflower too.”

“My immune, my bowel system is negatively affected. I have to be careful to not eat that many raw fruits and especially raw vegetables. This is why I don’t really eat fruit.”

“I just got all my teeth removed and it’s been 2 months. I can’t chew not cooked vegetables.”

For others still, a challenge to fruit and vegetable consumption mentioned five times by only Ottawa Good Food Box customers was the experience of adverse interactions that fruits and vegetables can have with medication. For this reason, many opted to avoid citrus fruits, mainly grapefruit, to circumvent any potential medical complications. However, they could still enjoy other fresh produce types and were aware of what they could not consume:

“Well I got to watch what I eat yes. I have no doctor diet to follow. I know that I can’t have any with grapefruit in it.”

“Not really just that I can’t take any grapefruit stuff, because of medication. [...] I got a very gassy stomach, because of all my pills, eh? I take 28 pills a day.”

Participants alluded to the changing food environment in contemporary times as a challenge to fruit and vegetable consumption. Individuals reminisced about their childhood and having access to a farm, garden, orchard and/ or forests with wild berries. These spaces were

typically accessed during outdoor play time when children wanted a quick snack or when they tended to garden duties with their parents. The changing harvest seasons influenced the fruit and vegetable types that were consumed and the quality of the crop season affected how much could be harvested:

“My mom had snacks for us. Different kinds. We were raised on a farm so we had all types. My mom had a big garden so had our own apple orchard and everything and so.”

“It depends on the season. We had our own garden.”

“Des pommes, ma mère allait aux bleuets. Des vrais bleuets de champs. Où que je demeurais, y’avait un petit bois. Fraises, framboises. J’avais toute à ma portée.”

Parents, mothers in particular, also used different methods to preserve certain foods including pickling, canning and freezing in order to conserve foods for later use:

“We used to eat raw onions [...] potatoes [...] cucumbers. My mother would pickle them too. We ate a lot. We work in the garden, we’d eat everything: Beans, corn...”

“Along with traditional food, they were canned or frozen usually. The fruits and vegetables were expired but not so much. It’s a big issue about fruits and vegetables up North.”

In adulthood, barriers to fruit and vegetable consumption were often related to environment type. For some First Nations participants, references were made to the different experiences that characterised home life on reserve where finding adequate amounts of fresh fruit and vegetable produce were limited because of few available resources to keep produce refrigerated. Also, the climate that characterised certain First Nations communities determined which fruit and vegetable varieties could survive organically:

“Participant: The only vegetables were potatoes. None other available.

Interviewer: Did you grow up on-reserve?

Participant: Yeah.

Interviewer: Were there grocery stores there?

Participant: They mostly served flour, sugar and all that.

Interviewer: Okay, they just didn't have...

Participant: No refrigerator.

Interviewer: How did people get fruits and vegetables there?

Participant: I don't know. We didn't.

Interviewer: Did people have gardens or...?

Participant: Yeah, for potatoes."

For several individuals, being outside the home made it difficult to access fruits and vegetables. Being at someone else's home made some feel uncomfortable to ask for a snack which influenced the quantity, quality and frequency of food consumed.

"Where I am during the day. If I'm at a person's house, I won't be able to grab a piece of fruit or something."

For students, their work or learning environment did not adequately support access to healthy foods largely due to a lack of storage space (e.g., fridge) or a sanitary area to clean food (e.g., sink with counter space). Long days on campus along with back-to-back classes and no place to refrigerate their food made it difficult to bring a packed lunch with fruits and vegetables.

"Most places I go don't have a fridge like a class or something; usually it's back to back classes."

"Having a place just to store it. It would be really hard if you had nowhere to put your stuff and had to keep your lunch on you all the time."

“A place to eat is important. Like you’re in somewhere where there isn’t a facility to wash your fruit or something like that. Those facilities need to be available. It should be in every work place no matter where you are.”

Described twice but worth mentioning was a specific barrier to consuming vegetables in the workplace aside from lack of storage and a refrigerated area and washing station. Participants discussed issues related to etiquette and discretion. The noise generated from eating crunchy vegetables deterred some from eating them to avoid annoying or irritating colleagues or draw unnecessary attention to themselves. Eating fresh ripe vegetables as a snack was described as an indiscreet activity in a work environment with little to no privacy:

“I want to say something else about vegetables. They’re noisy! It used to really irritate me when I was at work and my co-workers would eat vegetables as snacks at their desk.”

“Participant: There was a good article in the Globe and Mail. A couple who did urban etiquette. They said you shouldn’t do this [eat noisy vegetables].

Interviewer: Oh wow! That’s pretty strong.

Participant: Yeah but, you know when I read it, it’s me!”

Factors that facilitate the purchase and consumption of fruits and vegetables. While accessing, purchasing and consuming enough nutritious and healthy servings of fruits and vegetables was difficult for most people who lived marginally, factors related to macro-level factors and the physical environment that supported the purchase of foods in this category were mainly affordability (food cost) and income, availability and accessibility (store proximity). A summary of the factors that facilitate the purchase and consumption of fruits and vegetables can be reviewed in Table 23 (see p.182) and Table 24 (see p.183). Replenishing food items was not described as overly problematic when stores could be accessed with ease. Several participants

mentioned that having affordable types and quantities of fruits and vegetables available through a community food program site down the street enabled its purchase. For others who bought produce from the grocery store, food store characteristics including clearly advertised and well displayed items in a clean and tidy environment were preferred features that influenced where they bought food:

“I’m employed and it’s part of my routine.”

“I buy the fruits and veggies down the [street]. I walk three blocks.”

“There’s [large chain grocer] near my place. That place or [large chain grocer] depending how much I feel like buying.”

“It’s well lit. It’s set out right and there’s even space! Never too crowded or cramped.”

For several current Métis Ottawa Good Food Box customers, food knowledge facilitated the selection and purchase of fruits and vegetables. Knowing different ways to prepare and serve nutrition-rich foods alongside other food groups meant feeling comfortable and confident in selecting the foods they wanted as an investment in their health and a balanced diet:

“More money on vegetables because to me that’s got more vitamins, minerals and starch and lasts in the body long. It’s more necessary and it complements meals I serve; like my grains and my meats.”

“I think the freshest is the best, so I can get more nutrients out of something that is fresh and in good shape than something that is damaged and cheap. So I will go a little out of my budget to get the extra something that is good. It’s not too smart to do that, but I’ll try and get the best things I can get for my buck.”

Integrating fruits and vegetables as snacks and sharing similar taste in produce with family members supported their purchase and subsequent consumption. Also, living a vegetarian

lifestyle where the purchase of fruits and vegetables were vital for health and survival also took the guesswork out of selecting and buying produce varieties:

“[...] because we live together and we both eat an apple a day. [The] quantity has increased. If I wasn't living with him, I would still get what I get, but just for me.”

“I was a 5 -10 km and half marathon runner at one point in my life. I was strictly full vegetarian, so I think that has, based on my study and my upbringing, has shown me that I can get all the proper vitamins and nutrition from fruits and vegetables. I try very much to substitute red meat for my lentils based on protein and vitamin D and such. I can probably eat a salad 5 days a week and be happy with that.”

As eating adequate amounts of fruits and vegetables regularly can have positive effects on health and well-being, practicing healthful food habits that integrate diverse fruit and vegetable servings as part of a balanced diet and mindful lifestyle can become less of a struggle and more habit forming when you and the environment in which you live support a healthy and balanced life. Easy and convenient access to food stores, produce availability and adequate income influence where individuals shop and subsequently what they eat and how much.

Mentioned 10 times across all groups, having the kinds of fruits and vegetables available at their local grocery store or local food program favoured its consumption. Having fresh fruits and vegetables in the fridge, pre-washed and ready to eat supported convenience and the ability to make healthy snack choices between and at meal time:

“Having them pre-prepared. If you buy a bunch of fruit, a cantaloupe or melon, if you just cut them up and prepare them already it's easy to grab. What makes it easy is having them available and having them prepared.”

For others, having an organized fridge space helped them see what fresh produce varieties were available for consumption:

“What makes it easy is having my fridge well organized and being able to, I know it sounds odd but, see what’s in my fridge when I open it. ‘Cause that’s how things go bad.”

For several others, the home environment offered various features that made fruit and vegetable consumption relatively easy including adequate space to store and refrigerate fresh produce. Outside the home, transporting produce in a portable cooler kept items fresh for consumption:

“Being home because they [have] a place (fridge).”

“If I’m unaware what my schedule is, it makes it frustrating for me. I try and carry a cooler in my [van]. I have ice packs so my fruit and vegetables are refrigerated.”

Mentioned by current and former customers of the Ottawa Good Food Box (Aboriginal and non-Aboriginal), maintaining optimal health and avoiding ill health was among the motivators to consume a diet rich in fruits and vegetables. Specifically, the conscious choice of eating items from this food group was felt to support better overall health and prevent the onset of chronic illnesses, develop a stronger immune system and maintain good dental health (avoid tooth decay, cavities and the loss of natural teeth):

“I know it’s the right thing to do. I’m in it for the long haul. I want to live a good long healthy life, so... you are what you eat.”

“If you have plenty of fruits and vegetables, it’s easier for your body to stave off illness; keep them at bay [and] defeat them if infected.”

“If you cannot eat properly, if you don’t eat any, if you don’t have a balance diet then your body is going to be unbalanced. All your energy, your minerals in your body

deteriorate. Then you get osteoporosis, diabetes, malnutrition, this and that. You need to eat.”

“Having cavities filled recently. I don’t want to rot my teeth. I don’t want dentures.”

While recovering from the side effects of cancer treatment, one survivor pressed the importance of eating vitamin-rich fresh produce to promote healing. Other participants ate healthful portions of vegetables as a personal investment and attempt to prevent cancer’s onset:

“I just went through breast cancer. When you go through [therapy], this is top of mind, you know? Just to really, which is hard, it’s like lots of vegetables. Bok choy, broccoli, stuff that’s really good for preventive.”

“The disease fighting vegetables. That’s how I got into vegetables and focus [on things] that help fight cancer before I even get there. Depending on how you cook it and the longer you cook it the better it is for your body.”

Others ate fruits and vegetables to maintain regularity (avoid constipation), avoid digestive issues and stabilize their blood sugar to maintain a level of health:

“Oui, parce que c’est des fibres, la constipation et toute,... quand t’es habitué d’avoir tout ça, bien c’est bon pour toi.”

“Like with celiac disease, I also have another incurable, according to the medical profession, digestive system disease. If I eat junk, I’m toast. I’m sick for months.

“I try to have an apple everyday say 3pm to maintain my blood sugar level. I’ll have an apple, a pear or an orange.”

Several former Ottawa Good Food Box customers self-reported suffering from depression. For them, fruits and vegetables were perceived to support and maintain a state of

good mental health. When too few quantities and varieties were consumed, negative symptoms of depression appeared heightened:

“I have depression as well. You notice how it affects mind and energy. I’m not going to say I’m on a special diet but I know better and I should be doing this for my health.”

“I experience more stress like more kinds of mental illnesses when I don’t eat vegetables. Just like more stress, heightened stress and anxiety.

The most popular facilitator to support fruit and vegetable consumption related to decisions that coincided with lifestyle choices. Mentioned 29 times across all groups, individuals described how childhood habits, the choice to follow a vegan or vegetarian lifestyle and the personal preference for fruits and vegetables worked together to promote its consumption in adulthood. Many adopted a personal philosophy as to why it was important to eat enough fruits and vegetables to maintain health and balance in their life:

“My words of wisdom would be to promote how important it is, fruit and vegetables, to get you goin’ and keep you goin’. It keeps you healthier for your latter part of life and your latter years, it really matters.”

“It’s just a part of me and my lifestyle. It’s like breathing. If that is a good definition. It is just who I am and it always has been a part of... to incorporate it to my children lives and trying to show them small quick meals being health choices are better than...”

“[Being] completely vegetarian is new to me. I have fallen in love with vegetarian food when it’s done right. I had no idea it could be so pleasant in amounts that inspired me but I’ve got a ways to go to get to that point.”

Even those who labelled themselves as lazy when it came to meal preparation appreciated how some fruits and vegetables could be easily paired with other foods. Mentioned 23 times

across all groups, convenience due to minimal preparation entailed eating raw fruits and vegetables as a snack and was described as quick, healthy and good tasting. Whether canned, frozen or fresh or eaten raw, steamed or grilled, adults who often lead busy schedules described how little time and effort some produce required to prepare as a main or side dish:

“I’m lazy during the day and so I make kind of easier meals, like raw meals almost. Like, you can eat carrots just as they are. There are days when I just take mozzarella cheese and wrap it around my carrot and eat it as a snack. I don’t have to cook anything to do it cause it’s raw.”

“I eat more frozen vegetables when I’m busier during exam months. With frozen, I don’t have to chop them. I just put them in the oven or in boiling water I don’t have to do much. It works better when I’m crunched for time.”

For others, the convenience related to how easy some were to transport throughout the day because of their natural characteristics:

“They are just easy to bring along. Apples are already in a compartment. You just have to wash them and bring them along. It’s ready to go. Your bananas are already in a bag in its self; just bring it along.”

Concern over the number of daily servings of fruits and vegetables was not always a preoccupation. What drove some to prepare and eat from this food group was personal cravings:

“I like the taste. I have a taste bud and I get cravings.”

Knowing the benefits of consuming certain fruit and vegetable varieties (food knowledge) supported informed diet and health decisions and guided food choices to ensure individuals consumed the vitamins and minerals their body needs to function and feel well including iron and calcium:

“Lots of different varieties of cabbage and bok choy is very high in calcium. So I’d like to see more of that.”

“Well I’m open minded so I would eat anything at all. I just want to be able to have beets because they’re high in iron. I need iron in my diet and spinach too!”

For one Inuit mother who was less familiar with the benefits of fruits and vegetables, accessing suitable substitutes for vitamins and minerals usually found in country foods was a priority to keep her family healthy within budget. Knowing which foods were vitamin- and mineral-rich was essential to make healthy food choices to maintain a standard of health:

“We look for alternatives and substitutes by adding vegetables like lentils and other things high in iron. We’re very creative and innovative to keep our health up to par.”

Food- and health-based decisions affect not only the health of the main food shopper but also that of family members living under the same roof who often eat the same types of foods. While many individuals choose to buy and eat fresh produce to avoid illness or related symptoms, others do so to maintain a standard of health and adhere to the lifestyle and behaviours they are used to.

Strategies to manage money and/or food.

Economizing strategies and food shopping behaviours. For most people and all parents with children, money shortages were common and resources (food and money) were nearly always depleted at the end of the month. While participants detailed strategies and behaviours to cope with food insecurity, others described the need to plan and save money to prevent hunger. Economizing strategies could be divided into three categories: 1) Reduce food expenses, 2) Manage household food, and 3) Limit household costs. Table 25 lists economizing strategies, household food shopping and management behaviours to mitigate food insecurity and hunger.

Table 25

Economizing and Managerial Strategies to Reduce Food and Household Expenses and Hunger

Strategy	Behaviour
Food shopping behaviours	· Better price per pound, · Buy food during promotion · Coupon use · Food hoarding: Canned goods for emergencies, Gluten-free bread · Buy food in bulk · Buy food in season · Compromise food quality for price · Compromise food quality for quantity · Buy canned instead of fresh food · Buy frozen instead of fresh food · Buy foods that are filling · Plan food shopping trips in conjunction to essential travel · Shopping out of province: Quebec Shop at multiple stores
Household food management behaviours	· Cut the size of meals · Ration food · Reduce frequency of eating · 'Make do' · Food substitution · Eat leftovers · Freeze food · <i>Household principles</i>: Eat only when hungry, No wasting food
Reduce household expenses	· Budget to the last penny · Bring food from home (to places outside the home) · Participate in the Ottawa Good Food Box · Do what you have to do · Use electricity at non-peak hours · Rely on others for transportation

To save money on food, participants described creative economizing behaviours to reduce food expenditures when food and finances were limited or near depletion. Food shoppers would try to stretch their food dollars as possible to get the most value for their money (often compromising quality for quantity). Mentioned 4 times, individuals would buy produce that was cheapest by the pound to maximise the return on their investment in fruits and vegetables:

“Try to judge how much food for the grams and pounds.”

“I like fruit. I can like most things. It’s usually what’s cheapest. I buy two fruits when I go each week. When I go, it’s which two are the cheapest I buy the most of.”

To reduce expenses, many bought promotional foods items. Mentioned 42 times across all groups, checking for sales influenced which kinds, types and quantities of food that could be bought during a specific timeframe. This in turn affected dietary quality and diversity:

“I probably eat more clementines during winter than I do during the other seasons but that’s just ‘cause they’re on sale.”

“We tend to look for the things that are less expensive even though we need many other things but can’t afford because it’s just too expensive. [...] We [want] the broccoli but it’s \$2.99. Sorry we can’t eat broccoli, it’s too expensive. So we skip it.”

One female participant used coupons when possible on a multitude of products which saved money on food and non-food items at the grocery store:

“I’m a special and a coupon girl. I still think I save more on my own.”

Mentioned five times by current Good Food Box customers and non-users, stocking up on foods that were on sale was a common practice especially among those with food sensitivities or intolerances. They would stock up on discounted gluten-free bread which was otherwise expensive at retail value. Others would buy nearly expired fruits and vegetables that were deeply

discounted and freeze them until future use. Most hoped they enough savings to buy extra when items were on sale. Students bought more canned and frozen items to hold them over in case of emergencies and to mitigate instances of hunger:

“My freezer is full of gluten free bread because gluten-free bread is very hard to find fresh and even if you find it fresh,... it’s a lot so,... I don’t eat a lot of bread anyways. I need the freezer space [for] the bread so it doesn’t go bad.”

“Because I live alone and I’m a full time student I sometimes want the occasional canned vegetable for when I’m in a pinch or when I can’t get to the store and get fresh or say my freezer would break down, you know?”

“I eat more frozen vegetables when I’m busier during exam months.[...]”

For those with storage space, buying wholesale food items was a cost-effective way to ensure that the family had access to certain food items over a longer period while saving money compared to purchasing the same product in a smaller format:

“I’ll get the pre-package bag of apples oppose to just like a bag of 4 apples, because we live together and we both eat an apple a day. [The] quantity has increased. If I wasn’t living with him, I would still get what I get, but just for me.”

“You always have to buy in bulk.”

Others felt it was more economical to buy local produce during the harvest season. This affects the household’s dietary diversity and nutrient intake during the year:

“On mangeait beaucoup plus des fruits l’été parce que mes parents voulaient aussi acheter local. On mangeait des cerises de France quand ils étaient en spéciale, des pommes quand ils sortaient l’automne.”

“If it’s out of season it is more of expensive... blueberries. But things that are in season like corn, you can get 3 for a \$1.”

Weather and climate determined crop quality and whether fresh local produce was available and affordable. If crops did not produce high quality yields during the harvest, many felt the product quality was not worth the cost determined by food distributors:

“If it’s not a good season or not, I’m not going to like pay \$4 for a pepper!”

“In winter there is less fresh available. I prefer the summer fare so I will have to have canned peaches or something like that. It’s more so availability and price at that point.”

To avoid hunger, many who survived on low-income would compromise the quality of food for a better price (discussed 9 times). In food stores, they would search for less expensive food options within budget at the expense of its quality which often meant buying food with more sugar, salt and fat content or buying discounted lower quality foods (e.g., wilting). To avoid food waste, food retailers often reduce the cost of items that are near expiry, partially damaged or in poor quality:

“I usually end up getting the cheapest options [...] The big salads and stuff are usually more expensive.”

“I noticed they started to bag ones that were slightly old and reduce their prices. I ended up buying some extra for a stir-fry. I trim them down and do’em up right away.”

When fresh foods were too expensive, some would buy canned or frozen items as an alternative that provided the taste they craved but with additives and preservatives they did not (mentioned 23 times):

“We try to avoid can foods for the sugar kind that come in can. We buy [canned] from time to time. We suppose to eat what is good for our heart but we can’t because it’s a canned thing, so we have to use very moderate[ly].”

“In winter I tend to eat more canned food. Veggies can get expensive in the winter.”

Buying foods that were filling was one way consumers felt their money would go further. Foods high in protein (typically meat) were items that individuals would spend their money on more often because they did not eat as much to feel sustained for longer periods:

“Times are tough. My money goes farther buying staple foods. My staples are ground beef and things I can make a meal out of compared to just fruits. I know they’re good for you, but to me it’s not filling.”

For current Good Food Box customers (Métis and non-Aboriginal), taking part in a local fruits and vegetables program provided income relief and a dependable source of fresh produce:

“Because it’s fruit and vegetables and you get a good amount for a low price and when your low-income or on welfare or anything it’s just not enough money. You go to the grocery store with \$20 you don’t get near as much as you get with the Good Food Box. It does give a chance for families to have fruit and vegetables in their diet. I like that.”

For university students living away from their parents, partaking in the Good Food Box helped them improve their diet on a budget because of access to fresh food at a reasonable price:

“When we first tried the Good Food Box, I just [asked] “*What do you guys feel about vegetables?*” We weren’t really eating anything vegetable-wise because we didn’t go to the grocery store much. I was like: “*Do you guys want more vegetables? Should I get this food box? How do you guys feel about this?*”

For many low-income households, food selection, purchase and consumption and dietary quality is determined by food cost and what people are willing to pay for the foods they want and need to maintain or improve their health. When households survive on limited and declining financial and food resources, they often modify food purchasing patterns and compromise food quality to reduce food expenditures while maximising the amount of food that can be bought.

Household food management behaviours and expense reduction. When the household food supply was near depletion and before enough time or money could be spared to replenish the pantry, participants described how they modified regular food consumption patterns as food quantities were less sufficient. To manage remaining food resources, many reduced the quantity of food allocated to each household member. This was done in several different ways: cutting the size of meals, rationing food and reducing meal frequency (together, mentioned 20 times):

“I don’t really eat that much I budget myself whenever I can afford something and I always limit what to eat, so that it can last me.”

“À cette heure, je mangeais deux fois par jour, le déjeuner et souper mais là je mange rien qu’une fois. J’ai pas les sous pour manger.”

Expressed by non-Good Food Box users, when resources were exhausted and food items were in short supply, individuals ‘made do’ with what they had even though it meant not having a balanced or healthy meal:

“Don’t care much about food. They just tryin’ to get enough to live. They’re not planning their meals.”

“We make do with what we have at that time.”

To make food last or acquire money for other necessities, participants described compromising the quality of meals or recipes to buy more affordable foods such as substituting

canned pasta sauce for tomato juice because they could get more for less money and use it for other purposes. Others bought Jell-O to substitute for the fruits they could not afford. With difficulty locating country foods suitable in quality to a traditional Inuk diet, one Inuk woman described seeking food substitutes to obtain the nutrition quality she was once used to:

“I’ll try sauces and stuff, but I mean if you are going to go out and buy cheap sauce, it’s disgusting. [...] Tomato juice is my favourite. Macaroni and lots of tomato juice.”

“I just buy Jell-o. If I don’t, you know...”

“When you have cultural heritage as an Inuk from up North eating organic meat and poultry, of course it does. We have substitutes here that we buy. [...] We have to find substitutes and alternatives to buying what we eat. Like seal meat has a lot of high content in iron and protein. We have to find things that will satisfy our health.”

Implementing household principles of only eating when hungry and not wasting food were viewed as necessary to ensure that tummies were full and all food was used. Any leftovers would often be served at the following meal or frozen to avoid spoilage (mentioned 15 times):

“I don’t eat too much; I can’t be. Food doesn’t fascinate me. I know a lot of people are really fascinated by food. They see something new to try. For me, if I’m not hungry, I’m not gonna to eat. I eat enough to satisfy myself and that’s it. I pour it out of the can, heat it and that’s it. It’s just about getting the calories.”

“I’m getting leftovers of the leftovers to get by. I’ll make it last and make it stretch.”

When household resources were limited, participants managed expenses and time to make the most of resources that were at home. Participants described how they would reduce household expenses by carefully budgeting to track where funds were allocated and how much

was spent (mentioned 16 times across groups). This was important for seasonal workers, mature students, students living away from home and those who survived on inadequate income:

“J’ai pu le salaire comme quand je travail 40 heures semaine alors faut économiser faut faire un budget. Faut aller voir les places selon ton budget.”

“Being on disability and having a fixed income, I have to budget sensibility and things can get tighter at the end of the month.”

“It depend how much I’m making for that month what I have as an income.”

To save money and time, former and non-users of the Ottawa Good Food Box discussed the importance of planning food shopping in conjunction with essential travel for work or other appointments. To remain within budget, participants shopped at multiple stores where they could find food at a lower price and benefit from promotions. For others still, shopping outside Ontario was said to be beneficial because food was perceived as less expensive in Quebec (together, mentioned 15 times). For some, this was typical monthly food buying behaviour but for others, these behaviours and strategies were only used when resources were tight:

“It will be geographically and I shop as I travel, so I kind of save one trip. If I’m on my way home from work and I know [big box store] has specials on [...] I may buy 6 different items on for \$0.89 on the same travel home. I try to tie in time management.”

“Sometimes I go to the Quebec side ‘cause it’s cheaper.”

“I was forced to shop around, be more frugal, more spend thrift with my money.”

For others, bringing food from home to sustain them during the work day and between appointments was also another way to save money:

“I just make good snacks and I pack my own lunch usually to save money so.”

Others described sacrifice as ‘*you do what you have to do*’ to get by until more resources were obtained. Participants expressed using multiple strategies at a time to get what they needed based on circumstances. For a minority, more extreme practices suggested deviant or illegal acts:

“I will always incorporate everything they give me and budget through and work with what I have to deal with. It’s a necessity.”

“I’ll maybe steal if I have to.”

To save money on utilities, some changed their cooking and eating behaviours in conjunction with electricity rates to save as much money as possible on their bill:

“I also have to watch my electricity. I cook at weird hours too. There’s like three different time periods.”

When food security was compromised, adopting a variety of food shopping behaviours, food management practices, and economizing strategies was common. These behaviours affected the eating patterns, meal frequency and dietary quality of the household.

Strategies to acquire money and/or food. Under circumstances of poverty and more severe forms of food insecurity, individuals would often request support from known individuals and/or access support from local organisations. Table 26 summarises places and people often solicited to provide supplementary food and money when resources are exhausted.

Discussed by former Ottawa Good Food Box customers (Métis and First Nations peoples), participation in community food programs were important places from which to obtain food in times of need. Adults and children would go to an Aboriginal health centre where they could take part in gatherings with meaningful cultural, social and educational components and where a meal or snacks would be served:

Table 26

Food and Income Acquisition Strategies and Behaviours

Theme	Examples
Behaviours and strategies to acquire food	Participation in community programs and initiatives: · Culture night · Parenting resources · Children's after school programs · Senior Care program · Medicine wheel makeover · Community kitchen and cooking program · Community garden Behaviours practiced among roommates: · Bartering · Pooling food
Support seeking behaviours	Local community charities: · Food bank · Soup kitchen · Churches · Odawa's Bannock Bus People: · Family · Significant others · Close friends · Acquaintances
Behaviours and strategies to acquire supplementary financial support	Income acquisition: · Child part-time work · Rent household space · Credit card use to buy food Qualifying for government support: · Government initiatives: · Canada Child Tax Benefit (Federal support) · Ontario Trillium Benefit (Provincial support)

“[Wabano] have for every program, balanced meals. We get our juice. We get our fruit. We get our veggies. We get plentiful snacks and lots of fruit. Lots of everything. I was at the parent resource centre and we had sandwiches with a supper and then we had cheese and crackers. After that we had apples, oranges, grapes and we had that kind of stuff for snack. The children get that and they had milk to drink. So that was that program. Just like I say, after school programs, Wabano has the best for the kids. The best!”

“I’m in the senior care program. I get my fruit and veggies Monday and Wednesday. If I attend the programs, I get the healthy meals and the fruits and snacks and all the rest of it. And we have culture night on Wednesday. Monday evenings I go to the medicine wheel makeover. Again we’re served a healthy supper. Tuesday nights I go to parent resource centre and we just got served a good meal again tonight. Friday I can go to the community kitchen where we have hands on cooking. We do recipes. If you put yourself in these programs, you get what you need.”

For others, participation in a smaller-scale community garden on a seasonal basis with colleagues or neighbourhood residents was a sensible way to learn about growing food and acquiring some varieties that took fruit during the harvest:

“Les jardins communautaires. Je fais un jardin avec un groupe de bénévoles cet été et c’est gratuit.”

Along with the principle of not wasting food, some had established a relationship with their neighbour to swap or barter food items. As food and non-food items were received through charitable donations or participation in food initiatives, neighbours in similar socio-economic situations would exchange food for other necessities. Similarly, returning to community values

and thoughtfulness, some would buy necessities for their roommates in exchange something of significance according to an unspoken value system:

“I don’t like to waste food. I give the items that I don’t eat to my neighbour. We’d swap when we would. [...]; we do an exchange of things. It worked quite nicely.”

“I’m very good friends with the people I live with so if I see something on sale and I know they don’t have the time to go shopping I will buy something for them and they will make me dinner in exchange for something.”

For newly arrived immigrants and students, pooling food resources with others was a common to avoid food waste. Making an impromptu meal with pooled food items was an opportunity for a positive social evening that prevented hunger and feelings of isolation:

“I had a female roommate who bought very little fruit. She bought a lot of vegetables and I bought very little vegetables. I got the Good Food Bag. My intention was for us to share those two things. I got fruit, she got vegetables and would communally eat.”

“I live alone but I visit other people a lot where we share food cause they’re going through troubles too.”

In times of need, vulnerable people sought daily, weekly and sometimes chronic support from local community charities for food and household donations. Local institutions for community and social support include food banks (mentioned 17 times), soup kitchens (mentioned twice) and churches (mentioned 3 times). Because of inadequate social assistance and poor policies, a trip to the food bank or seeking help from other charities was typical throughout the month and these resources, initially conceived for emergencies, were carefully considered as an integral strategy against household need, hunger and basic survival:

“That’s the way that works and you might go to the food bank once a month as well.”

“You go to a program or you go to a food bank or you go to a soup kitchen to get what you need or you just simply do without.”

“Food banks are great but they’re giving the same amount of food they were giving 10 years ago. When you have a family, they’re giving 1 or 2 days worth of food and you can’t go for another month. When you don’t have any money, you’re going to have to go without. You should be allowed to go more than once per month.”

While some were thankful for the existence of charities and food initiatives, others were dissatisfied with emergency food services because typically received foods were perceived as less healthy and not always palatable or appropriate for those with certain health issues. For food bank users, dissatisfaction related to poor food quality, quantity and variety and the receipt of too few or no fresh fruits or vegetables (mentioned together 17 times). Though originally established to provide households with emergency food provisions, food bank users described a chronic use and dependency on their services to avoid hunger. Avoiding hunger was not always guaranteed as food provisions were often too few and monotonous:

“I’ve gone to some drop-in centres when I was on social assistance, like, welfare, [...] and we’d all get bellyaches and it was food from the [Drop-in centre]. I was sick every time I ate there and I’d bloat and I’d look like I was 7 months pregnant and I was sick like a dog. Some threw up. The food’s not good. That’s not normal.”

“There’s not a lot of fruits and vegetables in the food banks and if you get them, they are pretty rotten to the core.”

“They even give you a choice to take home a box of expired food! They said “*Here, you can look through this if you want.*” That shouldn’t be a choice.”

Feelings of embarrassment and inadequacy when seeking aid were difficult to overcome. These sentiments resonated with many who braved the elements alone, waited in long lines of people just to bring something home to their family; often without the guarantee it was going to be something they liked. Seeking charity was not only a physical process but one that was also emotional:

“Knowing I have to go to a food bank and the embarrassment of waiting in line outside for 1.5 hours even in the wintertime. You don’t know what you’re gonna get. You gotta be there early so the pickings aren’t gone. It’s embarrassment, lack of energy to go and get it at the food bank.”

Seeking financial or emergency food support from close friends, significant others, family members and acquaintances was also a strategy to obtain necessities until more money was located (mentioned 10 times). Individuals described being the support seeker but also the provider. Even with little means, they gave what they could to those in need:

“I get the odd fruit and vegetables from my aunt. She’ll give me a little bit of food.”

“We go out to people, my family they have salads and they give us food to bring home.”

“He loves fruits and vegetables and he will not let me contribute. He always brings food. He always pays for the meals.”

Trying to save for emergencies or additional monthly expenses, individuals would encourage the family to maximize their time, efforts and assets to help supplement the household income (former Good Food Box customers and non-users). For parents, it was an opportunity to build life skills in their children:

“I tried to get my little girl doin’ fliers for a year and a half but she was getting paid only one cent and a half a house. She went from 7 to 8.5 years old and we went through winter

storms and everything to get money together to make ends meet. It was too much for her.

I'm trying to make her independent and so I don't want to put her through that again [...]"

"It's a condo where I have 2 rooms I rent. I have, it's like a hotel in a way. But the common area's in the basement, the kitchen and TV and the living room area."

For others who could not increase their income by other means, they payed for living expenses with credit; not because they wanted to but because they had to:

"Getting enough food. Basically living off a credit card... not enough money."

For others still, qualifying for and being able to benefit from a new government program for income support and poverty reduction to help raise their children was described as an initiative that helped Canadian families balance work and expenses compared to times when programs were non-existent. However, receiving Federal support through the Canada Child Tax Benefit (CCTB) and provincial financial assistance through the Ontario Trillium Benefit (OTB) was still described as inadequate and unadjusted to realistically meet the costs of living in an urban environment even when a family budget was carefully developed and calculated:

"Living low-income makes it difficult because Ontario Works only provide basics and relying on Child Tax Benefits, I have to be careful what I spend and budget on fruits and vegetables. It doesn't cut it."

"We get a new cheque this month (*Laughs*) in July. It's gonna help a bit. There's an increase with the government. That does help out. It's a called the Trillium cheque and that's to help families that are on low-income or assistance."

Strategies to eat fruits and vegetables. Participants knew incorporating fruits and vegetables as part of a balanced diet was important even though consuming the recommended

minimum intake was not always possible. Participants shared food procurement, preservation, preparation, cooking and eating habits that promoted household fruit and vegetable consumption.

Procurement strategies. Whether through a community food program or in their private yard, several participants across all groups described how access to a garden promoted household fruit and vegetable consumption. During harvest season, individuals could grow different crop varieties depending on the climate in which they lived. For one First Nations man the climate in his home community could support the growth of potatoes but little else:

“Interviewer: How did people get fruits and vegetables there?”

Participant: I don’t know. We didn’t.

Interviewer: Did people have gardens or...?”

Participant: Yeah, for potatoes.”

Some Ottawa residents mentioned having the opportunity, knowledge and access to land to grow fresh produce. Gardening was considered economic in comparison to buying fruits and vegetables in food stores. A home garden could offer household members the choice of planting different fruits, vegetables and herbs for cooking:

Interviewer: How long have you been involved in the community garden?”

Participant: “This my first year. I just have two herbs growing right now. I have tomatoes, which are still growing. It’s taking a while; it’s a little dry, so every time I water them they’re always like (*sucking up sound*).

Preservation strategies. Former customers and non-users described ways to make their fresh produce last longer. To avoid wasting both money and food, participants mentioned techniques to extend the shelf life of produce. Practices included making preserves out of fruit

varieties, pickling (mentioned by Métis participants) and freezing produce before it spoiled (mentioned six times):

“I love to go strawberry picking in the fields but when it’s \$14 a basket, forget it. If there’s a sale, before they go to waste, you have to preserve them.”

“We used to eat raw onions. We used to eat raw potatoes. We used to eat cucumbers raw. My mother would pickle them too. We ate a lot.”

“I’ll freeze them myself, so never a problem.”

Preparation, cooking and consumption strategies. Participants described one or more habits to ensure that fruits and vegetables were included in meals and/or snacks (when the budget permitted or when produce was received through charity). Described across all groups, advanced preparation strategies allowed for easy and convenient produce access when household members were hungry. These strategies include having produce pre-washed (mentioned 10 times), pre-cut (described seven times) and pre-bagged (mentioned twice by current customers):

“I pre-wash and pre-cut them and then bag them or bring lemon water. Not the fake lemon in the plastic, the real ones.”

“What makes it easy is having them available and having them prepared.”

To avoid extra expenses and ensure that meals outside the home incorporated healthy food varieties, several former Good Food Box customers discussed how they prepared a homemade lunch for takeaway when moving from one appointment to the next:

“They just make good snacks and I pack my own lunch usually to save money so.”

“Quand je vais à l’école ou au travail, j’ai ma boîte à lunch, j’ai mes affaires.”

The home environment offered access to cooking utilities which enabled cooking food in different ways to capture unique tastes and textures. Cooking strategies to increase the appeal of fruit and vegetable consumption includes grilling, steaming, boiling or frying:

“Well, if I have them I’ll probably grill, steam or boil them.”

“I always fry them or cook them so I need to have that time.”

Advanced meal planning helped families schedule their weekly food menu, manage food items, time and reduce stress (mentioned 10 times by former Good Food Box customers). As a planning tool, this allowed households to develop a list of necessary food items to shop more effectively and remain within the food budget as much as possible:

“I need to write down meal plans in advance. Being one person, I tend to cook four portions and then it goes bad [...]”

Discussed 33 times by participants, weekly meals were chosen according to their nutrition value and cost. Recipes were described as rich in vegetables quantities and selected as part of what was perceived as a balanced diet and healthy food habits. For many, food prepared at home seemed healthy and satisfying and helped them reach satiation:

“I like my vegetables more. They last a bit longer. I can hide them better in other stuff that I like. I find them more filling, I’m not gonna lie. I like them more and I buy them more and they’re there so I’m gonna eat them.”

“[...] vegetables because to me that’s got more vitamins, minerals and starch and lasts in the body long. It’s more necessary and it complements meals I serve; like my grains and my meats.”

While some participants tried to plan carefully balanced meals for their families, many struggled to combine assorted tasty foods and flavours:

“I can usually think of a way to put vegetables and then I can sometimes think of a way to add a fruit. I rarely think of ways to put them both as much during one meal.”

For many, the processes of advanced meal planning and subsequent food preparation helped them reduce food waste. For single persons, advanced food preparation involved cooking large amounts of food and reducing this into smaller portions. The divided portions were frozen or refrigerated for later consumption. Sometimes effort and time intensive, it allowed people to save time on busier days and eat balanced meals with fresh and healthy ingredients:

“I like to do all my grocery shopping all in one day [...] and prepare and cook all day.”

“Je me prépare, j’ai une heure, j’ai un temps, je prépare ma salade de fruits. Si je sais que j’ai plusieurs cours, je vais me faire un riz à l’avance ou préparer mes légumes...”

The recipes and meal ideas that promoted the consumption of fruits and vegetables also included desserts such as fruit salads, applesauce and ice cream:

“I like adding peaches in my ice cream and I like the syrup that it is in. [...] I like peach halves in the can anyway.”

“If I do it’s cooked applesauce.”

Pasta sauces (mentioned five times), sandwiches (mentioned five times), soups and stews (mentioned nine times), stir fries (mentioned three times) and salads (mentioned three times) also allowed the inclusion of fruit and vegetable varieties. These were easy to make on a shoestring budget and could be made even more nutritious by adding fresh produce to the main dish or having it on the side. For some, making a full course meal or certain recipes depended if others were present or their tastes. For others, having to eat certain types of food because they could not afford the kinds and quantities of foods they wanted meant experiencing a disconnect between

familiar eating and cooking habits (culture) learned from elders before them (reported by the Inuit and individuals non-native to Canada):

“[...] mon conjoint, des légumes il mangeait pas ça. [...] Je faisais des potages. Comme ça bien, il les voyaient pas dans son assiette... yé mangeait en potage au moins.”

“Living alone half the time it’s not full course. I have to be very budgeting on that part.”

“It’s part of my routine; making stir-fries. I expect to peel and slice everything before I throw it in with the rice or pasta or whatever I’m eating.”

“Dinner mostly as a side. But lunch, for salads or on a sandwich or something.” “I eat foods that are outside of like my culture and my cultural heritage but I don’t eat them as prevalently. I boil a lot of food and we do a lot of just simple soups and stuff.”

Many people who survived on a limited food budget improvised and modified recipes with the ingredients they had to make a meal that was filling and as nutritious as it could be:

“It’s kind of disgusting but I’ll throw in some pears in a little macaroni or Kraft Dinner or onions in grilled cheese or something.”

For those who took pleasure in advanced meal planning and food preparation processes, creative ways to include fruits and vegetables in meals and snacks while remaining on budget were described. These food behaviours can have benefits if practices are sustained by motivated individuals, supportive lifestyle practices and an adequate income. Mentioned 14 times across all groups, eating raw fruits and vegetables was the easiest way to ensure their consumption. For those who did not have the opportunity to eat fresh produce before spoilage, eating around or cutting spoiled areas still permitted consumption and avoided food waste (mentioned seven times). To save money, many bought discounted fruits and vegetables nearing the end of their

shelf life (lower quality). For them, the little effort it took to remove the blemished portions was worth the reduction in cost:

“I make kind of easier meals, like raw meals almost. You can eat carrots just as they are.

There are days when I just take mozzarella cheese and wrap it around my carrot and eat it as a snack. I don’t have to cook anything to do it cause it’s raw.”

“I noticed they started to bag ones that were slightly old and reduce their prices. I ended up buying some extra for a stir-fry. I trim them down and do’em up right away.”

For former Good Food Box customers and non-users, a common way to eat fruits and vegetables was with condiments. Serving them with dipping sauce or salad dressing, sour cream or Cheese Whiz was a sufficient side to a meal or snack between lunch and supper and made vegetables more appealing to both adults and children. Combining fruits with yogurt was the favourite for many as a dessert or breakfast food:

“Lot of raw vegetables with a simple dip.”

“I had celery with a bit of cheese whiz.”

“If I had a dip or sour cream and I had like a Clubhouse packet of herbs or mix to go with sour cream or yogurt, grab whatever from the fridge and dip that.”

Health conscious participants would opt for making a beverage (described as “juicing”) or smoothie (mentioned 14 times). This enhanced food’s nutrient- and vitamin-value with little effort and helped people eat servings of fruits and vegetables and avoid food waste:

“We make smoothies or we juice it or whatever.”

“I try to save where he would probably throw it out. If I think it’s really on its last legs, I will look at it. But if I can save it for a smoothie [...] or mix it in with yogurt or something.”

Others added fruits to enhance the flavour of water (e.g., lemon) which kept them hydrated and ensured they drank adequate amounts water as an alternative to soda and a digestive aid. This strategy was mentioned by former Good Food Box customers:

“I’ve been better than before. Depends what I eat and I try and eat super foods like grains plus and chlorophyll water and lemon water and stuff that’s not too difficult to digest.”

Participants described seasonal strategies related eating fruits and vegetables during harvest seasons and, for students, the academic sessions. Related to convenience and the desire to avoid food waste, students reported buying more frozen produce during busier periods (mid-terms or finals) when study, work and eating schedules were less conventional:

“I eat more frozen vegetables when I’m busier during exam months. With frozen, I don’t have to chop them. I just put them in the oven or in boiling water I don’t have to do much. It works better when I’m crunched for time.”

During summer and winter months, participants reported buying both frozen and canned fruits and vegetables. During summer months and particular harvest seasons people bought fresh produce when possible. In winter, participants spent money on imported fruits and vegetables because they cost less and were in higher quality than domestic produce:

“In winter I tend to eat more canned food. Veggies can get expensive in the winter. I usually try fresh in the summer.”

“The canned vegetables, I’ll have in the winter time ‘cause a lot of fresh vegetables in winter don’t have taste.”

“In winter I still buy fresh vegetables that aren’t really in season like imported things.”

“In the summer, definitely more fresh if I can get it. It’s so good. In the winter, I definitely go for more frozen.”

Former Good Food Box customers were cautious of buying imported fresh fruits and vegetables during winter months and expressed a bias for frozen domestic produce:

“Sometimes I try and buy things frozen if they’re not available. If it’s the winter, I tend to buy more frozen vegetables that are from Canada rather than buy something that came from South Africa or far away.”

While many reported using food in inventive ways, determining the best approach to use produce varieties past their prime was essential to get the most value from produce without spending more. Many still preferred eating raw fruits and vegetables with or without condiments to maintain the nutritional adequacy of their diet and keep the household as healthy as possible.

Effects of living in and coping with food insecurity and poverty. Living in conditions of deprivation, food insecurity, poverty and hunger were associated with negative emotions that had ramifications that diffused throughout the home and supported negative attitudes against factors at micro- or macro-levels believed to perpetuate the experience of hardship and work against individual abilities to escape desolation. At a personal level, two common negative responses to barriers to the purchase of food and non-food items were frustration and worry (together, mentioned 22 times). Some rarely had enough money for necessities like prescription medication which affected their ability to manage health, support recovery or sustain healing:

“The health department eliminate the treatment plan that I take once a day and I cannot afford once a day taking the pill that I was. It was costing at that time \$8. The pill was doing very good [but] the health department doesn’t cover it anymore. It was expensive. I can’t afford it. So I can’t get better.”

“The government talks about people getting healthy to stop smoking and stuff. [...]as Nicorette and the other stuff to be healthy besides fruit and vegetables, Nicorette is \$30,

\$40! It's more than the friggin' cigarettes! It's not covered by OHIP. It's not tax deductible. You can't claim it to help you quit."

Others felt isolated, 'othered' and unworthy (mentioned 7 times), sad, depressed, upset and unhappy (mentioned 7 times). Many who survived on no- or low-income and used various social and food service and charitable resources felt a sense of inferiority where they could not freely participate in social or community activities. This wore on them psychologically. Often with tears in their eyes, a lump in their throat while having to look away, participants shared their personal trials and triumphs where they had achieved a post-secondary education but could still not find work. Through the pains of the experience, they began internalising the despair of unemployment and poverty:

"When you're broke and you don't have that stuff and don't get it at the food bank or you can't afford it, you don't feel like you deserve to be healthy. Go and work at the Quickie store even if you've got a degree in electrical engineering. You're supposed to go to Alberta or work at McDonalds to make yourself a worthy person. If you're not working you're not worthy [...] They're [the government] not helping."

"Even though my friends offer to bring food, I just always feel badly. I just always feel like a charity case. I just feel badly about myself. [...] They don't want to even take an apple from me or a cup of tea and that's hard on me."

For others whose lives were characterised by isolation, stress and exclusion, this affected social relationships. Some were hopeful to revive their social life and love for food:

"I'd love to be in a position where I'd be able to host friends over and have like these fabulous meals and experiment. That's wishful right now."

Despite experiencing adversity and struggle, participants were grateful for what they had and expressed appreciation for positive influences in their life. Friends and family played a critical role in providing physical and emotional comfort, support and care during occasions of crisis and times of need. Others also attributed a more spiritual orientation when difficulties were minimized or circumstances were unproblematic:

“We are blessed in that situation, because we help each other.”

“If it comes my way, I’m grateful to get it. I’m thankful to people if they give that to me.”

“Merci mon Dieu, pour l’instant je n’ai pas de problèmes. ”

For others, gratitude was expressed through an appreciation for local initiatives that help increase access to food and non-food items or provide generally good service:

“At my home, we were fortunate. Compared to the people from Nunavut we’re very fortunate. The only difficult thing to eat fruits and vegetables is income. I rely on food banks. I’m very grateful for that.

“We’re very fortunate to have this type of service [Ottawa GFB] available in Ottawa.”

“I’m fortunate to be on EI. You get a bit more money. People who are on Ontario Works, like that would be really difficult. You hardly get anything at all to live off of.”

Negative emotional and psychological consequences of food insecurity, poverty and the cumulative effect of individual and household stresses, frustration and worry can have grave consequences on the quality of individual health and interpersonal relationships. While not a direct focus of the current study, participants discussed mental responses practiced when dealing with the stress, worry and hardships of living in conditions of poverty and varying degrees of food insecurity. The coping pattern of ‘self-talk’ was commonly used when faced with difficult financial and/or food situations to manage stress, thoughts and emotions:

“If it’s not there it’s like: “Okay, get over it”. I say to myself: “Get over it, forget it”. I talk to myself... and tomorrow’s another day. That’s how I’ve lived my life.”

“How can I be angry if I don’t get something to eat? This is not the most important thing in life, but it affects your mood. You have to ignore it.”

Participants recognized the ways in which situations made them feel and adopted behavioural patterns to cope mentally and emotionally to survive hardships. This learnt skill helped them feel a sense of control but also awareness where sometimes the only way to overcome a situation was to ignore it until circumstantial improvements could occur.

Perceived whole-health effects of eating enough fruits and vegetables (or not). When participants were asked how they felt when they ate desired types and quantities of fruits and vegetables, they described personal experiences and observations in others with whom they live or associate with who also typically eat the same kinds of foods they do. Overall, most were aware of the positive effects that could be experienced when a balanced and healthy diet was followed. The most common response was feeling balanced followed by a general sense of feeling healthier with a stronger immune system, having more energy and feeling positive; all of which worked together to help them lead a more productive day:

“What we consume doesn’t just affect our physical health, it’s holistic. I didn’t realize how serious. There’s foods that harm and foods that heal so it’s not just the physical part. Paying attention to everything together makes all more reason to eat healthier.”

“Food also helps to keep my immune system strong.”

“It makes you happy if you eat good food. You’re in a good mood and everything. The sun is shining if you have good food in your stomach. You don’t have any stress with food; mostly joy.”

“There’s been a small change in my diet and I’ve found that I’m able to get more done.”

Participants also discussed the benefits of eating enough fruits and vegetables in relation to mental processes (e.g., perception and ability to think, reason and remember). For one participant, eating a diet rich in fruits and vegetables helps maintain focus to complete tasks:

“When you’re eating fruits and vegetables, you know, it’s kind of lighter and your body’s got all the nutrients it needs and so you feel better and you’re also, like I mean tasks are kind of like easier.”

When fruits and vegetables were consumed over time, participants psychological benefits including feeling less depressed, less guilt, more energy, positivity (outlook), clarity and confidence:

“In all honesty with me eating better, I’m not as depressed. It seems to give you energy and you’re on the go and you feel good. My emotional being has changed for the better because of it. The fruit and vegetables are exactly what I need. I don’t need pasta. I don’t need junk food.”

“Ça affecte pas ma santé mais on dirait que je me sens mieux quand j’en mange. Probablement pas parce que je me sens pas coupable... c’est plus psychologique.”

“I feel clearer. I feel more with-it and like confident. More confident.”

When asked the opposite, how they felt when they ate too few fruits and vegetables, participants described feeling unbalanced or unwell (mentioned 18 times) followed by not noticing any effects (mentioned nine times by non-affiliates of the Ottawa Good Food Box). One participant they felt that, with time, they did not have the ability to fight off illnesses as easily:

“If you’re not taking care of yourself, everything starts to fall apart. You’re moody. It’s like when you’re like child who needs sleep and you may not be as motivated.”

“I feel fine. I think they’re probably better for me but I can’t say that I feel differently.”

“I feel sluggish and tired and I usually get sick. Like I start to get sniffles then I start to cough and all that stuff. I feel like if I don’t eat enough fruit I’m just not helping my immunity any.”

Others who took several medications were unsure what symptoms were due to following a poor diet and what were the side effects from prescription drug use. For others, no noticeable differences were discerned:

“Because I got so much medication that it’s hard to say. The medication can throw my system off pretty fast.”

“None of us have had a vitamin deficiency so like in that sense we’ve been eating fruits and vegetables... at least the minimum amount. My point is that we’ve never really suffered the ill effects of not eating enough.”

When asked what was observed in other household members who did not consume enough fruits and vegetables, the major response from those not affiliated with the Ottawa Good Food Box Program was that they did not discuss their feelings in relation to this topic:

“They don’t say anything. When they get home from work and school, they’re always tired. They just take their showers, watch movies and do their own thing.”

“That’s never been a discussion. No.”

When a balanced diet with fruits and vegetables was not regularly consumed, participants felt less alert, less focused (different mindset) and short tempered. Some parents noticed differences in their children’s behaviour:

“When you don’t eat properly, you’re not healthy. Your mind isn’t nourished and your thought process is not working properly. It affects your emotions; tend to be snappy.”

“I find you get really tired when you’re not eating enough and if you’re not eating well you’re also tired and you’re not alert you’re just overall not a normal person.”

“I can see that she’s constipated and not listening and other stuff.”

Participants mentioned negative psychological effects that affected their ability to complete activities and live productively. These include feeling depressed, less energy, more stress, anxiety, guilt, inadequacy, irritability, lethargy and fatigue:

“I’m older. I have [to] keep up with my health and if I don’t, I notice a difference. I’m more depressed, I don’t have enough energy.”

“I experience more stress, heightened stress and anxiety.”

“I enjoy eating fruits and vegetables and I can feel it emotionally or physically when I don’t have access to it or haven’t had it for a while. I get lethargic or not as energetic... maybe irritable. You know when you really want, when you’re craving something it’s not there? Those things affect my behaviour.”

For others still, with time, they felt dehumanized because they could not feel better:

“It makes me depressed. Mentally it affects me. You just don’t feel human. I’m broken.”

While many participants noticed similar negative attributes in other household members when they too were eating too few or no fruits and vegetables, the major sentiment observed in others was a growing sense of guilt because they were not eating foods they knew they needed:

“Participant: She tells me that she doesn’t feel that she eats enough fruits or veggies.

Interviewer: So how does she feel when she doesn’t get enough? Does she ever tell you?

Participant: She feels the same way I feel: guilty.”

Participants also noted numerous physical effects in themselves and other household members when their diet was poor in fruits and vegetables. Individuals readily recognized

feeling physical fatigue and generally feeling tired, sluggish, dizzy, low or no energy, lazy and weak (together, referred to 44 times):

“I feel tired. Anxious maybe. It affects my behaviour not positively. When you’re eating a balanced diet, fruits and vegetables, you feel good. When that is not in your diet it affects your behaviour.”

“I feel more fatigued and my system doesn’t seem right. I feel out of whack, out of sorts.”

“I feel sluggish and tired and I usually get sick. Like I start to get sniffles then I start to cough and stuff. If I don’t eat enough fruit I’m just not helping my immunity any.”

Tied with these physical symptoms was the discomfort of stomach pains, withdrawals, cravings and hunger:

“My stomach hurts, I’m like bloated and like upset [...] I just don’t feel healthy. I don’t feel good overall.”

“Horrible. Dreadful. It’s like a drug addict that doesn’t have their drugs. Especially at the end of the month, and I don’t have money for salad. My body wants salad so much, it’s like... (*gasps*) like, I’m dying! My body wants salad. Give it to me, give it to me!”

“If you’re feeling hungry and it’s not there you start to get irritable.”

For some, this led to experiencing constipation and perceived weight gain:

“I actually notice bowel movements. You can tell when you’re not eating enough vegetables or fruits too. You’re more constipated. If you don’t have enough fibre in your system, everything doesn’t work properly.”

“If I don’t eat healthy food, I gain weight.”

For others still, consuming a poor diet had dermatological consequences which translated in facial blemishes and a poor complexion:

“My skin is not as nice. I’ll have more breakouts if I’m not eating healthy.”

“It affects my appearance, my skin tone.”

These negative effects also affected social relationships and daily interactions with others. Occasionally, arguments would ensue and stress would increase. The negative dynamic would often lead to more stress and anxiety among household members:

“When [daughter] was young she would be upset at me because she wouldn’t get it for snack at school.”

“They definitely complain! They just complain that they haven’t eaten enough of that during the day and they know that they should. Ugh!”

Even though some individuals did not notice any immediate consequences, most detailed the pains of not being able to eat healthily and how this affects them and their family. Personal consequences from eating a less balanced diet often diffused from an individual experience to the precipitation of frustration, tension and stress which escalated and was eventually directed toward other household members. As household tensions and stress have direct consequences on the quality of individual relationships between family members, not having enough nutritious foods can not only affect individual health but, over time, the health of the household.

Uses of food: From the land to the plate and beyond. As described by a multicultural cross-section of urban Ottawa, food serves different roles aside from minimizing hunger. A common use of food was for medicinal purposes (mentioned 29 times) as a way to assist individuals in illness recovery, to maintain a state health and well-being and to help children and youth develop optimally:

“My words of wisdom would be to promote how important it is, fruit and vegetables, to get you goin’ and keep you goin’. It keeps you healthier for your latter part of life and your latter years, it really matters.”

As some households could not always afford enough food throughout the month, they often relied on assistance from community programs to avoid feeling hungry. As service users often criticized the quality of food and the few fruits and vegetables they received through charitable programs, they described a disconnect between the health messages supported by government and non-government organizations and the little support for programs to provide more appropriate food aid to underserved communities and disadvantaged groups:

“I really urge the government to give money for food, for vegetables. The drop-in centres and the soup kitchens and the mission and the Salvation Army kitchens are not quality food. They do not bring people to a level of health up there. They actually bring them down and make them sicker. [...] People have serious diseases and the food that they’re served at soup kitchens and drop-in centres bring them towards the grave.”

“To be healthy is a cost and it’s unfortunate. It should be reversed because I think more people would have more energy, sleep better, exercise more, if they weren’t driven based on the foods that actually didn’t provide nutritional value.”

For some, eating a more balanced diet overtime helped improve their mood, sense of well-being and digestive health:

“In all honesty with me eating better, I’m not as depressed. It seems to give you energy and you’re on the go and you feel good. My emotional being has changed for the better because of it. The fruit and vegetables are exactly what I need. I don’t need junk food.”

“I think that by eating more healthy and by eating more balanced nutrition, which for my body requires a lot of vegetables, it just helps balance like whatever chemical processes are going on in my brain.”

The use of food was often described as a way to enhance social bonds with loved ones, acquaintances and colleagues and used to mark occasions and ceremonies (mentioned 21 times). Having guests over for a meal supported dietary improvement and positive food experiences:

“It’s one of the most pleasurable experiences; increases social interaction. There’s so many good things about eating and eating well includes fruits and vegetables.”

“When I’m alone, I tend not to eat as good as I should. When I go out with friends or since I started a prenatal class, I’m watching them eat or just the fact that they serve us healthier foods influences me to eat healthier. When I’m alone too much I don’t wanna prepare all the foods that are good for me and they’ve [fruits and vegetables] gone bad.”

Through food, they felt the ability to connect with other cultures and experiences and gain a stronger appreciation for their own. By pairing of different foods and cooking styles, the foods people ate linked to food knowledge passed down from generations and teachings learnt from others:

“That’s what determines the foods that I think are kind of more normal and that I’ve been acquainted with.”

“There are certain French Canadian meals that I will make. That’s the way I was when I was young. I eat like that now and I passed that on to my kids, recipes or whatever.”

Food was also used as a learning tool (mentioned 6 times) where, in some cases, experimentation with different food combinations was permissible and fit within the food budget. Whether learning through social media, online videos or by taking part in community

kitchens and cooking classes, individuals had the opportunity to broaden their food and cooking knowledge and flavour palate by using food in new and familiar ways to make edible products:

“It’s not always the same food. I like that because I think that’s kind of fun. I liked how there were like a couple foods that just were there that I wouldn’t have expected and I like that. I learned... I “Youtube’d” it.”

“I think like community kitchens and cooking classes to make different kinda foods that are also not too time intensive.”

For parents, food was often used as both a treat and a disciplinary tool in the context of child rearing. Discussed 15 times, a treat consisted of a food that had value or significance to the child but was not consumed often while the use of food as a disciplinary tool involved removing or withholding a food that the child desired. Even for adults, food was described as a treat when used as a reward or when they had enough money to buy a food otherwise considered a luxury:

“Don’t get me wrong, my middle daughter would eat Doritos over any type of fruit first but by my parenting skills, I need them to be able to have a cheater food once and while.”

“I was badly abused as a child so food was a thing that I went to bed without eating so many times it’s incredible. Unbelievable for real life. But we’ll leave that one alone. That hurts. That one hurts. It’s the truth though.”

“Fruit is only on the weekends. It’s a treat.”

For others, food was used as a mood regulator (mentioned 11 times) and not only carefully incorporated in meals or snacks for its nutrient properties but consumed because of how it made people feel after they ate it. Consuming foods with the objective of feeling both satisfied and satiated, too much sugar, salt and carbohydrate-loaded foods typically induced feelings of

heaviness, bloating and less energy. A more balanced diet with the inclusion of occasional or comfort foods were described to help improve one's mindset and induce less guilt:

“Ça affecte pas ma santé mais on dirait que je me sens mieux quand j'en mange.

Probablement pas parce que je me sens pas coupable... c'est plus psychologique. ”

“If I was having a very emotional day; if I was really stressed out, I would probably reach for something unhealthy opposed to fruits and vegetables.”

“I think it affects our mood too. I think it is also like if you're not eating good foods your body feels heavy and you don't have as much energy.”

Discussion

In Canada, vulnerable citizens including a growing number of children still lack access to culturally appropriate, safe, nutritious and healthy food. The level and severity of food insecurity that continues to affect Canadians is unacceptable. As a country that harvests many varieties of regular and organic fresh produce, unequal food distribution and poor dietary quality disproportionately affect diverse at-risk groups who experience different forms and degrees of food (in)security, marginalization and exclusion (e.g., single parents and children, students, women, the elderly and Aboriginal families). The disproportionate experience of food insecurity perpetuates social and health inequalities that continue to adversely shape the way people live, work and interact with others. This experience also affects one's ability to contribute to and feel part of their community (see Willows, Veugelers, Raine & Khule, 2011).

This mixed method study offers diverse and multi-cultural perspectives which include those from individuals who self-identify as First Nations, Inuit and/or Métis about the factors that affect household food security, fruit and vegetable consumption, health and well-being for at-risk groups including lower-income families and other demographic groups (e.g., students).

Through personal narratives, this study also explores the strategic behaviours people use to manage and acquire money and enough food to feed household members. Participants from diverse backgrounds and experiences shared personal accounts of hardship, triumph and resilience in the context of food, health and survival in an urban environment.

Quantitative information indicates the absence of a significant relationship between overall satisfaction with one's primary food store and gender and any association of the latter with level of satisfaction with fruit and vegetable choices, food quantity or quality. Other χ^2 results suggest an association between satisfaction with how food stores meet household food needs and gender. Qualitative results suggest that major drivers of food store satisfaction relate to the cost, quality and availability of produce and the convenience of having food and non-food items under one roof. This finding renders the statistically insignificant relationship between level of satisfaction with one's primary food store and available food quantity and quality less clear because these were raised as important themes that affect consumer satisfaction within the food retail environment.

No significant association between household food security status and gender was found nor any association between household food security status and self-rated health; the latter which goes against previous research findings that link these two variables (see Muldoon, Duff, Fielden & Anema, 2013; Seligman, Bindman, Wittinghoff, Kanaya & Kushel, 2007; Whitaker et al., 2006). A link between household food security status and Aboriginal identity was found; a finding that is in line with previous studies (see Food Banks Canada, 2012; Garriguet, 2008b; Raphael, 2011; Willows et al., 2009; 2011). Finally, no significant association between frequency of fruit and vegetable consumption (as measured by the average weekly frequency of fruit juice, fruit, green salad, potatoes, carrots and vegetables consumption) and access to a

functional vehicle was found; which also counters the results of a previous Canadian study linking compromised access to a vehicle and reduced access to fresh produce (see Bertrand, Therien & Cloutier, 2008). This suggests the neighbourhood food environment and infrastructure may play a more prominent role in household diet and health. Though not a direct focus of the current study, participants were concerned about food safety which in turn influenced consumer behaviour and, subsequently, the dietary diversity, quality and health of the household.

Food Store Characteristics, Level of Satisfaction and Gender

Prior to the 21st century in scientific literature, food procurement and grocery shopping in Western society were characterised as the conventional responsibility of women within the household. Supporting studies that underscore a shift in the types of roles that men and women are prescribed and ascribed in society and the home (Dholakia, Pedersen & Hikmet, 1995; Gardner, 2004; Richbell & Kite, 2007), main household food shoppers (both men and women) describe taking more equitable and active roles in grocery shopping and food buying decisions. Though this trend where both men and women accept more fluid and dynamic roles within the familial context emerged since the 1990s and into the 21st century (see Andreyeva et al., 2008; Dholakia et al., 1995; Gardner, 2004; Mortimer, 2013; Richbell & Kite, 2007), it challenges the mechanisms that uphold the construction of gendered roles by institutions (e.g., cultural, social and religious) and social mores (implicitly and explicitly).

Participants identified issues that affect consumer behaviours and personal satisfaction with the food store from where they primarily buy household food provisions. While no real differences were found between men and women regarding their level of satisfaction with the availability of fruit and vegetable choices, quantities and quality or their overall level of food store satisfaction, a significant difference was found in the level of satisfaction of men compared

to women with how closely food stores meet household food needs. These findings highlight the likelihood that men and women base their personal assessment of food store satisfaction on different store criteria or attributes. It also suggests that men and women experience the food shopping task differently since they may espouse different consumer behaviours as a result of how closely their primary food store meets a range of household food and non-food needs.

Participants described how the needs of the household are placed against what range of products are available, accessible within budget and obtainable in convenient ways. Studies have confirmed differences in male and female behaviours within the supermarket (see Gardner, 2004; e.g., price comparisons) and research also indicates that women tend to shop at multiple stores to benefit from varied food discounts, promotional offers and perceived lower food prices (Bronnenberg & Vonnhonacker, 1996; Urbany, Dickson & Kalapurakal, 1996) while men tend to shop at one store and are less inclined to buy from different food retailers in the hopes of economizing and/or spending within budget at their retailer of choice (Donegan, 1986; Gardner, 2004). Through personal accounts from this study, men too shop at multiple stores in the hopes of maximising potential savings. As perceived food store characteristics influence food shopping behaviours and individual satisfaction with how closely a store meets food needs, personal narratives from both men and women highlight how the task of food shopping is a calculated experience with consequences on dietary quality and quantity.

As some men and women strive to adopt a balance between traditional and more diverse gender roles and household duties, evidence from qualitative data on the factors that affect food store satisfaction reveals more information about changing collective and individual expectations about food, food retailers and subsequent access to these in urban Ottawa. Because customer satisfaction entails a comparison between what is perceived and expected from food stores,

females may be less satisfied than males with how closely food stores meet household food needs because of differences in the perceived importance of some store characteristics compared to those judged as important by their male counterparts. An Australian study by Mortimer and Clarke (2011) suggests that male shoppers place less importance on individual supermarket store characteristics than females. In particular, utilitarian characteristics such as efficiency and quick customer service embody aspects that men hold as more important to complete their food shopping task. International studies suggest that men are more goal-oriented as opposed to espousing socially oriented behaviours (Iacobucci & Ostrom, 1993; Noble, Griffith & Adjei, 2006). Alternately, women rate subjective components such as friendly interaction in service encounters (as opposed to speed), store cleanliness, value for money and price and food safety (food store handling and procedures) as important (Mortimer & Clarke, 2011).

As the ability to consume a healthful diet to lead a productive life is often viewed as an individual responsibility and choice, structural factors including advertised promotions (sales) and the visibility and perception of high-quality, affordable and fresh produce in adequate quantities hold an important influence on the foods that are bought. As these characteristics have been found and discussed elsewhere (see Andreyeva et al., 2008; Helgesen & Nasset, 2010; Trautrim, Grant, Fernie & Harrison, 2009), for many men and women, a combination of convenience, different price points and range of available products played a role in deciding where to shop for food (e.g., grocery stores or outdoor markets). The food that is physically and financially available at food stores affect individual and household food security status due to the distribution of enough preferred and needed food that can be bought from food producers and distributors. Although not the focus of this study, a food store's ability to best respond to customer expectations and needs may in turn play a role in customer loyalty. For most people

who survive on low-income, loyalty to some food stores is most often influenced by the potential savings they can benefit from on household items they already use and the types of food they prefer. Individuals who experience food insecurity will be less likely to take risks with food and money at the threat of wasting already limited resources.

While gender differences were found in satisfaction with how closely the primary food store met the food needs of household, there were no such differences with overall satisfaction. This means there are different criteria that influence the food shopping experience for both men and women. When certain foods are not available or conveniently accessible at one food store, men and women may expend energy, time and money to procure enough of the kinds of foods household members want to satisfy and fulfill their role as the primary household food shopper.

The Perception of Food Safety and the Purchase and Consumption of Food

Several federal agencies are tasked with monitoring the Canadian food supply so consumers can enjoy both domestic and imported food varieties (e.g., Health Canada, Canadian Food Inspection Agency, Agriculture and Agri-Food Canada). While Canada's food supply is ranked among the safest world-wide (Sizer, Whitney & Piché, 2012), participants were concerned about food additives and contaminants in canned goods and fresh produce and linked these worries to the perception that food regulations may be inconsistently monitored across countries from which foods are imported. The lack of global food standards and regulations was discussed as a major influence in the perception of food quality and an aspect that influenced food buying behaviours and diet.

Major concerns regarded lesser known details about farming, food processing and handling practices and pesticides and other toxic residues in food resources that are readily available for purchase and consumption. For participants, the country of food origin signaled

either decreased or enhanced food quality and safety, more or less trustworthy food inspection strategies and the existence or not of safeguards to protect consumers from hazardous products or food-borne illnesses. Participants perceived food handling, inspection and monitoring as less trustworthy practices outside of Canada and were biased toward domestic produce.

Discrimination over imported foods from certain countries underscores fragmented and partial ideas about existing protocols, procedures and legislation that govern food harvesting strategies and the import of fresh or processed foods.

Consumers and local growers associate important societal, environmental and individual benefits to buying and selling local produce (Hendrickson et al., 2013; Rose et al., 2008; Tegtmeier & Duffy, 2005). Participants associated greater trustworthiness with produce grown from local farmers compared to those sold by larger food retailers; a finding that has also been found and discussed by Byker, Rose and Serrano (2010). Consumers were mainly concerned about chemical and pesticide use and their lesser known effects on human health even though the regular consumption of recommended portions of fresh fruits and vegetables still has the effect of reducing the incidence of chronic diseases (see Health Canada, 2015). For those concerned about the effects of pesticides, herbicides and other contaminants and who were willing and able, paying a premium to consume organic produce was small in comparison to subsequent cost of feeling less well because of the cumulative effects of consuming toxic residues and other pollutants found in conventionally harvested produce. Less affluent participants ultimately viewed organically-grown produce as a luxury and could not afford to spend the extra money even though they acknowledged the claims that eating organic produce may be a less toxic and healthier alternative to conventionally grown food. In spite of the transmission of sometimes questionable facts from doubtful sources about the primary and secondary effects of toxins in

food to the public, participants are generally aware of the importance of eating enough fruits and vegetables to maintain good health and prevent and/ or manage illness.

Consumers are generally aware about and interested in healthier food products and options (Agriculture and Agri-Food Canada, 2016) and because of innovations in the food sector, consumers have the opportunity to enjoy and integrate different produce varieties in their diet throughout the year. Though there is growth in public interest and food movements to buy locally-grown and prepared foods to the extent possible from farms (Pinchot, 2014), most households have grown adept to a Western diet that integrates the consumption of a wide range of local, domestic and imported provisions of convenience, processed, preserved, dried, frozen and fresh food year-long (Byker et al., 2010). Relying exclusively on locally-grown produce was admirable but neither appealing nor realistic to meet all individual food needs. As a result, Ottawa residents do not typically rely on foods to the extent that they are regionally and seasonally available.

Participants felt that the food handling and distribution practices may undermine individual efforts to achieve optimal health and well-being because of a range of information on food safety issues available on the internet and through the media (e.g., radio, television or in print). Studies have highlighted that adverse media coverage or changes in the level of food safety information available to consumers may temporarily influence the demand and purchase of fresh products (see Dahlgran & Fairchild, 2002; Smith, van Ravenswaay & Thompson, 1988; Taylor, 2009). The temporary effects on food purchasing decisions is to reduce the risk of exposure by boycotting risky products until confidence is restored or that the incident is been forgotten (see Verbeke, Frewer, Scholderer & De Bradander, 2007; Yeung & Morris, 2001).

Aspects of food safety are often taken for granted when products are available and accessible for public consumption (Grunert, 2005). International debate has highlighted the controversies about safety and risk associated with the consumption of genetically modified foods (GMOs). Media coverage and reports based on anecdotal evidence have sparked public panic with the effect of garnering attention to issues surrounding food safety, human health and ethics in relation to the production and consumption of GMOs and its environmental impact (see de Vendômois et al., 2010). Participants were interested in and vocal about wanting greater transparency in food production processes and accountability for agricultural outputs with the implementation of better food labeling practices. Despite efforts to be informed consumers, households continue to struggle to find the financial resources to feed their families enough high quality food conducive of a healthy and balanced diet.

Challenges to Achieving Food Security: Known and Emerging Barriers

Food insecurity has profound effects on the main household shopper but also affects household health in ways that tend to escalate when financial resources decrease and nourishment is not available in desired quantities to appease individual need. Prior to providing recommendations on ways to better address the issue of food insecurity, it is imperative to identify what barriers affect the acquisition of enough food for individuals and households with children and how these affect them.

Feeding household members safe, appropriate, healthy and affordable food may be a daily task that some Canadian families take for granted. The most salient challenges to food security in Ottawa, Canada remain inadequate household income and social assistance, high cost of food and non-food necessities and transportation; all of which are also obstacles in other cities and suggested as barriers to food security by other studies (see Baskin, 2006; Baskin et al., 2009;

Garriguet, 2007a; Howard & Edge, 2013; Lecompte et al., 2007; Lecompte & McKinnon, 2009; Nathoo & Shoveller, 2003; OPHA, 2002; Power, 2005b; Willows, 2005). While many participants described how getting a sufficient amount of food to feed the household was difficult, it became evident that the experience of food insecurity was beyond an individual and household issue. Food insecurity is a broader issue that eventually comes at a cost to society.

At the individual level, food insecurity was described in similar ways to findings by Radimer and colleagues (1992). The experience was characterised by bouts of nutrition inadequacy that affected dietary quality, food insufficiency and nutritional compromises where people ate more energy-dense food to avoid the physiological and psychological discomfort of feeling deprived and hungry. Eating in healthy and culturally congruent ways and consuming enough food was not always possible. Cultural and personal food preference, affordability, education, media, biological needs, availability and food safety influence the types of food that are selected and purchased (see Kuhnlein & Receveur, 1996). Participants discussed the complex barriers that challenge their ability and capacity to buy, prepare and consume simple, everyday meals. Level of individual cooking and preparation skills and time to shop for and cook food affected the meals that were served to the household.

Participants described difficulties acquiring the types of food they needed in sufficient quantities to last the month and were unanimous in their concern about the rising cost of food and non-food items and the cost of living in Ottawa. Many felt that individual revenue, whether through employment, social assistance or disability program, could not keep up with the cost of living and subsequent expenses which, for most people, resulted in little money left for food, other necessities or even emergencies. Economically challenged households often sought help from charitable outlets or simply did without but others acquired debt at the risk of going hungry,

feeling degraded or even excluded from society. Data released by Statistics Canada (2016) on annual trends in mean food retail prices confirms the perception of steady food cost increases.

The retail cost of food in conjunction with the amount and source of a household's income is the primary determinant of food selection and meal frequency and may also affect the quantity and quality of food that is purchased. The source and amount of household income is also a known risk factor for food insecurity (see Baskin, 2006; Baskin et al., 2009; Garriguet, 2007a; Nathoo & Shoveller, 2003; OPHA, 2002; Power, 2005b; Willows, 2005). Minimum wage in Canada has remained above \$10 since 2010 and this hourly rate is assessed as comparable to the minimum wage for general workers in the late 1970s (Galarneau & Fecteau, 2014). For those who relied on government assisted income (OW, EI, ODSP, CPP) or who qualified for a child tax benefit, social assistance was judged as insufficient as it often left little to no money for food once rent was paid. Literature also supports the finding that the level of social assistance and minimum wage is inadequate to cover the cost of basic human needs and the purchase of enough food for a balanced diet (Baskin, 2006; Kennedy, 2007; McIntyre et al., 2001; Vozoris, Davis & Tarasuk, 2002).

Housing circumstances are linked to household food security (Kirkpatrick & Tarasuk, 2011). For those who lived alone, the ability to achieve a state of food security even temporarily was undermined by their living conditions where many expressed how housing quality was compromised to fit within financial constraints. Because of unstable economic conditions, employment insecurity and the high costs of living and rent in Ottawa, the food, financial and housing security statuses of many were threatened on a monthly basis as even the slightest decrease in income or increase in expenses renders them at-risk of homelessness. Many who lived on low-income described not having enough safe cookware or sufficient storage space to

stock enough food and other supplies because of cramped and inadequate living quarters. Little or no cooking or food knowledge and a lack of cooking skills often limited the food choices that individuals could select and buy to feed the family. These barriers to food security have been underlined as challenging to many low-income households in other contexts (see Chatterjee et al., 2005; Jetter & Cassady, 2006; Mehak et al., 2007; Richards & Smith, 2006; Woods, 2003). Because of this, some described the monotony of their diet as something that brought on feelings of dissatisfaction, personal sentiments of inadequacy and little praise by their kinship.

Perceived neighbourhood safety, community infrastructure and transportation are also risk factors to household food insecurity because they influence food access and determine health (Friendly, 2008). The elderly were concerned about personal safety, crime and recent gang activity. The perception of living in unsafe conditions bears other negative consequences to community, social, psychological and physical health, personal safety, individual well-being, and household food security status because of reduced access to food stores and other services, the experience of social isolation and diminished social cohesion. Because of the environmental and social characteristics of certain communities, literature suggests that due to higher overhead and operational costs (e.g., extra security because of higher crime rates), community residents must often pay higher prices for food that may not meet the standard of quality they expect at a reasonable cost (see Bitler & Haider, 2011; Short, Guthman & Raskin, 2007). For participants, good quality foods were available at most food retailers but often out of reach because of the high price. Alternately, some foods were available in limited quantities at market price but judged in poor quality or were expired.

Transportation, parking costs and proximity to food retailers were aspects related to the physical environment that challenged food access. While literature reports transportation to get

to (Jetter & Cassady, 2006) and from (Lecompte, 2009) food stores as challenging, transportation and parking costs often fed into the budget for groceries and other necessities. Finding a food store that had a range of affordable products and food varieties that could meet household food demands on a tight food budget often meant taking several buses outside the downtown core. Because of fluctuation in arrival times and fixed bus schedules, a single trip to and from the grocery store could take hours. Taking public transportation, carpooling or relying on one's ability to walk to and from grocery stores played a role in planning what food items could be brought home during one shopping trip. Many deliberately coordinated each trip according to their carrying capacity, the bus schedule and connecting routes, and the number of commuters on the bus during peak hours. This limited the quantities and size of items that could be brought home in one trip. Depending on the outdoor temperature, the distance travelled to and from the food store and the type of provisions that were bought, some foods were less fresh and even wilted upon arrival; a challenge reported by Lecompte (2009) with a study sample of lower income households from Ottawa. Although few had the luxury, some participants acknowledged the value and convenience of having access to a personal vehicle or having a friend or family member with one.

Travel and weather issues affect the ease with which food buyers get to and from food retailers with grocery bags in tow and seasonal weather patterns affect food availability, access, use and food system stability. Seasonal weather conditions and climate changes affect crop quality, the quantity of agricultural yields, the food types that can be regionally harvested and the subsequent market value at which foods is sold by food producers and retail distributors. For many, the role of and decisions made by key players in the agricultural industry and food sector at a high-level influence what foods are accessed and afforded to feed the family. Based on the

Food Price Report from researchers at the University of Guelph, it is predicted that the effects of El Niño on climate, the drop in currency value and other consumer trends (e.g., supply chain transparency) will continue to have a major effect on the cost of a food basket in 2016 (Charlebois et al., 2015). Food shoppers will have to cope with a 2% to 4% increase above the rate of inflation for food in general and an increase of up to 4.5% for fruits, vegetables and nuts (Charlebois et al., 2015).

While vulnerable groups to food and nutrition insecurity and hunger have been identified in previous literature (see Stuff et al., 2004; Vozoris & Tarasuk, 2003), this study has identified several groups in Ottawa that will become increasingly at-risk if social support and policies are not improved to meet current and future challenges within health, education and social institutions: Caregivers of aging and/or ill parents, students and grandparents. These groups noted particular barriers to food security, health and well-being that differ qualitatively from other vulnerable groups and make them at risk of experiencing poorer economic, employment, food and nutrition, and health outcomes. Main reasons are due to constraints to a fixed or low-income, restricted time and an increase in responsibilities and stress with little perceived support to coordinate duties and balance obligations.

The plight of adult caregivers will become an important group to monitor as vulnerable to food insecurity because of projected population trends expected to persist over the next several decades. Because of lower reproduction rates (e.g., mean number of children per woman), increased life expectancy and the life stage of the baby boom generation, senior citizens will continue to be the fastest-growing age group in Canada (Government of Canada, 2016b). Because of this current and continuing trend, a number of adults who provide care and support to their children and elderly or ill parents are at heightened risk of experiencing poorer mental,

physical and financial health and also negative professional consequences. For some participants, it meant spending more of their disposable income and personal savings to pay for incurred expenses in the context of care. In 2012 alone, 28% of the Canadian population over 15 years of age (8 million Canadians or nearly 3 in 10 people) provided care to family or friends with a long-term health condition, disability or difficulties tied to aging. Seven per cent of these regularly helped their parents and experienced financial difficulties (Turcotte, 2013). Based on a study by Turcotte (2013), 28% of caregivers of parents desire more public or financial support than what is currently offered. While support programs available to caregivers vary regionally (Bernier & Grignon, 2012), there are policies, programs and interventions in place to facilitate the responsibility of caregiving and to reduce stress on the caregiver (see MacCourt & Krawczyk, 2012). In Ottawa, those who care for aging or ailing parents did not appear to receive adequate public, financial or emotional support during the caregiving process. This suggests greater challenges to apply or qualify for government support or barriers to the use of certain community services to know which services, programs or interventions may be available to them.

Students are also vulnerable to food insecurity as they are at a disadvantage financially, are less experienced, have fewer resources and tend to live in shared living spaces characterised as low-income (see Rondeau, 2007; Seal, 2004). Studies have shown that food insecurity affects cognitive abilities including the capacity to focus, concentrate, learn and memorize (Gomez-Pinilla, 2008); critical abilities to studying. Student living conditions live may also increase their risk of food shortages. For some, restricted storage and fridge space heightened the risk of food theft between tenants. When carefully planned food rations were taken, the dynamic between student occupants were tense. Alternately, other students described how living with similar

others supported food security as those who lived together deliberately pooled food resources, information on income-relief efforts and worked to support a more positive living space.

Studies show that food insecurity is associated with adverse health outcomes in children (Kirkpatrick, McIntyre & Potestio, 2010) where even temporary periods of hunger can have permanent adverse outcomes on human growth and development (United Nations Millenium Project, 2005). Results indicates that all households with children suffered different levels of household food security ranging from worry about the quantity and quality of food to the adoption of disturbed eating patterns within the home because of inadequate access to food and finances. Not all children were cared for primarily by their parents; some were in the care of grandparents. Although grandparents were proud to provide for their children's offspring, this distinct arrangement of care can influence a state of food insecurity or strain as this demographic takes on renewed responsibilities of child care. Resident grandchildren were identified as a stressor on an otherwise fixed income with limited household food provisions. Difficulties to eat in ways that were congruent with culture and food knowledge related to earning or receiving too little income to balance the cost of living in urban Ottawa and paying high prices for food and other commodities (e.g., female hygiene products and non-food items).

Urban Food Security for First Nations, Inuit, Métis and Non-Aboriginal Persons

Changes in the food landscape, society, technologies and politics affect the food security status of Canadians and particularly that of lower income groups with fewer resources and little power. For different cultural groups, achieving food security means having access to a safe and diverse range of foods including the types of produce with particular ties to meaningful historical and long-term ways of living that support the application of food knowledge and healthy eating. What unites all groups regardless of income is a general apprehension about the general cost of

food to feed a household and the high cost of eating a healthy diet. Most felt that eating in ways that were congruent with their culture and vision of health was challenging in the short- or medium term or unsustainable. Not eating the kinds and quantities of food households members wanted and were familiar with entailed a combination of negative cognitive, psychological, emotional, spiritual and physical consequences as well as household tension and familial strain.

As hypothesized, a significant relationship was found between household food security status and Aboriginal identity as a result of the complex interplay of factors that support strained access to both traditional and mainstream market foods for First Nations, Inuit and Métis peoples and the residual effects of Canada's dark colonial history. This finding supports previous Canadian studies that found an overrepresentation of First Nations, Inuit and Métis peoples who experience marginalization and varying degrees and consequences of food insecurity compared to non-Aboriginal peoples (see Garriguet, 2008b; Willows et al., 2009; 2011). As the growth rate of Canada's Aboriginal population exceeds that of the general population (Government of Canada, 2016a), issues related to a disproportionate dependence on social assistance and experiences of food insecurity, hunger and poverty will continue to grow in importance and require planned and deliberate action by all levels of government for significant improvement and change to the status of Canada's First Nations, Inuit and Metis communities.

For some First Nations, Inuit and Métis families, transitioning to urban geographies brought opportunities along with challenges. Adapting to urban ways of living and providing enough quantities of high quality food has proven difficult for families even though some people are creative in their ways of dealing with adversity and barriers to living in ways that are culturally congruent with First Nations, Inuit and Metis ways of knowing and doing. As Aboriginal peoples traditionally apply the wisdom and teaching of Elders to procure, prepare and

preserve foods, the need to consume fruits and vegetables as part of balanced diet is a Western concept that some have yet to realise its value or incorporate as part of their dietary habits. Changes in society have lead to an increased dependence on the consumption of store bought foods (Dieticians of Canada Aboriginal Nutrition Network, 2005; First Nations Centre, 2005b; Kuhnlein et al., 2006) and the use of food assistance programs for Aboriginal groups (Food Banks Canada, 2012; 2013).

Although key barriers to traditional food consumption are experienced on-reserve (Chan et al., 2014) and in Inuit communities (see Kuhnlein & Chan, 2000; Kuhnlein, Receveur, Soueida & Egeland, 2004), the consumption of traditional foods is a pathway to health and food security and holds great social and cultural significance. To understand Aboriginal health outcomes, it is important to consider the influence that nutrition has on whole health. Poor nutrition unbalances the harmonization between one or more of the four quadrants of the health and well-being in First Nations, Inuit and Métis beliefs. Living in food insecurity negatively affects one's physical and psychological health and quality of life (see Che & Chen, 2001).

For First Nations peoples and the Inuit in Ottawa, traditional foods were described as preferred for their nutrient- and vitamin-rich properties. Accessing foods high in nutrient value, lean fats and protein was difficult since more culturally familiar, desired and appropriate foods were perceived as less accessible or unavailable compared to other boxed foods and commodities. What consists of traditional foods differs qualitatively for different First Nations groups across regional and provincial jurisdictions. Some First Nations participants came from communities with abundant access to wild game and fruits and vegetables that were supported by ideal climate and harvesting conditions. Others from more northern regions ate few or no fruits and vegetables but knew how to obtain essential nutrients by consuming other foods from the

land to maintain health and stave off illness. For the Inuit, traditional ideas of eating healthily do not include consuming fruits and vegetables because these foods were not typically affordable, edible or available in sufficient quantity and adequate quality. Having little or no access to familiar traditional/country foods and the limited ability to use and apply cultural food knowledge and teachings in a contemporary urban context were barriers to food security and feeling whole. This finding is consistent with existing literature concerning access and availability of traditional foods for Aboriginal persons (Baskin, 2008).

For many, eating country foods comprised an important fraction of the household diet upon return to their native community. For First Nations, Inuit and Métis in particular, harvesting practices provide a direct link with the natural world and are the primary methods through which to transmit cultural values, knowledge and wisdom, skills, beliefs and elements of spirituality (RCAP, 1996b). Because of limited access to fertile land in urban centres, the continuity of traditional harvesting and cultural practices are at-risk and access to a traditional diet may be limited by affordability and one's place of residence (Kuhnlein & Receveur, 1996). For First Nations, Inuit and Métis households, the foods perceived as most accessible in Ottawa were those that made them feel full but not the varieties that could make them feel whole. Conscious of the differences in dietary quality between country foods and those conducive to a Western diet, First Nations and Inuit participants described searching for less familiar foods with which to substitute in order to benefit from similar nutrient quality as foods accessible in their community when living off-reserve or away from a northern environment.

For other low-income households, achieving even temporary food security is a struggle. For non-Aboriginal people, finding high quality, nutrition-rich, fresh produce or familiar and trusted food brands at an affordable and fair price was difficult to access through grocery stores.

Most individuals, especially foreign exchange students, wanted better access to locally-grown and familiar produce at a level of quality comparable to foods harvested in their country of origin (e.g., participants of European decent).

Cultural revitalization was described by First Nations, Inuit and Métis participants as accessible through Aboriginal institutions where a combination of information centering on traditional knowledge, foods, cultures and health were available in print and integral to programs and group activities. The relationship between culture and food was described as altered when First Nations, Inuit and Metis families return home to a lifestyle that does not honour or celebrate ancestral traditions and knowledge which, together, uphold and sustain a symbiotic relationship with Mother Earth. Many described frustration with the monotony of food and a general disinterest in food and meal time because little joy could be drawn from family time around food. Living in poverty and hunger made being and feeling well a challenge. Living with one or multiple chronic health issues heightened most struggles with which people had to cope. For many, the perpetuation of poverty and the effects of intergenerational trauma were difficult cycles to break to find healing and health.

Strategies to Acquire and Manage Food and Money in the Context of Food Insecurity

When physical and economic barriers to food security in general and fruits and vegetables in particular are experienced, most household food providers use multiple creative and strategic behaviours to address food and financial shortages in the hopes of acquiring the necessities to alleviate hunger and any further loss. As economically challenged households face complex challenges that put strain on disposable income, factors that compromise food and monetary access often require them to seek support from family, friends and significant others and assistance from local services and programs for which they may be eligible.

Despite best intentions and effort, many low-income households cannot afford to eat the minimum recommendation of fruits and vegetables by Health Canada or in ways conducive to a balanced diet as advised by health professionals. Participants detailed strategic procurement, preservations, preparation, cooking and eating habits to help them include fruits and vegetables in their diet. But, for some, it was not always possible due to a combination of high cost and inadequate income, lack of availability of familiar and desired kinds, the preoccupation over food spoilage and limited shelf life. For those who wanted to avoid discarding food, finding creative ways to consume and pair produce was essential to curtail food and financial waste.

Advanced food preparation and meal planning supported healthful eating habits within and outside the home. Having a visual aid to see what foods would be consumed during the week helped consumers know what they could anticipate eating, what they needed to make meals and how they could use both their time and efforts efficiently while shopping for food. For participants who had knowledge and resources, making preserves, pickling and freezing fruits and vegetables was an efficient method of preservation to keep for later use rather than waste food. Freezing fruits and vegetables was a common technique used amongst students to ensure they would have fruits and vegetables readily available during the academic session as was cooking larger meals and dividing these into single portions and freezing them for later consumption. Finally, freezing locally-grown food during harvest seasons enabled its consumption in winter when fresh foods are of less available, in lower quality and more expensive. These practices were strategies to reduced household stress and food waste.

Changes in society and food landscapes have had an effect of changing the ways in which households acquire food. Older participants reminisced about childhood memories of time spent in the garden with their parents and how having access to land supported fruits and vegetable

consumption in early childhood. Now, access to fertile and cultivable land was not as easily accessible in urban Ottawa. Although seasonal cost fluctuation of fresh produce restricted access and limited the variety of foods that could be bought, procuring fruits and vegetables through charity or other food programs were strategies to ensure that fresh and/ or canned varieties could be accessed in times of food shortage. Although fresh fruits and vegetables were not consistently offered through emergency food programs, the ability to access healthier foods through community food interventions or home gardens was appreciated by those who wanted to eat in ways conducive to a healthy lifestyle and benefit from positive ties with the community.

The notion of an emerging tiered food system extends the suggestion by Campbell (1990) and Davis and Tarasuk (1994) concerning a “two-tiered food distribution system” in the 1990s between the ‘haves’ and the ‘have nots’. What is suggested by participant narratives is the existence of a third tier where there are, 1) foods donated for the purpose of being distributed through charity (e.g., food banks), 2) conventionally- and organically grown produce and other specialty foods (e.g., lactose- and gluten-free items) available to paying consumers through food stores, and 3) food available through income-relief strategies (e.g. the Ottawa Good Food Box) for those who still want fresh produce but may not be able afford it at market value. This trend indicates growing inequity within the food system that further segregates lower income earners because of the source from where they buy produce; programs often still attached to the stigma offering lesser quality food at a reduced cost to marginalized groups.

For many households at-risk of experiencing food insufficiency or financial shortages, food and money acquisition and management strategies were used in the hopes of obtaining the necessities to curtail hunger and/or further hardship when resources were scarce. Economizing strategies were used in the contexts of food shopping and within the home and could be

beneficial to 1) limit and reduce food expenses and unnecessary spending, 2) minimize household costs, and 3) limit food waste. Economically challenged households were skilled at seeking promotional items and finding more sensibly priced items per pound or unit. Coupon use, buying food in bulk, compromising quality for quantity and price, and, if resources and storage space permitted, food hoarding to benefit from promotional savings on already desired provisions comprised these behaviours. Strategies including buying promotional food items, generic or store brand labels, fixed weight items and/or lower priced fruits and vegetables have been found in a previous study (see Leibtag & Kaufman, 2003).

Economically challenged households were skilled in managing household food provisions to reduce household food expenses. Cutting the size of meals, rationing food per person or throughout the week, reducing frequency of food consumption and altering meal patterns, substituting certain foods for less expensive alternatives, freezing food, eating leftovers and simply ‘making do’ with what was left within the household were also described at length as strategies to survive when food and finances were near depletion. For those who struggle to put and keep food on the table throughout the month, dietary compromises in quantity and quality are often cited to secure provisions for children and grandchildren. As previous literature has discussed the compromises that parents make to ensure that their children are fed which may include restricting children’s access to food in times of extreme food insecurity and hunger (Beaumier & Ford, 2010; Campbell & Desjardins, 1989; Findlay, Langlois & Kohen, 2013; Fitchen, 1988; Hoisington et al., 2002; Kempson et al., 2003; Tarasuk & Beaton, 1999b; Tarasuk & Maclean, 1990) this study found a growing number of grandparents also compromise their dietary intake for the sake of their dependents.

To minimize and reduce household costs, participants were proud to describe how they carefully planned and developed a monthly expense budget to maximise limited income, prepared food from home when tending to activities outside the household and reduced electricity consumption during non-peak hours. Others reduced gas expenses by mapping and planning shopping trips alongside other necessary travel. For others still, living in proximity to another province entailed potential savings from cross-border shopping and reduced tax rates. Others took part in local food programs for income-relief. While some creative strategies and behaviours to maximise limited income have been detailed by Kempson (1996), this study offers different levels of economizing and managerial behaviours based on environment and purpose (e.g., maximize food use and minimize waste; maximise buying power and limiting expenses).

Many urban-based families perceive greater pressure on the household food budget because of noticeable price hikes in food commodities and living expenses. Most households who struggled financially knew about different programs from which to seek assistance to acquire food when in need. Family, friends and community-based organisations and charities were identified as factors that mitigated the consequences of certain stresses and vulnerability and provided critical assistance and support. Métis and First Nations participants expressed regular participation in organized activities as one strategy to share a meal among friends while learning about cultures, health, food and traditional teachings. Those who took part were able to enjoy the added benefit of becoming more informed about a topic they were interested in without feeling stigmatised or embarrassed. Other Aboriginal parents enrolled their children in programs where they could benefit from quality care and food. Kempson and associates (2003) also found that economically and nutritionally challenged households relied on community resources such

as Head Start Women, Infants and Children (WIC) programs, enrolled their children in school lunch/ breakfast or snack programs and participated in formal gatherings to acquire food.

When food shortages were experienced by students and/or recent immigrant households, bartering, swapping or pooling food provisions to make a social evening out of otherwise bleak circumstances with little food were common approaches to acquire needed nourishment. These occasions reduced the potential for individual hunger, isolation and exclusion and enhanced positive relationships amongst friends, acquaintances and the community. Others participants sought help from close family, friends and significant others for food or financial provisions on an occasional and sometimes a chronic basis when conditions of food and financial insecurity escalated (see Ahluwalia, Dodds & Baligh, 1998; Hoisington et al., 2002; Kempson et al., 2003; Kempson et al., 2002). Although characterised as having constrained resources, many who were in a position of support seeking also described a sense of altruism by providing to others in need to reduce hardships with the few means they could offer. Other studies on food acquisition practices found that borrowing from or sharing food with others who experience hardships is a common strategy used to avoid hunger (Black et al., 2012).

Although designed as a temporary solution to hunger, for many who survive on low wages or social assistance, charitable donation centres like food banks, soup kitchens or churches are a dependable monthly social safety net when monetary and food resources are depleted. Although participants were grateful that different social support programs and services existed to help provide temporary relief from hunger and starvation, the persistence of poorly adapted policies and inadequate social assistance means that marginalized households are chronically dependent on the services of food banks to survive in Ottawa. In most situations, it was felt that the types, quality and amount of food received by households was not sufficient and many

families could not acquire the kinds of produce or processed foods perceived as more appropriate. In some cases, those already feeling the pains of poverty were occasionally left with spoiled produce. Each month puts vulnerable groups in an emergency food situation and renewed feelings of inadequacy and embarrassment plague their sense of self. Food bank use is also a more common experience for a growing number of working Canadians (see CAFB, 2008).

Non-charitable food programs that seek to address food insecurity in Ottawa do not currently offer country foods for First Nations and Inuit groups. But, through services like the Ottawa Good Food Box Program, fruits and vegetables are offered at a lesser cost than most food retailers. For current customers, periods of uncertainty over food were described as less severe toward the end of the month because households knew they would receive a box of fruits and vegetables when resources were limited. As fewer First Nations, Inuit and Métis peoples take part in the program, this provides further suggestion that current ways of addressing food insecurity may be relevant, convenient and adequate for some but not everyone. Those most at-risk of experiencing more severe forms of food insecurity remain First Nations, Inuit and Métis groups, single parent families, women, children, immigrants and the elderly (Howard & Edge, 2013) as well as lower income households whose needs, concerns or interests (e.g., culturally relevant and accessible information on food and healthy eating in-line with their cultural knowledge and practices) are not adequately reflected in solutions to address more severe forms of food insecurity and hunger and the underpinnings of poverty. Some programs designed to address food insecurity are still entrenched in colonial thought and may not reach or address the factors that challenge food access for those who are most at-risk.

Although grateful to curtail hunger, participants also discussed the importance of managing disappointment when dealing with the receipt of less appropriate or less desired food

donations through charity. As food banks and food pantries were originally developed as part of an emergency food service to curtail household hunger, many Ottawa households depend on these services and community food and drop-in programs on a chronic monthly basis in response to inadequate social assistance and income in relation to the high cost of city living. Although new government assistance did not reduce the use of emergency food services and the experience of food insecurity and poverty, it did provide families the opportunity to have more available finances than they normally would. This finding demands new solutions to reach those who are most at-risk of food insecurity and change to current government assistance programs.

As some food and financial management and acquisition behaviours may be transitory, others were chronically used to avoid or postpone hunger and further hardship. Although it is uncertain to what degree the described behaviours are effective in obtaining the necessary amount of food and/or money, some strategies are not adaptive. It is unacceptable for struggling households to put their health and that of children at risk because of fewer socially acceptable opportunities to access food and money in ways that preserve dignity. Change needs to address the underlying causes of hunger and poverty to improve health and well-being.

The Selection, Purchase and Consumption of Fruits and Vegetables in Ottawa, Canada

Food security is an overarching issue to the consumption of adequate amounts of fruits and vegetables. Increasingly, consumers are interested in knowing the health and nutritional benefits of functional foods to prevent illness and disease and to enhance the experience of optimal health, healing and well-being for themselves and their family (see Agriculture and Agri-Food Canada, 2016). For lower income households, the types of food that are purchased often involve compromises between what is preferred, available and accessible at a standard of quality that will still appease household members. Like barriers to food security, aspects that challenged

the selection, purchase and consumption of adequate amounts of fruits and vegetables were similar (e.g., food availability, quality, cost and storage space) and what is interesting is how changes in the food landscape or geography affect the dietary quality of adults who perceived fewer constraints to fruit and vegetable access during childhood and were taught to enjoy eating this food group with most meals. For the main household food shopper, rarely was the decision to buy fruits and vegetables based on a single factor. Fruit and vegetable buying decisions were based on a combination of comparisons between factors related to availability and convenient access, cost-effectiveness (e.g., price per pound or unit), high quality (sensory aspects), palatability, familiarity and the probability that the items would be eaten prior to expiry.

Studies confirm the influence of sensory aspects (e.g., taste, smell, texture and appearance) and palatability as a major influence on food behaviour (see Erlanson-Albertsson, 2005; EUFIC, 2005; Pollard, Kirk & Cade, 2002; Sørensen, Møller, Flint, Martens & Raben, 2003) where typically a positive link between food intake and palatability is observed (Sørensen et al., 2003; Spiegel, Shrager & Stellar, 1989). For those who experience intermittent or chronic instances of food insecurity, regardless if food is palatable or not, often low-income groups are forced to regulate their appetite and limit food intake until more money or food can be obtained. For both low- and no- income households, regardless of food palatability, they often eat food that is donated which may not be congruent with their personal food preferences or health status but where the palatability of the kinds of food they may receive (characterised by high sugar and salt content) may disrupt or challenge their ability for appetite regulation and/ or satiation.

Based on personal narratives, concerns about the role of genetic or chemical solutions in the maintenance of quality (e.g., various sensory aspects) of fruits and vegetables affect consumer expectations and food buying decisions. The attitudes, ideas and beliefs we develop

through experiences with and knowledge about organic and conventional produce in turn influence our food preferences and aversions based on visual inspection and perceived standard of quality (Clarke, 1998). Many individuals described the significance of obtaining fruits and vegetables that were fresh, had an unblemished and proportioned appearance and were firm in texture. Although some claimed the superiority of organically-grown fruits and vegetables over conventionally-grown ones, organic products may have natural imperfections and blemishes because they are grown differently than conventional produce (Martin, 2009). This may result in organic produce not meeting the visual quality or reasonable cost they would comfortably pay when deciding which types and quantities of fruits and vegetables to purchase. Because of these conflicting beliefs, perceptions, attitudes, feelings and behaviours about fresh produce, a state of cognitive dissonance¹¹ is induced within the food environment for lower income earners or economically challenged households who hold certain perceptions, beliefs and attitudes about the consistency of healthy and high quality produce but cannot afford to purchase it to feed the household. Although the effects on human health of consuming a diet composed of organic foods are not well-known, limited studies that do exist indicate a host of benefits and comparative studies that investigate nutritional quality and safety between organic and conventionally-grown foods are increasing rapidly (see Matt, Rembalkowska, Luik, Peetsmann & Pehme, 2011).

Beneficial compounds found in fruits and vegetables (e.g., natural fibres) and how they interact with other foods make this food group recognized as a healthy food with additive favourable health effects. Even for parents, trying to feed their growing children the most adequate, nutritious and balanced diet possible is not always easily achieved when their child's food preferences, tastes and aversions are at a crossroad with the foods available for

¹¹ Cognitive dissonance is a psychological phenomenon that occurs when individual beliefs, attitudes and behaviours are in contradiction (see Festinger, 1957)

consumption. Many low-income parents want to instill healthy eating habits in their children and encourage them to eat a balanced diet. But, they experience difficulty in securing enough food in general and fruits and vegetables in particular which causes tensions and stress around food and time spent together. Little or no disposable income available at the end of the month and inconsistent donations of fruits and vegetables from charitable food outlets affect the household's dietary quality and overall well-being. As all households with children were food insecure, this outcome in and of itself raises concern over the dietary quality of young children to ensure optimal health, growth and development as it takes a measurable toll on individual and familial health and well-being and may incur considerable costs to the provincial health care system (see Tarasuk, Mitchell & Dachner, 2016).

No single food contains all the nutrients or essential healthy fats, oils and calories required to sustain health (the exception being breastmilk; FAO, 2002). This is why prescribed dietary guidelines advocate for a diverse food intake from all five food groups and include generous servings of vegetables and sensible amounts of fruits for optimal health (Harvard T. H. Chan School of Public Health, 2015). For most study participants, difficulties were reported when trying to eat in ways that satisfied the recommendations of their health care practitioner and their personal abilities to support dietary change, healthier eating habits and patterns. Other salient factors that drove people to select different types of food and fruits and vegetables as part of their diet and household meals were the experience of food allergies, sensitivities or intolerances and current medical conditions and prescription drug use. Lifestyle factors, limited food knowledge and personal preference or cravings for certain foods over others also intervened in consuming a healthy balanced diet. Adverse side effects to foods, potential interactions with

medication (e.g., grapefruits) and having weak or no teeth also play a role in limiting the quantities and types of fruits and vegetables one can consume to maintain health.

Contrary to our prediction, no statistically significant association was found between access to a functional vehicle and a higher reported mean weekly frequency of fruits and vegetables. This finding goes against the results of a previous Canadian study that linked compromised access to a personal motor vehicle to reduced access to fresh produce (see Bertrand, Therien & Cloutier, 2008). Although transportation to and from the food store was a barrier to food security, it was only identified as a barrier to the purchase of fruits and vegetables when returning home from the store with produce in tow. Based on testimonies, it did not appear that transportation itself was the only factor that made the purchase of fruits and vegetables a challenge but that weather conditions influenced the quality of the produce in consideration of store proximity and travel time from the store. As numerous communities across Ottawa are in proximity to local farms, community gardens, farmers' markets, Good Food Box distribution sites and mobile food trucks that promote and sell fresh produce options to communities (Ottawa Good Food Box, n.d.; Just Food, 2014), participation in these local initiatives may support the purchase and consumption of fruits and vegetables without the necessity of a functional vehicle. More research would be needed to identify community assets in promoting more equitable access to fruits and vegetables in Ottawa to assert these suggestions.

As food habits are known to be stable and long-lasting, they are subject to change due to physical and social environments, availability of education programs and health and medical interventions (Fieldhouse, 1995). While some individuals and groups are open to changes in eating behaviours and patterns, others resist in an effort to retain traditional practices and food and dietary habits. For some groups, cultural and health factors influenced the transition to and

maintenance of a strict vegetarian or vegan diet. This social determinant of food choice was experienced by the Inuit in particular who incorporated fruits and vegetables in their diet more regularly once living in an urban area compared to when living in the north. Others from abroad reported consuming fewer fruits and vegetables once in Canada because of challenges related to fruit and vegetable cost and quality. When asked whether and how their culture or cultural heritage affected the foods consumed, many participants did not recognize the influence of their own or the local culture on their food habits or eating behaviours. A study by Feunekes and colleagues (1998) suggests that people are not generally aware of the social influences that affect their eating habits or meal patterns and that a report of no influence of this factor does not necessarily indicate the absence of an association.

Within the context of food insecurity, participants who survive on low-income wages want nutrient-rich foods not because they want to belong to a niche market of ‘foodies’¹² but because they often do not have the extra income to afford dealing with sickness and cannot afford to miss work. For most participants, the held belief was that fruits and vegetables were important to keep a strong immune system and maintain health but many could not eat in ways that were congruent with this belief system.

Food Insecurity and Eating too Few Fruits and Vegetables: Effects on Health and Well-Being

Those living in conditions of food insecurity tend to have poorer health compared to those who are food secure (Chilton et al., 2007; Tarasuk, 2004). An absence of a statistically significant association between household food security status and level of self-rated health goes against previous studies that associate food insecurity to poorer self-reported health status (see

¹² A foodie is someone who has a refined interest and passion for eating and learning about food and food related experiences rather than eating out of convenience or hunger (Cairns, Johnston & Baumann, 2010)

Muldoon et al., 2013; Seligman et al., 2007; Whitaker et al., 2006). This finding is surprising because Aboriginal persons tend to appraise their health as less than optimal (Garner et al., 2010) and suffer disproportionately from poorer general health (Durie, 2004; Stephens et al., 2006; Tookenay, 1996) and food insecurity than non-Aboriginal persons (Garriguett, 2008b; Health Canada, 2007b; Office of Nutrition Policy and Promotion, 2007; Willows et al., 2009; 2011). While unexpected, results may not indicate a real lack of association between these variables but simply suggest that those who appraised their current health status may have different reference points of what it means to rate health as superior or inferior. Because of this, other underlying dimensions of self-rated health may provide a more complete understanding of the factors that determine and influence individual perception in relation to the assessment of their current state of health. Previous studies indicate that, even in the absence of illness, individuals are not more likely to rate their health as 'excellent' (Blaxter, 1990). On a continuum, early studies have suggested that a poorer health rating is associated with poor physical health while a more positive rating is associated with a broader understanding of health (Idler, Hudson & Leventhal, 1999; Mackenbach, van den Bos, Joung & Stronks, 1994; Smith, Shelley & Dennerstein, 1994). From these findings, participants who experience food insecurity or survive on low-income may not have appraised their health negatively since they are still functional and can complete daily tasks (see Johnson & Wolinsky, 1993) and based on qualitative responses and descriptive frequencies, most were not in a state of indicative of severe food insecurity with hunger.

Qualitative responses underscore that, overtime, the pains of food insecurity and poor diet (in quality and quantity of food) affect individuals and the whole health of household members (e.g., physical, psychological, social and spiritual). For most families who struggle to put food on the table, how food insecurity affects individuals within the household is something that

occasionally remains hidden and, in the case of children, most do not complain or discuss their feelings about not eating enough food in general and fruits and vegetables in particular. The reason for doing this is to avoid generating more tension within the household than what may already exist. Living in a state income, food and nutrition insecurity deprives households of adequately addressing poorer mental and physical health status because of acute and sometimes prolonged periods of stress and worry as a result of the uncertainties that come with living in poverty and deprivation. The emotional ramifications of living under conditions of uncertainty and isolation can lead to instances of poor psychological health. Common negative responses to the experience of poverty were frustration, sadness, feelings of isolation and social exclusion and helplessness. Friends and family played a critical role in providing physical and emotional comfort, support and care during occasions of crisis and times of need.

Though it is acknowledged that dietary quality plays a significant role in the promotion and management of health, chronic and degenerative disease prevention, illness management and healing (see International Food Policy Research Institute [IFPRI], 2003; Jaron & Galal, 2009), adequate fruit and vegetable consumption is often neglected and the ability to eat a balanced diet for optimal health is not always possible. In particular, adults who experienced more severe forms of food insecurity also reported living with a chronic health condition and complications with one or more health issue. While there is limited evidence of the extent that food insecurity relates to adverse health outcomes in post-secondary students, studies on young children suggest that food insecurity is associated with poorer academic achievement (see Chapparro, Zaghoul, Holck & Dobbs, 2009). In adults, it is associated with nutritional vulnerability (Kursmark & Weitzman, 2009; Nova Scotia Department of Health, 2004; Stuff et al., 2004; Tarasuk & Kirkpatrick, 2008; Vozoris & Tarasuk, 2003; Widome et al., 2009) and diminished mental and

physical health (Barnard, 1999; Siefert, Heflin, Corcoran & Williams, 2004a; Wu & Schimmele, 2005). Because the additive effects of living in poverty, hunger and malnutrition increase individual risk to developing chronic health issues (Kirkpatrick et al., 2010; Siefert et al., 2004a; 2004b), research suggests it may also reduce individual learning and working capacity and one's ability to participate in social life (see Barnard, 1999); all of which play a significant role in the lives of students and are outcomes that require a more adequate response by different levels of government to better support students.

As disparities in health and food security grow in the 21st century (FAO, 2001; 2008; Garriguet, 2008b; Jaron & Galal, 2009), marginalized groups face an uphill battle to overcome factors that support food insecurity, poverty, exclusion and hunger. Studies have shown that inadequately addressed causes of food insecurity, poverty, hunger and ill-health (physical and mental health) incur considerable cost to already marginalized households, communities and even broader society (see Heflin et al., 2005; Kirkpatrick et al., 2010; Province of Ontario, 2015; Seligman, Larais & Kushel, 2010; Tarasuk et al., 2015; Tarasuk, Mitchell, McLaren & McIntyre, 2013; Tarasuk & Vozoris, 2003). These costs translate into dependence on social assistance because lower-income residents cannot secure sufficient income to meet their food and health needs as a way to prevent or better manage diet-related illnesses. Food insecurity became more complex when trying to accommodate dietary restrictions to help manage chronic illnesses and/or keep digestive discomfort from food allergies, intolerances or sensitivities at bay. Because of the discrepancy between quantitative and qualitative findings, more research is required and a longitudinal study as opposed to one that is cross-sectional in nature may be able to provide a more comprehensive picture of health status and food security in Ottawa, Canada.

Research Limitations

The current study offers rich personal accounts of what life is like for households who struggle to consistently put enough food on the table while balancing other personal and professional responsibilities. Findings do not only focus on the toils of living in poverty but also highlights aspects of resilience and strength to overcome challenging hardships and adversity. The following limitations are those that may have the greatest effect on the interpretation and potential generalizations that can be made from current findings within the context of a cross-section, mixed method study. The issues discussed below are those that may affect the overall quality of results and what could be known about the research topic and subsequent themes.

One of the design's limitations is due to the cross-sectional nature of the study. Because of the time period selected to conduct data collection, findings may be most indicative of salient seasonal challenges to food security and fruit and vegetable consumption experienced during the period of time prior to study participation as opposed to a trend of issues experienced throughout different seasons over a calendar year. From a quantitative perspective, because data was collected at one point in time, a causal effect between variables cannot be inferred. Moreover, due to the use of χ^2 statistical analyses, the conclusion of an association or lack thereof between variables can be made but the determination of a causal relationship between variables cannot. However, the determination of whether a relationship between variables exists can be grounds for further research to determine the variance that each variable brings to the outcome variable.

The small sample size and consequently the small number of participants in each subgroup and the lack of a probability sampling technique may affect the generalizability about the factors that challenge or support food security, fruit and vegetable selection and consumption and the effects of on health for individuals and families. Understandably, First Nations, Inuit and Métis peoples as well as other interest groups and minorities have been studied extensively over

the years and the relationship between researchers and ‘the researched’ is rooted in historical tensions, exploitation and feelings of apprehension. This may explain part of the difficulty in the recruitment of people from certain cultural groups. Because of the recruitment of too few individuals who identify as First Nations, Inuit or Métis, for analysis purposes, it was not possible to further divide ‘Aboriginal perspectives’ into the distinctive and respective groups that data more adequately reflects. Quantitatively, sub-dividing Aboriginal or other cultural/ethnic groups into smaller groups would have not allowed the examination of questions beyond descriptive statistics. Information is also limited in terms of what comprises the “non-Aboriginal” experience since many immigrants and emigrants with mixed ancestry and heritages are also combined even though their lived experiences and cultures may differ. Statistically, post-hoc power analysis results reveal that, to detect medium to large effects, a minimum of 10 participants per group would be required to obtain statistical power at the level of 0.8 as recommended by Cohen (1988). Results, however, provide further support to explore further questions that have yet to be explored to verify the degree to which certain variables affect or relate to First Nations, Inuit, Métis or other minority groups. Future studies with First Nations, Inuit and Métis communities, groups similar in size and characteristics (e.g., culture) should be used as the comparison group and not mainstream society. With greater control over land and resources (self-determination), First Nations, Inuit and Métis peoples would be best respectively compared against each other instead of non-Aboriginal persons as they are almost always at a disadvantage because of the disproportionate experience of other systemic inequalities and inequity that underlie these differences and not actual differences between groups.

Based on the aggregate nature of the Aboriginal data, we are unaware of the individual experiences of First Nations, Inuit and Métis in relation to food security status, poverty,

frequency of food consumption and status of health. Because First Nations participants comprised approximately 55% of Aboriginal data, information more likely represents the circumstances of First Nations peoples and families in comparison to Inuit (20%) and Métis (25%) participants. However, to improve the quality of information, qualitative data was pooled, analysed and interpreted according to the individual experiences of First Nations, Inuit, Métis and non-Aboriginal peoples. Diverse yet similar disenfranchised groups experience food (in)security, poverty and determinants of health differently and this may also lead them to appraise their circumstances from a unique and subjective reference point that is different from groups that may share similar characteristics (e.g., First Nations and Métis peoples) and other groups who do not experience certain issues or obstacles to food and health. While the interpretation of these issues were conducted from the perspective of someone who does not necessarily share these same reference points, individuals with lived experience, inherent knowledge and heritage from First Nations, Inuit, Métis and Guatemalan-Canadian communities were consulted during the qualitative analysis and writing phases. While caution is suggested in the interpretation and generalization of findings for quantitative results, by including many experts with different levels of knowledge, experience and education, more could be known about the nuances that are not evident in quantitative terms.

Based on the design, the subjective and non-probability nature of participant selection through purposive sampling is also a limitation. However, it was judged appropriate to use this technique in consideration of the drawback from using alternative methods including whether to recruit by method of homogenous or random sampling to reach participants. The primary recruitment method of purposive and snowball sampling were beneficial approaches to reach the most appropriate groups and most difficult to sample to promote study participation and

encourage successful study candidates to share their experiences to assist in responding to the research questions that guided the study. While using a snowball approach is useful to identify particular participant groups (e.g., key informants including program users, care givers or others) within a field of health inquiry (Smith, 2005) including potentially difficult-to-sample groups including locating minority groups and underserved communities based on the knowledge, engagement and help from community members who posted recruitment flyers in places they felt would reach the most potential candidates. Through this method, we were able to solicit the participation of individuals who once participated in a local fruit and vegetable program and locate more participants who were First Nations, Inuit or Métis (albeit limited).

With regards to measure, the study asked respondents to reflect on their weekly frequency of fruit and vegetable consumption and their household food and financial situation over a 12-month period (food security). Because the FFQ and household food security questionnaires rely on retrospective information, studies by Knapik (2006) and Munch and Swasy (1988) suggest the precision of details and accuracy to questions that rely on event recollection is limited. To mitigate this and favour greater recall of their food behaviours and financial situation, the researcher was open to let participants choose the host location for the interview to ensure they felt safe, comfortable and relaxed. The researcher also reminded participants that there were no right or wrong answers, that they could take the necessary time to formulate their responses and that their answers could be revised for accuracy after the interview. By providing participants with a safe and respectful environment and demonstrating sensitivity, empathy and compassion, this may provide more supportive circumstances to help participants reflect on potentially emotionally laden experiences that characterise their personal narrative. To

ensure that details were understood, the researcher also applied several approaches proposed by Shotter (1993) which include questioning, reformulating and elaborating.

Also related to the quantitative measures, the use of the FFQ was integrated in the study to collect information on the mean weekly frequency of fruit and vegetable consumption. These numbers alone tell us nothing about household dietary quality, fruit and vegetable portion sizes, absolute nutrient intake or food adequacy. Alongside the USDA Household Food Security Module, neither measure takes into account access to, availability of, supply and use of country foods for First Nations, Inuit and Métis groups. Because First Nations, Inuit and Métis groups have a deep intricate connection with the land as a central element to traditional food practices, cultural identity and whole health, any assessment of household or community food security that does not take this into consideration is incomplete. This study does however compliment the FFQ and USDA Household Food Security measures with qualitative data in order to reflect the conceptualization of what it means to be food (in)secure for First Nations, Inuit and Métis households as well as other non-Aboriginal groups living in Ottawa, Canada.

The current study does not measure individual attitudes and beliefs toward fruit and vegetable consumption to best understand consumer behaviours. While the qualitative results on barriers to fruit and vegetable selection and consumption show that cost in consideration of other variables (e.g., shelf life and expiry) influence the household diet, measuring the attitude of the main household food shopper may provide a more complete understanding about why fruits and vegetables are purchased or not from a quantitative perspective. As dietary behaviours are best understood as affected by individual, social, environmental and organizational factors including social policies, assessing the components of attitudes and beliefs toward fruit and vegetable consumption may also provide an insightful explanation as to why some individuals do not

consume enough portions of fruits and vegetables when they are conveniently available and accessible. Findings of this nature may help program developers fill the gap in community programs and services to better support healthful eating patterns and behaviours while providing supportive options to help community members better manage and prevent chronic illnesses with diet (see Dibsall, Lambert, Bobbin & Frewer, 2003).

Similarly, because of the themes under examination and the exploration of how access to food in general and fruits and vegetables in particular affect the daily lives and physical, psychological, social and/or spiritual health of individuals and household members, it is difficult to assert with certainty that the reported whole health consequences are the result of impeded access to and limited or no consumption of fruits and vegetables. While qualitative responses suggest an association between diet and self-reported health effects, it cannot be verified that the whole health effects are not the product of the cumulative effects of living under conditions of food insecurity, poverty and/or consuming a poor and unbalanced diet or worse, residual effects of larger and more complicated health issues that were not reported. Participant testimonies do however provide a wealth of first hand information about the current life, health and social conditions under which they live and the most salient factors that influence households food access and eating patterns. While concluding linear causation is premature and speculative, responses underscore that not having access to the appropriate foods people enjoy and are familiar with because of high cost or poor quality has negative consequences on health in a wholistic sense. What this limitation does provide for future studies is the opportunity to develop and ask better questions that allow participants to deconstruct meaning in ways that best capture the effects of disparity on whole health.

Future Research and Recommendations

Factors at varied levels threaten reliable access to food, health and the ability to live a productive and healthy life for lower income households. This study informs us about the private and public struggles that households experience as well as the health and social conditions that affect the lives of Ottawa residents. While some households are fortunate to have access to important social and familial supports in times of need, others suffer in silence at the expense of the deterioration of their physical, mental and social health. For some groups, intergenerational forms of poverty and hunger continue to affect families who walk a similar difficult path like those before them. Doing nothing to minimise the gaps in health and social programs and services as well as the growing divide between different income and social groups is no longer an option if governments and communities desire to establish a healthier future for all Canadians.

Hunger, poverty, inequality, inequity and the persistence of poor diets will not cease tomorrow but with intersectoral collaboration and more adequate support, policy change and financial investments from different levels of government and those in positions of power and influence, the effects of poverty, food insecurity and preventable chronic and food-related illnesses can be reduced and alleviated. The following recommendations target changes at various levels of government to set households and communities on a more positive trajectory toward food and nutrition security, healthful eating, inclusion and empowerment.

Municipal-level recommendations. Social disparities generate disparities in health and vice versa and health inequalities are deeper than individual choices, nutrition and cost of food and living. Political, economic, social and environmental factors play a determining role in the complex processes that affect the sustainability of regional food systems (production and processing), and food access, affordability and distribution. To move from neighbourhoods and communities characterised by food insecurity and food desert-like attributes, changes are needed

at the policy- and bi-law level to prioritize action and build accountability to tackle core issues that relate to determinants of health (e.g., food security, housing, education and employment). Increased resource support for health, social and food programs and services are desperately needed to provide relief for emergency food programs and charities so that they remain for urgent use and not used as a chronic food acquisition strategy.

Local Indigenous and political leadership in partnership with leaders from community organizations (both Aboriginal and non-Aboriginal organizations), Elders, education institutions (elementary, secondary and post-secondary), community members and farmers require better opportunities for deliberate and coordinated dialogue and listening to discuss feasible and sustainable evidence-based solutions and community-driven approaches to minimize the pains of poverty, hunger and food insecurity. This can take the form of establishing a working group, local council or network of key stakeholders on the most salient factors that affect food access and affordability in different at-risk neighbourhoods across the city. Appropriate solutions will take into consideration that food security has varied meaning to diverse ethnic and cultural households. These factors should be taken into account when developing and implementing collaborative solutions to ensure that basic and relevant food needs are met in ways that promote and maintain human dignity, human interaction and community spirit.

Many initiatives and programs in Ottawa exist to promote health, food security, fruit and vegetable access and illness prevention (e.g., Ottawa Good Food Box; see Courtney, 2010). Too few, however, provide the opportunity to reconnect people with the land in ways that are congruent with local knowledge and approaches that include indigenous and other cultural teachings in the contexts of growing, gathering, preparing, preserving and serving food. Studies have shown that community gardens as an approach to improve fruit and vegetable consumption

have numerous benefits for communities and households as they help strengthen food-related knowledge and skills which are important to improve healthful food behaviours when resources are limited (see Kirkpatrick & Tarasuk, 2009). Increased and sustainable access to culturally appropriate foods, and health and food information in an urban environment would be one way to help reduce the hardships associated with food insecurity, the health disparities and cultural disconnect that are often experienced by households. By providing culturally relevant and linguistically accessible information developed by local community members, families will be able to make informed choices and have the opportunity to eat in ways that support healthy eating habits that are both culturally and nutritionally congruent and more appropriate.

For underserved First Nations, Inuit and Métis groups who experience a disconnect between culture and health, facilitating access to more traditional country foods as opposed to only fruits and vegetables would help Canada's Aboriginal groups reclaim cultural food and healing knowledge and revitalize and reclaim teachings about traditional food systems in ways that support Indigenous food sovereignty (Morrison, 2011) and cultural continuity. Within the context of a collaborative approach, it is important that non-Aboriginal peoples appreciate the complex historical tensions, devastation and subsequent resilience that First Nations, Inuit and Métis peoples have experienced. Including a local focus is a key component to support the reconstruction of traditional historical knowledge and regional understandings about the interconnection between a healthy and sustainable environment, food and well-being. With this approach, those who are in policy positions and those who experience food insecurity and poverty can more closely align more adequate solutions as allies.

When implementing policies or programs, it is important to acknowledge that all decisions that affect the land, resources and communities are being conducted on unceded and

unsurrendered Algonquin territory. Elders and other First Nations, Inuit and Métis community members and groups should be more than consulted with regards to local development and food projects. They should be involved and engaged in project development and have the right to disagree with a project moving forward until it can better address concerns for the environment, human safety and other regulations. This type of role and engagement requires a deliberate re-orientation of both privilege, power and control to: 1) enhance and strengthen more equal relationships between First Nations, Inuit, Métis and non-Aboriginal peoples, and 2) acknowledge the importance to revitalize local and Indigenous knowledge which is deeply rooted and interconnected with notions of food, cultures, health and Mother Earth.

Provincial-level recommendations. The province of Ontario established a Poverty Reduction Strategy that acknowledges the diverse needs of at-risk groups including Aboriginal persons (Province of Ontario, 2015) and established a separate strategy titled, the Aboriginal Healing and Wellness Strategy (AHWS; Ministry of Community and Social Services [MCSS], 2012). With its renewal came enhanced control over the management and administration of health services for First Nations communities in both on- and off-reserve (MCSS, 2012). What is lacking within this strategy is a component that focuses on removing barriers and increasing access to culturally appropriate, safe, nutritious and healthy food as a way to 1) build healthier communities, 2) break the cycle of poverty and 3) support the whole health of future generations. Offering more adequate resources that consider the unique and pressing wholistic needs of First Nations, Inuit, Métis and other at-risk groups can help the province respond more appropriately when redeveloping and refining aims for health, social and community programs. To reach the province of Ontario's objectives of improved physical, emotional, social and spiritual health, the revitalization and deliberate inclusions of the skills, knowledge and cultures of the communities

and groups that provincial investments are intended to serve need to be reflected in the social, community, health and food programs and interventions to remain appropriate and relevant.

As low-income households struggle in different ways to keep a roof over their head, serve a healthy and nutritious meal that is consistent with the health and food needs of household members and live in ways that promote whole health and well-being, amendments to the Ontario Child Benefit and provincial social and disability assistance are recommended as many working parents with children cannot afford to feed their children balanced meals to ensure optimal child development and health. Desperate change is needed at the policy and program levels with regards to social assistance. Even though government support considers basic necessities within their calculation of monthly allowances, it is precisely individuals who are dependent on these programs who struggle to access basic necessities to survive. Not only does the household health suffer as a result of concern and worry about further devastation and loss, but many parents and guardians cannot provide efficiently to meet the growing basic needs of their young children.

Because health and education are responsibilities that fall under the province's jurisdiction and because children may experience adverse and irreversible health outcomes because of mal- and under-nutrition and living under more severe conditions of food insecurity and hunger, cross-sector investments should support local breakfast programs to ensure that children are on the best track possible toward more positive outcomes. As a more promising recipe for illness prevention, health promotion and inclusion that supports health and food education and food knowledge acquisition in an academic setting for children during their early years, timelines, performance indicators and specific targets need to be developed to ensure that children from marginalized and vulnerable households can still thrive to achieve in learning and be equipped with better tools for a more prospective future. Addressing preventable diet-related

illnesses in childhood may have the effect of reducing the occurrence of less optimal health in adolescence and/or adulthood by increasing access to healthy foods during a critical phase in the life cycle which may in turn reduce pressure on the health care system because of unnecessary visitations for physician services for avoidable health issues. Those who may be involved as funders or program support could be organizations that have a stake in promoting positive outcomes in childhood health such as the Heart and Stroke Foundation, Canadian Diabetes Association, the United Way or the Canadian Council on Social Development.

Society plays an important role in shaping food choices through economic, commercial, social and environmental factors. It is important to review the levels of private and public policies to verify the extent to which the socio-political, socio-economic and socio-cultural environments in which we live contribute to healthy or less healthy food and eating choices.

Federal-level recommendations. As the previous Harper Government provided little to no interest in the implementation of a federal-level food policy such as the Canada Food Action Plan (Koc, MacRae, Desjardins & Roberts, 2008), policy action needs to be priority for the new Liberal government and supporting leadership. Under the current Trudeau Government, the Liberal Party of Canada has given new life to working in an engaged fashion with different stakeholders in the food system to develop more sustainable solutions to food insecurity. Committed to addressing food insecurity in Canada, the Liberal Party of Canada expressed support in developing a national strategy to reduce constrained access to food and to work consultatively with governments across jurisdictions as well as Aboriginal organizations and community groups to best develop more adequate solutions to the structures that challenge food security (Food Secure Canada, n.d.).

To demonstrate government transparency and accountability to civil society, the mandate letters of each appointed Minister was made public. In particular, Agriculture and Agri-Food Minister Lawrence MacAulay's has been assigned to "Develop a food policy that promotes healthy living and safe food by putting more healthy, high-quality food, produced by Canadian ranchers and farmers, on the tables of families across the country" (Office of the Prime Minister, [ca. 2015a], para. 15). Further, Indigenous and Northern Affairs Minister Dr. Carolyn Bennett and Health Minister Jane Philpott have been instructed to work in consultation with Northern communities to work toward the expansion and renewal of the Nutrition North Program (Office of the Prime Minister, [ca. 2015b]) and the Minister of Families, Children and Social Development, Jean-Yves Duclos has received instruction to lead Canada's Poverty Reduction Strategy with measurable outcomes where the report would be subsequently publically available (Office of the Prime Minister, [ca. 2015c]).

In line with current ministerial mandates and based on participant responses, there is a pressing need for the Federal Government to better support families by revising current financial allowances through the Canada Child Tax Benefit (CCBT) to ensure that parents/guardians can more adequately support their children to thrive, develop optimally and achieve their academic potential. As parents were unanimous in their concerns and worry about disturbed household eating patterns and the uncertainty about food and finances, the Federal Government can adjust social support to help lower-wage, fixed low-income and no-income families better meet the growing health, food and education needs of their young based on need. A continuous assessment of household and community needs is required to bring meaningful, useful and adequate changes to Federal programs and initiatives in the most at-risk and disadvantaged areas.

Finally, to support public accountability, participants were vocal about the need for more appropriate food labels that promote food traceability. Government agencies, food producers and retailers guard and manage the type and quality of information that can be known about certain products sold to the public. Requiring food producers to properly label food with a list of chemical preservatives including traces of pesticide and herbicide used in plant and animal farming can provide consumers with useful information to support their health decisions and food selection, purchasing and consumption behaviours. Although the levels of preservative and pesticides use in domestic and imported foods are considered safe and outweigh the risk of exposure (Health Canada, 2009b), this information can help increase confidence in consumers in the harvesting practices of food producers nation- and world-wide and support food buying decisions for those who have sensitivities to certain chemicals or preservatives.

To achieve these recommendations and support better policy development and innovation, cross-sector barriers within private and public sectors and between government departments need to be overcome. Policy development and reform should consider the interconnected challenges to reform structures in order to best support a more sustainable food system. Strategies need to reflect deliberate consideration of environmental and human health, economic growth, ethical harvesting practices, climate change and geography, and diet. Monitoring variations in food security and health, the progress of ministerial mandates in the achievement of short- and long-term government priorities will be critical to hold leadership accountable and responsible for the health and well-being of Canadians.

Relevance to research and practice. Testimonies disclosed intimate details about what consumers want and expect from those involved in food production and distribution and what they feel entitled to and willing to accept as human beings including the assurance of accessing a

range of safe, high-quality and affordable produce to support the consumption of foods that are congruent with varied wants and needs. As Ottawa becomes increasingly diverse (see Statistics Canada, 2012), the way in which food stores respond to the different interests and expectations of consumers will become more important as food retailers play a significant role in household food security and how people and communities access sufficient amounts of food to survive.

The identification of known and emerging trends that affect household food security status, fruit and vegetable consumption and overall health are important to verify the relevance of current policies, programs and services and whether infrastructure development is adequate. Imperative to inform policy and program development is the consideration of food and financial management and acquisition strategies used by individuals when household food and fiscal resources are at-risk or depleted. Those who survive on lower wages and social assistance often cannot afford to eat in ways that support the achievement and maintenance of optimal health and well-being. In Ottawa, individuals are preoccupied with the cost of a healthy diet and the ability to afford to make healthy eating choices. Because the notion of worry in the context of accessing a healthy food basket reaches across different income and education groups, it is clear that disparities in health and healthy eating are driven by deeper factors than individual food choice.

Multiple sampling strategies were used to maximise the potential to hear from people with diverse yet similar backgrounds and experiences in the contexts of food and health. Within a study that uses a mixed methods approach, the way in which qualitative data can be used to elucidate and even challenge quantitative findings is highlighted. Personal narratives provide meaningful information to clarify the significance of personal appraisals and relay sentiments about the interconnection between factors that would otherwise remain unknown if only one analytical approach was used. Similarly, the value of divising Aboriginal narratives into their

respective grouping of First Nations, Inuit and Métis was important to clarify specific concerns respective of members from each group. Future research should also use this approach when possible in both quantitative and qualitative studies to provide important details on the characteristics of each group respectively as opposed to using the colonial label of 'Aboriginal'. The recognition of community-specific ways of doing and being has yet to be fully embraced in the field of community psychology and may add a wealth of knowledge about the community and cultural contexts in which information is collected. Also, using an ecological model to understand issues that affect food selection, purchase and consumption, and food and money acquisition and management behaviours within the contexts of health and food (in)security enable their interpretation as interconnected.

Study results can inform policy- and decision-makers about the most salient issues that act as barriers to food, health and well-being and how local residents access and use resources to meet their need for survival. With relevant research and knowledge produced by consumers and groups most affected by the formulation and implementation of certain provincial and federal policies and programs, and with the mobilisation of individuals in positions of power and influence, optimism and anticipation of larger scale action and change to more effectively reduce food insecurity, poor diet and chronically ill-health can ensue. Awareness about the factors that impede and enhance food security and fruit and vegetable consumption can help guide local interventions to address issues at the community-level to better reach vulnerable populations. This study will enhance opportunities for public health interventions to make more appropriate policy recommendations that best reflect the needs and address the concerns of local residents.

Because local community food initiatives facilitate access to food and nutrition information (through health promotion and illness prevention programs) and emergency food

resources, knowing information on the barriers and facilitating factors to the access and consumption of healthful foods such as fruits and vegetables can help tailor local programs to be in tune with the necessary interests and demands of community members for education about food- and cooking-related skills and knowledge. Access to culturally sensitive and linguistically accessible health, education and food information can help promote health and well-being, cultural revitalization and inspire households to cook with familiar and potentially new healthy and functional food combinations. Through this opportunity, community health and resource centers can develop program aspects that address barriers and build on facilitating factors to support healthy eating. While this has implications for policies and programs, it may also lead toward community empowerment and more meaningful support to counter household food insecurity while assisting families and individuals to make informed food choices.

Food plays a central and vital role in sustaining both human and animal life and health and assists individuals across geographies. Through the different uses and roles of food in diverse settings, the interrelationship between food, health, cultures and the environment could not be more evident. Different types of food serve various functions in healing and maintaining whole health. Food often helps enhance social bonds and helps people reconnect with their heritage and history. These cultural connections with food and others may lead and inspire some to explore and discover new food and health practices and rekindle other rituals and traditions. As part of a healthy and balanced lifestyle, individuals know the importance of feeding their body quality foods, including fresh and nutritious fruits and vegetables to support a reasonably active life, a more balanced mind, body and spirit and for better well-being.

Study Two: Barriers and Facilitating Factors to the Uptake and Management of an Urban Fruits and Vegetables Program: A Needs Assessment of the Ottawa Good Food Box

Abstract

The objective is to explore issues that affect the management, coordination and service delivery of the Ottawa Good Food Box Program, and identify factors that influence program participation by lower-income households. Program staff (n = 5), site coordinators (n = 6) and steering committee members (n = 3) participated in a single and separate focus group/ talking circle session. Current (n = 13) and former (n = 14) program customers and non-users (n = 22; N = 49) completed a survey and interview in a cross-sectional, mixed methods study. Household food security status and weekly frequency of fruit and vegetable consumption were measured. Group discussion and interview protocols solicited information about operation and managerial practices and program knowledge and experience. Statistical analyses were completed with descriptives, χ^2 and ANOVA ($\alpha = 0.05$) and a thematic approach was used for qualitative data. Results suggest a strong association between Good Food Boc participation and food security status ($\chi^2_{(1)} = 11.13, p < 0.01; \phi = 0.48$). ANOVA and post-hoc results show a significant mean difference in weekly frequency of fruit consumption between program customers and non-users ($F(2, 46) = 11.29, p = 0.00$). Program participation explains 29.6% of the variance ($\omega^2 = 0.296$). Main factors affecting continued program participation relate to physical, economic, social and individual factors. Program strengths relate to product affordability, food box content and program dependability. Areas for improvement included food quality, quantity and variety. Implications to address gaps in community and social services are discussed. Recommendations promote improved service and potential expansion.

Key Words: *Community food initiatives, Good Food Box Program, fruits and vegetables*

Household and Community Food Security: Definition and Concepts

The health of a population relies, in part, on access to healthy, safe and nutritious food. Among individuals who live on a limited budget or in conditions of poverty, a critical challenge is often finding ways to access household food provisions in a timely manner and in sufficient quantities judged as qualitatively adequate and appropriate. As McIntyre (2003) explains, “Food used to be called a basic human need along with water, peace, shelter, education and primary health care,” (p.46). It is therefore difficult to conceive that society allows some people to manage without food on an intermittent or chronic basis. As noted by Dowler (1998):

Food is an expression of who a person is and what they are worth, and of their ability to provide their family’s basic needs; it is also a focus for social exchange. Food is, of course, a major contributor to health and well-being. But it is not just health that is compromised in food-poor households; social behaviour is also at risk (p.58).

With this in mind, we concur with Alston (as cited in Riches, 1999) that the right to be free from hunger should be a basic tenet of human rights. Food not only encompasses social, political, economic, cultural, and religious meaning, it is an essential commodity that human kind cannot live or manage without (Winston as cited in Riches, 1999).

For Anderson (1990), for food security to exist, it implies a certain reliable ability to secure food for one’s household and individual needs. Both individual and household food security are embedded within the broader context of community food security. When a recurrent lack of food access exists, individuals may experience “limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways” (Anderson, 1990, p. 1598). At a minimum food security requires the availability of adequate and safe foods, and the ability to acquire these foods in socially

acceptable ways (e.g., without resorting to the necessity of scavenging, stealing or other strategies; Anderson, 1990).

Before the 1970s, hunger was believed as due to insufficient food production. In the 1980s, enlightened discussions no longer focused on food scarcity as the main issue but unequal food distribution (Alves Pereira & Pacheco Santos, 2008). More recently, the centre of debates shifted to the dimension of food access as problematic for more vulnerable social groups (Alves Pereira & Pacheco Santos, 2008). Building on seminal literature on food insecurity with hunger by Anderson (1990), researchers and practitioners have worked to distinguish the phenomena of food insecurity from hunger by emphasizing that food insecurity status is a household-level economic and social condition that results from compromised food access while the experience of hunger is not a measure of absolute food insecurity but an individual state or physiological response (e.g., discomfort, illness, dizziness, weakness) that may result from the involuntary lack of food (Nord, Andrews & Carlson, 2007). The concept of achieving food security has been a popular research theme surfacing in both national and international articles and reports across the health, nutrition and social sciences and studies have typically focused on how compromised food access is experienced in different geographic contexts by minority or marginalized groups. To promote community food security, health, well-being and healing, reliable access to a healthy and safe food supply is a starting point to support the choice, procurement and consumption of enough nutritious food as part of a balanced diet. The Ontario Public Health Association [OPHA] describes community food security as “a strategy for ensuring secure access to adequate amounts of safe, nutritious, culturally appropriate food for everyone, produced in an environmentally sustainable way and provided in a manner that promotes human dignity” (OPHA, 2002, p.9)

As empirical studies have long confirmed that inadequate household income is the most significant barrier to food security (Kirkpatrick & Tarasuk, 2008; Tarasuk, Dachner, Poland & Gaetz, 2009) and healthy eating (Power, 2005b), research on food security now pays particular attention to discerning the contribution of different factors and their subsequent effects including psychological, socio-familial and physical repercussions (Hamelin et al., 1999), risk factors (e.g., perceived social support, surviving on low- or no income or ill health), outcomes (e.g., level of food insecurity or ill health) and how the complex interplay of these variables are experienced by citizens across jurisdictions. In the last 20 years, conceptions of food security have grown to include aspects of food quality, quantity, affordability, availability and accessibility as well as notions related to the cultural diversity of eating habits and behaviours, food safety as well as the environmental, economic and social sustainability of safe and healthy food systems (Alves Pereira & Pacheco Santos, 2008; Haering & Syed, 2009) and enhancing individual food skills and capacity (production, preparation, preservation, and storage; Provincial Health Services Authority [PHSA], 2006).

As the concept of food security has evolved and been applied to include varied elements embedded within its meaning, one aspect remains: food insecurity is a growing concern in Canada and continues to affect the ability of individuals and families to live and maintain healthy and productive lives. The focus on broader determinants of food security and health allows researchers to work with community partners and organizations and build a more convincing case to present to different levels of government and leadership in support of more appropriate and reformulated policies and program changes that support the integrity of human dignity.

Living in a low-income neighbourhood and food deserts. With increasing concern over the severity of chronic health conditions, nutrition-related illnesses and obesity across

populations in the 21st century, academics, researchers, practitioners, activists and community members have increased attention to how fewer affordable healthy food options and spatial inequalities in food access contribute to conditions supportive of community and household food insecurity and general ill health (Barton, Anderson & Thommasen, 2005; Che & Chen, 2001; Macintyre, Ellaway & Cummins, 2002; World Health Organization [WHO], 1986; Willows, 2005). For some neighbourhoods, having equitable access to healthy and nutritious foods remains difficult compared to other communities. As physical and social structures within any environment promote or hinder food access, neighbourhoods also experience systemic barriers to health due to unreliable access, unavailability and less affordability of food produce. Together, these influence the proliferation of ‘food deserts’ (Macintyre et al., 2002). Although an improved diet may not solve wider social and political ills and health woes, access to healthy, nutritious and safe foods including education on how to prepare and consume a more balanced and appropriate diet and an environment that promotes food security are necessary conditions and a pre-requisit to help improve the health of all people.

Definitions of food deserts. Like food security and food insecurity, there are several types of descriptions that characterise the conceptualization of a food desert. Unlike food security and insecurity however, these notions do not focus on levels of severity or hunger but refer to concepts of either constrained economic or physical access to different locations or types of food stores or limited access to adequate food provisions or still, any combination of the two within a geographic environment (e.g., community or neighbourhood; Clarke, Eyre & Guy, 2002; Cummins & Macintyre, 2002; Leete, Bania & Sparks-Ibanga, 2012; Shaw, 2006; Walker, Keane & Burke, 2010). As food access results from a combination of food pricing¹³ and availability of food within reasonable proximity and travel time in a community (e.g., the

¹³ Refers to affordability of price point options for health foods versus the cost of less healthy options

absence of or fewer grocery stores compared to smaller convenience stores; Morland et al., 2002b), depending on how environments with poor access to healthy and nutritious foods are defined, this affects how food deserts are identified and what solutions can be proposed to inform community action and change. For example, Short and colleagues (2007) use the term food desert to distinguish it as a spatial environment without a larger food retailer while other authors including Wrigley and colleagues (2003) and Guy and David (2004) use it to characterise urban areas with few to no affordable food retailers or healthy food options. Guy and David (2004) also emphasise that if food outlets exist in socially deprived and low-income areas amongst residents with poor nutrition, they may be of unacceptable quality.

In an attempt to expose and address several unresolved issues concerning the identification of food deserts and the extent to which these are home to a higher concentration of low-income populations, Leete, Bania and Sparks-Ibanga (2012) found that the majority of socioeconomically challenged households with constrained access to food stores in Portland, Oregon were located outside the parameters classified as a food desert (e.g., typically an urban core). How areas are defined, classified and identified as low food access areas has critical social, economic and political implications. Although all definitions agree on certain aspects of food deserts (e.g., physical area with low access to food retail outlets), they differ in terms of the emphasis and importance of these elements in relation to whether these environments are by definition low-income, deprived, disadvantaged and whether lack of access refers to physical, economic or a combination of the two (Leete et al., 2012). To date, literature denotes that researchers have yet to reach a universal consensus on a scientific definition of food deserts for empirical research. This in turn has limitations in terms of comparisons that can be made between food desert environments, deductions about the causes that support inadequate food

access and the policy changes or solutions that can be proposed to support contextual improvements to build healthier communities.

Measuring food deserts. In a review of the current state of knowledge about food deserts in the U.S., Walker, Keane and Burke (2010) found that most studies have focused on exploring ethnic and income disparities within environments of inequitable access to food. Walker and colleagues (2010) attribute this surge in focus to a change in both research and policy priorities that seek to reduce or eliminate disparities in health between different ethnic/racial and income groups. Other studies on food deserts have used various measures to assess the existence of reduced food access within different neighbourhoods. Most measures have assessed variables including access to food stores, socio-economic status and income, race/ ethnicity, food store density in and across neighbourhoods, cost of food and fresh produce, food store location, type of food store, availability of different food options and food store outlets, food quality, the impact of living in a food desert and the subjective perception of residents in relation to any of the above mentioned variables (Walker et al., 2010). The most popular measures to assess food deserts are objective varieties such as Geographic Information Systems (GIS) to develop density maps to identify the proximity to and density of grocery stores in different neighbourhoods in relation to where people live (Giang, Karpyn, Laurison, Hillier & Perry, 2008). Other studies have also used mixed methods to capture the essence of whether food deserts exist by gathering data from food store assessments and the perception of food access, food use inventories (e.g., consumer spending habits, store operation hours; Freedman, 2009; Freedman & Bell, 2009; Rose & Richards, 2004), business directories and national research databases (e.g., Census data; Powell, Slater, Mirtcheva, Bao & Chaloupka, 2007b), focus groups (Smith & Morton, 2009), in-depth or one-on-one interviews (Freedman, 2009; Rose & Richards, 2004) and surveys and

questionnaires (e.g., FFQ; Garasky, Morton & Greder, 2004; Lopez, 2007). The use of various methodologies, measures and definitions affects the type of information that can be inferred to other food desert studies and conclusions about the degree to which these exist or how problematic infrastructure may be for residents that reside within a food deserts.

Life in a food desert: Access to healthy foods. The concept of food deserts centres on systematic inequalities in the availability of and access to household food provisions within a specific geographic environment, typically urban and often disenfranchised (Williams, 2002). Unlike food security studies, food desert research focuses less on food use, food shopping patterns and food purchasing habits and more on the relative absence of or poor access to large food retailers (e.g., supermarkets) assumed to offer consumers more economic benefits and a greater selection of high quality nutritious foods compared to smaller food outlets (e.g., convenience stores; Block & Kouba, 2006; Bodor, Rose, Farley, Swalm & Scott, 2008; Chung & Myers, 1999). Within any physical and built environment, elements related to food access, availability, affordability, convenience and quality (Drewnowski & Spector, 2004; Edmonds, Baranowski, Baranowski, Cullen & Myres, 2001; Glanz, Basil, Mailbach, Goldberg & Snyder, 1998; Jekanowski, Binkley & Eales, 2001) are important factors that influence food procurement and the ability to eat in ways conducive to personal preferences or the adoption of more healthy dietary behaviours and practices (Larson et al., 2009; Papas et al., 2007).

For both low-income and higher-income earners, living in a food desert means not always being able to eat what you want when you want but rather consuming foods based on what is available as a compromise between the ideals of reasonable store proximity and food cost. In particular, American food desert studies have demonstrated that lower income neighbourhoods tend to have fewer grocery store outlets that offer nutritious and affordable food options

compared to higher income neighbourhoods. Because of limited access to large food retailers in urban cores combined with often higher overhead and operational costs due to environmental and social characteristics associated with urban centres (e.g., higher crime, poor infrastructure planning, zoning policies and by-laws; Bitler & Haider, 2011; Short et al., 2007), residual effects often result in higher food prices where residents of food deserts are compelled to pay inflated prices for food provisions often considered less healthy and sometimes of sub-par quality.

Canadian studies remain mixed about the existence or severity of food deserts. Although neighbourhood disparities in access to food have been identified in low-income, inner-city neighbourhoods in regions like London, Ontario (Larsen & Gilliland, 2008), findings are less consistent as other studies on low-income urban neighbourhoods fail to establish a significant and clear relationship between household income and food access. For instance, one study focusing on supermarket access in Edmonton, Alberta found that low-income urban neighbourhoods had better access to supermarket retailers than more affluent neighbourhoods (Smoyer-Tomic, Spence & Amrhein, 2006). Further, a study out of Montreal, Quebec found little evidence of poor access to healthy foods for city residents (Apparicio, Cloutier & Shearmur, 2007). However, several other Canadian studies suggest that some lower income communities do in fact experience restricted access to healthy food provisions (Gittelsohn & Sharma, 2009; Hemphill, Raine, Spence & Smoyer-Tomic, 2008; Larsen & Gilliland, 2008; McCreary & Peters, 2008). Controversy in terms of limited access to healthful foods provisions or food stores and little consistency in findings continues to characterise the literature in Canadian studies on food deserts and more rigorous research is needed to clarify and better link factors that hinder health and healthy eating to one's place of residence and neighbourhood.

Life in a food desert: Access to fruits and vegetables and health. Daily, individuals make food-based decisions that subsequently affect their health: What, when, how much and with whom to eat? To bridge the nutrition gap by integrating healthy food habits and consumption patterns and to promote safe food preparation, it is important and practical to have fruits and vegetables readily available to eat between meals and to incorporate them daily at mealtime (Fairholm, 1998). While many studies have explored the spatial conditions that contribute to adverse health and health disparities (Lee, 2002; Sexton, 2000), few Canadian studies have explored or established a clear relationship between living in a food desert and the reduced purchase or consumption of fruits and vegetables. With many Canadians already not meeting recommended daily servings of fruits and vegetables, let alone fresh produce devoid of added artificial sweeteners, sugars, salt and preservatives, their efforts to increase their fruit and vegetable consumption could be aggravated if they not only live in conditions conducive to food insecurity but also within structures that support food deserts. Despite knowledge of health benefits associated to eating adequate servings of fruits and vegetables in line with dietary guidelines, Blanchard and Lyson (2006) found that residents of food deserts were 23.4% less likely than residents with facilitated access to affordable fruits and vegetables to consume recommended daily minimum servings. An increasing number of American studies have explored the relationships between the neighbourhood food environment and fruit and vegetable intake in adults and suggest that closer proximity to a chain supermarket is associated with higher fruit and vegetable intake, the likelihood of meeting dietary guidelines of fruit and vegetable consumption and better overall dietary quality (Laraia, Siega-Riz, Kaufman & Jones, 2004; Morland, Wing & Diez Roux, 2002a; Wrigley, Warm, Margetts & Whelan, 2002; Zenk et al., 2009). Conversely, an Australian multilevel study of individual, social and environmental

mediators in fruit and vegetable intake found a lack of relationship between the density of neighbourhood supermarkets, the presence of fruit and vegetable markets and higher fruit or vegetable intake (Ball, Crawford & Mishra, 2006). Similarly, quasi-experimental studies based in the U.K. have found conflicting results between the effect of opening a supermarket in a neighbourhood and reported fruit and vegetables intake by residents (Cummins, Pettecrew, Higgins, Findlay & Sparks, 2005; Wrigley et al., 2003).

As many factors influence access to food and fruit and vegetable produce, the bottom line for many remains inadequate income in conjunction with other secondary factors that impedes household efforts to provide healthful food options to support whole health and well-being. While building more grocery stores to improve neighbourhood access to food may appear like a strategic approach to protect against food desert environments and provide better support for community food security, literature remains mixed in terms of improving proximity to food stores as a lone strategy to improve Canadian food security. Using both objective and subjective methods¹⁴, a recent study by Kirkpatrick and Tarasuk (2010) found that although the experience of food insecurity was associated with household factors including income and source of income, it was not mitigated by proximity to discount grocers or markets. Neighbourhoods with good food retail access still had high rates of food insecurity (Kirkpatrick & Tarasuk, 2010). When money is limited and household food resources are scarce or depleted, eating a healthy and balanced diet is not always possible depending where you live, where you shop or what perceived social support a household may have at arm's length. For people living in northern or remote communities, the high cost, lower quality, little variety and poor availability of fresh produce in grocery stores are barriers to the purchase of fresh fruit and vegetables (Lawn & Harvey, 2003; Wein, 1994). In these environments, limited market food consumption is due to

¹⁴ For example, neighbourhood food access maps developed with GIS software, surveys and qualitative interviews.

high cost and spoilage (Lawn, Langner, Brule, Thompson & Hill, 1994; Wein, 1994); factors that may explain why some First Nations, Inuit and Métis peoples do not share the Western view that the eating fruits and vegetables are vital to health since inherent knowledge of the land and animals supports consuming nutrients from other sources like wild game, fish and plants. Together, these studies suggest that, while proximity to food stores helps increase the likelihood of being able to access different varieties of foods including fruits and vegetables, other variables likely play a more predominant role in fruit and vegetable consumption for different ethnic groups in the context of food deserts or in circumstances of food insecurity.

Studies suggest that certain factors affecting food choice decisions do not necessarily relate to physiological need or nutritive value but instead relate to emotions (Booth, 1994). Choice of food in relation to fruit and vegetable consumption in adults are influenced by a combination of sensory appeal, familiarity and habit, social interactions, price, availability, time constraints, personal ideology, media, advertising and health (Pollard et al., 2002). Adverse food reactions also cause people with food allergies or sensitivities to avoid certain food triggers like fruits and vegetables (Skypala, 2011) despite their nutritional benefits for most. Depending on where we live, a combination of individual, social, political, economic and cultural factors are more likely to work together to determine what we eat, from where we procure it and how much we consume. Differences in the availability of and access to healthful foods have prompted attention to how the local food environment shapes health disparities, prevents nutrition-related illnesses or preserves and promotes health.

Life in a food desert: Transportation and healthful food. When proximity to food stores is compromised, access to an efficient method of transportation (public or private) may help improve physical access to food retailers and the ability to procure and transport enough

food to last until the need to replenish provisions. A Montreal-based study examining transportation and fruit and vegetable access found that 40% of residents without access to a personal vehicle had poor access to fresh produce (Bertrand et al., 2008). As lower income and socially deprived communities tend to be underserved by reliable, convenient and economically sensible methods of transportation, this makes it even harder to access localities where healthful foods are offered on a tight budget. Because supplemental expenses (e.g., transportation fees, parking costs or food delivery charges) are likely reduced from the food budget, the food shopping process becomes a calculated expedition based on individual capacity to transport the size and weight of food items home within reasonable time to avoid the spoilage of perishables. When transportation access is constrained, some individuals rely on smaller convenience stores that may not offer high quality affordable food varieties (Sharkey & Horel, 2008).

Constrained access, however, to transportation does not always influence the purchase of fresh produce and subsequent intake. A British study by Pearson, Russell, Campbell and Barker (2005) investigated associations between diet, supermarket access, transportation, fruit and vegetable price and deprivation in a food desert environment. Although studies have found a relationship between living in a food desert, poor diet and ill health, this study surprisingly found that material factors including poverty and distance to supermarkets were not significantly associated with fruit and vegetable intake. Their findings suggest that elements supporting the existence of a food desert including the price of healthy foods, socio-economic deprivation and a lack of locally available grocery stores were not significant predictors of fruit or vegetable consumption. Individuals who did not own or have access to a vehicle or who may have reported difficulties accessing a supermarket did not report low fruit or vegetable consumption. Cultural influences such as gender and age were more strongly related to fruit and vegetable intake where

male grocery shoppers ate less fruit than females (e.g., 1/3 less of a daily portion) and 15-year age increments were associated with slight increases in vegetable consumption by 1/10 of a serving (Pearson et al., 2005). Additional finances to accommodate transportation to food retail outlets or restaurants outside the neighbourhood often come at the expense of further limiting the food budget (Anema, Vogenthaler, Frongillo, Kadiyala & Weiser, 2009; Seligman et al., 2007) where some may limit or forego needed provisions outside their physical or economic reach.

As physical and built environments are influential social, cultural and political settings where people eat and/ or procure food for the household, food deserts are not simply notions of geographic distance between the households and food retailers but places where people interact in organized settings including places of work, study and play. Research should consider how disparities between healthy and affordable food can be minimized or eradicated to help support household food access for dietary need, food preference, lifestyle, health and well-being without having to make too many individual, nutritional, economic or social compromises.

Life in a food desert: Health status of residents. The WHO maintain that important social determinants of health such as the social, economic and physical conditions and environments under which people live affect their ability and capacity to achieve optimal health (Commission on Social Determinants of Health [CSDH], 2008). As a combination of geographic, physical and economic access to food influence in part what foods are purchased and what households consume, these factors in turn influence the health status of people and communities. Higher rates of chronic illnesses are associated to living in a disenfranchised environment and underserved community. Living in an area with poor access to or less concentration of larger food retailer is linked to higher rates of obesity, overweight health status and poor dietary quality (Cassady et al., 2007; Cummins & Macintyre, 2006; Larson et al., 2009)

in low-income and ethnic minority groups (Larson et al., 2009; Morland et al., 2002). For low-income and ethnically diverse neighbourhoods in the U.S., research suggests that neighborhood residents with better supermarket access and constrained access to smaller food outlets like convenience stores have healthier diets and lower levels of obesity (Larson et al., 2009). Other studies have shown that ethnically diverse environments inhabited by mostly minority residents are over-served by a greater availability of fast-food restaurants and high-fat/ energy-dense foods that are less costly than healthy food (Drewnowski, 2004; Larson et al., 2009). Where residents had limited access to fast-food outlets and better access to full-service restaurants, healthier diets were reported and so were lower levels of obesity (Larson et al., 2009; Powell, Auld, Chaloupka, O'Malley & Johnston, 2007a). Data suggests the need to address disparities in economic access to healthy varieties of fresh produce to help manage chronic diseases in groups at-risk of living in food insecurity and/ or a food desert. Community efforts could assist in the prevention and management of chronic nutrition-related illnesses and health promotion by offering better access to income-relief initiatives that promote fruit and vegetable access, purchase and consumption.

A cumulative effect of living on a low-or no income is associated to poorer physical and mental health. Chronic health conditions are the leading cause of death in Canada (Ontario Ministry of Health Promotion, 2010); putting a strain on the health care system and its resources for a condition that may be prevented, mitigated and managed by adopting a healthy lifestyle and supportive behaviours including the consumption of adequate amounts of nutritious fruits and vegetables. As chronic health issues are linked to intermittent or persistent food insufficiency (Wu & Schimmele, 2005) or food insecurity (Siefert et al., 2004), prolonged instances of living under circumstances of poverty, hunger and malnutrition are associated to living with more chronic health issues (Kirkpatrick et al., 2010; Siefert et al., 2004a; 2004b) and difficulties

managing one's health conditions. Diet-related chronic health conditions often require further managerial efforts that demand the additional support of adhering to dietary change (e.g., low- or no sugar or sodium rich foods), the purchase of specific nutritional supplements or the procurement of pharmaceutical products that may seem both physically and economically unavailable to individuals who survive on a limited, fixed or no income (Seligman & Schillinger, 2010). In Ottawa, forty four percent of adults aged 65 years and older reported suffering from high blood pressure while 18% reported a medical diagnosis of heart disease and diabetes respectively (Ottawa Public Health, 2014). A study by Seligman and Schillinger (2010) found that some food insecure people with diabetes reduced their medication dosage to extend the life of their prescription to spend less on medication and have enough money for food. Others reported going hungry in order to afford their medication. Further, adverse emotional effects of living in circumstances of food shortages are confirmed by several studies. Chronic or temporary strain associated with any level of food insecurity or food insufficiency may include feelings of stress, anxiety, guilt, isolation, exclusion, tension, exacerbated symptoms of depression and the perception that one is powerless to overcome the interconnected obstacles to obtain enough food (Hamelin et al., 2002; Rainville & Brink, 2001; Siefert et al., 2004a; Walker, Walker & Walker, 1994; Wu & Schimmele, 2005). Collectively, studies suggest that changes are required beyond those of individual control. Policy-level changes are needed to provide better support to improve health outcomes as a medium- and longer-term local objective paired with an enduring community orientation and commitment to ensure health for all.

More rigorous Canadian research and subsequent dissemination of findings with public health researchers, policy- and decision-makers, economists, urban planners, community activists and community members is needed to move studies toward actionable change. From

there, sustainable interventions can be developed and supported by communities to ensure the optimal potential of efforts to improve access to healthy, adequate amounts of nutritious food for healthier environments and more optimal health outcomes.

Canada's Response to Food Insecurity

Changes in social programs and growing inequalities. Part of the persistence of the experience of inequality and disenfranchisement in a developed country is due to Canada's changing economic landscape and major restructuring of social assistance and disability programs (Government of Canada, 2007; Riches, 1996; Tarasuk & Davis, 1996). Contemporary economic, social and political trends have increasingly put pressure on social assistance. Exacerbated by less certain labour and economic markets, recent shifts in the structure and dynamic of the family unit (e.g., greater number of single parents or divorced couples) and a more competitive job market (challenging the necessity of certain employment positions and employment prospects based on certain fields of study; Tarasuk & Davis, 1996), new and growing pressures have forced governments to redefine and restructure programs initially designed to protect vulnerable groups who struggle and to offset growing inequality in Canada.

The inability of governments to adequately adapt to the changing complex factors that put individuals and families at risk of poverty resulted in implemented changes characterised as sometimes incremental, sudden and occasionally dramatic that affected programs such as Ontario Works, EI or the ODSP. Rethinking and adjusting social assistance programs in the 21st century to meet demand and need resulted in tightening eligibility criteria and reducing or failing to update income assistance to reflect living expenses in different geographies. Not only has this driven growing social inequalities and exclusion between the 'haves' and the 'have nots' (Beltram, 2014) but it has also called into question the government's ability to support and meet

the needs of struggling citizens based on the inadequacy of social benefits in Ontario (National Council of Welfare, 2008). Because of questionable, often inappropriate or non-evidence-based changes in eligibility requirements or service delivery, the experience of poverty and food insecurity for social program beneficiaries becomes greater over time with many forced to rely on charitable assistance to survive (Carville, 2014). While issues related to household food insecurity relate to financial insecurity, government responses remain inadequate as government supported incomes remain far below Canadian poverty levels.

Changes to social assistance programs determine how much money marginalized and vulnerable households may allocate to necessities like the food budget, shelter and clothing. Based on findings by Tarasuk, Mitchell and Dachner (2013), nearly one in eight households including 1.5 million children in Canada experience compromised access to enough nutritious food to maintain good health. These households are more likely than their food secure counterparts to experience nutritional vulnerability and inadequacy and poorer health outcomes (Kirkpatrick, 2008; Kirkpatrick & Tarasuk, 2008).

Based on the most recent snapshot of the state of the city of Ottawa's health by Ottawa Public Health (2014; [OPH]), the city's population in 2011 was 883,391 where 25% reported being born outside Canada, 4% immigrated with the past 5 years of the survey (e.g., 2006 – 2011), 24% identified as a visible minority and 2% as Aboriginal. Of respondents, 79% mainly spoke English, 10% French and 11% spoke another language at their home (OPH, 2014). According to the report, in 2012, the general unemployment rate was 7% but, for those aged 15 to 24 it was twice as high at 15%. Moreover, 12% of Ottawa residents were classified as low-income. Based on data collected by Statistics Canada (2013b), a median household income after tax is considered low-income if less than \$38,920 for a household of four people; for a

single person, the threshold becomes \$19,460.13. Based on these figures, OPH (2014) estimate that 12% of individuals in private homes were low income in 2011. For demographics aged less than 65 years, the prevalence of low-income households rises to 15% and, for those aged 65 years and older, 7% (Statistics Canada, 2013b). It is also estimated that 15% of homeowners and 39% of people who lease spend approximately 1/3 or more of their household income on housing costs; leaving little else for other necessities.

It is also important to note how housing in Ottawa is problematic for those who receive shelter subsidies from Ontario works or ODSP. Based on 2013 data collected by the Canadian Mortgage and Housing Corporation (CMHC), the average cost for rent in Ottawa was \$766 for a bachelor apartment, \$932 for a 1-bedroom, \$1,132 for a 2-bedroom and \$1,320 for 3 or more bedrooms (Ottawa Public Health, 2014). To demonstrate the inefficient social support received by struggling Ottawa families, the maximum housing subsidy from Ontario Works for a couple with 2 children is \$702 and \$886 under ODSP. This indicates that disenfranchised groups are not only at risk of housing insecurity but may experience additional hardships as the average rent in Ottawa is beyond the support they receive (Ottawa Public Health, 2014).

According to the Nutritious Food Basket survey tool¹⁵, the OPH (2014) estimate that the cost of a healthy food basket in Ottawa has risen \$10 since previous data collection in 2012 where it now costs \$789 to feed a family of four. Survey information collected between 2011 and 2012 indicates that 33% of households in the lowest income bracket and 22% of those living below the low income cut-off were food insecure compared to 2% in the highest income bracket

¹⁵ This tool is based on the cost of foods that reflect Canadian consumer purchasing habits, consumption patterns and recommended national guidelines for to eat healthily.

and 5% earning above the low-income cut-off (OPH, 2014). In newly arrived immigrant households¹⁶, 25% were food insecure compared to only 7% reported by non-immigrants.

The slightest changes in financial status or circumstances are sensitive enough to predict changes in food security status (McIntyre, Connor & Warren, 2001). Low-income households are vulnerable to pressures on already limited finances and when food insecurity becomes more extreme, households become more deprived (Rainville & Brink, 2001).

Vulnerability to food insecurity: Urban Aboriginal and immigrant groups. Despite numerous efforts to address food insecurity, people worldwide and in Canada continue to experience compromised access to food which adversely affects their health status and well-being (Hamelin et al., 1999; Holben & Myles, 2004; Stuff et al., 2004). While the types of barriers to food security experienced by First Nations, Inuit, Métis and non-Aboriginal peoples differ qualitatively, individuals are more at risk of experiencing food insecurity when they relocate or first arrive to a new geographic environment. For Aboriginal women moving to an urban area, Sinclair (1997) found that main barriers to food security related to problems surrounding migration and adapting to a new lifestyle including the lack of economic assistance, limited or no family and community support/contacts and little or no knowledge of resources or cultural norms and practices. This may be further exacerbated by language barriers and limited fluency in the area's primary language of communication (Sinclair, 1997). Unique barriers to food security for Aboriginal peoples also include limited to no access to country foods and concerns over the safety and availability of traditional plant and animal species because of contamination (Lawn & Langner, 1994; O'Neil, Elias & Yassi, 1997; Wheatley, 1998). If certain country foods are available in urban centres (e.g., arctic char, salmon or wild game), they tend to be treated as delicacies or luxury food items and the cost associated to these exotic country foods

¹⁶ Respondents arrived in Canada within the last 5 years of data collected in 2011.

make them unaffordable on a restricted food budget. As poverty is more pervasive across Aboriginal communities and experienced within an over-represented number of First Nations, Inuit and Métis households, the relationship between the cost of food and income determine food selection for more individuals than considerations related to whether food is considered healthy, nutritious, tasty, desirable or even socially acceptable (Messer, 1989).

For newcomers to Canada from non-Western countries, stressors including the process of immigration, searching for employment, establishing a stable source of income, finding shelter, loss of social status and dealing with bouts of loneliness and social isolation (Meadows, Thurston & Melton, 2001; Murty, 1998; Tabora & Flaskerud, 1997) increase the likelihood of food insecurity and ill health. Research suggests that the health status of recent Canadian immigrants is often superior than that of long-term immigrants and native-born Canadians as a consequence of health, social and behavioural factors (Beiser, 2005; Oxman-Martinez et al., 2000) including their attempts to maintain traditional eating habits, patterns and diet as long as possible after migration (Mennell, Murcott & van Otterloo, 1992). Often referred to as the '*healthy immigrant effect*', this phenomenon and health advantage to newly arrived people in the host country is often lost with time due to dietary acculturation, environmental and behavioural changes (e.g., use of tobacco, alcohol or other substances), fewer perceived or actual social support networks and increased stress (Hyman, 2001; Mazur, Marquis & Jensen, 2003; Okafor, Carter-Pokras & Zhan, 2014; O'Laughlin, 1999). Mechanisms that also put new immigrant women at risk of poor health in the context of healthy eating are the roles of culture and ethnicity in food choices and consumption (e.g., preferences determine food preparation, frequency and time of eating), access to nutritional information (language of the host country and level of fluency determine what individuals can understand), availability of healthful and acceptable foods (physical distance,

quality and affordability of familiar foods) and poverty (Hyman, Guruge, Makarchuk, Cameron & Micevski, 2002; Welsh et al., 1998).

For many vulnerable households, access to community food assistance programs is an essential component to their survival despite raised concerns over the differences between what charitable initiatives offer in contrast with the needs of vulnerable service users (Tarasuk & Eaking, 2003). For health and food systems researchers, practitioners, community developers and urban planners, two responses to improve food access and address the interconnected issues related to the affordability of healthful food options include the following recommendations: 1) To improve transportation services, infrastructure and urban planning to facilitate and promote physical access to larger grocery retailers; and/or 2) To expand and promote community-based strategies that focus on further developing local food purchasing alternatives to tackle the issues of availability and affordability of by offering produce through smaller local markets, alternative food institutions (e.g., healthy food in schools programs) or health and resource centres at a lower cost. In Canada's fight against food insecurity, poverty, hunger and food deserts, fiscal investments and political dialogue have responded more immediately to address threats to food security by either: a) Establishing food initiatives that follow a charitable model (e.g., food banks and b) Investing in community-based alternative food programs that provide income-relief and follow a more participatory skills development orientation (e.g., the Good Food Box; Agriculture and Agri-Food Canada, 2008; Tarasuk & Davis, 1996).

Nevertheless, many disadvantaged groups face unique barriers to eating and feeling well. To help reduce the effects of social and economic deprivation (Marmot, 2005), action needs to address the more subtle forms of exclusion and poverty and address the complex interplay between social, cultural, political, and economic factors. From a public health and prevention

perspective, it is vital to understand and address the barriers to food security and fruit and vegetable consumption as well as the factors that facilitate access to sufficient quantities of quality foods to have an effect on health, well-being and healing.

Food bank use in Canada: Charitable initiatives. Over pressing concerns against people going hungry, shifts in social policy and the rising number of people experiencing economic hardship, communities across Canada developed ad hoc charitable food assistance programs in the early 1980s in the form of food banks (Riches, 1986). Over 30 years later since the first food bank opened its doors, over 800 food charities now characterise Canada's landscape (Yaworski, 2012). Despite major concerns over the nutritional adequacy of food assistance programs to meet the nutritional needs of economically challenged households, they have nearly doubled the number of donor-driven distribution sites within the last 10 years (CAFB, 2004). Although designed as a temporary solution to hunger, the establishment of food banks across the country has been Canada's primary response to address household food insecurity. As they rely heavily on personal donations and industry surpluses (Irwin, Ng, Rush, Nguyen & He, 2007; Tarasuk & Eaking, 2005; Teron & Tarasuk, 1999), food banks have become a dependable social safety net and staple for a growing number of Canadians.

Based on a comparison of findings from the 2008 HungerCount (pre-recession figures; CAFB, 2008) and the 2013 HungerCount (Food Banks Canada, 2013), more Canadians households relied on emergency food supplies and donor-driven items through food bank outlets in 2013 than before the recession in 2008 (833, 098 versus 675, 735). Although the data collected by Food Banks Canada represents a cross-section of annual food bank use, these figures suggest that even though the economic crisis was challenging for Canadians (e.g.,

weakened financial markets and destabilized industries; Beaton & Desroches, 2011), individuals continue to struggle to afford nutritious food despite being in a period of economic recovery.

Surviving on low- or no income is not only a question of living with limited financial resources, it also incurs certain social disadvantages including a sense of powerlessness, decrease in one's ability to influence certain situations and a greater likelihood of being mistreated by social organizations (Clarke-Stewart & Parke, 2014). Although the use of social support programs including food banks and other venues varies considerably among low- or no income households, "eventually, the search for food takes precedence over previously held values" (Hamelin et al., 1999, p.527S). A study examining the relationship between food bank use and household food insecurity with low-income families in Toronto, Ontario by Loopstra and Tarasuk (2012) noted that even though 75% of family participants experienced a degree of food insecurity, only 23% used a food bank. Among food bank users, food insecurity was a severe and chronic issue.

Despite the reliance of some on food banks, some families are reluctant to access this form of social support for many reasons including barriers to information (e.g., unfamiliarity with how food banks operate) and access (e.g., scheduling conflicts, tightening eligibility criteria to receive emergency food aid). For families who choose not to use food banks, some felt received provisions were unsuitable for their needs (e.g., no fresh produce, expired foods, too much junk food) and others did not feel that food banks were for them. For these families, food bank were perceived as socially unacceptable, degrading or incongruent with family values and needs (Loopstra & Tarasuk, 2012). In studies that have cited cultural factors as barriers to food banks use, participants described the screening process to prove 'need' as dehumanizing and degrading. In one study with immigrant women (Welsh et al., 1998), the stigmatisation and

intrusiveness associated with food bank use and the inappropriateness of foods received not only made the pains of poverty worse but deterred them from perceiving charitable assistance as a dignified option for social support. For Aboriginal people, often cited barriers to the use of charitable food programs (e.g., food pantries, soup kitchens) include being treated in an insensitive, unfriendly or discriminatory way by staff or volunteers (Palafox as cited in Stephens et al., 2006). In another study, Tarasuk and Beaton (1999b) noted that among families who used food banks, accessing this type of assistance caused tension between children and their parents and was a highly charged emotional experience for first time assistance users. Specifically, the majority of females (84%) described feelings of shame, embarrassment, degradation and humiliation while, among those whose children knew their mothers accessed food banks, shared their embarrassment and described the situation as anger provoking (Tarasuk & Beaton, 1999b).

Despite issues raised about food banks unable to provide nutritious foods conducive to a balanced diet, seeking assistance from food banks remains a strategy among others that some households use in times of food shortage. Although an occasionally distressing experience to rely on anyone, for individuals who depend on their social networks for information, food and emotional support, studies suggest that family members are a primary source of social support followed by friends, neighbours and distant acquaintances (Ahluwalia et al., 1998; McIntyre et al., 2000). Although less desirable, those with fewer closer support networks are more likely to access charitable food sources while individuals with a greater social support system composed of friends and family cope with hunger by seeking aid from them first (McIntyre et al., 2000). Studies show that participation in community-based food programs have the effect of building perceived social support and increasing social opportunities with community members with whom to share life experiences (Engler-Stringer & Berenbaum, 2007). A Canadian study on

programs that use and promote social support found that building friendships, social inclusion and feeling less isolated and having the ability to share resources and information through activities were important features that encouraged and increased participation in community-based initiatives (Engler-Stringer and Berenbaum, 2007). Thus, participation in community-based activities can have the effect of breaking social barriers and promoting social, community, and individual health by fostering positive social experiences and trust in the community for Aboriginal and non-Aboriginal peoples alike. Particularly, one health and nutrition study conducted in partnership with Australian Aboriginal peoples found that community-based programs were most successful in improving nutrition with sustainable health outcomes when Aboriginal people themselves controlled and maintained ownership of the intervention (Lee, Benson, Yarmirr, O'Dea & Mathews, 1995).

Even if the needs of food bank users were better recognized by charitable programs, the extent to which these could be adequately met is unlikely due to the heavy reliance of these institutions on unsustainable food and unreliable financial, human and material resources to function. Moreover, because of this dependency on donated surpluses and less predictable access to resources, this further limits the ability of a food bank, initially conceived as a short-term band aid strategy to avoid hunger and not a long-term solution to chronic food poverty, to meet the aims of promoting or asserting community food security and community health. Traditionally, charitable models of food provision have been regarded as useful strategies for maintaining sufficient access to food. However, more recent approaches that promote the harvest, growth, production, processing, handling, retail, and delivery of food (Food Secure Canada as cited in Meal Exchange, 2006), have been recommended to encourage food acquisition strategies that are sustainable and that empower and educate people who access and use local food resources.

Income relief strategies and sustainable food systems approaches have focused on the promotion of nutrition and health through capacity building to bridge the gap between community and public policies (Meal Exchange, 2006).

Alternative food purchasing initiatives: Participatory initiatives. In the 1990s, alternative food distribution networks designed as more sustainable solutions to food insecurity were perceived as more participatory and sustainable to support community-based development strategies (Kalina, 2001; Tarasuk, 2001b). Income relief strategies and sustainable food systems approaches have focused on the promotion of nutrition and health through capacity building to bridge the gap between community, public and health policies (Meal Exchange, 2006). As ad hoc initiatives, these networks focus on providing families with better access to lower cost foods and opportunities for food education and skill building to enhance household abilities to acquire, prepare, consume and store nutritious foods (Kalina, 2001). As alternatives to food banks, more participatory food acquisition models have included community kitchens, nutrition education programs, healthy diet workshops, community/ neighbourhood gardens, farmer`s markets and collective food buying clubs (Kalina, 2001; Tarasuk & Davis, 1996).

While many studies note that some areas with poor access to larger grocery retailers pay more for their groceries in general and fresh fruit and vegetable produce in particular at smaller food stores (Chung & Myers, 1999; Latham & Moffat, 2007), to help increase fruit and vegetable access, availability and affordability, some innovative local environmental strategies have included the introduction of farmer`s stands in low-income communities (Evans et al., 2012), mobile vending carts (Lucan et al., 2014; Tester, Irene & Laraia, 2010) and an increase of healthy food options and fruits and vegetables in corner stores (Jetter & Cassady, 2010; O`Malley, Gustat, Rice & Johnson, 2013). A study examining the effects of a targeted

intervention to improve access and availability of fruits and vegetables in an area of high deprivation and low-intake of fresh produce found that the presence of a Mobile Food Store (MFS) improved both access and availability of fruits and vegetables and increased consumption by 1.2 portions daily (Jennings et al., 2012). However, while these community interventions and initiatives are well intended, studies demonstrate mixed results in terms of their ability to increase individual and household fruit and vegetable consumption alone and more research is warranted to increase our understanding about what works, why and how these practices can be adapted to other environments in order to discover if additional strategic options may be best suited to address barriers to fruit and vegetable consumption for communities.

More promising community interventions are those that bridge the hard work of the local farming community with the efforts of members from community health and resource centres as a way to reach more deprived communities and also niche markets of organic and conventional crop consumers. Previous studies have shown that, together with other strategies (e.g., health education activities), farmer's markets can achieve greater community awareness and dietary change (Kropf, Holben, Holcomb & Anderson, 2007; Racine, Vaughn & Laditka, 2010) by decreasing the gap in where food is typically produced and where it is consumed. By parties coming together to help minimize barriers to healthy eating by increasing access to high quality, locally grown yields, consumers can approach those who grow the crops to demystify growing practices (e.g., contemporary methods used to grow conventionally produced or organically grown commodities) and learn about ways to best preserve and store seasonal provisions. Recently, the Union of Concerned Scientists (2011) recognized and recommended the practicality and efficiency of introducing good food markets as a viable strategy to help increase the consumption of fruits and vegetables. By building strategies that support the local food

economy and livelihood of local growers, this supports improved access to and the availability of local high quality produce for low- and higher-income households and supports the labour efforts of a hard working lower income demographic: farmers (Union of Concerned Scientists, 2011).

The presence of farmer's vending stands in different neighbourhoods may prove effective in creating competition for fresh produce and local goods and drive down higher food retail prices due to the presence of retail adversaries and consumer demand (Larsen and Gilliland, 2009).

Another example of a community capacity building and strengthening strategy is the Good Food Box Program; an initiative available across Canadian provinces. This locally run, not-for-profit program provides households with access to wholesale priced (low-cost), high quality fruit and vegetable varieties and has gained the reputation as a more dignified food purchasing alternative (Friendly, 1998). While the benefits of the program are evident, there is little information about the barriers and facilitating factors to participation in the program and how it could become more culturally relevant and safe for Aboriginal peoples and other ethnic groups in Ottawa (and elsewhere for that matter). Moreover, there is no information on the perceived challenges faced by Good Food Box site administrators, program staff and steering committee members that may prevent the program from being as successful as it can be. There is also sparse information about the factors that support monthly participation in the initiative and help individuals maintain program loyalty. There is also no information on the barriers or challenges to participation on behalf of current and former customers and information on the real or perceived barriers to program enrollment from people who choose not to take part. Also, there is little information on potential opportunities for program improvement as informed by community-driven solutions to help this initiative expand to better meet the fruit and vegetable needs of food insecure and food desert-type neighbourhoods in Ottawa. As this program offers

households an opportunity to spend a lesser proportion of their income on fresh fruit and vegetables, this provides some relief of financial pressures on occasionally meager resources and may lessen the likelihood or severity of household food insecurity and poor diet.

Thinking inside the [Ottawa Good Food box]. The Ottawa Good Food Box, a not-for-profit initiative, thrives to provide economic and physical access to healthful fruits and vegetables to residents across the city of Ottawa, Canada and is predicated on the philosophy and notion that everyone has the right to nutritious foods. As a city-wide program based out of the Centretown CHC and in partnership with the Coalition of Community Health and Resource Centres, the program started in 1996 by community developers and nutritionists out of concern that there were neighbourhoods and communities with inadequate access to healthy fruits and vegetables required for a balanced diet and good overall health. Currently, there are approximately 40 volunteer-run Good Food Box distribution sites across Ottawa (16 sites serve central Ottawa, eight locations serve the east end, 11 sites are in the west end and five sites serve the south end; Ottawa Good Food Box, n.d.) that serve fruits and vegetables to urban and suburban communities. Customers include vulnerable individuals and families with children but also people who generally value fresh, nutritious, local and seasonal produce sold at a fraction of the cost of grocery stores. The volunteer-run food distribution sites are offered through Aboriginal and non-Aboriginal community health and resource centres, community housing neighbourhoods and cooperatives, churches, elementary and adult high schools, post-secondary institutions (university and colleges), private households and through workplace establishments (N. Beaudin, personal communication, October, 7th, 2014).

Each food distribution site has developed their own version of the Good Food Box in recognition and appreciation of the circumstances under which it operates and to ensure that each

one is nurtured by the community it serves. For example, some sites have the luxury of access to a refrigerated area and clients may have more time within which to pick up their food box as they do not have to worry about immediate spoilage. The unique, creative and often innovative approaches adopted by each site are for the purpose of supporting and promoting the local food economy, program participation and fruit and vegetable access and consumption.

Running a Good Food Box Program is resource intensive. Relying on the generous support and enthusiasm of 85 local and active volunteers as well as two dedicated part-time staff members, the Ottawa Good Food Box sells between 350 to 550 monthly affordable fruit and vegetable boxes that have the capacity to feed between 1,400 to 2,200 people. The program works with and supports seven local farms and two local wholesale distributors by purchasing fresh produce in bulk. This food is then transported to a packing site (an Ottawa warehouse) where volunteers and staff gather in a collegial and highly organized atmosphere to pack each box on a monthly basis. Orders are reviewed methodically and delivered to each independently run distribution site and subsequently picked up by customers who placed an order with their local site coordinator. Not only do clients benefit from the Good Food Box but local volunteers of the program are offered opportunities to further their networking skills by liaising with other members of Ottawa's volunteer and farming and gardening communities while further building critical transferable skill sets such as time and financial management, supervisory and training techniques, safe food handling practices, leadership and team building skills, communication skills, problem solving techniques and becoming more adaptable as individuals.

As an alternative to the grocery store, Ottawa Good Food Box customers have the choice to order between five products including a mixed fruit and vegetable food box that come in three sizes and price points: small (\$10), medium (\$15) and large (\$20) and the option to buy a fruit

bag for \$5 depending on the size of their household and food preferences (see Appendix R for food box dimensions and example of produce and information content with monthly purchase). Clients can also purchase a one-size fresh organic produce box a flat rate of \$25 (typical size equivalent medium food box). Running a program like this one requires the coordination of many key players to make this an efficient local food strategy. While thriving to build community and provide educational tools and informative resources through the medium of a newsletter complete with nutrition tips and recipes with each order, the Good Food Box Program also enhances the exchange of nutrition knowledge and food skills by connecting with other food and health programs like community kitchens to help build individual confidence to cook fresh meals with produce from the box and provide households with fresh produce at a reasonable cost (N. Beaudin, personal communication, October, 7, 2014). While contributing to Ottawa's local food economy, this program has also served as a platform for the exchange of local food knowledge and practices and a network for better social support within a familiar, receptive and community-oriented environment for urban and suburban residents.

Participating in not-for-profit community-based initiative such as the Good Food Box Program may help individuals and families overcome physical barriers to food by having access to a distribution site within their community. It may also assist in offering better economic access to fruits and vegetables by providing them at a lower cost than grocery stores while improving household consumption in a way that can be educational, useful, empowering, and positive. To date, sparse information is available on community-based food and nutrition programs that incorporate the perspectives of current and former customers, non-program users and paid and volunteer staff to know whether this program provides food security by increasing access to fresh plant-based produce and whether it promotes fruit and vegetable consumption.

Promoting Healthy Eating: Community-Based Services and Programs

Identifying effective local community strategies that help support and promote healthy eating in ways that target low-income populations and appeal to the broader public is both a public health priority and a challenge for community health organizations that strive to increase access to and the consumption of healthful foods. While many social assistance programs have been implemented with the goal of reducing the vulnerability of disadvantaged households, questions remain as to the effectiveness and benefits generated from participation in these programs (Borjas, 2004) and their ability to address hunger and promote health in a way that preserves human dignity on a medium- and long-term scale (OPHA, 2002; Power, 2000). Literature strongly supports the tenet that the level of social assistance and minimum wage is inadequate to purchase enough nutritious foods for a balanced and healthy diet and sometimes not enough to cover the cost of basic human needs (Baskin, 2006; Kennedy, 2007; McIntyre et al., 2001; Vozoris et al., 2002). Since income is a major determinant of healthy eating, it's not surprising that some interventions that provide financial incentives to subsidize the cost of health foods have been successful in motivating participants to increase their fruits and vegetables intake to more adequate levels (see Bazzano, 2006; Herman, Harrison & Jenks, 2006).

Two American studies based on the participation of 2,024 low-income men and women aged 18 to 24 years demonstrated that after participating in a multipronged, stage-tailored education intervention, young adults increased their intake of fruits and vegetables including a more seasonal fruits, juices and high beta-carotene vegetables (Do et al., 2008; Nitzke et al., 2007). This study suggested that participation in an education intervention may assist in increasing total fruit and vegetable consumption in low-income young adults and help increase the daily consumption of greater fruit and vegetable varieties among this population.

Participation in strategically tailored education interventions could prove fruitful to help protect low-income or marginalized adult populations from the health-related effects of not eating enough fruits and vegetables in general and diverse fruit and vegetable varieties in particular.

While having adequate access to sufficient amounts of nutritious and safe foods determines health status, it is important for the interventions that are developed to be in tune with the practices of the community and be sustainable to ensure good health over time. When promoting balance in a healthy lifestyle, we have to move away from pressuring people to eat more healthily and help them enjoy eating healthful portions of fruits, vegetables and items in other food groups (Paisley, Sheeshka & Daly, 2001).

Incorporating Perspectives: The Healthy People, Healthy Communities Project

A unique opportunity for researchers and community members to strengthen community-academic partnerships and collaboratively discover the merits of applying western scientific methods and Indigenous knowledge is through engaging in a community-based research project. The aim of this approach is to enable the involvement of community members to identify issues within the community, support the collection, analysis and subsequent production of valid information and assist in the development of relevant recommendations and community-driven solutions to help expand the reach and delivery of important health and community programs.

Following the growing interest in the effectiveness of how local food environments and community initiatives influence access to food in general and fruits and vegetables in particular and how they play a role in increasing fruit and vegetable intake, the current study reports on a community-based needs assessment of a local intervention, namely the Ottawa Good Food Box Program, that thrives to assist households in accessing and consuming healthier quantities of quality fruits and vegetables. A community-academic project like this provides evidence-based

information to support the demand for more realistic financial investments to meet community fruit and vegetable needs while building the capacity of an already underfunded community-based food initiative as part of health promotion and illness prevention strategies. This study emphasizes the use of structures already in place within communities that are reflective and in sync with the social and cultural norms and practices related to procuring and consuming healthful foods through community program participation. Community strategies that aim to address both physical and economic barriers to food security need to address both issues of food access in general and foods that are culturally familiar and appropriate including fruit and vegetable procurement and consumption to help improve health outcomes.

Research Questions and Hypotheses

While the gaps in research have been discussed at length in an earlier chapter and on p. 320, the specific research questions that are answered in this study are the following:

1. What factors inhibit and promote participation in the Ottawa Good Food Box Program?
2. What issues affect program management and delivery as observed and experienced by paid and volunteer staff?
3. Does participation in the Good Food Box Program relate to enhanced household food security compared to other households who do not participate?
4. Do participants in the Good Food Box Program consume fruits and vegetables more frequently than former customers and non-program participants?
5. What community-driven solutions could support program expansion, improve service delivery and enhance participation for Aboriginal and non-Aboriginal peoples?

The inclusion of First Nations, Inuit, Métis and multicultural perspectives are integral to help inform and improve components of the Ottawa Good Food Box Program to promote

sensitivity and accessibility for the diverse groups it serves. Since research suggests that the barriers, concerns, and the experience of lower-income, multicultural households and communities involved in community programs differ from those of the middle class norm (Johnson, 2000), it is critical to incorporate the perceptions and ideas of people who participate in program alongside program administrators and further examine issues that may challenge household participation by including perspectives of people who do not currently participate in community food programs and people who have withdrawn their involvement. While studies have identified factors that prevent households from experiencing more adequate and stable access to nutritious, safe and culturally appropriate foods (see Hamelin et al., 1999; Holben & Myles, 2004; Stuff et al., 2004), there are unique barriers specific to the consumption of fruits and vegetables and participating in food programs that are occasionally context-specific that have yet to be identified in the context of the Ottawa Good Food Box Program.

Based on scientific literature, initial consultation and subsequent discussions with the Ottawa Good Food Box Program director and coordinator, the following is hypothesized for the main study groups (current and former Good Food Box customers and non-program users):

1. Current Ottawa Good Food Box customers will report a higher mean frequency of weekly fruit and vegetable consumption compared to one-time program customers and non-program participants;
2. Proportionally, more current Ottawa Good Food Box customers will report a status of household food security compared to individuals who do not participate in the program and household food security will be related to program participation; and
3. One-time and non-program customers will describe more barriers that relate to physical and economic access to the Ottawa Good Food Box Program including limited site

access, constrained financial resources, transportation challenges and stigma which challenge program participation compared to current customers who have integrated buying their fresh produce through the program in their monthly routine;

For data collected through separate group discussion sessions with Ottawa Good Food Box site coordinators, staff and steering committee members, results will be interpreted and discussed in line with the research questions. Based on information collected through the group discussion sessions and individual interviews, the development of theme-based and data-driven solutions will be included as part of the recommendations to improve the delivery and sustainability of the Ottawa Good Food Box Program to Ottawa residents.

Methods

Recruitment

Focus group and talking circles. Permission to request the participation of Ottawa Good Food Box staff, site coordinators, steering committee members and current customers was sought in advance from Christina Marchant (Director of the Community Health Promotion and Early Years Program), and Natasha Beaudin (Ottawa Good Food Box Program Coordinator). Subsequently, a copy of the research proposal and all related materials were submitted to the University of Ottawa's REB for further rigorous examination and approval (see Appendix G for REB certificate of approval; Ethics file #08-10-11).

Following Creswell's (2007) recommendations, to meet the study objectives and effectively respond to the research questions, multiple sampling strategies were used to solicit participant interest and to include different perspectives from different interest groups. The inclusion of diverse perspectives was important to help triangulate information (combination or mixed strategy; Miles & Huberman, 1994), validate data and capture a broader perception of the

Ottawa Good Food Box Program from community members, program volunteers and staff members. Using this technique was helpful to build a more complete cross-section of information about what works, what does not, what are realistic and feasible solutions to bring program improvements and how can changes help support service expansion while retaining current customers while still meeting the diverse food and health needs of Ottawa residents.

A stratified purposeful sample (non-probability sample) was used to minimize the sample bias that would have been introduced had we used a random purposeful sample. A criterion sampling strategy was used to target the inclusion of experiences from relative homogenous subgroups of people involved in the Good Food Box with diverse roles and responsibilities including community site coordinators, paid staff and volunteers because they could share valuable information and firsthand accounts about practices that have been either well-received or not as successful within the context of the program. By collecting information about the Ottawa Good Food Box Program from an operations perspective and further examining qualitative feedback about individual site management, the researcher could more easily identify and categorise pressing challenges and issue faced by staff, site coordinators and volunteers and note certain trends that influence program activities and direction under the steering committee. With this information and the assistance of project partners and community members, the development of more realistic and practical recommendations could be proposed to better address major barriers and issues, minimize challenges and build on and support program components and factors that enhance access to and participation in the Ottawa Good Food Box Program and each food distribution site.

Soliciting interest from individuals involved in the Ottawa Good Food Box (site coordinators, staff and steering committee members) was done in two ways: a) by word of mouth

from program headquarters staff to paid and volunteer staff; and b) by e-mail. The email provided more detailed information about project partners, study objectives, research questions, supporting organizations, ethics (e.g., data collection, use, storage and analysis) and implications for practice and research. We also highlighted how we would ensure that results be shared and communicated with members of the community, stakeholders and decision-makers as well as academics and people with an interest in food, health and community food programs.

Individual interviews. To support a more complete community needs assessment, the inclusion of the personal experiences, ideas and perceptions from current Ottawa Good Food Box customers, former customers (inconsistent program users) and people who do not participate in the program were important to gain a better understanding about the facilitating factors, motivations, challenges and barriers to joining or returning to the program.

As the rationale and approach for recruitment for individual interviews is detailed at length in a previous section (see Study 1, p.71), it is sufficient to briefly mention that a maximum variation sampling strategy (Patton, 2005) was used to recruit participants who were later categorised in three distinct groups (current and former Good Food Box customers and non-Good Food Box clients) based on answers provided to initial screening questions (Appendix O for telephone dialogue guidelines). A purposive sampling technique (Patton, 2005) was also used to inform the community about the *Healthy People, Healthy Communities Project*. We requested that managers and coordinators of different community health and social programs encourage program users to read the displayed or distributed flyers and contact the principle researcher for more information. Accordingly, we reached out to community members in several ways:

- a) a poster was displayed at several community health, resource and service centres;
- b) a poster was also displayed at two not-for-profit housing organizations;

- c) a flyer was distributed with each good food box order over three months; and
- d) a flyer was distributed to tenants of supportive housing or apartment complexes governed by both not-for-profit housing organizations.

Recruiting potential participants from a diverse range of sites within the community was a strategic approach to include a wider range of perspectives from individuals who could discuss experiences that draw on both shared and unique circumstances that relate to the purchase, procurement and/ or consumption of fruits and vegetables from different produce vendors in and around Ottawa. By including different perspectives which later formed the three principle study groups, solicited information from semi-structured, in-depth, face-to-face interviews could provide a better understanding about how the Ottawa Good Food Box Program is perceived and/ or experienced by diverse and similar groups. Using these recruitment techniques, we could also learn about the most salient factors that affect participation from the standpoint of former or irregular Good Food Box customers and people who never enrolled.

Participants were encouraged to share information about the study (e.g., the researcher's contact information and information flyer) with individuals or families they thought may be a good candidate for the study or who may be interested in knowing more about the project. This strategy, a snowball or chain sampling strategy (Miles & Huberman, 1994), was used to help identify other individuals who may share similar characteristics to other key participants and who would be a potential, suitable candidate to share their rich experiences within the context of the project (Black, 1999). Using multiple sampling techniques was important to identify harder-to-reach participants with unique characteristics (e.g., former Ottawa Good Food Box customers and First Nations, Inuit or Métis peoples and families).

Finally, the researcher was notified that a former Good Food Box customer who participated in an interview posted an ad for the study at one of the local laundry co-operatives. They did this based on knowledge that other locals in their neighbourhood who used the facility were once customers of the Ottawa Good Food Box Program and no longer participated. Although unexpected, this allowed the researcher to follow a new lead to better connect with prospective candidates and reach a potentially difficult-to-sample group (Miles & Huberman, 1994). For this reason, an opportunistic sampling strategy proved beneficial to connect with a hard-to-reach sample and inform them about the project through a location that was not initially anticipated as a recruitment site by the research team.

Participants and eligibility

A total of 63 (N = 63) men and women contributed in different capacity to data collected for study 2; some through participation in one of three single group discussion sessions (focus group or Talking Circles; n = 14) while others took part in a semi-structured, in-depth, in-person interview (n = 49). These perspectives provided the basis on which to conduct a community needs assessment with the aims of gaining a better understanding of potentially modifiable program factors that affect participation in the Ottawa Good Food Box Program. They also were the basis on which to gain more knowledge about the salient factors that affect program delivery (positive and negative) and the identification of challenges to address and strengths on which to build to improve the program from an operations point of view and to assert a more responsive program to the needs and reasonable desires of current and foreseeable customers. By addressing certain intricacies and promoting promising practices, better community health could be asserted through improved program accessibility and communication while maintaining a high standard of produce quality, more satisfied and returning customers, continued positive and healthy

relationships with community members and overall, a step to improving access to fruits and vegetables.

Discussion groups. Three separate group discussion sessions were held with a) Ottawa Good Food Box site coordinators (n = 6), b) Ottawa Good Food Box staff (n = 5) and c) Steering committee members (n = 3). The site coordinators took part in a focus group session while Ottawa Good Food Box staff and steering committee members each took part in a Talking Circle session; sessions were conducted independently from the other groups. In total, three males and 11 females took part in a group-oriented discussion session (n = 14) where the duration of the sessions ranged between 50 to 120 minutes in length.

When participants were recruited for the focus group session, there were approximately 28 individual neighbourhood Good Food Box sites in Ottawa and all site coordinators were contacted by e-mail to take part in the group discussion. Although seven individuals responded to the e-mail invitation, a total of six site coordinators (n = 6) took part in the focus group session and one person withdrew due to competing demands.

During the recruitment phase, the Ottawa Good Food Box staffed 1 male and 4 females (n = 5) to organize, coordinate and deliver the local fruits and vegetables program from headquarters. Some staff members had been involved with the Ottawa Good Food Box Program for as long as 9 years and others as recent as several months. By e-mail, staff members were invited to take part in a single Talking Circle session as a component of the project.

At recruitment, seven people comprised the Ottawa Good Food Box steering committee and out these, three members took part in the Talking Circle (response rate of 43%; all female). Among the participants, the range of experience and involvement as a Good Food Box steering committee member ranged from 2 months to over 4 years (mode and median = 2 months).

To take part in one of the group discussions, candidates had to: a) Have attained age of majority (be at least 18 years of age); b) Have the ability to speak and comprehend English or French enough to carry a fluid conversation; and c) Be capable of providing informed consent.

Candidate had to also meet additional criteria which determined which discussion session they would subsequently participate in for the study. Suitable candidates for the group session with Ottawa Good Food Box site coordinators had to provide positive responses to the following additional criteria:

- d) be a current coordinator of a Good Food Box site in urban Ottawa; and,
- e) be the coordinator of their community/ neighbourhood Good Food Box distribution site for a minimum of three consecutive months.

Potential candidates for the Talking Circle with Ottawa Good Food Box staff had to meet the following additional criteria:

- e) be a current staff member of the Ottawa Good Food Box Program;

Finally, to take part in the Talking Circle session with the Ottawa Good Food Box steering committee members, candidates were also required to:

- d) be a current member of the Ottawa Good Food Box steering committee; and
- e) have attended and participated in a minimum of two consecutive steering committee meeting out of the last four (50% meeting participation rate) as confirmed by attendance records and recent meeting minutes.

For the Ottawa Good Food Box site coordinators, having a minimum of three months of experience managing a community or neighbourhood site was an adequate minimum amount of experience and time to gain knowledge and a degree of appreciation about different types of management practices or organizing strategies that may support the success of their site based on

personal observation or client feedback. Moreover, meeting the criteria of managing the Good Food Box in an urban environment (as opposed to a suburban or rural area) was also deemed important to ensure that the issues raised were reflective of the experiences and perceptions of managing a fruit and vegetable distribution site within the more diverse context that characterises the social and cultural fabric of urban Ottawa. While the implementation of each Good Food Box site is tailored to the unique conditions and environment under which it operates and is managed (e.g., a home- or community-based food distribution site), how each site functions is often the product of the resources at the site coordinator's disposal and their individual capacity.

For the Ottawa Good Food Box steering committee group, the necessity to have minimally achieve a participation rate of 50% in attendance at steering committee meetings in the months prior to the Talking Circle was critical to ensure that all participants were aware about current program activities in which the Ottawa Good Food Box was involved and had garnered a sound knowledge and understanding about program direction and other potential opportunities or issues that could affect program delivery or its expansion in different communities. Reliable attendance at the steering committee meetings would further solidify the participant's commitment and dedication to follow through with their duties to attend meetings, participate in exchanges, support the development of strategic decisions, guide actions and demonstrate their assurance to fulfill these responsibilities as a group member.

Finally, it was imperative that everyone have the ability to speak and understand English, French or both languages to assert that full and informed consent could be provided and to ensure that the researcher could facilitate the discussion adequately and respond to all questions and concerns as clearly as possible in a way that is accessible and non-technical. Meeting the ability to converse in and comprehend English or French and making the language criteria

explicit also ensured that participants could engage as much or as little in the discussion as desired, that they could understand the questions being asked and that they had the ability to share their respective experiences and perceptions during the group session.

Individual face-to-face interviews. Inclusion criteria and participants' characteristics have been detailed at length in the previous study (see p.75 – 81) and summarised information can be found in Table 1 (see p.78). Of the 49 participants, 13 (27%) were current Good Food Box customers, 14 (29%) were former Good Food Box customers and 22 (45%) never participated. The majority of participant questionnaires were filled out in English $n = 45$; 92%) and the follow-up interview was also conducted in the preferred language.

Identity. Of the current Good Food Box customers who self-identified as Aboriginal, all were Métis ($n = 3$). Of the six former Good Food Box customers who identified as Aboriginal, three were First Nations, one was Inuit and two were Métis. Of the 11 Aboriginal people in the comparison group ($n = 11$), eight were First Nations and three were Inuit.

Level of education. Fifty-five percent ($n = 27$) of the sample had completed some postsecondary schooling or higher; ranging from some having completed some postsecondary courses to having achieved a full graduate or professional degree. For the comparison group, 41% of participants ($n = 9$) achieved a college level diploma or its equivalent, university degree or completed a Master's, PhD or professional degree. Thirty six percent of one-time Good Food Box customers completed a postsecondary certificate, diploma or degree and 15.4% of current Ottawa Good Food Box customers completed a completed bachelor degree (the remaining participants completed some high school $n = 5$) or some post-secondary school ($n = 6$)).

Household living situation and income. On average, Good Food Box customers lived at their current address for 63 months ($SD = 81$), former program customers reported an average of

43 months ($SD = 70$) and participants in the comparison group, 43 months ($SD = 40$). Ninety six percent of participants rented their dwelling ($n = 47$). The mode for months lived their current address for current and former Good Food Box customers was 12 for each group and 36 for non-customers. Most lived alone ($n = 26$; 53%). Living situations where two or more household residents were present were reported in 69% of Good Food Box customer households, 35.7% for former program affiliates and 31.8% for the comparison group. The average number of children per household for Good Food Box customers was 1, 3 for former customers and 2 for non-users.

Overall, 81.6% ($n = 40$) lived on an income of less than \$19 999 (69.2% of Good Food Box customers ($n = 9$); 93% of one-time Ottawa Good Food Box customers ($n = 13$), and 81.8% of non-program participants ($n = 18$)). Forty six percent of Good Food Box customers, 64% of former customers and 77% of non-users lived on social assistance.

Setting

Focus groups and Talking Circles. All group discussion sessions were conducted in a medium-sized office-space located at the Centretown CHC located at 420 Cooper Street in Ottawa; as chosen unanimously by participants due to familiarity with the neighbourhood and proximity to home or work. The focus group setting was equipped with several tables located at the centre of the room with chairs equal to the number of people who confirmed their participation in the session. Sessions were hosted according to the availability of participants, the researcher and a room to host the discussion session.

Because the Good Food Box Program operates out of this location several days per week, to maintain anonymity of individual who voluntarily participated in the group exchange within the limitations of a face-to-face groups activity to protect the identity and integrity of those who chose not to take part in the study, the focus group (site coordinators) and Talking Circles

(steering committee members) were hosted after work hours (post-work day) to avoid breaching ethical protocol and any negative repercussions directed at those who chose not to contribute to the project from others.

Interview sessions. As the interview setting has been detailed at length elsewhere (see Study 1, p.76), it is sufficient to mention that some face-to-face interviews were hosted at a campus-based student resource centre and, upon request, at the participant's residence when the individual could not or did not feel comfortable traveling to campus.

Material

Protocols, guidelines and principles. This project follows a community-based approach and the CIHR Guidelines for Health Research Involving Aboriginal People (CIHR, 2007). Project partners approved the research framework and materials and a certificate of approval from was received from Social Science and Humanities REB of the University of Ottawa. Materials and measures were available and translated in both English and French.

Consistent with the CIHR Guidelines for Health Research Involving Aboriginal People (CIHR, 2007) and the OCAP Principles (First Nations Centre, 2007), questions and objectives were developed based on founding discussions with people who worked in programs related to health promotion and illness prevention, the Ottawa Good Food Box, members from the Aboriginal community and service users of food and health programs and services in Ottawa. A document detailing the context and conditions of data sharing and access between project partners and the researcher were outlined in the PRC (See Appendix C). The acknowledgement and signing of this is document held the researcher and project partners accountable to the community and detailed principles that would be followed to ensure transparency in the research process; from the development of project components to the dissemination of study findings.

Recruitment email: Group session participants. To recruit participants for the discussion sessions, a bilingual email (French and English) was distributed to candidates identified by the Ottawa Good Food Box as current staff members or volunteers (steering committee members or site coordinators). An email for each of these three groups was drafted to reflect the unique contribution each group would provide at improving the quality of information that could be known about how the Ottawa Good Food Box Program is managed and how it is delivered in communities. Each email provided project details that identified project partners, the study's purpose, its objectives and expected outcomes (identification of program strengths and challenges and unique neighbourhood site practices to support the recruitment and retention of customers) and the estimated duration of the session (e.g., 1 hour). It also detailed a short overview of the nature of group discussion sessions and how anonymity and confidentiality could not be guaranteed but that the safety, security and respect of each participant would be guaranteed at all times. In the written report, the researcher informed the recipients that she would take every possible measure to ensure participant anonymity (e.g., by amalgamating responses with those of others, removing names from data, providing each participant with a code). The email requested that interested candidates reply to indicate their interest and availability to take part in the study. Based on the initial outreach email, a subsequent email was sent to those who had not yet responded and a separate one was sent to those who replied in order to determine a date, time and location to host the respective group discussion sessions.

Recruitment posters: Single interview participants. Interview participants were recruited through research posters that were displayed at several health, culture, resources, social services and co-operative housing organizations across urban Ottawa (see Appendix J for recruitment sites). Details about the recruitment posters can be found in on p.83 of Study 1.

Focus group and Talking Circle session guides. To assess the experience of managing a Good Food Box site and to learn about the strengths, challenges and limitations related to running the fruit and vegetable program in Ottawa, a focus group protocol and questions were developed uniquely for site coordinators and a separate protocol and questions were developed to guide the Talking Circles with the Ottawa Good Food Box staff and members of the steering committee (see Appendix S for focus group protocol and questions with site coordinators; Appendix T1 for Talking Circle protocol and questions with Ottawa Good Food Box staff; and Appendix T2 Talking Circle protocol and questions with members of the steering committee).

The focus group session with site coordinators was guided by 10 core open-ended questions that focused on capturing the uniqueness of the Ottawa Good Food box sites and on soliciting the thoughts, perceptions and ideas from the coordinators about the potential program strengths, challenges and improvements that could be made based on the availability of more or less resources (human, financial or material) and support. Some questions focused on knowing what motivated the site coordinators to become involved with the Good Food Box Program and implicated as a neighbourhood/community site coordinator. The purpose of the questions was to gain insight about what changes would be feasible and how the program could better meet the needs or expectations of customers.

The Talking Circle with Ottawa Good Food Box staff was guided by seven core open-ended questions that captured elements similar to those discussed during the focus group session with site coordinators but where the focus was placed on soliciting information on how the experiences of individuals in decision-making positions relates to general program management and service delivery in and across Ottawa. The questions were developed with the aims of discovering the perceived or real strengths and areas needing more support and/ or improvement

within the program as well as changes that may have been implemented since the program's inception in 1994 in Ottawa. Questions also sought to inspire conversation around whether adequate resources were available to ensure the program's continuation and how the program managed to meet the needs and demands from customers on a monthly basis. Finally, moving away from a one-size-fits-most model, we also wanted to know more about whether program adjustments had ever been suggested to improve program accessibility and inclusion for First Nations, Inuit, Métis and other specific minority or multi-cultural groups in the city.

Similar to the previous groups, steering committee members took part in a single Talking Circle session guided by nine core questions. Questions aimed to discover real or perceived strengths (factors that facilitate/ enhance the achievement of overall program goals or individual site success), challenges, limitations and identifying community-driven solutions to issues that shape program delivery, customer satisfaction, program accessibility, site expansion (reduce the incidence of potential food deserts) and providing food security (income relief strategy).

The focus group and Talking Circle questions were pre-tested on two college-level students and two adults from the community with a high school education (total of four individuals). Changes were made to improve question structure and clarity to avoid any misunderstandings or unnecessary and overcomplicated wording.

Pre-interview questionnaires: Participant survey package. A pre-interview participant survey package containing 37 mainly quantitative items was produced to capture important personal and contextual information about individuals and their household including their current living situation and household eating habits. The survey was divided into three distinct sections: 1) demographic characteristics, 2) food frequency and consumption, and 3) food (in)security (see Appendix L). The survey package was administered to all interview participants regardless of

study group. As information on the participant survey package has been detailed elsewhere (see Study 1, p.84), it is sufficient to mention that the survey package captured information on socio-cultural or socio-economic data which may help us further understand aspects that influence enrollment in community programs. This data would be considered in the recommendations to enhance the Ottawa Good Food Box Program to improve customer recruitment and retention.

Further, six FFQ items from the Fruit and Vegetable Consumption Module featured in the CCHS cycle 2.2 were included to assess dietary behaviour and nutritional exposure in relation to the consumption frequency of fruits and vegetables at home and away from the residence within a typical one week period. Information on the strengths, limitations and rationale for using this survey are detailed in Study 1 (see p.85).

Finally, to assess household food (in)security over 12 months, questions from the USDA Food Security Core-Module Questionnaire were used (Bickel et al., 2000). This questionnaire comprises 18-items divided into two sections that explore indicators of household food insecurity including the participant's perception of the household financial and food situation and eating patterns. More information about the rationale for including the USDA Food Security Core-Module Questionnaire has been discussed at length in Study 1 (see p.86).

In-depth, semi-structured interview guides. Three separate interview guides were produced for the purposes of the needs assessment and include both quantitative and qualitative questions that were either grounded in scientific literature or developed with the aim to collect information in concurrence with the project's research questions and objectives. Each guide incorporates questions to elicit and capture the experiences of the three study groups, namely current Good Food Box customers (59 items; see Appendix M1), former Good Food Box customers (59 items; see Appendix M2), and non-users (58 items; see Appendix M3). Questions

focused on food purchasing behaviours, use, preparation, consumption, and the factors that affect from where we procure food for the household. Other open-ended items sought to examine mitigating factors that affect the severity of food insecurity by examining whether certain barriers make for more cyclical, episodic or prolonged periods of food insecurity and how households respond to barriers(e.g., adopting various strategies to manage and survive amidst complex conditions and circumstances that limit and constrain finances and food resources). Information about the interview guides are detailed in Study 1 (see p.88).

Technology. With the consent of participants and to best manage the collection of qualitative data from the interviews and group discussions, a digital voice recorder was used during each session. The digital recorder ensured more accurate, verbatim qualitative response transcription. Files were encrypted with software to protect participant information. Field notes from the researchers were also used to track experiences and reflections throughout the study. The benefits and rationale of using a digital voice recorder are detailed in Study 1 (see p.90).

A Doodle poll was sent via e-mail and used to track the availability of participants who were contacted to participate in the study. This online tool reduced the effort of having to remind individuals to respond to the initial Doodle invitation and made the process of scheduling meetings with multiple individuals and groups more efficient. The online tool (Doodle) generates automatic e-mail reminders to meeting participants who did not respond or indicate a preferred meeting date and time within the set timeframe (after one week, a reminder was sent to those whose input was missing from the poll). This was viewed as beneficial to the project team as they could focus their efforts elsewhere while avoiding the back and forth hassle of conducting this scheduling process through e-mail. Other discovered advantages of using the Doodle poll are that it is both a secure and private online resource where the researcher could receive any

immediate updates by e-mail or by logging in as the calendar administrator through the Doodle website. Through this tool, the researcher could contact each respondent to confirm the date, time and location of each group session.

Honoraria and participant compensation. To honour the involvement and contribution of interview participants, as detailed in Study 1 (see p.90), individuals received a \$20 gift certificate redeemable at one or several national grocery chains, O.C. Transpo adult bus fare to and from the interview location, an information pamphlet about different Aboriginal and non-Aboriginal food programs and services in Ottawa (see Appendix N) and an information flyer about the study to share with other potential candidates or for their personal records. Non-Aboriginal and Inuit participants were offered two pouches of different tea varieties and First Nations and Métis participants received a cloth pouch that contained tobacco as a culturally sensitive and appropriate offering in addition to their honoraria.

At the end of the focus group session with Good Food Box site coordinators and the Talking Circle with volunteer steering committee members, one \$25 gift card was drawn. The gift cards were redeemable at multiple grocery retailers (e.g., Loblaws). Focus group and Talking Circle participants were also offered adult bus fare for their displacement to and from the host site and an information pamphlet about the study with the researcher's contact information.

Process

Engagement with Aboriginal groups and communities. Information about the process of engagement with communities by the researcher and the importance of being involved with the community prior and during the study have been discussed at length in Study 1 (see p.93).

Discussion group sessions. To understand the strengths and challenges of running the city-wide Ottawa Good Food Box Program and the intricacies of managing neighbourhood or

community food distribution sites, one focus group and two separate Talking Circles were conducted with paid and volunteer staff members between December 2011 and March 2012. Recruitment was done by e-mail and the Ottawa Good Food Box staff, site coordinators and steering committee members were each invited to take part in separate single group discussions.

Focus group session. An e-mail invited each Ottawa Good Food Box site coordinator to take part in an hour long group discussion session to share their ideas, comments and experiences related to the intricacies of managing the Good Food Box site in their community. Candidates were provided a response time of two weeks to express interest and indicate their availability to take part in a session before a subsequent e-mail was forwarded to coordinators with a suggested time and location to host the session based on replies to the invitation and Doodle poll.

Out of the 28 site coordinators, a response rate of 25% was achieved where the lead researcher received an e-mail reply from seven individuals interested in taking part in the session. Of these individuals, one participant withdrew due to urgent demands. Unable to participate in the session, the individual got in touch with the researcher and expressed the desire to still contribute their experience to enrich the collected data. Upon consultation with project partners, it was decided that the individual be provided the opportunity to still take part even though outside the focus group session. Whereby building rapport is typically done in-person with participants when conducting a focus group (Kvale, 1996), under these circumstances, the researcher demonstrated flexibility to adapt this effort (building rapport) through written communication rather than oral conversation. To acknowledge the participant's interest and efforts and being respectful of their time, the researcher made sure to clearly explain the purpose and context of the study, how their personal information would be protected based on steps suggested by Hamilton and Bowers (2006) which include copy and pasting email information in

a Word processor and removing any identifying information. The researcher further explained to the participant that any identifiers would be strategically replaced by a code indicator only known to the researcher as a measure to protect the participant's identity and maintain anonymity and confidentiality of responses. It was also explained that their responses would be pooled with data collected during the focus group to further maintain anonymity. Under these circumstances, because exchanges were done over the Internet, the researcher explained that, although there is no guarantee to safeguard internet communication from hackers or viruses, the researcher would follow ethical protocol and take all steps to protect and conceal the participant's identity and any identifying information for the duration that data is kept on file and preserved electronically.

The participant was provided with two options: 1) They could provide input by responding to questions in a Microsoft Word document and submit their responses by e-mail, or 2) The researcher could conduct an in-person or telephone interview with them when it was convenient for both parties and solicit the same set of questions asked during the focus group session. The choice of these options provided the participant with more control and attempted to level the asymmetry of power that typically characterises focus group sessions and interviews (Kvale, 1996). Although an e-mail outlining these options was sent to the individual to help assert their participation and input, when the researcher did not receive a response following the transmission of an e-mail reminder, the researcher interpreted the non-response as a withdrawal or disinterest from the study after two weeks. As a result, the attrition rate was one participant (14%) based on seven who initially expressed interest to participate in this study group.

The focus group sessions was hosted at the Centretown CHC and an e-mail confirming its time, date and location was sent several days prior as a friendly reminder. Participants were informed that they were taking part in a single session and it would be conducted in-person.

Talking Circle sessions. Talking Circles are rooted in the cultural practices of Indigenous peoples world-wide (Umbreit, 2003) and traditionally used among First Nations peoples (e.g., Ojibway tradition) as a way to foster a safe space to restore communal and individual reflection, learning and sharing as opposed to aggressive debate or disrespect among parties (Mi'kmaq Spirit, 2007). In a traditional or historical context, it is a method, ritual or tool to help establish a more receptive environment and non-hierarchical process for mutual support, team work and social change (Baldwin, 1998). As an approach to foster opportunities for compassionate listening and deep reflection, circle-type movements are becoming increasingly initiated with Western and European cultures (Baldwin, 1998; Umbreit, 2003) as a method used to resolve disagreements safely and respectfully with practical solutions. Within a research context, community-based equality and honesty can be enhanced with Talking Circles while ensuring that participants are treated with care and dignity as the circle draws on and considers the contributions of all participant experiences and personal disclosures in a respectful way without interruption. Within this more traditional approach, every person has the opportunity to play the role of the teacher, listener, learner and storyteller.

Ottawa Good Food Box staff were contacted by e-mail and a consensus was reached to host a Talking Circle within several days. A one hundred percent response rate was achieved with this group as no one withdrew their participation. A date and time to host the Talking Circle was established by staff members through consensus between all parties and held during work hours at headquarters. Holding the session during work hours was decided by staff to support and promote participation because they are an active project partner and have a vested stake to support decisions and solutions to enhance the program. Hosting the Talking Circle at headquarters was convenient and accessible and did not pose a conflict of interest since all

members took part and there was no potential for negative recourse. Because the session was hosted during paid work hours, staff members were not further compensated individually or collectively for their time, effort and participation. However, as an integral partner to the development of the project, members of the Ottawa Good Food Box were provided a hard copy and PDF of the research report in non-technical plain language to share with clients, staff, volunteers, stakeholders and other individuals or organizations with an interest in food access, community-academic partnerships or community health and food programs.

Steering committee members were contacted by e-mail to take part in a Talking Circle session to share their ideas, comments and experiences related to their involvement in guiding the Ottawa Good Food Box Program and the major concerns, strengths and issues (perceived or real) that they are responsible to address. They were provided a response time of 3 weeks to express their interest and availability to participate. Based on the response from interested parties, a subsequent email was forwarded to all committee members with suggested dates and times through a Doodle poll. After several date and times were proposed and several rounds of voting, a consensus was reached to host the Talking Circle after hours at the Centretown CHC.

Individual in-person participant interviews. Participant recruitment for the in-person interviews commenced several months after receiving official approval from the University of Ottawa REB. Critical details outlining the process of participant recruitment and screening as well as the interview phase are described thoroughly in Study 1 (see p.95). Triangulating project data between all study groups with diverse roles, responsibilities and accountability in the management and delivery of the Ottawa Good Food Box Program provided was an opportunity to structure a clearer understanding about how the program is managed, delivered, received and perceived by individuals and groups in Ottawa. This information was the basis to assess whether

there was coherence between the issues being addressed and considered by the staff, community site coordinators and the steering committee and the concerns and topics identified as strengths or challenges by the study groups.

Ethics, consent, privacy, anonymity, confidentiality and approach. To the extent possible, this project follows a community-based approach, the CIHR Guidelines for Health Research Involving Aboriginal People (2007) and the OCAP Principles (First Nations Centre, 2007). Participation was completely voluntary and based on the general characteristics of the studied population, it was assumed that everyone was capable of giving full and informed consent. The researcher ensured that each participant understood as fully as possible the purpose of the research, what was required of him/her, and the potential risks (minimal) and benefits of contributing to research in general and this study in particular.

Prior to any activity, the researcher read the consent form with the group or individual participant where each party followed with a hard copy of the form. Participants were encouraged to ask questions after one complete reading of the document. When the first reading was complete, the researcher paraphrased key sections and gave concrete examples (if needed) to ensure that participants understood what would be asked of them and to what they were consenting. Questions, comments and any issues were addressed prior to data collection and before participants provided oral and written informed consent (see Appendix P for interview consent forms, Appendix U for focus group consent forms and Appendices V1 and V2 for Talking Circle consent forms). Participants were reminded of their right to refuse to answer any question or to withdraw from the study without fear of reprisal. In the context of the group discussion sessions, participants were reminded they could engage in the discussion as much or as little as they desired or saw fit. If a participant withdrew from an interview, information would

be destroyed and audio-recordings from that session, deleted. Because of the nature of focus group or Talking Circle sessions, if a participant withdrew, the researcher assured the individual that their contribution up until the point at which they chose to withdraw would not be used.

Care was taken to ensure that participation in the study was a positive learning activity and experience. The researcher provided an ethical, safe and respectful atmosphere in which participants could engage and discuss their experiences in relation to food and health. Due to the nature of the interview, focus group or Talking Circles, participant identity needed to be disclosed for contact purposes. During the focus group and Talking Circles, participants were advised that anonymity could not be guaranteed from their colleagues who voluntarily took part in the group discussion because of the process and method. However, the researcher assured participants that all steps would be taken to not draw unnecessary attention to the meeting area and prevent any disruptions (e.g., discreet sign indicating 'meeting in progress; do not disturb).

Signed consent forms with identifying information (e.g., printed name, signature or initials) were kept separate from other research data. Any identifying data recorded in the pre-interview questionnaire, interview or focus group or Talking Circle data were subsequently documented under a numeric code and separated from raw data prior to data storage. Identifying information was discarded from the researcher's field notes and appropriate measures were taken to ensure privacy and confidentiality of audio-recordings and computer-based documents (e.g., file encryption). Processes to best ensure participant anonymity and confidentiality are detailed at length in Study 1 and these processes were also used during the collection, analysis and reporting of group-based data (see p.98).

When site coordinators arrived to the meeting location, the researcher greeted each individual and thanked them for taking part in the focus group session. The researcher distributed

a consent form to each individual and encouraged them to review its contents while everyone was still entering the room. Once everyone was settled around the central table, the lead researcher (also the moderator) introduced herself and provided a brief overview of the project, the goals for the focus group and underlined the importance of everyone's individual and collective contribution to the needs assessment. She also acknowledged the significant support each site coordinator provides to the Ottawa Good Food Box Program.

When a review of the consent form was complete and written and verbal consent to participate was obtained, participants were provided a second copy of the consent form for their personal records and given a blank ballot on which to write their name and preferred email address as an entry for a chance to win a \$25 gift certificate drawn at the end of the session. If individuals felt the need for a break, they were instructed to notify the researcher but that otherwise, the session would not last more than approximately 1 to 1.5 hours. Upon receiving unanimous agreement from participants to start, the researcher briefly underlined four guiding principles to help ensure that the session ran smoothly and was a positive experience:

- 1) Active participation: Everyone could share as much or as little as they felt appropriate. Everyone's experiences are valid and, whether they were speaking or engaging in active listening, everyone has something to contribute to the quality of the discussion and to support the study;
- 2) Courteousness and consideration for others: Participants were reminded to respect others by giving them as much time to express and share their ideas and to avoid interrupting other's when they were in the process of speaking;
- 3) Discretion: Participants were encouraged to share their experiences during the session but that the identities of those who participated were not to be shared with anyone

outside the meeting. Similarly, issues that were discussed in confidence with others were not to be judged or shared outside the meeting room; and

- 4) Respect: As all ideas and experiences were seen as supportive to the study, each person were to be treated with the utmost respect and their ideas and input were to also be respected. As there were no right or wrong answers, the idea of respecting self, others and everyone's thoughts and experiences was critical to foster a positive and receptive environment to enhance the exchange of ideas and information.

To ensure that all participants had the opportunity to be heard, the researcher finished each questions by asking if anyone had anything else to share or add before moving on to the next question. The researcher did not correct participants during the discussion as she had received previous training on group facilitation and was experienced in dealing tactfully with outspoken group members to ensure more balanced exchanges between the group. At the final question, the researcher cued participants that it was the final one in case they had other relevant information to add. At the end of the session, the researcher gave participants the option to re-visit any questions that had been asked or to share any final thoughts before bringing the discussion to a close. Once the group unanimously agreed that they sufficiently contributed what they had to share in response to both scripted and spontaneous questions, the researcher thanked them for their contribution, time and trust in sharing personal experiences with the group.

While everyone was still seated, the researcher informed the participants about the next steps in the project and then proceeded to the draw for the \$25 gift certificate. The researcher selected a participant from the group to draw a single ballot from a dark cotton bag. The name on the ballot indicated the identity of the individual who won the prize. Prior to leaving, all

participants were offered adult bus fare (four bus tickets) to and from the meeting location. The researcher also offered to stay behind in case anyone wanted to discuss anything further.

After conducting the focus group session, the researcher put a lot of care and thought into how the subsequent group sessions would be conducted based on sharing and expressing ideas and listening attentively and respectfully to what others contributed to the conversation. The researcher sought an alternative way to promote more active participation and a deeper degree of interconnectedness often not present in common methods of communication. To achieve this, the concept of a circle in subsequent group discussions was used as there is no hierarchy and everyone in the circle is assumed to be equal (regardless of status). This idea was seen as important to convey respect to participants and also to help balance the power-control hierarchy often characterised by Western research approaches.

Drawing from personal knowledge and experience, the researcher approached project partners with the idea of conducting Talking Circles as opposed to focus group sessions to revive a more democratic exchange and promote an interconnected process where everyone has a turn to speak and where all voices have a more equal chance of being heard. Originating with First Nations Leaders, Talking Circles are acknowledged as unique and excellent models for participant interaction within a safe learning environment. They are also known for their adaptive quality to circumstances where a gathering or circle of individuals require a decision based on consensus¹⁷. With the clearer integration of concepts including respect, reflection, listening and learning in the process, the atmosphere, environment and co-constructed knowledge became equally rich sources of information and interaction. Talking Circle members also have the opportunity to become the object of their own learning because the method more fully engages them in the group exchange and process.

¹⁷ Consensus is when each voice is heard in a way that conveys respect, intention, attention and consideration.

For the Talking Circles, the researcher arrived 30 minutes prior to set up the meeting room and remove any unnecessary furnishings. Upon participant arrival, each person was welcomed, instructed to sit where they felt most comfortable and provided a copy of the consent form to review while everyone arrived. When everyone appeared ready to begin, the researcher asked if everyone could provide a brief personal introduction. This was done in a clockwise fashion and the researcher was last to speak. The researcher then asked if each participant would read a paragraph in the consent form and once the reading was complete, the researcher would provide a summarized, paraphrased version prior to obtaining verbal and written informed consent. Steering committee members were provided a ballot to win a \$25 gift certificate. Good Food Box staff were alternately compensated for their efforts and time.

To set a positive and respectful tone for the circle, the researcher briefly outlined the four guiding principles used during the focus group session (see previous sub-section) but also drew from the concepts suggested by Baldwin (1998). For Baldwin (1998), Talking Circles promote the practice and skill of speaking with intention, listening with attention and self-monitoring the effects of one's contributions to the circle and dialogue. These guidelines were also critically considered to help build an atmosphere of trust, respect and safety among participants. As a general process, the researcher briefly outlined the history of the Talking Circle and mentioned that they would be applying a modified version of this ancient tool because of a particularly aggressive cold and flu season. Typically, an object of power is passed in a clock- or counter clockwise fashion (depending on the First Nations community) from person to person. The object that is passed around is considered sacred: a feather, a talking stick, peace pipe, sacred shell, wampum belt or other object of significance (First Nations Pedagogy, 2009). The idea is that only the individual in possession of the object can rightfully speak. Because of the

unforeseen circumstances under which the Talking Circle took place, each person was instructed to look the person next to them in the eye and provide a friendly nod or open hand gesture to pass along the right to speak to the next person within the circle. Once everyone understood that each question goes through a complete circle where individuals have the right to speak as much or as little as they wish (or pass their turn altogether), they were asked to be respectful, cognisant and mindful of time. Only when everyone had the opportunity to speak would the researcher ask if circle members desired to complete the circle process again (if anyone had anything to add) or pass to the next question. Finally, to respect the confidentiality of all shared information, the researcher reminded participants that all communications said within the Talking Circle be kept within the circle and not shared with outside members. Once this process was acknowledged and all questions were adequately responded, the researcher cued that they would begin the process as the voice recorder was set in place to document all shared information.

To maintain the integrity of participant responses, the researcher monitored the way in which unscripted questions were solicited in order to avoid contaminating the ideas and/or responses from participants. While each participant spoke one at a time, other circle members could reflect on what they wanted to say, listen to what their colleagues shared and structure their thoughts in meaningful ways while considering what had previously been communicated. When the final question was asked and looks and gestures had passed from one person to another in complete silence, this brought the circle to a close as no one had anything further to add. The researcher thanked everyone for their time, contribution and trust in and respect of the Talking Circle process; a method that was originally foreign to them. Because of the untimely cold and flu season, a workshop about the Talking Circle method and the significance of the talking stick was held at a subsequent Ottawa Good Food Box steering committee meeting.

With members of the steering committee, the researcher followed the same protocol used with the focus group: one gift certificate was drawn and to ensure fair play, the researcher asked a participant to choose one ballot from the bag. The name on the ticket was announced out loud as the winner of the gift certificate and provided their prize before their departure. Everyone was offered one adult bus fare to and from the meeting location. The researcher stayed behind to discuss anything further about the project.

Finally, as the pre-interview and interview processes have been detailed in Study 1, please see p.98 – 101 for more details on this phase and how the process was brought to a close.

Knowledge-sharing and results dissemination. Project participants were reminded that a report complete with findings would be made available upon completion of the analysis and write up of the dissertation. This report was completed with the assistance of project partners. Please see p.101 – 102 for more details on how findings and reports were shared with participants, community members and stakeholders.

Quantitative Data Analyses

Descriptive statistics including frequencies, means, medians and standard deviations as well as the method of analysis of variance (ANOVA), Chi-square test for independence (Pearson's Chi square) and cross-tabulations were used to examine questions related to the experience of food insecurity, food frequency and to know particular characteristics of the study sample (demographic questions). Food security status was scored according to guidelines provided in the USDA Household Food Security Core Module (Bickel et al., 2000) and frequency of fruit and vegetable consumption was also assessed as a continuous variable. Analyses were computed using the Statistical Package for the Social Sciences (SPSS) for Windows from IBM (IBM Corp., 2011) and significance of data was set at $p < 0.05$.

ANOVA. Using the F distribution, a one-way ANOVA was conducted to verify and compare mean differences between main study groups (total of three groups; current, one-time and non-participants of the Good Food box) and the frequency of fruit and vegetable consumption according to responses on the FFQ. In particular, based on the study design, the one-way ANOVA will provide statistical evidence of any differences in frequency of fruit and vegetable consumption based on participation (or not) in the Ottawa Good Food Box.

As the one-way ANOVA alone cannot verify which specific study groups are significantly different from each other, a post-hoc Tukey-Kramer Test which uses the studentized range distribution will be conducted to detect and determine which mean is different from other groups (pairwise comparisons). Because conducting multiple pairwise comparisons in a single analysis has the effect of decreasing the degrees of freedom (df), one of the benefits of applying a more conservative Tukey-Kramer method is that it is dependent on the assumption that all possible pairwise comparisons are being made, controls for alpha inflation when the homogeneity of variance is assumed and creates a set of family-wise confidence intervals on the differences between means when sample sizes are unequal (McDonald, 2014). Therefore, if the ANOVA test is significant (indicating that at least one mean is significantly different from the other groups), the Tukey-Kramer will correct for multiple pairwise comparisons with unequal sample sizes (family-wise error) and increase the validity of the statistical results where homoscedasticity is assumed (McDonald, 2014).

With a one-way ANOVA, an F statistic is generated (variance ratio) and compares the variability between groups to the variability within groups (Tabachnik & Fidell, 2007a). With the basic formula provided below, MST refers to the means squared due to groups (e.g., three main study groups; between groups), MSE is the residual means squared (means square due to

error; within groups, Y_{ij} are observations, T_i is the group total, G is the grand total of all observations, n_i is the number in the group, n is the total number of observations and k is the number of groups.

$$F = \frac{MST}{MSE}$$

$$MST = \frac{\sum_{i=1}^k (T_i^2 / n_i) - G^2 / n}{k - 1}$$

$$MSE = \frac{\sum_{i=1}^k \sum_{j=1}^{n_i} Y_{ij}^2 - \sum_{i=1}^k (T_i^2 / n_i)}{n - k}$$

To verify whether there is atleast one mean difference that is significantly different between the groups, we will verify whether the critical value of the Fisher statistic (F Test) is significant. Table 27 summarises the formulas used for the ANOVA.

When conducting an ANOVA, Tabachnick and Fidell (2007a) describe four main underlying assumptions to the analytical process that, if violated, may have a negative effect on the validity with which results are inferred and conclusions, asserted. The main assumptions are as follows:

1. Independence of observations;
2. Absence of significant outliers;
3. Normality of sampling distribution of means; and
4. Homogeneity of variance

Based on the study's experimental design (completely random design) and research question that relates to the frequency of fruit and vegetable consumption and participation in a local fruit and vegetable program (the Ottawa Good Food Box), is there a statistically significant

Table 27

ANOVA Summary of Relationships Between Values

Sources of variation	Sums of squares (SS)	Degrees of freedom (df)	Means square (MS; variance)	Fisher's F (F ratio)	P
Between (Main effect)	SS_{bet}	$df_{\text{bet}} = k - 1$	$MST = SS_{\text{bet}} / (k - 1)$	MST / MSE	
Within (Error term)	SS_{err}	$df_{\text{err}} = N - k$	$MSE = SS_{\text{err}} / (N - k)$		
Total	$SS_{\text{tot}} = SS_{\text{B}} + SS_{\text{W}}$	$df_{\text{tot}} = (k - 1) + (N - k)$			

Note. k = number of levels (or groups). N = number of participants (sample size). Adapted from "Analysis of Variance (ANOVA)" by H. Mohd Amin (2011, May). Retrieved from <http://www.slideshare.net/HazilahMohd/anova-by-hazilah-mohd-amin>

effect on the frequency of fruit and vegetable consumption (dependent variable; continuous) from participation in the Good Food box Program (independent variable; discrete)? As we predict, the frequency of fruit and vegetable consumption will be significantly more for participants who take part in the Good Food Box Program. Our hypotheses are the following:

- H_0 : There is not a statistically significant difference in the mean frequency of fruit and vegetable consumption from participation in the Good Food Box Program; and
- H_a : There is a statistically significant difference in the mean frequency of fruit and vegetable consumption from participation in the Good Food Box Program.

Prior to proceeding with the parametric test (ANOVA), several tests were conducted to assert that critical assumptions were not violated: Independence of observations/ errors, normality of sampling distribution, potential outliers and homogeneity of variance.

Verification of assumptions. To verify the assumptions that underlie the ANOVA, several tests were conducted with SPSS to confirm whether we could proceed with the parametric test and which subsequent tests or corrections would be required to generate valid results. Independence of errors/ observations: Verifying whether the assumption of independence of errors/ observations has not been violated is a question of the study's design and sampling procedure. The assumption of independence of errors/ observations refers to whether it can be asserted that the errors associated with each observation are independent from one another. Based on the current study's design and multiple sampling procedures, it can be asserted that there are different participants for each level of participation (or non-participation) in a local fruit and vegetable program. This sampling criteria and study design satisfies the criteria of and ensures the independence of errors/ observations for each response. Once participants were

screened, interviews were scheduled in a random order based on initial contact with the researcher and the mutual availability of each party to host the interview. Because the study incorporated a degree of random sampling, the independence assumption can be assumed. To confirm the absence of potentially problematic outliers and to verify that the dependent variable is normally distributed in each group, an exploratory analysis was conducted. Descriptive statistics and histogram charts were examined for any evidence of extreme scores (high or low) and abnormally distributed data (skewness or kurtosis). An initial investigation of the frequency of fruit and vegetables distribution detected two odd or unlikely responses from two participants. Subsequent to this discovery, the raw data was consulted to confirm whether this was the participant's response or whether the data was recorded incorrectly in the SPSS database. In both cases, it was a mistype and the correct value was input based on the participant's response on the questionnaire. A preliminary verification of the SPSS output of skewness values (see Table 28) provides information about the potential existence of outliers. Skewness values outside the range of ± 1 suggest the presence of outliers (Tabachnick & Fidell, 2007a). As the variables FFQ_fruit juice (1.676), FFQ_Greensalad (1.683), FFQ_Potatoes (1.670) and FFQ_Carrots (4.656) have skewness values outside ± 1 , outliers may be present. For each variable suggested to have the presence of outliers, a graph of the box plot was visually examined to determine which scores were outliers. For FFQ_fruit juice, cases 41 and 22 were identified as outliers. Cases 2 and 22 were outliers for the variable of FFQ_Greensalad and cases 40, 30, 27, 16 and 3 were observed outliers for FFQ_Potatoes. For FFQ_Carrots, cases 22 and 27 were also outliers. As expected, none were identified for FFQ_fruits and FFQ_veggies. A transformation of the values for the dependent variable affected may be required to make the scores of the outlying cases less deviant compared to the mean. It should be noted however that

Table 28

Descriptive Statistics to Verify the Normal Sampling Distribution of Means

Variable	M (SD)	Skewness			Kurtosis		
		Variance	Statistic	Std. Error	Zvalue (skewness)	Statistic	Std. Error
FFQ_fruitjuice	5.5000 (6.152)	37.854	1.676	.340	4.929*	2.821	.668
FFQ_fruit	8.7143 (8.371)	70.083	.969	.340	2.850*	-.196	.668
FFQ_Green salad	3.1837 (3.244)	10.528	1.683	.340	4.950*	3.218	.668
FFQ_Potatoes	1.8163 (1.333)	1.778	1.670	.340	4.911*	3.879	.668
FFQ_Carrots	2.2653 (3.141)	9.866	4.656	.340	13.694*	26.910	.668
FFQ_Veggies	9.2653 (8.698)	75.657	.906	.340	2.664*	-.385	.668

Note. N = 49. FFQ = Food Frequency questionnaire. Zvalues > the absolute statistic value of ± 2.58 are in boldface to indicate skewness and/ or kurtosis.

*p < 0.01.

based on an assessment of outliers through connectedness, scores for FFQ_Potatoes appear connected with the remaining cases as those that are more distant from the mean fill the gap between the outliers. As suggested by Tabachnick and Fidell (2007a), these cases may not be true outliers but rather the result of a non-normal distribution. Before transforming the data, a preliminary assessment for spread and dispersion (skewness and kurtosis) is conducted.

To investigate potential variability in the distribution of data, measures of skewness and kurtosis were considered to provide statistical evidence as to whether data followed the normal distribution curve. To determine the spread and dispersion of scores for the studied variables, Cramer and Howitt (2004) suggest conducting a significance test by dividing the measure of skewness of each variable by its standard error (standard error of skewness). To determine whether the degree of kurtosis within the sample is significantly more than normally tolerated within a normal distribution, the authors recommend dividing the kurtosis value for each studied variable by the standard error of kurtosis value (Cramer & Howitt, 2004). These calculations provide a z value where a score greater than the absolute value of 1.96 for skewness or kurtosis is judged as statistically significant ($p < 0.05$). For smaller samples, however, Tabachnick and Fidell (2007a) recommend using a more conventional alpha level of 0.01 ($z = \pm 2.58$) to determine and assess whether the presence of non-normality is significant. The following is hypothesized for the skewness of data:

H_0 : The data is normally distributed

H_a : The data is not normally distributed

Similarly, the following is hypothesized for the presence of kurtosis in the data:

H_0 : The data is normally distributed

H_a : The data is not normally distributed

The SPSS output (see Table 28) suggests that all variables are positively skewed and the sample distribution of means displays indicators of non-normality where the *z* values for skewness are all superior to the critical value of ± 2.58 . Under these circumstances, the null hypothesis is rejected that posits the absence of asymmetry (skewness) in the distribution for the studied variables (Cramer & Howitt, 2004). Further, with the exception of FFQ_fruit and FFQ_veggies, results indicate that the remaining variables displayed significant kurtosis beyond what is normally acceptable within a normal distribution as these are superior to the critical absolute value of 2.58 ($z > \pm 2.58$). As a result, we reject the null hypothesis for FFQ_fruitjuice ($z = 4.223$), FFQ_Greensalad ($z = 4.817$), FFQ_Potatoes ($z = 5.806$) and FFQ_Carrots ($z = 40.28$) and conclude that the level of kurtosis present for these variables is significantly different from the kurtosis of a normal distribution at the 5% significance level.

Although most variables demonstrate a slight positive skew (as indicated by each *z* value) and degree of kurtosis, the *z* values associated with FFQ_Carrots for skewness ($z = 13.694$) and kurtosis ($z = 40.28$) are severe and need to be addressed before proceeding with the statistical analysis of the ANOVA. To confirm the presence of non-normality within the distribution for the studied variables, a graphic examination of the shape of the distribution of each variable's histogram chart was studied more closely and, as expected and confirmed by the *z* values for skewness and kurtosis, the original state of the data for the food frequency variables significantly violates the assumption of normality.

Although statistical textbooks suggest a square root modification to the distribution of scores that deviate slightly from the mean (Tabachnick & Fidell, 2007a), because the original estimates include numerical zeros as real values within the distribution (as opposed to missing values) and are positively skewed, we proceed with a natural logarithm transformation to

enhance the symmetry of an otherwise positively skewed distribution and to decrease the dispersion of outliers from the mean. According to Osborne (2002), there are several assumptions about the variable scores on which the natural log transformation is conducted which include:

- a) That the data is positively skewed,
- b) That data points are not negative, and
- c) There are no zero values within the distribution.

Due to the presence of the scores with a value of zero within the distribution, Tabachnick and Fidell (2007a) suggest the addition of an arbitrary number (constant; c) to each score in distribution to ensure that the smallest score is at least equivalent to the constant and a natural logarithm transformation can then be performed to avoid taking the log of zero ($\log(x + c)$; Tabachnick & Fidell, 2007). The application of a constant equal to 1 (an arbitrary number) was chosen by the researcher to help make the smallest change in the data to improve and correct non-normally distributed data. The formula of $\log(x + 1)$ was used to transform each score within the variables that were positively skewed. Data for the ANOVA using the transformed data will be interpreted as a function of the transformation as this will provide new statistics for each group.

To verify whether a $\log(x + 1)$ transformation was effective in minimizing the significance of skewness and kurtosis within the distribution, we hypothesize the following regarding the skewness of data:

H_0 : The data is normally distributed

H_a : The data is not normally distributed

Similarly, we hypothesize the following for the presence of kurtosis in the data:

H_0 : The data is normally distributed

H_a : The data is not normally distributed

According to the SPSS output (see Table 29), using an alpha level of 0.01, the skeweness in all variables has been corrected to an accepted level of normal skewness within a distribution to proceed with parametric testing. Since the z scores associated with LOG_FFQ_fruitjuice ($z = 0.867$), LOG_FFQ_fruit ($z = -0.141$), LOG_FFQ_Green salad ($z = 0.482$), LOG_FFQ_Potatoes ($z = 0.556$), LOG_FFQ_Carrots ($z = 2.05$) and LOG_FFQ_Veggies ($z = -0.373$) fall within the absolute critical value of ± 2.58 we can accept the null hypothesis that suggests normality within the distribution for skewness.

The assessment of dispersion for the transformed variables using a $\log(x + 1)$ revealed non-significant kurtosis for LOG_FFQ_fruitjuice ($z = 1.289$), LOG_FFQ_fruit ($z = 1.642$), LOG_FFQ_Green salad ($z = 0.980$), LOG_FFQ_Potatoes ($z = 0.828$) and LOG_FFQ_Veggies ($z = -0.373$) using an alpha level of 0.01. For these variables, the null hypothesis is accepted which supports that normality of data. The z value for the variable of LOG_FFQ_Carrots ($z = 2.711$) indicates a slight but significant demarcation from the absolute critical value of 2.58, suggesting the rejection of the null hypothesis that posits normality within the distribution of regarding kurtosis for LOG_FFQ_Carrots with an alpha level of 0.01.

After a visual examination of the shape of the distribution of the transformed variable LOG_FFQ_Carrots with a normal curve imposed on the histogram chart and the inspection of the Normal Q – Q Plot of the variable (see Figure 3), an excess of kurtosis for this variable was unfound and the graphic distribution of the variable did not support the formal statistics for normality. While the variable's scores (with $\log(x + 1)$ transformation) are no longer terribly skewed in comparison to the mean, a logarithm transformation with a constant of 1 produced

Table 29

Descriptive Statistics to Verify the Normal Sampling Distribution of Means Based on a Log (x + c) Transformation to Scores

Variable	M (SD)	Skewness			Kurtosis			
		Variance	Statistic	Std. Error	Zvalue (skewness)	Statistic	Std. Error	Zvalue (kurtosis)
LOG_FFQ_fruitjuice	1.4884 (0.877)	0.770	0.295	.340	0.867	-0.861	.668	1.289
LOG_FFQ_fruit	1.8699 (0.949)	0.901	-0.048	.340	-0.141	-1.097	.668	1.642
LOG_FFQ_Green salad	1.1742 (0.722)	0.522	0.164	.340	0.482	-0.655	.668	0.980
LOG_FFQ_Potatoes	0.9417 (0.431)	0.186	0.189	.340	0.556	0.553	.668	0.828
LOG_FFQ_Carrots	0.9623 (0.615)	0.378	0.697	.340	2.05	1.811	.668	2.711*
LOG_FFQ_Veggies	1.9246 (0.960)	0.922	-0.127	.340	-0.373	-1.086	.668	1.626

Note. N = 49, FFQ = Food Frequency questionnaire. Zvalues > the absolute statistic value of 2.58 are in bold to indicate skewness and/ or kurtosis.
*p < 0.01.

skewness and kurtosis values nearest to 0 compared to using a larger constant value (e.g., 2, 3 and 4) which subsequently had the effect of increasing the z values for skewness and kurtosis for the variable LOG_FFQ_Carrots. To reduce the effect of kurtosis, produce fewer significant outliers and improve the distribution with a log transformation, Tabachnick and Fidell (2007a) explain that some outliers may be connected to the sample even if they present non-normality in the distribution as there may be small distances between the outlier and other values to the mean. Fortunately, ANOVA tests are relatively robust procedures against moderate deviations from normality (Verma, 2013) as demonstrated by simulation studies where the Type I error rate (false-positive) of an ANOVA with various non-normal distributions is not consequentially significant by the violation of this assumption (see Lix, Keselman & Keselman, 1996).

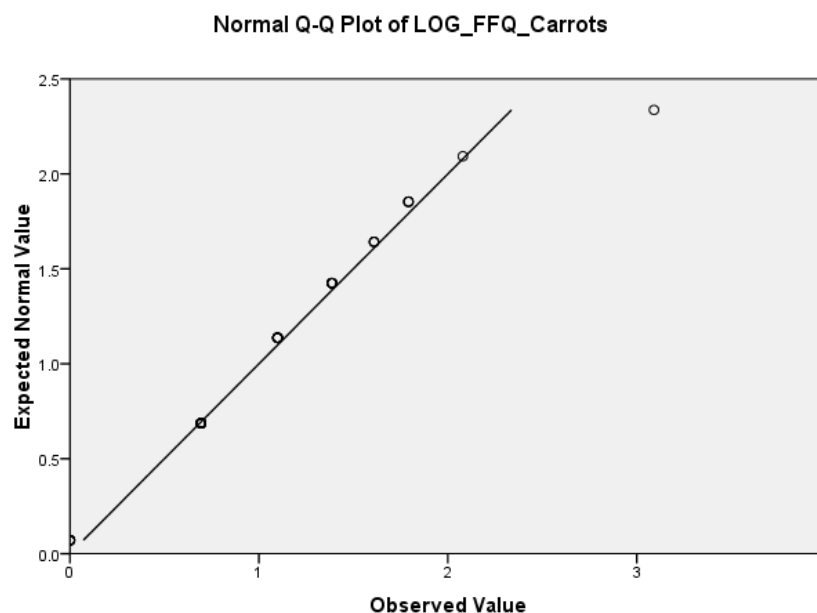


Figure 3. Q – Q Plot distribution of LOG_FFQ_Carrots after a $\log(x + 1)$ transformation to graphically inspect for normality within the distribution. The expected mean is represented by the diagonal line. Data points near this line are considered normally distributed. Data points that stray from the diagonal line in a non-linear pattern indicate a deviation from normality.

The significance test to verify whether the variance in different groups is equal (homogeneity of variance) is the traditional Levene's Test for homogeneity of variance (Levene, 1960). As a pre-condition for parametric testing (Tabachnick & Fidell, 2007a), this test is selected with the SPSS output to provide more information about homoscedasticity. Homogeneity of variance is tested on variables transformed with a $\log(x + 1)$ to correct for normality with an alpha level of 0.05. For the Levene Test, we propose the following hypotheses in reference to group variance:

H_0 : The variance in each group is equal (homoscedasticity)

H_a : The variance in each group is not equal (heteroscedasticity)

The Levene test statistics (see Table 30) indicate that homogeneity of variances can be assumed for the ANOVA test since all values of significance are superior to $p > 0.05$. Therefore, the variances are equal for current and one-time Good Food Box customers and non-customers for LOG_FFQ_fruitjuice $F(2, 46) = 1.847, p = 0.169$, LOG_FFQ_fruit $F(2, 46) = 1.37, p = 0.265$, LOG_FFQ_Green salad $F(2, 46) = 1.372, p = 0.264$, LOG_FFQ_Potatoes $F(2, 46) = 0.741, p = 0.482$, LOG_FFQ_Carrots $F(2, 46) = 2.209, p = 0.121$ and LOG_FFQ_Veggies $F(2, 46) = 0.16, p = 0.853$. As a result, we can accept the null hypothesis for homoscedasticity of variances and proceed to verify mean differences between groups now that all underlying assumptions of the ANOVA have been verified and meet the criteria for parametric testing.

Chi-square test of independence (χ^2). A brief introduction of the χ^2 analysis and its foundational assumptions have been described at length in Study 1 (see p.103) For the purposes of this study, a χ^2 test for independence is used to investigate the presence or absence of an association between two or more nominal variables with several categorical levels (Tabachnick & Fidell, 2007b). Degrees of freedom (df) are determined by subtracting 1 from the number of

Table 30

Traditional Levene's Test of Homogeneity of Variances

Variable	Levene statistic	df1	df2	Sig.
Log_FFQ_fruitjuice	1.847	2	46	.169
Log_FFQ_Fruit	1.369	2	46	.265
LOG_FFQ_GreenSalad	1.372	2	46	.264
LOG_FFQ_Potatoes	.741	2	46	.482
LOG_FFQ_Carrots	2.209	2	46	.121
LOG_FFQ_Veggies	.160	2	46	.853

Note. $N = 49$. $df1$ = degrees of freedom associated to groups ($df1 = k - 1$),
 $df2$ = degrees of freedom associated to error ($df2 = n - k$) where n is the number of
participants in the sample and k is the number of groups.

* $p > 0.05$

rows (R) and subtracting 1 from the number of columns (C) and multiplying both products.

Mathematically, the df for a χ^2 analysis of independence can be found using the following equation: $df = (R - 1) (C - 1)$ (Corder & Foreman, 2009). The alpha value for this test has been fixed at the 0.05 level of significance.

Several assumptions underly the χ^2 analysis of independence. Aron, Aron and Coups (2009) describe and discuss the following assumptions that underly the process:

1. Two or more variables are measured at the nominal or ordinal level;
2. Scores cannot be based on the same participants being tested more than once; and
3. Although there are several methods to minimise and avoid biases introduced by a small sample size (e.g., Fisher's Exact Test), typically, none of the expected frequency cells should contain a value of less than 5.

Verification of assumptions. To verify these assumptions within the current context, the current analysis seeks to verify the presence or absence of a relationship between participation in the Ottawa Good Food Box Program and food security status. Participation in the Good Food Box Program has two levels (Current customers and non-customer (or comparison group)) and food security status (defined by Bickel and colleagues (2000)) which is adapted for the purposes of the current analysis with two levels (food secure and food insecure). Participant scores are independent of other observed scores because each score relates to a different person in the sample (two independent, random samples). To ensure that expected frequencies are not inferior to 5 within the 2 X 2 contingency table, the SPSS output will be examined closely to ensure that this assumption is satisfied. In the event that it is not, robust corrective measures (e.g., Fisher's Exact Test) will be applied to ensure the validity of results and subsequent statistics based on the

data (e.g., calculation of the effect size based on the chi-square statistic to measure the association between variables where a statistically significant relationship is found).

Within the χ^2 approach, expected (theoretical) counts of categorical responses are generated and tested against observed frequencies of independent groups. Any differences between expected and observed frequencies are small when the null hypothesis is accepted and no statistical association is found between the studied attributes (thus, expected frequencies would be similar to the observed frequencies or the discrepancy between f_o and f_e is small; King & Minium, 2003; Tabachnick & Fidell, 2007b). Alternately, where comparisons between the expected and observed frequencies illustrate a significant discrepancy (size of the discrepancy relative to the magnitude of the expected frequency associated with a large χ^2 value), the null hypothesis is rejected based on statistics that suggest an associated between the studied variables (King & Minium, 2003; Tabachnick & Fidell, 2007b). The current study seeks to verify whether food security status is independent of the level of participation in the Ottawa Good Food Box.

With an alpha level set at 0.05 ($p = 0.05$), there is a 95% probability that any observed statistical difference between expected and observed frequencies will be real and not due to chance. The degrees of freedom for this test are as follows:

$$df = (2 - 1) (2 - 1)$$

$$df = (1) (1)$$

$$df = 1$$

Based on the current context, the $df = 1$ will allow the determination of critical χ^2 value at the .05 probability level according to the χ^2 distribution.

Qualitative Data Transcription and Analysis

Qualitative questions concerning the barriers and facilitating factors to the uptake of a local fruits and vegetable program and the issues related to the management and operation of the Ottawa Good Food Box Program and food distribution sites were analysed using a thematic approach (see Garko, 1999; Groenewald, 2004; Lester, 1999). Themes were derived from responses provided during the interviews and group sessions.

Field notes were taken during and after each interview and group session to record impressions, key points and (un)expected reactions. To understand the experiences from the participant's perspective in the context in which they occur, a thematic analytical strategy was used to establish and develop themes. This relies on a more general approach to qualitative analysis, namely, "constant comparative analysis" (Straus & Corbin, 1998). According to this approach from Straus and Corbin (1998), analyses are conducted across categories and themes. The analysis of qualitative data followed a modified and adapted step approach outlined by Boeije (2002). She proposes the following to help compare each piece of data with every other piece of relevant information:

1. "Comparison within a single interview
2. Comparison between interviews within the same group
3. Comparison of interviews from different groups" (Boeiji, 2002, p.395)

Themes were derived from the qualitative data collected from participants and from the researcher's field (observation) notes. The coding scheme was reviewed by another reviewer who is familiar with the project's framework and the qualitative analysis method of constant comparison. Attention was given to consensus and disagreement on the coding scheme and inter-rater reliability was conducted for the reviewers' level of agreement on emerging themes. When disagreement arose on themes and codes, a third reviewer was consulted to find resolve.

Working with community members during qualitative analyses, inter-rater reliability and data interpretation helped avoid the misinterpretation or misunderstanding of certain experiences or features that characterise program delivery and/ or management or the receipt of services from diverse perspectives. To ensure transparency and trustworthiness in the creation and interpretation of qualitative data, the same approach detailed in Study 1 was used in the analysis of data from the group discussions (see p.109).

Qualitative themes were developed and revised with assistance from several community members (one First Nations public servant, an Inuit youth program director at a local Inuit organization, a Métis program coordinator at an Aboriginal health centre and a senior graduate student in the Clinical Psychology Program at the University of Ottawa with experience in community psychology). These individuals provided assistance during the analysis of interview and group discussion transcripts, the establishment of qualitative codes and inter-rater reliability. As a measure to ensure qualitative validity, once a revised list of codes was developed, the researchers applied the method of constant comparison (Straus & Corbin, 1998) between transcripts for similarities and differences regarding the structures that influence the meaning related to the phenomena and the way it is experienced by the participants. This was used for interviews and subsequently to analyse data collected during group sessions. By becoming immersed and familiar with the different sources of qualitative data, the researcher, R.A. and project support staff became more aware of the range of issues that affect nutrition and food security, the selection, purchase, preparation and consumption of fruits and vegetables, and participation in and the management of the Ottawa Good Food Box Program.

This study applied the validation technique of information triangulation to verify the accuracy of interpretation of experiences related to the delivery and management of the Ottawa

Good Food Box. This technique was used to identify program strengths and challenges through the collection of information from all levels of people involved in the program to further investigate and corroborate themes from similar and diverse perspectives (Creswell, 2007). Discussions between the researcher and community members during this phase enabled the development of themes that were agreed-upon and the basis on which to reflect and analyse each question, interpret data, derive meaning and significance, and draw conclusions.

Results

Quantitative Results

Descriptive statistics. Forty nine participants (N = 49) completed the questionnaires and interview for the study. Thirteen participants (n = 13) identified as current Good Food Box customers, n = 14 were former Good Food Box customers (one-time customers) and n = 22 were part of the comparison group as non-customers of the Good Food Box Program.

Fifteen of the 22 participants (68%) not affiliated with the Ottawa Good Food Box Program knew about the program but not everyone knew where the nearest food distribution site was located. Of the former customers, 50% participated in the program within the past year while 14.3% participated between 2 to 5 years prior to the study and the same proportion (14.3%) were involved between 5 to 10 years prior to data collection. Seven percent (n = 1) of former customers were involved between 10 to 15 years prior to data collection and 14.3% were customers at the program's onset (mid-1990s). All former customers reported they would return to the program if major barriers to participation and customer satisfaction were addressed.

Thirty-one percent of current Good Food Box patrons were involved as customers between 1 to 3 years while 23% were customers for between 3 to 5 years. Nearly 8% were involved since 10 to 15 years prior to data collection. Thirty-eight percent of current Good Food

Box customers ($n = 5$) had become involved with the program within the last year. Of the current Good Food Box customers, nearly half (46%) had interrupted being a customer while 54% were continuous monthly customers.

Based on participant responses, the average frequency of fruit juice consumption over one week for Good Food Box customers was 2.54 ($SD = 2.33$), for one-time customers, 6.54 ($SD = 6.59$) and non-customers reported a mean of 6.59 ($SD = 7.01$). Over one week, the estimate of the mean frequency of fruit consumption was 14.46 ($SD = 7.26$) for Good Food Box customers, 10.29 ($SD = 8.99$) for one-time customers and 4.32 ($SD = 6.14$) for non-customers. The estimate of green salad consumption over one week for Good Food Box customers was 2.77 ($SD = 2.09$), 4.14 ($SD = 3.92$) for one-time customers and 2.82 ($SD = 3.35$) for non-customers. The average weekly frequency of potato consumption for current program customers was 1.62 ($SD = 1.19$), 1.86 ($SD = 1.17$) for former customers and 1.91 ($SD = 1.54$) for non program affiliates. Carrots were consumed a frequency of 1.46 ($SD = 1.27$) times over a week's time for Good Food Box customers, 2.5 times ($SD = 1.40$) for former program customers and 2.59 ($SD = 4.46$) times for non-customers. Finally, the mean weekly frequency of vegetable consumption was 11.85 ($SD = 8.25$) for current Good Food Box customers, 11.29 ($SD = 9.75$) for one-time customers and 6.45 ($SD = 7.76$) for non-customers.

The tables below indicate the proportion of positive responses by study group to questions asked in the adult version of the USDA Household Food Security Module (Bickel et al., 2000; Table 31) and several additional questions asked in the family version for households with children under the age of majority (Table 32). Based on the first several questions in the USDA Household Food Security Module asked to all households, a visual examination of results in Table 31 suggests that the majority of former and non-customers of the Good Food Box were

Table 31

Percentage of Positive Responses of USDA Food Security Adult Module Questions to Determine Household Food Security Status

Questions	Study groups									
	Adult-only households			Households with children			All households			
	Group			Group			Group			
	1 ^a	2 ^b	3 ^c	1 ^d	2 ^e	3 ^f	1 ^g	2 ^h	3 ⁱ	
Q1	45.5	69.2	88.9	100	100	75	53.8	71.2	86.4	
Q2	36.4	53.8	77.8	100	100	75	46.2	57.1	77.3	
Q3	54.5	84.6	88.9	100	100	100	61.5	85.7	90.9	
Q4	45.5	61.5	55.6	50	100	25	46.2	64.3	50	
Q4a	45.5	61.5	55.6	50	100	25	46.2	64.3	50	
Q5	36.4	69.2	61.1	100	100	25	46.2	71.2	54.5	
Q6	18.2	46.1	38.9	50	100		23.1	50	31.8	
Q7		15.4	16.7	50			7.7	14.3	13.6	
Q7a		15.4	16.7	50			7.7	14.3	13.6	

Note. GFB = Good Food Box. Group 1 = Current GFB customer, Group 2 = Former GFB customer, Group 3 = Non-program participant. N = 49. ^an = 11, ^bn = 13, ^cn = 18, ^dn = 2, ^en = 1, ^fn = 4, ^gn = 13, ^hn = 14, ⁱn = 22.

Q1 = Worried food would run out, Q2 = Food didn't last and no money to buy more, Q3 = Couldn't afford to eat balanced meals, Q4 = Adults cut the size of meals or cut meals because not enough money for food, Q4a = Adults cut the size of meals or cut meals: Almost every or some months, Q5 = Adults ate less than they felt they should because not enough money for food, Q6 = Adults were hungry but didn't eat because not enough money for food, Q7 = Adults not eat for whole day because not enough money for food, Q7a = Adults not eat for whole day: Almost every or some months.

Table 32

Positive Responses of USDA Food Security Family Module Questions to Determine Household Food Security Status

Questions	Households with children			
	Study groups			All households with children
	Current GFB customer ^a	Former GFB customer ^b	Non-program participant ^c	
	%	%	%	%
Q1	100	100	75	85.7
Q2	100	100	50	71.4
Q3	100	100	50	71.4
Q4	50		25	28.6
Q5	50		25	28.6
Q5a	50		25	28.6
Q6	50			14.3
Q7	50			14.3

Note. GFB = Good Food Box. $N = 7$. ^a $n = 2$, ^b $n = 1$, ^c $n = 4$.

Q1 = Relied only on a few kinds of low-cost foods to feed children, Q2 = Cannot afford to feed children balanced meal, Q3 = Children don't eat enough because cannot afford food, Q4 = Cut the size of children's meals because cannot afford food, Q5 = Children skip meals because not enough money for food, Q5a = Children skip meals because not enough money for food: Almost every or some months, Q6 = Children went hungry because cannot afford to buy more food, Q7 = Children don't eat for a whole day because not enough money for food.

preoccupied with the household food and money situation over the last 12 months; as indicated by positive responses to most USDA Food Security Module questions (questions 1 through 5). For 7.7% of Good Food Box customers, 14.3% of former customers and 13.6% of the comparison group, adults did not eat for an entire day. In the same proportions, this occurrence happened almost every or some months during the year. Most households with children ($n = 7$) provided positive responses to the majority of survey questions. With the exception of several participants from the comparison group (non-customers of the Good Food Box Program), all former customers of the Good Food Box Program (households with children) provided a positive response to questions 1 to 6 and the majority of current Good Food Box customers with children worried they would run out of food, experienced food running out before they could buy more, could not afford to eat balanced meals, reduced the size of or skipped meals, ate less than they felt they should, did not eat even though they were hungry and finally, occasionally did not eat for a whole day. Four participants from the comparison group with children provided positive responses to questions 1 through 5 of the module. No adults from this study group reported going hungry and not eating or not eating during an entire day because there was not enough money.

A visual examination of descriptive results in Table 32 indicate that, of the seven households with children, 85.7% ($n = 6$) relied on only a few kinds of low-cost food to feed their children, 71.4% ($n = 5$) could not afford to feed their children balanced meals. The same proportion reported that their children did not eat enough because they could not afford to buy more food ($n = 5$; 71.4%). Almost 29% (28.6%) of households with children provided a positive response to cutting the size of their child's meal because they could not afford more food and/ or that their child skipped meals because there was too little money for food. For 28.6% of the sub-sample, a child skipping meals because of inadequate finances occurred almost every month or

some months. Finally, one household with children (current Good Food Box customers) provided a positive response to the occurrence of a child going hungry because of a lack of money for food. The same household ($n = 1$; 14.3%) also reported times when children in the household did not for an entire day because of a lack of food and no money to buy more.

Positive responses such as ‘often’, ‘sometimes’, ‘yes’ and ‘almost every month’ and ‘some months but not every’ were coded as affirmative responses. The sum of affirmative responses to items in the USDA Household Food Security Module (Bickel et al., 2000) provided an overall raw score on a scale that ranged from food secure, food insecure without hunger, food insecure with hunger, moderate and food insecure with hunger, severe. Food security status was determined according to scoring guidelines for participants without children (the adult module; $n = 42$) and for households with children (family module; $n = 7$).

Table 33 provides proportions of overall food (in)security status by study groups and in the overall study sample. Results suggest the majority of former and non-customers of the Good Food Box scored along the scale of food insecure while most current Good Food Box customers (53.8%) scored as food secure. Only 21.4% of former Good Food Box customers and 9.1% of non-affiliates were food secure. No households with children were food secure. Of households with children 57% ($n = 4$) were food insecure without hunger and 28.6% ($n = 2$) were food insecure with hunger, moderate. For households without children, 63.6% of current Good Food Box customers, 23.1% of former Good Food Box customers and 11.1% of non-users were food secure. These proportions indicate that overall responses for 36.4% of current Good Food Box customers, 76.9% of former program customers and 88.9% of non-program participants suggest the experience of household food insecurity during the last 12 months since data collection.

Based on findings included in Table 34, upon verifying food security status by Aboriginal

Table 33

Percentages of Overall Household Food Security Status by Study Group

	Study groups									
	Adult-only households			Households with children			All households			
	Group			Group			Group			
Household food security status ^j	1 ^a	2 ^b	3 ^c	1 ^d	2 ^e	3 ^f	1 ^g	2 ^h	3 ⁱ	
Food secure	63.6	23.1	11.1			0	53.8	21.4	9.1	
Food insecure without hunger	18.2	30.8	50	50		75	23.1	28.6	54.5	
Food insecure with hunger, moderate	18.2	30.8	33.3		100	25	15.4	35.7	31.8	
Food insecure with hunger, severe		15.4	5.6	50			7.7	14.3	4.5	

Note. GFB = Good Food Box. Group 1 = Current GFB customer, Group 2 = Former GFB customer, Group 3 = Non-program participant. N = 49. ^an = 11, ^bn = 13, ^cn = 18, ^dn = 2, ^en = 1, ^fn = 4, ^gn = 13, ^hn = 14, ⁱn = 22.

^jFood security scale and definitions are from the "Guide to Measuring Household Food Security, revised," by G.Bickel, M. Nord, C. Price, W. Hamilton and J. Cook, 2000, *United States Department of Agriculture (USDA), Food and Nutrition Service*, Alexandria, VA. Retrieved from <http://www.fns.usda.gov/FSEC/FILES/FSGuide.pdf>

Table 34

Percentages of Household Food Security Status by Aboriginal Identity and Study Group

Aboriginal identity ^c	All households				
	Study groups				
	Household food security status	Current GFB customer	Former GFB customer	Non-program participant	All households
Aboriginal ^a	Food secure	5			2
	Food insecure without hunger		10	50	26.5
	Food insecure with hunger, moderate	5	10	5	6.1
	Food insecure with hunger, severe	5	10		6.1
Non-Aboriginal ^b	Food secure	20.7	10.3	6.9	22.4
	Food insecure without hunger	6.9	6.9	6.9	12.2
	Food insecure with hunger, moderate	6.9	10.3	20.7	22.4
	Food insecure with hunger, severe			3.4	2

Note. GFB = Good Food Box. *N* = 49. ^a*n* = 20, ^b*n* = 29.

^cAboriginal identity refers to the self-identification of being First Nation, Inuit, Métis or non-Aboriginal.

(n = 20) and non-Aboriginal (n = 29) identity and level of participation in the Good Food Box, scores from 95% of Aboriginal participants (n = 19) and 62% of non-Aboriginal participants (n = 18) corresponded with a degree of food insecurity. Thirty five percent of Aboriginal peoples (n = 7) and 41.4% of non-Aboriginal peoples (n = 12) were food insecure with hunger; rated as either moderate or severe hunger. Moreover, findings based on household food security status in dwellings without children crossed with gender (Table 35) indicate that four males (9.5%) and eight women (19%) were food secure. Three males, six females and two two-spirited participants reported scores indicative of experiencing food insecurity with moderate hunger while three females (7.1% of the sample) experienced instances of food insecurity with severe hunger. Finally, Table 36 indicates the proportion of household food security status with children crossed by gender and the corresponding study group. As all households with children were food insecure (n = 7), four of these were without hunger (57.1%; male, n = 2; female, n = 2), two were with hunger, moderate (28.6%; male, n = 1; female, n = 1) and one was food insecure with severe hunger (14.3%; female, n = 1).

ANOVA. By satisfying the underlying assumptions of the ANOVA, the analysis to verify the difference of mean frequency of fruit and vegetable consumption was conducted on the $\log(x+1)$ transformation for the intake of fruit juice, fruit, green salad, potatoes, carrots and vegetables. The alpha level for the analysis with SPSS is fixed at 0.05. Our hypotheses are the following:

H₀: There is no difference in weekly mean consumption frequency for fruit juice, fruit, green salad, potatoes, carrots and/ or vegetables based on participation in the Good Food Box;

H_a: There is a significant difference in weekly mean consumption frequency of fruit juice, fruit, green salad, potatoes, carrots and/ or vegetables based on participation in the Good

Table 35

Percentages of Household Food Security Status Without Children by Gender and Study Group

All households					
Study groups					
Gender	Household food security status	Current GFB customer	Former GFB customer	Non-program participant	All households
Male ^a	Food secure	20	10	10	9.5
	Food insecure without hunger	10	10	10	7.1
	Food insecure with hunger, moderate		10	20	7.1
	Food insecure with hunger, severe				
Female ^b	Food secure	17.2	6.9	3.4	19
	Food insecure without hunger	3.4	13.8	24.1	28.6
	Food insecure with hunger, moderate	3.4	6.9	10.3	14.3
	Food insecure with hunger, severe		6.9	3.4	7.1
Two-spirited ^c	Food secure				
	Food insecure without hunger			33.3	2.4
	Food insecure with hunger, moderate	33.3		33.3	4.8
	Food insecure with hunger, severe				

Note. GFB = Good Food Box. $N = 42$. ^a $n = 10$, ^b $n = 29$, ^c $n = 3$. Two-spirited is a pre-colonial term that refers to cross-gender identity documented in Native North American tribes and relates to gender variant people within native traditions (see Roscoe, 1988).

Table 36

Percentages of Household Food Security Status with Children by Gender and Study Group

All households					
Study groups					
Gender	Household food security status	Current GFB customer	Former GFB customer	Non-program participant	All households
Male ^a	Food secure				
	Food insecure without hunger			66.6	28.6
	Food insecure with hunger, moderate		33.3		14.3
	Food insecure with hunger, severe				
Female ^b	Food secure				
	Food insecure without hunger	25		25	28.6
	Food insecure with hunger, moderate			25	14.3
	Food insecure with hunger, severe	25			14.3

Note. GFB = Good Food Box. $N = 7$. ^a $n = 3$, ^b $n = 4$.

Food Box.

Table 37 summarises the ANOVA results and suggests a significant difference in weekly mean consumption frequency of fruit based on the F ratio of $F(2, 46) = 11.293, p < .000$. This suggests that at least one of the group means for weekly frequency of fruit consumption differs significantly in comparison to at least one other group. For this reason, we reject the null hypothesis that suggests no difference in mean frequency for fruit consumption between groups. To determine which groups differ from each other, multiple pairwise comparisons are conducted. The F ratios for the mean weekly consumption frequency of fruit juice $F(2, 46) = 2.013, p > .05$, green salad $F(2, 46) = 0.639, p > .05$, potatoes $F(2, 46) = 0.113, p > .05$, carrots $F(2, 46) = 1.454, p > .05$ and vegetables $F(2, 46) = 2.984, p > .05$ were not statistically significant different based on the level of participation in the Good Food Box Program. Based on these results, we accept the null hypothesis for these variables that suggest no mean difference between groups on the mean frequency of fruit and vegetable consumption for fruit juice, green salad, potatoes, carrots and vegetables.

Based on confirmed the homogeneity of variance for the sample from the Levene Test for Homogeneity (Levene, 1960) and since the result of the F test for the mean of weekly frequency of fruit consumption ($F(2, 46) = 11.293, p < 0.05$) is significant, a post-hoc comparison that assumes homogeneity of variance and considers data based on an unbalanced one-way ANOVA (unequal samples) is required. A Tukey-Kramer Test is used to verify which groups differ from one another based on the mean weekly frequency of fruit consumption with a family-wise error rate adjustment for conducting multiple pairwise comparisons. The family-wise error rate adjustment reduces the alpha level to 0.0167 because of the number of group comparisons for the post-hoc test (p value of $0.05 / 3$ group comparisons = 0.0167 with 98.33% confidence intervals).

Table 37

Single Factor Analysis of Variance (ANOVA) Between Level of Good Food Box Participation and Frequency of Fruit and Vegetable Consumption

One-tail ANOVA						
Variable	Sources of variation	SS	df	MS	F	<i>p</i>
Log_FFQ_fruitjuice	Between Groups	2.974	2	1.487	2.013	.145
	Within Groups	33.988	46	.739		
	Total	36.962	48			
Log_FFQ_Fruit	Between Groups	14.249	2	7.124	11.293	.000*
	Within Groups	29.021	46	.631		
	Total	43.269	48			
LOG_FFQ_GreenSalad	Between Groups	.677	2	.338	.639	.533
	Within Groups	24.367	46	.530		
	Total	25.044	48			
LOG_FFQ_Potatoes	Between Groups	.044	2	.022	.113	.894
	Within Groups	8.874	46	.193		
	Total	8.917	48			
LOG_FFQ_Carrots	Between Groups	1.079	2	.539	1.454	.244
	Within Groups	17.072	46	.371		
	Total	18.150	48			
LOG_FFQ_Veggies	Between Groups	5.085	2	2.542	2.984	.060
	Within Groups	39.190	46	.852		
	Total	44.275	48			

Note. N = 49. SS = Sums of squares. MS = Mean square. df = degrees of freedom.

* < .01, one-tailed

For unequal and small sample sizes and assumed homoscedasticity, the Tukey-Kramer post hoc test is used to detect and locate the mean difference between groups and protect against alpha inflation and Type I error (McDonald, 2014). Table 38 provides a summary of the SPSS multiple comparisons and implements the Tukey-Kramer modification of the Tukey Test and confidence intervals for mean differences. Results indicate that the mean frequency of fruit consumption for current Good Food Box customers differs significantly from the weekly mean fruit consumption of individuals who did not participate in the program ($p < 0.0167$). Concretely, Good Food Box customers consume fruits more frequently on average (Log_FFQ_Fruit, $M = 2.59$; $SD = 0.6381$, $p = 0.000$) over a weekly period compared to those who do not take part in the program (Log_FFQ_Fruit, $M = 1.31$, $SD = 0.8007$). Conversely, the average weekly fruit consumption of former customers (Log_FFQ_Fruit, $M = 2.08$, $SD = 0.9060$) is not statistically different from the mean fruit intake of current customers and non-program users with an alpha level of 0.0167 (98.33% confidence intervals around the means).

With 98.33% confidence, results suggest that participation in the Good Food Box Program has a positive effect on the behaviour of fruit consumption. Figure 4 graphically displays the mean of the three study groups for weekly mean fruit consumption. The X axis (abscisse) represents the three groups: Good Food Box customers, one-time customers and non-customers while the Y axis (ordinate) designates the average frequency of fruit consumed over a week period by study group according to the $\text{Log}(x + 1)$ transformation of data.

Table 38

Multiple Comparisons Between Level of Participation in the Good Food Box Program and Reported Mean Frequency of Weekly Fruit Consumption Using Tukey-Kramer Test

Dependent variable	Group (I)	Group (J)	Mean difference (I - J)	Std. Error	P	98.33% CI	
						LL	UL
LOG_FFQ_Fruit	GFB customer	One-time GFB customer	.51085	.30593	.228	-.3672	1.3889
		Non-GFB customer	1.27991*	.27786	.000*	.4824	2.0774
	One-time GFB customer	GFB customer	-.51085	.30593	.228	-1.3889	.3672
		Non-GFB customer	.76906	.27155	.018	-.0103	1.5484
	Non-GFB customer	GFB customer	-1.27991*	.27786	.000*	-2.0774	-.4824
		One-time GFB customer	-.76906	.27155	.018	-1.5484	.0103

Note. N = 49. GFB = Good Food Box. Std. Error = Standard error. CI = confidence interval; LL = lower limit, UL = upper limit.

*, The mean difference is significant at the 0.0167 alpha level.

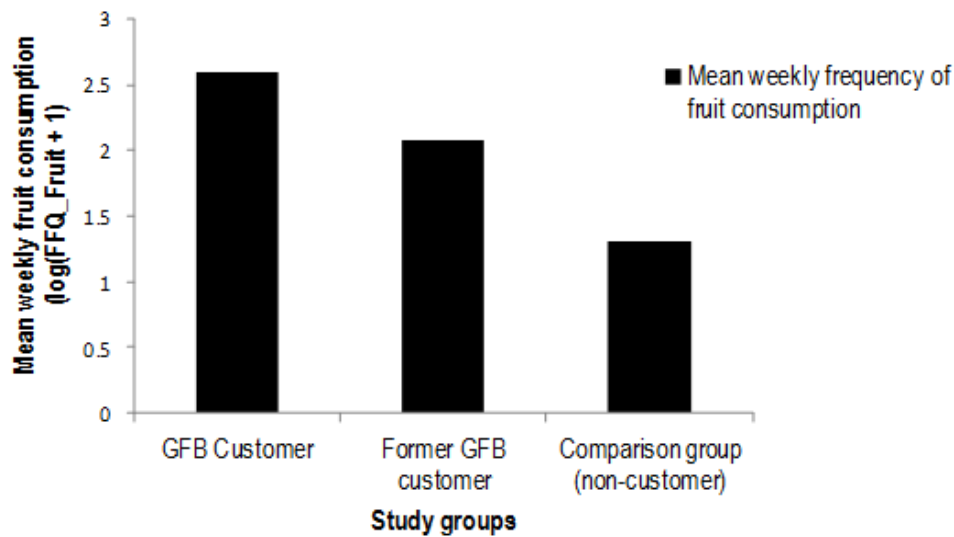


Figure 4. GFB = Good Food Box. Histogram comparison of mean weekly frequency of fruit consumption by level of Good Food Box participation. A positive effect is found for mean weekly frequency of fruit servings between Good Food Box customers and non-customers; meaning Good Food Box customers reported eating fruits more often than the comparison group.

Effect size: Eta and omega squared. The results above indicate that the participation in the Ottawa Good Food Box (independent variable) had an effect on fruit consumption and it is unlikely that the observed mean difference among groups occurred haphazardly. However, from the descriptive information and statistics, it is uncertain how much of a difference is made by the independent variable alone. The simplest measure of effect size for an ANOVA is using the Eta squared (η^2 ; also referred to as R^2) according to Tabachnick and Fidell (2007b). To calculate the effect size of the level of Good Food Box participation on mean frequency of fruit consumption, the following formula is used:

$$\text{Eta squared} = \frac{\text{Sum of Squares Between}}{\text{Total Sum of Squares}} \quad \text{or, algebraic expression} \quad \eta^2 = R^2 = \frac{SS_{\text{bet}}}{SS_{\text{Tot}}}$$

Based on the SPSS output for the ANOVA (see Table 37), the Sum of Squares between (14.249) divided by the sum of squares total (43.269):

$$\eta^2 = R^2 = \frac{14.249}{43.269} = 0.329$$

According to Kirk (1996) the magnitude of the effect size can be interpreted according to the following guidelines where 0.01 is a small effect size, 0.059 is a medium effect and a value of equal or greater to 0.138 is a large effect. In line with Kirk's (1996) guidelines, the effect size for the current study is considered large where 32.9% of the variance in (or, change) frequency of fruit consumption is influenced by participation in the Ottawa Good Food Box.

As a critique of the η^2 measure, Tabachnick and Fidell (2007b) underline that η^2 is a more biased estimate of the proportion of variability in the dependent variable accounted for by the independent variable in the study's sample and tends to overestimate the effect size in the population from which the sample was drawn. To provide a calculation of effect size that is unbiased and generalizes to the population, Tabachnick and Fidell (2007b) propose the omega squared (ω^2) estimate of the parameter because it adjusts for the overestimation of the effect size by η^2 . For this reason, the ω^2 is typically smaller than the η^2 (Tabachnick & Fidell, 2007b). The following formula will be used to calculate an unbiased parameter estimate of the effect size of Good Food Box participation on mean frequency of fruit consumption that may generalize to the population:

$$\omega^2 = \frac{SS_{\text{Bet}} - (df_{\text{Bet}})(MSE)}{SS_{\text{Tot}} + MSE}$$

$$\omega^2 = \frac{14.249 - (2)(0.631)}{43.269 + 0.631}$$

$$\omega^2 = \frac{14.249 - 1.262}{43.9}$$

$$\omega^2 = \frac{12.987}{43.9}$$

$$\omega^2 = 0.296$$

Based on the omega squared result of 0.296 and according to Kirk's (1996) guidelines, there is a strong relationship between the mean weekly frequency of fruit consumption and participation in the Ottawa Good Food Box. Results suggest that almost 30% (29.6%) of the difference in mean frequency of weekly fruit consumption may be influenced by Good Food Box participation (compared to non-participation).

Chi-square test of independence (χ^2). A total of 49 cases were used to study the relationship between level of participation in the Ottawa Good Food Box and food security status. Forty-nine study participants ($N = 49$) self-reported whether they were current program customers or not currently involved and grouped accordingly. As a result, 13 participants ($n = 13$) provided a positive response when asked about their affiliation with the Good Food Box Program and 36 participants identified as non-affiliates and comprised the comparison group ($n = 36$). In the current study, we hypothesize the following regarding the independence of categorical variables:

H_0 : In the general population, there is no association between participation in the Good Food Box Program and food security status; and

H_a : In the general population, there is a predictable relationship between participation in the Good Food Box Program and food security status.

Based on the χ^2 distribution, the critical χ^2 value for $df = 1$ at the significance level of .05 ($p = 0.05$) is 3.84 and the critical χ^2 value for $df = 1$ at the significance level of .01 ($p = 0.01$) is 6.64. The following formula is used to calculate expected frequencies (f_{ejk}) in each cell to

populate a 2 X 2 contingency table of expected and observed frequencies (King & Minium, 2003);

f_{ejk} is the expected frequency, f_{row} is the total frequency for the row, f_{col} is the frequency for the column and ' n ' is the sample size:

$$f_{ejk} = \frac{(f_{row})(f_{col})}{n}$$

To obtain the χ^2 value, the following formula is used based on calculating the square of the discrepancy between f_{ojk} and f_{ejk} and divided by f_{ejk} . The sum of the four components in the 2 X 2 contingency table is the calculated value of χ^2 :

$$\chi^2 = \sum \frac{(f_{ojk} - f_{ejk})^2}{f_{ejk}}$$

The f_{ojk} and f_{ejk} for each cell and the corresponding χ^2 value is provided by the SPSS output in Table 39. Confirmed in χ^2 test output, the χ^2 value with $df = 1$ is calculated at 11.13 according to the Pearson χ^2 value ($\chi^2_{(1)} = 11.13$; the discrepancy between the calculated version and the output may be a question of rounding). Although some statisticians have argued that that uncorrected χ^2 value is reasonably accurate with f_{ejk} cell values as low as 2 (see Camilli & Hopkins, 1978; Delucchi, 1983), others recommend bringing a conservative correction (e.g., Yates' Continuity Correction in a 2 X 2 table; Fleiss, 1981; Greenhouse, 1990) to the statistic in order to reduce the statistic value (and as a consequence, reducing the power). This correction renders the χ^2 statistic more conservative where some statisticians have shown how the Yate's Continuity Correction statistic may even over-correct for 2-sided tests (Maxwell, 1976); making it more difficult to reject the null hypothesis (see Haviland, 1990). Because of these limitations with the Yates' Continuity Correction, Corder and Foreman (2009) and Howell (2013) suggest using the Fisher's Exact Test statistic as it does not rely on the underlying assumptions of the χ^2 because it is not based on the χ^2 distribution. Fisher's Exact Test provides a p value and will be interpreted based on its value. Therefore, because one cell in the contingency table is inferior to 5

Table 39

Expected and Observed Frequencies for each Cell in A 2 X 2 Contingency Table Based on Food Security Status and Level of Participation in the Ottawa Good Food Box Program

		Food security status		
Participation in the GFB		Food secure	Food insecure	f _{row}
GFB customer	Count	8 (3.4)	5 (9.6)	13
	% within Row	61.5 (26.2)	38.5 (73.8)	100
Non-GFB participant	Count	5 (9.6)	31 (26.4)	36
	% within Row	13.9 (26.7)	86.1 (73.3)	100
f _{col}	Count	13	36	49
	% within Row	26.5	73.5	100

Note. N = 49. $\chi^2 = 11.13$, df = 1. GFB = Good Food Box. Expected frequency values are in boldface in parentheses to the right of each observed frequency.

f_{col}=marginal column frequency, f_{row} = marginal row frequency.

and violates the assumption that no f_{ejk} cell count should contain expected values lower than 5, the statistic provided by Fisher's Exact Test is reported.

Table 40 provides tests of association with data on the association between food security and level of participation in the Ottawa Good Food Box. The Pearson's chi-square, $\chi^2_{(1)} = 11.13$, $p = 0.001$, and Yates' Continuity Correction statistics, $\chi^2_{(1)} = 8.81$, $p = 0.003$, provide suggestive, albeit limited and biased evidence to reject the null hypothesis given the violation of the assumption of the absence of expected frequencies smaller than 5. Fisher's Exact Test provides evidence to reject the null hypothesis that suggests food security and participation in the Ottawa Good Food Box are independent and unrelated ($p = 0.002$). Significant results from Fisher's Exact Test ($p = 0.002 < p = 0.05$) indicate that food security status is related to level of participation in the Good Food Box Program and expected and observed frequency differences are statistically different. Based on these results, the critical $\chi^2_{(1)}$ value for $p = 0.05$ (3.84) and $p = 0.01$ (6.64) are statistically inferior to the obtained value of $\chi^2_{(1)} = 11.13$ and we can reject the null hypothesis with 99% confidence intervals. Based on the statistically significant discrepancies between the observed and expected frequencies, we can conclude that individuals who do not take part in the Good Food Box are likely to express preoccupation with the household's financial and food situation in line with food insecurity compared to current Good Food Box customers.

To test the strength of the association between food security status and participation level in the Good Food Box within a 2 X 2 contingency table, the phi coefficient (ϕ) is tested and ranges between a value of 0 (no association) to 1 (perfect association; King & Minium, 2003). The ϕ value is interpreted according to Cohen's (1988) guidelines where 0.1 indicates a small effect, 0.3 is a medium effect and 0.5 is a large effect. The formula for the ϕ is the following where χ^2 is the calculated χ^2 value and n is the sample size:

Table 40

Chi-Square Tests of Association for Food Security and Level of Participation in the Good Food Box Program

Test of association	Value	Df	Asymp. Sig. (2-sided)	<i>p</i> (2-sided)	<i>p</i> (1-sided)
Pearson Chi-square	11.13 ^a	1	0.001**		
Continuity Correction ^b	8.81	1	0.003**		
Fisher's Exact Test		1		0.002**	0.002**

Note. N = 49. $\chi^2 = 11.13$, df = 1. Asymp. Sig. = Asymptotic significance. Two-sided refers to testing of the alternative hypothesis (variables can be positively or negatively associated) versus the null hypothesis of no association.

^a1 cell (25%) has an expected count less than 5 where the minimum expected frequency is 3.45.

^bComputed only for a 2 X 2 contingency table.

** $p < .01$

$$\phi = \sqrt{\frac{\chi^2}{n}}$$

$$\phi = \sqrt{(11.13/49)}$$

$$\phi = \sqrt{0.227}$$

$$\phi = 0.476$$

A ϕ value of 0.476 indicates a medium to large association between food security and participation in the Good Food Box.

Odds ratio and relative risk estimates provide more information about the dependency between food security status and level of participation in the Ottawa Good Food Box and are provided in Table 41. By visually inspecting the row percentages of the cross-tabulation of participation in the Good Food Box and food security status, 61.5% of current Good Food Box customers and 13.9% of non-affiliates were food secure. Results suggest that the odds of being food secure are 9.9 times greater if you are a current Good Food Box customer compared to 0.1 times smaller¹⁸ if you're not. The relative risk of being food secure as a program customer is 4.43 which is congruent with the row percents based on the cross-tabulation of variables and the relative risk of food insecurity as a Good Food Box customer which is smaller at 0.45.

¹⁸ Calculated by taking the inverse of 9.9 (e.g., 1/x)

Table 41

Risk Estimates Related to Food Security and Participation in the Good Food Box Program

Risk estimates	Value	95% CI	
		LL	UL
OR for Participation (GFB customer/ non-affiliates)	9.92	2.30	42.85
For cohort (Food security status = food secure)	4.43	1.76	11.11
For cohort (Food security status = food insecure)	0.45	0.22	0.90

Note. N = 49. OR = odds ratio; GFB = Good Food Box; CI = confidence interval, LL = lower limit, UL = upper limit.

Qualitative Results

As the inter-rater reliability results for single interviews with Aboriginal and non-Aboriginal participants have been detailed in earlier in Study 1 (see p.110), qualitative data for the group discussion sessions were coded with the assistance from a senior graduate student in Clinical Psychology. Based on 178 randomly selected quotes as part of the inter-rater reliability process for the focus group session with volunteer Ottawa Good Food Box Coordinators, 157 codes were agreed upon by the raters; indicating an inter-rater reliability of 0.88 (157/178) for this group. Further, 126 quotes were selected from the Talking Circle transcript with Ottawa Good Food Box staff members and, of these, 112 were agreed upon; indicating an agreement rate of 0.88 (112/ 126). Finally, a 0.95 rate of agreement was achieved based on 110 codes for the Talking Circle with steering committee members. These rates provide a high rate of confidence in the analysis process of group-based qualitative data.

Knowledge about the Ottawa Good Food Box Program (from non-users). For most, program and product information came from more distal interpersonal relationships including friends and acquaintances, roommates, co-workers and even by word-of mouth from other program customers. The program was also promoted by site coordinators, social workers, rehabilitation councillors and office administrators (secretary). For one non-program user who experienced hardship, gathering information from a current program customer was an important step to know whether it may be a good fit:

“One gave me a so-so review, the other gave me a rave review and said: *“I really depend on it”* and so on so... It’s almost like fate or something; I’m bouncing back financially.”

Knowing the community’s perception about the Ottawa Good Food Box Program and its components can help program and site coordinators assess the types of information that may

promote or hinder the program's image or its uptake. The themes about program knowledge and perception by non-program affiliates are summarised in Table 42. Non-program users knew the program was a monthly initiative that they offered fruits and vegetables at different price points with a structured ordering process. Participants were also aware about its collection process through a food distribution site:

“He promoted it. He pays so much money at the beginning of the month and then a couple weeks later, he picks up this box.”

“The community centres because I've picked up information at [location] and the people were very good at promoting it and explained it to me while giving adequate information; even a schedule of all the dates of like: pay by this date; pick up this date; how it works; the name of someone I could meet with.”

For others, feedback related to the content and quality of the fruits and vegetables; comments were in terms of the appearance, size, taste and cost:

“He did say he wouldn't dissuade me from trying it. He thinks I should try both. He was raving about one box he got; how big and good and tasty, and the flavour. I was like drooling, right?”

“C'était des fruits et des légumes à meilleur marché. Pis y'étaient belles; sont beaux.”

“From what I've read, you can get a box of food for \$5, \$10, \$15 or \$20. I know that \$25 is organic fruits and vegetables or you can get a box of just local produce that's seasonal.”

Non-participants felt the food box cost was reasonable and may offer good value on investment:

“I heard [about] the cost. During the month when you run out of food, it's nice to know

Table 42

Knowledge and Perception of the Ottawa Good Food Box Program as Understood by Individuals not Involved in the Program

Themes and issues	Example
Monthly ordering process	
Product content	- Produce quality: Appearance, size, taste, locally grown produce, organic produce; - Produce variety;
Product cost and format sizes	
Impression of the GFB	- Negative: Unpractical - Positive: Competent site coordinators, convenient, available to everyone, increases access to fruits and vegetables, save money, good value, supports local economy, supports local farmers, provides food security, share cooking knowledge;

that you have it to look forward to around the middle of the month and, it's reasonable."

Word of mouth is one way to transmit program information to potential customers as personal accounts can influence the impression of those who may not have firsthand program experience. For this reason, it is important to know the individual perception about the program and how it is branded in the minds of current and potential customers.

Perception of the Good Food Box Program. Testimonials from current and former program participants were negative, positive or a mix of both (see Table 42). For non-customers, personal curiosity had yet to be appeased. For one Aboriginal person, after seeing what was in the food boxes, much of the fruit and vegetable content was less familiar and as a result, less desirable. Investing money for the receipt of produce that may not be desired was unpractical:

"Initially when I saw the boxes coming in through Wabano, honestly there was a lot of stuff in there that I wouldn't have eaten... strange vegetables I've never even seen and whatnot."

Positive program perceptions related to convenience and competent site coordinators. The program was described as important, available to everyone and a beneficial program for those who can take part:

"I think it's great for people on low income, but not just low income. It's convenient to go pick it up and to save money. It's great."

"It's an excellent program. They are there to help and help your diet be more nutritious."

It was acknowledged that program benefits extend beyond customer participation as patronage also supports the local economy and the livelihood of farmers:

"It's good especially 'cause it's helping local farmers. I think that's good for supporting the economy [...]."

For others, the program increases access to good quality fruits and vegetables, provides food security and saves people money:

“To introduce people who haven’t had the pleasure of really enjoying fresh fruits and vegetables and who are used to, say canned or frozen....”

“That you can probably get a box that are cheaper than going into the market or grocery store.”

Several First Nations and Métis participants enjoyed how the site at the Wabano Centre for Aboriginal Health occasionally integrates produce from the Good Food Box in community kitchen classes:

“You can buy affordable vegetables and fruits and they’ll teach you how to cook inexpensive meals or nutritious meals cheaply.”

Understanding individual uptake of the Ottawa Good Food Box Program. This section summarises the main factors that influence the uptake of the Ottawa Good Food Box Program. For some, curiosity about the program enticed them purchase a food box. For others, convenient access to a pick-up location or knowing family members or friends who were involved supported their decision to participate:

“I’m involved in your study because I’ve only recently looked into it. Networking and asking questions about it with interest. I love the taste of fresh vegetables. I’m about to take that big step because it looks like I recently got service.”

“It’s handy. It’s easy to get fruits and vegetable than having to go out. I don’t drive so, [the GFB] is in walking distance but my brother gets it too so he picks it up. My sister gets it too, so he picks up the three of them. He just drops them off to us. He drives.”

For others, program participation could support healthy lifestyle choices where customers can access fresh produce and offset cross-town travel expenses:

“I ate a lot of vegetables before I was a vegetarian. Even if I wasn’t one I would still purchase the Good Food Box just because there is so many good vegetable in there. It’s nice not having to go all the way to [grocery store] and back”

For others, financial need or the desire to save money motivated program uptake:

“When I started doing it 12 years ago, I did it once or twice and stopped for a period of about 11.5 years. Only out of extreme dire financial straits have I started again.”

“I think it was just to offset what I needed and I think the abundance of the food that I got for the price I paid.”

Barriers to participation in the Ottawa Good Food Box Program. Table 43

summarises themes related to the major barriers to participation in the Good Food Box Program as identified by former customers and non-users.

Physical factors. Like many who take part in the program, access to a food distribution site within proximity to the workplace or home plays a determining role in program participation. Not having a neighbourhood food box site prevented some from taking up the program but did not discourage some determined households from finding other community food outlets nearby:

“Because I moved to Vars and they didn’t have a Good Food Box program but I had farms all around me though.”

Economic factors. For many former customers and non-users, program participation depends on how much money they can save on foods that household members already eat. Grocery stores offer discounts on different produce throughout the year and are direct program

Table 43

Summary of Barriers that Challenge Participation in the Good Food Box Program

Factors	Issues	Example
Physical factors	Access to GFB site	- No neighbourhood GFB site
Economic factors	Competition for savings Money	- Grocery store
Program-specific issues	Ordering process Food box content Inability to select produce No delivery Unaware about the program	- Point of contact - Food quantity, food quality, food variety, little quantity of food for cost of food box
Social factors	Stigma	
Individual factors	Health and physical mobility issues Personal schedule Transportation	- Fibromyalgia, sore feet, food allergies/ sensitivities - To and from GFB site (with food)

Note. GFB = Good Food Box.

competition. Periodic sales at grocery stores can mean bigger savings and shoppers can select the types, quantities and varieties of food they want:

“It was about \$5 cheaper than if I had gone and bought all those things, except sometimes if it’s on sale, I would’ve got a better price.”

“Maintenant que je fais mon épicerie, j’ai découvert [nom d’épicerie] et les prix sont très bons. Donc j’ai réalisé que ça vaut pas la peine et puis je peux manger ce que je veux. Si je veux du brocoli et si y’en a pas dans la Boîte verte je vais être déçu. Tandis que je peux aller au [nom d’épicerie] et l’acheter moi-même. Je trouve que la Boîte Verte c’est bon pour quelqu’un qui n’aime pas trop faire l’épicerie ou regarder les spéciaux mais quelqu’un qui est prêt à le faire, ça vaut pas la peine. ”

“I felt that we didn’t get enough for our money. We got a few fruits such as maybe apples, oranges. Nothing beyond that. Didn’t seem like a good quantity of stuff! I could go to the grocery store for that \$10 and buy a lot more. Sad to say, but it’s true.”

The commitment required to pre-order and collect food boxes was another drawback. For some, the grocery stores offered a more spontaneous appeal that corresponded with their buying habits and routine. Explained by one Aboriginal participant:

“I grabbed a flyer from Wabano. I glanced at it and intended to purchase it. By the time I’ve done my grocery shopping I don’t really need to get it. I don’t necessarily think about the date and timing. I just never follow through with planning on giving the \$20 to Wabano or forget to pick it up.”

For several Aboriginal and non-Aboriginal study participants, having enough money to pay for the food box was a challenge that prevented program participation:

“When it comes down to it, you know, you need a buck to get it.”

For several former customers, the payment deadline to purchase a food box did not coincide with the date when they received government financial assistance. Because of this participants had to bow out from the program:

“The week of the payment thing. It was so close to the end of the month and some of us won’t get anything till the end of the month. I can have something budgeted but not always. Trying to keep that budget for later. If it is like first week of the first month, that makes it easier for everybody. If not, you got to wait for the next one.”

As a result, numerous former customers and non-affiliates felt the program was a great initiative but could not participate because of a lack of money to finalize their purchase.

Program-specific issues. Another barrier to program participation was confusion over who to contact to get program information or how to process an order:

“The challenge is the contact information. To know who [to speak to] instead of signing up and ‘*we’ll get back to you*’. Having someone physically. If I can’t speak to someone right away, then I’m not going to bother.”

For some, having little control over the produce quantity led to disappointment. Some felt they did not receive enough for their investment:

“I just couldn’t balance out how much I paid for it and what I got for my value of money for it. If they could improve the quantity with how much I’m spending, I would go back.”

For several non-Aboriginal people, an important barrier to program participation was the inability to select their own fruits and vegetables:

“I’m leery about using it because I like to pick my own fruits and vegetables. If I get something I don’t like, it will go to waste. Or do they give me vegetables I don’t like, like artichoke hearts or asparagus, you know? People eat it. I don’t like it.”

As the Ottawa Good Food Box Program strives to introduce new fresh food produce varieties and inform and educate households about the benefits of eating certain foods, some former customers were not looking to incorporate new foods or recipes but just getting enough familiar varieties at a fraction of the cost of what they would spend elsewhere:

“You don’t get to choose from a list necessarily. It is a packaged thing. There was at least one or two things I wasn’t willing to learn how to use.”

For one newer Aboriginal resident who sought program information, the absence of a delivery service among other aspects deterred him from becoming a customer:

“I always asked: Do they deliver or how much does it cost? Important questions because 1) I got lost easy in Ottawa and had no transportation; and 2) I was iffy about price. I didn’t know if it was gonna be \$15 a box and I wasn’t sure if they’d put everything I need in there... if it’s fresh or if it’s gonna be... you know? I didn’t really trust.”

As described by current customers, people in their social circles were still not aware about the program and the lack of program visibility or signage was likely a barrier to its uptake:

“More locations or just spreading the word. A lot of people don’t know about it and I talk it up a lot. I’m always surprised when, students who are looking to save as much money as possible don’t know about it.”

Social factors. Specific social factors affected the thoughts and behaviours fed into an uneasiness to participate in the program. Worried how others may perceive them if their participation became known was a barrier for some to sign up. Others felt the program was generally misunderstood as a food buying alternative for marginalized households. Because of this invisible gaze, some felt like program participation associated them to less desirable groups:

“Let them know more about it in advance and to advertise it more. To advertise it to everybody instead of making it seem ‘*This is for those destitute ‘down and out’ people.*’

Individual factors. Continued patronage became complicated due to personal health issues. Specifically, several individuals explained how having fibromyalgia, arthritis and sore feet affected their ability to continue to take part in the program since hauling the food box from the pick-up location required lifting and transporting heavy goods:

“Someone say to carry the box but I cannot carry the box. [...] Sometimes I have to carry the things [...] so I don’t have the money [for delivery], so I have to carry. I have to live days with all my pain”

“Maybe I could get a bag but I can’t carry like the whole thing because my health. I am not supposed to carry heavy stuff. My feet [are] sore and I’ve got arthritis in my legs.”

For others, food allergies and sensitivities prevented them from participating in the program. Some people preferred to not risk that they would invest in a purchase that they could not fully benefit from or enjoy. For a former customer (Métis, female), allergies to numerous foods made participation in the current program structure less than satisfying:

“I tried it on and off with [Aboriginal health centre] about 2 years ago at least and it didn’t work for me because of what I told you; because of the long list of allergies [...] Some didn’t look fresh and the others, well, I was allergic to and I couldn’t eat. Like, I can’t eat turnip, I can’t eat garlic, onions, shallots.”

For one former customer and non-affiliate (both Aboriginal), a busy schedule challenged their ability to allocate time to collect their food box during operation hours:

“For me, if I go to school, then like if I have to run for some place later on, it takes a lot of travelling to go there. I’m not prepared for that.”

“It’s good, yeah, but just never had time to go wait in there. (*Laughs*)”

Finding convenient transportation to and from a neighbourhood food box distribution site was difficult for some who had to travel far distances to arrive to the nearest pick-up site. For others, having extra goods to carry made the trek home from the site more challenging because of health complications where even traveling short distances were exasperating:

“Some are not mobile. They can’t take the bus or if they do they’re havin’ trouble.”

Some physical, economic, program-specific, individual and social factors challenged participation in the Good Food Box Program for some households. Multiple barriers acted together to emphasize the program’s potential lack of fit with consumer food habits and purchasing behaviours. Because of this, program uptake did not appear feasible.

Understanding program attrition: Ottawa Good Food Box Program. Table 44 is a summary of themes related to why individuals may drop out of the Good Food Box Program.

Physical factors. For another individual, no longer having neighbourhood access to a site meant having to drop out of the program. For another current customer, seasonal activities including scheduled time outside the city influenced sporadic program attrition:

“I think they changed locations. They never advertised; they never told the people here. They don’t inform... they kind of hiding it. I feel like discriminated. That’s not nice. I discovered those things and then I say that’s why I don’t come here.”

“I skip a month in the summer August, June or July or perhaps both. That’s happened twice 2 years in row either because I am out of town or, you know what I mean, like house sit for a friend [where] the farmers market is close by. I get to choose what I like instead of a surprise.”

Table 44

Qualitative Themes Related to Customer Attrition From the Ottawa Good Food Box Program

Factors	Issues	Example
Physical factors	Access to GFB site	- Changes to neighbourhood GFB site
Economic factors	Incurred parking cost No money	- High parking fees (e.g., campus)
Program-specific issues	Ordering process	- Inconvenient and confusing - Missed order deadline
	Food box content	- Perception of poor fruit and vegetable quality
	Previous less positive program experience	- Non receipt of food box
Social factors	Sense of altruism	- Allow others to benefit from program
Individual factors	Wasted more food than consumed	- Could not eat all food box produce

Note. GFB = Good Food Box.

Economic factors. Occasionally, the savings can be offset by other incurred costs. For one former non-Aboriginal customer, the extra parking costs on a local college campus forfeited the purpose of trying to save money since it was immediately spent on campus parking:

“Oui mais vu que là je suis étudiante ou si y’a une place plus près que je peux m’y rendre avec ma voiture à ce moment je vais y aller. C’est juste que là si je suis à [nom de collègue], bien là faut que je paye un parking. C’est pas économe pour moi.”

For former Good Food Box customers, not having money by the deadline to complete their order made it difficult to continue as a regular customer. For some former customers, a lack of synchronicity between the deposit of government assistance cheques and the payment deadline to finalise the food box order caused some to drop out of the program:

“What didn’t make me continue was the fact that I couldn’t get the money. It’s hard for me. The way that the person used to arrange payment was on the 22nd. It wasn’t the beginning of the month. So, even though it was set, I used to get the vegetables and fruits in the middle of the month, it was a week after that I used to have to pay.”

“It had nothing to do with the program. It was personal economical choices that I had to bow out.”

Program-specific issues. Several former customers liked the idea of purchasing their fresh produce through a local food distribution site and saving money but the ordering process was inconvenient, confusing and a hassle which deterred them from returning:

“I would have liked to keep doing the food box. The reason why I kind of stopped wasn’t because I wasn’t enjoying the food box but because it just ended up being more of a challenge to order it than anything else.”

“That would be the hassle of trying to order it.”

For others, forgetting to make their purchase prior to the closing date to finalize an order snowballed into missing too many dates in a row to desire returning to the program. Meeting the deadline for subsequent orders without any recall cues made forgetting a common occurrence:

“The reason I stopped was the accessibility of how I was ordering the box and then picking it up. I was a little bit unsatisfied. You have to order by a certain day on a certain week of the month and I felt it was just getting confusing and it wasn’t very clear. [...] it just didn’t seem very convenient.”

Some people felt that the program’s fruits and vegetables did not meet a personal standard of acceptability which is why they decided to cease participation:

“Some of the fruits were overly ripe. Some of the vegetables were not ripe at all and that’s what made me stop actually going to that one.”

“The apples were bruised like, soft and... you know what I mean? I had to cut these parts off with a knife. I know I want to do this in the future, but that’s on my mind. Will it be fresh? Will I have to do some cutting? I hope it’s fresh and maybe that delays me a bit.”

For former customers, a less satisfying program experience was sometimes enough to convince people to withdraw:

“It just made me feel like uncomfortable to go back. There was a few people whose box didn’t get delivered. It was consistent about 2 or 3 times in a row. I didn’t feel like going back for a while.”

Social factors. A sense of altruism resonated through some responses as the reason for withdrawing from the program. For one post-secondary student and former Good Food Box customer (non-Aboriginal), finding more stable employment and income related to feeling like she should not take advantage of a program that aims to provide income-relief:

“For me it was an issue of like... I was running out of money at the end of the semester and now that it’s summer and I have a new job, I feel like I can afford to buy vegetables so maybe I should let someone else use it.”

Individual factors. For several former customers (Aboriginal), food waste was a major issue that influenced program attrition. Although unclear what factors related to the outcome of food waste (e.g., the food quality, expiry or the preference for specific types of produce over others), the idea of wasting more fruits and vegetables than those consumed was a preoccupation:

“For living alone, it was content. The fact that I end up wasting food; that’s what kind of scares me. I don’t like to waste food.”

“I use to get them at the Good Food Box... but I felt like I wasted more.”

While certain individual factors influenced personal satisfaction with the program, a poor program experience as a can be detrimental to further participation. While several individuals related their desire to purchase their fresh fruits and vegetables through the program as a way to maintain optimal health, others with food sensitivities/allergies felt the program did not offer the same health benefits because they could not select items they could eat and enjoy. For others with limited physical mobility, ill health or little access to reliable and convenient methods of transportation, getting to and from the pick-up site with produce in tow was difficult and less of a good fit with personal circumstances and needs.

Perceived program/ site management strengths

Current and former customers identified perceived strengths and expressed a general appreciation for the program. Many current and former participants identified the program structure and/ or unique promising practices used at independent sites as aspects that made their

experience pleasant. Strengths related to convenience were associated to economic and geographic components and related to individual factors and practices controlled by each site coordinator. The most cited perceived program strength was product affordability:

“It helped me have a lot of vegetables for a low price when I was very low on money.”

“I think the \$10 one food feeds you for a week. That’s really cool because \$10 spent on that, you’ll get broccoli, cauliflower, oranges, apples and some bananas sometimes.”

It was also felt that the promise of economic benefits, good value and participation in the program as an income relief strategy could be better promoted to marginalized and at-risk groups because it could still provide households with nutritious foods without hampering their food budget. Participants recognized the potential benefits the program could have for single mothers, low-income earners and those who depend on social assistance:

“It’s just a good idea: to support people who need support; especially single mothers. If they can utilize something like that would be wonderful.”

“What I liked the fact that they were helping the people that are in need. We can’t forget that there are still working people that they don’t have enough money because then they have to go in debt. They have to pay credit card, high interest, so that the money they are getting is not enough. So the nice thing is that there is someone in the community worrying about people that cannot afford food.”

For almost 69% of current and 21% of former customers, convenience was expressed through the description of site management (e.g., quick food box pickup) and how much money and effort customers saved by getting their produce in proximity to their home:

“The financial value and convenience both are really like impressive to me.”

“The [community centre] which is both the [community centre] where I get the Good Food Box and [another centre] that are a stone’s throw away from where I live; makes it even more convenient.”

For several current and former customers, dependability in knowing that you could trust receiving a good return on your investment was an aspect that pleased them:

“I like that I can depend on it being there every month. That you knew after that \$10 you were always going to be satisfied with the quantity and quality of it. That you were guaranteed to get it.”

Site coordinators played an important role in program delivery. From managing orders, promoting sales by liaising with the community, ensuring customers were satisfied and finding ways to implement good practices that are congruent with the culture of where the site is located and customers. Customers highlighted how acts of kindness, consideration and professionalism made a difference in their satisfaction with the program:

“I had really positive experience when the Good Food Box delivered to my home. I was so surprised they would go so far to do that. I ordered the Good Food Box online, but forgot to change the location. It was in another part of the city. [...] That woman was able to deliver to my house on the same day too!”

A unique practice that supported positive experiences for some customers was the implementation of a ‘Swap Box’ feature. Although not practiced at all sites, several current customers reported that the ‘Swap Box’ concept allowed them to trade some of the produce they received for other fresh fruits and vegetables from an extra box managed by the site coordinator. This was appreciated by those who could not eat certain items due to health issues or because of how produce would counteract with certain pharmaceuticals:

“Sometimes they have things I can’t eat. Because of my blood pressure pills, I can’t have grapefruit but there is always something else I can change it for: The swap box.”

Current and former customers liked an advanced payment option which permitted a convenient and quick food box collection:

“It’s convenient. I can pick up all my vegetables in one place and move between classes. It’s not time consuming. I have already paid in advance and don’t have to shuffle in my wallet.”

For current and former customers, some of the draws to the program and motivators to continue participation related to the receipt of good quality produce in satisfying varieties and quantity at a sensible cost. Although customers could not choose the content of their food box, the majority of former and current customers enjoyed what they received:

“I think it was just to offset what I needed and I think the abundance of the food that I got for the price I paid.”

“Y’avait quand même des bons légumes et des fruits. ”

Customers who received the Good Food Bag, felt they received generous quantities of numerous fruit varieties for \$5:

“Well the fact the bag usually comes with three bananas, four apples, three oranges, two pears and a variant of peach, strawberries or mango.”

For several current customers, receiving fresh apples during harvest season (Fall) is an anticipated event due to the good quality in general and taste in particular of this local fruit:

“Apples are very tasty.”

Even vegetables received praise and were worthy of anticipation:

“I ate a lot of vegetables before I was a vegetarian. Even if I wasn’t one I would still purchase the Good Food Box just because there is so many good vegetable in there.”

For many, the quantity in the food box was adequate for consumption over one week. For others, with some strategic planning, a single food box could be stretched over one month:

“Quantity wise, I think it’s good for a week. You shouldn’t think you’re getting your good food box once a month and have fruits and vegetables for the whole month because you won’t. You will eat them before.”

“The Vanier one you can do the food guide for the week. If you were to balance it out for the month you would get something. If you were to balance it out you can put one fruit or one vegetable for every day until you get your next food box.”

Being health conscious, some felt the program promoted the ability to follow government prescribed nutrition guidelines even while on a budget; something they appreciated because it also allowed them to plan their meals accordingly over a certain period:

“I did the one in Vanier. You would get like 6 apples or 6 oranges. You would get a couple meals with each. It would balance out like if you were to do a week of it, you can actually follow the food guide.”

“A no brainer as far as it covered all your meals and everything. You could sort of plan better with what you had.”

Some participants joined the program because of the savings and felt that the food quality surpassed their expectations. Initially, some envisioned getting cheap food at a low cost but soon found out it was not the case. Through this, trying the organic food box was the next objective:

“I didn’t expect it to be really great food but I also still want to experiment with the organic local box now that it’s in season to see what that’s like.”

Offering vegetable varieties and organic produce at different price points allowed people to try both new and familiar foods while anticipating different content each month:

“You can get fruit for \$5 or organics food for \$25. I got the box for \$20 and found it a good choice of everything. I was very pleased.”

For several current and former customers, investing in buying locally grown produce was a major draw among others. Because certain customers joined the program to save money, they felt their money could go further by being pooled with the financial resources of others and this could better support local farmers, community-based programs and the promotion of good quality local produce:

“Knowing it’s more of a local thing. It’s really hard to buy local, because you think: *‘where am I going to buy local?’* I can go to across Carleton U or the Parkdale market. You don’t really know about anything else. This [Good Food Box] is almost coming to me. It’s really important. Farmers feed us.”

“I like that it’s trying to promote local food at the same time. It’s trying to use local food and just the like cooperative concept of it all. So, that’s something I’d wanna support.”

Because only certain fresh fruit and vegetable varieties are grown in proximity to Eastern Ontario and Western Quebec where the program’s affiliated farms and suppliers are located, one former customer (non-Aboriginal) underlined that expectations to receive seasonal and locally grown produce had to be maintained in perspective of what grows regionally:

“Because it’s from this area you get certain vegetables and fruits. So it was pretty stable but if you wanted something else you didn’t get it. Like cherries. As far as in the summer, summer fruit, not so much.”

For many, upon receiving their monthly food box, there was familiar and unfamiliar produce which affected whether people knew how to prepare, cook and/ or consume the food item. For this reason, many people appreciated receiving a recipe card that featured information about the item accompanied by a low-cost recipe to encourage people to try less familiar fresh produce to diversify their diet. Program coordinators also included a newsletter to help inform and educate customers about important health, food and community events:

“The pamphlet that will come with it will have a recipe and it’s convenient.”

“There will be a recipe with news. I appreciate that as well [which] usually coincides with whatever new item will be in the box.”

Mentioned nine times, current and former customers appreciated and anticipated for what was coined an ‘element of surprise’; a food or health item that periodically arrived with their food box as a bonus:

“I like the fact that I know from what other people’ve told me that it changes every, like, it’s not always the same food. I like that because I think that’s kind of fun. I liked how there were like a couple foods that just were there that I wouldn’t have expected and I like that. I learned... I ‘*Youtubed*’ it.”

“I like that it came with a toothbrush because it was dental hygiene month.”

Purchasing healthy and nutritious foods in enough quantities and appropriate portions is important to maintain a healthy diet and good overall health. To maintain health, participants related many of the program strengths to elements that included income relief, a skills building component (e.g., learning how to prepare, cook and eat different fresh foods) and positive social networks.

Perceived benefits for program participants

For several current customers, having a food buying alternative to purchase fresh fruits and vegetables other than the grocery store was an option that was valued in some communities. By buying and collecting their food box at the same location, seeing the same people and being able to connect with others had some customers associate program participation with an increased sense of community.

One current customer was so thrilled about her food box purchase that she took to social media to express her excitement by posting a photo of it to promote the program to potential customers and share what she received with an online community:

“I was really happy to get this food box. I even took a photo and posted it on Facebook, because it’s good food and a lot.”

For current and former customers, having access to new and/or less familiar foods was appreciated. Receiving less familiar foods promoted dietary variety and diversity and broadened their meal ideas. Several Métis people took pleasure in learning about new foods:

“More variety would be nice. It’s nice to try new things, where you can get healthy meals from other stuff as well too. That when you are shopping you’re not just going for potatoes and carrots. You can try a sweet potato or cook instead with a shallot instead of a regular onion.”

Another Métis participant shared their thoughts on how the program promotes better access to different types of food which can revive the way one perceives the food selection, preparation and consumption process:

“I think people need to try new things. Everybody kind of stalemates a little. They don’t look around and try new things. I really think variety is the spice of life.”

For others, program participation promoted fruit and vegetable access where individuals could buy more fresh produce through the community-based fruit and vegetable program compared to grocery stores:

“It allows me to eat more vegetables than if I was trying to go buy them and do it truly on my own.”

“The fruits I bought before I found the Good Food Bag were bananas and usually grapes or like berries, depending if they’re on sale. I had pears, but they got more expensive. I stopped buying them and just got bananas and berries.[...] Before I found the Good Food Bag, I didn’t buy pears very often nor did I buy apples.”

For current and former customers, program participation provided food security. This perception was supported by the idea that because food boxes were prepaid at the beginning of the month when financial resources were more abundant, by the end of the month when resources were lower, households can still depend on receiving fruits and vegetables through the Good Food Box and worry less about having to buy produce until resources were replenished:

“[With] the food box, I know a couple weeks later I’ll have food back in the fridge, in the cupboards. That’s always pleasant. I don’t have to worry about it.”

“For when we ran out of the money... We give the money, we go the Good Food Box and thank God it was there because I didn’t have the money to get it when it came in. Convenient at the time.”

For others, it was less clear that participation in the program promoted food security since they did not always receive the types of food they wanted. But, for several former customers, they were thankful for the quantity of foods they received because it was this that would help them curb hunger:

“I’m very thankful that they had them at the time. For me, say I put in my money at the beginning of the month and I didn’t have the money later and then the Good Food Box came. I was grateful and thankful but stuck with what I got. End of story.”

Because the program structure encourages individuals to budget and set money aside in advance to purchase the desired food box, some former customers identified how participation in the program enabled financial management:

“Surtout quand tu travailles pas, c’est à la fin du mois que t’as pas d’argent. Ça aide avec la gestion d’argent.”

“Puts money away, puts food away for the future and I have to eat more vegetables and fruits ‘cause I don’t eat that much of them right now.”

Others associated time management to the program structure because the content of the food box is pre-determined and food box collection was relatively simple. This way they could spend time thinking about other things:

“I don’t have to think about it. I don’t have to go shopping, pick and choose and again, it’s not far to transport home so there is very little I can complain about.”

“I don’t have to think about it. I don’t have to decide what I’m going to get. It’s presented to me and I just make of it what I will.”

For one former customer (non-Aboriginal), time management could benefit individuals who either enjoy the grocery shopping less or do not look for sale items. For the extra savvy shopper who knows how to stretch a dollar, program participation is less alluring:

“Je trouve que la Boite Verte c’est bon pour quelqu’un qui n’aime pas trop faire l’épicerie ou regarder les spéciaux mais quelqu’un qui est prêt à le faire, ça vaut pas la peine.”

While some strengths are linked to the program structure and how each site is managed, these in turn benefit customers by 1) enhancing a stronger sense of community and engagement, 2) acting as an alternative to grocery stores, 3) supporting nutrition security and food security, 4) developing financial and time management skills, and 5) assisting with food planning. These aspects were described to further strengthen good physical and social health and support.

Potential areas for program improvement

Former and current customers identified ways in which the program could be modified within reason to make it a more positive experience for customers:

“It’s a very good program. It just needs to be tweaked a little bit.”

Food box content. For current and former program customers, areas that failed to meet their expectation related to the food box content: Produce quantity (mentioned 36 times), produce quality (mentioned 30 times) and lack of food variety (mentioned 20 times). For many, the dissatisfaction with quality referred to the receipt of bruised or even expired produce (e.g., apples, bananas, mushrooms and potatoes). In spite of the occasional receipt of a less than fresh produce, some customers remained loyal while less than desirable experiences made them hesitant to return as consumers:

“I don’t mind a couple flaws. I grew up on a farm. But I had potatoes come in the bottom of the paper bag. They were wet and mouldy. That happened several times. I wasn’t impressed.”

“You don’t want to have banged up apples and bananas and this and that. I was payin’ and I thought I was gettin’ a good thing.”

For several customers who wanted to get the most out of their purchase, inspecting the quality of each fruit and vegetable took time and many had to re-organize their meal plans

around produce that was likely to spoil first and could not be salvaged. Some spent time cutting around the bruised or spoiled portions of the produce they just received. Disbelief and frustration because of this was often expressed through laughter by First Nations and Métis study participants and in a more serious tone by non-Aboriginal people.

“I will get stuff in it that I have to use right away. Like that day as oppose to using them [later]. I understand you eat your vegetables like every day, but there’s just some things that I’m not going to cook until the weekend. Like a pepper’s going a little soft and I have to eat this right away.”

“That there was bad parts. You have to cut it. (*Laughs.*) [...] That’s when I found the cutting and the bruising and [it would take] about 20 minutes.”

For several former customers (Aboriginal) and one current customer (non-Aboriginal) their reservations about returning to the program or being completely satisfied with the program related to the lack of freshness for bananas, celery, green peppers and mushrooms:

“They weren’t always the best. They have like warehouses and they throw one here and one there and one there, you know? And let’s say I got the box with the celery with brown on it and green pepper with a part that’s rotten? They don’t care.”

“If there are mushrooms, it maybe had been [packed] an afternoon two days before pick up and there is a lot of moisture in the plastic sealed box. There’s already a kind of wilting. On occasion the paper bags are already kind of soft. There is quite a bit of condensation inside the sealer bags.”

“They didn’t have really good... like the bananas were not as fresh.”

For several current customers, receiving produce of questionable quality often affected more than just one food box item. This often left customers upset and sometimes disgusted:

“I had some bad apples. Really got me upset because when you know you think an apple isn’t really good and it’s really powdery... it’s just really gross.”

For other current customers, the inability to choose the types of fruits and vegetables or to trade less familiar or less desired items for more wanted varieties led to the perception that they were not getting the full value of their food box. The concept of food waste was experienced in two ways at the stage of pre-consumption: 1) Wasting food because you do not like or cannot eat certain food items or, 2) Wasting food because of quick expiry:

“For living alone, it was content. The fact that I end up wasting food; that’s what kind of scares me. I don’t like to waste food.”

“Sometimes I run out or the vegetables go bad before I eat them.”

The concept of food quality and food waste also related to the state in which the fruits and vegetables were in when they were received by the customer. For some former customers, poor food quality was linked to the food being overly ripe or unripe. This affected not only customer satisfaction but also their experience in the program and their ability to consume the fresh produce they hoped to receive:

“Like I said, that one was overly ripe and not, and sometimes it was too hard with the vegetables.”

For others still, the perception of program shortcomings were in the form of feeling they received too few fruits and vegetables for the money they spent and did not receive enough fruits and vegetables to meet their needs. Others felt overwhelmed with the food quantity received and did not know what to do with the excess produce:

“Ça répondait pas à mes besoins. La boîte à \$10, c’était pas assez pour moi parce que je mangeais beaucoup plus de fruits et légumes que ça.”

“Again at the beginning it was good quantity then it started to change. A little bit less and when there was in season there was too much”

For current and former customers, their dissatisfaction with the program was due to the receipt of too many vegetables of one type including too many onions, potatoes and carrots:

“Being a single man, I find there are more onions or more carrots or potatoes then I usually need.”

“There were way too many potatoes and onions... which I still have!”

Because of the surplus of vegetables received during some months, some preferred getting more fruit in their food box. In some instances, having learned from their past experience, some customers simply bought the fruit bag to supplement their need for more fruits:

“I’d say there is too many carrots and too many onions and not enough fruit.”

“There aren’t enough fruits for my liking. There will be some bananas, some cucumber or tomato or what not, so I will put an additional 5 or 10 down for the fruit basket.”

For others, too little fruit and vegetable varieties in a monthly food box dissuaded them from continuing with the program. For First Nations, Métis and non-Aboriginal current and former customers, too few types of fruits and vegetables or too many unfamiliar fresh produce varieties raised more eyebrows than cutlery. Some felt the need to defend their decisions about spending a little more money on fresh produce at other food retailers to get what they wanted:

“Instead of wasting \$20 on stuff I get that I don’t want, I’m gonna spend \$2 on lemons or \$0.50 on a lemon if I can get it on sale.”

Others were adamant about their disappointment when the content of the food box did not meet their expectations. Some individuals, however, still had a positive perception of the program even though they experienced a degree of dissatisfaction during some months:

“In the beginning was very good, you know, but then we gave up. Was the same always over and over again. It doesn’t go that far the same vegetables every week [...].”

“There were sometimes where I felt like I wasn’t getting as much of a variety as I would have hoped for. But it was still very good.”

For several others, their disappointment with the food variety was due to their unfamiliarity of how to prepare, cook or pair produce with other food ideas:

“Des fois j’avais des choses je me disais: “*Qu’est-ce que je vais faire avec ça?*”. C’est sûr qu’ils donnaient des recettes pour expliquer comment les utiliser mais...”

For current customers, even though there were some items they either did not want to eat or could not eat because of potential negative interactions with medication (e.g., grapefruit), they would often give them to someone they knew who would likely appreciate the offering:

“I’m very picky with vegetables. I don’t like cabbage and stuff like that, so I give it to my roommates. When you get the \$20 one, you get cabbage and those kinds of things. It’s just certain vegetables I’m picky about.”

For former customers, there was a consensus over the lack of local, seasonal and regional produce varieties during harvest seasons. For current customers, dissatisfaction related to not having enough vegetable varieties including different types of lettuce, endives, arugula or dandelion. For others, a degree of disappointment came in the form of receiving certain kinds of fresh produce but not the one’s they expected or wanted:

“Y’avait pas vraiment de produits locaux. Même un été j’avais des pommes vertes qui poussent pas au Canada, des oranges, des bananes. C’est pas vraiment ça que je veux pendant l’été. J’aime mieux avoir des produits locaux.”

“I like to have more varieties of lettuce and have endives or arugula or dandelion that I know hasn’t come in contact with pesticides.”

“J’aime beaucoup les patates en général et j’en avais pas. J’avais pas les légumes que j’aurais voulu manger. J’aurais pas choisi ce qu’il y avait dans la boîte.”

For other former customers, they understood the program would typically offer produce grown as close to home as possible even though there were times they would receive more exotic produce. Some former customers thought they would receive more foreign-grown fruits and were disappointed when their expectations were not met because of the receipt of other varieties:

“Because it’s from this area you get certain vegetables and fruits. So it was pretty stable but if you wanted something else you didn’t get it. Like cherries. As far as in the summer, summer fruit, not so much”

“I thought, “*Oh my God! We’re gonna get nice watermelon. We’re gonna probably get cantaloupe...*” and I only found 2 fruits in there! Maybe apples and oranges and I wanted some watermelon, grapes, bananas or some other fruit.”

While some individuals voiced enjoying the good food quality, variety and quantity, others were less satisfied. While receiving bruised, overly or unripe or nearly expired fruits and vegetables appears to be the norm for all customers, this affects the perception about the quality, variety and quantity of items paying customers expect to receive and leaves a less positive impression about how the program is managed and delivered which affects participation if no actions are taken to address recurring issues.

Inability to select produce. Tied to the disappointment with produce quality was the inability to select produce on two levels: 1) The inability to choose the types of fruit and vegetable varieties to include or exclude from an individual food box, and 2) The inability to

personally select the fruit or vegetable items to include in their food box. For 36% of former customers (35.7%) and 38% of current customers, the inability to select or choose produce affected their overall experience and satisfaction with the program:

“If it was on my terms, [...] I could pick [what] I want and if they were beautiful, not poked or bruised. When I’m in the store, I choose; it gives me power. When they throw it in my basket, they choose what I get. The lack of control is what bothered me the most. Control of what I get. Control of the quality.”

“Based on the veggies I’ve seen, [those] that come in the box are usually ones I don’t eat. There is usually multiple green or red peppers, which I don’t eat sweet peppers.[...]”

For some, the one-size-fits-all program approach was incongruent with their vision of health and healthy eating. The inability to choose food items forced them eat in ways that were inconsistent with their preferences and ability to maintain health:

“I find telling everyone “*you have to have these types of fruits and vegetables*” very rigid and inflexible because we have different health concerns. That’s like saying everyone who comes to a restaurant is served one meal regardless of what they would like or what they’re not able to eat for religious, health or any kind of reason.”

Element of surprise. For several former and current customers, not knowing the content of food box from one month to the next was not always appreciated as it sometimes made it difficult for customers to organize their meal plans. For others, not knowing the content in advance brought frustration when items that could not be consumed were received; making the surprise of what could be received during the month, a less desirable outcome:

“I would like to know what I’m expecting. I can plan meals a little better that way.”

“The surprises. I can’t take surprises. I have to choose what I need and what I want.

Don’t give me fruit I’m allergic to! Don’t give me food I can’t eat. It was all the time. I don’t like random.”

Food packaging. The quality of food can also be affected by the way in which goods are packaged. Currently, the content of each food box is delivered in a standard plastic container (comparable in size and quality to a plastic recycling box). All food boxes are prepared and packed by a volunteers at a local warehouse and subsequently delivered to the pick-up site. This process is orchestrated by the program coordinator to ensure orders are received in proper quantity at each site. As all boxes are typically hand washed and dried at the warehouse prior to filling them, some boxes may not have been dried or packed properly which leaves less hardy produce more vulnerable to spoilage. For others, concern about excess moisture in their food box was expressed in relation to how it may affect the overall food quality of their purchase:

“Maybe something in the box would take the moisture out to some degree without affecting the veggies to wilt.”

“I don’t mind a couple flaws. I grew up on a farm. I had potatoes come in the bottom of the paper bag [that] were wet and mouldy. Happened several times. I wasn’t impressed.”

Little quantity of food for cost of food box. Mentioned by 21% of former customers (67% Aboriginal; 33% non-Aboriginal), receiving too little food for the cost of the food box was one component among others that affected program satisfaction. Respondents felt they could get more value for their money by purchasing their fresh produce from other food retailers:

“The money I spent didn’t balance out with what I got. I didn’t find a discount on it.”

Program structure. Mentioned three times by two former customers and one current customer, ambiguity related to the hours of operation of each food distribution site was reported

as a source of frustration and inconvenience. Based on some pick-up site locations, individuals could collect their produce during typical work hours while at other sites (e.g., home-based locations), hours were limited and scheduled around the site coordinators availability and not the availability of the majority of customers:

“Le dernier mois j’avais pas été satisfaite. La journée où j’avais été chercher ma boîte c’était fermé.”

“Having it in one location might work as well and having people go to that one location that is open. You can go to the church all day and pick up your good food box in Montreal. It gives you the option to go all day or you’re not like: “[name of site coordinator] *are you home?*” And she’s like “*No, I’m not,*”

Limited to no communication about changes to the program or services were frustrating for some. Although a rare incident, one former customer expressed not knowing that her neighbourhood site changed location. Miscommunications about orders was interpreted as an indication of potential limited program capacity since it operates around the availability of local volunteers to help keep the program functional and low-cost:

“I think they changed locations. They never advertised; they never told the people here. They don’t inform they don’t, they kind of hiding it. I feel like discriminated. That’s not nice. I discovered those things and then I say that’s why I don’t come here.”

“There has been a mix up or a problem with the delivery, so my box didn’t arrive. I need to come back next day or two days after the delivery day. Those little things happened a few times.”

“There might be a shortage of volunteers to distribute it or funding to attract the farmers, producers or whoever transports it.”

For 30% of current customers where 50% were Métis and 50% were non-Aboriginal and one former customer who was Métis, it was a great program but that offering it once a month was not enough to meet their monthly fruit and vegetable needs:

“I would like to get all my vegetables from this program and I would like to have it more often. Not, not once a month.”

Some current customers (students) found it inconvenient to pay in advance for their purchase; when tuition fees were due at the same time as payment for the food box order, some struggled to adjust to their living conditions which include surviving on a limited budget:

“I can understand that having to deposit the money by a [deadline]. Sometimes it’s inconvenient for students. Student life is different than for the average person.”

Transportation of Food from Good Food Box Site. For 28.5% of former customers and one current customer, issues related to transporting food box items from the site to home were interpreted in two ways based on economic and physical capacity. For some, living on a limited and already stretched budget meant not always having enough financial resources to pay for transportation from the Good Food Box site. For others, physically transporting potentially heavy produce from the site was an onerous task often complicated if, as a student, you had to also juggle carrying your textbooks or, for others with certain medical conditions, transportation challenges were in relation to unpredictable symptoms or pain severity. For some who took public transportation, they would hope the bus was not full to capacity to accommodate space for their extra groceries bags or food cart:

“For me it was just transporting it. It was going to get it and bringing it on the bus.”

“Pis là avec mon sac [la boîte verte] et mes affaires [d’école], si j’aurais pris la \$10 ou \$20, ouf, y’en donnait du stock! ”

“Someone say to carry the box but I cannot carry the box. [...] Sometimes I have to carry the things [...] so I don’t have the money [for delivery], so I have to carry. I have to live days with all my pain.”

Managing the core operations of the Ottawa Good Food Box and each site requires the development of important skill sets to ensure that orders and payment are managed and enough volunteers are recruited to fulfill certain functions and roles as needed. With limited capacity some months over others, communication with customers may be a challenge.

Sentiments about participation in the Good Food Box Program. Participants overwhelmingly expressed a variety of sentiments on a personal level that affected how they felt about the program which they sometimes kept to themselves but which was most often diffused to others (family, friends, acquaintances and even strangers) by word-of-mouth in both familiar and less familiar settings. The satisfaction people expressed related to the good quality of their purchase, the money they saved, the overall customer experience and that their expectations had been either met or exceeded:

“Then I found the Good Food Bag and I was like: “Pears! I love pears!”

“You can get fruit for \$5 or organic food for \$25. I got the box for \$20 and found it a good choice of everything. I was very pleased.”

“When I bought my Good Food Box it was exactly what I was expecting.”

Current and former customers were also thankful that the program existed and expressed their sense of gratitude in reference to how they personally benefit from the program and how the program helped them avoid less desirable circumstances when financial resources were depleted:

“I think it’s very good program and has to be supported. It’s wonderful and I want to thank the people who do all the volunteering and keep it going 12 months of the year.”

“For when we ran out of the money... We give the money, we go the Good Food Box and thank God it was there because I didn’t have the money to get it when it came in.

Convenient at the time”

Others expressed a mix between anticipation for their purchase, contentment and a sense of feeling overwhelmed with the produce they received:

“We got garlic once. Not something you think of when you think of fruits and vegetables; it’s the seasonings. Different things you normally wouldn’t pick up. It’s a surprise when you get it to see what you got.”

“I have more than I require. It’s not so much of a complaint, but it’s just as an observation. The Good Food Box isn’t lacking in any sense.”

For current and former customers, program participation was cost-effective. For many participants, positive interactions enhanced their experience as a valued customer and supported satisfaction. For several individuals, depending on the timely receipt of produce in times of need helped stave off instances of hunger or having to use more severe measures to acquire nutrition.

Less favourable sentiments were expressed by former customers with the exception of two participants (current customers). These sentiments were the result of the food box not meeting a personal standard of quality. Further, although thankful, some individuals expressed disappointment because they could not select the types of produce varieties in their food box. Others had high hopes of receiving many different types of fruits and vegetables and received other kinds that did not meet their expectations in quality, quantity or variety:

“I’m very thankful that they had them at the time. For me, say I put in my money at the beginning of the month and I didn’t have the money later and then the Good Food Box came. I was grateful and thankful but stuck with what I got. End of story.”

“Quantity and the quality. (*Laughs.*) ‘Cause what you got, you had to take and it looked like it wasn’t fresh and it’d been sitting there and it got banged up, bruised up.”

“There were sometimes where I felt like I wasn’t getting as much of a variety as I would have hoped for. But it was still very good.”

For several former and current customers, the overall experience was overshadowed with feeling upset or frustrated from not receiving the high quality fruit and vegetable items they anticipated. For one current customer, the experience was only occasional but for other former customers, it was consistent:

“I had some bad apples. Really got me upset because when you know you think an apple isn’t really good and it’s really powdery... it’s just really gross.”

“As a paying client... like what I had to do it all the time [cut spoiled areas off produce]. I didn’t like that. Why couldn’t I be the one to get the perfect fruits? (*Laughs.*)”

For several former customers, speculation over why less fresh, bruised or expired produce was received in their monthly food box was assumed to be the fault of careless food handlers who were not careful with produce or overlooked the quality of items prior to stocking and distributing the fruit and vegetable boxes. The carelessness was generalized from not caring about the quality of the produce to not caring about the customers:

“I don’t know if it was ‘cause the people that were handling it did this. Banged them and didn’t realize by the time they get this in a day or two everything’s going to be bruised. It looked, God awful!”

“They weren’t always the best. They have like warehouses and they throw one here and one there and one there, you know? And let’s say I got the box with the celery with brown on it and green pepper with a part that’s rotten? They don’t care.”

While different factors are important to promote contentment and customer satisfaction, people are generally satisfied with their experiences in the Ottawa Good Food Box Program and enjoy the beneficial yields as customers. For others, investing money for produce you cannot select or choose may feel like a gamble when you are uncertain whether you will like or want to eat what you receive.

Group discussion sessions. To conduct a comprehensive examination of the factors that facilitate and prevent the uptake of the Ottawa Good Food Box Program, it was important to include perspectives from paid staff and volunteers who are vital to program delivery. Through three facilitated discussion sessions guided by a semi-structured focus group or Talking Circle protocol, participants shared insight on practices and factors that support or challenge the optimal function of the Good Food Box Program and food distribution sites. By triangulating different perspectives from individuals who play diverse roles within the program, a variety of issues were raised including current program challenges, issues experienced by site coordinators and areas for improvement. Participants also shared their perspectives on perceived program strengths, program achievements and program changes its implementation in Ottawa in the 1990s. From there, participants proposed recommendations to support meaningful improvement and change to help enhance program delivery and facilitate its uptake by local residents.

Challenges for the Ottawa Good Food Box Program. Challenges to program delivery and expansion were primarily identified by staff members. Steering committee members briefly touched upon several issues that were perceived to affect program delivery and the coordination of program activities and resources. Main issues related to branding and marketing, human, financial and material resources, partnerships and future directions and priorities.

An important issue raised by program staff related to differentiating itself from charitable programs. As staff and volunteers often engage in outreach by presenting information about the Good Food Box, feedback remains that many residents are mindful about the program's existence but unaware that the program is open to everyone regardless of income or status. Staff members felt they put great effort to justify how the program differs from charitable services but still struggled to effectively explain that the program is a more dignified and respectful food alternative than emergency food services

"I can voice a comment that my mom made: *"Oh, I didn't know everybody could do it."*

"A barrier to going forward is the difficulty in trying to explain why our non-charitable model is a more respectful model for customers and community members. I feel a lot of people think the food banks take care of food security issues, but at the same time, the people who use it have to prove that they're needy to use it. It's not respectful. We haven't really found an effective way to show ourselves as a viable alternative yet."

Another major challenge identified by staff and steering committee members was to increase program visibility and elevate their profile as a program that offers fresh and nutritious produce to everyone:

"The program's profile can be improved. We were talking about this with the team.

We've been plateaued with the distribution of a certain number of boxes per month and the need is so much greater. The program would be so attractive to more people and there's a need to increase our profile to reach more people. We started to do that. We're in the beginning stages of making the program much more attractive right now."

The recruitment and retention of volunteers support is a major issue where, without dedicated site coordinators and volunteers, certain sites could fold. This affects whether the

program is delivered in certain neighbourhoods and how it functions is a result of capacity. The loss of volunteers and site coordinators of any Good Food Box site may provoke a loss of revenue and customers if an appropriate replacement is not found:

“Another challenge is the keeping trained site coordinators. [...] They can burn out or move on to other activities, so sometimes we may get a year from them, and that’s great, but the challenge is to keep re-investing a new site coordinator for that site or building new sites. It’s our greatest strength and our greatest challenge. Our volunteers are the backbone of the organization and it depends on that capacity. Some need more support and we’re not always able to give them enough support. If a volunteer or a site coordinator decides to quit, that site or that neighbourhood, then who knows how many customers we lose who would be looking to access that.”

With program expansion in mind and being knowledgeable of certain issues that are problematic for some groups with unique challenges, maintaining an adequate pool and distribution of volunteers to assist in program delivery at sites across the city equally affects the types of optional services that can be offered to customers to help maximise satisfaction while minimizing inconvenience, exclusion or other hardships:

“Looking into an ‘Adopt a Site’ program where people can maintain a site in their community. One aspect of that program would be to have a volunteer help bring the groceries to the customer’s home if there was an issue with transportation.”

Equally challenging is the turnover experienced on the steering committee. Maintaining individuals with a rich knowledge and familiarity of the issues that affect the quality of service delivery is a significant issue because of time, resources and effort required to provide new

individuals with enough training and support. This was deemed important to help volunteers find meaningful involvement in the program and potentially lengthen the duration of their tenure:

“One of the things about the Steering Committee is that having a steady set of people is a challenge. But everyone who has come on board – even for a short amount of time, has added to the program. [...] people are still around to some capacity. Some are involved in the school program, we also have someone who was on the committee and she left, but now she’s back. It’s not that they lost interest in the Good Food Box per say, it’s that they had to find their niche.”

Developing, maintaining and strengthening partnerships with supporting organizations were challenges to the expansion of the Good Food Box Program by staff and the steering committee (mentioned 7 times). As a not-for-profit, working with limited human and financial resources, it was acknowledged that cultivating relationships with key people and relevant organizations can be a lengthy process that requires a lot of time and should be fostered by someone with excellent communication and social skills and patience. Because of the high turnover within some organizations, the process of maintaining and strengthening a longer-term relationship with organizations who share a similar vision was occasionally difficult to assert:

“We hadn’t had the capacity until now to reach out to those communities and I think it’s just a matter of time and cultivating the proper relationships. Rightfully there could be some questions: “*Why are you outreaching now? We want to get to know you and find out what you’re all about...*” [...] Maybe our current model isn’t sufficient in relating to all groups and in working 2.5 days a week, it’s not always enough time to establish the relationship and respect with new potential partners. It’s easy when you’ve already worked with communities who know the people and the work.”

Steering committee members also mentioned the desire to foster better relations with Aboriginal communities and organizations but underlined that they too recognize this is a process that may take time. As steering committee members recognized the wealth of inherent cultural knowledge and ways of doing practiced by Aboriginal and other multi-cultural groups in the city, they highlighted the priority to foster better collaborative efforts and a relationship founded on mutual respect and reciprocity with diverse groups and organizations across the city:

“I think we have a lot to learn about the Aboriginal communities. When I work with them, I come away learning something new. Definitely a lot of challenges in the community; a lot of post-trauma but they’re also a community that is healing.”

“Getting into the Aboriginal community is a focus, but it’s no different than other groups that we’re serving...our seniors, our children. Of course, the Aboriginal community even if we went to Odawa, they have a seniors group, the alternative school group they have there, the sweetgrass daycare... we’d get all of the groups in one shot. Wabano is the same way. We’d also get the homeless. We’ve got a whole range of people.”

While it was assumed that everyone needs generous portions of fruits and vegetables to support a healthy diet, it was equally acknowledged that perhaps the challenge to expanding Good Food Box services to other communities through other organizations were competing priorities and varying needs of different groups (e.g., at-risk groups) that other establishments seek to address within their own capacity and resources:

“We still have strong ties with a lot of the community centres. [Names of several community health and resource centers] some have been there from the beginning. Others have come and gone. Depends on the priorities of the organization. If food isn’t the priority, maybe they are focused on quitting smoking or some other topic.”

“I was at [Name of Aboriginal health centre] for a year. They’re dealing with a substantial amount of things that interfere with regular access to food. Community meetings were held every Wednesday where they discuss all the issues and garner a better understanding about what’s going on through their community.”

Staff and steering committee members also underlined the criticality of working together to build stronger communities and networks within and across organizations and sectors. While discussed as an ongoing challenge, it was described as a priority to facilitate potential program expansion. Participants highlighted the need to establish stronger ties with different at-risk, minority groups and interested communities and organizations to help improve access to fresh fruit and vegetable produce with better household and community health in mind.

A major challenge for staff and site coordinators was to know whether they were meeting customer needs and expectations. As a program that does not collect or retain customer data or monitor customer satisfaction, it is difficult to know whether the program is meeting its aims and how it is received and perceived by customers:

“From the perspective of a client, I’m sure it’s a challenge that we’re set in a certain way, like we always get the boxes in the third week, people would like more variety, people would like home delivery, people would like more flexibility, so those are the things I’ve heard as challenges.”

To expand the program in a way that retains current customers and attracts new ones, staff members acknowledged the necessity to be open to both necessary and appropriate changes. To expand the program to more diverse communities, staff and steering committee members discussed the need to improve the Ottawa Good Food Box’s organizational network and connections and maintain objectives that can be achieved within program capacity and funding:

“For the capacity of boxes we distribute we’re finally the right amount of staff to work with what we have, but we’d always like to grow and to keep adding resources.”

“We all have lives after the Good Food Box. Things are being done in capacity and we still have room to grow a little bit more and not lose track of ourselves. Before we were dreaming too big.”

To make cost-effective decisions that are in tune with the program’s vision and mission, staff and steering committee members described the need to balance competing ideas for expansion (e.g., reprioritise efforts and focus, reallocate resources in different program components):

“We have a planning day with our Steering Committee, so we kind of set up our priority for this year. Last year it was schools and kids and other years it’s been newcomers and seniors, because we see that these are group that have high needs.”

“There’s so many competing ideas that there’s a sincere challenge to focus on what has been chosen to be focused on in order to move forward. I can see where that would be a real struggle too: to balance the growth with the ideas.”

Working within capacity (human and financial resources) is still a challenge to ensure that there are enough volunteers to support each site and all program components. Access to adequate resources are crucial to ensure the program’s viability for now and in the future.

A major source of concern identified by staff and steering committee members was customer recruitment and retention in general and how to reach more First Nations, Inuit and Métis households in particular (raised 14 times). Part of the challenge resides in enticing enough individuals to follow through with a food box order. While some program aspects are fully or partly subsidized by the assertion of funding from external sources, other components depend on

program revenue through the sale of various products (food boxes and fruit bags). While some sites have a consistent amount of customers on a monthly basis, other sites continue to struggle:

“I work with Aboriginal agencies and I’m always bringing up the GFB. Not before your project though, really... it was never a targeted population. We were working with newcomers, we knew that, and children and seniors in the overarching community, so hopefully from your project we will be able to maybe intertwine some of our activities that would be culturally sensitive in methods of getting the message out.”

“Just from what I’ve heard so far, it sounds as if retaining existing clients, also growing the program at a rate that is manageable with the capacity that we have is a bit of an ongoing challenge, so finding the funding and maintaining the funding to support that growth are some of the challenges that I am aware of. There also seem to be problems with the fact that there are not enough clients at some sites.”

While the desire to know the factors that make participation in the Ottawa Good Food Box Program easy or challenging drove, in-part, initial discussions to develop the *Healthy People, Healthy Communities Project*, program staff acknowledged the challenge of competing with food retailers when it comes to convenience. Convenience may be expressed in the gratification of buying food and non-food items instantly at the grocery store and where choice, selection and variety of fresh, frozen or canned foods are abundant:

“We’re also asking people to change the way they’re spending their money and their time and how they eat. Those are three major changes that create challenges for people.”

“The program is competing with the regular food system, for starters. In the communities that I grew up in it was just really difficult and I don’t really know how to get people interested in health.”

Food stores are able to offer an array of items that may be locally grown, domestic or imported and individuals can purchase what they desire based on their household food budget, need, want and availability. Because the program aims to offer patrons local fresh produce, they are sometimes limited by the quality of the harvest and weather trends during different seasons. The quantity and types of produce included in each box and the cost at which program coordinators can purchase foods thus fluctuates from season to season; which may affect customer satisfaction with the quantity and quality of their food box and/ or fruit bag:

“We definitely have more in the box during harvest season and summer time. In winter and spring, the food prices are higher so your money goes little bit less farther so boxes are less full. In August, September and October, we have a hard time shutting out \$20 boxes cause they’re so full.”

While the Good Food Box may receive external funding for one fiscal year, it is not guaranteed to receive the same amount from the same source the next. Finding sustainable funding to ensure program delivery is a challenge. Because of this, planning to expand the program is challenging because the ability to hire enough staff to keep up with demand depends on consistent food box sales which depend on satisfactory produce quality and suitable weather conditions to support a good harvest among other factors:

“As the numbers increase certain elements of the delivery and the packaging and certain kinds of boxes that are offered could be enhanced in certain ways or to have more options (seniors box, kids box).”

“We had a four-day a week staff and because of funding, went down to two and a half days a week and we managed to keep it going anyway – and that was mostly a miracle, but also hard work. Changes in funding have resulted in changes to the program.”

Sustainable funding for service options could help the Good Food Box meet the needs of underserved groups including those who have mobility issues and fewer options to eat healthily while on the go. To maintain food delivery service for those in need and to deliver the program more than once a month, more funding would be required for other incurred costs including maintenance, fuel and motor vehicle insurance:

“We needed a truck for delivery and we can only do it once a month under the current set up and I think if we move it into the school programs, once a month will make a huge amount of difference to get awareness out there. But with the nutrition aspect, we really need to be there once a week to make a big impact, so that people walking down the street will be eating vegetables or an apple, so we will need some kind of transportation, some kind of way to make deliveries a couple times a month instead of once.”

Finding a centrally located and accessible establishment from which to distribute monthly food boxes was sometimes a challenge when seeking new locations to host a Good Food Box site. While the distribution of food boxes from public locations (e.g., health and resource centres) may offer better access to other key resources (e.g., space, access to major public transportation routes or flexible operation hours), private locations including homes introduces some limitations that may lead to more challenges or limited access for customers:

“Often, these places didn’t really have enough resources. A lot of site coordinators were balancing their time with other jobs.”

“I’ve heard from many groups that carrying those heavy vegetables home is a challenge, so transportation is a challenge. We’ve looked at solutions, [...] having a central pick up site is a challenge for some customers.”

For staff members who coordinate the program, easy access to a refrigerated warehouse to store the food boxes once they are stocked is equally challenging since space is rented and current access is limited. Times when space is accessible may not always coincide with the availability of the most volunteers which may in turn affect the overall time required to fill orders and ensure their delivery to each site. The time at which this process is completed may not always coincide with the schedule of site coordinators who balance volunteer duties with work:

“For me I find the logistical challenges can be improved. We rent a warehouse space and we have a limited amount of control over that. We pay delivery people and pay for the trucks. So there are some things that go wrong in those situations and sometimes have less control over that service. Getting delivery, accessing the warehouse. It would be great to have our own space and own our own truck.”

Challenges for site coordinators. Site coordinators are important players in the delivery of the Ottawa Good Food Box Program as they manage individual food distribution sites through private homes or public establishments. As site coordinators wished for more customers in time, they discussed challenges related to inconsistencies with the availability of human and material resources to run their site and meet some of the overall program aims (e.g., improved social cohesion). The issues described below were identified during their focus groups session.

While some site coordinators manage individual food distribution sites as part of their employment, others volunteer and balance duties around their work, family and personal schedules. Many site coordinators would like to promote the program more effectively but feel they would need more volunteers to be effective and to achieve a stronger sense of community:

“Some of our programs are diabetes programs and we’re able to promote as much as possible as well. I can’t be the only one who promotes it, like you were saying, I need more volunteers.”

“Individuals contact us, pay for the box, we order it, deposit the money, boxes come we slap their name on it with a piece of paper that goes on the box and then they pick it up. That’s straight forward part of my job to do with that. But if, to actually do more with it to use to have a community kitchen activity, to create a meal, to have more of a social aspect to have a market kind of a thing. We definitely need more resources and more people, volunteers or so.”

Site coordinators wanted to do more to promote their site but did not have the capacity to do so because of other demands:

“I think it’s a very well rounded program and if it’s done really well then you have to, I’m guilty of this too, promote more. I can but sometimes I just don’t have the time.”

“That’s again something on my part that I have fallen down on the job, but there is just so much I can do.”

As the lead contact and site manager with sometimes few knowledgeable and reliable colleagues to substitute during their absence (e.g., vacation), no succession or replacement plan meant interrupted service at sites without this support. This affect the program revenue, customer satisfaction and heighten the potential for customer attrition:

“I did cancel when I was on holidays last year in July. I told our clients ahead of time that I won’t be there for July, and so we closed it. I also let [HQ Coordinator] know not to take any online orders as well [for that site]. That worked, but you lose continuity.”

“Having someone replace me seems to be a challenge. It’s easy to take care of but to bring somebody else in and have them do it?! I’ve gone away twice when the box was coming in and I’ve had difficulties both times. The person I told I wasn’t going to be there wasn’t there on Monday to submit the order so people were coming in and talking to the receptionist at the front desk and giving her money which didn’t get to the second person, so, I missed a bunch of orders that month.”

For some coordinators, having inadequate physical space can be problematic on food box delivery day or for extended periods if customers cannot collect their purchase same day:

“For us it is space. It’s going to be a bigger issue for the next three months, because we are moving out of our building. When people leave their boxes or don’t pick up their boxes on Tuesday that’s when it’s an issue, because I don’t have an extra fridge.”

For some site coordinators without access to material resources including a cellphone or landline, frustration can be experienced when it is nearly impossible to be kept abreast about any delays or issues experienced that affect the delivery of food boxes to the site:

“I’m one of the last ones to get ours. This is probably unique just to leave it in my house co-op. We have a community centre but there is no telephone in it. I have to make sure I’m at the community centre for the time of the delivery.”

However, even though access to communication resources at some food sites were challenging, further probing uncovered that the quality of communication between site coordinators and headquarters on delivery day was a more pressing issue. For many site coordinators, knowing when food boxes would be delivered was important and not knowing affected management practices and their ability to adequately respond to customer inquiries:

“A few months ago we were having deliveries that were way late. I have customers coming in that were on Para-Transpo and ride the bus... they got to run. She was just really upset about this and I just couldn't tell them when [they were going to deliver]. I really can't do anything. That was a big challenge.”

Like staff and steering committee members, site coordinators were preoccupied with customer recruitment and retention. Described over 21 times, site coordinators wanted to know strategies to help improve the retention of current customers and techniques to facilitate the recruitment of new ones. Some site coordinators appeared to internalise the issue of recruitment and retention as they expressed it as a personal shortcoming:

“My weakness is keeping customers.”

“I'm glad to hear that it's not just me. I think really reassuring to think that I know I only have a few orders again... it's reassuring to know it's not just me, thank you guys.”

“I think the challenges are the customers we have lost. I really don't know and I don't know why. I don't have any more customers. Like what happened? I thought you were enjoying it? That it was a good value!”

Site coordinators recognized that competing with grocery and big box stores for customer loyalty is a challenge that makes the viability of a small, locally run food box site less certain in some neighbourhoods and under conditions where every dollar counts in most households. However, several site coordinators explained that program commitment relates to a consumer orientation and value of locally grown produce which influences where food dollars are spent:

“If you own a car, the marginal cost of operating it and going from super market to super market to getting the specials and picking out what you want. It's very hard to compete with that.”

“I don’t think it’s anything within the GFB that’s the problem. The problem is the retaining retail client out there. People that go out and do their shopping at Costco, Wal-Mart and places like that, because they can save a few bucks here and there. The kinds of people that come by me are people who have a commitment to buying locally.”

For others, finding ways to improve a sense of belonging within the community and strengthen social cohesion was an objective they desired to achieve by turning their respective site into a more receptive and comfortable environment for social exchanges. As a place where community members could socialize with other residents who share an interest in food and health, site coordinators felt that this had potential to better acquaint residents and broaden their personal social networks. However, achieving this goal, a broader aim of the Ottawa Good Food Box Program, was a challenge most coordinators were unsure how to accomplish. Past efforts to foster a more social setting were not always as well received as coordinators would have hoped:

“I really like your social aspect. I think we got to do something but I don’t really don’t know what yet? Like if we had a big crock pot of soup on or something to at least to keep them around for a little bit longer. Maybe they will meet somebody else from the community who [also] uses the Good Food Box.”

“That’s my big problem with it. It’s not related to [HQ Staff member] or the general organization. The thing is I don’t find it’s enough community; it doesn’t look like a community project. There’s no interaction between the people - they come and get their stuff and they get out. I say hi and that’s about it. I give them info on what’s going on in the community. There’s no sense of community in that project, which is partly on me.”

While other site coordinators struggle to connect customers with other neighbourhood residents, some site coordinators organize social activities where community members

participate enthusiastically. Many felt that engaging in social, cultural and leisurely activities would enhance customer experiences and their sense of belonging but implementing these in ways that entice customers to stay and converse is a challenge.

Perceived program strengths and areas for improvement. Participants from all group sessions identified strengths and areas where the program could feasibly operate more efficiently and effectively. As a program that operates and functions largely based on volunteer support, people appreciate the Good Food Box for its value as the program offers customers more than just fruits and vegetables. For staff and site coordinators, a program strength is the potential to become better acquainted with others residents (social value) to broaden social networks and knowledge of local supports:

“It’s just one of those things that’s, so economical it’s out there it’s for everyone... if you can get that message across and teach people how to cook with it, that’s huge.”

“The aspects of the GFB the bulk buying, the value and trying to create more social and accessible food onsite for people and where they can choose as well.”

As a program based on a bulk-buying model, staff members seek to negotiate a good rate for fresh fruits and vegetables. Following a non-charitable model to get the most produce for customers who value and like to eat locally grown and sometimes imported fruits and vegetables, this was a program component that could benefit communities because financial resources are pooled and fresh produce is available a reasonable distance from their home:

“One of the parts of the program that I like is the sort of the whole cooperative purchasing part of it. So, in a way it teaches people that collectively they have maybe more choice, more say, more power, right? If they pull their resources together.”

“Another big strength is that it’s not a charity, so it’s really about creating affordable access to fruits and vegetables but it’s one of the only community food programs that I know if that isn’t a charitable model.”

The program has also adjusted how it operates to be better synchronised with social assistance payments by the government. Individuals are requested to pay for their food boxes at the start of the month to receive their purchase during the third week when resources are fewer:

“We have adapted to accommodate low income individuals and food insecure neighbourhoods by having people put their orders in on the first week of the month – if you’re on fixed income, that’s when you get your cheque – and the box comes in on the third week of the month when people start to get a low food supply.”

Initially developed as a program to help improve access to fruits and vegetables for lower income households, staff and site coordinators discussed how the program is open to all who value and enjoy fruits and vegetables. Talking Circle and focus group participants discussed how everyone needs food to survive and the program can provide income relief for customers while building a sense of community. Under its model, the demonstration of ‘need’ is not required and customers are treated with respect, compassion and more importantly, as a person:

“So many services are segregated... like where Aboriginal people go to Aboriginal organizations for their needs, but we’re really open for everyone.”

“[...] People are customers, they’re not clients. Even though it’s designed for people with low incomes, it can work for anybody. We have people from all sort of different income brackets. There are even MPs [Members of Parliament] that buy the box. So, it reduces the stigma of needing help to feed your family really well. It’s respectful and it takes away stigma and it’s a huge strength that it’s not a charity model.”

Because the program can operate from virtually any location, for many individuals with constrained access to fruits and vegetables (e.g., senior citizens), it is suggested that program participation helps improve access to fruits and vegetables (financial, physical and geographic) and leads to healthier eating habits (mentioned 12 times):

“Seeing it go into a senior’s building which helps them with access because a lot of them have transportation problems or health problems [...]”

“Access, like all different kinds of access... like, we go into neighbourhoods that might not have grocery stores. Financially more accessible, work with communities that are harder to access and we want people to eat more fruits and vegetables, so we’re promoting that to the broad population.”

“We talked about competition with other organic boxes and competition with Hartman’s [...] we figured that our markets are slightly different. We’re not looking to compete, but be more like a bridge for people to have access to the foods they need to be healthy.”

The degree to which improvements within the community included a better sense of community, sense of belonging, empowerment or better cohesion depended on how each unique site was managed and whether complimentary activities were organized and implemented. Whether activities were organized was described by site coordinators as dependent on the engagement of community members themselves, cultures and norms of the neighbourhood:

“Site coordinators in every little neighbourhood can get together and start a good food box site and it’s good to increase access to local food, and it’s good for cohesion and good for community capacity in the community by bringing coordinators and neighbours together to buy food. I know that’s the rosy picture and some sites are much more like that than other sites, but I think in principle that’s what we can move towards.”

“I have a loyal group of customers who have standing orders that come every month, and they all kind of help each other. They will help each other deliver it. You know walking down the street with their deliveries or remind them to pick up their orders. I like that is become something that we all are in it together [...] it still promotes social cohesion.”

For those who live in the same building (e.g., retirement residences, community housing or apartment complexes), program participation provided an opportunity for social engagement and a chance to ensure individual safety by giving customers a chance to check-in monthly:

“So even it’s 10minutes, it might bring someone out of their apartment, go downstairs to pick up their goods and then go back up, but they’ve had some sort of social contact that day, someone has seen them and to check in and things like that, so for me, working with the seniors is a key point.”

Participants described different ways in which paid staff and volunteers facilitated access to fruits and vegetables in communities who host a site. Staff and site coordinators described how the program has maintained and strengthened their relationships with other organizations and community members despite some difficulties:

“We have an excellent relationship with [Name of Centre for Aboriginal health], but the only time we did outreach to other organizations that are Aboriginal-specific was when we started this research project. You [the researcher] and I did outreach to the [Names of Aboriginal community health centres], and it opened my eyes to looking at different partners for the program. It’s like I needed a reason to start reaching out to those organizations and we also started setting priorities. I never really looked at it through that lens until I started working with you.”

“Adobe has become a corporate volunteer, but we’d like to work on gathering more support.”

As a not-for-profit program, it has a pool of volunteers who help maintain the low delivery cost of the program across the city. Those involved with the program described the value of volunteers as they have diverse skill sets, interests, experience, knowledge and perspectives that relate to food, the environment, community, cultures and health that enrich the program and its delivery:

“I would say [HQ Coordinator] has really been amazing for the program. Since she started there it has been well coordinated and well communicated. She’s responsive to feedback [and] really encouraging. If you get a bad bunch of bananas in there, if your client complains, she says come tell me, we’ll organize it, we’ll get a refund. She’s got those marketing and sales skills, I guess, behind her as well as the coordination skills as well. I think she has been a real asset to the program as well.”

As the process of becoming a steering committee member is open to community members, this allows for people with diverse perspectives, knowledge, backgrounds and skills to influence program priorities and activities. Steering committee members were hailed for their strong leadership and dedication to the Ottawa Good Food Box Program (mentioned 9 times):

“We’ll recruit for the proper skill sets that we need for the programs. For example, say we were going to do the school program or veggie bag, [steering committee member] could come in as the voice of public health to the school board legitimately. With your past knowledge of the Toronto Food Box, and your knowledge culturally, we’d translate that into language that a basic Ottawa family can use. It’s habit. [...] Having [steering committee member] as a dietitian is brings that [nutrition] back into focus. She’s sitting

in her capacity as a dietician... something we had many moons ago, lost and now it's good to have that back."

"We also have community members on our steering committee and they drive the organization; that's a strength too. We're involved in a lot of interesting things right now, so there has been a lot of growth and I think about all the outreach with seniors and schools, presentations we've been doing, we attended a province-wide food security conference and we just learned so much."

According to staff, care and pride are taken in developing products that bare the product's name. To ensure professional, good quality of copied materials (e.g., flyers, pamphlets or information sheets) principles were developed to ensure consistency and inclusion based on volunteer capacity to translate:

"We always wanted the marketing to look colourful and professional and we never wanted a flyer that had been copied 20-times that looked shabby or old. Always wanted to promote it to the general public. We always wanted it to look nice."

"We got our flyer translated in six other languages. So it's in Chinese, Vietnamese, Arabic, Farsi, Spanish and Somali."

Improving the program's internet and social media presence was another important focus. The website is now more user-friendly with a Google Maps feature to help visually locate all food distribution sites in Ottawa. They also modified web safety and security features to adapt to paperless and wireless trends and permit online product payment options (e.g., PayPal, credit card) Implementing online payment was the program's way of responding to issues of access and inconvenience:

"Our website was totally re-vamped two years ago. It was disastrous before."

“Our new website has the Google maps so people can easily find out which site is in their neighbourhood.”

“I love the payment Pay-Pal. We signed on to the online purchasing and it has helped. It’s more convenient for everyone and the money is there upfront.”

To address the issue of communication and help inform customers and community members about the latest news affecting the Good Food Box, staff and volunteers worked to improve their online presence by creating accounts with Twitter, Facebook and Youtube. Through social media, they can connect and communicate with community members on a larger scale with updates and notifications instantly:

“Social Media! The Steering Committee has a Twitter account, so people are twittering. We do have a Facebook account. We’ve got stuff on YouTube. This is all in the last 18 months too.”

“We’ve been on Facebook for two years, with the fall PR campaign we saw an increase in visits from the Facebook page, but we haven’t seen that publicity translate to an increase of customers yet, but I also think that takes time.”

Staff have offered webinars over the internet to inform and educate online community members and give them an opportunity to engage in an open conversation with others:

“[Staff member] and I did a webinar where we talked about the general population in Canada is about 7% food insecure, but then specifically, off reserve Aboriginals had a 20% food insecurity rate. Children also have a high security rate with women and low income individuals. I attended workshops that demonstrated more Aboriginal-focused foods and practices (ex: corn branding or wild rice gathering and celebratory feasts) I learned a lot about other aspects that could be potentially included in our program.”

“We’ve had blogs and that’s opened up communication quite considerably actually, yet, there’s still room to grow.”

Although the ability to order food boxes online was described above as strength, several steering committee members described how this purchase option is not open to customers across the city. Still experiencing issues with online orders and subsequent payments, malfunctions also affected the ability for individuals or organizations to make donations to the program:

“Not all the sites can order online. It used to be just the universities. It’s not a centralized thing it’s more by site. We opened them up as pilots. We didn’t know how this was going to work. I think there was a time period where we were just looking at any glitches. There are, we’re not masterminds in technology, we’re learning as we go.”

“We have a wonderful steering committee fellow who designed our website. Put us on the donate punches, but if you want to donate, there’s all kinds of little glitches. But man, it was 100%.”

Although some individuals enjoy the physical experience of selecting and purchasing fresh produce or knowing what they will receive in order to better plan their monthly food expenses, this is not currently an option under the current delivery model of the Good Food Box. While online orders are a popular method of product purchase, steering committee members described the online ordering and donation processes as ones that were still riddled with errors despite the best intentions and knowledge of volunteers. These errors could affect the reputation, credibility and revenue of the Ottawa Good Food Box Program as well as the safety and security of both personal and financial information provided by customers.

Discussion

This study offers unique perspectives on the uptake of the Good Food Box Program from First Nations, Inuit, Métis and non-Aboriginal persons and on the factors that affect program management, delivery and possible expansion in Ottawa according to paid staff and volunteers. Quantitative results suggest that Good Food Box participation is associated with an increase in frequency of fruit servings and greater household food security compared to people who do not take part in the program. While qualitative information highlights how the program may benefit households and communities at different levels, former customers and non-affiliates identified physical, individual, social and program-specific factors and concerns that hold them back from joining or returning to the program including compromised access to a food distribution site, inadequate income, a less positive customer experience and concerns about food waste, to name a few. While customers were generally satisfied with the program, they discussed components where the program failed to meet their expectations and fruit and vegetable needs such as the receipt of an unsatisfactory food box in quality, quantity and content for the cost. While not guaranteed, on condition that access issues and intrinsic program characteristics were addressed, former customers maintained a positive outlook of returning to the program and most non-users were interested in joining provided they could conveniently access a food distribution site in proximity to their home/work. Raised issues underscore the potential lack of fit between the program's offerings and the food needs of diverse ethnic and cultural groups. Derived themes from single interviews and group discussion sessions also highlight issues that affect program management and delivery including sustainable access to resources (financial and material), recruitment and retention of customers and volunteers and building and strengthening partnerships with other organizations as a non-profit in urban Ottawa.

Participants shared why they chose to participate in the program, what they appreciated and/ or why they withdrew. For some, participation supports dietary diversity and for others, the minimum food box cost was a risky expenditure that could entail more food waste than consumption based on the program's one-size-fits-all model. While not a direct focus of the study, participants revealed emotional consequences related to partaking in the program including enthusiasm and gratitude for its availability and disappointment when poorer quality food was received. They explained how a less favourable program experience often heightens other struggles with which households have to cope.

Staff members, site coordinators and steering committee members shared their insight about aspects that challenge program delivery and affect program expansion in Ottawa. They provided feedback on how they believe the program can be improved with sustainable solutions and expressed how the program can be more responsive and relevant to the growing food needs of Ottawa residents. Both community- and data-based solutions are discussed to support the current objectives and future aims of the Good Food Box Program.

Fruit and Vegetable Consumption and Good Food Box Participation

Quantitative findings suggest a statistically significant relationship between frequency of fruit consumption and program participation. Specifically, individuals who took part in the Good Food Box reported a significantly more frequent consumption of fruit compared to non-affiliates. While this study did not find a significant relationship between level of participation and the frequency of fruit juice, potatoes, carrots or vegetable consumption, other informal food program evaluations suggest a positive association between fruit and vegetable consumption and participation in community food programs. For example, an evaluation of the Good Food Box Program in Barrie, Ontario reported an increase in fruit and vegetable consumption for 70% of

study participants after they enrolled compared to prior consumption (Stenekes, 2008). Another assessment by Miewald, Holben and Hall (2012) found that those who did not take part in food programs consumed fewer fruits and vegetables than those who did. These studies, however, may overestimate the influence of food program participation on fruit and vegetable intake by assessing them as one food group as opposed to two separate groups or single food servings to appreciate the unique nutritional qualities and derived health benefits attributed each category.

Good Food Box customers consume fruits more often on a weekly basis than non-program users and qualitative results indicate that they want even more seasonal fruit varieties and quantities in the food box to meet demand, preference and need. Liking sweet tasting food and drink has been discussed in studies as both biological (innate) and universal because of its hedonic impact (Drewnowski, 2000; Mennella & Beauchamp, 1998; Steiner, Glaser, Hawilo & Berridge, 2001). Preferring sweet flavours over others is explained in developmental studies as modulated by context where the sensation for sweetness is acquired by associative learning and exposure (Birch, McPhee, Steinberg & Sullivan, 1990; Liem & de Graaf, 2004; Popkin & Nielsen, 2003; Sclafani, 2004; Sullivan & Birch, 1990) which may also explain increased consumption of or demand for fruits over vegetables.

Dietary knowledge and the availability of health information also play a significant role in the demand for fruits and vegetables. In Canada, through media-based messages, health authorities have encouraged consumers to aim for 10 servings of fruits and vegetables daily and this is said to account for some variance in the dietary quality and intake of Canadians (Burfield, 2003). Although most Canadians fail to reach this prescribed intake (Burfield, 2003), consumers are generally aware of the important role that diet plays in 1) achieving optimal health outcomes, 2) preventing and mitigating risk for disease, and 3) managing ill health (Jones, 2002). Good

Food Box customers receive supportive health and food information to assist and encourage the preparation and consumption of fresh produce through education and awareness. The marketing of fruits and vegetables through the medium of a monthly newsletter may contribute to heightened awareness of how to prepare and incorporate fruits and vegetables in meal and/ or snack options. As this program offers fruits and vegetables at a comparably lower cost and promotes the derived health benefits of consuming meals rich with fruits and vegetables, increased awareness of safe food preparation and healthy cooking ideas may relate to a more frequent consumption of featured food box produce in general and fruits and vegetables in particular based on seasonal availability¹⁹. As the newsletter was an appreciated component of the program, this may enhance their knowledge about how to incorporate different fruit and vegetable varieties in their daily diet and further inform and validate their personal and household health and food choices and beliefs.

As a program that follows a non-charitable model, people who use the program may represent households more able to budget and allocate more disposable income to ensure monthly participation in comparison to non-users who may have other competing wants and demands for financial resources. Since the program provides income relief to its customers in the form of variations in food box sizes and content, greater fruit consumption in program users compared to non-users can be explained by supplementary fruit produce that may be bought during the month (outside the program) with additional freed up income until food boxes are delivered. To explain food spending habits by household income in a population of people not participating in a food program, Stewart and Blisard (2011) explain that lower income households tend to spend less on certain food commodities including beef, dairy products, baked

¹⁹ Although not statistically significant, Good Food Box customers reported the highest mean weekly frequency of vegetable consumption ($\mu = 11.85$, $SD = 8.245$) compared to former customers ($\mu = 11.29$, $SD = 9.746$) and non-program affiliates ($\mu = 6.45$, $SD = 7.757$).

goods, frozen prepared foods, eggs, fruits and vegetables for at-home consumption. For very small adjustments in buying power, lower income homes allocate food dollars to beef and prepared frozen dinners (Stewart & Blisard, 2011) and may or may not spend additional dollars on fruits and vegetables (Blisard, Stewart & Jolliffe, 2004; Stewart, Blisard & Jolliffe, 2003). Lower income families with restricted food budgets and money may allocate priority to more energy dense foods and overlook fruits and vegetables (Tarasuk, Fitzpatrick & Ward, 2010). Stewart and Blisard (2011) observed that when household earnings increased by 10% (reaching between 130% and 185% of the poverty line), an increase in spending on fruits and vegetables was observed by 1.15% and 1.93% respectively. Similarly, Stark Casagrande and colleagues (2007) found that households earning between 100% and 125% of the poverty line were no more likely to meet dietary guidelines for fruits and vegetables than households living in poverty.

To cater to the fruit and vegetable needs and demands of other households, more effective marketing and advertising of product option in the newsletter, website or social media may increase awareness about the different offerings that are regularly available to generate more revenue and sales. This may in turn promote customer satisfaction by having access to the greater fruit quantities at an affordable price. To broaden the scope of the Good Food Box to meet the food needs and interest of other families, it may be of interest to investigate other product options that could be developed and explore other partnerships that could support changes and future program directions (e.g., the sale of meat products).

To encourage participation in community food programs that seek to employ a self-help approach to food acquisition and to more effectively and equitably enhance opportunities to improve dietary intake with fruits and vegetables, results suggest that social policy and social assistance reform may be better alternatives to help the most vulnerable households at risk of

poverty and food insecurity. Changes to social policy and assistance and support for action to develop a national food strategy and policy may address other important issues that play a role in determining health outcomes and dietary intake for Ottawa residents who live on no income or are incapable of meeting basic human needs that are beyond fruit and vegetable consumption.

Household Food Security Status and Good Food Box Participation

To be food insecure means to have compromised access to and limited availability of nutritious and preferred foods. The notion of food (in)security has evolved in both definition and meaning since it was first introduced (Bastian & Coveney, 2013) and has been broadly applied and discussed to characterise different contexts as an operational concept (see Maxwell, 1996; Maxwell & Smith, 1992). The way in which food (in)security is understood by policy- and decision-makers affects the types of solutions that are developed and implemented to address this economic, social and public health issue.

A food insecure status does not indicate food needs but provides a vague indication of household experiences in relation to economic uncertainty and food, its psychological repercussions and resulting food behaviours. Experienced at a lesser degree, food insecurity can entail the uncertainty of being able to provide enough food for oneself and the household in socially acceptable ways (Frongillo, 1999). For some, the experience of food insecurity may mean economic uncertainty and for others it may indicate altered and irregular eating habits and patterns (Willows et al., 2009). For others still, it may mean the consumption of fewer food varieties and/ or the intake of lower quality or limited quantities of food (Willows et al., 2009). While early research has confirmed that the frequency of fruit and vegetable consumption decreases as food insecurity becomes more severe (Kendall, Olson & Frongillo, 1995), this cross-sectional study provides support that, not only does the mean weekly frequency of fruit

consumption decrease in households that do not participate in the Good Food Box Program but the experience of food insecurity is also more common in household who do not take part in the program as a likely result that their household food needs and interests are beyond those of fruits and vegetables.

As hypothesized, participation in the Good Food Box contributes to overall food security however, the relationship between these variables remains unclear. Quantitative results indicate program customers are more likely to be food secure than those who do not participate but qualitative results paint a different story since issues around food access, affordability, selection, quality and quantity are still problematic for customers and remain program barriers for former customers and non-affiliates. As the program strives to contribute to more food secure communities and households by providing improved physical and financial access to fruits and vegetables through a network of food distribution sites, it may provide enhanced food security for select neighbourhoods and households who may be less at risk of more severe manifestations of food insecurity and even hunger. These results suggest that the conception of what it means to be food secure for program developers and coordinators may differ from the food needs of those most vulnerable to and at-risk of food insecurity. This suggests that the most needy and vulnerable households to food insecurity and poverty may still be underserved by urban community food programs due to a combination of structural and economic barriers that work together to prevent them from accessing nutritious food varieties in socially acceptable ways.

While FoodShare in Toronto, ON developed the first Good Food Box in Canada out of concern over growing health, food and hunger issues that stemmed from the social and economic conditions of a recession in the 1980s (e.g., income inequality, unemployment and household hunger; Biberstein & Daalderop, 2008), it is difficult to know how the current program structure

addresses or responds more appropriately to previous criticisms of emergency food programs. In a study by Ciccarielli (1997), charitable food assistance programs were criticised as inadequate to alleviate food insecurity for reasons including “limited quantity, quality and variety of food, a lack of personal choice in food acquisition process, limited frequency of access, and feelings of humiliation and powerlessness among some food bank users [...]” (p.11). Within this study, similar sentiments are echoed as barriers to participation and customer satisfaction based on intrinsic characteristics of the program. Based on the program’s current one-size-fits-all structure, seasonal variability in food content and quantity reflect set market food prices from wholesalers and prices that are negotiated and agreed upon by the program coordinator and food producers. Although the program offers food boxes in different sizes and at different price points to appeal to individuals and families, the lack of personal choice in the fruit and vegetable acquisition process, limited monthly ordering frequency, the occasional receipt of a food box that fails to meet the program’s promise of high quality fruit and vegetable varieties can lead to feelings of disappointment, sadness, frustration and the impression of being let down.

Two early Canadian studies on food insecurity indicate that over 30% of low-income households would participate in a food-buying club if one were available (Donovan, Clemens, Kosky & Payne, 1996; Olson, 1992). The current study challenges this finding as, even though a program that functions like a food buying club is available and most low income households know about it, many still do not participate as a result of a lack of accessibility, money and control in the selection of the produce they would receive. Previous informal assessments of the Good Food Box Program in other geographic areas with regular program customers indicate poor site access, excessive food quantity, forgetting to place a subsequent food box orders (Brownlee & Cammer, 2004; Ciccarielli, 1997), difficulty preparing certain foods (Rose Bell,

Rose, Roll & Dupont, 2014) and no control over produce selection (Biberstein & Daalderop, 2008) as barriers to fully benefiting from the program and accessing fresh produce. Qualitative results from this study suggest that these issues among others are not only aspects that challenge customer satisfaction, they deter urban residents and limit some communities from fully benefiting from a program designed to have an impact on food insecurity and address diet inadequacy in lower income groups.

Findings from this study corroborate those found by Loopstra and Tarasuk (2013) on why food insecure families may not participate in community food programs including community gardens, community kitchens and/ or the Good Food Box Program. Lack of program access and knowledge of how or where to participate are barriers to program participation and may prompt attrition which also supports the program lack's fit with the busy schedule, interest and need of urban residents. These challenges and hardships further exclude these groups from program participation and subsequent access to networking opportunities and engagement to build a stronger sense of community and support.

As a program that seeks to provide food security, the program stopped short of meeting the need for sufficient, culturally appropriate foods for First Nations, Inuit, Métis and other underserved groups as voiced through stories of discontentment and concern. For Canada's Indigenous peoples, there is significant diversity in the use of plant-based foods from coast to coast due to geographical and ecological influences and cultural traditions and preferences (Kuhnlein & Turner, 1991). First Nations and Inuit participants originally from geographic areas in northern Canada shared how their ideas differed about what constitutes healthy and nutritious foods. For them, early negative experiences, observed high cost and the receipt of poor quality, often expired perishables from local grocery stores in their community of origin (Burnett,

Skinner & Leblanc, 2015; Socha, Chambers, Zahaf, Abraham & Fiddler, 2011) left them suspicious about the claim of fruits and vegetables as part of a healthy and balanced diet. Many still may not envision fruits and vegetables as healthy because of the conditioned belief that these foods are not palatable or appealing.

For most First Nations and Inuit participants, these early experiences and perceptions formed genuine barriers to participation in community food programs and fruit and vegetable consumption in adulthood. Migration to urban areas often entails a disconnect with more familiar country foods and natural resources recognized by Indigenous cultures to assert whole health and healing. This often results in dietary change as they try to adapt to a food system that is entrenched in colonialism, socio-cultural changes and modern forces that continue to exploit Indigenous territories and inhibit the ability of First Nations and Inuit to procure foods they consider healthy (Myers, Powell & Duhaime, 2004). For First Nations and Inuit groups who have experienced this, investing in a food box with fruits and vegetables is incongruent with traditional knowledge and ideas about what is appetizing and preferred. As their ideas of food to maintain a healthy life are different from Western culture, receiving a fruit and vegetable box that may contain bruised, damaged or expired produce can heighten the experience of distress at the hand of a program designed to assist; like many other ineffective food programs including the Food Mail Program (FMP), Nutrition North Canada (NNC) and the Country Foods Initiative (CFI) which failed to delivery on the promises of better food security (e.g., quality, variety and availability of foods) and support for people living off the land (see Burnett et al., 2015; Power, 2007; Socha et al., 2011).

Understanding the Barriers to and Attrition from the Ottawa Good Food Box Program

Rarely related to only one factor, barriers to program uptake are due to more than limited finances. There is a significant overlap between economic, social, program-specific and individual issues that make program participation convenient for some and difficult for others. The season (weather), sales or cost and quality of seasonal produce in grocery stores, proximity to a food distribution site and household schedule are factors that come into play when considering whether to join the Good Food Box Program. Individuals who did not participate in the program reported more barriers that related to health issues (physical health issues, food allergies and potential interaction of fruits with medication), scheduling, transportation and financial constraints as deterrents to program participation than former and current customers. These barriers question the current program's fit with the lifestyle and needs of urban residents and the program's ability to ensure convenient program access to food sites and, subsequently, fruits and vegetables. Some program changes can be addressed by staff and program coordinators but others require social action and change from other interest groups, advocates and levels of government to provide more equitable and reasonable access to food.

For adults and the elderly, physical limitations were sometimes an issue to ensure that all foods could be consumed. As a result of no longer having one's natural teeth or suffering from general weakness, harder fruit and vegetable varieties were not preferred foods and did not fit the health and lifestyle needs of this group; again, suggesting a lack of program fit with food needs as a result of health issues. A Canadian study conducted in Côte-Saint-Luc, Quebec reported that elderly customers commented on the excessive quantities of certain produce which made the program less practical for those who had more difficulty preparing meals with the food box items (Rose Bell et al., 2014).

Students who lived near or on campus generally enjoyed the practicality and convenience of having a Good Food Box on site. However, some who lived off-campus found it inconvenient to pay for incurred parking costs when collecting their food box. The added fees and inconvenience outweighed the economic benefits of continuing with the program. Moreover, because of the new challenges that accompany the transition to more independent living as a post-secondary student, young scholars often struggled when adjusting to their living conditions which include surviving on a limited budget during the academic session. Each semester brought new challenges and unexpected costs (e.g., tuition, textbooks) which put added financial strain on an already limited budget. The experience of acute food shortages was more common and because of these challenging circumstances, food priorities were no longer fruits and vegetables but other foods to avoid hunger. Currently, no campus-based Good Food Box evaluation or needs assessment with this particular demographic exists to identify promising practices.

Factors that Challenge Program Delivery and Site Management

Separate group discussions with staff, site coordinators and steering committee members revealed different challenges faced by people in different positions of leadership who hold varied responsibilities that relate to program implementation, management and delivery. While most Good Food Boxes across Canada differ in how they are implemented based on context (Morgan, Scharf, Bieberstein & Daalderop, 2008), challenges for staff and volunteers related to securing a sufficient supply of human, material and financial resources to support program delivery while keeping subsequent costs low. This program, like other food programs in Canada, is strongly supported by community groups and schools (Tarasuk & Davis, 1996) and able to function as a result of strong volunteer capacity; an aspect that is dually identified as a program strength and a characteristic that makes program delivery vulnerable. Linkages with other organizations often

determined if, how, where and when new food distribution sites could reach new neighbourhoods or other organizations. The program has a prominent presence and voice in local food movements but competes for food dollars with a range of food retailers from small urban grocers to large box store who offer a variety of food and non-food items under one roof. This can be a daunting task for a locally run, not-for-profit, community-based program with far fewer resources than larger food corporations. Locating enough sustainable human, financial and material resources is important to maintain the viability of this local food program as, combined, they affect the quality of program delivery. For site coordinators, a lack of material and human resources where no succession plan, inadequate space and too little time to engage in outreach were factors that strained their ability to recruit more customers, implement activities to support and strengthen community cohesion and support program growth.

Since the program relies heavily on volunteer labour, any decrease in volunteer capacity means having to scale back on health promotion, healthy eating and/ or outreach activities. A major issue raised by discussion group participants was the recruitment, retention and distribution of enough volunteers throughout the city. Work by Guthro (2010) explains that family, work and community and expectations shape individual involvement in informal learning contexts. Since obligations and responsibilities are not static, it is important for grassroots, community-based organizations to explore and develop different strategies to survive within an increasingly challenging economic, social and political climate (Guthro, 2010). Theoretical and empirical literature on volunteerism in an organizational context suggest that personal perception of and feelings about the way one is treated by an organization, the organization's reputation and personal practices have an effect on the length of tenure of volunteers (Davis, Hall & Meyer, 2001; Grube & Piliavin, 2000; Omoto & Snyder, 1995; Penner & Finkelstein, 1998). Because the

program does not conduct exit surveys or engage in periodic reporting with volunteers, volunteer turnover within the Good Food Box Program is acknowledged as a critical challenge that needs to be addressed. Studies acknowledge that volunteer burnout or high attrition rates are a serious problem for administrators who manage not-for-profit organizations or programs. As disjunction between motives for volunteering and the nature of the task or predicts a weakened loyalty to volunteer commitments (Holden, 1997), within the context of an anti-hunger organization, Barkan, Cohn and Whitaker (1995) found that a lack of resources can also explain situations where there is high volunteer drop out. A more recent study by Ellen Netting (2008) explains that volunteer resignation is most often the product of situation factors including not receiving as much guidance or direction as desired. It would seem reasonable to argue that it may be in the best interest of the Good Food Box to identify motivations why some choose to volunteer at recruitment to determine ways to better attract, support and retain volunteer assistance over longer periods (see work by Clary et al., 1998) and conduct exit interviews when they resign.

Some site coordinators lacked support when they could not tend to their program duties. Without arrangements for supplementary support or a succession plan to ensure continued program access and customer participation, the negative effects from poor management and practice spill over and affect the perception of poor program service and result in lost revenue and customer dissatisfaction. While a Good Food Box study by Rose Bell and colleagues (2014) found that volunteers played a role in increasing fruit and vegetable access for elderly customers, this study suggests they may play a more integral role in the quality of program delivery. To fully understand the role of volunteer support in the context program delivery and outcomes, more research is needed.

Another issue raised by staff and the steering committee was finding sustainable financial support to cover program costs and innovative methods to better address program access. Since community food programs fall under the primary responsibility of the provincial government (Riches, 1997), great competition exists for financial support for programs that seek to have an impact on food security in Ontario. The Ottawa Good Food Box receives money from the province and the municipality under the City of Ottawa's commitment to poverty reduction strategies with access to food as one of its funding streams (Ottawa Good Food Box, 2010). The program currently runs a stable budget where food box revenue and financial support from private/ public funding cover program costs but current grant totals and funding programs are not always guaranteed for subsequent years. Government priorities change and so do allotted resources to help support community programs. These changes in turn have an effect on staff members and their ability to hire necessary staff to help balance tasks and/ or effectively respond to customer feedback with sustainable and appropriate improvements. As a not-for-profit program, limited and uncertain financing means trying to do more by being as resourceful as possible. With broader goals that include increasing access to low-cost fresh fruits and vegetables, increasing consumer knowledge about healthy eating, nutrition and food issues, enhancing the social support networks of customers and increase food security (Ottawa Good Food Box, 2010) among others, the capacity and resources of the program may be stretched too thin in an attempt to accomplish all of these simultaneously.

Despite the valiant efforts of paid staff and volunteers, a major challenge for those who coordinate the program and food sites is to effectively differentiate itself from other charitable and emergency food programs (e.g., food banks). The common misperception from community members is that the program targets the inclusion of marginalized households. As the Good Food

Box Program does not follow a prescribed logistic model, collect demographic data on its customers or have the same goals as other adaptations, it's difficult for them to know who's needs they are indeed serving. The identity crisis of the program does not appear only situated in Ottawa but extends to other regions (see Lentz Laporte Potts, 2013). A reason why the program may struggle to establish the program identity it wants as an entity that is different from charitable efforts could be related the physical environment in which some Good Food Box sites operate. To expand the program, the program coordinator occasionally seeks out potential host organizations in areas at-risk of food insecurity or potential food desert communities. Some food distribution sites operate out of private residences and others are managed out of community health and resource centres, schools, churches and other public locations. While the current study did not focus on the effect that space can have on the program's uptake and implementation, sites that operate out of locations closely tied to charity (e.g., churches and food banks) with a responsibility toward households in need can influence the perception and attribution that the Good Food Box serves the needs of those who are marginalized. Church institutions and food banks play a role in poverty and hunger relief efforts without a necessary focus on health promotion. This may prevent some groups from participating as the stigma attached to the risk of accepting charity can be a deterrent from the uptake of the program even though program managers want to convey that it's open to all. A study on food bank use by Tarasuk and colleagues (1998) suggests that stigma among other reasons is a barrier to participation in food programs. Therefore, while trying to be inclusive by expanding their program in different locations to enhance participation, the program's attachment to hunger, poverty or charity-based institutions may have a deterrent-effect; affecting its ideal profile and subsequently limiting public participation. Further investigation on the role of the environment and community

characteristics within the context of running a community-based food distribution site as part of the Good Food Box Program is needed.

Staff members felt they put a substantial amount of effort to increase awareness and educate the public about how the Good Food Box Program can empower communities and create new social spaces that bring people together around fruits and vegetables in the hopes of improving social support networks, food security status and dietary and health outcomes. The desired message is not being received by all. Findings from this study suggest that a combination of ineffective advertising and communication about the program may lead to misunderstandings about the program's aim and scope which in turn prevent potential customers from joining. Loopstra and Tarasuk (2013) also suggests a similar conclusion about how programs advertisement affects whether and how these programs are in turn perceived as options to improve food access and for whom. As explained by McKnight (1995), for interventions to succeed, individuals have to know what is being offered, feel it's important to them and be willing to use it. To maximise these opportunities, physical, social and psychological barriers to program use need to be reduced or eliminated (McKnight, 1995). To enhance community life and health, it is important to carefully consider the needs of the community and identify how promising practices can be better implemented to have a positive effect on the program's uptake and profile.

While site coordinators appeared preoccupied by their occasional limited ability, capacity and knowledge to effectively implement supplementary activities to foster community cohesion, it is less certain how these aims may be achieve through the program's current structure alone because of inherent program aspects which include one to two monthly site visits as part of the food box buying process. While 50% of participants in a small Quebec-based Good Food Box pilot project with elderly people reported that program participation made them feel more

connected to the community (Rose Bell et al., 2014), results from this study are varied as sense of community or cohesion in relation to program participation were not directly measured. Qualitative results indicate that program users appreciate that some site coordinators mitigate circumstantial or situational issues (also known as ‘non-obligatory helping’; see Omoto & Snyder, 1995) but none highlighted that, as a result of participation in the Good Food Box, they felt more connected to their community. As site coordinators expressed altruistic and collectivist values as motivation to volunteer (e.g., desire to help others and support their community) and initial enthusiasm to support a program and its cause²⁰, many felt their motivation dwindle when effort (physical and emotional) and time spent on activities that focused on building community were poorly received or left unappreciated by customers. While studies on volunteerism tend to report its benefits for society (see Johnson & Schaner, 2005; Wilson, 2000) and the volunteer (see Lum & Lightfoot, 2005; Moen & Fields, 2002), reporting on the less positive effects is less frequent and relatively unknown. Efforts of site coordinators may be better focused on strengthening activities to promote community cohesion if there is an identified need or desire for such initiatives or, alternately, if there is no need or customer interest at particular sites, attention to improving the implementation or delivery of other program components including positive social interactions can be important to maintain or improve customer satisfaction.

The benefits of resulting behaviours that transpire from a stronger sense of community are numerous (see Hyde & Chavis, 2008) and the degree to which this may be achieved through the Good Food Box Program relies heavily on the ability, skills, knowledge, capacity and confidence of site coordinators. Implementing and monitoring whether the overarching program goal of fostering a sense of belonging is reflected and achieved at a site-level is an important step

²⁰ Program aspirations include to have a positive effect on fruit and vegetable consumption, enhance food security and improve the quality of community life.

toward enhancing community life and demonstrating accountability to the community and customers. Site coordinators have the most frequent direct contact with customers within the structure of the Good Food Box and when programs fall short of delivering on the promises they were designed to achieve, this results in a disservice to communities and disappoints customers who joined to benefit participation in something initially deemed positive; all of which run contrary to the Good Food Box goals.

Perceived Program Strengths, Benefits and Reach

Different food initiatives across Ottawa provide hunger relief by charitable food assistance or offer food support through community-based programs where the latter supports the acquisition of nutrition and food knowledge, food preparation and cooking skills (Engler-Stringer & Berenbaum, 2005; Tarasuk and Davis, 1996; Tarasuk, 2005). These approaches have been Canada's main response to food insecurity in an effort to help address access food. Those involved with the Good Food Box Program aim to improve the culture of well-being and healthy eating in Ottawa neighbourhoods. For those who participate monthly and who recognize the value of participation, benefits of participation extend beyond income relief as customers were relatively satisfied with other program aspects. Although most individuals (customers and non-program users) had a positive impression about the program, those who did not recognize the value of the food box content were unlikely to participate or return to the program if they felt they could: 1) get more for their money elsewhere, 2) encounter less challenges, or 3) make fewer compromises. Through program participation, benefits were identified for both customers and the community in the context of relationships and interactions that, together, create a sense of place and space.

Investing in the local economy and supporting local business was an intrinsic program aspect that many customers valued and, among other reasons, prompted community members to join. Many expressed a sense of commitment to support the livelihood of local farmers, community food programs and job development. Ottawa conveniently straddles two provincial boundaries and is proximate to numerous farms in Eastern Ontario and Western Quebec. Mostly small farms, the 2006 Census of Agriculture reported 1, 933 farms within the Ottawa-Gatineau Census Metropolitan Area²¹ (CMA). The proportion of farms that harvest fruits and vegetables exceeded the provincial proportions in the region for both Ontario and Quebec and have access to 184 farms that produce organic crops (Statistics Canada, 2009). These farms are among the suppliers of fresh produce for the Good Food Box Program along with other area wholesalers (Good Food Box, n. d.). It is estimated that as many as 10, 000 people are directly and indirectly employed because of the region's agricultural industry (City of Ottawa, n.d.). As a country that produces and grows many nutritious and tasty food varieties, investing in and supporting local agriculture is one way to reconnect people with their regional food system.

Although there exist variations in the way the Good Food Box Program is delivered from coast to coast (e.g., program administration, goals, target audience, food box content; Lentz Laporte Potts, 2013), there exist common program elements that characterise it as a food action program with an orientation toward community development that is context- or neighbourhood-specific (e.g., regular intervals of food distribution, open to all regardless of income and the involvement of community members as volunteers in program delivery; Lentz Laporte Potts, 2013). To increase awareness about different topics related to food and health, customers

²¹ A census metropolitan area (CMA) is defined by Statistics Canada as an area that has a population of at least 100,000 with an urban core of at least 50,000 people. There are 33 CMAs across Canada (Statistics Canada, 2009).

enjoyed receiving reference material to support their health and eating habits. Each food distribution site has the potential to offer more tailored community support and food knowledge. The implementation of these activities depends on the knowledge, time, skills and resources of the site coordinator and customer interest. Because the program does not monitor the implementation of support activities to help build and enhance a sense of community, it is difficult to know whether each community has the same opportunity to benefit from this overarching program goal.

Current customers identified many benefits and program-based strengths that supported their monthly loyalty and mentioned fewer aspects that challenged their participation. For those who enjoyed the program within its current structure, a sense of gratitude and satisfaction were common sentiments. For some customers, the program is a dependable source from which to get nourishment at a fair and affordable price on a monthly basis. For others, the thought of not being able to buy their fruits and vegetables through the program meant likely affording fewer fruit and vegetable quantities or none at all. For them, it was through the Good Food Box that they could afford more fresh produce than they would otherwise be able to procure themselves. One assessment of the Good Food Box by Brownlee and Cammer (2004) reported an average savings between 10% to 25% on fresh fruit and vegetable produce bought through the program compared to buying the same fresh produce items in a grocery store. While savings in a single month may be marginal, these savings add up over the course of one year and may alleviate some financial pressure for participating households.

Praise over the quality of the program's fruits and vegetables have been reported elsewhere within the context of elderly persons (see Rose Bell et al., 2014). In this study, some students and adults enjoyed the food quality and the ability to choose different food box sizes to

suit their needs; a program feature not consistently available across Canadian cities (Lentz Laporte Potts, 2013) but a component implemented within the Ottawa-based program. Some customers appreciated the receipt of potentially less familiar fruits and vegetables to savour during the month as this helped them diversify their diet. For others still, program participation was seasonal and/ or based on the experience of more limited finances and, like a safety net, there was reassurance that it could be accessed when needed. These findings are consistent with previous community needs assessments (see Rose Bell et al., 2014).

At a community-level, program participation allowed customers to affiliate with others in meaningful ways to access resources, information and support. At its core, an orientation of community development supports self-reliance in the resolution of issues based on solutions generated from collective action (United Nations, 1949, as cited in Ontario Health Communities Coalition, n. d.). Policies and practices are implemented at the program-level to maintain consistent, predictable delivery of service and at the site-level to guide management operations with the community in mind. Promising practices that work at one location may not generalize to the function of other host sites since each one is managed independently and has varied access to resources of different quality and quantity (e.g., material and human). The flexibility, understanding and compassion that site coordinators demonstrated to local customers was among the appreciated qualities that reflected well on the program and encouraged customer loyalty. While general components of how the Good Food Box Program functions may shed doubt on how the program addresses or responds to issues of access, the orientation of site coordinators to promote program values of connectedness are uniquely reflected in the promising practices they use to best respond to and accommodate individual and contextual circumstances that affect customers, program satisfaction and fruit and vegetable access.

Since the Ottawa Good Food Box Program supports and encourages the implementation of innovative strategies at the site-level that are in tune with the unique circumstances under which each site functions and operates, independent sites should be assessed according to how they address inherent program issues based on the community resources they have at their disposal and how they work to assess community and household food insecurity as opposed to the program at large. As a grass roots food action program that involves many community members and supporters from diverse backgrounds with varied levels of knowledge, experience and skill, collective efforts, networking and partnerships were identified as important factors to help the program reach different communities that may be at-risk of food insecurity, poor diet and health outcomes and/ or isolation. Through the Good Food Box, the community plays a more prominent role in the food system where different types of relationships between individuals and food are fostered; components and interactions that are weakened within the mainstream food system (Kloppenbergh, Hendrickson & Stevenson, 1996).

Rooted as a strategy to promote food security, more research is needed to assess other potential program models and structures to adequately address food insecurity within the umbrella of the Good Food Box or the feasibility to link the program with other initiatives or organizations as a means to address the unequal distribution of food in general and fruits and vegetables in particular among more marginalized neighbourhoods and groups. What is evident from findings is that, what works for some, does not for others and this generalizes from program participation to food selection, preference, preparation and habits of consumption. As an alternative food buying program that aims to have an impact on food insecurity in Ottawa, partnerships with other local organizations to offer more than fruits and vegetables may make

this program a viable option through which to save money and find more ways to connect with the community around good food.

Research Limitations and Strengths

This study captures multiple perspectives on the factors that affect participation in and the delivery and management of the Ottawa Good Food Box among a small yet diverse sample of households in an urban environment. Staff, steering committee members and site coordinators play an integral role in the implementation of the grassroots program, the quality of its delivery and, more generally, in the regional food system. The limitations below are those that may have the greatest impact on the possible generalizations of findings and the quality of results.

The small sample size and consequently the small number of participants in each sub-group and the lack of a probability sampling technique may affect possible generalisations about the barriers and facilitating factors to the uptake of the Good Food Box Program for First Nations, Inuit, Métis and non-Aboriginal families. Due to a combination of time constraints and limited capacity, a total of 63 participants were recruited with the support of project partners who facilitated study access to Good Food Box customers, steering committee members, staff and site coordinators. Difficulty recruiting current program customers who identify as First Nations, Inuit or Métis may further support the suggestion of the program's lack of fit with the food preferences and interests of individuals who identify with these groups and may also be indicative of underlying socio-economic issues that result in program exclusion. Acknowledging the relationship between the researchers and the 'researched' is another factor explained at length in Study 1 (see p.275 - 276) that also can explain difficulties in recruiting enough participants in certain sub-groups and why it was not possible to further divide Aboriginal data into respective First Nations, Inuit, Métis or other cultural/ethnic group that responds more appropriately

reflect. From a quantitative perspective, it would not have been possible to examine any of the data provided by First Nations, Inuit or Métis beyond descriptive; another concern that has been detailed in the limitations of Study 1 (see p.276). Findings of a post hoc power analysis reveal that the sample size may have played a lesser role in affecting the significance of some statistical comparisons. With the effect size $f = 0.8$ and $\alpha = 0.05$, results revealed that based on the mean, the between-groups comparison effect size observed for the present study ($d = 0.99$), a minimum of 10 participants per group would be required to obtain statistical power at the level of 0.8 as recommended by Cohen (1988). Therefore, for this study, there is only a 0.01% chance of falsely rejecting a null hypothesis when it is in fact true. Qualitatively, while this form of data analysis is less concerned with sample representativeness than relevance (Popay, Rogers & Williams, 1998), differentiating issues that relate to First Nations, Inuit, Métis or all three main groups (as indicated by the use of the term 'Aboriginal') was possible. Though there are similarities between First Nations, Inuit or Métis cultures and groups, there is also a lot of variability in the context of the relationships, traditions and practices that each group and sub-group have with food. Ensuring that only those who could share experiences and knowledge related to the processes and structures that affect participation in the Ottawa Good Food Box was more important than the number of people recruited. While caution is suggested in terms of the interpretation and generalization of findings for quantitative results, individuals from the First Nations, Inuit and Métis communities were consulted during the analysis and elucidation of qualitative results. Contributors from these communities reviewed portions of the data with the researcher and supported the process of inter-rater reliability. Based on discussions with members from the Aboriginal communities in Ottawa and a non-Aboriginal colleague in the field of community psychology, it was judged essential to differentiate themes that emerged as

respective to each group (First Nations, Inuit, Métis and non-Aboriginal) where possible and to explain how the issues raised may further challenge program participation and fruit and vegetable consumption for First Nations, Inuit and Métis peoples. Because the research approach included the consultation and guidance of individuals with extensive inherent and diverse knowledge and experience with different demographic groups in Ottawa, the qualitative portion is considered valuable and valid.

Another factor that may have contributed to difficulties in recruiting current Good Food Box customers is that fewer individuals may take part in the Good Food Box during Eastern Ontario's and Western Quebec's peak harvest seasons (spring, summer and fall) because fresh produce is available in abundance in local markets across the city. This may have led to seasonal program attrition and account for the small sample size of current Good Food Box customers. The farmers' market landscape is one where consumers can often negotiate the price and quantity of their fresh food purchases and exercise more power over food selection; an option not currently offered by the Good Food Box. Farmers markets are integral to the city's local economy and rooted in Ottawa's urban community life. Because it is a space that gathers people who share similar interests and values of supporting local food producers, future studies may want to consider seasonal and time factors that may have an effect on participant recruitment and prolong data collection over several months.

A final note on limitations due to the sample: Because the Good Food Box does not collect customer data and does not base adhesion on the demonstration of need, it was not possible to know baseline information about the studied population (e.g., current or former customers) or how participation is distributed across sites in Ottawa. Although the use of a probability sampling technique is ideal for quantitative studies, after a discussion with project

partners and an expert in the field, the inability to obtain such data was judged as justifiable for the non-use of such an approach and not deemed as damaging to the quality of the study.

Recruitment issues and historical and political tensions of doing research with vulnerable groups were acknowledged during the development of the *Healthy People, Healthy Communities Project* and an orientation that included the integration of a Community-Based Research (CBR)²² approach was adopted to support “a systematic effort to incorporate community participation and decision making, local theories of etiology and change, and community practices.” (Wallerstein & Duran, 2006, p. 313). As an alternative orientation to conventional research, this approach involves several guiding principles and is mainly characterised by a collective commitment to investigate an issue and, individually and jointly, reflect and engage in decision-making processes to provide meaningful research products and solutions through collective efforts from the stages of project planning to the communication of results (McIntyre, 2008).

To develop a better relationship with community members and supporting organizations, the researcher volunteered in the community in an effort to observe and experience the norms, processes and culture of different community food programs (e.g., community kitchens, Ottawa Good Food Box packing day). While building rapport and trust with organizations and community members were important aspects of the project, gaining support from organizations was more fluid once iterative processes and regular check-ins were established with project partners to ensure that findings would be returned to the community in ways that were

²² The Loka Institute defines a community-based research (CBR) approach as “[...] conducted by, for or with the participation of community members. Community-based research aims not merely to advance understanding, but also to ensure that knowledge contributes to making a concrete and constructive difference in the world.” (Loka Institute, 2002, as cited in Flicker, Savan, Kolenda & Mildenerger, 2007, p. 2)

linguistically accessible, appropriate and sensible; steps necessary to demonstrate that the project could triumph over research's colonial legacy.

While the study captures a breadth of diverse and multi-cultural perspectives that support a greater understanding about the factors that challenge and support participation in the Good Food Box, it also highlights the issues faced by all levels of staff. Focus groups are regularly used in health and social research with small groups (Webb & Kevern, 2001) and they are complex to moderate to ensure that all participants have a voice and to recognize the value of their perspectives. To achieve this, the researcher tried to support and promote the active contribution of all participants but felt that, despite efforts to achieve balanced participation, the dominance of several individuals may have intimidating less eloquent speakers. While this may have limited what could be known during the focus group with site coordinators, Talking Circles were applied to balance issues of control and power between the researcher and participants to ensure that everyone, even if they had nothing to share, had the opportunity to speak.

With regards to gaining a better understanding of how independent and community food sites are managed and the conditions under which site coordinators deliver the program, the study falls short of is differentiating between the different types of environments in which each food distribution site operates (community- or neighbourhood-based) and does not capture information on the resources and/or structures that may in turn affect program access and availability and customer and volunteer recruitment and retention. As most site coordinators shared perspectives that relate to managing the program in Ottawa's downtown core, there may be other factors that affect program participation, program delivery or site management in communities outside these limitations but still considered within the urban environment. As a result, findings cannot generalize to the experiences of all program customers and volunteers as

some issues may be site- or place-specific and more reflective of the presence or absence of specific structures, organizations or neighbourhood characteristics out of which sites operate.

This study also shares the limitations of using the FFQ and the USDA Household Food Security questionnaires which rely on retrospective information. Concerns over the use of these instruments have been detailed at length in Study 1 and information how issues were ethically and respectfully mitigated have also been discussed (see p. 278 - 279).

Finally, while the current study found a relationship between frequency of weekly fruit consumption and participation in the Good Food Box, findings do not assess dietary or nutrient adequacy and cannot assert that program customers necessarily have a better diet or health than individuals who do not participate. Future studies could explore how effectively the program supports the preparation and consumption of foods conducive to a balanced and healthy diet for more optimal health outcomes and how the program promotes dietary variety with educational tools that inform customers how to combine different foods in ways that can be healthy, nutritious, palatable and culturally appropriate.

Community-Driven Recommendations to Improve Customer Satisfaction and Program Participation

When asked how certain aspects of the Good Food Box Program could be improved or enhanced, current and former customers shared potential solutions to promote customer satisfaction, recruitment and retention. Non-affiliates also chimed in with feasible solutions to increase program awareness and visibility to the general public, underserved communities and at-risk groups who could benefit from participating in a program that provides income-relief and supports access to and the consumption of fruits and vegetables. While some recommendations require more drastic program changes, others are simple fixes with the aims of better program

promotion with the goal of informing and recruiting a wider net of Ottawa residents as customers.

Improving content of the food box. The need to address food quantity could be understood in two ways: 1) Offer more frequent opportunities for customers to purchase produce during the month, and 2) Offer more or less of certain fruits and vegetables. For 28.5% of former and 7% current customers, placing bi-weekly food box orders would allow a more consistent flow of produce to feed the household. For former customers, more frequent purchasing opportunities meant being able to buy more fruit and vegetable varieties they already wanted, in the quantity they needed from a dependable place. For other current customers, offering more fruits and fewer vegetables was proposed as the latter was already abundant with each food box:

“Avoir la livraison au deux semaines [...]”

“Fewer carrots and more strawberries or raspberries and bananas, especially tomatoes.”

“Fewer vegetables. [...] I just would like more fruits.”

Current customers enjoyed the types of fruits and vegetables they received but recommended offering more variety options and types of produce to help introduce new foods. Introducing less familiar produce varieties could make mealtime more enjoyable compared to sticking to mundane, consistent food varieties:

“More variety would be nice. It’s nice to try new things, where you can get healthy meals from other stuff as well too. That when you are shopping you’re not just going for potatoes and carrots. You can try a sweet potato or cook instead with a shallot instead of a regular onion.”

“Something consistently there that would be better would be a leafy green because you would always use that.”

“Lots of different varieties of cabbage and bok choy is very high in calcium.”

For some, program participation was about getting enough of the foods you wanted at a competitive price and not about trying new foods. For several non-users, the potential of receiving one or several less familiar or less desired foods seemed too risky of an investment on a limited budget. For most non-customers, aside from not knowing about the program, not being able to choose your produce was a main barrier to program participation. Having the opportunity to select a box with more desired food was one of the most cited suggestions for improvement:

“It would not be bad if there was let’s say a website or something to select what items and the number. I can optimize exactly what I’m putting my money into.”

“The suggestion of having like options and options box. The options box will likely be the best improvement of what I’m thinking of.”

For others still, if a ‘Selection Box’ could not be offered, two customers suggested having a ‘Swap Box’ at every Good Food Box site to allow customers to exchange less desired produce for an item that would likely be consumed:

“It would be nice to have the possibility to choose some products. I didn’t eat spinach. It would be nice if I had the opportunity to take something else.”

“If you just said, like in a restaurant you would say “hold the onions”. Like if you can switch out something else that you know would eat all the time. I eat salad all the time [and] add it to everything; in sandwiches and some at dinner. I’ll trade this for this, but then I know that is not always available.”

Others suggested different price point options for organic boxes, vegetables and pre-cut options to appeal to diverse groups and prospective customers while retaining current ones:

“I think that a good thing will be to get price of organic foods affordable and less like, every time you see organic it’s extremely expensive [...] Negotiate better price and see if you can give more affordable to people.”

“I had a suggestion about a \$5 [veggie] bag.”

“It would help promote healthy snacking if they came with the pre-cut idea.”

For former customers, improving food variety was tied to harvest seasons where some wanted more Canadian- and locally-grown produce (domestic) in each food box:

“Avec des changements, oui. Si y’avait plus de produits locaux pis on pourrait ramasser la Boite verte, deux boîtes dans le mois, à chaque deux semaines...”

“Quand je pense à l’été passé, j’ai pas eu d’épis de maïs, qui est surprenant parce que c’est un produit local qui est pas cher en saison.”

Others recommended including seasonal herbs or spices to encourage customers to add natural flavours to their food as opposed to using salt. Of those mentioned, familiar varieties were basil, oregano, rosemary, sage, thyme and peppermint:

“Maybe purchasing spices and [info on] how to store spices and how long and general tips what these are for in the bulletin that comes with the monthly box. There’s sometimes a theme on Mexican or Greek Mediterranean diet. Most people know things like tomato and basil go wonderful together and oregano and pork and lemon juice. Even a few sprigs of rosemary, fresh oregano or some fresh herbs would be lovely. Sage in the winter or thyme.”

“Would it possible to add just one leaf of peppermint or basilica or different herbs? [...] It keeps food healthier if you don’t use salt and use herbs instead. Tea like peppermint can be used for cooking but can also be used for tea.”

To ensure that only the best quality fruits and vegetables are included in each box, current and former customers recommended The implementation of quality control checkpoints can help ensure that customers are getting only the best quality produce as promised by the program. This can be accomplished by updating volunteer training guides and implementing better monitoring practices. The appearance, texture, scent and taste of produce is also influenced by packaging type and quality as customers were concerned over the amount of moisture in their food box which was assumed to affect produce quality. The Ottawa Good Food Box could explore different box models or ventilation options to minimise the condensation or moisture that may accumulate in the boxes once they are re-refrigerated overnight and diminish produce quality:

“I think that if maybe they took better care with the fruit and vegetables. Apples and oranges, they’re in abundance out there and they’re bruised and they’re this and that but when you pay good money you expect good stuff.”

“Maybe something in the box would take the moisture out to some degree without affecting the veggies to wilt.”

After food box orders are packed, more mature, misshaped or slightly bruised items that were set aside can be further inspected by the program coordinator to verify which ones are safe and appropriate for consumption. These items can then sold at the food distribution site at a fraction of the cost to customers or be included as an option in the Swap Box²³. This practice is current with food trends in Canada and Europe. In March 2015, a large Canadian grocery chain launched an initiative to target food waste and sell blemished, misshapen or undersized produce under a generic brand name where customers can buy bagged produce for up to 30% less than other fruits and vegetables (Abraham, 2015). In May 2015, to diminish food waste, the French

²³ A ‘Swap Box’ is used by some site coordinators to allow customers to trade less desired food box items for others in a supplementary food box ordered for the site. This practice helped minimise customer dissatisfaction when some produce items could not be consumed for various reasons (often health-related or strong personal preference).

national assembly passed legislation banning big supermarkets from discarding or destroying unsold food items (Chrisafis, 2015). The Good Food Box can implement a similar policy to minimise food waste while still offering edible, safe and nutritious produce at a reduced cost.

Improving program visibility and awareness. Participants across all study groups felt the Good Food Box should focus on increasing public awareness about the program and making its mission and objectives better known to improve its profile and minimise stigma. In particular, increasing program visibility through more effective forms and mediums of advertisement was mentioned 55 times by participants with 61.8% of responses coming from non-customers:

“It just needs to be known that it exists. I don’t think there is enough awareness. If there was, people would be like: “I would totally do that”. When I tell someone about this they’re like “*What? Really?*””

“They could also become more prominent and I feel like they should advertise a little harder and that’d definitely help a lot. And part of that advertising would just be making it easier to understand how to get it.”

Specifically, several current and non-customers suggested posting information about the program on public transportation vehicles such as local buses. Non-customers proposed the use of a mobile food truck to promote and sell produce as an eye-catching option for communities:

“The Parkdale Market and other stuff, they’re on buses and stuff.”

“Something mobile. A mobile outlet like the Salvation Army with their vans.”

Others felt that key local businesses and institutions with a vested interest in health and well-being could be an ally to promote the program. These places may include community health and resource centres, drop-in centres and doctor’s offices and Aboriginal friendship centres.

While some of these locations may have a Good Food Box site, promotional materials need to be

more evident and visible. To expand program services and minimize stigma, some suggested partnering with community businesses that people frequent daily basis including coffee shops, fitness centres, local schools and food festivals:

“[...] Doctor’s offices. All kinds of doctor’s offices.”

“Put around out fliers at the Friendship Centre, Wabano and Woman drop-in centres.”

“[...] Just having them up in community centres and other places like coffee shops.”

“Every public school, every school should have this. Every, fitness centre, private or public, could have this.”

“Something like [Veg Fest], you could totally like advertise the Good Food Box. I don’t

Others recommended implementing Good Food Box products in different community-based food programs including cooking programs to teach people how to use different produce. Partnering with local schools to develop a school snack or meal program could reach more vulnerable groups and ensure that anyone from children to young adults in school have access to nutritious fruits and vegetables to support learning and nutrition security while reducing hunger:

“I would think for just for the social value, maybe a weekly program of some duration in the form of cooking lessons and such like that.”

“Maybe through schools so kids could tell their parents about it. There’s some other problems there, but that’s another way to do it. Kids could get the food for lunch.”

“I have contact with other international students and they don’t know about this. They should deliver more advertisement with international students or Europeans and maybe with all students because many don’t have much money. If they had a simple way to get good food it will be healthier and they will save money.”

For numerous non-program participants and one former customer (Aboriginal), recommendations focused on the medium through which to best promote the program and reach more people. Having a stronger internet presence, investing in the development of a cellphone application ('app') and reaching people through television and radio were potential ways to gain the attention of the general public and tech savvy groups:

"More through the internet. That's the trend and you need to have more visibility."

"The younger people today, obviously it's gonna be through wireless communications and smart phone techniques."

"Advertising would be big. [...] Radio advertisements or a little TV spot or something."

Others felt that there was merit in using print media (e.g., flyers and bulletins) and encouraging people to spread the word verbally to reach more community members:

"Advertise in local newspapers or if they could afford to, get an article written."

"Put out fliers to everybody at their door. Put it on the cars. I know they can't always read, but put notices on the windshields."

"Word of mouth and talking to your family and friends. Tell 'em it's healthy for you!"

Improving the information pamphlet to make information more concise and explicit was viewed as important give people the most salient information to encourage program uptake:

"From my background in marketing I think that more information could be put on it to entice people or to let them know what's in there for them."

"One thing that would help is to make a pamphlet or an e-pamphlet to let people know in advance that they need to bring a grocery cart if they're super strong or canvas bags; not just plastic bags."

An effective advertising strategy can help a budding or growing initiative become better known depending on which communication mediums are used to convey information. In some cases, innovative advertising strategies and the use of new technologies to reach the masses may lead to substantial gains in the least amount of time and sometimes, using old tools in new ways could prove effective albeit more sensible when on a tight program budget.

Improving program components. The spirit of these suggestions was based on the acknowledgement that the program is a positive initiative and could be improved to reach more communities while retaining current customers if the ordering process was improved. This component was described as complex and challenging and often entailed more than one visit to a food distribution site to first, place an order and second, to collect the order. Providing a step-by-step online or in-person tutorial could better support people who wanted to make a purchase:

“The first thing would be making it easier to get into the program and buy your Good Food Box.”

For some, the multi-step ordering process sometimes led to missed deadlines for product purchases or confusion with collecting their food box during operation hours. To help customers curtail these experiences, participants proposed to address these issues with the distribution of a “*Save the date*” card to remind customers of explicit pick-up times at the preferred site or the deadline by when to place their next food box order. It may benefit customers to pre-order food boxes over several months at a time for added convenience:

“It was just figuring out how to actually order it. For me a lot of the times I got it once and then I never really knew the date that the food bank would order them and stuff. They never gave me a “*Come before this time next*,”.

“Pis savoir les heures de collecte!”

“Maybe it would have been better if it was on sort of an always bought basis. Like you could order in advance or something like that.”

For non-customers and one former customer, a major program barrier related to lack of immediate financial resources. To promote inclusion, having a sliding payment scale or split payment option was suggested to help expand the Good Food Box Program to at-risk and underserved households who survive on meager resources:

“Si ça serait gratuit ou bien half-off pour que ça devient plus *“affordable”* pour les familles selon les circonstances.”

“The monthly payment. Maybe two different payments option towards the payment.”

For 24.5% of study participants (mentioned 10 times in total), offering delivery for a nominal fee was seen as a helpful and sensible service to encourage the participation of individuals with physical or health limitations, mobility challenges, small children or without access to transportation:

“All I have is a bicycle. The food box is a bit heavy. For extra money, a delivery service would be good. I find it fair if you pay extra to deliver, because it costs something.”

“Hopefully they can even deliver it to some people who can’t get there. I see the elderly people falling around on the sidewalks and I feel for them.”

“Delivery. There’s people that are disabled and especially in the winter with their scooter chairs, walker, crutches and whatever reason they’re sick, trying to get [from] this to this location. Say they’re across town and have to take 2 or 3 buses [...] and something happens along the way! Ones that can make it can come get it but what about others? Five dollars extra for delivery would be good.”

Some participants were enthusiastic about receiving recipe cards with their purchase and wanted more to support meal and snack ideas. Making minor adjustments to the information and education materials could support customer satisfaction and healthy eating practices. Other former customers (Aboriginal) wanted traditional food recipes and health information distributed with recipe cards. One current customer felt that including an herb/ spice information card with the food box could support more palatable and healthy meals:

“The recipes. The kale had a recipe with it to cook the kale which I thought was cool.”

“I wish they would stick to what we use to eat.”

“Maybe purchasing spices and [info on] how to store spices and how long and general tips what these are for in the bulletin that comes with the monthly box.”

Former and non-customers identified various ways in which the program could expand by developing alliances with other food and health programs in Ottawa. Through initiatives including community gardens and neighbourhood food markets, participants felt that more households could be reached who were already interested in and value healthy eating. By bringing people closer to natural harvests, it would also support opportunities for learning, community cohesion and the ability for community members to play varying roles in local food systems:

“You know those community gardens? I think it would be beneficial to have a garden in a couple of areas and have participants come and plant and stuff. That would be a way to promote the Good Food Box for vegetables and fruit and brings the community together.”

“Have little markets or something instead of just food banks, crash sales and bake sales. Do them like the fruit and vegetables things.”

To support the identification and selection of good quality fresh produce, it was suggested that the program offer workshops or shopping tours on produce selection:

“To learn how to pick them. I don’t know the different techniques to spot good fruit that’s not gonna go bad in a day. Like an afternoon program on picking fresh fruit and knowing the difference between bad and good.”

To improve the impact of the Ottawa Good Food Box Program and to increase the program’s social and professional networks, an Innu participant recommended the possibility of building partnerships with northern communities who want fruits and vegetables but have little financial, regional or physical access:

“This is the first time I’ve heard about this program. When you went over to Ottawa Inuit Children’s Centre and talked about this wonderful program, this could be used as a model for setting up healthier fruits and vegetables programs in the north. [...] I wish that there were programs available families up North. I’m fortunate to have the services here, but this could be used as a great model for good in the North.”

Through collaborative efforts and pooled resources, the Good Food Box Program can provide more adequate access to healthful fresh fruits and vegetables in more diverse and at-risk neighbourhoods with inadequate access to food retailers that offer affordable high quality fresh produce in sufficient varieties and quantities.

Other Recommendations

Having access to safe and healthy foods at an affordable price may be an aspect that some Canadians take for granted. But, being able to offer nutritious and healthy portions of food to each household member is something many struggling Canadian families cannot do. For them, various compromises are made to acquire the foods they want and need in sufficient quantities

which, despite their efforts, remains a serious challenge. A former program customer (Métis person) expressed the pressing need for social assistance to re-orient certain efforts to help marginalized families afford better foods for better health. For her, current charitable food assistance is not culturally appropriate or conducive to helping people be healthy but to make them feel full at the lowest cost. To better support healthy lifestyle choices on a tight budget and improve access to nutritious foods, different levels of government should better support social support programs where opportunities to buy or receive healthier food varieties are possible. The urgency for this plea related to the need to recognize the role of food in relation to critical, chronic and terminal health issues and the necessity for more sensitive, compassionate and competent community support:

“I really urge the government to give money for food, for vegetables. The drop-in centres and the, the soup kitchens and the mission and the Salvation Army kitchens are not quality food. And they do not bring people to a level of health up there. They actually bring them down and make them sicker. A lot of people have cancer, Crohn’s, ulcerative colitis, AIDS. People have serious diseases and the food that they’re served at soup kitchens and drop-in centres bring them towards the grave.”

Many people who receive financial support through different government initiatives believe the support they currently collect is not conducive to a healthy, independent lifestyle nor does it allow them to procure enough healthy food and the basic necessities they need to support health, healing and well-being. Although articulated by one person, this opinion was echoed in different ways by many participants who suffer from one or often multiple chronic conditions.

Community-Driven Recommendations to Improve Program Delivery and Site Management

Program volunteers and paid staff also provided meaningful recommendations to improve program delivery efforts between staff and site coordinators. While nearly all recommendations were geared toward increasing the effectiveness and efficiency of the Ottawa Good Food Box Program. In particular, questions what practices and improvements could increase the program's appeal and promote participation for First Nations, Inuit, Métis or other cultural groups. This prompted a rich exchange of ideas and perspectives and groups discussed and identified ways the program could be more responsive to the growing food, nutrition and health needs of urban residents and the challenges they face in urban Ottawa.

To know who is using the program, whether it is meeting the aims it was theoretically designed to reach and whether customers are satisfied, participants across all discussion groups identified the need to collect valuable customer data to be better able to respond to these questions. Data collection would help program coordinators know what are the most popular products (food box price points), if they are reaching their target audience and, more importantly, what are customer participation trends and how this is distributed across the city (consistent, seasonal or sporadic customers). By knowing a more detailed picture of the different types of customers who use their services, the program can be tailored accordingly to maintain its efficiency. Collecting this type of information can be costly (time and money) but, in the medium- and long-term, it can help the program respond more appropriately and effectively to customer needs based a more accurate consumer profile which can inform advertising and marketing efforts and pricing strategies. Gradually collecting customer details and information through exit and customer satisfaction surveys could benefit the program and future directions:

“It would be good to know how to identify ethno-culture communities; what would be attractive to the communities, so that we can work with the Good Food Box and also

those communities to promote it in a more effective way because like now it's generic and I can show people [that] this is what was in the box for November based on the list. There is going to be some mystery things in December, things we can't guarantee and people take a risk it's a bit of a gamble."

"If somebody leaves, how do you do a survey with that person? It's easy to do a survey with the participants because you know they like it. I'm wondering what would be a way for them to get more feedback from [people] if they are no longer customers."

Across all groups, participants highlighted the need to strategically re-brand the Ottawa Good Food Box in a way distinguishes it from charitable or emergency food programs.

Participants described mediums through which a more effective advertising and marketing strategy could be achieved to increase their visibility across neighbourhoods as a way to raise awareness of and participation in the program. Using advertising space on buses, having a food truck canvass different parts of the city and selling food carts with the Ottawa Good Food Box brand were proposed to increase visibility and distinction. To extend awareness, expand the program and minimise potential stigma, staff felt it was necessary to open new sites in more diverse establishments (e.g., government offices) and expand partnerships beyond health institutions (e.g., schools):

"We had so much momentum with public awareness but it's still a struggle."

"We needed a truck for delivery and we can only do it once a month under the current set up. If we move it into the school programs, once a month will make a huge difference to get awareness out there. With the nutrition aspect, we really need to be there once a week to make a big impact so people walking down the street will be eating vegetables or an apple. We'll need a way to make deliveries a couple times a month instead of once."

Several site coordinators proposed marketing the program through a traveling fruit and vegetable market that could be offered in different communities during the harvest seasons. Through this initiative, produce from local farmers could be sold individually or in pre-packed food box form to allow urban residents more control in the selection of the fresh produce:

“It could be marketed as a Good Food Box project going into a multi-cultural community. You don’t package it in a good food box, but offer it as a market.”

Building the Ottawa Good Food Box profile alongside other thriving community health and food programs may be one way among others to inform individuals about the program and how it benefits households and communities and supports farmers and the local economy. Another way to advertise the program via the internet to expand the concept of community is to market the Good Food Box in a way similar to other well-known middleman service (e.g., Groupon). Through this type of approach, consumers generally purchase an electronic voucher online to obtain a product that is marketed based on the proportion of savings it offers compared to buying the same product(s) elsewhere. The Good Food Box marketing strategies can apply these approaches where, illustrating how much money can be saved on produce compared to large food retailers, can appeal to more households and lessen the perception of the program being misconstrued as a charitable service. Gil (2013) explains that popularity from services like Groupon appeal to consumers who like to spend money while getting a perceived bargain. Using this approach, the Good Food Box could appeal to more individuals who want to save money on produce they already buy.

Several site coordinators felt the program may be more successful if it expanded sale products to include staples (e.g., milk, rice, bread, flour, grains and legumes). By including these, the program may appeal to more cultural groups who are inclined to use these in familiar recipes:

“It might be interesting to create something with rice, corn, beans. For African families, this is the staples they like. *Ami Jeunesse*²⁴ create boxes with milk bread; it becomes something different.”

Staff and site coordinators discussed different ways to modify the current program to appeal to more groups with particular food needs. For example, mentioned over 15 times, was the idea of having a ‘Selection Box’ as opposed to a one-size-fits-all approach. Others thought this could be tailored for children, seniors and different cultural and ethnic groups where food boxes would be complete with more suitable produce for different food needs. More than one food box option would be available to customers at the time of purchase:

“I think it’s quantity for seniors [...] like getting a butternut squash, can they cut it? Do they have arthritis? There has been some discussion about that and trying to make it more accessible and more enticing to the senior population. [...] Certain boxes come ‘as is’ and that can be a challenge if someone doesn’t like all the food options provided.”

“Maybe people would benefit from options like a seniors box, a vegetable bag or a kids box. Maybe it could increase program popularity and visibility if we offer things that are more familiar to you.”

While the content of the ethnic food boxes were not specified, the logistics of implementing this in Ottawa was discussed based on a pilot project conducted in Toronto, ON where food box content was tailored to diverse ethnic and cultural groups. Ethnic-themed food boxes could include different fruits, vegetables herbs, spices, recipes and health and food information that would vary based on the theme of the food box ordered by the customer:

²⁴ *Ami Jeunesse* is an Ottawa-based co-operative program available to francophone families with young children and adolescents who live in poverty. Operating in the city’s west end (Woodroffe avenue), the program seeks to reduce poverty-related hardships (e.g., food insecurity, social exclusion) to ensure more positive outcomes. For more information, please visit their website at <http://amijeunesse.ca/>

“Implementation of herbs for different types of recipes or traditional health practices.”

“The Good Food Box in Toronto had an Aboriginal focused box and a Japanese box as well as other culturally themed packages for their diverse populations.”

When asked how the program could be adapted to promote cultural inclusion, one site coordinator from a host site at an Aboriginal health centre shared how she welcomes Good Food Box customers around a traditional First Nations dish that contains seasonal fresh produce familiar to First Nations and Métis peoples and known in contemporary times to the Inuit:

“Moderator: Is there anything that First Nations, Métis and Inuit customers are looking for in their Good Food Box that non-Aboriginal customers are not?”

Site coordinator: Some of the things I like are wild rice but wild rice is very expensive. I do a Three Sisters soup²⁵ with corn, beans and squash. Those are some of the things that I would like out of the Good Food Box but they are seasonal too. You couldn’t get those in the spring or anything, but in the fall you can probably get those. Even wild rice is only harvested in late summer, so you wouldn’t get that this time of year either.”

As site coordinators shared creative practices they implemented at their Good Food Box site to make it welcoming and unique, many expressed how the ‘Swap Box’ method could be a promising technique where customers may be more satisfied having an exchange option to trade less familiar or less desired foods for other fresh produce:

“The swap box is a good thing.”

²⁵ A Three Sister soup is a traditional soup adapted from the Iroquois “*Haudenosaunee*” nation and inspired by a life creation story. This soup combines beans, corn (or more traditionally, Hominy in place of corn) and squash which are harvested together in such a way that creates a mutually supportive ecosystem where each food supports and protects the other as they grow. For more information on this process, its history or the recipe, please visit the Wabano Centre for Aboriginal Health website and information page: <http://www.wabano.com/wp-content/uploads/2014/06/CLANconnections-AUGUST-2014-final-2.pdf>

Others suggested incentives including a customer loyalty program where after buying so many food boxes, customers could receive a free one:

“Do you guys use any loyalty programs? Like 10 months and they get one? [...] maybe something around Christmas time like they get a box free?”

Staff and site coordinators discussed offering more price point options for individuals who are curious to try the program but are not ready to commit fully to a food box. Building off the already popular \$5 fruit bag, offering a \$5 mixed produce bag could promote access and generate revenue:

“Maybe the content of the Good Food Box can be revamped a bit or create a new category like a \$5 food bag, \$10, \$15, \$20, \$25 organic and maybe something else.”

“Most of them are single persons and think a \$10 box is too much stuff. I love those \$5 bags and think we should offer something like that for veggies.”

To promote inclusion and address transportation or mobility challenges, participants mentioned the possibility of offering delivery for a nominal fee, coordinating carpooling between customers based on need and availability and offering branded food carts:

“What could be nice is the possibility of organizing a carpooling system for people to have access to our sites or buying carts to help people transport the goods if they’re on foot and selling them at a subsidized rate.”

“We don’t offer delivery but if I really see that the person is stuck... or, somebody was sick once and it doesn’t happen regularly, I personally delivery it.”

Staff discussed the need to locate and assert sustainable funding sources to gradually expand their services and maintain or increase human and material resources accordingly to

operate more efficiently. Adequate funding could provide better access to program-owned material as opposed spending revenue on rented resources:

“Logistical challenges can be improved. We rent warehouse space and have a limited control over access. We pay delivery people and rent the trucks. There are things that go wrong in those situations and we have less control over that. It would be great to have our own space and own our own truck.”

“Having our own warehouse and truck would facilitate our scheduling and access.”

Improving the packaging of individual food boxes was discussed by site coordinators in relation to recent customer complaints over excess condensation which was said to affect the overall quality of food items. Site coordinators recommended rethinking how food boxes are currently prepared, packaged and stored at the warehouse:

“The corners hold a lot of condensation. Maybe venting holes on the top or sides?”

Communication with customers needs to be strengthened to minimise complaints and maintain customer satisfaction and participation. As some food distribution sites offer longer and more flexible pick up times, this is not always possible for site coordinators who run their food site from their home and juggle their Good Food Box duties around their work schedule. To minimise confusion over the hours of operation of each pick up site, one steering committee member recommended that staff or site coordinators manage communication with customers by sending a friendly reminder by telephone, text, voicemail or email. Several site coordinators practiced this approach at their respective site and if alternate arrangements were required to accommodate customers' schedule, these could be negotiated when orders were placed:

“Steering committee member2: Is there is a way for people to subscribe once they place an online order? I’m thinking about the library. I get notifications like: “Your book is due. Pick up your book.” So it reminds me.

Steering committee member1: That’s left to the site coordinators. There may be a phone call. We’ve got that capability. Those are the ideas we need to hear!”

“I can keep open for pickups from 3:30 – 5:30. That’s probably just a problem for me. I try to catch a person coming home from work but usually they make arrangements. I send reminder to [customers] two days before to remind them of the date.”

Flexibility and sensitivity were components described as promising practices by site coordinators who tried to accommodate the schedule and circumstances of customers:

“I have on occasion delivered boxes to clients who weren’t able to come and pick them up. It’s not a big deal it doesn’t take up my time.”

“We try to be sensitive the people realities are. Every time somebody forgets [to pick up their box], I call them up and say: “Can you make it today or tomorrow?” If they can’t come next day, we give it to the food bank or another client. Flexibility is our strength.”

In summary, to improve the efficiency and effectiveness of the Ottawa Good Food Box Program, it was recommended that the program begin gathering customer data to support the development of more accessible, sensitive, diverse and relevant health and food information to support the program’s education and knowledge components. By implementing a carefully planned and structured advertising and marketing strategies with the support of key stakeholders, program has more potential to increase public awareness about the program’s vision, mission and aims. By piloting the community-generated recommendations to improve program delivery, the

program could better tailor its components to the needs of community members and, more specifically, its target audience.

Implications for Practice: Exploring Improvements and Expansion through Research

With the support of different organizations, institutions and households, the Ottawa Good Food Box Program is able to reach diverse neighbourhoods, communities and households that may otherwise be less able to buy the quantity of fresh fruits and vegetables they want. While the aims of the Good Food Box are ambitious, it is a program that has the potential to improve on multiple levels with time, supportive and strategic efforts, sustainable financing and openness for change.

The program is involved with several Ottawa-based food and health projects (e.g., Good Food in the Neighbourhood and Good Food for Seniors) that assist and encourage young and older persons to consume a more balanced diet with fresh and nutritious fruits and vegetables. By targetting specific groups, the program has recognized relative growth based on an increase in food box sales by an average of 62% over three years (from 2007 to 2010; Good Food Box, 2010). Based on these figures and qualitative feedback from participants in this study, another at-risk group that may benefit from program participation are post-secondary students.

With few Canadian scientific studies available on the experience of food insecurity in post-secondary students, there are several indicators that suggest a rise in student food poverty and food insecurity on college and university campuses across the country: Rises in tuition, compulsory fees and student debt (Freeman, 2015; Statistics Canada, 2015), increases in campus-based food bank use (Ferguson, 2004; Freeman, 2015; Rondeau, 2007) and inadequate adjustments made to student loans programs (Ferguson, 2004; Meldrum & Willows, 2006).

These are indicators of failed social policies that, together, perpetuate food insecurity and hunger among vulnerable and marginalized students.

As growing scientific evidence links disordered eating patterns related food insecurity and nutrient inadequacy to impaired cognitive function and performance (Gao et al., 2009; Visvanathan, 2014) and less favourable health outcomes (Berkowitz, Gao & Tucker, 2014; Casey et al., 2004; Cook & Frank, 2008; Kirkpatrick & Tarasuk, 2008), more appropriate mechanisms need to be implemented across campuses to better support vulnerable students to succeed and thrive in a positive learning environment that is responsive to their whole health needs. A Canadian study by Farahbakhsh and colleagues (2015) suggests that most food insecure students use a variety of coping strategies to acquire extra income to pay for school and living expenses such as applying for loans or bursaries, seeking employment or working extra hours and/ or purchasing food on credit. Starving as a student is not a right of passage but a heinous and unacceptable occurrence when top university and college executives continue to hike tuition rates faster than the rate of inflation (Cartwright, Shimmons, Barr-Telford & Prasil, 2003) and line their pockets at the expense of those who struggle to get an education for the chance to find decent and meaningful employment. The implications of these findings support the need for further investment in programs that can provide income relief and more adequate financial support to alleviate food insecurity and potential hunger.

Expanding the Good Food Box Program to post-secondary campuses. In September 2010, the Canadian Federation of Students (with students at the University of Ottawa and Carleton University) successfully campaigned, lobbied and negotiated with the City of Ottawa for the implementation of a Universal Bus Pass (known as the U-Pass) for full-time students to address the issue of affordable transportation (Canadian Federation of Students Ontario, 2010).

Participation in the U-Pass Program is mandatory for full-time students with some exceptions that allow students to opt out of the public transportation initiative²⁶.

A similar negotiation could be made between the Ottawa Good Food Box and the University of Ottawa, Carleton University, St-Paul's University, Algonquin College and La Cité Collégiale to make the purchase and consumption of fruits and vegetables more accessible for students enrolled at a post-secondary education institution and living on or near campus. The post-secondary institutions identified above have the capacity to collectively house 8, 919²⁷ students in residence. Similar to the U-Pass, payment for a monthly Good Food Box could be added to the student fee portion of tuition and paid when the student registers for courses (part- or full-time). For students who do not live on campus and want to benefit from the program, an opportunity to opt-in could be arranged and subsequent adjustments made to the student's account. Inclusion and exclusion criteria can be further developed and negotiated between the academic institutions, the Ottawa Good Food Box and other potential stakeholders.

Providing a monthly food box to students in on-campus housing addresses the issue of program access and transportation since the food boxes would be delivered to campus for pick-up. Moreover, for students who rely on financial assistance through the Canada Student Loan Program or their provincial student loan program (e.g., OSAP), fees for a food box would be added to their tuition and program participation would provide income relief as the loan repayment period typically commences six months after the student has completed their studies or has left school (Government of Ontario, 2015). Unlike the high interest rates associated with

²⁶ For more information, visit Carleton University's U-Pass website at <http://carleton.ca/upass/opt-out/> or the University of Ottawa's U-Pass homepage <http://sfuo.ca/upass/>

²⁷ This figure represents the sum of residence capacity across all five campuses; as confirmed by each individual campus' residence management body. The following data is the student residence capacity of each individual campus: 3, 953 at the University of Ottawa, 3, 600 at Carleton University, 85 at St. Paul's University, 1, 050 at Algonquin College and 231 at La Cité Collégiale.

credit cards, there are financial relief options available when repaying student debt (e.g., repayment with Aeroplan Miles or Repayment Assistance Plan; Government of Ontario, 2015) which can further ensure that, while students are in school, they do not have to worry about access to fresh fruits and vegetables. With the arrangement of having a food box paid through a student's account, students can spend money in their food budget on other necessities (e.g., food and non-food items).

Opportunities for social interaction and community support. Currently, the Ottawa Good Food Box Program has a food distribution site on both the University of Ottawa and Carleton University campuses. While food plays a role in interpersonal relationships and communication in general (Fieldhouse, 1995), participation in the Good Food Box extends this notion as a study by Rose Belle and colleagues (2014) reported that program involvement made people in Côte Saint-Luc, QC feel more connected to their community. Within an education setting, one's sense of community is attached to academic and social aspects of the school experience (Rovai, Whighting & Lucking, 2004). When scholars are adequately supported academically, socially and personally (Tinto, 1997) within a positive social environment with a strong sense of community, more optimal educational outcomes are achieved (Astin, 1984). Based on qualitative findings from interview participants, being connected to the community and having adequate personal and social support are critical to becoming more aware about potentially important events, services and programs that can be of assistance if and when needed. Having adequate social and community support is important and so is strengthening ties with the broader community as studies have found positive relationships between having adequate social and emotional support and health behaviours in multi-ethnic adult populations (e.g., fruit and vegetable consumption; Emmons, Barbeau, Gutheil, Stryker & Stoddard, 2007).

Improving recipe cards and newsletter content. Because the Good Food Box Program integrates information and education components through the distribution of recipe cards and a newsletter with food, health and local content, the program can expand by providing more adequate support with the extension of an invitation to take part in other community programs and workshops to demonstrate sensitivity to the different ways people learn. Traditionally and in contemporary times, effective ways of learning for First Nations, Inuit and Métis peoples stems from observation, imitation (modeling) and oral traditions (Alberta Education, 2005). From this assertion, building skills related to food planning, preparation, preservation and cooking through active participation in food programs may equip customers with more effective learning tools than a recipe card alone. Providing customers with an invitation to participate in local community food programs can also help fill the gap to heighten the social value of participation in the Good Food Box if activities to enhance social interactions cannot be organized through neighbourhood food box sites. In line with the Good Food Box's goal of health promotion, customers could received a seasonal schedule of workshops and food, kitchen or garden programs offered at health or resources centre nearest to their Good Food Box site.

First Nations, Inuit and Métis groups and others have a unique relationship with food and the environment from which it comes (RCAP, 1996b) and these cultural and local teachings elements that enable a connection with the natural world should be considered when thinking about exploring the kinds of information about food and health that customers from different cultural and ethnic backgrounds would find useful, educational and relevant to feature in the Good Food Box newsletters. Cultural awareness training should be provided to Good Food Box volunteers, site coordinators and staff who have direct contact with clients. Training will provide the opportunity to learn more about the unique vision and interconnectedness of culture and

health from the perspectives of the clients and community they serve. By providing this type of training, the Good Food Box has the opportunity to build better rapport with clients and the community by bring more responsive the food, health, and cultural needs of current and prospective customers.

Opportunities to strengthen occasions for dialogue and listening with Aboriginal and multi-cultural organizations and community members should be a priority to help find other ways to strengthen the program in relevant ways as a community collaborative process. Through strengthened communities ties between Aboriginal and non-Aboriginal organization, the program's recipe cards and newsletters could appeal to individuals looking for more tailored information that revitalizes notions of culture, traditional practices and knowledge to support the dietary and health choices of program customers and household members who depend on them as the main food provider. This input and collaboration can assist and support changes in the way the Good Food Box is delivered to address food insecurity, fruit and vegetable consumption and health while ensuring that program aspects are better tailored to meet the linguistic, cultural, health and food needs and interests of diverse groups who are disproportionately affected by chronic disease, poor diet and ill health.

Relevance to Research and Practice

Findings may be used to develop more appropriate and relevant interventions and policies to minimize health disparities in First Nations, Inuit, Métis and other multi-cultural groups living in urban Ottawa. Results can be used to advocate for the investment of health dollars in programs, services and initiatives that seek to promote health and general well-being and assist in the prevention and management of chronic diseases or other nutrition-related illnesses by increasing access to healthy, safe, and nutritious market foods and traditional/country foods.

Acknowledging how food insecurity has different implications for diverse cultural groups can better serve underserved communities and groups in Ottawa by developing programs that reflect the unique and specific barriers to food security, program participation and fruit and vegetable purchase and consumption which in turn influence eating patterns and health outcomes.

Participants who shared their voice and experiences contributed perspectives to further assist those involved in the management and delivery of the Ottawa Good Food Box by highlighting the issues that affect customer experiences. It is important to note that innovative strategies and partnerships are a collective product where changes to the program need to be made with the community and residents. It is clear that the program thus far has made strides and has been a positive experience for most customers. The nature of the recommendations were provided to help strengthen the program, improve delivery and customer satisfaction, enhance customer recruitment and retention. A diverse participant group was able to provide a deeper understanding of the program's assets and potential areas for improvement to better support the food, health, and social needs of customers. By including the perspectives of Aboriginal and non-Aboriginal participants, recommendations can also illustrate changes that need to be made in order to make the program more relevant and appropriate for users in an urban environment. Because of these strengths, findings from this study can result in innovation at the community level while informing other levels of government on the needed changes to provide more sustainable support to food programs and communities to make eating healthily an easier choice.

Another benefit and strength of the study is that it includes multiple sampling strategies to be as inclusive as possible of diverse perspectives. Within a mixed method approach, this study highlights the value of using both qualitative and quantitative sources of data to provide a deeper understanding of real world issues and the essence and meaning of human experiences

that would otherwise be less known or left unknown if one approach or the other was used exclusively. Using an ecological model to understand issues that affect program management and delivery and the factors that affect program participation, retention and attrition, experiences and behaviours are considered within the context that they occur and are seen as an inseparable relationship. This study reflects the experiences and circumstances of community members who trusted the research process to voice the challenges, difficulties and factors that facilitate and promote eating well and being healthy in their community. Too often the voices of vulnerable and marginalized members of the community are not considered in decision-making processes and the development of policies or frameworks that affect their everyday lives. This study provided urban-based First Nations, Inuit, Métis and non-Aboriginal peoples the opportunity to share their experiences, express their concerns and to have their voices heard in a setting that is respectful and safe. For the participant, taking part in this project was a meaningful way to contribute to their community and toward a process of healthy program and policy changes.

By building on community-driven and evidence-based recommendations, an action plan to improve the Ottawa Good Food Box may contribute to healthy program changes and result in the expansion of its services to groups who want and enjoy eating fruits and vegetables. The involvement of community members as integral players in the development recommendations through first-person accounts helps link decision-making and policies to evidence-based practice and the identification of strategies to increase the likelihood of action and change while maximising the use of available or known resources.

Finally, partners in the academic-community collaboration benefit from the formation of a positive new relationship among a student-researcher, community developers and managers and the many volunteers who supported the project since its onset. The partnership that has been

developed has increased the potential for social networking and has provided a new venue through which project partners can exchange ideas and perspectives for improving community service, social support, and community and public health for Ottawa residents. Partnership and continued dialogue between Aboriginal and non-Aboriginal peoples, academics, stakeholders, decision-makers and community workers are important aspects of the project to make meaningful improvements to and the expansion of the Ottawa Good Food Box Program and to include the perspectives and needs of minorities including First Nations, Inuit and Métis peoples in services, programs and policies. A project of this kind that includes the perspectives of current and former customers and non-program users has not yet been done to capture the wholeness of food and community program experiences and develop strategies that include the ideas and voices of First Nations, Inuit and Métis perspectives within a multi-cultural orientation to help build a better and more inclusive program.

General Discussion and Future Directions for Research

In every country regardless of wealth and health status, food insecurity exists as do nutrition-related health issues (United Nations, 2011). Although Canada is among the most affluent and healthiest countries (OECD, 2014), health inequalities and food insecurity and hunger are ongoing concerns and challenges for many. Factors including the rising costs of food, energy, transportation (e.g., bus fare or vehicle ownership, maintenance and insurance costs), fuel (e.g., seasonal price hikes), housing (e.g., rent, maintenance, mortgage payments or property taxes), education tuition (e.g., college, university or professional training and development), health care fees (not covered by provincial health insurance), emergency expenses and employment insecurity, unemployment and underemployment all play a role in increasing individual risk of poor economic, social and psychological outcomes (e.g., poverty, exclusion and emotional distress; Cernik & Spence, 2008; McLoyd, Harper & Copeland, 2001; Newman, 1996; Vozoris & Tarasuk, 2003).

As some of these expense categories continue to escalate at a rate that occasionally outpaces inflation (Beltram, 2012; Dupuis, St-Maurice & Vachon, 2013; Nord, Coleman-Jensen & Gregory, 2014; Statistics Canada, 2016), simple economics makes it more difficult for already impoverished families or the working poor to make ends meet, pay off incurred debt or save for the future. Because of shifts in both the labour and economic markets and limited job prospects, post-secondary students and recent graduates are at-risk of food, financial and job insecurity because of increased financial stress and mounting student debt that can influence longer term personal and economic challenges (see Chapparro et al., 2009; Hughes, Serebryanikova, Donaldson & Leveritt, 2011). In the upcoming years, adult caregivers of elderly or ailing parents will also be at a heightened risk of food, financial and employment insecurity as they are wedged

between pressures to support the growing needs of their parents and those of their children. These pressures and demands come at both financial risk and emotional costs during the caregiving process and beyond as perceived social and/ or government supports and policies do not adequately reach and meet the needs of those most affected by these changes in society. As Canada's economic landscape changes from downturn to recovery, Canadians continue to seek support from and put added pressure on local charities and food assistance programs to meet various household needs (CAFB, 2008).

When it comes to accessing nutritious foods to support the shaping of bright minds and healthy bodies, we need to demand more from our leadership and more practical solutions for the short-, medium- and long-term to help make choosing healthier food and lifestyle alternatives an easier choice and a genuine option among others. For decades, leaders in academia, health care (e.g., nurses nutritionists and dieticians), community project developers, activists and members of special interest groups have advocated for collective action against food insecurity issues (e.g., poverty, poor nutrition and hunger) including more relevant community and social policy change. In Canada, there is now multi-sectoral commitment to the development of a strategy that supports a national food policy (see Food Secure Canada, 2011; Bloom, 2014). To move the agenda forward where food is recognized as a human right, the mobilization of supportive government and public engagement is needed to effect food system change to responsibly and sustainably increase economic and physical access to nutritious foods, and support resilient communities and healthier environments.

Wedging pressing food system issues between other political priorities is not an easy task and shaping the food environment is a collaborative effort from individuals with different and similar backgrounds who have authority, influence and the ability to promote, improve or hinder

momentum toward a more food secure environment. Positioning food security within a human rights framework is not a novel idea and this manuscript agrees with previous work that presses for the need to responsibly and actively address the fundamental causes of food insecurity, unequal food distribution and hunger (see Chilton & Rose, 2009; Kent, 2005) to in turn promote better health and well-being. The right to food is defined by Ziegler (2002) as:

The right to have regular, permanent and unrestricted access, either directly or by means of financial purchases, to quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of the people to which the consumer belongs, and which ensure a physical and mental, individual and collective, fulfilling and dignified life free of fear, (p.20).

Addressing both social and economic determinants of food insecurity with a national food security strategy and more appropriate changes at the policy level are in tune with the recommendations of Special Rapporteur on the right to food, Olivier De Schutter (2008), that suggest that a national strategy requires monitoring to identify and protect against threats to food availability, accessibility and adequacy. De Schutter (2008) also recommends improved coordination between organizations at different levels of government with mechanisms to improve accountability, responsibility and responsiveness of agencies in the implementation of a strategy and/or policy that ensures the right to food. Finally, De Schutter (2008) points to adequate public engagement to ensure that the most vulnerable voices are heard. It can be challenging to motivate organizations and institutions to recognize certain benefits of change as they may benefit from the status quo and be reluctant to embrace and implement more transformative changes. For this reason, stakeholders and community members should have the opportunity to better develop, maintain and strengthen partnerships/ relationships (e.g.,

Aboriginal and non-Aboriginal organizations) and problem solve collectively to ensure that different views and concerns are considered when working toward strategic change than can empower underserved groups characterised as having less power and influence singlehandedly.

When food retailers increase the price of fresh fruits and vegetables, Canadians feel the pinch of wanting to make healthier choices in an environment that makes it difficult to achieve a more optimal state of health and diet. This concern becomes especially burdensome for low-income households who spend a larger portion of their income on basic necessities where some needs go unmet without incurring some type of debt. The dominant ideology in Canada that supports the status quo of society's most powerful social, economic and political groups is the emphasis of personal responsibility in relation to poverty (see Schaefer & Smith, 2004). The guiding framework of this research as well as the shared values and vision of project partners support more structuralist perspectives where the fundamental causes of poverty, food and nutrition insecurity and the unequal distribution of food are viewed as the product of disparities within the larger socio-economic and socio-political systems. How the retail food environment contributes to food and fruit and vegetable consumption is a field that is of growing interest not only to food marketers and academics but also public health advocates (see Glanz, Sallis, Saelens & Frank, 2005; Zenk et al., 2009). Changing the way we think about food (in)security in relation to ethics, cultures, health, politics, economics, farming and the environment and moving toward a paradigm change will enhance the ways we think about transformative community-led action and support for much needed policy and even legislative changes.

Individuals tend to work within the structures of what they perceived is possible and the idea of achieving any substantial changes in how society connects the dots between food, nutrition and whole health issues in an effort to raise its profile is often underestimated. Within

the context of this study, the Ottawa Good Food Box Program engages communities and mobilizes volunteer efforts to support program delivery and help keep program costs low. Without a motivated and dedicated group of volunteers, it is difficult to fathom how the program could function while maintaining its affordable appeal to people who want fresh fruits and vegetables. Access to a less predictable supply of human, financial and material resources often means finding innovative and creative ways to deliver program components through food distribution sites in an effort to reach the aims the program was designed to achieve. As volunteers support efforts to improve community and household access to fruits and vegetables, bridge socio-economic divides and build more cohesive communities, customer and volunteer recruitment and retention are continuous challenges to program expansion and maintaining a predictable standard of service delivery. Because food access shapes communities, how municipalities address emerging intersecting issues related to food security and health is a growing and critical issue in strengthening healthy cohesive communities and local economies.

One strategy to redistribute food is through better urban planning that prioritizes the environmental, health and food needs of future generations as opposed to making profitable gains off those who struggle to eat enough foods. Weather, climate changes and geographic location are factors that relate to the physical environment that are not currently included in the ecological framework by Story and colleagues (2008) that depicts the influence of different levels of factors on what people eat. These emerging issues are of growing importance and require attention as the quality of agricultural yields is intricately related to environmental health, food cost and food security, climate change and variable weather patterns. To adapt local food systems towards improved sustainability, these factors will continue to be important elements

requiring socially responsible and environmentally mindful consideration by various levels of leadership across sectors and governments in strategic planning and policy development.

The production of more agricultural yields to feed the masses is not needed but using innovative ways to redistribute food and make healthful eating more equitable for all households can promote health and decrease food waste. Both Canada and France have developed responsive initiatives to increase access to food still fit for human consumption in order to also minimize food waste (policy-based in Canada and legislative in France; see Abraham, 2015; Chrisafis, 2015). In Canada, a pilot project that sells safe yet below grade fruits and vegetables at a 30% discount through a large grocery chain is looking to expand its initiative in more stores due to growing product demand (CBC News, 2016). This change in business policy permits households to buy the types of fresh and nutritious food options they want while making both environmentally mindful and budget friendly choices.

As the cost of living and food increases, cautious and resourceful consumers try to economize in creative ways. As the most salient barriers to food security, and healthful eating behaviours and patterns are direct and indirect products of macro-level and physical environments, many continue to struggle despite their best efforts because of interacting influences and decisions made at higher levels. As attempts to better manage household food and finances (e.g., reduce food expenses, manage household food and limit household costs) were often detracted by emergency expenses, unexpected price hikes or changes to social support programs and eligibility, many households are left feeling negative emotional effects (e.g., frustrated, worried, isolated, 'othered', unworthy, sad, depressed, upset and unhappy) as they have little perceived control over their environment or the desired outcome from their efforts.

Project findings may inform and educate decision- and policy-makers on the most salient factors that affect the health and diet of different at-risk groups. Results from Study 1 and 2 allow community project developers to better understand and address gaps in services and make evidence-based decisions to improve programs (e.g., collect customer data, develop a more effective marketing strategy, improve product packaging and specific program components (Selection Box and optional delivery) and increase public awareness). Many factors influence the selection, purchase and consumption of food and not one single factor can determine or explain why individuals choose to eat the foods they do. Understanding the elements that drive the household diet from multi-cultural and ecological perspectives enable a shift away from victim-blaming to a broader understanding that focuses on higher-level factors that influence food access, eating behaviours and household food and financial acquisition and management behaviours (e.g., findings from Study 1). For Ottawa residents, despite grave concerns about the harms of pesticide and herbicide residues and consuming GMOs, most households still purchase and consume fresh agricultural produce but not in enough quantities to meet the dietary guidelines imposed by government agencies.

Within the physical environment, the delivery of social and community programs and the formulation of health and public policies (macro-level setting) need to adapt to better support the needs of those who struggle (e.g., program eligibility criteria or financial allowances for ‘necessities’). Intervention research shows the paradoxical effect of population-based public health interventions where strategic efforts, however well-intended they may be, can contribute to aggregate-level health disparities; especially in the context of integrating new health or food information and technology (Farmer, 2004; Variyam & Golan, 2002). Social, health and food policies and programs are typically developed by individuals or groups in positions of privilege

and power with often little or no consultation with those most affected by poorly conceptualized programs that may be ineffective, inappropriate and/or cannot be sustained by the community.

When food or financial shortages are experienced by households, understanding whether local resources are accessed and how is important to ensure that social programs reach the target audience (Studies 1 and 2). More support to evaluate whether community-based food programs in Ottawa are meeting the objectives they were designed to reach based on the characteristics and cultures of the community in which they operate would help determine program relevance. In particular, food security research with Indigenous groups should assess household and community food security status in terms of predictable access to both market and traditional country foods to build a more relevant and comprehensive case when discussing food, whole health and cultural needs (see Power, 2008). Better monitoring and resource support to assess the performance and reach of food and health programs can ensure that appropriate and effective programs are sustained by adequate resource investments. For First Nations, Inuit and Métis peoples as well as for other Canadian cultures, food is not only believed to sustain people, it is also a mechanism through which to feed the mind and nourish the spirit. Without change, more vulnerable groups will continue to feel the pangs of hunger and pains of desperation and helplessness.

Projects that help build local knowledge through the intensive efforts of community-academic partnerships can benefit the community by involving the contributions of community members and researchers at different stages of the research process from project development to results dissemination. Participation in this project provided project partners and community members the opportunity to play a significant role as co-learners, co-researchers and co-contributors (Bergold & Thomas, 2012) in the synthesis of localised knowledge from Western,

First Nations, Inuit, Métis and multi-cultural perspectives and the development of community-informed research products.

Although academics have come a long way since applying questionable methods and procedures ahead of the safety and well-being of participants in the name of reaching scientific goals (conventional research), there are still many steps that need to be taken to strengthen ties and redefine bonds between academic institutions and communities (e.g., leveling the power differential, recognizing different sources of knowledge, education and experience as valid and valuable, converging orientations and approaches to doing real-world research). Planning and conducting a participatory project that involves academics, community developers and community members requires the convergence of social and scientific inquiry with multiple perspectives and orientations (theory meets practice; knowledge meets wisdom). The process of embarking on a more collaborative approach with community members and organizations highlights the need to strengthen relationships and build capacity within these institutions to enhance opportunities to reach project objectives within a reasonable timeline, meet community needs and maintain the researcher's interest. Benchmarking practices to establish more equal means of power and control in the decision-making processes that ultimately affect the project's outcome can help support more trustworthy and positive relationships. Academic institutions and community-based organizations are knowledge-rich resources with their own ideas and perspectives on ways to resolve public and community health disparities. Because of these different worldviews, establishing partnerships between academic institutions and community-based organizations can be both described as an art and a challenge.

In the 21st century, we are witnessing a necessary revival and promotion of both ancient and traditional teachings in health, health care and healing to help struggling cultures and

communities find utility and regain balance with the land and with each other. Horrific historic acts that have ravaged oppressed and marginalized communities and families are not to be excused nor condoned. The loss, devastation, and anguish that underserved communities feel can become a state of healing and hope through the incorporation of the voice of the 'silent' and recognizing how the notion of cultures can be appropriated and preserved by deliberately engaging community members in the development and implementation of community-based programs that assert their well-being. Unfortunately, more vulnerable groups will continue to feel hunger and desolation if community action plans and financial supports for existing programs continue to stall or become eliminated as new priorities are deployed. As a community, as partners, and as advocates for health and well-being, it is time to meaningfully and appropriately assist and support those who have felt defeat by social injustice, who have known marginal living, and who have known the pains of ill-health. All levels of government need to recognize that the face of poverty and hunger in this country has changed and further inaction is no longer an option.

Contribution of knowledge to current literature and research. The purpose of this study is to contribute toward local understandings of the lived experience of food security and insecurity, its subsequent consequences within an urban context and a needs assessment from all levels of involvement in the Ottawa Good Food Box. This research builds on conceptual understandings by examining the context in which food in general and fruits and vegetables in particular are accessed and purchased, prepared and consumed by culturally and ethnically diverse household and the repercussions of consuming too few or none at all. This work also furthers the understanding of the complex interplay of factors that influence perceived health status based on the degree of food security, self-reported fruit and vegetable consumption and

factors that enhance or hinder access to the purchase and intake of health foods required to live a productive life. Findings also highlight the most salient challenges to participation in the Good Food Box based on its current orientation of a one-size-fits-most model. Moving beyond quantitative information, this study allows individuals to provide meaning to the barriers and factors that enable food security and fruit and vegetable consumption by permitting participants to express themselves in their own words to link issues as they are experienced and offer a deeper understanding of their daily struggles and triumphs in making household food choices.

The research design demonstrates the complementary nature of incorporating historically duelling worldviews in order to explore the contemporary lived experience and consequences of urban food insecurity, issues related to the purchase and consumption of enough fruits and vegetables, challenges to the uptake of a local fruits and vegetable program and subsequent health effects and sentiments of living under turbulent economic and social conditions. Namely the approaches used are conducive to concepts of Indigenous research methodologies (e.g., Talking Circles, post-hoc guiding / advisory committee) and the Western research approach of utilizing mixed methods (quantitative analysis, phenomenological analysis, face-to-face interviews and focus groups sessions) within a community-based participatory research framework. These approaches are considered appropriate to explore this thesis topic as a way to meet the demands of scientific rigour and expectations from academic institutions while upholding the cultural integrity of the people who are participating and contributing toward this project as a way to foster and enhance a research environment that communicates respect, safety, inclusion, compassion and empowerment. The topic of food security and nutrition has never been approached in this way and it is ground breaking to apply Indigenous methods to the Western academic paradigm. Findings from this study are not only important for academics and

policy- and decision-makers, but also critical for increasing social understandings of critical factors to consider when formulating local health promotion, prevention and nutrition programs and policies. Building on local knowledge will enable the development of more relevant and appropriate policies that are reflective of Ottawa's cultural and ethnic urban diversity.

Next Steps: Celebrating Community Partnerships and Giving Back

Due to the undertaking of a community-based, participatory-research approach and to respect the CIHR guidelines (2007) and OCAP Principles (First Nations Centre, 2007), it is of utmost importance to give back to participants and the community by promoting trust and honesty by returning and sharing results alongside meaningful and feasible recommendations to achieve both action and sustainable change. To benefit Ottawa's multicultural and Aboriginal groups, results were presented at a community feast and forum to celebrate and acknowledge the support and contribution of participants, community members, project partners, local businesses, funders, local stakeholders and decision-makers and individuals from the academic community. By hosting a community feast and local forum to showcase project findings, it was felt that we could reach more individuals who contributed to the project in a meaningful way to discuss the larger impact and implications with the community rather than present exclusively at an academic conference or publish in a scientific journal.

Presenters included individuals who work in the areas of community and public health, food security and farming and an invitation to speak was equally extended to the Minister of Provincial Parliament (MPP) for the Ottawa-Vanier area and the mayor of Ottawa. This occasion provided an opportunity for community members to liaise and network in a respectful, safe and receptive social environment with individuals who play different roles in government, the food and farming industry, community and public health, media, academia and other community-

based organizations with differing degrees of influence and power. Through these opportunities we sought to raise the profile of the Good Food Box Program and the importance of supporting income relief efforts and food and nutrition programs. Attendees had the opportunity to reflect on the implications of findings and recommendations, share their perspectives and ask questions. This event was a platform on which to build discourse and move findings beyond the manuscript to the eyes and ears of community members and people in positions to act.

A final project report was shared with and provided to appropriate community organizations, project partners and participants in basic, non-technical language. A follow-up meeting will be organized with community members to identify appropriate future research and community program funding opportunities in order to pilot the project's recommendations to see whether they support the expansion of the Ottawa Good Food Box Program in ways that are appropriate and sustainable. These recommendations support expansion through partnerships and collaborative work to better meet the food needs of customers, improve customer recruitment and retention and provide more pathways to household food security and healthier communities.

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Appendix A - Program Logic Model Worksheet

Program: Modified Ottawa Good Food Box Program for Aboriginal and non-Aboriginal peoples in urban Ottawa. **Date:** January 15th, 2010

Name of person(s) completing worksheet: Emily Lecompte (supervised by Dr. John S. Lyons), Natasha Beaudin and Cindy Peltier

Mission: The Ottawa Good Food Box is dedicated to increasing access to and availability of fresh fruits and vegetables that are locally grown to communities across the Ottawa area. This program is a community-based intervention that encourages individuals and families to prepare and provide their household with safe, nutritious and culturally appropriate foods at a reasonable cost.

Client needs that the program assessed	Intended inputs	Intended activities	Intended outputs	Intended shorter-term outcomes	Intended medium-term outcomes	Intended longer-term outcomes
<i>The project assesses how the following factors affect the uptake of the Ottawa Good Food Box:</i> • Environmental, cultural, economic, individual, psychosocial factors • Household composition • Food security status • Knowledge of community food programs in Ottawa • Perceived benefits of eating more fruits & vegetables • Fruit & vegetable preparation knowledge • Food security and fruit & vegetable consumption • Food intake frequency • Knowledge about the Ottawa Good Food Box • Availability of and access to a Good Food Box site • Perception of the Ottawa Good Food Box	<i>Human resources:</i> • 2 paid community developer for 3 hours of work over 15 mos. • 1 PhD student • 1 Graduate student <i>Physical space:</i> • Interview locations • Distribution centres of the good food boxes <i>Equipment & supplies:</i> • Office equipment • Good Food Boxes • Participant honorarium (bus tickets, teas, gift certificates, tobacco pouches)	• Recruit current, one-time and non-users of the Good Food Box who identify as non-Aboriginal or FNIM to assess factors the enable and challenge program participation • Identify program strengths and areas for improvement through talking circles, focus groups, and interviews • Generate community-driven recommendations to that address barriers to the Good Food Box and build on facilitating factors • Incorporate Western and Indigenous research methods to conduct activities and analyse and interpret data	• # of Aboriginal and non-Aboriginal peoples recruited • Increased access to low-cost, high quality fruits and vegetables • # of participants who consume adequate amount of fruits and vegetables • Increased awareness about the Good Food Box as an alternative to food banks and charity • Increase consumer knowledge of eating healthily and food issues • # of food insecure participants	• Increase fruit and vegetable consumption • Food security • Increase in feelings of social support • Provide access to community food resource information • Decreased hunger • Increase knowledge of benefits of fruit and vegetable consumption • Increase clients awareness of the benefits of participating in the Good Food Box • Better food preparation skills • Improved diet • Ability to meet recommended minimums of fruit and vegetable intake	• Continued participation in the Good Food Box program • Increased participation in the Good Food Box • Better self-rated health status • Increased psychosocial and physical well-being • Reduced hunger • Decreased food insecurity • Increased community awareness of the Good Food Box • Better access to fruits and vegetables	• Decrease in health inequalities • Continued and increased participation in the Good Food Box Program by Aboriginal Peoples and at-risk groups • Better social support networks and social capital for Good Food Box participants • Better sense of belonging for program participants

Appendix B1 – Letter of support by the Centretown Community Health Centre



**Centretown Community
Health Centre**
**Centre de santé
communautaire du Centre-ville**

420 rue Cooper Street, Ottawa, Ontario K2P 2N6
T: (613) 233-4443 F: (613) 233-3987 info@centretownchc.org
Charitable Registration/Organisme de charité enregistré : # 10690 3073 RR0001

January 5, 2010

Anisnabe Kekendazone centre – The Ottawa NEAHR
1 Stewart st., 3rd floor,
Community Information and Epidemiological Technologies (CIET)
& the Institute of Population Health (IPH),
University of Ottawa
Ottawa, ON, K1N 6N5

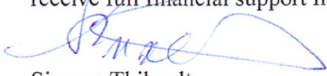
Re: NEAHR Seed Funding Proposal –

An examination of the barriers and facilitators to the uptake of an urban, community-based fruits and vegetables program and the effects on the health and well-being of First Nations, Inuit and Métis peoples

The Ottawa Good Food Box is a city-wide program of the Centretown Community Health Centre and funded by the City of Ottawa. Developed in 1996 by a group of Community Developers and Community Nutritionists as a way of reaching out to people in the community who were unable to access adequate amounts of quality fresh fruits and vegetables, the Good Food Box was organized to facilitate the promotion of healthy food behaviours and to help increase the consumption of locally grown fresh fruits and vegetables. The Good Food Box seeks to introduce new varieties of food, encourage the preparation of home cooked meals with fresh and nutritious produce, and build community capacity and spirit. It is a non-profit, community-based program that brings people together to purchase fresh and nutritious varieties of fruits and vegetables at a lesser cost from trustworthy local farms and wholesalers. The organization relies heavily upon community volunteer support to carry out its services, including site coordination, monthly packing of boxes, and a volunteer steering committee.

There are 25 Good Food Box locations across Ottawa that serve the diverse food needs of many urban families, including First Nations, Inuit and Métis families. In particular, the Good Food Box site at the Wabano Centre for Aboriginal Health is coordinated by a devoted member of the Aboriginal community and employee at the centre, Cindy Peltier. There is a need to expand this site and others across the city and to assess the barriers and facilitators to the uptake of the Good Food Box program.

The Ottawa Good Food Box is committed to continuing to collaborate with community partners on projects that enhance community food security. With regard to the proposed research, we are committed as a stakeholder to work together toward the successful delivery of all aspects of the proposed research and to improving the quality and delivery of the Good Food Box's services and programs. We look forward to working with Emily Lecompte and other community partners, and strongly believe that this proposal encourages the equal participation of Aboriginal families in health food practices that are sustainable and culturally appropriate. We anticipate that the information generated by Ms. Lecompte's thesis will help us to improve and adapt our services for First Nations, Métis and Inuit populations, and look forward to the opportunity to expand the service to new customers. We highly recommend that the above mentioned project proposal receive full financial support from the Ottawa NEAHR.


Simone Thibault
Executive Director, Centretown Community Health Centre

Telephone: 613 – 860 – 6767 Fax: 613 – 233 – 2062 e-mail: goodfoodbox@centretownchc.org
Address: The Ottawa Good Food Box, 420 Cooper, Ottawa, ON, K2P 2N6

Building healthier communities...together
Ensemble...pour bâtir des communautés en meilleure santé

Appendix B2 – Letter of support by the Wabano Centre for Aboriginal Health

299 Montreal Rd. Ottawa, ON K1L 6B8 • t: 613.748.0657 • f: 613.748.9364

May 5, 2010

Anisnabe Kekendazone Centre – The Ottawa NEAHR
1 Stewart Street, 3rd floor
Community Information and Epidemiological Technologies (CIET)
& the Institute of Population Health (IPH),
University of Ottawa
Ottawa, ON K1N 6N5

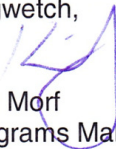
**Re: NEAHR Seed Funding Proposal –
An examination of the barriers and facilitators to the uptake of an urban, community-
based fruits and vegetables program and the effects on the health and well-being of
First Nations, Inuit and Métis peoples**

The Wabano Centre for Aboriginal Health is an urban health centre that provides quality, holistic, culturally-relevant health services to Inuit, Métis and First Nation communities of Ottawa, engages in clinical, social, economic and cultural initiatives that promote the health of all Aboriginal people, promotes community-building through education and advocacy, and serves as a centre of excellence for urban Aboriginal health.

The Wabano Centre for Aboriginal Health is committed to strengthening the capacity of the broader service system by initiating and sustaining partnerships to facilitate a collaborative approach to planning, service delivery and evaluation. To this end, the Wabano Centre for Aboriginal Health is committed as a partner on all aspects of the proposed research including providing feedback and guidance on the planning and delivery of the project, recruitment participation, providing staff support for focus group sessions, and contributing to the organization of Good Food Box talking circles for users and non-users of the community-based program offered through the health centre services and programs. We are also committed to working with Emily Lecompte throughout the entirety of the research project and share the vision that the results of the project will be communicated and accessible to participants and members of the community in a way that is meaningful and relevant.

We strongly support and believe that this proposal encourages the participation of First Nations, Inuit and Métis peoples in health food practices that are sustainable and culturally appropriate. We highly recommend that the above mentioned project proposal receive financial support from the Ottawa NEAHR.

Miigwetch,


Kim Morf
Programs Manager

www.Wabano.com

Appendix C – Principles of research collaboration (PRC) between The University of Ottawa, the Ottawa Good Food Box & the Wabano Centre for Aboriginal Health

PARTIES

This document constitutes a ‘*Principles for Research Collaboration*’ (PRC) between:

- Emily Lecompte (under the supervision of Dr. John S. Lyons; University of Ottawa);
- The Ottawa Good Food Box (GFB), a program of Centretown Community Health Centre which supports the purchase of top-quality fruits and vegetables at good prices; and
- The Wabano Centre for Aboriginal Health, an urban-based health centre devoted and committed to delivering health services in a culturally respectful and appropriate manner to First Nations, Inuit and Métis community members.

The Ottawa GFB and the Wabano Centre for Aboriginal Health will participate as members of the research team under the terms identified below through Natasha Beaudin (*Ottawa GFB*) and Cindy Peltier (*Wabano Centre for Aboriginal Health*). The above listed individuals constitute the research team. Additional members may join in signing this PRC and participate as members of the research team once all members (listed above) have agreed.

PURPOSE

The purpose of this PRC is to establish a set of principles that guide the conduct of the research projects, “*An examination of the barriers and facilitators to the uptake of an urban, community-based fruits and vegetables program and the effects on the health and well-being of Ottawa’s Aboriginal and non-Aboriginal peoples*”. In short, this agreement acknowledges the importance of incorporating cultural values and perspectives into the research process.

OBJECTIVES

The main objectives of the study are:

- To determine the barriers and facilitators to accessing the GFB (and other sources from which to purchase fruits and vegetables) for urban First Nation, Inuit, Métis and non-Aboriginal peoples;
- To develop a program that support the unique needs of the community in order to encourage the participation of First Nation, Inuit, Métis and non-Aboriginal people in the GFB Program; and
- To examine (by questions related to perception) if accessing, purchasing and consuming fresh fruits and vegetables via a GFB aids in the management and/or prevention of certain chronic diseases (ie: diabetes).

Outcome goals of the research collaboration include:

- Establish new GFB sites at places where First Nations, Inuit, Métis and people from other minor groups feel safe, comfortable and respected;
- Developing new partnerships with organizations and relationships within the community
- Increasing the number and diversity of GFB clients;
- Improving the service and delivery of the GFB Program (based on study findings);
- Having preliminary information and data that discusses the relationship of fruit and vegetable to chronic disease management and/or prevention.

RECORDS

The Principal Investigator (PI) or project coordinator will coordinate all administrative matters relating to the above named research project. The PI or project coordinator will provide each member of the research team with notes of meetings, including decisions made, within a reasonable time frame.

ETHICAL CONSIDERATIONS

Ethical codes of conduct for research in Aboriginal communities have been articulated in the *Tri-Council Policy Statement*. However, each member of the research team collectively shares the responsibility for raising ethical concerns and issues. Ethical dilemmas are resolved on the basis of the research team striving for a significant degree of consensus.

DURATION AND AMENDMENTS

This PRC will be in effect throughout the entire research process, from the development of research questions through data collection and analysis phases into dissemination of findings. This PRC can be amended upon mutual consent by members of the research team.

PRINCIPLES: OWNERSHIP, CONTROL, ACCESS AND POSSESSION (OCAP)

The research team acknowledges and supports the principles of ownership, control, access and possession as outlined below:

- Members of the research team acknowledge and respect the Aboriginal right to self-determination, including the jurisdiction to decide about research in their communities. In doing so, the research process shall be built upon meaningful engagement and reciprocity between the research team and Aboriginal communities. Further, the research team agrees they will strive to respect the privacy, dignity, culture and rights of Aboriginal peoples.
- The research team will strive to include meaningful and equal participation from Aboriginal community members. Therefore, the parties agree they will be jointly and equally involved from beginning to end in the research process, from research question formulation, through data collection, analysis and into dissemination of research findings related to the above named project.
- The research team may also strive to demonstrate this support by obtaining and attaching letters of support from Aboriginal community leadership at the local level who may assist as either a member of a research advisory committee or in providing assistance related to the recruitment of participants. Primarily, the task of negotiating letters of support from local Aboriginal communities resides with the principal researcher, Emily Lecompte (University of Ottawa).
- The research team will collectively make decisions on research questions, in data collection, interpreting results, in drafting research reports and in dissemination of findings. The PI will not present a completed research design for approval but involve all other members of the research team in the process.
- The research questions must not only reflect academic interests but strive to ensure that the research is also relevant and beneficial to Aboriginal communities.
- In dissemination strategies to Aboriginal communities, the research team agrees that the language and manner of sharing research will be appropriate.

- The (purpose of) research project will be explained to all stakeholders (participants and Aboriginal community members) in a language that is appropriate to the Aboriginal community. Likewise, the research team will explain potential risks and benefits in a similar manner.
- The research team agrees they will not sensationalize problems in Aboriginal communities. Rather, they will strive to present a balanced portrait that also focuses equal attention on more positive aspects. As such, the research team understands that they will collaboratively prepare draft findings prior to submission for publication or presentation. The parties agree to review findings in a timely manner (e.g., 3 - 4 months).
- Given that all members of the research team will be provided the opportunity to review and comment on findings prior to publication or presentation, any one member of the research team may not, particularly once initial dissemination has occurred, further analyze, publish or present findings resulting from the above mentioned research project unless the entire research team reaches a consensus.
- The PI is responsible for maintaining the integrity of all data collected, such as storing participant consent forms, etc. However, once privacy and confidentiality of participants has been demonstrated, data sets in the form of SPSS, NVivo 8.0 or QSR*N6 (NUD*IST) computer files may be shared with all members of the research team. In cases of disagreement over transfer of data sets (as described above), the research team will strive to achieve a significant degree of consensus.
- The research team agrees to provide meaningful and appropriate research capacity-building, as indicated by Aboriginal community participants.
- The research team agrees that Aboriginal communities have the right to follow cultural codes of conduct and community protocols. However, rather than end a research relationship, in situations where Aboriginal community members are in disagreement, the research team will strive to resolve conflict towards achieving a significant degree of consensus.
- The research team agrees that it may be necessary for Aboriginal community members (investigators and participants) to seek advice and support from community elders and other community leadership.

DUTIES AND OBLIGATIONS OF THE PARTIES:

The Ottawa GFB obligations:

- Identify a key staff person to work with the researcher ;
- Participate in a steering committee to help guide the project;
- Orient the researchers to the CHC model of care and to the Ottawa GFB;
- Assist to develop partnerships and Good Food Box sites during phases 1 and 2 of the project;
- Promote the project to potential candidates of the study and other members of the community;
- Assist to recruit participants to phases 1 and 2 of the research;
- Provide input in project and research activities to assert suitability for the community and the study;
- Participate in evaluation and wrap up of the project;
- Provide Ottawa U with invoices for any operating expenses incurred by the project which are reflected in the budget

University of Ottawa obligations:

- Direct and manage all parts of phases 1 and 2 of the research initiative;
- Establish a steering committee to help guide the project;
- Be the sponsor for the project and manage the finances;
- Provide supervision and expertise on subject content and process;
- Provide updates to project partners about project activities and research progress
- Provide a report on research and evaluation findings upon the completion of the research
- Offer to involve the Ottawa GFB and Wabano in the next steps upon project completion

AUTHORSHIP

Criteria outlined by Huth (1986) will be used as guidelines for authorship of publication based on the findings of the research. The criteria recommends that: (1) *all authors must make a substantial contribution to the conception, design, analysis, or interpretation of data;* (2) *authors must be involved in writing and revising the manuscript for intellectual content;* and (3) *authors must approve the final draft and be able to defend the published work. Those who have made other contributions to the work (e.g. data collection without interpretation, etc.) or only parts of the above criteria should be credited in the acknowledgements, but not receive authorship.* Further,

- Research project staff may participate as authors provided that they fulfill the criteria outlined above.
- All members of the research team will be provided the opportunity to review and comment on findings prior to publication or presentation. Any one member of the research team may further analyse, publish or present findings resulting from the above-mentioned research project with the agreement of the Principal Investigator and the other research team members.
- The explicit permission of an individual or organization must be sought prior to acknowledging their contribution in a paper or presentation.
- A research team member or a partner may chose to include a disclaimer if they do not agree with the content or views presented in a publication.

IN WITNESS WHEREOF, the parties hereto have executed this agreement.

June 4/12
(Date)

June 11th, 2012
(Date)

Oct 9, 2015
(Date)

(Date)

C. Monahan, cchc
(Signature)

[Signature]
(Signature)

[Signature]
(Signature)

(Signature)

Appendix D - Community capacity building and training strategy

Consistent with the OCAP principles (First Nations Centre, 2007), one part-time research assistant (R.A.) with experience and knowledge of community research and Aboriginal cultures was hired to be involved in the transcription and analysis of qualitative data. Another individual from a nearby First Nations community was hired as research project support to help develop information products to be distributed to the community about the *Healthy People, Healthy Communities Project*. An advertisement for the job opening was distributed by the Chief Coordinator of the Aboriginal Resource Centre by email to students at the University of Ottawa campus listed in their database. It was equally displayed on the Ottawa Good Food Box's website and shared through our project partner's networks via email. All inquiries to this regard were sent to the researcher and interested, qualified and available candidates were asked to attend an interview conducted by the researcher and project partner from the Wabano Centre for Aboriginal Health (see Appendix E for the job description and application criteria). Once all interviews were conducted, the researcher and community partner discussed the strengths of the candidates and arrived at a consensus about which individuals were best suited for hire. The successful candidates were able to develop and enhance vital research skills, knowledge and leadership skills as there were activities that required the individual to work autonomously and with the lead researcher.

Appendix E – Job description and application criteria



JOB OPPORTUNITY

Are **YOU** looking to use the concepts you learned during your degree and get **MORE** experience in research and related activities? Are you looking to be more **INVOLVED** with the community and be part of a project that is **MEANINGFUL, POSITIVE & INNOVATIVE**?

The *Healthy People, Healthy Communities Project* is an academic-community partnership between the University of Ottawa, the Ottawa Good Food Box and the Wabano Centre for Aboriginal Health. We are looking to hire someone to help with project-related activities.

The collaborative project goals of project are:

- ☑ To determine the barriers and facilitators for accessing the Ottawa GFB (and other sources of fruits and vegetables) for urban First Nations, Inuit, Métis and non-Aboriginal peoples;
- ☑ To develop culturally competent, community-driven survey instruments that communicate respect and the inclusion of First Nations, Inuit, Métis, and non-Aboriginal perspectives;
- ☑ To develop an intervention that supports the unique cultural, health and food needs of Ottawa's Aboriginal population in order for them to benefit from and participate in the Ottawa GFB ;
- ☑ To determine if purchasing a monthly GFB and consuming additional amounts of fruits and vegetables can help manage the current state or prevent the onset of chronic diseases.

Employer: University of Ottawa

Location: Ottawa, ON

Job status/ type: Part-time Research Assistant

Start Date: Immediately

Job Summary

The ideal candidate will be involved in the collection, analysis of qualitative and quantitative data. They will work in partnership with the researcher with support from community partners, organizations and stakeholders and will also be assigned administrative tasks.

What YOU can expect: The hired individual can further develop vital research and leadership skills as well as broaden their knowledge on community-based projects and Aboriginal health. They will also strengthen their communication skills, networking abilities and capacity to transform and exchange information in ways that are useful and meaningful to people outside the academic community.

Application Criteria

- Identifies as a person who is First Nations, Inuit, Métis or non-Aboriginal;
 - Recently completed an undergraduate degree, is an undergraduate student in their final year or is a student in a graduate program at university in social sciences, health sciences or related discipline;
 - Has a keen and active interest in research and research-related activities;
-
- Has experience working with Aboriginal organizations or within Aboriginal communities and/ or diverse communities
 - Respected within their community;
 - Proficient in Windows-based computer system and Microsoft Office Programs
 - Has excellent English and French communication skills (writing, speaking and listening) and is tactful in all forms of communication;
 - Has strong organizational and management skills and is detail oriented;
 - Self-motivated and has the ability to work independently and/ or in group environment;

Assets:

- Knowledge about the determinants of Aboriginal health and food security;
- Experience collecting and/ or analysing qualitative and/ or quantitative data;
- Has strong computer skills with Microsoft Office, SPSS statistical software and general Internet and electronic communications; and
- Has knowledge and/or experience in digital photography.

This is an exceptional opportunity to develop your abilities in research, communication and leadership while being supported by a group of knowledgeable, motivated, positive and team-oriented project partners. Hours are flexible and can be negotiated with the lead project researcher.

Discover new opportunities and get involved with the community!

For more information about this opportunity or to apply today, send your resumé and cover letter by email to **Emily Lecompte** at XXXXXX@uottawa.ca

Appointment decisions will be based on organizational needs. We therefore encourage First Nations, Innu and Métis Peoples, persons with disabilities, and members of visible minority groups to apply and declare themselves as part of one or more of the above mentioned designated groups. On behalf of the Wabano Centre for Aboriginal Health, the Ottawa Good Food Box, and the University of Ottawa, we thank all applicants who express interest and apply, however, only those candidates selected for an interview will be contacted.

Thank You! Miigwetch! Merci! ᑭᓯᓂᓐᓂᓐ Marsee!



Emily M. Lecompte
Child & Youth Mental Health Research Lab
University of Ottawa, School of Psychology
136 Jean Jacques Lussier
Ottawa, ON, Canada, K1N 6N5

Appendix F - Supporting local businesses: Material resources and technical support

Henry's Photography and Elm Printing's have built individual reputations as reliable, dedicated and trusted businesses in Ottawa. Each business is engaged in the community and both have been involved in different capacity with the project's partnering organizations (Centretown Community Health Centre and the Wabano Centre for Aboriginal Health). To help promote local community business and make the most of research funding, project partners of the *Healthy People, Healthy Communities Project* suggested approaching Ross Grieves, manager of Henry's Photography in Ottawa and Mario Porco, manager for sales and marketing from Elm Printing for digital technology, accessories and printing support. Having Henry's Photography and Elm Printing as the project's main material providers and source for technical support helps strengthen existing relationships between community project partners and these businesses and provides new networking opportunities for business with academics.

Appendix G – Research Ethics Board certificate of approval

File Number: 08-10-11

Date (mm/dd/yyyy): 10/18/2011



Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

Ethics Approval Notice Social Science and Humanities REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
John	Lyons	Social Sciences / Psychology	Supervisor
Emily	Lecompte	Social Sciences / Psychology	Student Researcher

File Number: 08-10-11

Type of Project: PhD Thesis

Title: The Barriers And Facilitators to the Uptake of an Urban, Community-based Fruits and Vegetable Program

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
10/18/2011	10/17/2012	Ia

(Ia: Approval, Ib: Approval for initial stage only)

Special Conditions / Comments:

N/A

File Number: 08-10-11

Date (mm/dd/yyyy): 10/18/2011



Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

This is to confirm that the University of Ottawa Research Ethics Board identified above, which operates in accordance with the Tri-Council Policy Statement and other applicable laws and regulations in Ontario, has examined and approved the application for ethical approval for the above named research project as of the Ethics Approval Date indicated for the period above and subject to the conditions listed the section above entitled "Special Conditions / Comments".

During the course of the study the protocol may not be modified without prior written approval from the REB except when necessary to remove subjects from immediate endangerment or when the modification(s) pertain to only administrative or logistical components of the study (e.g. change of telephone number). Investigators must also promptly alert the REB of any changes which increase the risk to participant(s), any changes which considerably affect the conduct of the project, all unanticipated and harmful events that occur, and new information that may negatively affect the conduct of the project and safety of the participant(s). Modifications to the project, information/consent documentation, and/or recruitment documentation, should be submitted to this office for approval using the "Modification to research project" form available at:
http://www.rges.uottawa.ca/ethics/application_dwn.asp

Please submit an annual status report to the Protocol Officer 4 weeks before the above-referenced expiry date to either close the file or request a renewal of ethics approval. This document can be found at:
http://www.rges.uottawa.ca/ethics/application_dwn.asp

If you have any questions, please do not hesitate to contact the Ethics Office at extension 5841 or by e-mail at: ethics@uOttawa.ca.

Signature:

Leslie-Anne Barber
Protocol Officer for Ethics in Research
For Barbara Graves, Chair of the Social Sciences and Humanities REB

Appendix H – CIET notification and certificate for seed funding

May 9th, 2012

Dr. John Lyons
Ms. Emily Lecompte
University of Ottawa
Ottawa, Ontario
Canada

Dear John and Emily,

Thank you for your application to the Ottawa NEAHR. On behalf of the *Anisnabe Kekendazone* Advisory Board we are pleased to offer you an acceptance for your research proposal entitled “An examination of the barriers and facilitators to the uptake of an urban, community-based fruits and vegetables program and the effects on the health and well being of First Nations, Inuit and Métis peoples”

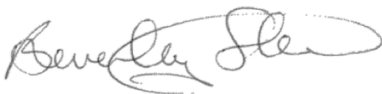
The award provides a total of \$50 000 with an initial payment of \$25 000. The final payment will be released upon submission to a larger national grant to continue the project.

Award recipients are required to follow the CIHR Grants and Award Guides, General Guidelines for all research training award programs. This award does not make you an employee of CIET, the IPH, University of Ottawa, or any of the five national Aboriginal organizations represented on the Board. As a recipient of this award you will be responsible for your own tax obligations.

The Board requires that your pilot project be presented at our annual AK/NEAHR colloquium. Upon receipt of this NEAHR funding we hope you will agree to the above requirements.

If you have any questions or concerns please feel free to call me at (613) 562-5393. Thank you!

Sincerely,



Neil Andersson (neil@ciet.org)

Executive Director

Beverley Shea (bshea@ciet.org)

Co-director

Anisnabe Kekendazone
Ottawa NEAHR
Tel: (613) 562-5393
Fax: (613) 562-5392

Anisnabe Kekendazone – Ottawa ACADRE
1 Stewart Street, 3rd Floor
Institute of Population Health, University of Ottawa, Ottawa, ON K1N 6N5
tel: 613 562 5393 fax: 613 562 5392 e-mail: acadre-iph@ciet.org

Appendix I – Estimated project budget

An Academic – Community collaboration between The University of Ottawa,
the Ottawa Good Food Box & the Wabano Centre for Aboriginal Health

Type of Project Supplies	ITEM NAME	COST PER ITEM	# OF ITEMS	TOTAL COST
STAFF SALARIES AND STIPENDS	Community developer(s)	\$5,250	2 (x \$5, 500)	\$11, 000
	Research Assistant (Aboriginal student)	\$5,000	1 (x \$5, 000)	\$5,000
	Translation Services (translation of materials in Inuk)	\$600	1	\$600
DATA COLLECTION, MEETINGS & WORKSHOPS	Participant honoraria (for Phase I of project = \$20 gift certificate and raffle)	\$20	40 (x \$20)	\$800
	Good Food Box (subsidized cost; Phase II)	\$20	40 participants (x 6 month trial x \$20)	\$4,800
	Bus tickets for participants (Adult Fares to and from the study location will be purchased; one-way travel requires 2 bus tickets thus, 4 tickets will be set aside for each participant and one ticket will be provided to an accompanying child (if needed))	\$1.25	70 (x \$1.25 (ticket price) x 4 (tickets needed))	\$350
	Tobacco (item will be divided in pouches as a cultural offering)	\$60	6 (x \$80/ per tobacco tin)	\$480
	Material (for tobacco pouches)	\$10.00/ per meter	7 meters (x \$10/meter)	\$70
	Ribbon (for tobacco pouches)	\$10	3 meters (x \$10/meter)	\$30
	Refreshments and supplies (Cheese, crackers, berries, juice, water and tea, cups, napkins, plates, etc... to be served at meetings with community members, interviews and Talking Circles for participants; the community forum will be catered by a local Aboriginal restaurant)	\$8,000	1	\$8,000
	Photo developing (Phase II for Photovoice)	\$1,000	1	\$1,000
	Posters and project advertisement (printing)	\$200	1	\$200
	Teleconference meetings	\$1,400	1	\$1,400
OFFICE MATERIALS, SUPPLIES & SERVICES	Photocopy Service			
	Facsimile service (fax)			
	Courier service			
	Business cards			

	Paper shredder	\$100	1 (x \$100)	\$100
	Ink cartridge (toner)	\$100	3 (x \$100)	\$300
	Printer paper	\$80	1	\$80
ELECTRONIC DEVICES & SUPPLIES	Colour Printer	\$500	1 (x \$500)	\$500
	Multimedia digital projector (to be used during meetings and at community forum)	\$1,000	1 (x \$1,000)	\$1,000
	Digital voice recorder (for interviews and Talking Circle)	\$180	1 (x \$180)	\$180
	Digital cameras	\$200	15 (x \$200)	\$3,000
	Memory card (for camera)	\$40	15 (x \$40)	\$600
	Camera case (for camera)	\$25	15 (x \$25)	\$375
	External portable hard drive (for pictures collected from Photovoice component in Phase II)	\$150	1 (x \$150)	\$150
COMPUTER SOFTWARE	NVivo 8 license	\$635	1 (x \$635)	\$635
	SPSS v.17 license (1 yr.)	\$100	1 (x \$100)	\$100
DISSEMINATION OF RESULTS	Preparation and printing of manuscript for project partners and participants	\$75/ per person	50 (x \$75)	\$3,750
	Community forum (all materials, technology assistant, podium, table rentals, project banner, etc)	\$4,500	1	\$4,500
TRAVEL, ACCOMODATIONS, AND REGISTRATION	Conference fees, travel and accommodations (data sharing and dissemination phase)	\$1,000	1	\$1,000
GRAND TOTAL				\$50,000

Total budget expenses per category breakdown (in \$CAD):

• Staff salary and stipends:	\$16, 600
• Data collection, meetings and workshops:	\$15, 730
• Office materials, supplies & services:	\$ 1, 880
• Electronic devices and supplies:	\$ 5, 805
• Computer software licenses:	\$ 735
• Dissemination of results:	\$ 8, 250
• Travel, accommodations, and registration:	\$ 1, 000
TOTAL	\$50, 000

Appendix J – Supporting organizations and locations for participant recruitment

The following locations have been identified by the research team as appropriate establishments from which to recruit participants for both Phase I (needs assessment) and Phase II (implementation) of the study. The organizations have signed a letter that supports the promotion of the project and the recruitment of candidates through their establishment (the following list of organizations is in no particular order):

- a. Centretown Community Health Center;
- b. Eastern Ottawa Resource Centre;
- c. Gignul Non-Profit Housing Corporation;
- d. Lowertown Community Resource Centre;
- e. Options Bytown;
- f. Ottawa Good Food Box;
- g. Ottawa Inuit Children's Centre;
- h. Overbrooke-Forbes Community Resource Centre;
- i. Wabano Center for Aboriginal Health; and
- j. Vanier Community Services Centre.

Appendix K1 – Recruitment poster for current Good Food Box customers



FIRST NATIONS, INUIT, MÉTIS & NON-ABORIGINAL PARTICIPANTS NEEDED



Are You A Current Client Of The Ottawa Good Food Box?

If you answered YES, you may be able to take part in an interview

Interviews will be conducted in a safe and respectful manner.
Complete confidentiality is guaranteed.

Who am I? A doctoral student with Métis heritage at the University of Ottawa doing a research to examine the barriers and facilitating factors to getting enough fresh and nutritious fruits and vegetables.

Why am I doing this? Your knowledge and contribution to the study will help inform community and local programs about the challenges you may face when trying to access fruits and vegetables. The information you provide will help improve a local food program.

The interview will take about an hour and will be conducted in either English or French. We value your time and experience and will offer you a gift certificate as a thank you for participating in our study

Participation is limited

For more information, please contact
Emily Lecompte at 613-XXX-XXXX
or by email at XXXXX@uottawa.ca

Merci! Thank you! Miigwetch!



Food Study – U of O
Emily Lecompte
613-XXX-XXXX
XXXXX@uottawa.ca

Food Study – U of O
Emily Lecompte
613-XXX-XXXX
XXXXX@uottawa.ca

Food Study – U of O
Emily Lecompte
613-XXX-XXXX
XXXXX@uottawa.ca

Food Study – U of O
Emily Lecompte
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XXXXX@uottawa.ca

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Food Study – U of O
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613-XXX-XXXX
XXXXX@uottawa.ca

Food Study – U of O
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Appendix K2 – Recruitment poster for individuals not part of the Good Food Box



FIRST NATIONS, INUIT, MÉTIS & NON-ABORIGINAL PARTICIPANTS NEEDED



DO YOU HAVE DIFFICULTY GETTING THE FRUITS & VEGETABLES YOU WANT AND NEED FOR YOU AND YOUR FAMILY?

If you answered YES, you may be able to take part in an interview

Interviews will be conducted in a safe and respectful manner.
Complete confidentiality is guaranteed.

Who am I? A doctoral student with Métis heritage at the University of Ottawa doing a research to examine the barriers and facilitating factors to getting enough fresh and nutritious fruits and vegetables.

Why am I doing this? Your knowledge and contribution to the study will help inform community and local programs about the challenges you may face when trying to access fruits and vegetables. The information you provide will help improve a local food program.

The interview will take about an hour and will be conducted in either English or French. We value your time and experience and will offer you a gift certificate as a thank you for participating in our study

Participation is limited

For more information, please contact
Emily Lecompte at 613-XXX-XXXX
or by email at XXXXXX@uottawa.ca

Merci! Thank you! Miigwetch!



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Appendix K3 – Recruitment poster for former Good Food Box customers



FIRST NATIONS, INUIT, MÉTIS & NON-ABORIGINAL PARTICIPANTS NEEDED



Were you once a client of the Ottawa Good Food Box but it just did not work out?

If you answered **YES**, you may be able to take part in an interview

Interviews will be conducted in a safe and respectful manner.
Complete confidentiality is **guaranteed**.

Who am I? A doctoral student with Métis heritage at the University of Ottawa doing a research to examine the barriers and facilitating factors to getting enough fresh and nutritious fruits and vegetables.

Why am I doing this? Your knowledge and contribution to the study will help inform community and local programs about the challenges you may face when trying to access fruits and vegetables. The information you provide will help improve a local food program.

The interview will take about an hour and will be conducted in either **English** or **French**. We value your time and experience and will offer you a **gift certificate** as a thank you for participating in our study

Call today! Participation is limited

For more information, please contact
Emily Lecompte at 613-XXX-XXXX
or by email at **XXXXX@uottawa.ca**

Merci! Thank you! Miigwetch!



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Appendix L – Participant survey package: 3-part pre-interview questionnaires



Participant survey package

General instructions

- ☒ Thank you for participation in this study and agreeing to answer the following questions in the participant survey package. There are three questionnaires in this survey.
- ☒ The following questions ask about the types and amounts of food you consume as well as some personal information to help us better understand the people we are talking to
- ☒ Your participation in this study will help us better understand the unique experience that affect the consumption of adequate amount of fruits and vegetables and the uptake of a local fruit and vegetable program, the Ottawa Good Food Box
- ☒ All your answers will remain private and all information you share will be kept confidential. Only the researcher and members of the research team will see your answers. Please be assured that we will present information in a way that protects your identity and the identity of people or services that you mention.
- ☒ Please answer all questions as best to your knowledge
- ☒ There are no right or wrong answers
- ☒ Take all the time you need
- ☒ If you have any questions, comments or concerns, please feel free to ask the researcher

Demographic and Information Questionnaire



PARTICIPANT ID: _____

DATE: _____

I need to include some personal information about you in order to get a picture of the people we are talking to. Please be assured that everything you will remain completely confidential.

1. With which of the following groups do you identify with (please check one):

- ☐ Male
- ☐ Female
- ☐ Two-spirited

2. What is your birth year (e.g., 1972): _____

3. What is your ethnic or cultural origin: _____

(For example, Canadian, Aboriginal, French, Italian, German, East Indian, Polish, Spanish, Portuguese, Lebanese, etc...)

3. a) If you identify as Aboriginal or have Aboriginal heritage, please specify if you are:

- ☐ First Nations
- ☐ Inuit
- ☐ Métis
- ☐ Other: (please specify Aboriginal group) _____

4. How long have you lived in the Ottawa region? (please check one)

- ☐ Since birth
- ☐ More than 10 years
- ☐ Between 5 – 10 years
- ☐ Less than 5 years

5. How long have you lived at your current address (estimate in years or months)? _____

6. Do you currently own or rent your home? (please check one)

☐ Rent

☐ Own

7. Including yourself, how many people are currently living in your household? _____

8. How many of these are children under 18? _____

9. How many people in your household do you buy and prepare food for regularly? _____

10. Do you currently own a functioning vehicle (e.g., car, van, truck)?

☐ YES

☐ NO

☐ Do not know

11. Here is a list of categories that correspond to amounts of money. Think about the amount of money available to you or your household over the period of one-year (for example jobs, social security). Which category do you fall into? (please, check one)

☐ less than \$10,000

☐ \$15,000 - \$19,999

☐ \$25,000 - \$29,999

☐ \$35,000 - \$39,999

☐ \$45,000 - \$49,999

☐ \$60,000 - \$69,999

☐ \$10,000 - 14,999

☐ \$20,000 - \$24,999

☐ \$30,000 - \$34,999

☐ \$40,000 - \$44,999

☐ \$50,000 - \$59,999

☐ \$70,000 or more

12. What is your household's main source of income (choose only one):

☐ Employment

☐ Social Assistance

☐ Seniors' Benefits/ Old Age Pension

☐ Other: _____

☐ Do not know

13. What is the highest level of education that you have completed? (please check one)

☐ No schooling or some elementary (1 to 8 years)

☐ Elementary school

☐ Some high school

☐ High school

☐ Some post-secondary schooling (e.g., CEGEP, university; community college)

☐ Completed community college, technical college, or CEGEP

☐ Completed university

☐ Master's, Doctorate or professional degree (e.g., medical degree)

☐ Other education or training: (please specify) _____

☐ Don't know

FOOD FREQUENCY QUESTIONNAIRE



Participant ID: _____

Date: _____

The next questions are about the foods you usually eat or drink. Please tell me how often you eat or drink each one, for example, twice a week, three times a month, and so forth. Remember, I am only interested in the foods **you** eat. Include all foods **you** eat, both at home and away from home.

1. How often do you drink fruit juices such as orange, grapefruit or tomato?

☐ _____ per week

☐ Never

☐ Don't know/ Not sure

2. Not counting juice, how often do you eat fruit?

☐ _____ per week

☐ Never

☐ Don't know/ Not sure

3. How often do you eat green salad?

☐ _____ per week

☐ Never

☐ Don't know/ Not sure

FRUIT AND VEGETABLE INTAKE AND HEALTH

4. How often do you eat potatoes not including French fries, fried potatoes or potato chips?

☐ _____ per week

☐ Never

☐ Don't know/ Not sure

5. How often do you eat carrots?

☐ _____ per week

☐ Never

☐ Don't know/ Not sure

6. Not counting carrots, potatoes, or salad, how many servings of vegetables do you usually eat? (Example: A serving at both lunch and dinner would be two servings)

☐ _____ per week

☐ Never

☐ Don't know/ Not sure

- END OF PART II OF SURVEY PACKAGE -

Please take a moment to fill in any questions you may have skipped

USDA Core Food Security Module – Adult and Family Version



Participant ID: _____

Date: _____

The following questions are about several statements that people have made about their food situation. For each question, we would like you to think about your food situation in the past **12 months** and mark [x] your response in the box provided.

Please be assured that all information will be kept strictly confidential.

1. Which of these statements best describes the food eaten in your household in the last 12 months:

- ☐ We always have enough to eat and the kinds of food we want
- ☐ We have enough to eat but not always the kinds of food we want
- ☐ Sometimes we don't have enough to eat
- ☐ Often we don't have enough to eat

The following questions refer to statements people have made about the food situation for adults in the household.

2. We worried whether our food would run out before we got money to buy more. Was that often true, sometimes, or never true for your household in the last 12 months?

- ☐ Often true
- ☐ Sometimes true
- ☐ Never true
- ☐ Don't know

3. The food that we bought just didn't last, and we didn't have money to buy more. Was that often true, sometimes, or never true for your household in the last 12 months?

- ☐ Often true
- ☐ Sometimes true
- ☐ Never true
- ☐ Don't know

4. We couldn't afford to eat balanced meals. Was that often true, sometimes, or never true for your household in the last 12 months?

- ☐ Often true
- ☐ Sometimes true
- ☐ Never true
- ☐ Don't know

FRUIT AND VEGETABLE INTAKE AND HEALTH

5. In the last 12 months, did you or other adults in your household ever cut the size of your meals or cut meals because there wasn't enough money for food?
- ☐ Yes
☐ No (Skip to question 6)
☐ Don't know (Skip to question 6)
- 5a. How often did this happen – almost every month, some months but not every month, or in only 1 or 2 months?
- ☐ Almost every month
☐ Some months but not every month
☐ Only 1 or 2 months
☐ Don't know
6. In the last 12 months, did you or other adults in your household ever eat less than you felt you should because there wasn't enough money for food?
- ☐ Yes
☐ No
☐ Don't know
7. In the last 12 months, were you or other adults in your household ever hungry but didn't eat because there wasn't enough money for food?
- ☐ Yes
☐ No
☐ Don't know
8. In the last 12 months, did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?
- ☐ Yes
☐ No (Skip to question 9)
☐ Don't know (Skip to question 9)
- 8a. How often did this happen – almost every month, some months but not every month, or in only 1 or 2 months?
- ☐ Almost every month
☐ Some months but not every month
☐ Only 1 or 2 months
☐ Don't know
-

The next group of questions refers to statements that people have made about the food situation of children, under the age of 18, in the household.

FRUIT AND VEGETABLE INTAKE AND HEALTH

9. I relied on only a few kinds of low-cost food to feed the children because I was running out of money to buy food. Was that often true, sometimes, or never true for your household in the last 12 months?
- ☐ Often true
 - ☐ Sometimes true
 - ☐ Never true
 - ☐ Don't know
10. I couldn't feed my children a balanced meal, because I couldn't afford it. Was that often true, sometimes, or never true for your household in the last 12 months?
- ☐ Often true
 - ☐ Sometimes true
 - ☐ Never true
 - ☐ Don't know
11. My children were not eating enough because I just couldn't afford enough food. Was that often true, sometimes, or never true for your household in the last 12 months?
- ☐ Often true
 - ☐ Sometimes true
 - ☐ Never true
 - ☐ Don't know
12. In the last 12 months, did you ever cut the size of any of your children's meals because there wasn't enough money for food?
- ☐ Yes
 - ☐ No
 - ☐ Don't know
13. In the last 12 months, did any of the children ever skip meals because there wasn't enough money for food?
- ☐ Yes
 - ☐ No (Skip to question 14)
 - ☐ Don't know (Skip to question 14)
- 13a. How often did this happen – almost every month, some months but not every month, or in only 1 or 2 months?
- ☐ Almost every month
 - ☐ Some months but not every month
 - ☐ Only 1 or 2 months
 - ☐ Don't know
14. In the last 12 months, were any of your children ever hungry but you just couldn't afford more food?
- ☐ Yes
 - ☐ No
 - ☐ Don't know

FRUIT AND VEGETABLE INTAKE AND HEALTH

15. In the last 12 months, did any of your children not eat for a whole day because there wasn't enough money for food?

☐ Yes

☐ No

☐ Don't know

– END OF PART III OF SURVEY –

Thank you for taking time to fill in the surveys and for sharing this information with us!

Please notify the researcher that you have completed the survey component

Appendix M1 – Interview guide for Good Food Box Program customers



PHASE I: Questionnaire for Good Food Box Users

Barriers and facilitators to the uptake of a local fruits and vegetables program in Ottawa, Canada

Participant ID: _____

Date: _____

Good Food Box Location: _____

Introduction

Interviewer: Over the next hour, I would like to talk to you about fruit and vegetable consumption in your household over the past 12 months. I am interested in learning about your knowledge about fruits and vegetable, your perception about barriers affecting the consumption of fruits and vegetables, difficulties related to getting enough of fruits and vegetables and your attitude toward integrating fruits and vegetables in your diet and how this affects your life.

*There will be several parts to this interview. There will be some broader questions and some more specific questions. All and any information that you give me is **completely confidential**. I will not share your individual private responses with anyone. We will only combine your answers with those of other people and report on the overall results.*

We will begin by going through the consent form to make sure that you are comfortable with everything and then move on to the questions.

Some questions will require you to choose from a list of answers, while other questions will require more detailed answers so that I fully understand the experiences you are sharing.

You may find that I'm asking questions about things that you've already told me, this to ensure that I fully understand the extent of your experience.

Please speak as freely as you like, and again, please feel free to say if you need to take a break at anytime during the interview.

Now, are you ready to get started?

This first section is about your fruit and vegetable intake.

Determinants of fruit and vegetable intake (participant's perception):

- 1. Do you purchase both your fruits and vegetables from the same location**
(probe with examples of grocery store, farmer's market F&V program)?

- ☐ Yes
☐ No
☐ Not sure

- 2. Where do you purchase the fruits and vegetables for your household?**
(probe with examples such as a farmer's market, grocery store, community garden,...)

- ☐ Same location for the purchase of both types of produce (check if applicable)

Fruits: _____

Vegetables: _____

3. When you go to the grocery store or market, what are the main things that affect your purchase of fruits and vegetables?
(If needed, probe with \$ per pound, quantity and quality of produce, etc)
-

4. Is there regularly enough fruit and vegetables to eat in your household for you and your family?

- ☐ YES (go to question 5)
☐ NO – Would you please explain
-

5. Do you live alone or with other people?

- [] Alone (skip to question 6)
[] With other people

5.a) How do the people you live with influence your purchase of fruits and/or vegetables? (if needed, probe with types or amounts of F & V)

6. When you go to the grocery store or market, do you tend to spend more money on fruits or vegetables, or spend the same on both?

- ☐ Spend more money on fruits
☐ Spend more money on vegetables
☐ Spend about the same amount of money on each
☐ Not sure

7. Do you have any food allergies or intolerances to certain foods? (If no, skip to Q8)

- [] Food allergies
[] Food intolerances

7.a) If yes, which ones? _____

8. Are you more likely to eat certain forms of fruits and vegetables at different times of the year? For example: Fresh, canned or frozen fruits and vegetables (If unsure, skip to Q9)

8. A) If Yes, why please explain?

8. B) If No, what makes it easy to eat any type of fruit and vegetable at any time of year?

Before we go to the next section, are there any concerns that you would like to talk about?

II – Culture and Food:

The next questions will talk about cultural differences related to food and will require a more detailed answer as it refers to your experience.

9. Does your culture or cultural heritage affect your food choices?

- ☐ YES
- ☐ NO (Go to Q10)
- ☐ NOT SURE (Go to Q10)

9.a) How does your culture or cultural heritage affect your food choices?

10. Does your culture or cultural heritage affect how or what you eat?

- ☐ YES
- ☐ NO
- ☐ NOT SURE (Go to Q11)

10.a) How does your culture or cultural heritage affect (or not) how or what you eat?

Before we go to the next section, are there any concerns that you would like to talk about?

III – Participation in Ottawa Good Food Box

The next questions will talk about your experience with the Ottawa Good Food Box and will require more detailed answers.

11. When did you become a member of the Ottawa Good Food Box? (e.g., month/ year)

12. How did you hear about the Ottawa Good Food Box program?

13. On a scale from 1 to 5, where one is very dissatisfied and five is very satisfied, please tell me how satisfied you are with the choices of fruits and vegetables you have for your Good Food Box (show cue card):

Dissatisfied	Somewhat Dissatisfied	Indifferent	Satisfied	Very Satisfied
1	2	3	4	5

- Please explain

14. On a scale from 1 to 5, where one is very dissatisfied and five is very satisfied, please tell me how satisfied you are with the quantity of fruits and vegetables you get in your Good Food Box (*show cue card*):

Dissatisfied	Somewhat Dissatisfied	Indifferent	Satisfied	Very Satisfied
1	2	3	4	5

- Please explain

15. On a scale from 1 to 5, where one is very dissatisfied and five is very satisfied, please tell me how satisfied you are with the quality of fruits and vegetables you get in your Good Food Box (*show cue card*):

Dissatisfied	Somewhat Dissatisfied	Indifferent	Satisfied	Very Satisfied
1	2	3	4	5

- Please explain

16. On a scale from 1 to 5, where one is NOT AT ALL and five is COMPLETELY, how closely does the Ottawa Good Food Box meet your needs (*show cue card*):

Not at all	Slightly	Moderately	Very Close	Completely
1	2	3	4	5

- Please explain

17. On a scale from 1 to 5, where one is very dissatisfied and five is very satisfied, please how would you rate your overall satisfaction with the Ottawa Good Food Box:

Dissatisfied	Somewhat Dissatisfied	Indifferent	Satisfied	Very Satisfied
1	2	3	4	5

- Please explain

18. What do you enjoy about the Ottawa Good Food Box program?
-

19. What do you like the least about the Ottawa Good Food Box program?
-

20. Have you ever ceased participating in the Ottawa Good Food Box to purchase your fruits and vegetables?

20 a) IF YES, WHY? _____

21. How do you think the Ottawa Good Food Box could be improved?

22. What types of community resources do you think are the most helpful to increase fruit and vegetables consumption in the community?

Before we go to the next section, are there any concerns that you would like to talk about?

IV – Perceived benefits and barriers about fruits and vegetables

The next questions will talk about decisional considerations about fruits and vegetables. I will read a statement and then would like you to rate the extent to which you agree or disagree with based on a scale from 1 to 5, where 1 is completely disagree and 5 is completely agree.

23. Eating more fruits and vegetables is expensive

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

24. I would worry about pesticides if I ate more fruits and vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

25. Preparing and cooking vegetables is too time consuming

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

26. I am confused over the definitions about fruit and vegetable portion sizes

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

27. My significant other or children do not like to eat fruits or vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

28. Planning and preparing meals with more vegetables disrupts my routine

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

29. I get a bad reaction (e.g., gas, cramps, etc...) if I eat fruits and vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

FRUIT AND VEGETABLE INTAKE AND HEALTH

30. Others would think I am fussy if I worried about having to eat fruits or vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

31. When I do not eat enough fruits and vegetables I do not feel good

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

32. Eating more fruits and vegetables gives me more vitamins and minerals

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

33. I would be following the advice of my doctor if I ate more fruits or vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

34. By eating more fruits and vegetables, I feel good about looking after my health

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

35. My family and friends would be pleased if I ate more fruits and vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

36. I enjoy the taste of fruits

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

37. I enjoy the taste of vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

38. Eating more fruits and vegetables helps keep me regular (avoid constipation)

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

39. Eating more fruits and vegetables daily means that I am less likely to get sick

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

The next set of questions will talk about certain things that may make it hard to get enough food. I will read a statement and then would like you to rate the extent to which this is a problem for you on a scale of 1 to 4, 1 being never a problem, 2 sometimes a problem, 3 often a problem, and 4, always being a problem (show cue card for each question – circle participants answer).

FRUIT AND VEGETABLE INTAKE AND HEALTH

40. Not enough money for fruits and vegetables

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

41. The fruits and vegetables I want are not available

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

42. The fruits and vegetables I buy just don't last

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

43. It is difficult to get to and from the store

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

44. Cooking is difficult for me

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

45. Not enough cooking supplies

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

46. No enough storage space

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

47. Are there any other reasons?

- ☐ YES – which ones? _____
- ☐ NO
- ☐ NOT SURE

Before we go to the next section, are there any concerns that you would like to talk about?

V – Current and former fruit and vegetable behaviours

The next section deals with the current and former food behaviours related to eating enough fruits and vegetables and will require some more details about your experience

48. As a child, did you eat fruit and vegetables at snack times?

- ☐ YES
- ☐ NO (Go to Q49)
- ☐ NOT SURE (Go to Q49)

48. a) If YES, what types of snacks did you eat? _____

49. As a child, were fruits and vegetables regularly served at meal time?

- ☐ YES
☐ NO (Go to Q50)
☐ NOT SURE (Go to Q50)

a) If YES, at which meals were more likely to eat fruits ?

*(e.g., breakfast, lunch, supper)*_____

b) If YES, at which meals were you more likely to eat vegetables?_____

c) If NO, how come?_____

50. On a scale from 1 to 5, where one is NOT AT ALL LIKELY and five is VERY LIKELY, how likely are you to eat fruit as a snack daily (show cue card):

Not at all likely	Not too likely	Somewhat likely	Likely	Very likely
1	2	3	4	5

Explain: _____

51. On a scale from 1 to 5, where one is NOT AT ALL LIKELY and five is VERY LIKELY, how likely are you to eat vegetables as a snack daily (show cue card):

Not at all likely	Not too likely	Somewhat likely	Likely	Very likely
1	2	3	4	5

Explain: _____

52. On a scale from 1 to 5, where one is NOT AT ALL LIKELY and five is VERY LIKELY, how likely are you to include fruits and vegetables in meals daily (show cue card):

Not at all likely	Not too likely	Somewhat likely	Likely	Very likely
1	2	3	4	5

Explain (probe: what makes it easy or hard to include fruit and vegetables in meals)

53. During a typical day, when are you more likely to eat fruits and vegetables?
(probe: morning, afternoon, before supper, late at night)

53. a) **What makes it easy to eat fruits and vegetables during the day?**

53. b) **What makes it difficult to eat fruits and vegetables during the day?**

Before we go to the final section, are there any concerns that you would like to talk about?

VI - Fruit and vegetables consumption and health

The next section deals with the consequences of not eating enough fruits and vegetables and will require some more details about your experience

54. How do you feel when you don't eat enough fruits and vegetables?

(if needed, probe for emotional and physical aspects)

55. How do different members of your household feel when they don't eat enough fruit and vegetables?

56. Do you currently have a medical condition that requires you to be on a special diet?

☐ YES

☐ NO (Go to Q57)

☐ NOT SURE (Go to Q57)

56. a) If YES, what makes it difficult to remain loyal to your diet?

57. Does not eating enough fruits or vegetables affected your own or other household members' health and well-being? If so, how?*(Probe for physical and social health)*

58. Overall, how would you rate your health in the past 4 weeks? (circle one)

Excellent

Good

Fair

Poor

Very Poor

59. During the past 4 weeks, how much energy did you have? (circle one)

Very much

Quite a bit

Some

A little

Barely any

Closing question:

Is there anything I should have asked about factors that affect the fruits and vegetables that you eat so that you're thinking "Why didn't she ask me about....." ?

– END OF INTERVIEW –

Appendix M2 – Interview guide for one-time Good Food Box Program customers



PHASE 1: Questionnaire for one-time Ottawa Good Food Box users

Barriers and facilitators to the uptake of a local fruits and vegetables program in Ottawa, Canada

Participant ID: _____

Date: _____

Good Food Box Location: _____

Introduction

Interviewer: Over the next hour, I would like to talk to you about fruit and vegetable consumption in your household over the past 12 months. I am interested in learning about your knowledge about fruits and vegetable, your perception about barriers affecting the consumption of fruits and vegetables, difficulties related to getting enough of fruits and vegetables and your attitude toward integrating fruits and vegetables in your diet and how this affects your life.

*There will be several parts to this interview. There will be some broader questions and some more specific questions. All and any information that you give me is **completely confidential**. I will not share your individual private responses with anyone. We will only combine your answers with those of other people and report on the overall results.*

We will begin by going through the consent form to make sure that you are comfortable with everything and then move on to the questions.

Some questions will require you to choose from a list of answers, while other questions will require more detailed answers so that I fully understand the experiences you are sharing.

You may find that I'm asking questions about things that you've already told me, this to ensure that I fully understand the extent of your experience.

Please speak as freely as you like, and again, please feel free to say if you need to take a break at anytime during the interview. Now, are you ready to get started?

This first section is about your fruit and vegetable intake.

Determinants of fruit and vegetable intake (participant's perception):

1. Do you purchase both your fruits and vegetables from the same location

(probe with examples of grocery store, farmer's market F&V program)?

☐ Yes

☐ No

☐ Not sure

2. Where do you purchase the fruits and vegetables for your household?

(probe with examples such as a farmer's market, grocery store, community garden,...)

☐ Same location for the purchase of both types of produce (check if applicable)

Fruits: _____

Vegetables: _____

3. **When you go to the grocery store or market, what are the main things that affect your purchase of fruits and vegetables?**
(If needed, probe with \$ per pound, quantity and quality of produce, etc)
-

4. **Is there regularly enough fruit and vegetables to eat in your household for you and your family?**

- ☐ YES (go to question 5)
☐ NO – Would you please explain
-

5. **Do you live alone or with other people?**

- [] Alone (skip to question 6)
[] With other people

5.a) How do the people you live with influence your purchase of fruits and/or vegetables? (if needed, probe with types or amounts of F & V)

6. **When you go to the grocery store or market, do you tend to spend more money on fruits or vegetables, or spend the same on both?**

- ☐ Spend more money on fruits
☐ Spend more money on vegetables
☐ Spend about the same amount of money on each
☐ Not sure

7. **Do you have any food allergies or intolerances to certain foods? (If no, skip to Q8)**

- [] Food allergies
[] Food intolerances

7.a) If yes, which ones? _____

8. **Are you more likely to eat certain forms of fruits and vegetables at different times of the year? For example: Fresh, canned or frozen fruits and vegetables (If unsure, skip to Q9)**

8. A) If Yes, why please explain?

8. B) If No, what makes it easy to eat any type of fruit and vegetable at any time of year?

Before we go to the next section, are there any concerns that you would like to talk about?

II – Culture and Food:

The next questions will talk about cultural differences related to food and will require a more detailed answer as it refers to your experience.

9. Does your culture or cultural heritage affect your food choices?

- ☐ YES
- ☐ NO (Go to Q10)
- ☐ NOT SURE (Go to Q10)

9.a) How does your culture or cultural heritage affect your food choices?

10. Does your culture or cultural heritage affect how or what you eat?

- ☐ YES
- ☐ NO (Go to Q11)
- ☐ NOT SURE (Go to Q11)

10.a) How does your culture or cultural heritage affect (or not) how or what you eat?

Before we go to the next section, are there any concerns that you would like to talk about?

III – Participation in Ottawa Good Food Box

The next questions will talk about your experience with the Ottawa Good Food Box and will require more detailed answers.

11. When did you become a member of the Ottawa Good Food Box? (e.g., month/ year)

12. How did you hear about the Ottawa Good Food Box program?

13. On a scale from 1 to 5, where one is very dissatisfied and five is very satisfied, please tell me how satisfied you were with the choices of fruits and vegetables you had as a client of the Ottawa Good Food Box (*show cue card*):

Dissatisfied	Somewhat Dissatisfied	Indifferent	Satisfied	Very Satisfied
1	2	3	4	5

- Please explain

14. On a scale from 1 to 5, where one is very dissatisfied and five is very satisfied, please tell me how satisfied you were with the quantity of fruits and vegetables you had as a client of the Ottawa Good Food Box (*show cue card*):

Dissatisfied	Somewhat Dissatisfied	Indifferent	Satisfied	Very Satisfied
1	2	3	4	5

- Please explain

15. On a scale from 1 to 5, where one is very dissatisfied and five is very satisfied, please tell me how satisfied you were with the quality of fruits and vegetables you had as a client of the Ottawa Good Food Box (*show cue card*):

Dissatisfied	Somewhat Dissatisfied	Indifferent	Satisfied	Very Satisfied
1	2	3	4	5

- Please explain

16. On a scale from 1 to 5, where one is NOT AT ALL and five is COMPLETELY, how closely did the Ottawa Good Food Box meet your expectations (*show cue card*):

Not at all	Slightly	Moderately	Very Close	Completely
1	2	3	4	5

- Please explain

17. On a scale from 1 to 5, where one is very dissatisfied and five is very satisfied, please how would you rate your satisfaction with the Ottawa Good Food Box (*show cue card*):

Dissatisfied	Somewhat Dissatisfied	Indifferent	Satisfied	Very Satisfied
1	2	3	4	5

- Please explain

18. What did you like about the Ottawa Good Food Box program?
-

19. What did you like the least about the Ottawa Good Food Box program?
-

20. Would you consider returning to the Ottawa Good Food Box to purchase your fruits and vegetables?

20 a) IF YES, WHY? _____

20 b) IF NO, WHY NOT? _____

21. How do you think the Ottawa Good Food Box could be improved?

22. What types of community resources do you think are the most helpful to increase fruit and vegetables consumption in the community?

Before we go to the next section, are there any concerns that you would like to talk about?

IV – Perceived benefits and barriers about fruits and vegetables

The next questions will talk about decisional considerations about fruits and vegetables. I will read a statement and then would like you to rate the extent to which you agree or disagree with based on a scale from 1 to 5, where 1 is completely disagree and 5 is completely agree.

23. Eating more fruits and vegetables would be expensive

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

24. If I ate more fruits and vegetables, I would worry about pesticides

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

25. Preparing and cooking vegetables is too time consuming

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

26. I am confused over the definitions about fruit and vegetable portion sizes

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

27. My significant other or children do not like to eat fruits or vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

28. Planning and preparing meals with more vegetables disrupts my routine

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

29. I get a bad reaction (e.g., gas, cramps, etc...) if I eat fruits and vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

30. Others would think I am fussy if I worried about having to eat fruits or vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

FRUIT AND VEGETABLE INTAKE AND HEALTH

31. When I do not eat enough fruits and vegetables I do not feel good

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

32. Eating more fruits and vegetables gives me more vitamins and minerals

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

33. I would be following the advice of my doctor if I ate more fruits or vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

34. By eating more fruits and vegetables, I feel good about looking after my health

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

35. My family and friends would be pleased if I ate more fruits and vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

36. I enjoy the taste of fruits

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

37. I enjoy the taste of vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

38. Eating more fruits and vegetables helps keep me regular (avoid constipation)

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

39. Eating more fruits and vegetables daily means that I am less likely to get sick

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

The next set of questions will talk about certain things that may make it hard to get enough food. I will read a statement and then would like you to rate the extent to which this is a problem for you on a scale of 1 to 4, 1 being never a problem, 2 sometimes a problem, 3 often a problem, and 4, always being a problem (show cue card for each question – circle participants answer).

40. Not enough money for fruits and vegetables

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

FRUIT AND VEGETABLE INTAKE AND HEALTH

41. The fruits and vegetables I want are not available

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

42. The fruits and vegetables I buy just don't last

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

43. It is difficult to get to and from the store

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

44. Cooking is difficult for me

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

45. Not enough cooking supplies

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

46. No enough storage space

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

47. Are there any other reasons?

- ☐ YES – which ones? _____
- ☐ NO
- ☐ NOT SURE

Before we go to the next section, are there any concerns that you would like to talk about?

V – Current and former fruit and vegetable behaviours

The next section deals with the current and former food behaviours related to eating enough fruits and vegetables and will require some more details about your experience

48. As a child, did you eat fruit and vegetables at snack times?

- ☐ YES
- ☐ NO (Go to Q49)
- ☐ NOT SURE (Go to Q49)

48. A) If YES, what types of snacks did you eat? _____

49. As a child, were fruits and vegetables regularly served at meal time?

☐ YES

☐ NO (Go to Q50)

☐ NOT SURE (Go to Q50)

a) If YES, at which meals were more likely to eat fruits ?

(e.g., breakfast, lunch, supper) _____

b) If YES, at which meals were you more likely to eat vegetables? _____

c) If NO, how come? _____

50. On a scale from 1 to 5, where one is NOT AT ALL LIKELY and five is VERY LIKELY, how likely are you to eat fruit as a snack daily (show cue card):

Not at all likely	Not too likely	Somewhat likely	Likely	Very likely
1	2	3	4	5

Explain: _____

51. On a scale from 1 to 5, where one is NOT AT ALL LIKELY and five is VERY LIKELY, how likely are you to eat vegetables as a snack daily (show cue card):

Not at all likely	Not too likely	Somewhat likely	Likely	Very likely
1	2	3	4	5

Explain: _____

52. On a scale from 1 to 5, where one is NOT AT ALL LIKELY and five is VERY LIKELY, how likely are you to include fruits and vegetables in meals daily (show cue card):

Not at all likely	Not too likely	Somewhat likely	Likely	Very likely
1	2	3	4	5

Explain (probe: what makes it easy or hard to include fruit and vegetables in meals)

53. During a typical day, when are you more likely to eat fruits and vegetables?

(probe: morning, afternoon, before supper, late at night)

53.a) What makes it easy to eat fruits and vegetables during the day?

53.b) What makes it difficult to eat fruits and vegetables during the day?

Before we go to the final section, are there any concerns that you would like to talk about?

VI - Fruit and vegetables consumption and health

The next section deals with the consequences of not eating enough fruits and vegetables and will require some more details about your experience

54. How do you feel when you don't eat enough fruits and vegetables?

(if needed, probe for emotional and physical aspects)

55. How do different members of your household feel when they don't eat enough fruit and vegetables?

56. Do you currently have a medical condition that requires you to be on a special diet?

☐ YES

☐ NO (Go to Q57)

☐ NOT SURE (Go to Q57)

a) If YES, what makes it difficult to remain loyal to your diet?

57. Does not eating enough fruits or vegetables affected your own or other household members' health and well-being? If so, how?*(Probe for physical and social health)*

58. Overall, how would you rate your health in the past 4 weeks? (circle one)

Excellent

Good

Fair

Poor

Very Poor

59. During the past 4 weeks, how much energy did you have? (circle one)

Very much

Quite a bit

Some

A little

Barely any

Closing question:

Is there anything I should have asked about factors that affect the fruits and vegetables that you eat so that you're thinking "Why didn't she ask me about....." ?

- END OF INTERVIEW -

Appendix M3 – Interview guide for non-participants in the Good Food Box Program



PHASE 1: Questionnaire for non-Good Food Box participants

Barriers and facilitators to the uptake of a local fruits and vegetables program in Ottawa, Canada

Participant ID: _____

Date: _____

Good Food Box Location: _____

Introduction

Interviewer: Over the next hour, I would like to talk to you about fruit and vegetable consumption in your household over the past 12 months. I am interested in learning about your knowledge about fruits and vegetable, your perception about barriers affecting the consumption of fruits and vegetables, difficulties related to getting enough of fruits and vegetables and your attitude toward integrating fruits and vegetables in your diet and how this affects your life.

*There will be several parts to this interview. There will be some broader questions and some more specific questions. All and any information that you give me is **completely confidential**. I will not share your individual private responses with anyone. We will only combine your answers with those of other people and report on the overall results.*

We will begin by going through the consent form to make sure that you are comfortable with everything and then move on to the questions.

Some questions will require you to choose from a list of answers, while other questions will require more detailed answers so that I fully understand the experiences you are sharing.

You may find that I'm asking questions about things that you've already told me, this to ensure that I fully understand the extent of your experience.

Please speak as freely as you like, and again, please feel free to say if you need to take a break at anytime during the interview.

Now, are you ready to get started?

This first section is about your fruit and vegetable intake.

Determinants of fruit and vegetable intake (participant's perception):

- 1. Do you purchase both your fruits and vegetables from the same location**
(probe with examples of grocery store, farmer's market F&V program)?

- ☐ Yes
☐ No
☐ Not sure

- 2. Where do you purchase the fruits and vegetables for your household?**
(probe with examples such as a farmer's market, grocery store, community garden,...)

- ☐ Same location for the purchase of both types of produce (check if applicable)

Fruits: _____

Vegetables: _____

FRUIT AND VEGETABLE INTAKE AND HEALTH

3. **When you go to the grocery store or market, what are the main things that affect your purchase of fruits and vegetables?**
(If needed, probe with \$ per pound, quantity and quality of produce, etc)
-

4. **Is there regularly enough fruit and vegetables to eat in your household for you and your family?**
☐ YES (go to question 5)
☐ NO – Would you please explain
-

5. **Do you live alone or with other people?**
[] Alone (skip to question 6)
[] With other people

5.a) How do the people you live with influence your purchase of fruits and/or vegetables? (if needed, probe with types or amounts of F & V)

6. **When you go to the grocery store or market, do you tend to spend more money on fruits or vegetables, or spend the same on both?**
☐ Spend more money on fruits
☐ Spend more money on vegetables
☐ Spend about the same amount of money on each
☐ Not sure

7. **Do you have any food allergies or intolerances to certain foods? (If no, skip to Q8)**
[] Food allergies
[] Food intolerances

7.a) If yes, which ones? _____

8. **Are you more likely to eat certain forms of fruits and vegetables at different times of the year? For example: Fresh, canned or frozen fruits and vegetables (If unsure, skip to Q9)**

8. A) If Yes, why please explain?

8. B) If No, what makes it easy to eat any type of fruit and vegetable at any time of year?

9. On a scale from 1 to 5, where one is very dissatisfied and five is very satisfied, please tell me how satisfied you are with the choices of fruits and vegetables you have where you purchase this produce (*show cue card*):

Dissatisfied	Somewhat Dissatisfied	Indifferent	Satisfied	Very Satisfied
1	2	3	4	5

- Please explain

10. On a scale from 1 to 5, where one is very dissatisfied and five is very satisfied, please tell me how satisfied you are with the quantity of fruits and vegetables available where you purchase this produce (*show cue card*):

Dissatisfied	Somewhat Dissatisfied	Indifferent	Satisfied	Very Satisfied
1	2	3	4	5

- Please explain

11. On a scale from 1 to 5, where one is very dissatisfied and five is very satisfied, please tell me how satisfied you are with the quality of fruits and vegetables where you purchase this produce (*show cue card*):

Dissatisfied	Somewhat Dissatisfied	Indifferent	Satisfied	Very Satisfied
1	2	3	4	5

- Please explain

12. On a scale from 1 to 5, where one is NOT AT ALL and five is COMPLETELY, how closely does the place where you purchase your fruit and vegetables meet your expectations (*show cue card*):

Not at all	Slightly	Moderately	Very Close	Completely
1	2	3	4	5

- Please explain

13. On a scale from 1 to 5, where one is very dissatisfied and five is very satisfied, please how would you rate your satisfaction with the place from where you purchase your fruit and vegetables (*show cue card*):

Dissatisfied	Somewhat Dissatisfied	Indifferent	Satisfied	Very Satisfied
1	2	3	4	5

- Please explain

Before we go to the next section, are there any concerns that you would like to talk about?

II – Culture and Food:

The next questions will talk about cultural differences related to food and will require a more detailed answer as it refers to your experience.

14. Does your culture or cultural heritage affect your food choices?

- ☐ YES
- ☐ NO (Go to Q15)
- ☐ NOT SURE (Go to Q15)

14.a) How does your culture or cultural heritage affect your food choices?

15. Does your culture or cultural heritage affect how or what you eat?

- ☐ YES
- ☐ NO (Go to Q16)
- ☐ NOT SURE (Go to Q16)

15.a) How does your culture or cultural heritage affect (or not) how or what you eat?

Before we go to the next section, are there any concerns that you would like to talk about?

III – Participation in Ottawa Good Food Box

The next questions will talk about your the Ottawa Good Food Box and will require more detailed answers.

16. Do you know about the Ottawa Good Food Box program?

- ☐ YES (continue to Q17)
- ☐ NO (skip to Q20)
- ☐ Not Sure (skip to Q20)

17. How did you hear about the Ottawa Good Food Box program?

18. What have you heard about the Ottawa Good Food Box program?

19. What do you think about the Ottawa Good Food Box program?

20. How do you think a locally run fruit and vegetable program could better reach people in the community?

21. What types of community resources do you think are the most helpful to increase fruit and vegetables consumption in the community?

Before we go to the next section, are there any concerns that you would like to talk about?

IV – Perceived benefits and barriers about fruits and vegetables

The next questions will talk about decisional considerations about fruits and vegetables. I will read a statement and then would like you to rate the extent to which you agree or disagree with based on a scale from 1 to 5, where 1 is completely disagree and 5 is completely agree.

22. Eating more fruits and vegetables would be expensive

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

23. If I ate more fruits and vegetables, I would worry about pesticides

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

24. Preparing and cooking vegetables is too time consuming

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

25. I am confused over the definitions about fruit and vegetable portion sizes

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

26. My significant other or children do not like to eat fruits or vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

27. Planning and preparing meals with more vegetables disrupts my routine

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

28. I get a bad reaction (e.g., gas, cramps, etc...) if I eat fruits and vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

29. Others would think I am fussy if I worried about having to eat fruits or vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

FRUIT AND VEGETABLE INTAKE AND HEALTH

30. When I do not eat enough fruits and vegetables I do not feel good

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

31. Eating more fruits and vegetables gives me more vitamins and minerals

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

32. I would be following the advice of my doctor if I ate more fruits or vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

33. By eating more fruits and vegetables, I feel good about looking after my health

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

34. My family and friends would be pleased if I ate more fruits and vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

35. I enjoy the taste of fruits

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

36. I enjoy the taste of vegetables

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

37. Eating more fruits and vegetables helps keep me regular (avoid constipation)

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

38. Eating more fruits and vegetables daily means that I am less likely to get sick

Completely disagree	somewhat disagree	neutral	somewhat agree	Completely agree
1	2	3	4	5

The next set of questions will talk about certain things that may make it hard to get enough food. I will read a statement and then would like you to rate the extent to which this is a problem for you on a scale of 1 to 4, 1 being never a problem, 2 sometimes a problem, 3 often a problem, and 4, always being a problem (show cue card for each question – circle participants answer).

39. Not enough money for fruits and vegetables

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

40. The fruits and vegetables I want are not available

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

41. The fruits and vegetables I buy just don't last

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

42. It is difficult to get to and from the store

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

43. Cooking is difficult for me

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

44. Not enough cooking supplies

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

45. No enough storage space

Never a problem	Sometimes a problem	Often a problem	Always a problem
1	2	3	4

46. Are there any other reasons?

- ☐ YES – which ones? _____
- ☐ NO
- ☐ NOT SURE

Before we go to the next section, are there any concerns that you would like to talk about?

V – Current and former fruit and vegetable behaviours

The next section deals with the current and former food behaviours related to eating enough fruits and vegetables and will require some more details about your experience

47. As a child, did you eat fruit and vegetables at snack times?

- ☐ YES
- ☐ NO (Go to Q48)
- ☐ NOT SURE (Go to 48)

47a) If YES, what types of snacks did you eat? _____

48. As a child, were fruits and vegetables regularly served at meal time?

- ☐ YES
- ☐ NO (Go to Q49)
- ☐ NOT SURE (Got to question 49)

a) If YES, at which meals were you more likely to eat fruits ? (e.g., breakfast, lunch, supper)_____

b) If YES, at which meals were you more likely to eat vegetables?_____

c) If NO, how come?_____

49. On a scale from 1 to 5, where one is NOT AT ALL LIKELY and five is VERY LIKELY, how likely are you to eat fruit as a snack daily (show cue card):

Not at all likely	Not too likely	Somewhat likely	Likely	Very likely
1	2	3	4	5

Explain: _____

50. On a scale from 1 to 5, where one is NOT AT ALL LIKELY and five is VERY LIKELY, how likely are you to eat vegetables as a snack daily (show cue card):

Not at all likely	Not too likely	Somewhat likely	Likely	Very likely
1	2	3	4	5

Explain: _____

51. On a scale from 1 to 5, where one is NOT AT ALL LIKELY and five is VERY LIKELY, how likely are you to include fruits and vegetables in meals daily (show cue card):

Not at all likely	Not too likely	Somewhat likely	Likely	Very likely
1	2	3	4	5

Explain (probe: what makes it easy or hard to include fruit and vegetables in meals)

52. During a typical day, when are you more likely to eat fruits and vegetables?
(probe: morning, afternoon, before supper, late at night)

52. a) What makes it easy to eat fruits and vegetables during the day?

52. b) What makes it difficult to eat fruits and vegetables during the day?

Before we go to the final section, are there any concerns that you would like to talk about?

VI - Fruit and vegetables consumption and health

The next section deals with the consequences of not eating enough fruits and vegetables and will require some more details about your experience

53. How do you feel when you don't eat enough fruits and vegetables?

(if needed, probe for emotional and physical aspects)

54. How do different members of your household feel when they don't eat enough fruit and vegetables?

55. Do you currently have a medical condition that requires you to be on a special diet?

☐ YES

☐ NO (Go to Q56)

☐ NOT SURE (Go to Q56)

a) If YES, what makes it difficult to remain loyal to your diet?

56. Does not eating enough fruits or vegetables affected your own or other household members' health and well-being? If so, how?*(Probe for physical and social health)*

57. Overall, how would you rate your health in the past 4 weeks? (circle one)

Excellent

Good

Fair

Poor

Very Poor

58. During the past 4 weeks, how much energy did you have? (circle one)

Very much

Quite a bit

Some

A little

Barely any

Closing question:

Is there anything I should have asked about factors that affect the fruits and vegetables that you eat so that you're thinking "Why didn't she ask me about....." ?

– END OF INTERVIEW –

Appendix N – Reference sheet: Eating well in Ottawa (programs, services and markets)



EATING WELL IN OTTAWA

Everyone should have access to the foods they want and need.

The following programs may help you or your family:



Fresh picked food is available at your Local Farmers' markets:

1. <u>Cumberland Farmers' Market</u>, Est. 2006 R. J. Kennedy Memorial Centre (Cumberland Arena), 1115 Dunning Road, Cumberland, ON Days & Hours of operation: Saturdays; 8am – 1pm Email: cumberlandmarket@gmail.com Website: www.cumberlandfarmersmarket.ca/	2. <u>Main Farmers' Market</u>, Est. 2009 Saint Paul University 223 Main St, Ottawa. (In the parking lot at St. Paul University) Days & Hours of operation: Saturdays; 9am – 2pm For more information, contact Natalie McClure by phone at 613-668-2207 or by email at mainmarketottawa@gmail.com
3. <u>Ottawa Byward market</u>, Est. 1830 55 ByWard Market Square, Ottawa, ON Days & Hours of Operation: May/Oct. - 6 am to 6 pm, Nov./Apr. - 9:00 am to 5:00 pm For more information: email: bywardmarket@ottawa.ca website: www.byward-market.com	4. <u>Ottawa Farmers' Market</u>, Est 2006 Lansdown Park, 1015 Bank Street, Ottawa, ON Day(s) & Hours of Operation: Sundays 8 am to 3 pm (May 09 to November 21) Thursdays 1 to 6 pm (June 17 to October 7) Saturdays 8 am to 3 pm (November 6, 13 & 20) For more Information contact Linda Cook by phone at 613-986-2770 or by email email: manager@ottawafarmermarket.ca website: www.ottawafarmersmarket.ca
5. <u>Ottawa Parkdale Market</u>, Est. 1988 Parkdale avenue at Wellington Days & Hours of Operation: April – December 24th 7 days/week ; 7 am to 6 pm	6. <u>Quartier Vanier Outdoor Market</u> Corner of Montreal road and Hannah street Days & Hours of Operation: Saturdays from 9am – 2pm For more information, email Chris Penton at cpenton@vanierbia.com or call 613-745-0040 Website: www.quartiervanierbia.com/market.html

For more information on farmers' markets in the area and across Ontario see:
http://www.farmersmarketsontario.com/Markets.cfm?uSearchString=&PageNum_qMarkets=1&uSortOrder=City



EATING WELL IN OTTAWA

Places to get great food in Ottawa, Ontario!

Ottawa Good Food Box

The Ottawa Good Food Box is a non-profit community-based initiative bringing neighbours together to buy a variety of delicious and nutritious fresh fruits and vegetables at wholesale prices. Their goal is to supply food that is in season and grown as close to home as possible. It is open to everyone. Customers order and pay for their food box early each month. Payment and delivery take place at neighbourhood sites.

Tel: 613-860-6767

Email: goodfoodbox@centretownchc.org

Web: www.ottawagoodfoodbox.ca

Community Gardening Network of Ottawa

The Community Garden Network of Ottawa is an information and resource-sharing network that supports the sustainable development of community gardens within the city. As of spring 2007, [Just Food](#) is the new location of the Community Garden Network.

Tel: 613-236-9300, ext. 301

Email: info@justfood.ca

Web: www.justfood.ca

Ottawa Buy Local Food Guide

The Ottawa Buy Local Food Guide was created to feature local farms and markets in Ottawa. This Guide allows people with access to transportation to link with local farms and markets, and develop ongoing relationships with farmers. The latest edition of the Ottawa Buy Local Food Guide is available on the web site below.

Tel: 613-236-9300, ext. 301

Email: info@justfood.ca

Web: http://www.justfood.ca/projects_buy_local.php

The King's Daughters Dinner Wagon – Meals on Wheels

Meals on Wheels is a volunteer-based community support service that delivers nutritious meals to individuals to help them maintain their health and independence at home. This service is offered on both a short term and long term basis. Hot and frozen meal delivery is available.

Tel: 613-233-2424

Email: kddw@cyberus.ca

Web: www.mealsonwheels-ottawa.org

Savour Ottawa

[Savour Ottawa](#) is a joint initiative by the City of Ottawa, Ottawa Tourism And Just Food to promote area producers and help easily identify locally grown food for restaurants, retailers and consumers. The initiative aims to bring together food producers, vendors, the restaurant industry and the tourism sector to develop and promote products, experiences, events and venues that will brand Ottawa and area as a culinary tourism destination.

VISIT THEIR WEBSITE: www.savourottawa.ca



HAVE YOUR VOICE HEARD!



The **University of Ottawa**, the **Ottawa Good Food Box** and the **Wabano Center for Aboriginal Health** have partnered in a research project to improve the *Ottawa Good Food Box* Program and find ways to make it easier for people across the Ottawa area to access **local, fresh, nutritious and tasty fruits & vegetables!**

WE WANT TO HEAR FROM YOU!

If you're a **current client** of the Ottawa Good Food Box, a **1-time client** of the program or have **never** used this local fruits and vegetable program, we want to hear from you!

We are conducting interviews to know about some of the things that make it easy or difficult for you to get enough fresh and nutritious fruits and vegetables for you and/ or your family. Interviews are conducted in a safe and respectful manner. Confidentiality is **guaranteed**.

Your contribution will help us improve the *Ottawa Good Box Program* and inform local community programs about the challenges you may face when trying to buy fruits & veggies.

Interviews take about an hour and are conducted in either **English** or **French**. We value your time and experience and will offer you a **gift certificate** for your participation

PARTICIPATION IS LIMITED. CALL TODAY

For more information, contact **Emily Lecompte**
at **613-XXX-XXXX** or by email at XXXXX@uottawa.ca

MERCI! THANK YOU! MIIGWETCH! ᑭᓄᓐᓇᓂᓐ MARSEE!



Appendix O – Telephone dialogue guidelines with prospective participants

There are two potential situations:

- 1) Potential candidate calls and reaches the principle investigator the first time, and
 - 2) Interested candidate calls, leaves message for interviewer and the interviewer calls back and leaves a message.
-



Scenario one: Potential respondent calls and reaches the interviewer the first time

- **Principle Investigator** (when answering the phone): *Hello, Emily Lecompte speaking. How can I help you?*
- **Respondent**: *I saw a poster about a study on nutrition and the Ottawa Good Food Box. What is this all about?*
- **Principle Investigator**: *Thanks very much for calling! May I ask you where you saw our poster?"*

Determine in the location where the poster was seen.

- **Principle Investigator**: *Thank you. Let me tell you some more about the study. The reason for that poster is that we would really like to talk to residents in this area about their experiences related to accessing enough fruit and vegetables for consumption. We are interviewing a small number of people now. Would this be of interest to you?*
- IF NO: *Thanks very much for calling.*
- IF YES: *Thanks. I would just like to ask you a few questions to see if you can take part in the interview.*

PRELIMINARY QUESTIONS FOR PARTICIPANTS

1. *Are you at least 18 years of age and currently live independently?*

IF NO: Thank them for their interest, and explain that at this time, we are only interviewing people who are 18 years old or older currently living with on their own.

IF YES: Continue to Question 2.

2. *Have you ever been a client of the Ottawa Good Food Box?*

IF NO: Continue to Question 3

IF YES: Continue to Question 2a)

- 2a) *Were you a one-time client or still a current client?*

IF ONE-TIME Client: continue to Question 3

IF CURRENT Client: continue to Question 3

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3. Do you have *Aboriginal heritage or do you identify as First Nations, Inuit or Métis?*

IF NO or YES: Continue to Question 4.

4. *Are you comfortable enough in English or in French to carry out a long conversation?*

IF NO, thank them very much for calling, and explain that at this time, we can only interview people who are comfortable in English or French.

IF YES: Tell them about study

The reason that we are doing the study is that we want to better understand the challenges and facilitating factors related to the uptake of a local fruit and vegetable program, the Ottawa Good Food Box. We would like to interview you to learn about your experiences and hear your stories. The interview will take up to 1 ½ hours.

5. *Are you still interested in participating?*

IF NO: Thank and end conversation.

IF YES: *Thank-you. I would like to arrange a time to interview you. First, I would like to get some contact information. (Continue to question 6 and 6a.)*

6. *What is your name? You can just give me your first name if you prefer*

Record on page entitled: **Interviewer** : Record Contact Information.

6a). *What is your phone number?*

Record on page entitled: **Interviewer** : Record Contact Information.

If no phone: *Is there another place I can reach you?*

7. *What day and time would you be available for an interview?*

(Check against your schedule, and then agree on a time).

If they are stuck, offer them a day or time, or both.

If that afternoon is not convenient for them, inform participant of the next date on which interviews will be held and make an appointment. If there are no more interview dates left after that day, thank participant for their interest and end conversation.

The researcher will reassure the participant that the interview location is safe and secure and that their identity will remain anonymous and that all information will remain confidential at all times; that both locations provide rooms in order to ensure privacy and confidentiality.

The interviews will be held at _____ (specify location and check that they know where it is) at _____ o'clock (time).

8. *Would you like me to give you a reminder call a day before the interview?*

Record on page entitled: **Interviewer** : Record Contact Information.

IF NO: Do not call before interview.

9. *Do you have clear directions on how to get to the location?*

IF NO: Give verbal directions on how to get to interview location and the address. Then thank participant for their interest, and end conversation with a gentle reminder of the date and time of the scheduled interview

IF YES: Thank participant for their interest, and end conversation with a gentle reminder of the date and time of the scheduled interview.

Remind the participant: Please call us at any time at this telephone number if you have any further questions or need more information: 613-XXX-XXXX Ext. XXXX



Scenario Two: Interviewer calls, but no-one home. Leave a message.

Hello my name is _____ from the University of Ottawa. I'm calling to speak to _____ . Could he/she please call me back at: XXX-XXX-XXXX, Ext. XXXX. Thank you.

Appendix P – Individual interview consent forms



Université d'Ottawa | University of Ottawa

École de psychologie | School of Psychology

136 Jean-Jacques Lussier, Vanier 3002, Ottawa, ON K1N6N5

☎ 613-562-5801 📠 613-562-5147

You have been asked to participate in an interview and to complete a questionnaire as part of a Doctoral research project of a graduate student in psychology at the University of Ottawa. The purpose of this study is to better understand the challenges and facilitating factors in the uptake of a local fruit and vegetable program, the Ottawa Good Food Box. Knowing this information will help us identify strategic areas of the Ottawa Good Food Box that may need to be improved as well as other areas of the program's strengths that can be enhanced to help increase participation and access to locally grown fruit and vegetable produce. We are interested in hearing about the food situation in your household, and to get your ideas on whether and how certain factors, such as your health food behaviours (e.g., food preparation and food choices) might be related to your experience of not getting enough fruits and vegetables. We would also like to hear your ideas on things that might help reduce this problem in the community. Your participation in this interview may lead, for example, to more community attention and discourse on this important health-related issue. The research project is funded by Community Information and Epidemiological Technologies (CIET) Canada.

If you agree to participate, we will do an in-person individual interview with you today and ask you to complete a short questionnaire that will provide demographic information (e.g., age, living situation, income range, etc...) and details about your household food situation afterward. The interview will last about 1 ½ hours. During the interview, you will be asked several questions about your household food situation, contributors to having enough or too few amounts of fruits and vegetables, your health and well-being, where you live, and the relationships between these topics. You may share as little or as much as you would like, and can take the time that you need to answer the questions.

The interview will be audio-taped and hand-written notes will be taken by the interviewer to ensure that we do not miss or misinterpret any important information that you share. The audio-tape will only be listened to by the members of the research team, and will be used exclusively for research purposes. Your identity and any identifying information you give will remain strictly confidential and will not be revealed in the written report related to the study.

There are minimal risks to taking part in this interview. For example, you may get tired during the interview. Feel free to ask for a break at any time as needed. Also, the questions that you are asked to answer might be upsetting or difficult to discuss. If you feel uncomfortable at any time during the interview, you are free to stop the interview or to not answer any specific question without giving a reason. At the end of the interview, you will be given information on services that may interest you.

There are no immediate benefits to participating in the study. The information collected during the interview will be used to help us understand the experiences of individuals and families in our community. We also hope to learn how household situations, health, and participation in a local food initiative might be related to their ability to access enough fruits and vegetables for themselves and their household.

As a thank you for your participation, you will be given a \$20 grocery voucher for a local grocery store in Ottawa. You will also be given compensation for your transportation equivalent to bus fare (if necessary).

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The grocery voucher and transportation reimbursements are yours to keep, without penalty, even if you decide to stop the interview at any time.

Your participation or non-participation in this study will be kept confidential. To ensure participation anonymity, all interviews will be given an ID number that cannot be linked to your name or other identifying information. Your signed consent form and any other identifying documents will be kept separate from your interview, questionnaire and audio-tape materials. All information you provide will be secured and held by the Research Team at Ottawa University for seven years and will be used for research purposes only. Study results and any direct quotes that we use from your interview will be presented in a way that protects your identity and the identity of people or services that you mention. You may obtain a summary of the study results if desired.

We are planning a follow-up study that will take place in a few months from now about increasing fruit and vegetable consumption. This study will focus on addressing the barriers to the uptake of the Good Food Box and build on the facilitating factors that were reported by participants from this study (study 1). During this study, you will be asked to take part in a tailored fruits and vegetable program over 6 months where you will be asked, at that time, to agree to participate in another interview and fill out a questionnaire on three different occasions. However, giving your permission to participate in the present study in no way obligates you to participate in the follow-up study

If you have any questions about the study, you can contact one of the researchers:

Emily Lecompte, Doctoral Student
University of Ottawa/Université d'Ottawa.
School of Psychology
200 Lees Avenue, E-120
Ottawa ON Canada K1N 6N5
(613) XXX-XXXX ext. XXXX

John Lyons, PhD, Research Supervisor
University of Ottawa/Université d'Ottawa.
School of Psychology
200 Lees Avenue, E-121
Ottawa ON Canada K1N 6N5
(613) XXX-XXXX ext. XXXX

For questions related to the ethics of the project, you may also contact the research ethics board at the following address: Research Grants and Ethics, 550 Cumberland, Room 159A, University of Ottawa, Ottawa, ON, K1N 6N5, (613) 562-5841.

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Consent

I acknowledge that the research study described above has been explained and my questions about the study have been answered. I understand that my participation is voluntary. I am aware of my right to refuse or withdraw participation from the study without penalty. If I choose to withdraw from the study, I will still receive the grocery voucher and be reimbursed for transportation in the form of bus tickets. I have been assured that the all information is confidential and my identity will be kept anonymous.

Your signature below indicates that you understand and agree to the above information.

____ (initial) I consent to have the interview audio-taped.

____ (initial) I agree to be contacted about the follow-up research study in a few months

____ (initial) I DO NOT wish to be contacted about the follow-up research study in a few months

Signature of Participant

Date

Signature of Interviewer

Date

☐ I would like to receive a copy of the results of the current study by email

Email address: _____

Appendix Q – Brief biography of individuals who provided project support

Andrea Azurdia – Emigrated from Guatemala in 1985, Andrea has since made Ottawa, Canada her home. Studying at Trent University and Carleton University, she recently completed her doctoral degree in Clinical Psychology at the University of Ottawa. Her dissertation focused on the experience of homelessness and quality of life. Her interests in community psychology have lead to her involvement and volunteering in co-operative housing as a director of the Board of Directors at the Sandy Hill Housing Co-op. Andrea currently works as a Clinical Psychologist under supervised practice with the Ottawa-Carleton District School Board (OCDSB) and at the Child, Adolescent, and Family Centre of Ottawa. With her husband, Andrea enjoys learning about sustainable living practices including plant-based cooking and lifestyle. *(Role: inter-rater reliability of qualitative data)*

Pierre Beaulieu-Blais – Pierre is a proud Métis man from northern Ontario and has worked at the Wabano Centre for Aboriginal Health in different capacity over the years. He was the Coordinator for the HIV/ AIDS Program and was also part of the Homelessness and Outreach Services. Directly involved in the community, the Wabano Homeless Outreach team provides health and wellness services to Aboriginal community members in the urban Ottawa area through different programs, services and assistance. *(Role: inter-rater reliability of qualitative data)*

Pauline Brooke – Like many First Nations and Métis peoples, Pauline was not raised in the traditions or culture of her Iroquois roots (her Grandmother was from Caughnawaga; now Khanawake). Influenced by events experienced during the standoff at Oka in the summer of 1990, she became committed to a lifelong path of learning about and honoring her ancestral way of life and chose to participate in learning opportunities to reclaim her traditions and culture through Powwows, ceremonies and social events. Currently, she works at Health Canada in the First Nations and Inuit Health Branch as part of the Aboriginal Programming Unit. She is the lead organizer for Aboriginal Awareness Week, the Iskotew Lodge, the Aboriginal Summer Student Program and the Aboriginal Awareness Introduction Course. She is also avidly involved in Ottawa's Aboriginal community. Her interests, among others, include traditional medicines, traditional and modern diet, lifestyle and nutrition, food, exercise and health. She is also the proud mother of two daughters, has one granddaughter and resides with her partner in Ottawa. *(Role: inter-rater reliability of qualitative data)*

Lynda Brown – Born in Nunavut, Lynda is the Director of the Tukimut Youth Program at the Ottawa Inuit Children's Centre. Upon graduating from Trent University with an Honours Bachelor of Arts degree in Native Studies and Psychology, she moved to Ottawa where she and her husband, Rob Nicholson, raise their three beautiful children. Lynda is also a very active member and volunteer in the community. Primarily, her efforts focus on Inuit women and children and affordable housing. Currently, she is the President of Inuit Non-Profit Housing Incorporation, and has served on their board for over 11 years. In 2008, Lynda was selected to participate in the Governor General Leadership Conference based on her commitment to her community. She is also a traditional throat singer and drummer who performs' locally, nationally and internationally. Committed to lifelong learning and sharing knowledge, she often organizes

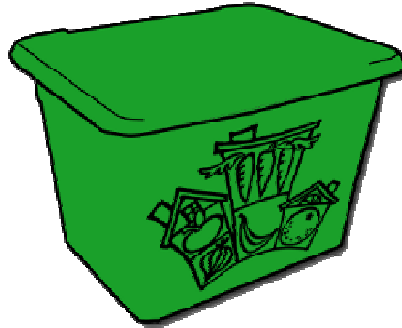
and presents cultural knowledge through demonstrations, information sessions and workshops. *(Role: inter-rater reliability of qualitative data)*

Jayne Murdoch-Flowers - Jayne is a registered dietitian specializing in indigenous community nutrition. She achieved a Master of Science in nutrition from McGill University in Montreal, Quebec. She is also a member of the Dietitians of Canada and the College of Dietitians of Ontario. Originally from Halifax, Nova Scotia, Jayne recently relocated to Iqaluit, Nunavut with her husband and son. *(Role: Research Assistant)*

Sarah Toulouse - Sarah is an Ojibwe woman from Sagamok Anishnawbek First Nation (Ontario). Living in Ottawa for the past 9 years, Sarah pursued post-secondary schooling in Business Management and Entrepreneurship at Algonquin College and works hard to broaden her professional and personal networks in the community. Sarah has been involved in diverse roles in health and community research projects as a former employee at Statistics Canada (Social Aboriginal Statistical Division) and within community programs with the City of Ottawa. She also volunteered with Ottawa's Good Food Box Program over several months. These experiences shaped and fueled her curiosity about research, food security, nutrition and health. Currently, Sarah works as Camp Administrator for Attawapiskat Catering Limited Partnership (ACLP) at the De Beers Victor Mine. In her spare time, she enjoys maintaining her involvement in research, cooking, reading, painting and drawing. *(Role: Research support staff)*

Appendix R - Dimensions and contents of the Good Food Box and other products

Monthly, good food boxes are distributed to customers across Ottawa through neighbourhood and community distribution sites. Each box contains familiar staples including onions, carrots, apples, bananas and lettuce and less familiar varieties like eggplant which are purchased from both local farmers and wholesalers in Ontario and Quebec. Fresh produce varieties vary based on seasonal availability and the quality of the harvest (e.g., strawberries, green beans, asparagus, etc.). A monthly newsletter accompanies each box and contains recipes and nutritional information (Ottawa Good Food Box, n.d.).



Good Food Box Products	Cost	Dimensions	Fruit and vegetable servings for 1 week	Example of contents (August 2013)
Large food box	(\$20)	20"L x 15"D x 13.5"H	Adequate size for 3 – 4 people	4 ears of corn, 2 lbs of carrots, 2 lbs of onions, 4 oranges, 7 bananas, 3 apples, 10 pounds of potatoes, 1 romaine lettuce, 1 zucchini, 1 head of broccoli, 1 cucumber, 2 pears, 1 grapefruit, 1 squash, and 1 lime
Medium food box	(\$15)	12.5"L x 15"D x 8"H	Adequate size for 2 – 3 people	4 ears of corn, 2 lbs of carrots, 2 lbs of onions, 4 oranges, 5 bananas, 3 apples, 5 pounds of potatoes, 1 romaine lettuce, 1 zucchini, 1 cucumber, 1 head of broccoli, 2 pears, 1 grapefruit, and 1 lime
Small food box	(\$10)	12.5"L x 15"D x 8"H	Adequate size for 1 person	2 ears of corn, 2 lbs of carrots, 1 lbs of onions, 3 oranges, 3 bananas, 2 apples, 5 pounds of potatoes, 1 romaine lettuce, 1 zucchini, 1 head of broccoli, and 1 cucumber.
Fruit bag	(\$5)	3 Litre	Adequate size for 1 person	3 bananas, 3 apples, 1 grapefruit, 2 kiwis, 4 oranges, 2 pears, and 1 lime
Organic food box	(\$25)	20"L x 15"D x 13.5"H	Organic content adequate for 2 – 3 people	1 green leaf lettuce, 1 bunch onions, 1 head garlic, 1 bunch rhubarb, 1 bunch tatsoi, 1 lb of beets, 1 bag yellow beans, 1 bag sugar snap peas, 1 bunch black kale, 1 bag of garlic scapes, 1 lb of tomatoes and 1 mango

Appendix S - Focus group questions with Good Food Box site coordinators

General Protocol

Pre-focus group preparation:

- Set-up the room in a way that is inviting and not distracting. Ensure there is sufficient place and space for all group of participants to be comfortable. Make sure every participant has a chair;
- Consider refreshments (food, snacks, water) if possible;
- Prepare the following and have accessible:
 - a. Notebook or tape recorder to record discussion
 - b. Paper, pens, markers and pencils (if necessary)
 - c. List of participants taking part in the focus group session
 - d. Name tags (if necessary)
 - e. A visible clock or watch to discreetly keep time (monitor questions and length of time spent on each one closely to ensure the session remains on track)
- Set a positive atmosphere and tone: Make sure to acknowledge each participant as they arrive and invite them to sit where they feel comfortable;
- Deal tactfully with difficult participants. Do not argue with or correct them. Make sure everyone has a chance to speak by monitoring participation.

Introduction:

- Welcome participants to the focus group session and introduce yourself;
- Explain the context of the *Healthy People, Healthy Communities Project* and the purpose of the group discussion session;
- Individuals may not be familiar or know what a focus group session is. Explain what a focus group is;
- Read the consent form and highlight the important information. Explain that information is confidential and no names will be used. Explain that a draw will follow the discussion session and that, even if individuals decide to withdraw, they still qualify for the draw without penalty.
- Make sure all participants sign and return the consent form. They can receive a copy for their personal files if desired. When participants return their consent form, the researcher can provide them with a ballot for the draw at the end of the focus group discussion. Participants can place their ballot in a secured box or bag.
- To help put everyone at ease and become more familiar, ask individuals to introduce themselves (pick a number or the individual on your left or right to start; probe: name, work, favourite food, etc.)

Discussion:

- Use the questions below as a guide.
- Remember to use probes if necessary and follow up questions to explore important concepts and issues in more depth.
- Remember to verify the clock/ watch to ensure that the session is on track for time

Closing the discussion:

- When all the questions have been answered and no one has anything further to add, close the focus group by thanking participants for their time and demonstrate gratitude for the rich personal testimonies, ideas and opinions they contributed to the discussion;
- Turn off the recording device;
- Before they leave, give them contact information for further follow-up if requested and explain how data will be analyzed and shared;
- Remember to draw a name for the honoraria before anyone leaves the meeting room.

Post-focus group wrap-up

- Write a summary of your impressions from the session (what worked well, what did not; what stood out, etc.)
- Transcribe the session as soon as possible
- Read your notes and verify themes from the session (were there any extreme negative or positive emotional responses?). What are the main themes or issues that arose during the group session? How were these dealt with?

- **Guiding questions with Ottawa Good Food Box Site Coordinators**

1. Why did you become involved with the Ottawa Good Food Box (GFB)?
2. Why did you want to become a GFB Site Coordinator?
3. What are the strengths of the Ottawa GFB Program?
4. What areas of the Program do you think could be improved?
5. Have there been any changes to the Program since it began?
6. In your opinion, to what extent is the Ottawa GFB adjusted to meet specific needs of Ottawa's Aboriginal population?
 - 6a) Does your site do anything specific to better serve Ottawa's Aboriginal population?
7. Are there any things about your GFB site that you think is a particular strength?
8. Are there things that you believe hold your site back from being as successful as it could be?
9. Currently, are there enough resources to support each Good Food Box site?
(probe for space allocated for site locations, human resources (paid and volunteer))
10. In your opinion, how could the Good Food Box be improved to be more accessible to:
 - a) First Nations, Inuit and Métis peoples in Ottawa?
 - b) Non-Aboriginal peoples in Ottawa?

Appendix T1 - Talking Circle with Good Food Box staff

Talking Circle Protocol (research context)

Pre-Talking Circle preparation:

- Set-up the room in a way that is inviting and not distracting.
- Chairs should be placed in a circular pattern to facilitate the formation of a traditional ‘Talking Circle’. This method allows participants to voice their perspectives, concerns and dreams in a non-confrontational, egalitarian and respectful manner.
- Ensure there is sufficient place and space for all group of participants to be comfortable. Make sure every participant has a chair;
- Consider refreshments (food, snacks, water) if possible;
- Prepare the following and have accessible:
 - a. Notebook or tape recorder to record discussion
 - b. Paper, pens, markers and pencils (if necessary)
 - c. List of participants taking part in the focus group session
 - d. Name tags (if necessary)
 - e. A visible clock or watch to discreetly keep time (monitor questions and length of time spent on each one closely to ensure the session remains on track)
 - f. Offering for participants (e.g., tobacco, tea, gift certificate)
- Set a positive atmosphere and tone: Make sure to acknowledge each participant as they arrive and invite them to sit where they feel comfortable;
- If an Elder is present, it may be desired to have an opening prayer or words of wisdom shared by the Elder to help guide the session;

Introduction:

- Welcome participants to the Talking Circle session
- When everyone is seated, the researcher/ moderator/ circle keeper should place the voice recording device on a small table in the middle of the circle
- Before commencing the group discussion, offer all participants a small pouch of ceremonial tobacco as a token of thanks and demonstration of appreciation for their time and efforts.
- Begin the discussion with a warm welcome and short introduction of the context of the *Healthy People, Healthy Communities Project*, the purpose and goals of the Talking Circle session and the process that will be followed to ensure that everyone has the opportunity to have their voice and ideas heard.
- *What is a talking circle?* The ‘Talking Circle’ method allows everyone to see each other and provides all circle members with an equal chance to speak and share their point of view. This method is frequently used in Indigenous cultures all over the world to resolve problems effectively and encourage people to speak freely and openly (Mi’kmaq Spirit, 2007).
 - The ‘Talking Circle’ should be moderated with the help of a *talking stick*, feather or other sacred object. This may differ depending on the sacred Territory and region where the Talking Circle is conducted. Consultation with an Elder or Knowledge Keeper can help clarify which protocol and customs to implement during the Talking Circle with different First Nations or Métis groups.
 - The person holding the *talking stick* (or feather) will have authority to speak freely and openly while the other participants listen attentively. Once the person holding the *talking*

stick (or feather) has completed their idea, they may then pass the object clockwise (Algonquin territory) to the next person to allow them to voice their concerns.

- In the case where someone has nothing to say about one of the topics of discussion, they can simply pass the *talking stick* (or feather) along to the next person without penalty.
- Once the *talking stick* has been circulated one complete round in silence, this confirms that none of the participants have anything further to add or share. Thus, the focus group discussion and 'Talking Circle' may officially come to a close (Mi'kmaq Spirit, 2007).
- Once everyone understands the Talking Circle approach, proceed to ask circle members to introduce themselves (probe: if they are not sure what to say, start by mentioning their name, where they are from (their home community) and what they hope to learn from the Talking Circle session). On Algonquin territory (Ottawa), begin in a clockwise fashion.
- Once introductions are complete, read the consent form and highlight the important information. Explain that information is confidential and no names will be used. Explain that a draw will follow the discussion session and that, even if individuals decide to withdraw, they still qualify for the draw without penalty.
- Make sure everyone who participants signs and returns the consent form. They can receive a copy for their personal files if desired. When participants return their consent form, the researcher can provide them with a ballot for the draw at the end of the focus group discussion. Participants can place their ballot in a secured box or bag.

Discussion:

- Use the questions below as a guide.
- Remember to use probes if necessary and follow up questions to explore important concepts and issues in more depth only after the sacred object has returned to the circle keeper. Write down questions to probe for clarification as needed but only ask when it is your turn.
- Remember to verify the clock/ watch to ensure that the session is on track for time

Closing the talking circle:

- Once the *talking stick* has circulated one complete round in silence, this confirms that none of the participants have anything further to add or share and 'Talking Circle' may officially come to a close. If an Elder is present, they may wish to say a closing prayer;
- Turn off the recording device
- Thank participants for their time and acknowledge the rich personal testimonies, ideas and opinions they contributed to the discussion;
- Before they leave, give them contact information for further follow-up if requested and explain how data will be analyzed and shared;
- Remember to draw a name for the honoraria before anyone leaves the meeting room.

Post-focus group wrap-up

- Write a summary of your impressions from the session (what worked well, what did not; what stood out, etc.)
- Transcribe the session as soon as possible
- Read your notes and verify themes from the session (were there any extreme negative or positive emotional responses?). What are the main themes or issues that arose during the group session? How were these dealt with?

Guiding questions: Good Food Box Headquarters (*Staff*)

Icebreaker Question: *Why did you become involved with the Ottawa GFB?*

1. What are the strengths of the Ottawa Good Food Box (GFB)?
2. What areas of the program do you think could be improved?
3. Have there been any changes to the Ottawa GFB since it began?
4. To what extent is the Ottawa GFB adjusted to meet specific needs of the Aboriginal population in Ottawa?
5. Are there things that you believe hold the Program back from being as successful as it could be?
6. Currently, are there adequate resources to support each Good Food Box site?
(probe for space allocated for site locations, human resources (paid and volunteer))
7. In your opinion, how could the Good Food Box be improved to be more accessible to:
 - a) First Nations, Inuit and Métis peoples in Ottawa?
 - b) Non-Aboriginal peoples in Ottawa?

Appendix T2 - Talking Circle with Good Food Box steering committee

Talking Circle Protocol (research context)

Pre-Talking Circle preparation:

- Set-up the room in a way that is inviting and not distracting.
- Chairs should be placed in a circular pattern to facilitate the formation of a traditional 'Talking Circle'. This method allows participants to voice their perspectives, concerns and dreams in a non-confrontational, egalitarian and respectful manner.
- Ensure there is sufficient place and space for all group of participants to be comfortable. Make sure every participant has a chair;
- Consider refreshments (food, snacks, water) if possible;
- Prepare the following and have accessible:
 - a. Notebook or tape recorder to record discussion
 - b. Paper, pens, markers and pencils (if necessary)
 - c. List of participants taking part in the focus group session
 - d. Name tags (if necessary)
 - e. A visible clock or watch to discreetly keep time (monitor questions and length of time spent on each one closely to ensure the session remains on track)
 - f. Offering for participants (e.g., tobacco, tea, gift certificate)
- Set a positive atmosphere and tone: Make sure to acknowledge each participant as they arrive and invite them to sit where they feel comfortable;
- If an Elder is present, it may be desired to have an opening prayer or words of wisdom shared by the Elder to help guide the session;

Introduction:

- Welcome participants to the Talking Circle session
- When everyone is seated, the researcher/ moderator/ circle keeper should place the voice recording device on a small table in the middle of the circle
- Before commencing the group discussion, offer all participants a small pouch of ceremonial tobacco as a token of thanks and demonstration of appreciation for their time and efforts.
- Begin the discussion with a warm welcome and short introduction of the context of the *Healthy People, Healthy Communities Project*, the purpose and goals of the Talking Circle session and the process that will be followed to ensure that everyone has the opportunity to have their voice and ideas heard.
- *What is a talking circle?* The 'Talking Circle' method allows everyone to see each other and provides all circle members with an equal chance to speak and share their point of view. This method is frequently used in Indigenous cultures all over the world to resolve problems effectively and encourage people to speak freely and openly (Mi'kmaq Spirit, 2007).
 - The 'Talking Circle' should be moderated with the help of a *talking stick*, feather or other sacred object. This may differ depending on the sacred Territory and region where the Talking Circle is conducted. Consultation with an Elder or Knowledge Keeper can help clarify which protocol and customs to implement during the Talking Circle with different First Nations or Métis groups.
 - The person holding the *talking stick* (or feather) will have authority to speak freely and openly while the other participants listen attentively. Once the person holding the *talking*

stick (or feather) has completed their idea, they may then pass the object clockwise (Algonquin territory) to the next person to allow them to voice their concerns.

- In the case where someone has nothing to say about one of the topics of discussion, they can simply pass the *talking stick* (or feather) along to the next person without penalty.
- Once the *talking stick* has been circulated one complete round in silence, this confirms that none of the participants have anything further to add or share. Thus, the focus group discussion and 'Talking Circle' may officially come to a close (Mi'kmaq Spirit, 2007).
- Once everyone understands the Talking Circle approach, proceed to ask circle members to introduce themselves (probe: if they are not sure what to say, start by mentioning their name, where they are from (their home community) and what they hope to learn from the Talking Circle session). On Algonquin territory (Ottawa), begin in a clockwise fashion.
- Once introductions are complete, read the consent form and highlight the important information. Explain that information is confidential and no names will be used. Explain that a draw will follow the discussion session and that, even if individuals decide to withdraw, they still qualify for the draw without penalty.
- Make sure everyone who participants signs and returns the consent form. They can receive a copy for their personal files if desired. When participants return their consent form, the researcher can provide them with a ballot for the draw at the end of the focus group discussion. Participants can place their ballot in a secured box or bag.

Discussion:

- Use the questions below as a guide.
- Remember to use probes if necessary and follow up questions to explore important concepts and issues in more depth only after the sacred object has returned to the circle keeper. Write down questions to probe for clarification as needed but only ask when it is your turn.
- Remember to verify the clock/ watch to ensure that the session is on track for time

Closing the talking circle:

- Once the *talking stick* has circulated one complete round in silence, this confirms that none of the participants have anything further to add or share and 'Talking Circle' may officially come to a close. If an Elder is present, they may wish to say a closing prayer;
- Turn off the recording device
- Thank participants for their time and acknowledge the rich personal testimonies, ideas and opinions they contributed to the discussion;
- Before they leave, give them contact information for further follow-up if requested and explain how data will be analyzed and shared;
- Remember to draw a name for the honoraria before anyone leaves the meeting room.

Post-focus group wrap-up

- Write a summary of your impressions from the session (what worked well, what did not; what stood out, etc.)
- Transcribe the session as soon as possible
- Read your notes and verify themes from the session (were there any extreme negative or positive emotional responses?). What are the main themes or issues that arose during the group session? How were these dealt with?

Guiding Questions: Good Food Box Steering Committee

1. Why did you become involved with the Ottawa Good Food Box (GFB)?
2. Why did you become part of the Ottawa GFB Steering Committee?
3. In your opinion, what are the strengths of the Ottawa GFB Program?
4. What areas of the Program do you think could be improved?
5. Have there been any changes to the Program since it began?
6. In your opinion, to what extent is the Ottawa GFB adjusted to meet the needs of Ottawa's Aboriginal population?
7. Are there things that you believe hold the Ottawa GFB back from being as successful as it could be?
8. Currently, are there adequate resources to support each Good Food Box site?
(probe for space allocated for site locations, human resources (paid and volunteer))
9. In your opinion, how could the Good Food Box be improved to be more accessible to:
 - a) First Nations, Inuit and Métis peoples in Ottawa?
 - b) Non-Aboriginal peoples in Ottawa?

Appendix U – Focus Group consent forms for Good Food Box site coordinators



Université d'Ottawa | University of Ottawa

École de psychologie | School of Psychology

136 Jean-Jacques Lussier, Vanier 3002, Ottawa, ON K1N 6N5

☎ 613-562-5801 📠 613-562-5147

You have been asked to participate in a Focus Group session as part of a Doctoral research project of a graduate student in psychology at the University of Ottawa. The purpose of this study is to better understand the challenges and facilitating factors in managing an Ottawa Good Food Box site. Knowing this information will help us identify strategic areas of the Ottawa Good Food Box that may need to be improved as well as other areas of the program's strengths that can be enhanced to help increase participation and access to locally grown fruit and vegetable produce. We would also like to hear your ideas on things that might help reduce the problem of accessibility to affordable, fresh and safe fruits and vegetables for First Nations, Inuit, Métis peoples in the community. Your participation in the Focus Group session may lead, for example, to more community attention and increased participation in the Ottawa Good Food Box by local residents.

If you agree to participate, we will do a Focus Group session with other site coordinators of the Ottawa Good Food Box. The session will last about 1 ½ hours. During the sessions, questions about the strengths of the Ottawa Good Food Box, ways it may be improved for Aboriginal and non-Aboriginal participants and the relationships between these topics will be discussed. You may share as little or as much as you would like.

The Focus Group session will be audio-taped and hand-written notes will be taken by the interviewer to ensure that we do not miss or misinterpret any important information that you share. The audio-tape will only be listened to by the members of the research team, and will be used exclusively for research purposes. Your identity and any identifying information you give will remain strictly confidential and none of this will be revealed in the written report.

There are minimal risks to taking part in this session. For example, you may get tired during the focus group discussion. Feel free to ask for a break at any time as needed. If you feel uncomfortable at any time during the focus group session, you are free to discontinue participation or to not answer any specific question without justification.

There are no immediate benefits to participating in the study. The information collected during the Focus Group session will be used to help us understand the intricacies related to managing a Good Food Box in Ottawa and possible ways to improve the Ottawa Good Food Box for clients.

As a thank you for your participation, your name will be put in a draw for a \$25 grocery voucher for a local grocery store in Ottawa. Your name will be considered for the draw at the completion of the focus group session even if you decide to discontinue your participation in the discussion at any time.

Your participation or non-participation in this study will be kept confidential. To ensure participation anonymity, an ID number will be written on forms (if necessary) that cannot be linked to your name or other identifying information. Your signed consent form and any other identifying documents will be kept separate from focus group transcripts and audio-tape materials. All information you provide will be secured and held by the Research Team at the University of Ottawa for seven years and will be used for research purposes only. Study results and any direct quotes that we use from the Focus Group session

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will be presented in a way that protects your identity and the identity of people or services that you mention. You may obtain a summary of the study results if desired.

If you have any questions about the study, you can contact one of the researchers:

Emily Lecompte, Doctoral Student
University of Ottawa/Université d'Ottawa.
School of Psychology
200 Lees Avenue, E-120
Ottawa ON Canada K1N 6N5
(613) XXX-XXXX ext. XXXX

John Lyons, PhD, Research Supervisor
University of Ottawa/Université d'Ottawa.
School of Psychology
200 Lees Avenue, E-121
Ottawa ON Canada K1N 6N5
(613) XXX-XXXX ext. XXXX

For questions related to the ethics of the project, you may also contact the research ethics board at the following address: Research Grants and Ethics, 550 Cumberland, Room 159A, University of Ottawa, Ottawa, ON, K1N 6N5, (613) 562-5841.

Consent

I acknowledge that the research study described above has been explained and my questions about the study have been answered. I understand that my participation is voluntary and that the session will be audio-taped. I am aware of my right to refuse or withdraw participation from the study without penalty. If I choose to withdraw from the study, my name will still be considered in the draw for the \$25 grocery voucher. I have been assured that the all information is confidential and my identity will be kept anonymous without prior consent.

Your signature below indicates that you understand and agree to the above information.

Signature of Participant

Date

Signature of Interviewer

Date

☐ I would like to receive a copy of the results from the study by email

Email address: _____

Appendix V1 – Talking Circle consent forms for Good Food Box staff



Université d'Ottawa | University of Ottawa

École de psychologie | School of Psychology

136 Jean-Jacques Lussier, Vanier 3002, Ottawa, ON K1N 6N5

☎ 613-562-5801 📠 613-562-5147

You have been asked to participate in a Talking Circle as part of a Doctoral research project of a graduate student in psychology at the University of Ottawa. The purpose of this study is to better understand the challenges and facilitating factors in coordinating the Good Food Box locations in Ottawa. Knowing this information will help us identify strategic areas of the Ottawa Good Food Box that may need to be improved as well as other areas of the program's strengths that can be enhanced to help increase participation and access to locally grown fruit and vegetable produce. We would also like to hear your ideas on things that might help reduce the problem of accessibility to affordable, fresh and safe fruits and vegetables for First Nations, Inuit, Métis and non-Aboriginal peoples in the community. Your participation in the Talking Circle may lead, for example, to more community attention and increased participation in the Ottawa Good Food Box by local residents.

If you agree to participate, we will do a Talking Circle with the staff at the Good Food Box headquarters. The interview will last about 1 ½ hours. During the interview, you will be asked questions about the strengths of the Ottawa Good Food Box, ways it may be improved and the relationships between these topics for Aboriginal participants. You may share as little or as much as you would like.

The Talking Circle will be audio-taped and hand-written notes will be taken by the interviewer to ensure that we do not miss or misinterpret any important information that you share. The audio-tape will only be listened to by the members of the research team, and will be used exclusively for research purposes. Your identity and any identifying information you give will remain strictly confidential and will not be shared in the written report.

There are minimal risks to taking part in the study. For example, you may get tired during the discussion. Feel free to ask for a break at any time as needed. If you feel uncomfortable at any time, you are free to discontinue participation or to not answer any specific question without justification.

There are no immediate benefits to participating in the study. The information collected during the discussion will be used to help us understand the intricacies related to managing a Good Food Box in Ottawa and possible ways to improve the Ottawa Good Food Box for clients.

Your participation or non-participation in this study will be kept confidential. To ensure participation anonymity, an ID number will be written on forms (if necessary) that cannot be linked to your name or other identifying information. Your signed consent form and any other identifying documents will be kept separate from Talking Circle transcripts and audio-tape materials. All information you provide will be secured and held by the Research Team at the University of Ottawa for seven years and will be used for research purposes only. Study results and any direct quotes that we use from the Talking Circle will be presented in a way that protects your identity and the identity of people or services that you mention. You may obtain a summary of the study results if desired.

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If you have any questions about the study, you can contact one of the researchers:

Emily Lecompte, Doctoral Student
University of Ottawa/Université d'Ottawa.
School of Psychology
200 Lees Avenue, E-120
Ottawa ON Canada K1N 6N5
(613) XXX-XXXX ext. XXXX

John Lyons, PhD, Research Supervisor
University of Ottawa/Université d'Ottawa.
School of Psychology
200 Lees Avenue, E-121
Ottawa ON Canada K1N 6N5
(613) XXX-XXXX ext. XXXX

For questions related to the ethics of the project, you may also contact the research ethics board at the following address: Research Grants and Ethics, 550 Cumberland, Room 159A, University of Ottawa, Ottawa, ON, K1N 6N5, (613) 562-5841.

Consent

I acknowledge that the research study described above has been explained and my questions about the study have been answered. I understand that my participation is voluntary and that the session will be audio-taped. I am aware of my right to refuse or withdraw participation from the study without penalty. I have been assured that the all information is confidential and my identity will be kept anonymous without prior consent.

Your signature below indicates that you understand and agree to the above information.

Signature of Participant

Date

Signature of Interviewer

Date

Appendix V2 – Talking Circle consent forms for Good Food Box steering committee



Université d'Ottawa | University of Ottawa

École de psychologie | School of Psychology

136 Jean-Jacques Lussier, Vanier 3002, Ottawa, ON K1N 6N5

☎ 613-562-5801 📠 613-562-5147

You have been asked to participate in a Talking Circle as part of a Doctoral research project of a graduate student in psychology at the University of Ottawa. The purpose of this study is to better understand the challenges and facilitating factors in managing an Ottawa Good Food Box site. Knowing this information will help us identify strategic areas of the Ottawa Good Food Box that may need to be improved as well as other areas of the program's strengths that can be enhanced to help increase participation and access to locally grown fruit and vegetable produce. We would also like to hear your ideas on things that might help reduce the problem of accessibility to affordable, fresh and safe fruits and vegetables for First Nations, Inuit, Métis peoples in the community. Your participation in the Talking Circle may lead, for example, to more community attention and increased participation in the Ottawa Good Food Box by local residents.

If you agree to participate, we will do a Talking Circle with other steering committee members of the Ottawa Good Food Box. The session will last about 1 ½ hours. During the sessions, questions about the strengths of the Ottawa Good Food Box, ways it may be improved for Aboriginal and non-Aboriginal participants and the relationships between these topics will be discussed. You may share as little or as much as you would like.

The Talking Circle will be audio-taped and hand-written notes will be taken by the interviewer to ensure that we do not miss or misinterpret any important information that you share. The audio-tape will only be listened to by the members of the research team, and will be used exclusively for research purposes. Your identity and any identifying information you give will remain strictly confidential and none of this will be revealed in the written report.

There are minimal risks to taking part in this session. For example, you may get tired during the focus group discussion. Feel free to ask for a break at any time as needed. If you feel uncomfortable at any time during the focus group session, you are free to discontinue participation or to not answer any specific question without justification.

There are no immediate benefits to participating in the study. The information collected during the Talking Circle will be used to help us understand the intricacies related to managing a Good Food Box in Ottawa and possible ways to improve the Ottawa Good Food Box for clients.

As a thank you for your participation, your name will be put in a draw for a \$25 grocery voucher for a local grocery store in Ottawa. Your name will be considered for the draw at the completion of the focus group session even if you decide to discontinue your participation in the discussion at any time.

Your participation or non-participation in this study will be kept confidential. To ensure participation anonymity, an ID number will be written on forms (if necessary) that cannot be linked to your name or other identifying information. Your signed consent form and any other identifying documents will be kept separate from focus group transcripts and audio-tape materials. All information you provide will be secured and held by the Research Team at the University of Ottawa for seven years and will be used for research purposes only. Study results and any direct quotes that we use from the Talking Circle will be

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presented in a way that protects your identity and the identity of people or services that you mention. You may obtain a summary of the study results if desired.

If you have any questions about the study, you can contact one of the researchers:

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Consent

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Your signature below indicates that you understand and agree to the above information.

Signature of Participant

Date

Signature of Interviewer

Date

☐ I would like to receive a copy of the results from the study by email

Email address: _____