

Determinants of Immigrant Food Security:
An Examination of the Food Environment
in the Region of Waterloo, Ontario

by

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

This study aimed to explore the role of the food environment in shaping immigrants' access to food and ultimately their health. A growing body of research is examining the influence of food environments—defined as everything outside of the individual that influences eating habits (Story, Kaphingst, Robinson-O'Brien, & Glanz, 2008)—on the health of Canadians. The study is based on the premise that immigrants to Canada may be particularly vulnerable to factors in the environment that impact access to nutritious and affordable food, and thus to poor health and health inequities. The inquiry opens by examining food insecurity among recent immigrants. It asserts that the food environment might be an overlooked determinant of declining immigrant health over time in Canada.

In lieu of research examining the impact of the food environment on the health of immigrants in Canada, the literature review explores possible determinants of the food environment. Past research suggests that immigrants are vulnerable to barriers to food security in the food environment such as a lack of income due to limited employment opportunities. Immigrants also have key strengths that can make them resilient to barriers in the food environment, such as social networks. This literature firmly links the food environment with an increased risk for food insecurity and provides a sound rationale for this research.

The methodology is the case study, using a mixed methods approach which encompassed in-depth interviews and photovoice to elicit perceptions regarding food access. The interview sample consisted of nine immigrants, in addition to nine key informants (i.e., settlement service providers, policy-makers) in the Region of Waterloo, Ontario, Canada.

Prevalent themes identified corroborated past research of the existence of economic barriers to food security for immigrants including limited employment opportunities for recent immigrants that can increase their purchasing power, the high cost of food, and the pervasive wide availability of unhealthy food in the Region of Waterloo. Two major theoretical contributions of this research are the application of a systems-based approach to food security and the examination of the role of the immigration experience as a social determinant of health. At the practice level, the findings indicated the need for collaboration and further coordination that can help stakeholders improve the food environment.

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Chapter 1 – Introduction

1.1 Background and Research Questions

Food insecurity is considered a public health issue in Canada due to its association with nutritional health inequalities among vulnerable groups (Mark, Lambert, O'loughlin, & Gray-Donald, 2012; Rock, McIntyre, Persaud, & Thomas, 2011; Tarasuk, 2009). Food security exists when “ all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (Barret, 2010, pg. 825). In the 2007-2008 period, 7.7% of Canadians were reported to be food insecure, and 2.7% were reported to be severely food insecure indicating reduced food intake and disrupted eating patterns (Health Canada, 2012). Food insecurity is even more prevalent among recent immigrants, with 12.6%—over 750,000, reporting food insecurity in 2007-2008 (Health Canada, 2012).

The number of food insecure immigrants in Canada is worrisome as food insecurity has important implications for health, such as depression and obesity in adults and increased risk of hospitalization among infants (Adams, Grummer-Strawn , & Chavez, 2003; Buscemi, Beech, & Relyea, 2011; Cook, et al., 2004; Chilton, et al., 2009; Park, Kersey, Geppert, Story, Cutts, & Himes, 2009). Additionally, Sanou and colleagues (2014) suggest that food insecurity may be associated with declining health for immigrants over time. This may be best illustrated by the *healthy immigrant effect* (HIE), a phenomenon that explains that recent immigrants are typically healthier than the Canadian average. However, following arrival in Canada, the health of immigrants declines over time (Dean & Wilson, 2010; Sanou, et al., 2014; Wang & Hu, 2013). There is strong evidence of HIE for chronic conditions such as osteoporosis, cancer, coronary heart disease, type 2 diabetes, as well as anaemia, decreased mental capacities and increased morbidity (Latham & Moffat, 2007; Newbold, 2006). It is known that these types of chronic disease are often the result of poor and unhealthy diets, which include a high consumption of low quality and low nutrient food (Wang & Hu, 2013).

Given the association between food and health, the *food environment*—factors that impact what, where, and how much people eat (Story et al., 2008)—may be an overlooked determining factor of food security and its potential impact on the health of immigrants. This is because having a poor diet is not influenced by individual behaviour alone. Rather, poor diets are also a consequence of the contextual (e.g. social and physical) aspects of the environment such as access to healthy food (Kneen, Houghton, Gibson, & Community Nutritionists of BC, 2004; Kushel, Gupta, Gee, & Haas, 2006). Indeed, the importance of the contextual conditions of the environment that shape peoples' diets is recognized by the Canadian federal government (Health Canada, 2012). This is evidenced by a new health promotion program that targets the built environment to foment healthy eating called Curbing Childhood Obesity: A federal, provincial, and territorial framework for action to promote healthy weights (Ministry of Health, 2011). The recent push for restructuring the food environment to improve eating habits in the population reveals the important role that planners have in our communities (Health Canada, 2013; Ontario Professional Planners Institute, 2011). For instance, policy makers are beginning to engage in the regulation of the food environment through zoning regulations and through incentives for grocery stores in underserved areas (Health Canada, 2013). The evidence of these strategies for improving the food environment, however, is still in the process of being solidified (Health Canada, 2013).

At the provincial level the importance of the food environment on the diet of the population is being recognized. In Ontario, there is some evidence that community-based food initiatives are able to counteract the negative impacts of poor access to food. For instance, one study of community gardens in the Region of Waterloo showed that community gardens improve the availability of inexpensive and high quality fruits and vegetables, as well as an increased connectivity with neighbors (Miedema, Desjardin, & Marshall, 2013). Whether these initiatives are sufficient to overcome individual access barriers to food security among immigrants in particular is unclear. In fact, a recent Canadian report based on national data indicated a need for further research of how the food environment influences different populations in particular contexts (Health Canada, 2013). It noted that:

The inconsistent findings that characterize the literature could reflect actual differences in how people respond to food environments rather than simply inconsistent methods or study designs. If aspects of the food environment are a more important determinant for some populations than others, this could be an important policy or program consideration (Health Canada, 2013, pg. 37)

Further, the report indicates the need for more research on the influence of the food environment on the diet and health of cultural, racial, and other minorities (Health Canada, 2013).

In light of the negative impact of food insecurity, it is important to address inequities in food access for immigrants. This is not only because immigrants account for about 20% of the Canadian population, and are expected to be a crucial component of population growth in the future of Canada (Statistics Canada, 2009), but also because access to food and its potential impact on health is a human rights issue (United Nations Human Rights, 2012). This is particularly the case when considering three key issues relevant to immigrant populations: a) immigrant populations are influenced by a set of compounding vulnerabilities such as little economic and social resources (Lindsay, Sussner, Greaney, & Peterson, 2009; Warfa, Curtis, Watters, Carswell, Ingleby, & Bhui, 2012), b) food insecurity could be a barrier for immigrants in their assimilation to their new environment in Canada, since it poses important limitations on their opportunities to engage in an active and healthy life (Dubowitz, Acevedo-Garcia, Salkeld, Cristina Lindsay, Subramanian, & Peterson, 2007), and c) the impacts of household food insecurity are often experienced by the children of immigrants (Buscemi, Beech, & Relyea, 2011; Chilton, et al., 2009; Yeh, et al., 2008). Therefore, in addition to the various implications for health, food insecurity is an important social justice issue for the growing population of immigrants in Canada. Given the potential link between food security (via the food environment) and the declining health of immigrants—as indicated by the HIE— it is important to address food insecurity among immigrant populations.

Accordingly, the broad aim for this qualitative research is to examine the role that the food environment plays in shaping immigrant health.

The specific research questions are:

- What are the individual and environmental determinants of how immigrants living in the Region of Waterloo navigate the food environment?;
- What is the perceived relationship between the food environment and the health of immigrants amongst immigrants and service providers?
- How can the food environment be improved to target food insecurity amongst immigrant populations?

1.2 Study Significance

This study contributes knowledge of how the food environment influences the food security of immigrants within the regional context of southwestern Ontario. There is value in validating food security research of immigrants in an additional and potentially unique context such as the Region of Waterloo (Wang & Hu, 2013). The Region of Waterloo offers a unique context for research considering progressive action, albeit slow-paced, to improve the food environment. Examples are permissive policies in the Regional Official Plan (ROP) that aim to increase access to food in the community (Long, 2013).

In addition, this study contributes to the little-researched area of the impact of the food environment on the health of immigrants. Understanding the environmental determinants of immigrant health is important, particularly given health inequities such as higher prevalence of chronic disease and obesity among racial and ethnic minorities (Azar, Chen, Holland, & Palaniappan, 2013). This thesis is an exploratory case study of the role that the food environment plays in shaping immigrant health, as well as the barriers and assets that immigrants have for navigating the food environment. Specifically, the aim of this study is to understand how immigrants navigate the local food environment through a holistic framework that can help deconstruct the complexities of immigrant health. Through this understanding, the study contributes to identifying the needs within the immigrant population for engaging with the local

food environment and for overcoming food insecurity. Ultimately the hope is that through these findings, local food initiatives and policies that acknowledge the needs of immigrants can be supported in the Region of Waterloo and can possibly inform health promotion practices.

1.3 Organization

This thesis is organized in six chapters. This Introductory Chapter discusses the major background literature driving this research, as well as the research questions. **Chapter 2** discusses the current state of the literature on three major topics: food security and health, immigration, and the food environment. **Chapter 3** outlines the research methods used to conduct the thesis. **Chapter 4** summarizes the results from interviews with immigrants and key informants in the Region of Waterloo. The key findings are discussed in **Chapter 5**, in relation to existing literature. **Chapter 6** concludes the thesis with a summary of key findings, their significance in the planning context, and recommendations, as well as advice for future research.

Chapter 2 – Literature Review

2.1 Introduction

The literature presented in this section highlights the complex interplay between individual factors and the food environment. Researchers agree that understanding the context in which individuals live helps in disentangling their health outcomes (Latham & Moffat, 2007). This is also supported by Goodman and Leatherman (1998; pg. 11) in their argument that the social context in relation to the food environment aids us in understanding biologies: “Who becomes ill and what are the consequences, who gets food when food is limited, and why is food limited in the first place”. Thus, the present chapter situates individual characteristics of immigrant populations within the wider environmental context in which they reside. This helps to understand how the food environment influences health.

This literature review discusses research on the determinants of the food environment at the local, national, and the international levels, with a focus on research based in Canada. This chapter is divided into three sections. The first section discusses the framework that drives this research to attain a comprehensive grasp of past literature. The second section outlines the connection between food security and health, which establishes the need for examining food security among immigrant populations as a valuable and necessary field of research. It also places the literature of the migration experience into context with research of the food environment and its impact on health. In the third section, the determinants of the food environment are discussed with attention to their impact on immigrant populations. A review of the literature of the food environment provides a foundation to this research, as the goal is to examine the determinants of the food environment in the Region of Waterloo.

2.2 Conceptual Framework

In examining the literature of the food environment, a multi-level framework was used to integrate research of the determinants of the food environment and of the influence of the food environment on health. This framework integrates the *Analysis Grid for Environments Linked to Obesity*

(ANGELO) tool (Swinburn, Egger, & Raza, 1999) and the *social determinants of health* (SDH) framework (Figure 1, Raphael, 2004). ANGELO is an analytical tool that allows communities to identify environmental determinants that influence their physical activity and their eating habits. This tool enables communities to assess whether these determinants can be altered (Foulkes, 2011). The four pillars of ANGELO mirror those identified in the literature; sociocultural, physical, political, and economic determinants. Each of these pillars is framed in micro and macro levels to understand how environments shape individual eating patterns. For example, the physical determinants of the environment reflect what is available at the neighborhood level (e.g. food locations; micro-level) and at the national level (e.g. access to farmland; macro-level). Similarly, the economic determinants are informed by what is available in terms of household income (micro-level) and in terms of the national economy (macro-level) (Swinburn et al., 1999). This tool frames the study based on past literature and to interpret the responses from participants about the food environment. The SDH framework also guides the research to complement ANGELO.

According to the SDH framework, food security is a determinant of health. Social determinants of health are “the economic and social conditions that influence the health of individuals, communities, and jurisdictions as a whole” (Raphael, 2004, p. 1). The SDH framework emphasizes the importance of the structure of societies and the organization and distribution of economic and social resources (Raphael, 2004). Past research on the health determinants of immigrant populations indicates that SDH have a strong influence on the health of immigrants (Dunn & Dyck, 2000). Therefore in this study the SDH are emphasized in interpreting the relation between the determinants of the food environment and the health outcomes of immigrants.

Together, the ANGELO tool (focused on the environment) and the SDH framework (focused on socio-economic factors of health outcomes) guided this literature review towards a holistic understanding of the various aspects of the food environment that impact the health of immigrants. This integrated framework strengthened the study by reconnecting the public health and the planning fields that together have a stronger impact on the food environment (Corburn, 2004). ANGELO is a useful and accessible

tool for assessing the impact of the environment on eating habits across multiple dimensions of the environment (Kirk, Penney, & McHugh, 2010; Swinburn et al., 1999). An environmental perspective of health, however, requires a broad framework of health determinants for ensuring that these (whether environmental or individual) are also acknowledged.

Figure 1 below outlines the framework utilized to review the literature on three main themes: Food security, health, and the food environment. These factors appear to be interrelated and should thus be integrated for a better understanding of the impact of the food environment on health.

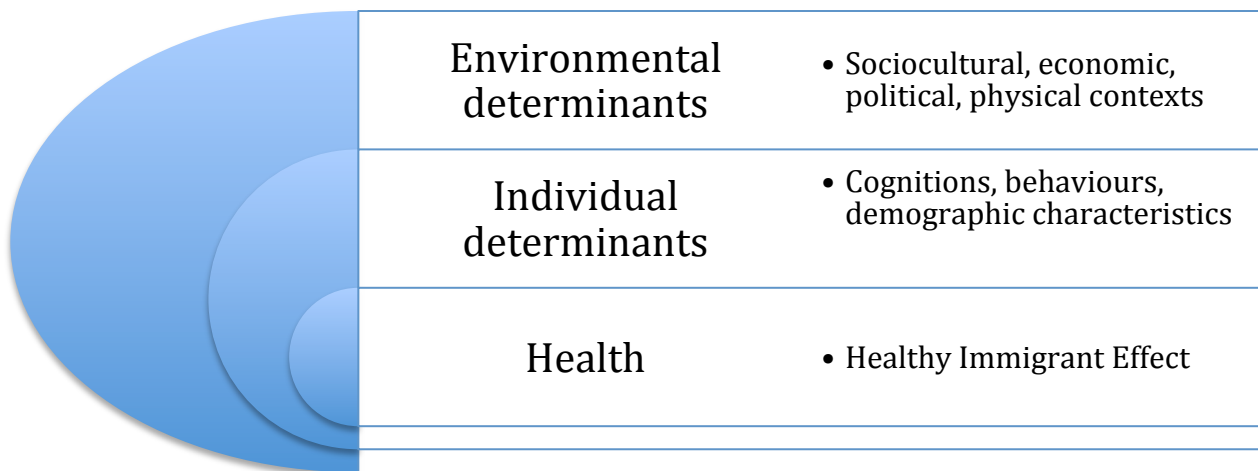


Figure 1 Integrated Framework of the Food Environment

This framework borrows from similar ecological frameworks such as that proposed by Story and colleagues (2008) for examining individual and environmental determinants of the food environment. Individual determinants are individual factors that influence eating habits, including cognitions, behaviors, and demographic characteristics. These determinants are thought to influence issues like food knowledge, skills, behaviours, and cultural beliefs (Story et al., 2008). Environmental determinants are those outside of immediate individual influence, including sociocultural, economic, political, and physical contexts of the environment. These are all examined through the use of the ANGELO tool. The framework integrates the health dimension to emphasize the impact of the food environment (including the determinants discussed above) on the health of the immigrant populations.

2.3 Food Security and Health Disparities

Food insecurity has important implications for health, as it can lead to physical and mental health problems including chronic disease, the leading cause of death globally (Toronto Public Health, 2014; Carter, Dubois, Tremblay, & Taljaard, 2012). Food insecurity appears to influence health throughout the food production and consumption process. During food production, food can be exposed to chemicals and toxins, resulting in low-quality and even hazardous food (Fennema, 1990). Consuming low quality food can cause health problems such as anaemia in children and can pose an increased risk of obesity in adults (Adams, Grummer-Strawn, & Chavez, 2003; Park, Kersey, Geppert, Story, Cutts, & Himes, 2009; McIntyre, 2004;). Past research on the long-term consequences of food insecurity has shown that an insufficient nutritional intake can often lead to chronic disease such as diabetes (Gucciardi, Vogt, DeMelo, & Stewart, 2009; Kneen et al., 2004; Toronto Public Health, 2014; Vahabi & Damba, 2013). Food insecurity has also been associated with mental health problems including depression (Carter et al., 2012; Heflin et al., 2005).

Vulnerable populations are primarily affected by food insecurity. Specifically, food insecurity impacts children (Carter et al., 2012; Tarasuk, 2009), single parent families (McIntyre, 2004), ethnic minority groups (Vahabi & Damba, 2013), low income households (Park et al., 2009), individuals living with diet-related chronic disease that have the extra challenge of accessing food that allows them to comply with appropriate diets (Tarasuk, 2009), and off-reserve Aboriginal households (Health Canada, 2012). These populations in turn are more likely to experience social and health disadvantages throughout their lives (Tarasuk, 2009). For example, ethnic minority children, when compared to Canadian-born children, experience more risk factors such as frequent episodes of hunger that can contribute to and exacerbate chronic disease (Muntaner, Ng, & Chung, 2012).

Immigrants are particularly vulnerable for food insecurity, as they face multiple compounding sources of disadvantage when accessing the local food environment. These include language difficulties, cultural food preferences, and poor knowledge of available food resources (Vahabi & Damba, 2013). In

addition, immigrants report unequal access to food that is nutritious and culturally appropriate (Vahabi & Damba, 2013; Health Canada, 2012). Other studies indicate that simply being of a minority ethnic background is an individual-level risk factor for food insecurity (Carter, Dubois, Tremblay, & Taljaard, 2012; Gundersen, Kreider, & Pepper, 2011). Perhaps as a result of these and other barriers, immigrants experience higher than average levels of food insecurity (Health Canada, 2012). What is not clear from the literature, however, are the strategies that immigrants are utilizing to cope with food insecurity. Previous studies in Canada that have emphasized barriers to food security (e.g. see Vahabi & Damba) have taken attention away from potential protective factors or facilitators of food security amongst immigrant populations. Further, it appears that investigating the determinants of food insecurity in the context of the food environment is a worthwhile research endeavor. This is given the impact of the household food environment on chronic health issues like obesity amongst food insecure households in recent studies (Nackers & Appelhans, 2013; Dean & Sharkey, 2011).

2.4 The Immigration Experience and Health

This section presents literature of the immigration experience and its relation to the health of immigrants. It highlights how the food environment may have unique repercussions for immigrant populations.

In his investigation of the health outcomes of immigrants, Newbold (2009) found that significant declines occur in the health of immigrants approximately two years after arrival to Canada. Further, the study indicated that differences exist in the health outcomes of individuals who arrive through different immigration classes. Specifically, Newbold (2009) noted that refugees are most likely to have the worst health outcomes, whereas skilled class immigrants have the best health outcomes. The author attributes these outcomes to the vulnerabilities of refugee populations, such as a loss of social networks and experiences of traumatic events. In addition, the author argues that skilled class immigrants immigrate with more resources than immigrants from other immigration categories (e.g. financial resources).

Other research suggests possible reasons for the health declines of immigrants including barriers to health care and immigrant acculturation (Dean & Wilson, 2010). Immigrant acculturation means that immigrants adopt the “Canadian lifestyle” that leads to poor eating and physical activity habits (Dean & Wilson, 2010; Wang & Hu, 2013). The dietary acculturation of immigrants has been suggested in the past to explain the decline in health, as indicated in a recent scoping review by Sanou and colleagues (2014). The authors refer to dietary acculturation as “the process by which immigrants adopt the dietary practices of the host country” (pg. 25). While immigrant acculturation may be a significant contributor to a decline in the health of immigrants, it is argued that this theory does not fully explain the changes in dietary preferences of immigrants, and it is rather narrowly focused on individual behaviour (Sanou, et al., 2014; Viruell-Fuentes, 2007). These findings suggest the relevance of how the migration experiences of immigrant populations may explain their engagement with the food environment beyond acculturation.

Much literature on the pre-migration experiences of immigrants and refugees reveals the depth and breadth of the impacts of these experiences on the post-migration livelihood of immigrants. It also reveals differences in the pre-migration experiences of immigrants and refugees. Pre-migration experiences are characteristics and circumstances that immigrants possessed *before* their arrival to their host country. These traits are key to understanding the post-migration experiences of immigrants, which are possessed by immigrants *after* arrival into their host country. Pre- and post-migration experiences have been investigated in a diversity of areas regarding the livelihood of immigrants and their children (Pong & Landale, 2012; Schweitzer, Brough, Vromans, & Asic-Kobe, 2011). The migration experience consists of three major transitions; these are changes in personal ties and reconstructing social networks, shifting socioeconomic status, and shifting cultural systems (Kirmayer, et al., 2011). Appendix A outlines the main determinants pre-, during, and post-migration, as per Kirmayer and colleagues (2011).

Research on the impact of pre-migration identifies traumatic experiences and the loss of social networks for immigrants and refugees (Kirmayer et al., 2011). Specifically, trauma leads to psychological distress among refugees, including post-traumatic distress disorder, anxiety, and depression (Schweitzer

et al., 2011). Psychological distress among refugees is often the result of prolonged violent conflict in their country of origin, as well as circumstances that result from conflict like displacement and being subjected to or witnessing traumatic events (Schweitzer et al., 2011). Experiences of mental illness can be carried over post-migration, and can result in difficulties adjusting to the new country that can lead to anxiety and somatization (Schweitzer et al., 2011). Despite their higher prevalence to psychological distress, a very small proportion of refugees—and in some circumstances other immigrants—suffer from psychological disorders (Beiser, 2005). Having a mental disorder diminishes the resources that these individuals have for adjusting to the host country and consequently, for achieving food security (Heflin et al., 2007).

Immigrants also experience a significant change in their personal ties leading to a restructuring of their social networks post-migration (Kirmayer et al., 2011). As they immigrate, people deal with a loss of social support leading to a lower *quantity*, but not *quality*, of social support (Dunn & Dyck, 2000). Specifically, circumstances like unplanned migration often lead to a rupture of social networks including family and friends, particularly among refugee immigrants (Schweitzer et al., 2011; Torres & Wallace, 2013). As they transition into the host country, immigrants restructure their social ties. This may be aided by religious practices that encourage religious participation, strengthening social ties (Smits, Ruiter, & Tubergen, 2010). Having social networks influences the resources that immigrant populations have, including access to social and financial support (Dean & Wilson, 2008; Kirmayer, et al., 2011; Torres & Wallace, 2013).

Immigration into a new socio-economic system has implications for the economic stability of immigrants and refugees (Kirmayer et al., 2011). A review of Canadian national data on the health determinants of immigrants and refugees indicates that socio-economic characteristics are likely related to the health outcomes of these populations (Dunn & Dyck, 2000). Results from the study indicate that the relationship between income and health of immigrants is not clear, however, despite the higher relevance of socio-economic status for immigrants compared to non-immigrants. This reveals the complexity of the

immigration experience and the need for further research to contribute some clarity. Past research has contributed some understanding of the impact of socio-economic status on health. This research indicates that unemployment and/or underemployment, and insufficient income to cover basic needs like food and shelter are issues that immigrant populations experience (Beiser, 2005; Dean & Wilson, 2008; Vahabi & Damba, 2013).

Studies suggest that the economic environment hurts immigrants both psychologically and physically. In the psychological realm, studies have shown that a lack of employment can lead immigrants to experience poor mental health, including feelings of stress and depression (Dean & Wilson, 2008). Experiences of mental illness have a particularly negative impact on the mental health of immigrants who have endured traumatic experiences, such as war. In a study by Warfa and colleagues (2012) of refugee Somali immigrants in the UK and the US indicated that recent refugees experience periods of unemployment and a devalued identity. These factors worsen the mental state of these groups (Warfa, Curtis, Watters, Carswell, Ingleby, & Bhui, 2012). The impact of poverty and unemployment on the physical health of immigrants has also been widely acknowledged in past research (Beiser, 2005; Chilton, et al., 2009; Heflin et al., 2007), and the impact of income on the risk of chronic disease is being recognized in the literature (Dinca-Panaitescu, Dinca-Panaitescu, Bryant, Daiskid, Pilkington, & Raphael, 2011). All these socio-economic elements may have important implications for the food security of immigrant populations. This is especially the case for refugee populations who often arrive with little or no socioeconomic resources to the host country (Newbold, 2006). With time, they may manage to overcome these obstacles. However, they also face larger barriers that exist in the social structure, such as adaptation to a different set of sociocultural dynamics.

Immigrants and refugees are influenced by their cultural values and this seems to have important implications for health. At the individual level, immigrants appear to retain their cultural values, particularly in their selection of food (Azar et al., 2013). By retaining their traditional ethnic diets, immigrant populations benefit psychologically from the maintenance of their ethnic identity (Chapman &

Beagan, 2013; Collins F. L., 2008). The maintenance of their traditional ethnic diet also appears to be beneficial physically, as these diets usually promote the consumption of fruits and vegetables (Chen, Zhao, Goto, & Wolff, 2015). Societal cultural values are also relevant to understand the post-migration context. For many immigrants, being perceived as an immigrant or refugee is challenging to their health outcomes due to social exclusion and discrimination (Beiser, 2005). This reduces their resources for food security by reducing access to important resources, like employment (McIntyre et al., 2014; Galabuzi, 2006). This demonstrates that issues like discrimination that are unique to immigrants may exacerbate the health effects of food insecurity and may worsen their health outcomes.

Factors such as neighborhood access to healthy and affordable food are determinants of the food environment that can significantly impact the health of immigrants (Latham & Moffat, 2007). For instance, a study by Chaufan and colleagues (2012) demonstrated that limited access to transportation was a barrier to healthy food required for diabetes prevention for a group of Latino immigrants in California, USA.

Lastly, scholars agree that although the field of planning could help reduce issues that are adverse to health in urban communities (Boarnet, 2006; Laurian, 2006), planners based in Canada have limited knowledge of how planning regulation impacts the health of the population. This was highlighted in a recent study whereby planners attributed unhealthy eating habits to individual food choice (Grant & Manuel, 2011). An added limitation for planners is the lack of understanding of unique needs and assets of immigrant populations (Nguyen & Salvesen, 2014).

2.5 The Importance of Food Environments for Food Security

A local study by Minaker and colleagues (2013) indicated that the relationship between the food environment and diet quality is best measured using objective measures such as geographic distance to the nearest grocery store. They argued, however, that to arrive at a better understanding and framework of the food environment and its impact on health required further research on the environmental influences on food choice. Others agree with this argument, stating that further discussion is needed on the

underlying constructs contained in concepts measuring the food environment (Caspi, Sorensen, Subramanian, & Kawachi, 2012). Indeed, in the Canadian context it is argued that current food environment measures are simplifying the food environment, in that they are measuring issues like geographic distance to stores but ignoring issues like the quality and the affordability of food (Health Canada, 2013).

Notwithstanding the apparent simplification of measures of the food environment, a scan of the literature suggests that the food environment and its influence on immigrant health is determined by a combination of individual and environmental factors. The following sections discuss how individual factors intermingle within environmental determinants of the local food environment according to four main types of environments: economic, sociocultural, political, and physical. Specifically, these aspects of the environment provide some clarity to the questions: a) what are the financial factors?, b) what are the attitudes, beliefs, perceptions and values?, d) what are the rules and regulations?, and c) what is available? (Swinburn et al., 1999).

2.5.1 Economic Environment

For decades, inequalities in nutritional intake have been linked with socioeconomic inequities (e.g. see Travers, 1996). Thus, it is not surprising that economic status is the main determinant of how individuals access food, and this determinant is interrelated with other aspects of the food environment (Nord, 2014). Inadequate income results in limited financial resources for affording adequate food, limited transportation to access food outlets, and limited time for grocery shopping due to working conditions (Vahabi & Damba, 2013; Kirkpatrick & Tarasuk, 2003). Specifically related to immigrants is the issue of job accessibility. Recent immigrants who immigrated to Canada through the Skilled Worker Program, for example, face difficulties finding employment. Those immigrants who do find employment often do not work in the area of their expertise, leading to lower income (Dean & Wilson, 2008). Indeed, a recent Canadian study indicated that immigrants who seek nonprofessional jobs such as jobs in the sales and service industry are more likely to find a job compared to other immigrants (Grenier & Xue, 2011).

Further research indicated that immigrant workers who have comparable education to Canadian workers experience more food insecurity (McIntyre, Bartoo, & Emery, 2014).

There is a strong association between income and food insecurity (Nord, 2014), however, studies have shown that income is not the only explanatory economic variable for a lack of food security (Gorton, Bullen, & Mhurchu, 2009). Some studies have shown that since the decline in social assistance in Canada to low income households in the form of welfare, the 'welfare poor' have become the 'working poor', defined as households with an income below the low income cut-off. In 2007, among individuals identified as the working poor, 31% reported holding multiple jobs and 76% reported working full-time (McIntyre et al., 2014). This research suggests the limited income that households earn when holding full-time employment, in addition to the limited full-time jobs leading some households in Canada to spend significant time working in multiple jobs likely due to earning low income. This reduces the time that these families have for other activities like purchasing and preparing food. Other research indicates that even with adequate levels of income, some households remain food insecure. The study suggested that despite the strong relationship between rising incomes and improved health, this relationship is not direct (Rose, 1999). This means that other explanatory factors exist for determining the relationship between income, food security, and health outcomes. The study concluded by indicating that accurate assessments of food security should not only consider income but also issues like housing and food costs (Rose, 1999).

Scholars agree on the impact of competing expenses that negatively impact household income (Gorton et al., 2009; Kirkpatrick & Tarasuk, 2011; Vahabi & Damba, 2013; Yeh et al., 2008). Teixeira (2009), for example, argues that because access to housing is key to the successful integration of immigrants, its growing unaffordability in large and mid-sized cities in Canada is of concern to planners and public health workers. In addition, research has shown that the increase in energy prices in Canada in the 1998 to 2001 period led to a disproportionate increase in food insecurity among households with heating costs expenditures (Emery et al., 2012). After statistically removing essential household expenses like clothing, telephone, transportation, and personal care supplies, researchers in another study showed

that remaining household income was not enough to afford a nutritious food basket in Nova Scotia, Canada (Newell, Williams, & Watt, 2014). The cost of food is another critical factor for food access. A study by Kirkpatrick and Tarasuk (2003) established the influence of food affordability on the purchasing patterns of low income groups in Canada. The most significant finding was that low income households purchased significantly less servings of milk products and fruits and vegetables than higher income households, indicating systematic socioeconomic inequities in Canada. Such inequities lead to less selectivity in food for these households, and often, to the consumption of unhealthy food options that are less expensive (Kirkpatrick & Tarasuk, 2003). The issue of the high price of healthy food and the low price of unhealthy food has been documented in research from other developed countries such as the US (Chaufan, Constantino, & Davis, 2012).

2.5.2 Sociocultural Environment

Variables at the individual level such as household composition are important sociocultural determinants of food security. Inadequate income that results in food insecurity is particularly relevant for certain vulnerable populations that share social and cultural barriers. Among these vulnerable groups are single-parent families and ethnic minorities. Single-parent families are most likely to experience food insecurity, possibly because of lower household income and limited resources for grocery shopping and for food preparation (Nord, 2014; Vahabi & Damba, 2013). Being of an ethnic minority also influences the resources that people have, such as knowledge of available community resources, and English language skills (Vahabi & Damba, 2013).

Being of an ethnic minority is also associated with food procuring and consuming practices that reflect an established cultural identity (Sanou et al., 2014). For instance, access to resources for procuring food is often influenced by the cultural attitudes that a community holds. This is revealed in the way that people from some ethnic minorities may feel stigmatized for reaching out to food banks (Dean & Wilson, 2008; Vahabi & Damba, 2013). In addition, people from certain ethnic minorities have particular dietary

needs and preferences, a significant factor for these individuals as they adopt or reject the Canadian diet (Castellanos, Downey, Graham-Kresge, Yadrick, Zoellner, & Connell, 2013).

Food literature suggests not only the physiological importance of food but also its psychological significance because it provides a sensation of comfort in invoking recollection of past experiences (Holtzman, 2006), it alters the physiological state of individuals in the relief of stress (Tomimaya, Dallman, & Epel, 2011), and it improves overall positive well-being by regulating emotions (Desmet & Schifferstein, 2008). Particularly relevant to this study is the impact of culture and ethnicity on food choices and practices of immigrants. Examining immigrant experiences in navigating their ethnic, and often multi-ethnic, food environments helps to understand the food practices of immigrants (Chapman & Beagan, 2013). Food practices involve the ingredients, diets, and food consumption that are part of a person's cultural group (Chapman & Beagan, 2013). These are dependent on the level of knowledge and cooking skills that immigrants have—past research has shown that a lack of knowledge and skills can lead to low food security (Barry, 1997). Furthermore, immigrants experience particular disadvantage in the food environment when faced with unfamiliar local food or cooking methods (Burns, Webster, Crotty, Ballinger, Vincenzo, & Rozman, 2000). Immigrants are also distinct from other populations in regards to food practices due to the continuing influence of traditional gender roles in the household. A study of Mexican immigrants in a US neighborhood indicated that the fulfillment of the role of caretaker among women in Mexican immigrant families presents both a constraint and an opportunity for women in being able to select the food for the family but unable to earn wages that can increase household income (Dean, Sharkey, Johnson, & St John, 2012). Food practices contribute to the cultural identity of immigrants, and help them cope with the experience of loss. These are important to provide immigrants with a sense of identity and connection to their country of origin (Chapman & Beagan, 2013).

Global changes in the food system, however, have influenced the food practices of cultural groups, blurring the divide between foods “here” and foods “there” (Collins, 2008). In addition to globalization, food practices are influenced by transnational migration patterns. Current mobility trends of immigrants and refugees allow them to build cultural attachment to multiple social groups across the

border (Chapman & Beagan, 2013). The adoption of diverse cultural food practices occurs among immigrants in Canada. Research has shown that the dietary preferences likely change for immigrants over time through their acculturation to the Canadian food environment (Dean & Wilson, 2010; Wang & Hu, 2013). Researchers are wary about using the acculturation model to explain dietary preferences post-migration, however, since dietary acculturation is at play with wider structural and contextual factors such as socioeconomic status and discrimination (Viruell-Fuentes, 2007).

Researchers alert us of the impact of discrimination of immigrants and refugees in their host environment on key determinants of food security and health (Barret 2010; Edge & Newbold, 2013; McIntyre et al., 2012; Viruell-Fuentes, 2007). Discrimination, defined in past research as “any judgments and actions that create and reinforce oppressive conditions that marginalize, and/or restrain the lives of those being discriminated against” (Edge & Newbold, 2013, p. 141), affects immigrants in a variety of areas. Immigrants experience discrimination and racism in health care, particularly in the face of funding cuts to the health care system (Edge & Newbold, 2013). Immigrants also experience discrimination in their own neighborhood in their encounters with non-immigrants and in settings such as schools and restaurants (Viruell-Fuentes, 2007). The impact of discrimination is also experienced by immigrants in the housing market when collecting information about housing vacancies, securing affordable housing, and by the spatial racial segregation of ethnic minorities that persists in large and mid-sized cities in Canada (Teixeira, 2009). Discrimination in the housing market in Ontario was confirmed in a recent investigation by the Ontario Human Rights Commission (OHRC; Ontario Human Rights Commission, 2008). In their investigation, the OHRC reported discriminatory stereotypes towards racial minorities, particularly towards African minorities, who are often perceived by landlords as being criminals and dirty. Other damaging stereotypes to which immigrants are exposed include beliefs that they are terrorists, that they won't pay their rent, and that they are violent. Moreover, the same report indicated the negative impact of discrimination on the social segregation of racialized minorities in subsidized housing communities in Ontario (Ontario Human Rights Commission, 2008).

Immigrants also experience discrimination in employment, as has been indicated in studies by McIntyre and colleagues (2014) and Galabuzi (2006) whereby it was shown that immigrants with similar qualifications to non-immigrants are less food secure and work in more precarious conditions than their non-immigrant counterparts. A study by Viruell-Fuentes (2007) indicated that, perhaps to avoid undesirable encounters with those who may discriminate against them, immigrants in Detroit report limiting their interactions with others who are not from their same ethnicity. This may lead to further segregation for some immigrants, which often results in difficulties identifying food insecure immigrants (Barret, 2010). These findings on the impact of discrimination on the food security of immigrants indicate the increased vulnerability of these populations due to issues such as geographic segregation and thus the need for further research that is focused on immigrants.

Findings on the role of ethnic communities as buffers from negative social experiences for immigrants reveal the influence of social networks (Viruell-Fuentes, 2007). Social networks are an important resource for vulnerable populations, particularly because they encourage social capital. Social capital means that people in a community can form social networks and from these networks they can create a strong sense of neighborhood cohesiveness. This in turn encourages feelings of reciprocity and trustworthiness among neighbors (Uphoff, Pickett, Cabieses, Small, & Wright, 2013). Social capital buffers the negative impact of low socioeconomic status on health (Uphoff et al., 2013). Thus, ethnic minorities with low socioeconomic status may overcome barriers to food through the knowledge transfer of available community resources that social capital encourages. Past studies indirectly indicate the possible relevance of social capital for food security. For example, involvement in voluntary and political associations, as well as frequent involvement with family and neighbors, leads to a significant reduction in overweight status (Veenstraa, Luginaahb, Wakefield, Birch, John, & Elliot, 2005; Leyden, 2003). Furthermore, low social capital leads to high food insecurity, partially explaining why some communities are food secure, but residents are food insecure (Carter et al., 2012).

2.5.3 Political Environment

The political environment includes rules and regulations at the micro and macro scales that influence the food environment (Swinburn et al., 1999). Understanding the community and legislative context of food security is important, as has been indicated by the Public Health Agency of Canada (2011). However, research on the political environment in relation to food is scarce (Dean & Elliot, 2011; Gorton et al., 2009). To date, literature has been focused on policies that mandate the availability of financial resources such as employment and welfare programs (Gorton et al., 2009).

At the micro scale, the political determinants include rules at the school and household level (Swinburn et al., 1999). At the household level, the political environment appears to be closely associated with the sociocultural determinants of a family's decision about what kind of food to purchase and how to prepare it. In her review of the role of culture on individual behavior, Swidler (1986) concludes that culture influences action by shaping a repertoire of habits, skills, and styles. Under this assumption, it is understood that the sociocultural environment influences the rules around how households manage food. The sociocultural environment of immigrant households' food practices has been discussed in length in the section above.

At the macro scale, the political environment is influenced by regulations and policy. Past research indicated that the political environment guides rules and regulations such as government priorities, funding decisions, and planning policies that influence healthy eating and physical activity levels (Dean & Elliot, 2011). Despite the scarcity of research investigating the political determinants of the food environment at the macroenvironmental scale, there is growing recognition in research of the politics of food security and its impact on health (e.g. Collins, Power, & Little, 2014; Gorton, et al., 2009; Tarasuk & Davis, 1996). Such recognition is perhaps due to the growing food insecurity in developed countries such as Canada (McIntyre, 2004; Tarasuk, 2004), despite the establishment of community food programs like food banks.

Research based in Canada has indicated that reforms of the welfare system that accompanied economic changes in the late 1980's and early 1990's had a significant negative impact on efforts to reduce food insecurity among the vulnerable poor (Tarasuk & Davis, 1996). Specific changes included an increase in unemployment and poverty, worsened by the erosion of social programs such as the provision of income support to those in need (Tarasuk & Davis, 1996). Since the mid 1990's, the provision of social programs to thwart food insecurity became the responsibility of municipal governments, which to-date have been unable to establish sustainable and effective policies or programs to reduce food insecurity (Collins, et al., 2014). Instead, a number of ad-hoc, community-based initiatives such as food assistance programs were established. These programs are now known to be ineffective methods to reduce food insecurity (McIntyre, 2004).

More recent research indicates that programs to reduce food insecurity in Canada are now being focused on municipal-level food-based initiatives primarily in the form of the charitable, household improvements, and community food system models (Collins et al., 2014). Under these models, the current approaches to reduce food insecurity include food banks, community kitchens and community gardens, and partnerships between municipal governments, food activists, and local service providers via local food policy councils and food charters. Whereas Collins and colleagues (2014) recognize certain benefits from these programs, such as more dignified ways to obtain food, these programs do not address the root of food insecurity—income security. However, the authors conclude that among the models utilized, the community food systems model (e.g. local food policy councils) offers the most potential to reduce food insecurity at the municipal level. However, not enough research exists in Canada to understand how the community food system model may help reduce food insecurity (Collins et al., 2014). Additionally, the authors note that most of the research on community food initiatives has been focused on large urban centres like Toronto, and less research exists on smaller municipalities. This is a gap in research since larger urban centres have more resources to address food insecurity than smaller urban centres (Collins et al., 2014).

Planning regulation also has an impact on the food environment. Food environment planning plays a major role in, among other things, bridging tensions between stakeholders (Campbell, 2004). The role of planners in regulating the food environment, however, is not without criticism. The belief among public health experts is that the food environment tends to discourage healthy food consumption (Toronto Public Health, 2014). Others argue that this problem is particularly critical in low-income communities whereby poor land use planning has resulted in issues such as unequal access to healthy food for some neighborhoods (Feldstein, 2007). Research suggests there is an absence of a holistic framework with which planners can help structure the food environment in a way that promotes food security for the population (Larsen & Gilliland, 2008; Gorton, et al., 2009).

Although in its beginnings planning incorporated the entire food system including food production, processing, distribution, consumption, and waste management into the development of cities, there is scarce literature about food systems in planning (Pothukuchi & Kaufman, 2000). However, scholars argue that currently there is an increased attention to the food system from planning (Mendes & Nasr, 2011). Other scholars argue that planners have devoted much attention in recent years to identifying the physical design aspects of built environments in relation to health (i.e., walkability), while critical dimensions of food environments have not received the same degree of attention (Larsen & Gilliland, 2008). Reasons for the lack of attention to the food environment reveal the complex milieu in which planners work. In their study of 22 planning agencies in the US, Pothukuchi and Kayfman (2000) found that planners had very little involvement in community food security, citing reasons such as the food environment not being under their realm, lacking funds to focus on issues at the food environment level, and believing that market forces dominate the food environment. The latter sentiment that the food environment is dominated by large corporations is supported elsewhere in the literature (Pothukuchi, 2004).

2.5.4 Physical Environment

Physical determinants of the food environment have been highlighted in the literature at all scales

of the food environment. At the macro scale, the physical food environment influences the food choices of individuals; at the micro scale, it influences food preparation and intake (Sobal & Wansink, 2007). At the micro scale the physical food environment includes small food spaces such as the kitchen and the dinner table. The kitchen is a significant factor in food preparation and consumption practices of immigrants because it determines what food is available and what methods of food preparation can be performed (Sobal & Wansink, 2007). The table, in turn, is an important component of the household food environment that provides a space for food consumption (Sobal & Wansink, 2007).

At the larger household scale, literature indicates the size of households as important factors because they often facilitate the storage of large quantities of food (Heflin, Corcoran, & Siefert, 2007). Purchasing food in large quantities is an economic facilitator for families because it tends to be cost-effective (Ross & Geil, 2010) and it allows households to store food in case of emergency (Dean, Sharkey, Johnson, & St John, 2012). In addition to the size of households, household infrastructure is also important. A study by Dean and colleagues (2012) of a neighborhood of Mexican immigrants in the US indicated that the physical infrastructure of households indirectly and directly influenced the food security of this population. Household infrastructure influences food security indirectly through the encouragement of social networks, which are known to improve food security (Uphoff et al., 2013). Families in this study indicated that they engage in social activities in their home through social gatherings outdoors like barbecues. Household infrastructure also impacts food security directly. In times of economic crises, these families struggled in food preparation due to a lack of lightening, air conditioning, or insulated walls (Dean et al., 2012). The findings indicated the intersection between different determinants of the food environment, particularly how physical and social aspects of the environment interact to enhance or deteriorate food security. Adequate space for food preparation is also a main physical determinant of the household food environment. Specifically, studies indicate that immigrants with low economic resources utilize creative means to accommodate their household food needs; for example, immigrant Mexican families who cannot afford to pay for gas cook their food

outdoors in an open fire (Dean et al., 2012). The circumstances of these families may be unique since they live in a predominantly low income neighborhood. Nevertheless, these findings highlight the relevance of human agency over material hardships within the structural environment, and how the physical environment is utilized by individuals to remain resilient to food insecurity.

Much research has been focused on determinants of the food environment at the neighborhood level. As previously discussed, the literature has identified community-based resources like collective kitchens and community gardens that can be incorporated in the physical food environment to address food insecurity (Engler-Stringer & Berenbaum, 2005; Gorton et al., 2009). Community kitchens are described in research as “the pooling of resources and labour to produce large quantities of food” (Tarasuk & Reynolds, 1999, p. 13). Although in essence collective kitchens are community food programs, they exist in public spaces at the neighborhood or community level. A recent Canadian review of collective kitchens in Canada revealed that collective kitchens exist all over Canada, with more than 1,300 kitchens in Quebec alone (Engler-Stringer & Berenbaum, 2005). According to the authors, collective kitchens offer multiple benefits, namely they improve food security by helping participants save money, they increase food resources, and are less stigmatizing than food banks. Community gardens have also been reviewed in past literature. A study in the Region of Waterloo about the impact of community gardens concluded that they are a valuable, inclusive, and inexpensive way to supporting the health of the community by providing physical spaces for interaction and access to food (Miedema et al., 2013).

The location of food outlets is one important physical aspect of the food environment at the neighborhood level (Nord, 2014). Past research has indicated that advantaged neighborhoods have better geographical access to high quality and healthy food over disadvantaged neighborhoods (Ball, Timperio, & Crawford, 2009). In Canada, food deserts—areas that have poor access to healthy and affordable food (Beaulac, Kristjansson, & Cummins, 2009)—have been recognized as an issue in demographically dispersed cities like London, ON. In these types of cities access to healthy and affordable food has

decreased in the core, particularly in low socioeconomic neighborhoods (Larsen & Gilliland, 2008). Other research based in Canada confirms that there is a lower availability of produce in stores located in low-income neighborhoods, although the cost of food in low-income neighborhoods does not appear to be higher than the cost of food in high-income neighborhoods (Latham & Moffat, 2007).

Researchers in the Region of Waterloo measured the proximity of retail food outlets in relation to participants' residences, the quality of vegetables and fruits for sale, and the relative availability and affordability of healthy versus unhealthy food and beverages (Minaker, Raine, Wild, Nykiforuk, Thompson, & Frank, 2013). To measure the eating habits of participants, they were asked to record their diet over a two-day period. The most striking findings were the wide availability and affordability of unhealthy food in the Region that is associated with a poor diet quality among residents. The findings also indicated women's proximity to a convenience store predicted an increase in their body weight (Minaker et al., 2013). Thus this research indicates the existence of both food deserts and *food swamps* in the Region. Food swamps are defined as areas of communities or neighborhoods that have an overwhelming access to unhealthy food (Rose, Bodor, Swalm, Rice, Farley, & Hutchinson, 2009). Indeed, research indicates that ethnic minorities and low income populations are more likely to reside in areas that are defined as food deserts or food swamps (Block, Scribner, & DeSalvo, 2004). This evidence suggests the need to examine not only the cost of food, but also the quality and variety of food that is available in neighborhoods. This is particularly relevant for populations that have unique dietary needs, like immigrants (Latham & Moffat, 2007; Grabovschi, Loignon, & Fortin, 2013).

At the macroenvironmental scale, factors such as the agricultural system and access to transportation are important physical determinants of the food environment. A community's local agriculture is important because it provides a community with a diverse availability of food such as small-scale and start-up farms that make communities self-reliant (Hamm, 2009). Additionally, local agriculture encourages a direct connection between communities and the food supply, which makes people aware of the importance of the food environment (Hamm, 2009). Transportation is key to the food environment, as

it provides access to local food resources. A lack of transportation has been found in past research to have a negative impact on food security (Quandt , Shoaf, Tapia, Hernandez-Pelletier, Clark, & Arcury, 2006; Chaufan et al., 2012). Lack of access to transportation impacts low-income populations, particularly those populations that do not have access to a private vehicle. Limited access to transportation also affects older adults who are unable to drive to obtain food (Radermacher, Feldman, & Bird, 2010).

2.6 Conclusion

Past research has explored the systemic determinants of food insecurity in some detail, which indicates the importance of taking a systems-based approach to understanding food insecurity. This chapter presented research of the food security and health of immigrant populations, and the potential impact of the food environment on these, as well as existing gaps in the literature. It provided context for understanding the vulnerability of immigrants to food insecurity, suggesting that immigrant populations have unique needs and deal with unique barriers. In lieu of food environment research specific to immigrants in Canada, the literature review provided a discussion of how immigrants are likely to engage with the food environment. This literature is based on research of the pre- and post-immigration experience. The literature review then discussed the importance of the food environment for food security, with direct discussion of immigrants where research exists. The literature indicated that how people navigate their food environment is contingent on a number of variables at the individual and environmental levels. At the individual level, research on the food habits of immigrants is focused on immigrant acculturation, however this literature review identified structural variables that appear to need further research, particularly in their interrelation with individual variables (Viruell-Fuentes, 2007). Previous research suggests the influence of multiple, compounding factors on the food security of immigrants, such as income (Vahabi & Damba, 2013), lack of employment opportunities (Dean & Wilson, 2008), and housing affordability (Teixeira, 2009). This research also reveals some of the assets that these populations have, like maintaining their traditional ethnic food (Chapman & Beagan, 2013) and having strong social networks (Uphoff et al., 2013).

The literature review identified the following gaps in research:

- i) Understanding how immigrants cope with barriers to food security is important. Whereas much research in the literature has focused on perceived barriers to food security (e.g. Vahabi & Damba, 2013), research on the facilitators of food security for immigrants is scarce.
- ii) Most Canadian literature is focused on the food security of immigrants and refugees living in large cities like Toronto, and less focus has been placed on studying food security in mid-sized cities at the regional level (Collins et al., 2014).
- iii) Aforementioned is the lack of research of how immigrant populations engage with the food environment in Canada, particularly in smaller municipalities (Health Canada, 2013).
- iv) Objective measures of the food environment are said to oversimplify its meaning, and individual perceptions of how the food environment operates provide clarity to said measurement tools (Minaker et al., 2013).
- v) There is limited research focused on the health determinants of immigrants, and thus the need to study immigrant populations as distinct groups from non-immigrants (Wang & Hu, 2013).
- vi) There is a lack of a comprehensive framework for planning research and practice to understand food environments in their integration with individual characteristics, given the relatively new area of research of food environments (Health Canada, 2013). This indicates the need for a comprehensive framework that can aid in integrating the individual and environmental determinants of the food environment.

Chapter 3 – Research Methods

3.1 Introduction

An exploratory case study on the role that the food environment plays in shaping immigrant health was conducted. Additionally, the barriers and assets that immigrants have when navigating the food environment were examined. The methods include in-depth interviews with key informants and immigrants living in the Region of Waterloo complemented by a participatory action research method called photovoice. The research methods answer the main research question of *how do immigrants engage with the local food environment in the Region of Waterloo?* The subquestions are the following:

- What are the individual and environmental determinants of how immigrants living in the Region of Waterloo navigate the food environment?
- What is the perceived relationship between the food environment and the health of immigrants among immigrants and service providers?
- How can the food environment be improved to target food insecurity among immigrant populations?

This chapter is divided into five sections that discuss each stage in the research process. The first section describes the research setting. The next section discusses the research design, including details of the study methodology, epistemology, and fieldwork methods. The third section describes the study participants and the procedures used during data collection. The fourth section discusses procedures for data analysis. The last section describes the procedures used for ensuring rigour in the research process.

3.2 Research Setting

The Region of Waterloo is a mid-sized urban municipality located in Southwestern Ontario, and it includes the three cities of Cambridge, Kitchener, and Waterloo, and the townships of North Dumfries, Wellesley, Wilmot, and Woolwich. Growth in the Region of Waterloo is managed by rules for land use planning stated in the Planning Act, which is a provincial document that provides a legal basis for setting the ground rules in Ontario around the use and control of land (Ontario Ministry of Municipal Affairs and

Housing, 2013). The Planning Act is reviewed by provincial representatives for, among other objectives, the promotion of “sustainable economic development in a healthy natural environment within a provincial policy framework” (Government of Ontario, 2015, Section 1.1). Under the Planning Act, the Provincial Policy Statement (PPS) is issued by the Minister of Municipal Affairs and Housing to provide policy direction to municipalities in matters of land use planning and development (Ontario Ministry of Municipal Affairs and Housing, 2013). The PPS, last updated in April of 2014, establishes the mandates required for municipalities, including the preparation of an official plan and the regulation of land uses through zoning by-laws, among other needs. The PPS recognizes and attempts to integrate the complex interrelationships of environmental, economic, and social determinants relevant to land use planning (Ministry of Municipal Affairs and Housing, 2014). Complementing the PPS is the Regional Official Plan (ROP), the Regional Municipality of Waterloo’s guiding document for directing growth over the long term, which contains “goals, objectives and policies to manage and direct physical (land use) change and its effects on the cultural, social, economic and natural environment within the regional community” (Region of Waterloo, 2010, p. 3).

Surrounded by rich agricultural land and a unique farming community, the Region of Waterloo is recognized for its long-standing connection to its agricultural history. The Mennonite community, well known in the Region for its traditional farming practices, provides the Region with a unique combination of farmers and farmland that is one of a kind in Ontario. The importance of agriculture for the Region of Waterloo is also indicated by the amount of land classified as farmland, over 65 per cent in 2006, although the number of farms has declined by 12 per cent over the last two decades (Region of Waterloo, 2011). The presence of three permanent farmers markets and over sixty community gardens, among other initiatives, illustrates the interest among key decision-makers in the Region to preserve such rich agricultural culture.

The Region has a diverse population in terms of income, ethnicity, and migration status (Region of Waterloo, 2011). Despite the net interprovincial migration loss seen in the last years in Ontario, the Region of Waterloo continues to experience immigrant population gains. At the provincial level, Ontario

has experienced a spike in people leaving the province for other provinces (mainly Alberta and British Columbia) since 2003/2004 (Statistics Canada, 2014). The Region of Waterloo, however, has one of the fastest growing populations in Ontario, with an expected population growth from 543,000 in 2014 to 729,000 in 2031 (Region of Waterloo, 2011). There has been an increase of up to 20% of immigrants living in the Region of Waterloo (Region of Waterloo Public Health, 2009).

Immigration has contributed to approximately one fifth of population growth in the Region. Between 2001 and 2006, approximately 17,000 people immigrated to the Region of Waterloo, and as of 2009, immigrants accounted for 22.3% of the population with about 105,375 immigrants reported in the 2006 Census. The Region of Waterloo also reports the presence of 0.9% of non-permanent residents—people who are from another country living with Study or Work Permit status or with refugee claimant status (Region of Waterloo Public Health, 2009). The demographic make up of immigrants in the Region mirrors that of the national average in that the main places of origin of immigrants are Southern Europe, Eastern Europe, and Asia. The geographic origins of more recent immigrants, those immigrants who arrived from 2001 to 2006, are India, China, Pakistan, Romania, and the United States of America (Region of Waterloo Public Health, 2009).

The population of immigrants in the Region is distributed mainly in the urban municipalities of Kitchener, Waterloo, and Cambridge making the Kitchener Census Metropolitan Area (CMA) the seventh largest location of immigrants in Canada. Approximately 26.4, 22.7, and 21.1 per cent of immigrants were residents of Kitchener, Waterloo, and Cambridge, respectively, in 2006 (Region of Waterloo, 2011). Among immigrants living in the Kitchener CMA, the most recent immigrants accounted for 4.6% of the total population (Region of Waterloo Public Health, 2009). Thus the geographic focus of the study is the Kitchener CMA (Figure 2).

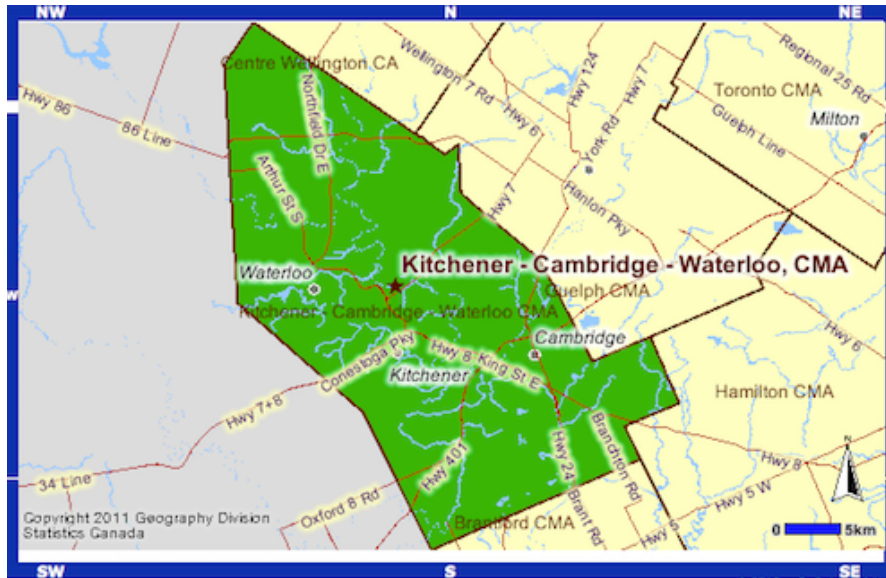


Figure 2 Kitchener Census Metropolitan Area (Statistics Canada, 2015)

The demographic characteristics of immigrants living in the CMA of Kitchener, Cambridge, and Waterloo are summarized in Table 1.

Table 1 Kitchener CMA Demographic Characteristics (2005)

	Kitchener – Cambridge – Waterloo (CMA)
Total Population	
Total	451,235
Female	50.8%
Male	49.2%
Age	
0-14	18.1%
15-64%	69.4%
65 and over	12.5%
Immigrant Population	
Citizenship Status	
Immigrant population (landed immigrants)	20.34%
Non-permanent residents (work/study permit, refugee claimants, family members of residents in	0.74%

Canada)	
Age at immigration	
Under 5 years	2.24%
5 to 14 years	21.28%
15 to 24 years	23.89%
25 to 44 years	42.97%
45 years +	7.02%
Language	
Mother tongue non-official	15.68%
Social Status	
Married	65.45%
Single	18.07%
Divorced	6.07%
Separated	3.53%
Widowed	6.87%
Living alone	9.23%
Education	
High school or equivalent	25%
Apprenticeship or trades certificate or diploma	10.07%
College, CEGEP or other non-university certificate or diploma	16.59%
University certificate, diploma or degree at bachelor's level or above	20.87%
Employment	
Unemployed	37.52%
Full time employment (Average income)	36.18% (\$50,811)
Part time employment (Average income)	26.30% (\$24,299)

Source: (Statistics Canada, 2006)

3.2.1 The Region of Waterloo Food Environment

In the Region of Waterloo there is a decline in healthy activities among citizens including a decline in physical activity and healthy eating. Further, the rates of chronic disease have increased particularly for diabetes, asthma and high blood pressure by 1.4 per cent, 0.8 per cent and 2.6 per cent

respectively (Region of Waterloo, 2011). Data specific to immigrants in the Region of Waterloo indicate that immigrants are more likely to report high blood pressure than non-immigrants but report similar rates of heart disease to non-immigrants (Region of Waterloo Public Health, 2010). Further, immigrants show similar rates of obesity and being overweight when compared to non-immigrants, and national data show that long-term immigrants are more likely to be overweight (Region of Waterloo Public Health, 2010).

Given data indicating relatively poor health outcomes among immigrants as well as the general population, there is a wide acknowledgment within the Region that there are large shortcomings to be addressed. For example, in the past the Region of Waterloo has pushed for local food purchasing among citizens through initiatives such as mapping farmers' markets in the Region (Region of Waterloo Public Health, 2005). However, there are no indications that this effort is recognizing the importance of the local food environment in shaping health, despite this being a public health initiative. Rather, public health efforts have emphasized the importance of reducing the overall carbon footprint from transporting food and supporting the local economy (e.g. see Region of Waterloo, 2004). Recently, the Region seems to be recognizing the importance of the health impact of the food environment, perhaps as a response to the decline in healthy eating and the rise of chronic disease (Regional Municipality of Waterloo, 2014).

Within the Region of Waterloo, the Health of Immigrants Report (2010) suggests that issues such as poverty and housing have an impact on health. Other local reports indicate that poverty is the main contributor to poor health (Region of Waterloo, 2011). In Waterloo Region, 37 per cent of households where at least one member immigrated between 2001 and 2006 spent more than 30 per cent of their income on housing costs. Over time, this number decreased to 33 per cent of households with at least one immigrant spending more than 30 per cent of their income on housing (Region of Waterloo Public Health, 2010). These trends may get worst over the long term, as shown by market trends that there is very little housing being built for low and middle income earners (Region of Waterloo, 2011).

In addition, data in the Region of Waterloo suggest a lack of employment opportunities for immigrants that might be related in part to substantial economic changes that the Region has experienced in the last decades. One of the most significant changes is the economic shift from manufacturing to a

service-based economy. Whereas manufacturing jobs now total 40,000, down 10,000 from 1987, the service industry now accounts for the majority of available jobs. These jobs are characterized as offering low wages, fewer benefits, and being part-time (Region of Waterloo, 2011). The recession of 2008 led to a period of unemployment, which has been slowly declining since 2010. The current poverty rate in the Region is 10%.

Among recent immigrants, approximately 33.5% were reported to be living under the low income cut off in 2005 and their incomes have been decreasing compared to the incomes of those who are Canadian-born and longer-term immigrants (Region of Waterloo, 2011). Trends show specifically that the moderate number of immigrants living under the low income cut off may be a reflection of poverty among recent immigrants. Such a gap in income between recent immigrants and non-immigrants decreases over time but it still does not reach comparable numbers (Region of Waterloo, 2011).

Considering the well-documented connection between health and income, it is no surprise that the Region spends 33% of health care costs on preventable chronic conditions (Region of Waterloo, 2011). Initiatives by the Region of Waterloo to curbe unhealthy eating have arisen, possibly from an acknowledgement that we need changes in the food system. From the planning perspective there are initiatives to provide healthier food options for residents, however these are yet to be implemented. For instance in the ROP there is support for a food system model that is diverse, provides healthier food choices, and supports local farming. To achieve this model the Region lists policies that include supporting an environmentally sustainable and economically viable regional food system (section 3.F.6), providing a mix of local and healthy food destinations (section 3.F.1.c), supporting community gardens (section 3.F.4), and supporting temporary fresh markets (section 3.F.2; Region of Waterloo, 2010). These policies seem to be slowly opening doors for small-scale food businesses that can help increase food security in the Region. An example of this can be seen in Kitchener where city staff are proposing an expansion of the areas where food trucks can park (CBC, 2014). The Region is also updating bylaws that are currently obstacles for community gardens and temporary markets, and in 2009 it adopted a local Food Charter (Long, 2013). How these policies are translated into practice, specifically in targeting the

food security of immigrants is unclear. Hence there is a need for research that furthers knowledge on the food environment for immigrants from a planning perspective (Pothukuchi & Kaufman, 2000).

3.3 Research Design

3.3.1 Study Design

The study relied on qualitative data methods because they provide a deep and contextual comprehension of the experience of individuals and communities (Brown, 2003). On qualitative data, Patton (2002) posits that they “take us, as readers, into the time and place of the observation so that we know what it was like to have been there. They capture and communicate someone else’s experience of the world in his or her own words” (pg. 47). The benefits that qualitative data provide are aligned with the study’s objective of providing a valuable insight into the nature of the food environment in the Region of Waterloo as perceived by immigrants.

A valuable aspect of conducting qualitative research is the opportunity for flexibility when interpreting emerging data (Patton, 2002). Qualitative inquiry provides the flexibility to detect unrecognized patterns and themes that may not have been accurately represented in past research through other types of inquiry. Through qualitative methods of research, a more complete picture of food insecurity can be gauged to establish new perspectives to be examined through quantitative data (Gundersen & Ziliak, 2014). A qualitative exploration guided this study to issues that are important to examine in their context while also allowing for an introspective examination of personal assumptions and biases (Creswell, 2014). This is an important role of researchers, considering the level of personal and ethical involvement of the researcher in almost any methodology that is followed (Creswell, 2014).

Similar claims can be made of the contribution of qualitative research to the field of planning. Considering the inherent influence of social life in planning, it is no surprise that qualitative methods are useful in the different stages of the planning process. For instance, qualitative research contributes to the process of public participation in planning through techniques like scenario planning (Gaber, 1994), and in planning proposals whereby the stakeholders’ input is presented and evaluated for the development of a

community's goals (Wang & vom Hofe, 2007). Also important is the planner's understanding of the complexity of the features of his or her community. As Wang and vom Hofe (2007) note:

Planning professionals can affect the future of a community with their abilities to understand the history of the community, to respond to the forces of growth, and to anticipate the future of the social, environmental, and cultural aspects of a community. We cannot develop a plan for an area before we understand it (pg. 2).

Such approach to planning has the potential of reducing the impact of modernist planning in thinking that "one-size fits all" that is readily abundant in decision-making (Fischer, 2003). In this way, qualitative inquiry in planning allows for creativity among planners for developing unconventional ideas that can help solve complex problems (Lugo, 2012).

Qualitative inquiry is also valuable to place the nuances of the immigrant experience into context. Qualitative methods are useful for understanding the diversity of individuals and their social environment and to empower the marginalized by giving them a "voice" (Trickett, 1996). Further, qualitative inquiry provides insight into misconceptions about marginalized populations that arise from quantitative analysis (Stein & Mankowski, 2004). In the past, it has been argued that research specific to the association between health and migration has historically been relegated to quantitative methods of research such as in the field of epidemiology. This gap in in-depth, contextualized research of the experience of immigrants and their health could be addressed with more qualitative methods of research (Elliot & Gillie, 1998).

3.3.2 Epistemology

To consider how we know what we know is important ahead of engaging in the research process (Berbary, 2014). This is because the research process evolves depending on the epistemological stance of the researcher often regardless of his or her awareness. The research is directed both by the understandings of the world of those being researched and of the researchers themselves. It is from these perspectives that qualitative interpretations are formed. According to Creswell (2014), the researcher's

worldview or epistemological position generally develops from disciplinary orientations, inclinations, and past experiences. Additionally, the beliefs of the researcher will lead to a particular methodological approach to the research (Creswell, 2014). Thus a discussion of the epistemology and theories that influenced this research is particularly suiting to help the reader better grasp the rationality behind the research design.

This study arose out of personal curiosity about the world and of the ways in which systems work and influence the livelihood of communities and people. This means understanding why and how things work in the way they do and why and how people respond to systems in place. Accordingly, the epistemology that guided the study is one of understanding the subjective reality of the participants, from their perspective. Such epistemology, often termed “constructionism”, arises from the quest to construct meaning with the acknowledgment that multiple realities exist (Berbary, 2014). Said multiplicity of ideas or perspectives of realities can be gleaned from the reliance on the participants’ views of the issue at hand (Creswell, 2014).

However, this study did not develop from a position of complete neutrality on the topic. The personal experience of immigration to Canada is what made me gravitate towards this particular topic of research. Thus, personal biases and expectations were confronted throughout the research process. These expectations were sometimes fulfilled, and other times they were disconfirmed in the field. Having a personal stake in the topic was beneficial in providing a unique insight into the research topic of experiencing immigration, and also facilitated relationships of trust with the immigrant participants and with the organizations that serve them.

The study was informed by two theoretical positions. The research design was partially influenced by contemporary intellectual theories of post-modernism and phenomenology. Post-modern theory posits that there is no absolute truth in social research. Rather, post-modernism celebrates the existence and importance of a diversity of perspectives. Post-modern thought has been particularly influential in social research and particularly the planning profession. In the planning field, post-modernism is a rejection of the modern ideals of mass-consumption and the reliance on the experts

“expertise” (Beauregard, 1991). New currents in planning long for the acknowledgment that often experts are not those reaching from their ivory towers but they are those whose livelihood is the subject of planning or study.

The tenets of phenomenology were also critical to the development of this research due to phenomenology’s close association with the fields of psychology and philosophy, and with the study of culture. Knowledge of these fields was instrumental in understanding the experiences of how individuals engage and adapt to new cultural environments. Phenomenology emerged from the fields of psychology and philosophy from the quest to understand the lived experience of individuals in certain contexts (Creswell, 2014). According to Creswell (2014) “...this description culminates in the essence of the experiences for several individuals who have all experienced this phenomenon” (pg. 14). Phenomenology was used in this study by interpreting the perceptions of the immigrant participants and key informants in the context of their past and current experiences. In regards to immigrant participants particularly, responses emphasized their cultural background and how this influences their behavior today.

3.3.3 Methodology

The qualitative case study was the methodological basis of this study. Multiple definitions of the case study methodology abound, although generally the case study is a comprehensive research strategy, defined by three main characteristics: a) to study a phenomenon in its real life context, b) to understand the complexity of issues around the phenomenon, and c) to conduct an in-depth exploration of multiple perspectives (Simons, 2009).

The qualitative case study methodology is particularly appropriate because it aligns with the goals of this study. First, the study aims to examine the experience of immigrants in navigating the food environment in their “real-life” context—this answers the main question: *How do immigrants engage with the food environment in the Region of Waterloo?* The qualitative case study methodology is most appropriate for answering the main research question as it provides an opportunity to study human

behavior occurring in the natural environment of the events and systems that influence this behaviour (Feagin, Orum, & Sjoberg, 1991). This aligns with the theoretical framework utilized in the study, in placing individual characteristics in the wider framework of the food environment understood through the ANGELO framework.

Second, the case study methodology supports the study's goal of exploring the complexity of the food environment, by examining its individual and environmental determinants—thus answering the research sub-question: *What are the individual and environmental determinants of the engagement of immigrants with the food environment?* Since this study is focused on the complex interrelation between individual factors and environmental determinants, the case study is important for understanding the contextual conditions that are relevant to the phenomenon under study (Baxter & Jack, 2008). According to Baxter and Jack (2008), case studies should be considered when the focus of the study is to answer how and why questions—that is, when the study is developed to shed light on the structure and nature of a phenomenon. As Thomas (2011) explains, the focus of inquiry when conducting a case study is to disintagle the interaction of many factors.

Third, this methodology allows an examination of multiple perspectives and how these are embedded in the intricacies of the food environment. The case study "... allows the researcher to explore individuals or organizations, simple through complex interventions, relationships, communities, or programs and supports the deconstruction and the subsequent reconstruction of various phenomena" (Baxter & Jack, 2008, p. 544). Such an approach helped to identify and examine the diversity of perspectives of immigrants and key informants from various backgrounds and experiences. In this way, the relationship between aspects at the individual and the environmental levels was examined. Such exploration aided primarily in answering the research sub-question: *What is the perceived relationship between engagement with the local food environment and the health of immigrants?*

Establishing dimensions or boundaries of the case were critical for the feasibility of this study (Thomas, 2011). The *spatial* boundary of the study is the food environment in the Region of Waterloo.

This is the subject of the study, the case itself. The object of the study—the analytical frame— is the determinants of the way in which immigrant populations operate within the food environment. These determinants are identified through the themes that emerge from the perspectives and insights on how and immigrants navigate the environment. The type of case study developed is an atheoretical/ideographic case or also known as instrumental case study as outlined by Thomas (2011). The study is atheoretical/instrumental because the purpose is to examine and illustrate the nature of the food environment and of those experiencing it.

3.4 Fieldwork Methods

The study utilized a mixed-methods approach combining in-depth interviews, key informant interviews, and photovoice. This section discusses each fieldwork method and its relevance for the study.

3.4.1 In-depth Interviews

Interviews are suitable for this study as they are an effective medium for participants to communicate ideas and for researchers to understand them. This is because interviews allow researchers to understand the participants' perspectives at a deeper level, something that cannot easily be measured or understood by merely observing individuals or through survey-type data collection methods (Patton, 2002). In this way, the interview method provides participants with a personal space to discuss their thoughts on various experiences that may have been too sensitive to discuss through other methods (Patton, 2002). As per Creswell “the more open-ended the questioning, the better, as the researcher listens carefully to what people say or do in their life settings” (pg. 8). This method allowed asking open and in-depth questions to participants, which encouraged participants to express their own construction of their reality and meaning of a situation.

The goal for the in-depth interview was to encourage naturally emergent themes while still maintaining a broad focus on the issue of interest. Thus the interview was structured including main questions, follow-up questions, and probes prepared to elicit depth and detail during the interview (Rubin & Rubin, 2005). For this a semi-structured interview format was used, which allowed to design the

wording and sequence of questions in advance (Patton, 2002). The semi-structured interview format also ensured that all interviewees were asked the same questions in the same or similar order (Patton, 2002), although these were not always strictly followed to allow issues of concern to participants to emerge. This means that if a participant engaged in a particular topic, they were allowed to continue, and follow-up prompts were used to elicit conversation. The semi-structured interview method has been used successfully in various qualitative studies of the health of immigrant populations (Dean & Wilson, 2010; Dyck & Dossa, 2007; Elliot & Gillie, 1998).

The semi-structured interview was divided into three general themes (Appendix B). The first thematic area focused on the background of the participants. This theme included questions such as their reasons for immigrating to Canada and specifically to the Region of Waterloo, their experience of navigating a new culture, and how the experience of being an immigrant in Canada has changed over time. The second theme pertained to the immigrants' perceived health and their nutrition. This included questions such as the meaning that immigrants ascribed to the concept of health and how they saw their health to be related to their diet. The last theme was focused on the barriers and facilitators of food security for the immigrants. Participants were asked about their experience navigating the food environment in the Region of Waterloo. The food environment was defined for participants as anything in their environment that influenced their eating habits. They were given examples such as their local grocery stores and their households as food environments.

3.4.2 Key Informant Interviews

Key informants facilitated insight into the issues that were not possible to directly experience or observe. Key informants, says Patton (2002) are “people who are particularly knowledgeable about the inquiry setting and articulate about their knowledge” (pg. 321). The use of key informants was particularly valuable by providing a broader perspective to understanding the food environment. These perspectives were also useful to put the immigrant perspectives into context. Key informants were individuals from the community who are well aware of the current context of food security, health, and/or

immigrants in the Region of Waterloo. Their roles in the community are community service providers for immigrants and for the general population in the areas identified above.

The key informant interview format was semi-structured and it followed themes similar to those in the immigrant interviews (see Appendices C and D). Three themes were emphasized in interviews. The first theme was the background of key informants, including their work experience, expertise, and the length of their work in the Region of Waterloo. The second theme was the state of immigrants living in the Region of Waterloo. As anticipated, answers varied depending on the work experience of each key informant. Namely, key informants whose work involved direct interaction with immigrants and refugees had extensive expertise on the topic of immigrants. Other key informants also had some knowledge although to a lesser degree. The third theme was the state of food security in the Region of Waterloo. Within this theme, participants were asked about the determinants of food security in the food environment in the Region, and about the food security of immigrants specifically.

3.4.3 Photovoice

Photovoice was used to complement in-depth interviews with immigrants and key informants (Carson, Engebretson, & Chamberlain, 2006). Photovoice is a participatory method that uses participant-taken photographs to communicate the connection between lived experience in the environment through a combination of narrative and visual means (Jurkowski & Paul-Ward, 2007). As such, photovoice is traditionally used in public health to understand problems and find solutions that meet the health needs of people (Carson et al., 2006). To capture the perspectives of participants they were asked to take photographs of their food environment; the specific prompt used was to photograph *healthy food places* and *unhealthy food places* to reflect their perspectives of the food environment in association with their health. During the photo-elicited interview the SHOWed method developed by Wang and colleagues (1998) was used. The SHOWed method asks participants the questions: What do you see here? What's really happening here? How does this relate to our lives? Why does this problem or this strength exist? What can we do about it? By framing their stories in this way, participants identified and discussed the

problem or strength if any was identified. The goal was to encourage participants to envision tools or strategies for altering whatever issues that emerged (Wang, Yi, Tao, & Carovano, 1998).

Photovoice is employed to level-off power dynamics among researchers and participants through a deeper level of involvement from participants in the study (Wang & Burris, 1997). Overall, the goals of photovoice are to (a) engage people in active listening and dialogue, (b) create a safe environment for introspection and critical reflection, (c) move people toward action, and d) inform the broader, more powerful society to help facilitate community changes (Carson et al., 2006). The photovoice method provides participants with the space and tools to develop skills of critical reflection. It is thought that this method encourages participants to progress from accepting their fate and the status quo as a result of feelings of inferiority, to examining their choices to either maintain or change their reality (Carson et al., 2006). In this way, participants can benefit at various stages of the research by contributing to healthy and effective change, and by improving their overall status (Wang et al., 1998).

Photovoice proved to be useful in this study because it helped to engage participants who may not be very proficient in the English language, as has been done in previous research of immigrant populations (Streng et al., 2004; Wang & Burris, 1994). Beyond being engaged, these participants were potentially empowered by being able to express their own perspective through an accessible means. Photovoice served to encourage participants to engage in meaningful dialogue through the discussion of the process and the outcomes of image making. The photographs helped to clarify ideas that emerged during the initial in-depth interview by asking participants more direct questions about their perspectives.

There were limitations to using photovoice, in particular in regards to the prompt used. These are discussed in Chapter 5. Participants also provided input of their experience using photovoice. One participant indicated that he ‘just wanted to get the activity done’, and three participants indicated that they enjoyed the experience. One reported, “there was a gathering where these photos were taken and we were having fun taking the photos” (IP3). It appears that for many of the participants the photovoice

activity became a communal experience, whereby they shared what they were doing with friends and family. Although admittedly the fact that they were taking photographs with the assistance of others may have biased the results, the joint experience appears to have been positive overall. Additionally, two participants commented on how engaging in photovoice made them reconsider their food choices: “I also enjoyed this, it made me think ‘what am I taking’ otherwise we would keep on doing what we used to do, but because of your process, I thought what's good.” (IP9) The most telling photographs are included in Chapter 4, however additional photographs can be found in Appendix E.

3.5 Data Collection and Participants

3.5.1 Data Collection

This section discussed the data collection procedures used, including sampling strategies and interview protocols.

3.5.1.1 Immigrant Participants

One study aim was to identify themes across a diverse group of participants to obtain a better sense of the relevance of each issue for immigrants. For this goal, maximum variation sampling was used because of the assumption that any common patterns that emerge across a diverse group capture the core experiences and shared dimensions of the participants (Patton, 2002). To maximize variation in the sample, specific characteristics of participants were identified in advance that were of interest, which help to construct a diverse sample. It was anticipated that a diverse sample would result from this sampling method in regards to ethnic background, age, time since arrival, and geographic location in the Region. Time since arrival was particularly crucial for the study to capture the experiences of immigrants at different points since arrival to Canada.

To recruit participants, contact was initiated in the summer of 2014 with local community organizations that serve immigrants (Appendix F). From this initial contact two gatekeepers were located from organizations in the cities of Kitchener and Waterloo. Gatekeepers are “persons who can allow or

prevent an outsider's entrance to a community" (Higgins, et al., 1996, p. 31), and they have been used in previous community-based health studies (e.g. Higgins et al, 1996; Johnson, Hayes, Ekundayo, Wheeler, & Ford, 2012). One gatekeeper was recommended by a local community organization, and the other gatekeeper was selected for this study. Both gatekeepers participated as key informants in this study.

These organizations provide a variety of services and programs tailored to immigrants. Among these services are employment services and health education workshops. The recruitment initiated through a discussion with the executive director of a local organization who recommended one of the organization's employees due to her involvement with immigrants. This gatekeeper in turn arranged meetings with the participants, in this way ensuring the privacy of the participants. Participants were also recruited through an additional gatekeeper who recommended attendance to a health education program held weekly by the organization, as well as a food distribution program offered by a local community centre. Upon being provided verbal explanation of the purpose and nature of the study, each participant was given an information letter and consent form on department letterhead (see Appendix G). A total of eight participants were recruited through this method.

In addition, snowball sampling was used to locate other potential participants who may not use community services or who are not active in the community (Patton, 2002). Snowball sampling is often used when studying immigrants, a hard-to-reach population (e.g. see Castellanos et al., 2013; Dean & Wilson, 2010; Marrow, 2012; Wang, Rosenberg, & Lo, 2008). Through this method the spouse of one of the participants was recruited. In addition, flyers were posted to recruit participants in the summer of 2014 around community services like public libraries and mainstream service providers such as community health centres. The flyers contained brief information about the study and the researchers' contact information (see Appendix H). Through this method two more participants were recruited, who initiated contact by phone, making the total number of recruited participants 11.

The interviews took place in public spaces that were convenient and safe for all parties. These spaces were public libraries in Kitchener and Waterloo as well as public cafes. The study procedure involved two in-depth interviews. During the first interview, participants were read the information letter

and the consent form out loud due to potential language barriers, as recommended by Berbarry (2014). After the participants consented to the interview, they were asked to complete a socio-demographic survey (see Appendix I). Then, the tape recorder was initiated and the interview started. On average, these interviews lasted one hour, but they ranged from 30 to 85 minutes. After the interview participants were provided with a disposable camera and were given a prompt for the photography exercise. These participants were met one week later to get the camera back to print the photos. For approximately half of the participants the gatekeeper was met for the cameras, and the other participants were met directly. Once the photos were printed, participants were contacted to schedule the follow-up interview.

During the follow-up interview a tape recorder was used and the photographs were seen. With the photographs, participants were engaged in the photo-elicited interview and were asked questions such as how the experience of taking the photographs was, how they felt about the photographs, which were their favorite and the least favorite photographs, what some photographs meant to them, and reasons why they took particular photographs. The interviews were transcribed shortly after and uploaded into NVivo 10 software for analysis, and the survey data were entered into an Excel spreadsheet to obtain descriptive statistics.

Prior to entering the field, approval to conduct the study was obtained from the University of Waterloo Research Ethics Board. Doing this ensured that appropriate ethical concerns were followed and that the procedures preserved and respected the rights of the participants, including the ethical principles of respect for persons, concern for welfare, and justice (Government of Canada, 2014). The ethical framework as per Patton (2002) was to reflect on the way the interview could impact the interviewee, and on the impacts that the interview would have on myself. This was done before and often after engaging in the interview, and these reflections were recorded and/or consulted with a research supervisor. Two key ethical considerations were using the informed consent form and asking participants to avoid taking photographs of other individuals during their photography exercise. The consent form outlines the activities that participants will be asked to complete and their rights as a participant such as the ability to

ask questions at any time during the research and of being able to terminate the study at any time by advising the researcher.

Participants received a \$25 gift card to a local food store as an honorarium for their time and participation. Providing incentives for participation in research has been recommended as a valuable strategy to enhance immigrant participation in nutrition research (Sanou et al., 2014), however not all participants participated in all states of the research, as elaborated below.

3.5.1.2 Key Informants

The key informants were recruited through purposeful sampling by selecting participants who were seen as most appropriate and knowledgeable about the research topic (Patton, 2002). This is a method of sampling that is used frequently in qualitative research (Baxter & Eyles, 1996). Snowball sampling was also used through referrals from other researchers at the University of Waterloo who were familiar with the subject of the research, and from online government sources. Upon receiving the contact information of these participants contact was initiated through email in most cases. When their email address was unavailable, potential participants were contacted through the phone. All the individuals contacted agreed to participate in the interview. The information letter and consent form (Appendix J) through email and also the printed version was brought for the in-person meeting. Each interview was conducted in the participants' place of work, as this was a familiar space for the participants, and it was often convenient. The same ethical procedures outlined in the previous section were followed.

3.5.2 Participants Characteristics

3.5.2.1 Immigrants

In total, 11 individuals were interviewed between August 2014 and December 2014. To trace how the experiences, knowledge, and health status changed over time, immigrants were interviewed who have been living in Canada for less than three years (recent immigrants), between three and ten years (mid-term immigrants), and ten years or more (long-term immigrants), as per previous research (Dean &

Wilson, 2010). The majority of participants had been immigrants or refugees in other countries prior to their arrival to Canada, and were mid-term immigrants. Participants are residents in urban and suburban areas of the Region of Waterloo in the cities of Kitchener and Waterloo. Similar to previous research of food security of immigrants (eg., Chilton, et al., 2009; Heflin et al., 2007; Vahabi & Damba, 2013), more than half of the participants in the study were female. Participants reported a wide range of ages (from 24 to 60+ years of age), and most participants were middle aged. Particularly important to the results of this study is the fact that about 35 per cent of the participants are government-sponsored refugees from Iraq. Note that all participants who disclosed their income live under the low-income cut-off. Further details on participant demographic can be found in Table 2 below. Two of the participants did not complete the follow-up interview, as they could not be reached after several attempts so their data were excluded from the analysis. One interviewee completed both interviews in a single setting and did not complete photovoice due to the practical constraints placed by the setting in which she was recruited (a local food bank).

Table 2 Socio-demographic Characteristics of Immigrant Participants

	Total
Population	
Total	9
Female	6
Male	3
Age	
29-39	3
40-49	2
50-59	1
59-69	3
Marital Status	
Married/Living with a partner	5
Separated or Divorced	2
Widowed	2

Country of Birth	
Haiti	1
Iraq	4
India	2
Lebanon	1
South Korea	1
Years Living in Canada	
0 to 3 years	4
3 to 10 years	4
10 years +	1
Highest Level of Education	
Middle School	1
High School	2
University degree	4
Post-graduate degree	1
Immigrant Class	
Family Class	2
Refugee/Humanitarian Class	4
Skilled Worker Class	3
Previous Immigration history	
Yes	8
No	2
Income	
Under \$5,000	4
\$10,000 to \$14,999	3
N/A	2
Chronic Disease N = 4	
Heart disease	2
Arthritis or other rheumatic disease	2
Diabetes	3
Other	1

3.5.2.2 Key Informants

In addition to immigrant interviews, nine key informant interviews were conducted with individuals who are well aware of the issues surrounding the food environment in the Region of Waterloo and at the national level. Key informants also included practice leaders in the field of immigration and refugee settlement services. The key informants were selected strategically to gain insights from the perspective of public health, planning, and immigrant services. Most of the participants had extensive experience and knowledge on the topics of food security and health, and had been working in the Region for approximately 15 years on average. As per recent research (Sanou et al., 2014), identifying and involving community champions like peer leaders and outreach workers helps to enhance immigrant participation in research.

3.6 Data Analysis

Due to the study being mainly exploratory, the intent was not to develop a specific theory but to examine the relationships between the determinants of food security and the health of immigrants at the individual and the environmental levels. To accomplish this, data analysis was conducted using the premises of thematic analysis, defined as the process of encoding qualitative information (Boyatzis, 1998), a “method for identifying, analyzing and reporting patterns (themes) within data” (Braun & Clarke, 2006, p. 79). Through thematic analysis, codes are developed by the researcher in the form of words or phrases to represent patterns or themes identified in the data (Boyatzis, 1998). Thematic analysis is widely used in qualitative research, although it is not often identified as such (Braun & Clarke, 2006). This method of qualitative data analysis is regarded as foundational for qualitative research due to its flexibility and richness and detailed account of data. It can be used both to describe and to interpret data (Braun & Clarke, 2006). Thematic analysis allows the combination of analysis of the meaning of the data with their particular context (Vaismoradi, Turunen, & Bondas, 2013), a major focus throughout the study.

A quantifying approach was used in some instances by referring to the prevalence of responses when developing themes (e.g. the majority of participants said that..., five of the nine participants

indicated that...), however, efforts were made to rely less on the frequency of responses and more on the underlying meaning of interview responses, as suggested by Vaismoradi and colleagues (2013). A theme “captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the dataset” (Braun & Clarke, 2006, p. 82). Naming the coded categories based on the text in data when the data did not align with any clear theoretical framework used inductive analysis. Deductive analysis was used when a directive approach was needed in testing assumptions of a previously developed framework, and when coding responses to direct questions posed during the semi-structured interview (Vaismoradi et al., 2013).

A six-step guide was followed for thematic analysis (Braun & Clarke, 2006). The first step was to get familiarized with data by transcribing all the interviews, and by reading each interview and reflecting and noting down initial ideas. These ideas were discussed with a research supervisor throughout the analysis process, iteratively. Next, the interview scripts were uploaded into software commonly used for qualitative analysis called CAQDAS; the program used was NVivo 10. This computer program was appropriate for this research as it is argued that programs like NVivo 10 simplify and speed the analysis process that is directly managed by the researcher. Computer programs like NVivo are thought to increase the rigour of the research process by allowing the researcher to make multiple comparisons between data in a relatively short period of time (Leech & Onwuegbuzie, 2011). The second stage of the process was to create generalized codes, based on an initial reading of the transcripts. For this, interesting features of the data were identified and captured with initial codes. Data were collated in relevance to each of these codes, and sometimes the same datum was coded more than once under multiple codes as suggested by Corbin and Strauss (1998; see Table 3). This occurred inductively and deductively. The third stage of the process was to create themes—in this stage groups of similar codes were gathered into a single theme. Each theme was reviewed in the fourth stage, which served to check that the coded themes worked in relation to the coded extracts. In some occasions the names of themes were changed or codes were moved under different themes where there was a better fit. This was the fifth stage of analysis, which consists of ongoing analysis to define the specifics of themes, generating clear definitions and names for these.

Writing the results of the analysis, which are in Chapter 4, was the sixth stage. During the writing process, the most telling extract examples were selected and analyzed, and these were related back to the research questions and to previous literature (Braun & Clarke, 2006).

Table 3 Data Extract with Codes

Data Extract	Code
Once the government give us good food not expire food, expired food is a big problem for families. Maybe other families eat it and don't know. We check the expiration date before we eat everything. But for vegetables it's okay, but other food you have to throw it. The budget, we don't have enough money to buy many things from stores, so we always watch our budget to buy the necessary food. (IP4)	<ol style="list-style-type: none"> 1. Our budget is too low to buy food 2. The government should give good food

3.7 Ensuring Rigour in Qualitative Research

As in quantitative research, rigor in qualitative research is achievable. In the context of qualitative research, rigour is synonymous with *evaluation*, which is the judgment of the worthiness of empirical scientific research performed through the examination of the research methodology, the methods, and the analysis, by the corroboration or refutation of research findings, and through the fit with existing literature (Baxter & Eyles, 1996). Four criteria were followed for ensuring rigour in the research process:

Credibility, or the “authentic representations of experience”, *transferability*, or the “fit within contexts outside the study location”, *dependability*, or the “minimization of idiosyncrasies in interpretation”, and *confirmability*, or the “extent to which biases, motivations, interests or perspectives of the inquirer influence interpretations” (Baxter & Eyles, 1996, pg. 512).

To achieve credibility, there must be a connection between the concepts that the researcher uses to simplify the experiences of the participants (Baxter & Eyles, 1996). This line of thinking corresponds with the post-modern argument of the existence of multiple realities and perspectives. To ensure that a broad range of perspectives and information-rich cases were obtained, the study utilized maximum

variation sampling to select a wide variety of immigrant participants, and purposeful sampling was used to select key informants who would provide rich data. Any personal biases were acknowledged upon entrance to the field, particularly in relation to personal socio-demographic characteristics of being a minority immigrant woman. In addition to these strategies to achieve credibility triangulation was used, a powerful technique of reaching convergence—this means that multiple sources provide similar findings (Baxter & Eyles, 1996). The main methods for triangulation were the use of direct quotations from different respondents, and the confirmation of findings based on multiple methods. These methods included a combination of three qualitative research methods—in-depth interviews, photovoice, and key informant interviews. Further, peer debriefing was utilized by sharing the transcriptions and codes with a research supervisor so she could indicate any misinterpretations in the data analysis.

Admittedly, given that this is a case study of a targeted group in a regional context, it is difficult to state in confidence that transferability was achieved, or that findings can be generalized to other contexts (Baxter & Eyles, 1996). However, efforts were made to achieve transferability by clearly describing the research process and its context. Doing this ensures that the findings are meaningful to others so that they can assess whether the constructs used can be transferred to other contexts (Baxter & Eyles, 1996). Thus, in this chapter and throughout the thesis every effort was made to achieve transparency about the research process.

The third criterion is dependability, a concept similar to reliability in quantitative research, in that the goal is to obtain consistent constructs that are matched with the same phenomena through time and space (Baxter & Eyles, 1996). To counteract any threats to dependability, an audio-recorder was used during interviews, which allowed the mechanical record of data. In addition, each interview was manually transcribed. The study utilized member checking whereby the summarized interviews and the interview scripts were shared with the key informants to obtain feedback on the interview transcripts. Two key informants requested changes in the interview scripts, mainly in the form of typos and minor rewording of a few sentences. Due to the lack of access to a computer for immigrant participants, it was difficult to use member checking by sharing interview transcripts. However, efforts were made to confirm understanding

of statements by immigrant participants during the interview by repeating to them their statements and by asking for clarification when they were unclear.

The last criterion, confirmability, or the extent to which biases influence the results, was managed from the beginning of the research process by reflecting on personal bias and characteristics. In using thematic analysis, it was acknowledged that there is no complete objectivity in research, and that subjective interpretations of data would emerge (Corbin & Strauss, 1998). Objectivity in qualitative research is achieved, Corbin and Strauss state, when there is “openness, a willingness to listen, and to give voice to respondents” (pg. 43). Subjectivity influences analysis because the themes that are said to ‘emerge’ are founded on the researcher’s existing knowledge and experience and from thinking about connections between the themes (Braun & Clarke, 2006). While coding, questions suggested by Corbin and Strauss (1998) were reflected upon: What is going on here? Am I representing the reality of data? Asking these questions helped to keep the coding process in perspective of the research questions and of the reality of perspectives that were emerging from data. In addition, personal notes were kept of the analysis process in the form of memos, as in the following reflection:

After reading scholars Charmaz (2006) and Corbin and Strauss (1998) I realized that I have been forcing codes into pre-established categories. I have decided to start creating codes as they appear in the text and from these to create new categories. These may or may not fit the initial framework. (Personal Memo)

Through these reflections, assumptions were brought to awareness of the influence of personal characteristics and of personal biases on the analysis process. As the reflection above indicates, making personal reflections allowed the realization of attempts to make the data fit into established categories. This was found to compromise the data analysis process; therefore the procedure of thematic analysis was more carefully followed.

3.8 Summary

In this chapter a thorough guideline of the research process was provided. This included the selection of the research setting, a methodological and epistemological discussion, and an overview of the research design including methods, participants, and procedures for data collection. The chapter concludes with an account of the data analysis process, and of how rigour was ensured in this study. The following chapter discusses the results of the research.

Chapter 4 – Results

4.1 Introduction

This chapter addresses the main objective of this thesis: To examine the determinants of how immigrants navigate their food environment in the Region of Waterloo. This section highlights themes that arose in interviews with two sets of participants—nine recent, mid-term, and long-term immigrants, and nine key informants who live and work in the cities of Kitchener, Cambridge, and Waterloo. The specific research questions are:

- What are the individual and environmental determinants of how immigrants living in the Region of Waterloo navigate the food environment?;
- What is the perceived relationship between the food environment and the health of immigrants amongst immigrants and service providers?
- How can the food environment be improved to target food insecurity amongst immigrant populations?

To illustrate the results of the study an integrated framework was utilized based on concepts from the ANGELO framework (Swinburn, Egger, & Raza, 1999) and the SDH framework (Raphael, 2004) for incorporating the interplay between individual factors and environmental determinants of the food environment. The framework is based on theories from the fields of public health, health psychology, and urban planning, similar to a model developed by Story and colleagues (2008). The key findings integrate individual factors with the micro- and macroenvironmental determinants of the food environment to examine how these may influence food security and health.

This chapter is divided into four main sections—the first two sections represent the microenvironmental and the macroenvironmental determinants of food security for immigrants in the Region of Waterloo from the observations and perspectives of key informants and immigrants. Swinburn and colleagues (1999) defined the microenvironmental size of an environment as a *setting* where people gather for food-specific purposes, and that could be improved. The authors defined a macroenvironment

as a *sector* including food-related industries, services, or supporting infrastructure. Within each size of the environment, the results are framed according to one of four types of environments—physical, economic, sociocultural, and political. These are discussed according to the importance that participants placed on each environment. *Physical determinants* of the food environment refer to what is available and it includes aspects such as land use, transportation, and physical design. *Economic determinants* of the environment are the costs associated with obtaining food. *Political determinants* of the food environment include the policies and formal and informal processes that enable food security such as land use permissions. In addition, the *sociocultural determinants* of the food environment are defined by the attitudes, beliefs and values that a society holds and that may impact food security (Swinburn et al., 1999). The chapter concludes with a summary of the findings.

4.2 Key Informant Perceptions of the Food Environment

This section focuses on responses from key informants, with the purpose of providing a broad perspective of the food environment in the Region of Waterloo from the observations of these respondents. Each sub-section was provided in order of importance based on frequency of mention and depth of discussion by key informants. For ease of organization, direct quotations in this section are organized into tables, and a discussion is provided below each table.

4.2.1 Economic Environment

According to key informants, the lack of accessibility of food is not only due to physical availability of food, but also to the *affordability* of food. In their responses, key informants placed most emphasis on the economic access to food security: “It’s an economic issue why some people aren’t able to afford enough to eat” (KI1). Although some of the key informants mentioned the resources that immigrants have for achieving food security after immigration, their main focus was the lack of economic opportunities for immigrants in the form of employment opportunities and financial stability. On the microenvironmental level key informants commonly discussed barriers at the household level, such as

income and household expenses. The macroenvironmental sectors of most relevance included the changing economic landscape, such as a lack of permanent, full-time jobs, the affordability of the housing market, and the need for financial support and basic services (Table 4).

Table 4 Economic Determinants of the Food Environment

<i>Microenvironmental Determinants</i>		
Major themes	Sub-themes	Comment
Home	Income	<ul style="list-style-type: none"> • “If you look at the majority of newcomers coming in, economically they might be at a greater disadvantage.” (KI9)
	Financial priorities	<ul style="list-style-type: none"> • “Mostly they struggle with their bills, because they will have lots of bills you know? They will have the immigration loan that they have to pay, they have their phone bills, plus grocery shopping and everything, children need clothing, and they need this and that, and everything.” (KI3)
	Holding multiple jobs	<ul style="list-style-type: none"> • “They say ‘Yes, we'd love to go and garden, yes we'd love to look at maybe a trade in the food sector, however, we have to hold two or three different jobs down just to be able to live’.” (KI6)
Neighbourhood	Cost of food	<ul style="list-style-type: none"> • “If you look at the grocery store model where you have a high-end grocery store, and a low end grocery store, and they're both part of the same chain. Why? So those who can't afford it don't have the right to good quality food.” (KI5)
	Alternate sources of food	<ul style="list-style-type: none"> • “And it's amazing how much food you can produce in the little community garden. It does help for food security for people who don't have much money.” (KI4) • “The lots were very, very small, the next year we had to charge to maintain the lots, and the money that we suggested, even that amount was a

		<p>burden for a single person living on Ontario Works, and for seniors.” (KI3)</p> <ul style="list-style-type: none"> • “Those who come here as refugees, they are still stuck with buying stuff the cheapest. So they're still going to the no frills, they are buying stuff absolutely cheap. They don't even go to their little neighbourhood markets because it just costs more and they're just totally fixated on the cost.” (KI4) • “They are using it [food banks]. Even sometimes here in the house, if house is full we call food bank to bring here and they share in the kitchen to be able to save some money.” (KI6)
	Traditional ethnic food	<ul style="list-style-type: none"> • “Yes there are more stores, specialty stores that are providing the food that they're accustomed to eating, but again it's the expense.” (KI9)
<i>Macroenvironmental Determinants</i>		
Housing	Housing affordability	<ul style="list-style-type: none"> • “Average apartment in Kitchener - Waterloo is \$900, two bedroom. And a family of four, a family of five will receive \$800, so they need a hundred more, from where? From food of course, they will take money from food to put towards the rent.” (KI6)
Social services	Financial support	<ul style="list-style-type: none"> • “They live by the poverty line because when you come with a big family, your expenses will be higher, and life is so expensive here. Yes, the government supports everybody but it's not enough support.” (KI3) • “Seniors as well, seniors have a highest rate of income from government than regular single person.” (KI6)
	Community services	<ul style="list-style-type: none"> • “There is sort of subsidized childcare, wait lists for that - by the time you are able to access it your children aren't eligible for it anymore anyways.” (KI7)

Employment	Unmet job expectations	<ul style="list-style-type: none"> • “They were going through depression because of the changes, the expectations didn't match the reality, [and] they couldn't find a job.” (KI2)
Cost of food production	Farming costs Energy costs	<ul style="list-style-type: none"> • “And had farmers saying "You want me to sell my apples for two dollars for a dozen, do you know the expenses I face?” (KI4) • “The cost of gas really drives the cost of food, and I think we're really seeing that now, when we go into the grocery store, two years ago what it cost to buy meat has almost tripled today.” (KI9)

According to key informants, some immigrants arrive with economic resources that they either collected prior to immigration and/or that they receive post-migration: “I think maybe new immigrants too, many of them who come with money it's not an issue, and many of them do” (KI4). Two key informants highlighted the resources that some vulnerable immigrant groups receive from government supports, such as financial assistance for seniors. Having financial support aids in increasing food security for immigrant populations, and a causal link between receiving public assistance and food insecurity amongst immigrants has been indicated in previous research in the US (Borjas, 2004). Key informants pointed out in interviews, however, that although recent immigrants receive financial support, it is not enough to fulfill their basic living expenses in the Region.

Despite resources accumulated pre-migration and during post-migration through government support, immigrants appear to lack economic access to food security. In most cases, the main source of disadvantage—for recent immigrants particularly—is low income, as mentioned by most key informants. Key informants indicated that low income is, for the most part, the result of a lack of employment opportunities for immigrants in the Region and the need for immigrants to hold multiple, low paying jobs. A compounding disadvantage stated by four of the key informants is the impact that housing affordability has on income. In particular, key informants discussed how the unaffordability of the housing market makes it difficult for immigrants to meet other basic needs. In addition, the lack of social supports like

access to subsidized childcare in the Region is a significant factor for vulnerable populations such as single-parent families.

Having low income appears to negatively impact all aspects of life, and it often leads immigrants to struggle in prioritizing basic necessities. For instance, one key informant highlighted the unsafe or inadequate living conditions that result from having low income for some immigrants, and another key informant referred to the delay in achievement of personal goals. According to key informants, having low income also limits the activities that immigrants can engage in to cope with lack of food security, such as community gardening. This is due to the economic constraints of activities like community gardening, such as paying for transportation to where they are taking place, and paying for a lot. The dire economic circumstances of immigrants pose barriers to healthy eating and thus have important implications, particularly on the nutritional status of immigrant populations (Tarasuk, 2004).

The recurrent constraint that immigrants face when having low economic resources often results in their adoption of unhealthy, non-traditional food options, as indicated by six of the key informants. Immigrants in this condition are forced to reach out to places like food banks so they can save money to afford other expenses. This is also facilitated by local organizations that assist refugees, stated one key informant. Adopting unhealthy food options, according to the observations of some key informants, is also the result of the high cost of healthy food, and the low cost of unhealthy food:

They look well fed, but what are they eating? If people can't afford healthy food and they don't have a choice, I just find it kind of unfair that the foods that are very unhealthy are very cheap and that's what people can afford. (KI8)

Refugees and refugee claimants are the most disadvantaged of immigrants, according to key informants. Some refugees are living under the poverty line, since they arrive to Canada with little or no resources: “I would say it's the amount of money that they receive, and not thinking about refugee claimants where they might not have anything before they claim their status” (KI6). Refugee claimants

and other immigrants without many resources must gather basic household items upon arrival, like cooking utensils, furniture, and appliances, paying back immigration bills, all of which incur significant financial costs.

Three of the key informants related the problem of the high cost of food with the high cost of food production and distribution in the Region. According to these key informants, misunderstandings around the cost of food production and consumption often leads to disconnect between the local food system and the rest of the community. This is because while the community expects lower prices of food, farmers in the Region of Waterloo are struggling to produce food at a cost that will yield them profit. Key informants stated that these misunderstandings then create tensions between local farmers and the community. A lack of connection between the community and local farmers may have a particular negative impact on immigrants who are not fully aware of alternative food resources that exist in the community: “For newcomers coming into a community not knowing what the use and purpose of the locally grown food entirely, and being accustomed to their own heritage foods - they were at a disadvantage health wise” (KI9).

Overall, these findings suggest that immigrants face compounding sources of disadvantage. These most often originate from having low income, and low income often creates the need to balance the fulfillment of basic household needs. Immigrants experience this disadvantage from the moment they arrive, as they have to deal with the payment of bills, unexpected circumstances such as not finding employment, and not receiving enough financial support to cover their most basic needs. Among the consequences of a lack of food affordability for immigrants are adopting unhealthy food options that are cheaper, and barriers to participating in alternative food movements like community gardens. Closely tied to a lack of economic access to food is the high cost of producing food in the Region, which diminishes the economic accessibility to healthy, local food for immigrants.

4.2.2 Political Environment

Along with an emphasis on the economic environment, key informants focused their responses on the impact of the political environment. The macroenvironmental barriers most commonly emphasized were the gaps in policy, the lack of political will to improve the food environment in the Region, the corporatization of food, and barriers to planning practice that consider food security. Key informants also talked about the microenvironmental barriers that immigrants face. These included policies that offer insufficient support for immigrants and other vulnerable groups, such as having a minimum wage that is not enough for people to survive, and people relying on an unsustainable system of emergency food. On the other hand, immigrants are keen to take advantage of the supports that they do have, according to the observations of key informants. This seems to be the case particularly for immigrants who are now finding opportunities that they did not have in their countries of origin, such as being able to participate in community gardening (Table 5). The following responses are in order of importance, according to the relevance that key informants seemed to place on each aspect of the political environment.

Table 5 Political Determinants of the Food Environment in the Region of Waterloo

<i>Microenvironmental Determinants</i>		
Major themes	Sub-themes	Comment
Built environment	The role of planners	<ul style="list-style-type: none"> • “The planning and building of a community that supports individuals' activity levels and sustainable food systems. Looking at the built environment is very much in keeping with planning. (KI9) • “Sometimes I think the planners don't think that access to food falls under their realm.” (KI5)
Community services	Lack of tailored resources	<ul style="list-style-type: none"> • “There are not enough services in the area. I wouldn't say there is enough, many agencies are doing different services for seniors but somehow it's not connected and it's not tailored.” (KI6) • “Specifically addressing food insecurity for the immigrant population, I don't think I'm aware of anything.” (KI1).

		<ul style="list-style-type: none"> • “We met with other organizations, they didn't want to waste - they call it waste of time because they don't have staff to do that. That's really a challenge and it's considered waste of time, when you spend many, many hours looking into these things.” (KI3)
<i>Macroenvironmental Determinants</i>		
Gaps in land use bylaws	Bylaws hindering alternative food resources	<ul style="list-style-type: none"> • “All three cities still have bylaws that do very much temper where exactly they [community gardens and temporary markets] are permitted, and there are some other things that aren't directly addressing permits for markets that do in practice hinder them from getting established.” (KI1)
	Managing evolving land uses	<ul style="list-style-type: none"> • “If we look at even for example in Cambridge, the man that sells ethnics vegetables for the ethnic community. They come to the parking lot and they grab all their vegetables and they leave and he leaves before a bylaw [officer] catches them. Well, could you imagine if this was actually an accepted business?” (KI5)
	Inconsistent bylaws	<ul style="list-style-type: none"> • “We have seven municipalities, three cities, and four rural municipalities, and they all have different bylaws, they have different governments, and different rules.” (KI4)
Growth-dependence planning model	Influence of market forces	<ul style="list-style-type: none"> • “Those laws were put in there to protect the big grocery stores. All those laws came into place during the fifties, sixties, and seventies, to bolster up big retail. And they put all kinds of laws in place [to create] big kind of buffer zones say of Zehrs, Sobeys, or whatever. You can't establish a bakery or a little fruit stand or anything like that.” (KI4) • “Here in Cambridge I see so much reservation around expanding markets or expanding alternate models because there seems to be this fear over, we can't disrupt the commercial businesses because they pay the big dollars to be here and we need to keep them here in the community.” (KI5)

	Redistribution of unwanted food	<ul style="list-style-type: none"> • “So in a place like Loblaw’s, it doesn’t want to look at 75 different agencies being like “Okay, I’m gonna phone you all up and I’m giving you each two boxes or three boxes; give you a half box ‘cause you’re smaller and you don’t have a lot of storage space”. It is more of [being called] to go there, pick up the like ten [bins] of stuff they have. (KI7) • “If you go back in history and if you look at what a food bank was and what the food bank has become today, we know there’s a problem, there’s been a break down there.” (KI5)
	Partnerships	<ul style="list-style-type: none"> • “So now from two multicultural gardens there are now four. It’s really wonderful to see how they have moved forward with that project.” (KI9) • “We have a community that is very collaborative among service providers. Many of the service providers, we have a lot of history of collaboration. All of the service providers are well placed.” (KI2)
Food and agriculture policies	Unsustainable agriculture	<ul style="list-style-type: none"> • “We have a food system that is wholly unsustainable when you look at the resources environmentally that are required to produce it and is not sustainable in the long term. We really need to change the way we grow food in the food industry.” (KI1) • “Our local farmers are increasingly turning to big agriculture because that’s the only way they can sell crops, so more and more corn, and more and more soy. Cash crops are being grown and less and less vegetables.” (KI4)
	Uncoordinated food policies	<ul style="list-style-type: none"> • “A lot of the issues around our food system are outside the municipal government’s jurisdiction; a lot of them need addressing at the provincial or federal level. So we need a food system plan for Canada that involves governments and non-government organizations at all levels.” (KI1)
Political system	Lack of political will	<ul style="list-style-type: none"> • “Not all of our decision makers are on board, as well not all of our cities have made a plan for our

		food.” (KI9)
	Voting intentions	<ul style="list-style-type: none"> • “Most political parties don't win the elections by telling people that they are going to give benefits and services to the poor people.” (KI7)
	Limitations to advocacy	<ul style="list-style-type: none"> • “Do we stop doing what we're doing now, and engage in advocacy knowing that people are going to have basic needs unmet so that we can pursue a long-term agenda of advocating for people's human right to food, in theory?” (KI7)
Immigration policies	Opening doors for economic immigrants	<ul style="list-style-type: none"> • “A lot of changes are coming with bringing more economic established people who will be ready to work as soon as they arrive, and that is readily affecting every other service.” (KI6)

The major issue that key informants perceived as a barrier to food security for immigrants in terms of policies and regulations are gaps in policy. This was apparent in interviews, in which key informants talked not only about policies and bylaws in relation to the food environment, but also national policies that will negatively affect immigrants and refugees at the local level. There was recognition among key informants of the impact of planning on the health of communities.

At the local level, key informants referred to bylaws in the Region that they perceived as hindering food security for the population. These bylaws are obstacles to land use policies that permit the establishment of food spaces like temporary markets and community gardens. A recurrent theme among key informants was the inconsistency in bylaws in the Region, which make it difficult for farmers and other interested stakeholders of the food environment to provide alternative food resources. Further, key informants observe changes in the food environment in the Region that require planning regulation. In particular, one key informant discussed how some newcomers to the Region are illegally utilizing spaces to establish temporary food carts that sell ethnic food. This is perhaps signaling the need to manage evolving land uses, in absence of specific policies to regulate the changing food environment. To three of

the key informants, this demonstrates a lag between land use in practice and the land use bylaws that are in place.

Some key informants attributed the gap in bylaws to the perceived lack of importance that planners place on the food environment. One key informant expressed the connection between the city's planning and the food security of the population, acknowledging that planners have an impact on the health of communities. To another key informant, however, planners have a role to play in the food environment but they do not perceive it as such, as illustrated in the following quote: "Sometimes I think the planners don't think that access to food falls under their realm." (KI5) Additionally, two key informants noted that the gap in bylaws might be a result of a market-led political environment, leading to what one key informant called the "corporatization of food". For one key informant, this market-led environment has resulted in out-dated policies that favour big corporations. This was indicated in remarks by some of the key informants, specifically in regards to bylaws that serve as buffer zones for large-scale grocery stores:

Those laws were put in there to protect the big grocery stores. All those laws came into place during the fifties, sixties, and seventies, to bolster up big retail. You can't establish a bakery or a little fruit stand or anything like that. (KI4)

Similarly, another key informant discussed reservations within the municipal government to expand temporary markets or alternative food resource models due to the economic power of large commercial businesses. According to the same key informant, this is especially the case for large grocery stores that are landowners in the Region.

A market-led environment could be perpetuating food insecurity in the Region, particularly because it may be supporting big grocery stores at the expense of the health of vulnerable citizens. The current political environment appears to continue the support of market-based solutions to food security, especially through the redistribution of unwanted food from food producers through food banks. This was exemplified by one key informant's remarks on the current food redistribution practices of big grocery

stores, in which large grocery stores donate unwanted food to the local food bank. The key informant indicated that these distribution practices lack a rigid structure of redistribution, so that certain food banks will receive certain products regardless of their adequacy for storing these products. The same key informant stated that combined with an unregulated system of food donations, food banks offer a lack of food selection for food bank participants. This has been replicated in past research in Ontario (Tarasuk & Eakin, 2003). Two of the key informants were particularly concerned about the way in which the role of food banks has evolved over the decades. According to these key informants, food banks were intended to be a temporary solution for low-income neighborhoods in response to rising rates of hunger. However, the structure of food banks over time became a permanent, albeit perhaps inefficient, cure for rising food insecurity.

Key informants also referred to issues in food production practices. From their responses, it appears that the food environment in the Region of Waterloo supports food production and distribution practices that are environmentally unsustainable: “The irony is that so much of our produce gets shipped to the US, processed there and then it comes back, which is environmentally really kind of insane to put it mildly.” (KI4) Key informants also referred to competition among large-scale food producers, which seems to be an added pressure on local farmers to not only sell their products cheap, but also to produce crops that are wanted by larger food producers.

Perhaps closely related to the impact of inadequate planning and regulation is a perceived lack of political will to develop programs or policies that could reduce poverty. There was a wide agreement among key informants on this issue: “Its political will when it comes right down to it. Is the regional government willing to speak up and say this isn't enough?” (KI1). Another key informant associated a perceived lack of political will to voting intentions. To this key informant, the lack of political will from those in higher positions diminishes the power of advocacy for non-profit organizations. For instance, the key informant stated that organizations like food banks do not have the resources to engage in full-scale advocacy for a more comprehensive food security strategy. Therefore, whereas there are many key

stakeholders interested in improving the food environment, the lack of political will that is apparently driven by personal goals of political candidates to be elected often imposes a barrier.

Likely due to the diversity of fields in which key informants work, their responses were not limited to land use policies but they also referred to social policies that are specifically targeted at immigrants and refugees. One key informant talked about new immigration laws that are narrowing access to Canada to those immigrants who are seen as having the most “economic promise”, so to speak. An increased limited access to those wishing to immigrate through other immigration classes (e.g. family class, refugee class) seems to have been followed by decisions to cut budgets to social services that help new immigrants and refugees. These policies seem to be particularly targeted towards refugee claimants—one key informant observed the proposal of bills that will likely undermine the financial and health security of refugee claimants. Bill 585 is one example—this is a Private member’s bill that was put forth by a member of parliament in 2014 and was incorporated into omnibus Bill C-43 in October 2014. If passed, this bill will have tremendous implications for refugee claimants and those without a permanent status in Canada. The purpose of the bill is to allow provinces to decide who gets social assistance, and to impose minimum requirements as a result (Income Security Advocacy Centre, 2014).

Those key informants who work in an environment in which competing interests need to be addressed (e.g. community programs serving immigrants) felt that this competitive milieu affects other aspects of the food environment and, consequently, the food security of the population. Particularly, key informants spoke about a lack of financial support for programs that target immigrants, forcing those who are interested in improving the food environment to volunteer their time. Further, some key informants felt that efforts to improve the food environment need to be more coordinated across governments and non-governmental organizations. According to two key informants, more coordination between sectors would help ensure that the needs of most stakeholders in the food system are met: “So let's look at this from a local economic perspective, how do we link with local farmers, and building local business and then attracting local businesses, and adjusting the food access.” (KI5)

In contrast, some key informants discussed assets of community organizations in the Region. One of these assets, shared by a number of key informants, is a sense of strong partnerships between different service providers, particularly those service providers that target immigrant groups. This environment of collaboration, according to one key informant, has often resulted in unique opportunities for creating new initiatives. According to two key informants, two added benefits of partnerships between community organizations serving immigrants are the ability to discuss issues that arise for immigrants and refugees and the involvement of the Region of Waterloo's government in such collaborations.

From the interviews, it appears that some key informants acknowledge that there are promising steps being taken at the regional level to address barriers and to build upon opportunities to improve the food environment. These steps include efforts by some sectors in the Region to increase access to community gardens and temporary markets, and the establishment of local food policy councils that aim to bring the needs of all stakeholders of the food environment to the forefront. These responses indicate a need to coordinate the activities that have naturally emerged as initiatives at the household, the community, and the governmental levels.

In summary, key informants indicated that immigrants provide important skills and innovative practices to the food environment in the Region, such as selling ethnic food from informal food carts. However, zoning regulation needs to be in line with these practices. In addition, policies are needed at every level of government to support incoming immigrants, such as those policies and programs that can help secure employment for these populations. However, many of the key informants did observe positive changes, such as regional efforts to establish alternative food resources. Also acknowledged by key informants is the establishment of the Regional Food Policy Council as a promising vehicle for slowly bringing food security to the forefront of planning practice.

4.2.3 Physical Environment

Key informants referred to both the physical microenvironmental and the macroenvironmental aspects of the food environment, although they placed most emphasis on the macroenvironment. There

was a greater focus on macroenvironmental aspects perhaps due to the nature of the participants (i.e. regional employees that are used to looking at the big picture). The macroenvironmental sectors discussed by key informants are transportation and agriculture. Among the microenvironmental settings discussed by key informants are food resources including ethnic stores, grocery stores, and alternative sources of food like community gardens. The results are summarized in Table 6.

Table 6 Physical Determinants of the Food Environment in the Region of Waterloo

<i>Microenvironmental Determinants</i>		
Major themes	Sub-themes	Comment
Access to local stores	Ethnic stores	<ul style="list-style-type: none"> • “We have a lot of traditional stores here, which we introduce to clients right away.” (KI6) • “We’re a country of immigrants and people are used to, you know food is such an important part of their culture and to new Canadians access to food, they want access and, are those foods available and grown in an environmentally sustainable way, is such a long way until we solve those issues.” (KI1)
	Food deserts	<ul style="list-style-type: none"> • “There are still pockets where people don’t have access to food. In Cambridge up in Preston Heights, cut off from everything, there is not a food store there besides the Short Stop.” (KI5)
	Food swamps	<ul style="list-style-type: none"> • “Unhealthy food options are just too darn easy. They’re everywhere. So why is it that every convenience store has junk food, where is the healthy food?” (KI5)
Access to alternative sources of food	Community gardens	<ul style="list-style-type: none"> • “We have sixty plus community gardens with probably fifteen hundred plus in Waterloo Region but we also have more than half a million people living here. And of all those people living in apartment buildings or townhouses with very little of their own space where they can grow food.” (KI1)
	Emergency food	<ul style="list-style-type: none"> • “So single parents are a vulnerable group, they face a lot of the same physical barriers getting here (food bank).” (KI7)

<i>Macroenvironmental Determinants</i>		
Agriculture	Rich farmland	<ul style="list-style-type: none"> • “We’re a combination of urban and rural municipality, we’re three large cities but surrounded by farmland basically and very rich agricultural land, class one agricultural farmland.” (K11)
Transportation		<ul style="list-style-type: none"> • “How we get people where they need to be? Our current bus system - if it takes you two hours to go to the store, it’s not do very convenient.” (K15)

Key informants raised issues that are barriers for immigrants at the neighbourhood level (microenvironmental scale). One major barrier mentioned by three of the nine key informants is the lack of geographic accessibility to food resources. Specifically, these key informants referred to a limited availability of healthy and affordable food in some areas of the CMA, particularly in the City of Cambridge. One key informant referred more directly to the existence of both food deserts and food swamps in the Region. Such views are consistent with previous research from the Region of Waterloo that the Region has 5.6 times more unhealthy food options such as fast food restaurants within a walking radius of 800 meters than grocery stores (Minaker et al., 2013). Another key informant emphasized the unequal distribution of food resources not only in regards to regular grocery stores, but also in regards to accessible emergency food. This key informant discussed the difficulties for specific groups of the population, such as single parents and older adults to reach food banks, mainly due to barriers getting transportation to the food bank:

People who live in North Waterloo, there's a pocket around Conestoga Mall, you have to take a couple buses to get here, dealing with all your children and getting the food home. It's very stressful, dangerous, definitely not rewarding because, maybe you have a stroller, there's only so much food you can carry, and then getting your children. So you end up not getting a lot of stuff because you can't carry it and then, just why come here. (IP7)

An additional barrier in regards to transportation discussed by other key informants is the time that it takes to travel through the Region. Key informants discussed that without adequate transportation, some populations are unable to reach farmers' markets: "There are still huge regions of the city where people can't get that food. So if I don't have a car, how am I gonna get to the farm store?" (IP4)

Aligned with the lack of geographic accessibility is the lack of infrastructure for immigrants to be self-sufficient for food access, particularly in regards to community gardening. Whereas key informants discussed the existence of community gardens in the Region of Waterloo, they asserted that the current number and geographic accessibility of these gardens do not meet the population demand in the Region. This, they indicated, is particularly troublesome considering the number of new immigrants living in apartment buildings where growing food is usually not an option.

Despite these barriers, there exist assets at the micro and macroenvironmental scales in the food environment. At the microenvironmental scale, key informants discussed access to ethnic stores, which is important for the food habits of immigrants (Sanou, et al., 2014). Key informants are observant of this need, particularly those key informants who serve immigrants directly. Indeed, one key informant indicated introducing recent immigrants to these stores when they arrive. At the macroenvironmental scale, an asset discussed by key informants is the rich agricultural land that the Region of Waterloo offers to the community. Agricultural land in the Region improves opportunities for local production of food, as indicated by key informants.

Together, these findings indicate that there are alternative sources of food such as community gardens and temporary markets, which could potentially facilitate food security for immigrants. However, the barriers that immigrants must endure to access these opportunities, such as lack of transportation, make them difficult to access, and thus, are unequally distributed in the community. The next section of the results addresses some of the strategies that immigrants utilize in the face of such obstacles. In addition to access to ethnic stores, key informants mentioned access to alternative sources of food, namely community gardens, food aid, and temporary markets. In addition, key informants referred to community gardens that exist in the Region, and they talked about the benefits that these gardens have for

immigrants. On a larger scale, one key informant referred to the opportunity that access to farmland grants the community for producing its own food.

4.2.4 Sociocultural Environment

The following are responses about two major topics that key informants deemed as relevant to immigrant populations: Social networks and the process of settling to the Region of Waterloo (Table 7). In this section, interview responses are sub-divided into determinants at the individual, microenvironmental, and macroenvironmental levels to better represent the individual-level as well as broader nature of responses regarding the sociocultural environment.

Table 7 Sociocultural Determinants of the Food Environment in the Region of Waterloo

<i>Individual Factors</i>		
Major themes	Sub-themes	Comment
Pre-migration experiences	Past history	<ul style="list-style-type: none"> “Many people who come as a refugee come with pre-immigration history in which surviving is the only thing. And so while they are settling in Canada they start to contemplate their own past history.” (KI2)
	Perspectives of food	<ul style="list-style-type: none"> “Healthy food is not a priority at that time when you're just trying to survive, so that mentality is carried here, and if you're in survival mode here, is still not a priority, is just as long as we eat. That is what is important.” (KI8)
Post-migration experiences	Adapting to a new environment	<ul style="list-style-type: none"> “Generally settlement is a big challenge for everybody. Even if you are highly educated, or you have the language, you will come to the point that you'll be shocked or you will be facing problems in settlement in any area that is different than where you used to live.” (KI3)
	Lacking resources	<ul style="list-style-type: none"> “I would say the majority of our clients are coming with no English at all. A very small percentage will have higher education; majority is grade ten. If you look at employment as an outcome, it's really hard for those people to find and settle.” (KI6) “I think that because of the rush that people engage in trying to survive they have just that they have to multiple jobs, I

		think that the food issues becomes a critical way of crises, because you may not have time to cook your own food because it takes long.” (KI2)
	Acculturation	<ul style="list-style-type: none"> • “I think they adapt those behaviours (unhealthy eating) and then they influence also their family at home to purchase and have those foods more available.” (KI9)
	Maintaining traditional diets	<ul style="list-style-type: none"> • “The food that was available in your diet is not there, it’s gonna be a challenge for you, and it’s gonna be a big issue for you. And if you try to change, that will affect you not only physically, emotionally.” (KI3)
<i>Microenvironmental Determinants</i>		
Neighbourhoods and communities	Social networks	<ul style="list-style-type: none"> • “The community is very tight knit, I'm not saying everybody knows everybody, everybody knows at least somebody. And the volunteers who do it are right from that neighbourhood so they know people too.” (KI8)
	Service provider interactions	<ul style="list-style-type: none"> • “My interaction with that individual that is coming to see me has to be lifetime forming. Not just because you came and you are an immigrant we'll give you a checkmark that we provided services, no I don't believe that.” (KI2)
	Information resources	<ul style="list-style-type: none"> • “If you have an established community, you have people who will support you; it's a big deal. It's not about financial support as much as about information sharing, and resources, to know about resources, to know where to go if you need something.” (KI6)
	Using food programs	<ul style="list-style-type: none"> • “I can't really pick fruits and vegetables but I do try to pay attention to what people get excited about.” (KI8) • “Food is a very personal and individual sort of thing, so it's filtered by your personal history growing up, your culture, income, resources, stage in your life.” (KI7)
	Self-sufficient communities	<ul style="list-style-type: none"> • “Some of these farmers have told me that they may allocate a small piece of land for a new immigrant family, who are good farmers, and give them maybe a hectare maybe of farmland for free.” (KI4) • “They were very pleased they were able to grow some of the foods that they had back home, and share with their neighbours.” (KI9)

		<ul style="list-style-type: none"> • “Food came as a part of their initiative, when they came back for those workshops we started talking and we realized what is important nutrition, and food and cheap food, and healthy food, and how to cook it cheap.” (KI6)
<i>Macroenvironmental Determinants</i>		
Agriculture	Community-agriculture connections	<ul style="list-style-type: none"> • “Next time they go there they buy a little more for themselves and it's just a treat and next thing you know, they're buying all their meat there. So the personal interaction starts happening, and people drive all the way out to the farm. (KI4) • “We end up with kids who think that soup comes out of a can, or corn comes out of a can, because they've never seen a cob of corn from the farm.” (KI5)“
Government practices	Supporting healthy eating	<ul style="list-style-type: none"> • “We have for example, a peer health project. The whole idea is to train peer health workers to support people from their own neighbourhoods around healthy eating and healthy living.” (KI9)
Societal values of food	Food preparation	<ul style="list-style-type: none"> • “Overall I think that the vast majority of people still don't spend enough time preparing their own food, and they see food as a survival technique, like what can I eat quickly so I can get out of the house, how can I eat my lunch quickly while I'm working on the computer, how can I eat in the car.” (KI4)
Food production and distribution system	Understanding needs	<ul style="list-style-type: none"> • “I think we're doing better than we were, say, 15 years ago. I think with the support and the movement that we have around food in this area people are becoming more attuned to the needs of others.” (KI9)
Food marketing	Mass advertising of unhealthy food	<ul style="list-style-type: none"> • “The youth coming in are very susceptible to advertising. They see that a lot of the kids around them have all of the different foods that aren't quite so healthy and just succumbing to the pressure of advertisement, marketing, and peer influence.” (KI9)

When immigrants arrive to a new place, their natural first step in the immigration process is often to find and join established communities that can share resources and that provide a sense of community. Forming relationships makes sense for new immigrants, as belonging to a social network has been found

in research to lead to immigrants' success post-migration (Gorton et al., 2009; Grenier & Xue, 2011).

Two key informants expressed the resources that social networks provide new immigrants, particularly in the form of information sharing of existing community organizations and programs.

Some key informants observed the regional government's efforts to support immigrants through networks in their community from people with whom they may identify. These efforts appear to not only originate from the government, but also from the efforts and seemingly genuine interest of community service providers to develop meaningful relationships with immigrants, as indicated by one key informant's observations. According to another key informant, the relationships and supports in the community are not exclusive to neighbours in tight ethnic communities, but they also occur with local farmers, perhaps encouraging a deeper understanding of what farmers do for the community. This highlights that social networks span outside the immediate ethnic community to include other stakeholders of the food environment like local food producers. Having these connections may in turn encourage immigrants to get involved in activities that are happening in the community, and as a result, to become more self-sufficient. This was demonstrated in the observations of two of the key informants who reflected on how collaboration between members of the community increases self-sufficiency. For instance, a key informant discussed how the interactions between local farmers and immigrants result in support from farmers towards new immigrants by sharing land with immigrants who worked as farmers in their country of origin.

Thus the social environment of immigrants appears to help immigrants assimilate to their new environment, find resources to overcome obstacles to food security, and to become self-sufficient over time.

According to some key informants, the pre-migration experiences of some immigrants make them vulnerable to ensuing settling challenges. Such experiences seem to be particularly common among refugees, as their immigration is often unplanned and it is due to recurrent exposure to traumatic experiences like ongoing, violent conflict (Schweitzer, Brough, Vromans, & Asic-Kobe, 2011; Eurostat, 2000). According to key informants, these immigrants are affected by these experiences years after

settling in Canada. Some of the key informants referred to this process as “being on survival mode” and spoke of the ways in which this process of familiarizing to the new environment is especially difficult for those who are still focused on *surviving*. These sentiments are relevant to the food security of immigrants due to their influence on the perceptions and attitudes that immigrants have about food, including the way in which they prioritize and assess the quality of food. For instance, one key informant illustrated how being on survival mode impacts how some immigrants prioritize food:

Healthy food is not a priority at that time when you're just trying to survive, so that mentality is carried here, and if you're in survival mode here, is still not a priority, is just as long as we eat. That is what is important. (KI8)

Following issues of pre-immigration are the challenges that people face post-migration. Key informants talked about the challenges that develop when people immigrate, even if they have resources. These challenges include adapting to a new environment, which involves learning the language, attaining education, and obtaining work experience. As two key informants indicated, these challenges are significantly salient among refugees. The scenario is bleaker for those immigrants who have fewer resources, for whom the settlement process may take more than a decade.

The environment to which immigrants arrive worsens the experiences of those lacking resources post-migration. For instance, the economic environment often forces immigrants to hold multiple jobs, and in turn they have less time for other activities and necessities. This was clear to key informants who spoke about the process of settling in the Region, including the need for immigrants to adopt what may seem as easier and faster food options that are time efficient but may not be healthy. This has been shown in past studies which indicate that one of the major difficulties that immigrants face for procuring healthy and culturally appropriate food is a lack of time to shop and prepare this food (e.g. see Gorton, et al., 2009; Yeh, et al., 2008). A lack of time also makes it difficult for immigrants to maintain traditions that for them are an important part of their culture, and hence, their identity. One key informant, who is also

an immigrant, referred to this difficulty when explaining her reliance on canned food to feed friends during gatherings.

Of concern is the observation by a key informant of the perceived lack of interest and willingness of people to cook their own food. Such view is in line with a reported decline in cooking and food preparation skills among various segments of the general population (Health Canada, 2010). This perception points to the need to place individual responsibility within the context of the wider environment—in this case, the food industry. According to three key informants, people are lured to pre-packaged, unhealthy food by the advertisement industry, which seems to go unregulated by governments. These key informants were particularly concerned about the role of advertisement and peer pressure in making the most vulnerable—children—succumb to unhealthy food offered by the food industry.

Despite the pressure to adopt the food that is available in the Region, key informants talked about the need for immigrants to maintain their traditional diet, as the majority of key informants perceived traditional diets as being healthier than the average Canadian diet. Past research confirms this belief among key informants, as traditional diets seem to provide a healthier alternative to fast food convenience items (Kwik, 2008). In fact, evidence suggests that newcomers who exchange their traditional food for more Western food are at a higher risk for increased body weight and coronary heart disease (Lee & Huang, 2001). Two of the key informants who work in food distribution programs reported using their resources to ensure that they are providing culturally appropriate food and opportunities for immigrants to maintain their eating habits. One of these key informants referred to the need to offer traditional food options, to respect the traditional food habits of immigrants and as a strategy to manage low food resources. Another key informant spoke about structural changes in the Region that are widening possibilities for immigrants who want to maintain their traditional diet. An example of this is a program established by the Region of Waterloo that supports immigrants through trained peer health workers from their own ethnic community around healthy eating and healthy living, as indicated by two of the key informants.

Two key informants talked about two main benefits of traditional diets for immigrants. According to these key informants, traditional food helps immigrants grieve their sense of loss. Another benefit of traditional diets is that immigrants maintain a sense of identity from the process of preparation and consumption. This was evidenced by comments made by one key informant, who spoke about the personal experience of trying to acculturate to the food that is available in the supermarket: “I bought cans of [food] just to try, and then I said, ‘No, this is not gonna work cause it's not me and I can't do that’”. (KI3) These comments by key informants highlight the importance that immigrants ascribe to traditional food. Despite good intentions by immigrants to maintain their diets and by community service providers to provide this food to immigrants, a lack of accessibility to traditional ethnic foods makes this process difficult. One key informant in particular expressed the belief that immigrants do acculturate to unhealthy Canadian eating habits.

Overall these findings reiterate not only the relevance of social networks for immigrants but also the difficulties that immigrants and refugees face pre- and post-migration. An added pressure for immigrants is the need to acculturate to food consumed in the Region, which is often unhealthy and dissimilar to the traditional food ways of immigrants. These findings point to the importance for planners and policy makers to be aware of the needs of immigrants when supporting policies that decide what type of food is permitted, and where it is permitted in the Region. Policies that regulate, for instance, where community gardens and temporary markets are permitted appear to have implications for the food security of immigrant populations. Interviews with key informants also highlighted the importance of encouraging social interaction among ethnic communities and also between the community and local farmers.

4.3 Immigrants’ Perceptions of the Food Environment

This section is focused on responses from interviews with immigrants, integrated with responses from the photovoice exercise. This section is organized into five sub-sections including individual experiences of immigrants, and the sociocultural, economic, physical, and political determinants of the

food environment. The section is organized based on the depth and frequency with which each sub-section was discussed by participants. Responses are framed according to the SDH framework in relation to how immigrants navigate the food environment in the Region of Waterloo.

4.3.1 Individual Determinants

4.3.1.1 The immigration experience

Participants were asked about their experience immigrating to Canada, as well as about prior immigration experiences if they had them. Responses from immigrants are divided by pre-migration and post-migration experiences. Understanding the immigration experience was crucial to contextualizing responses about how immigrants navigate the food environment, as these responses illustrate the relevance of prior individual history and culture in understanding how immigrants experience their environment.

When asked about reasons for immigrating to Canada, four of the nine participants talked about negative experiences in their country of origin as the main driver. These responses were common amongst the four participants who immigrated as refugees to Canada, and who were also refugees in other countries. Two participants specified the experiences they had, such as being threatened back home and not being able to return, as exemplified in one participant's remark of their experience:

We have bad situation in our country so we live our country to Syria and stayed in Syria for six years, then I get the refugee for Canada, they accepted me as a refugee, after that I came because I can't go back because it's still the same situation, nothing change. (IP4)

Another main reason for immigrating to Canada is the search for better life opportunities, not only for themselves but also for their children. This was the case among four participants:

First when we came to the USA, it was work related. We never knew about the life but after a year or so we started liking the lifestyle so we decided that at some point, for the future of our son, we decided if there came an opportunity to stay in the USA, but at the same time I was

thinking if we decided to stay here, my first preference was Canada, a better country compared to our life in the USA, we wanted to move to a better place. (KI11)

At least three of the participants lived as immigrants or refugees in other countries before migrating to Canada. This appeared to facilitate the immigration process for these participants, as they seemed to have established expectations of the reality of immigrating, including the difficulties of finding employment and of the process of adapting to a new culture.

Participants were asked their reason for immigrating to the Region of Waterloo, given the importance to have some context for why immigrants were in the country and selected the Region as a destination. In their responses, they highlighted the role of social networks in Canada, which was of influence from the very beginning for some participants in their decision to live in the Region of Waterloo. Five participants indicated that it was the recommendation of friends and others they met to arrive to the Region, for reasons like a higher sense of security and better access to social services, in comparison to larger cities in Canada like Toronto: “I heard from friends that Kitchener is better than Toronto. They told me that Toronto is too crowded and here it’s more safe, and more calm and quiet, and we are here.” (IP7) Two participants had done previous research before migrating, and had decided to immigrate to the Region because it is well connected and has a well-known university. Seven participants had immigrated with family, including parents, siblings, partners, and children, and two participants had immigrated on their own.

Participants were asked about their post-migration experiences in the Region of Waterloo. They discussed how once they migrated they experienced difficulties adapting to the Canadian culture:

Big difference, especially the weather and the life. I travelled before to Europe and I saw how they live, but then you live as a person it’s different. The culture is different from our culture so we have to get used to this people, everything, even the food. (IP4)

As the above quote illustrates, one main reason for the difficulty of adaptation is the large difference between the cultures back home and in Canada. Adapting to a new environment proved to be difficult for some of the participants. In addition, from their responses it appeared that the adaptation process takes away their focus from other issues that these participants may deem as important, for reasons like having to spend time learning English instead of looking for employment. For instance, only two of the participants had practiced English in their previous migration experiences, and none of the other seven participants knew English well prior to arriving to Canada. Whereas some of the participants indicated attending an ESL (English as a Second Language) school, which enhanced their social networks, needing to learn a new language seems to pose a major challenge for immigrants who need jobs.

4.3.1.2 Perspectives of health

When asked how they define health, participants offered a variety of definitions. Five participants emphasized the physical aspect of health, by defining health as the absence of disease. They offered definitions such as not being sick, not having a disability, and not going to the doctor. Seven participants talked about the mental aspect of health by referring to factors such as enjoying life, being themselves, feeling happy and comfortable, and feeling good about themselves. Participants also talked about activities and settings that lead to health, like work safety, peace and security, being outdoors, eating, and exercising. When asked about the importance that they ascribe to health, participants referred to the things that they can do when they are healthy. Primarily participants talked about being able to work, study, and enjoy time with friends. Participants also talked about being independent, as one older participant indicated:

My health is important for me because it's everything for me. I can feel that I'm alive, I could walk, and I could do things. I could eat properly, I could do things properly, and also I don't bother anybody around me by depending on them. (IP3)

Besides not wanting to depend on others, participants said health was important to them so that they could place less focus on themselves and engage in activities that serve others, like taking care of children.

Participants were also asked to rate their health—two participants rated their health as excellent, five participants rated their health as good, and two participants rated their health as poor. Participants who rated their health as excellent talked about the activities that they engage in to be healthy, such as exercising and eating healthy food. These participants also happened to be those who were most economically stable. One of the participants who rated their health as good said their health is good because they take medications, and the remaining four participants said their health is good but they still deal with health issues, like joint pain and chronic disease. One participant who rated their health as poor referred to issues such as a lack of time and energy to take care of themselves: “I’m so tight schedule, whenever I have spare time I just want to sit down or lay down so I am relaxed.” (IP10) Another participant cited their pre-migration history as being a major deterrent on their health, which has carried over to their life in Canada:

We were in a bad situation back home so of course I have not a healthy body, and my husband too, he had a heart surgery before. But we are working for my son, we want to raise him healthy food, healthy place, healthy everything. So healthy life for him. (IP4)

The quote above stresses the importance of understanding the immigration experience to provide context to the post-migration health status on immigrants. Particularly, it illustrates how immigrants prioritize the health of their children, even when they themselves are at risk of poor health.

In addition to being asked about their own health, participants were asked about the health of other immigrants they know. Five of the nine participants talked about their observations of chronic disease among immigrants, specifically diabetes and high blood pressure. One participant ascribed this issue to individual responsibility:

I’m from South Asia, and I know we are predisposed to heart disease, many of my friends have gained weight from moving to Canada, it is not

Canada's fault but it is our fault that when we move from one country to another we choose different food choices which are cheap also so they are gaining weight. (IP9)

In the quote above, the participant appears to be attributing the decline in healthy food choices of friends to individual responsibility. This is despite acknowledging that the cost of food is an economic constraint for recent immigrants. It signals the strong influence of the reliance on placing individual responsibility on issues like obesity in mainstream knowledge. This has repercussions for public policy, as the needs of vulnerable immigrants may not be brought to public knowledge in all cases.

4.3.2 Sociocultural Environment

Participants talked in depth about determinants of the sociocultural environment, and they emphasized factors at the microenvironment level. Sociocultural factors influencing the engagement of immigrants with the food environment include a) social networks, and b) food practices.

Seven participants discussed the role of social networks in their adaptation to Canada. The resources they gained from social networks include information resources, coping mechanisms in times of life crises (like divorce for one participant), and opportunities for social interaction. The latter was particularly the case for an older male participant, as illustrated in the following quote: “I have very good. I always go to ESL in college and I am happy with the whole; my friends in the school, I have many friends here.” (IP2) When referring to information resources, most participants discussed the influence that their social networks had in helping them find food resources like food banks and community centres that offer food programs: “Yes, from people I know from the same country, they told us which place has good quality, where we can get some help.” (IP4) Two participants discussed sharing recipes and food, and receiving help from family and friends for grocery shopping. These findings highlight the role of social capital in the immigration experience of immigrants, particularly for finding resources to meet basic needs.

The importance of food practices that are traditional for immigrants arose during discussions using photovoice. Participants were asked about their favourite photos, which they selected based on food that they like eating, food that they consider to be healthy, and food that is traditional to them: “This is my routine food, usually I cook this one.” (IP7) In addition, three participants indicated taking photographs of food they learned from other countries in which they lived prior to their immigration to Canada. Participants also discussed the great importance that they place in maintaining their cultural identity:

Now I speak another language, but at home, I feel I am near to my family because I still speak the same language with my kids, I don't want my kids to forget their mother language. Everything is still the same. Time by time after years my kids, they will change a little bit but for their kids, they will change more. Not for me, I want to keep my habits with us, and our culture. (IP7)

The quote above demonstrates that some participants place great emphasis on transmitting their cultural values to their children, acknowledging that their children will likely have a different experience than them. Past research reports similar findings, whereby it was found that immigrant parents are more likely to retain their heritage culture than their children (Tardif-Williams & Fisher, 2009). This is relevant to the attitudes that these immigrants have towards food purchasing and preparation habits, and in the way in which outside food is prohibited to their children, as stated by most participants with children. In this respect, participants discussed in great depth the strategies that they use to maintain their traditional ethnic diets, including making food from scratch and purchasing fresh food from the market and grocery stores.

Despite the importance that most participants ascribed to maintaining their traditional diet, many indicated a change in their diet since they arrived to Canada—this was particularly the case among younger participants. They reported a variety of reasons for this change. Two older female participants reported eating smaller portions, and eating food that makes them feel healthy: “Same diet but portions are less. In Iraq we eat big portions” (IP3). An additional two middle-aged participants indicated a change

in their cooking strategies according to the Canadian Food Guidelines. Five participants indicated that they purchase pre-packaged food when needed: “We buy it from the Indian stores, it's pre-made.” (IP11) It is interesting to consider that these participants have maintained their traditional diets but with changes in the way they prepare their food.

The traditions of these participants appeared to influence how they purchase food. Some participants indicated that they assess the quality of the food that they purchase. A strategy for assessing quality that two participants discussed is reading labels for religious and health reasons. For instance, one participant indicated that she reads the labels to ensure that the food that she purchases does not contain certain ingredients that her religion prohibits. Participants also highlighted a concern for finding healthy food for themselves and for their family. They perceived canned food and food that does not appear fresh as unhealthy: “I will never eat a food from a can. They say its health, but it’s not, I want everything fresh.” (IP3) Further, four participants perceived food as being low quality if they thought it contained pesticides:



Figure 3 Healthy Food are Fruits and Vegetables

“It’s good. I don’t know why they make it so big, what do they put on it? (laughs) Something suspicious. I hadn’t seen something that big in our country but we are eating what we can.”

(IP5) This emphasis on eating healthy food was greatly represented in participants’ photographs, as seen in Figure 3.

Perceiving that the food they are eating is low quality may have negative repercussions for these participants. Literature suggests that such perceptions may lead to feelings of a loss of control over their health from being unable to attain food that they see as good quality food. This difficulty may be associated with negative psychological

health outcomes such as depression (Heflin et al., 2007). In addition to quality, participants discussed that they prioritize the origins of food. For example, they perceived food from fast food restaurants as being low quality:

I cook my meals, I heard a lot of something in the restaurants, sometimes, the fast food, I want to learn my kids that it's not good to eat all the time outside. We can eat once per month, because your health, I don't want you to be fat. They understand. (IP7)

Participants also discussed their accessibility to ethnic food, which appeared to depend on the cultural background of the participant. At least two participants from the same background reported feeling satisfied with the availability of ethnic food in the Region:

There are no barriers; if I want to buy something I read the ingredients in the can. Now there are a lot of shops like Hasty Market, they have Mediterranean food, like this food. We don't eat something that contains ingredients that are difficult to find. Everything is provided here. It's good. (IP7)

However, two other participants from a similar background felt that there are not enough ethnic stores; other participants highlighted that they drive to another city to obtain their ethnic food. These findings indicate that while for some groups of immigrants their traditional ethnic food is easily accessible in the Region of Waterloo, for other immigrants accessing sources for preparing their traditional food is difficult. This highlights differences in access for different ethnic minorities.



Figure 4 Unhealthy Food is Pre-packaged Food

Participants also discussed their observations of food procuring habits of friends and family members. Two participants indicated observing declining healthy food procuring habits among friends who were also immigrants, stating that friends are purchasing unhealthy food options like pre-packaged food. These participants perceived pre-packaged food sold at the grocery store to be unhealthy (Figure 4). In addition, three participants reported that their children eat outside the home with friends or at school, and one participant indicated unhealthy eating practices in her child: “Sometimes he goes with his friend



for eating junk food but I don't allow him to go too much.” (IP4) From this quote, it is interesting to highlight the influence of peers to which children of immigrants are often subjected to when being around other children, also shown in past Canadian research (Deslandes, Rivard, Trudeau, Lemoyne, & Joyal, 2012).

Figure 5 My Favorite Photographs are of Food I Eat

Participants talked in depth about their cooking practices. Primarily they discussed methods they use for maintaining their traditional diet, and a few talked about ways in which they have incorporated Canadian food into their traditional cooking. These were emphasized in interviews and also in the photographs that participants took (Figure 5).

In their responses, these participants appeared to be very proud of their ethnic background and of their cooking methods as part of their cultural identity. Among participants with families, all female participants reported doing the cooking for the family, and the two single male participants in the study discussed the strategies they use for eating despite lacking cooking skills. The top reasons that participants cited for maintaining their traditional diets were to maintain their cultural identity and to eat

healthy: “Everything that is considered part of culture, we have our own literature, our own language, dance music, of course the food. Food is the biggest part.” (IP11)

Eating healthy seemed to be prioritized by participants differently; for instance, healthy eating was a particularly salient concern for older female participants, as they indicated needing healthy food to be healthy as they age, and that traditional food is healthier than Canadian food. Two male participants illustrated how their pre-migration history had influenced the way they prioritize food. For example, for one male participant food preparation is not a task for men in his culture:

I have four sisters also, they all cooked. No time for me to do cooking.
One big difference in Haiti, men don't cook as much as women. Even the
restaurant, the women cook, in the family women cook, no men cook.
(IP1)

Another male participant discussed the way previous experiences of being hungry influenced how he perceives food today: “Any food is nice, any food. When you are hungry any food you like. When you feel hungry you can eat everything.” (IP2) This last quote illustrates the influence of living on “survival mode” as some of the key informants indicated.

The length and depth with which immigrants discussed their sociocultural micro and macroenvironments indicate the great relevance of these to how they navigate the food environment in the Region of Waterloo. In particular, immigrants appear to place great value on their traditional food practices, including their food purchasing choices, food preparation practices, and their prioritization of healthy food. The findings also reveal significant differences in how immigrants perceive food; for instance there were differences between males and females, such as how the women in the study prioritize eating healthy food versus the male participants. There were also differences in how immigrants from different backgrounds were able to find food of their choice.

4.3.3 Economic Environment

The next theme most discussed by participants is their economic access to food. Within this theme, both micro and macroenvironmental determinants were highlighted by participants. At the microenvironmental level, the issue most commonly raised was having low income, while at the macroenvironmental level, participants discussed the high cost of food and a lack of employment opportunities in the Region.

Four of the nine participants referred to depleting financial resources, a lack of financial support, and of how a lack of economic resources limited their ability to prepare their own meals and purchase healthy food:

In the start when we stayed in Kitchener, the resources were very limited and we were having tortillas, but when we moved to our own home, we had more choices. I can prepare more from scratch, but when you don't have resources you are more prone to buy easy options that are cheaper.
(IP9)

Responses regarding living with a low income were common across the participants, with the exception of two participants who immigrated as skilled immigrants and who were able to secure jobs not long after their arrival to the Region. This raises the need for additional research into differences in experiences across heterogeneous immigrant populations. Low income was reported among immigrants who had been living in Canada from 3 to 25 years, and it was a particular concern among middle-aged immigrants who arrived as refugees. Having low income appeared to determine how participants, particularly those who immigrated as refugees, obtain food: “The salary of refugee was very low so we had to bring some food from other places (food banks) just to make us in the budget because the budget is not enough.” (IP4)

Related to a lack of income was the issue of unmet employment expectations for these immigrants, an issue that has been found in previous research based in Canada (Dean & Wilson, 2008; Grenier & Xue, 2011). As previously discussed, participants in this study were greatly limited by economic access to food security. Thus in their discussion of how to improve the food environment, they

discussed better access to employment opportunities: “If the government creates jobs for new immigrants, it would be a good thing. But the Canadian people face the same problem. There are a lot of Canadians who can't find jobs.” (IP7). In addition, participants referred to the difficulty and time it takes to find employment—one participant stated that it takes approximately one year for new immigrants to find a job. A theme that appeared to be common among three of the participants is the feeling of starting from zero, or below zero as one participant remarked in the following quote:

Many people are doctors, engineers, and they can't work, and they're still looking for a job, and this is a big issue for all people. You have to get evaluated, study from the beginning, very tough. Since we left our country, my husband had a good job, and we left everything. We had an electronics store but we left everything, we came to start from zero, now we are under zero, slowly. This is a big problem for all the immigrants. But before we came we didn't know there was this problem. (IP4)

The quote above illustrates the frustrations that arise for immigrants when looking for employment, and in many cases, from being forced to restart their career, even when having previous work experience and education. This could have short-term and even long-term consequences on the health of immigrants, as shown in a study by Dean and Wilson (2008) that immigrants report feelings of stress and depression from a lack of income, loss of employment-related skills, loss of social status, and family pressures. The same study also indicated that these feelings appear to transfer to family members. For another participant, the issue of employment was related to instability of his employment that made budgeting for food difficult:

You're always thinking if you don't have a full-time job, you don't know when they tell you ‘no more job for you’. You have to have some money saved, can't throw money and buy what you want - make sure you can save for your rent. But if you have an income, you know exactly how much money you make every month, and you can make a budget, you can go shopping and know how much money you can spend. (IP1)

One participant who has been living in the Region for almost three years indicated feeling hopeful about her husband's job search process. The current findings could be illustrating differences in the employment experience post-migration of immigrants from different backgrounds (e.g. refugees versus skilled immigrants), which, if probed more deeply in further research, could have repercussions for programs and policies that help different types of immigrants.

In addition to barriers related to income and employment, participants discussed the rising cost of food as a broader economic determinant of the environment. Seven participants highlighted the high cost of food when characterizing their first impression of the food environment in the Region:

First impression, expensive, it's very expensive. In Iraq when we buy, we buy box because it's cheaper. But here, two, three, and the taxes, it's very expensive. All my money is going to food. Especially the vegetables and fruit, it's very expensive. (IP5)

Four of the nine participants reported cost as the main determinant of the food that they purchase, while other participants prioritized the quality of food regardless of its cost. For instance, one older participant, who due to her diabetes depends on healthy food like fruits and vegetables, indicated that all her money is going to this type of food. Past research on barriers to diabetes prevention among a group of immigrants in the US also indicated socioeconomic barriers to healthy eating due to the high cost of food and the low cost of unhealthy food (Chaufan et al., 2012). This is worrisome considering that diabetes affects people of all ages and social backgrounds, but it takes a disproportionate toll on older adults, the poor, and minority groups (Chaufan et al., 2012). As this finding suggests, food insecurity may worsen the vulnerability of older immigrant adults to chronic disease like diabetes due to limited resources to adjust their diets.

Participants discussed strategies that they use for finding inexpensive food such as comparing prices between brands and between stores, waiting until the end of the day to shop for groceries, asking others about sales, avoiding expensive stores, and checking the flyers that they get from stores, as illustrated in one participant's comment:

In the store, I compare. Also by flyers, even mac and cheese there is Kraft that's usually expensive brand, but sometimes Food Basics has the food cheaper, on sale. So if dinner Kraft is 99 cents I go to buy the brand. (IP10)

Another participant stated that the cost of food increased since she arrived three years ago. Participants also discussed the high cost of what they perceived to be healthy food, such as organic food and food from the market and higher quality stores:

They (Food Basics) have a good quality, it's not excellent quality like Zehrs, Zehrs they have better quality. But here I can afford to buy as much as I want to eat. 90 or 85 per cent from what I want to buy in Food Basics I can afford the price, but in Zehrs is very expensive for me. For this reason usually I go to Food Basics, because it's not a bad quality and I can afford the price. (IP7)

As the quote above indicates, some participants are forced to purchase lower quality food over high quality food, even when it is physically available because it remains unaffordable for them. It also illustrates that when participants are unable to purchase high quality food, they appear to prioritize the quantity of food as a marker for food choice.

These findings illustrate the burden that the high cost of food is for vulnerable populations like new immigrants who do not yet have the economic resources to purchase the food that they need. They also indicate the significant economic barriers that immigrants experience post-arrival, often despite having previous education and work experience. The circumstances are worse for refugee immigrants, who arrive to the Region without financial resources to survive while they find employment.

4.3.4 Physical Environment

Participants also discussed their physical environment, with a focus on their access to food at the microenvironmental scale. The following results discuss the perceptions of participants of the food spaces

in the Region of Waterloo, their neighbourhood access to food, and their access to alternative food resources, such as community gardens.

Participants reflected on the types of stores that are available in the Region of Waterloo, in comparison to the stores that are typical in their country of origin. Primarily, participants talked about the size of stores, the physical look of stores, and the availability of ethnic food stores in their area. A common theme was the large size of the stores in Canada—with some participants expressing that there is a diminishing variety that is sold in these stores: “We don't have back home very big stores, we have small shops, but it has everything you want, not like these stores.” (IP4) Other participants reported initially being impressed by the size and variety in stores. In regards to the physical look of stores, three participants discussed the cleanliness of stores: “Food basics and Freshco it's so so but Sobeys and Superstore it's more professional and more clean. You can see they are dealing food better.” (IP10) According to this participant’s observations, stores that are more expensive are better maintained than stores that are more affordable.

Participants reported shopping in stores that are near their residence, seemingly due to convenience. Among the modes of transportation that participants reported using are driving for two participants, walking for four participants, taking the bus for two participants, and biking to the store for one participant. Some participants used multiple modes of transportation when needed. The majority of participants reported having a good physical accessibility to stores—for most of them within a five-minute walking distance:

Freshco is what we found, it's better for organic food. Farmer stores use organic soil so the food is healthier but what can we do? We can't go every time to the market, so we buy from here. It's here and its close so we have to buy here. (IP5)

The quote above also illustrates that although some participants were aware of alternative food options like markets, they lacked accessibility to these places. In most cases, this was due to a lack of access to a vehicle.

Not all participants had physical access to alternative food resources—four out of the nine



participants had physical access to a farmers' market, and two of the nine participants had space for gardening in their own home. Three participants discussed going to the farmer's market: "I go to the market, every Saturday, I bought vegetables and tomatoes, kale, spinach, celery, fresh egg, swiss chard, and fruit, everything in the market I bought everything." (IP3) Further, one participant indicated intentions of purchasing food directly from farmers. For the participants who did have physical access to a farmers' market, they indicated that going to the market was an enjoyable experience and reported attending almost weekly, depending on weather conditions (Figure 6).

Figure 6 Farmers' Market

Participants highlighted their participation in activities that provide them with alternative food resources and discussed challenges and benefits experienced in their participation. Seven of the nine participants had participated in a community garden project and described their experience in the project. Their responses illustrate that for those participants who lacked physical accessibility it was a significant constraint to engage in activities such as gardening.

One challenge discussed by three participants is living far from the community garden, which made it difficult and expensive for participants to take care of their gardening plot:

So every day we had to go and we needed money for transportation. If it's by bus, the ticket is expensive, three dollars go, and three dollars come back, six dollars to do it every day? To make this? It's unfair, so most of them left, they didn't continue so the plants died. (IP5)

A related challenge discussed was the minimal economic benefit that participants obtained from gardening, as they reported that their plots were often small and did not yield enough food to make the

effort worthwhile: “It's not like you can donate or help, it's not much product to say ‘Okay, I want to take this much, this quantity, and the extra quantity I want to give it away.’” (IP7) An added challenge mentioned by one participant was theft from their lot: “The place where we did the gardening was not protected so it was open for the public, I go and no cucumber, no pepper.” (IP3) Further, participants discussed the lack of resources for gardening, such as expensive seeds and a lack of water in the garden.

Despite these challenges, five participants discussed multiple benefits from gardening. The main benefits discussed were practical and social benefits, including being able to plant their own ethnic food, seeing the plants grow, and spending time with family: “We took our kids and they helped us to water and how to plant the tomatoes, and also we planted some herbs, coriander, and mint.” (IP7) Although all participants who had previously participated in community gardening indicated they had stopped their participation, they expressed interest in continuing gardening if a better opportunity presented itself.

In summary, these results illustrate that the layout of the food environment is important for immigrants. In particular, they indicated the importance of having close proximity to food resources like grocery stores. This is particularly important for those immigrants who do not have regular access to a vehicle, and especially for those immigrants who due to physical constraints mobilizing (e.g. chronic pain) are unable to take public transportation. In addition, these participants recognized the benefits of alternative food resources such as community gardening. However, they also discussed barriers to access these resources, such as transportation to the community garden and to the farmers’ market.

4.3.5 Political Environment

Participants discussed the political environment at both the micro and the macroenvironmental scales. At the microenvironmental scale, they discussed access to informational resources and to services in the community. At the macroenvironmental scale they discussed the regulation of the food industry.

Participants discussed the great importance of disseminating knowledge and resources to immigrants, particularly for those immigrants who are recent arrivals to the Region. Four participants highlighted difficulties from a lack of knowledge regarding the food environment, including finding the

most inexpensive and best places to shop for food, as illustrated in the following quote: “Now we know where to go, to buy lower. But for new people it’s hard for them, they don't know the places especially the first year; it will be difficult for them.” (IP4) Other challenges mentioned by participants included understanding labels in food, and finding alternatives to grocery stores: “I saw all those shoppers (stores) where you can go do your shopping but I don't know any place beside them where you can go and obtain food.” (IP1)

Despite lacking knowledge resources immediately after arriving to the Region, participants indicated that immigrants gradually learn about resources in their community, which they said are widely available once they find them. Two main assets discussed by participants are resources in their community, specifically in the form of programs offered by community organizations and access to alternative food resources like community gardens. In regards to community programs, participants discussed programs that assisted them in learning skills, finding resources, and finding employment: “We got great help from the Working Centre regarding resume because every country is different, so we learned many things about creating a resume.” (IP9) Two participants had suffered from unexpected family circumstances, which forced them to live in a shelter for a short period of time. Both participants indicated that they received food at the shelter, although one participant expressed frustration at being unable to prepare his own meals. Another participant reported gaining food skills at the shelter from a worker who provided cooking classes to shelter participants:

I stayed in the shelter for 4 months and there we had a program, there was somebody who took care of the food, she made every dinner, breakfast, and lunch we ate ourselves. They called her food coordinator or something like that. She was telling us where to get cheap food. (IP10)

In relation to the regulation of the food industry, participants discussed food labeling, food production, and advertisement of unhealthy food. In regards to food labeling, two participants discussed the need to know what kind of food they are purchasing: “One thing I would like to see in the restaurants, some of them publish the calories in their ingredients. If the Region forced them to publish that would be

very good.” (IP11) Additionally, they cited the need for government intervention in the food production industry.

Two participants indicated a need for changes in the food production process citing issues such as less sugar and less chemicals in food, as illustrated in the following remark by one participant: “Not to use too much chemicals, to make the plants, take care of people. Fewer hormones, I have never seen pepper this size. Before they never used chemicals but now they want to make a bigger quantity to satisfy people.” (IP5)

Related to food labeling were discussions by some of the participants regarding food marketing standards. This was illustrated by

one participant’s photograph whereby unhealthy food is being advertised to children (Figure 7).

As the photograph shows, food is branded to children by utilizing images that populations of this age are likely to identify. These food items, which may be unhealthy as in the photograph, are likely to be found in grocery



Figure 7 Unhealthy Food is Advertised to Children

stores, which are often categorized in the food environment literature as healthy food spaces (e.g. Glanz et al., 2005; Health Canada, 2013).

Participants also referred to the need for more community-based supports that enhance access to food, such as more community centres, feeding healthy food to children in school, and supporting businesses that sell ethnic food:

Food trucks or street food, is there any? I don't know how is law here, you can't sell anything on the street. In Canada or Ontario it's more strict.

In my country we have lots of street food, I was thinking some things and then I heard somebody say: ‘Oh you're not allowed to sell there, you're not allowed to sell there’, you know. (IP10)

Supporting immigrants does not only mean providing jobs directly—as the quote above indicates, immigrants are also looking for their own opportunities outside of the regular job market. Helping these immigrants create their own opportunities requires opening the doors for immigrants who are interested in having food businesses. Bylaws exist to allow food trucks in the Region, however it appears that some immigrants who are recent arrivals may not be fully aware of these opportunities. Additionally, the quote above illustrates that there might be misinformation within the different communities of immigrants regarding zoning bylaws.

These findings regarding the political environment highlighted barriers and assets at the micro and macroenvironmental scales in the Region of Waterloo. They indicate that immigrants have important knowledge to contribute to how the food environment should be improved. In particular, they discussed the need for informational resources, especially for recent immigrants. They also discussed the benefit of services provided by local community organizations. In addition, they indicated the need to examine policies and regulations at the macroenvironmental scale, particularly in regards to food industry practices.

4.4 Conclusion

Findings from the interviews revealed the difficulties that immigrants and refugees in the Region experience when navigating the food environment. Highlighted by key informants were the economic barriers that immigrants face upon arrival to the Region of Waterloo and the difficulties that these barriers pose for adapting to life in the Region. Immigrant participants largely agreed with these perceptions by key informants and added the issue of a lack of employment opportunities in the Region of Waterloo. The assets that the Region of Waterloo offers to immigrants were also revealed in interviews, as well as the strategies and mechanisms that immigrants adopt to cope with pre- and post- migration difficulties. Among assets discussed by key informants were the collaborative partnerships between service providers

in the Region of Waterloo and the rich agricultural resources that exist in the Region. Immigrant participants discussed the strategies they utilize to maintain their traditional diets despite having low incomes, and the importance of their diets to their health.

The results also reveal the potential influence of the food environment in the Region of Waterloo on the health outcomes of immigrants. Mainly the findings indicated that the health outcomes of immigrants could be influenced both by the interaction between predisposition to certain health outcomes and post-migration stressors, as well as their resources for coping, as suggested in past research (Beiser, 2005). For instance, the older participants in the study highlighted their experience of chronic disease and pain when discussing their health by attributing these issues to old age. However, these participants also discussed how the food environment influences their nutrition, which has an impact on their health.

Additionally, this research confirmed the need for comprehensive frameworks that can help decision makers in the Region of Waterloo (and similar contexts) improve the food environment for target populations. In utilizing the ANGELO framework, this research revealed determinants both individual and environmental in the physical, economic, political, and sociocultural aspects of the food environment. ANGELO, integrated with the SDH framework, revealed the potential influence of each aspect of the food environment on the food security and health of immigrants. This research was exploratory, yet, it helped in bringing the relevant role of macroenvironmental aspects of the food environment into food security research. The usefulness of the ANGELO framework to understand the food environment is discussed at length in the following chapter.

Chapter 5 – Discussion

5.1 Summary of Key Findings

The objectives of this research were to examine a) the individual and environmental determinants of how immigrants living in the Region of Waterloo navigate the food environment, b) the perceived relationship between the food environment and the health of immigrants amongst immigrants and service providers, and c) how to improve the food environment to target food insecurity amongst immigrant populations. The key findings of the research are highlighted in this section followed by the study limitations, and specific discussion of the findings as they address the research questions above.

5.1.1 Key Findings

5.1.1.1 A systematic approach to food security is required

Results from 18 interviews with key informants and immigrants living in the Region of Waterloo support a systemic perspective of the interrelation between individual and environmental determinants of the food environment, and their impact on food security. This was confronted throughout the research process in relation to the difficulty of identifying a determinant as solely individual or environmental. For instance, a lack of income was an individual factor at the household level, perhaps due to the need for recent immigrants to devote time to learn English instead of looking for a job. However lack of income was also an environmental determinant since the economic environment at the macroenvironmental scale dictates who gets jobs and what type of jobs they get. Without a comprehensive understanding of how all these elements intermingle to affect food security, a significant reduction of food insecurity in the Region of Waterloo is likely to remain an elusive endeavor. This thesis provided some background and confirmed previous research of the main aspects that could be targeted for food secure immigrant populations in the Region. These aspects are discussed in more detail in the next sections of the chapter.

5.1.1.2 Food security interventions at the food environment level might be more appropriate than those at the individual level

The results of this study support the argument that food environments might have a stronger impact on food security over individual behavior such as skills and knowledge (Story et al., 2008). This was largely suggested by the emphasis that both key informants and immigrant participants placed on the physical, political, economic, and sociocultural aspects of the food environment compared to individual behavior aspects, such as food knowledge. Among key informants, the political environment was most emphasized in responses, followed by observations of the economic environment. These participants also discussed the physical and sociocultural environment but to a lesser extent. This group of key informants appeared to be highly familiar with the food environment in the Region of Waterloo and of issues that they believe need to be addressed. Immigrant participants were less aware of issues at the macroenvironmental scale and they focused their responses on issues at the microenvironmental scale. This is likely due to the short time that most participants had been living in Canada and thus less contextual awareness of issues, as well as due to the diversity of background and experiences that these participants have. When they referred to issues at the macroenvironmental scale, it was often in response to direct questions posed by the interviewer.

Overall, participants considered that unhealthy food environments are the responsibility of governments at the federal level and municipal levels through regulation of the food industry and of land uses that influence where unhealthy food is placed and where alternative sources of food are available. An emphasis on how the food environment impacts the food security of immigrants might guide future interventions away from an individual-level approach to changing behaviour to approaches that address the context of behaviour. Such approaches could be for example interventions that address store proximity and the quality of food sold at stores. Others, such as Cannuscio and colleagues (2013) have drawn similar conclusions. This perspective, emphasized by most of the participants, diminishes the reliance on behavioural interventions that have proven to be ineffective over the long term to reduce food

insecurity (Swinburn et al., 2002; Tarasuk, 2004). Recommendations for how to do this are made later in the conclusions.

5.1.1.3 The immigration experience is an important but neglected social determinant of health

The findings revealed the need to examine and target the needs of immigrants as unique populations, in particularly in relation to their immigration experience. In their responses, immigrant participants highlighted how their pre- and post-migration experiences have influenced their health and their food security in the Region of Waterloo. In particular, participants discussed the great importance that they ascribe to maintaining their traditional ethnic diets that they learned from family and friends back home. These traditional ethnic diets are perceived by most participants to be healthier than the Canadian diet. Such perspective is also aligned with past research of the health benefits of traditional ethnic diets (Kwik, 2008). In addition, the findings reveal that the immigration experience at some levels does not cross ethnic, gender, or age categories. This is particularly for the importance of maintaining traditional food practices, suggesting a shared immigration experience in this regard.

The findings suggest that immigrant populations may prioritize various aspects of the food environment differently, and therefore likely have different needs. As previously mentioned, the maintenance of traditional ethnic diets appeared to be of highest concern. This was followed by discussions of unmet expectations of how the economic environment in the Region of Waterloo would benefit them once they arrived. Examples of this were insights of unmet employment opportunities and the rising cost of food. In addition, the findings support the observation by Viruell-Fuentes (2007) that health declines among immigrants are due to more than dietary acculturation. This is because responses by immigrant participants were focused on aspects of the food environment that influence their food security, and less focus was placed on their acculturation to the Canadian diet. Additionally, although the scale of this thesis was not large enough to establish health declines among immigrants, it appeared that immigrants face significant barriers (e.g. low income, lack of knowledge of the system) upon arrival to the Region of Waterloo. Immigrants are able to cope with such barriers through survival strategies such as

obtaining food from friends or from food banks. However, it is likely that this circumstance will have a negative impact on their health outcomes over time. These findings are in line with past research that shows that the health of recent immigrants decreases significantly over a short period of time post-arrival (Newbold, 2009), which signals a systematic impact on their health.

5.1.1.4 A coordinated change of the food environment is needed

The findings raise significant implications for the need to improve resources and outreach to immigrant populations. This was clear when receiving responses from immigrant participants regarding a lack of informational resources on obtaining affordable and good quality food in the Region of Waterloo. On the part of key informants, they indicated outreach initiatives by the Region of Waterloo to engage community service organizations for immigrants in alternative food resources, like community gardening. These findings also reveal the potential ineffectiveness of individual-based health food promotion interventions when the key barriers remain macroenvironmental factors that are beyond the direct control of individuals. This suggests the need for broad based and coordinated advocacy for change of the food environment, in terms of a) resources and outreach to immigrants at the individual level and b) advocacy for change at the environmental level. The findings are focused on barriers and assets at the regional level, however they reveal the need for coordinated change across the levels of government. This is discussed in greater detail in the sections below.

5.2 Limitations

The findings of this study cannot be completely evaluated without considering its limitations. The first limitation is the sample of participants in this study. The intention was to use a maximum variation sample, which means that a wide diversity of participants are recruited based on established characteristics such as socio-demographic status or ethnic background (Patton, 2002). The purpose of recruiting a diverse sample of participants was to find commonalities in the experiences of the food environment among immigrants in the Region of Waterloo. This was also the purpose when recruiting

key informants. As community organizations were approached about this study, however, they stated the need to examine different groups of immigrants separately, since they have different immigration experiences. By this they were indicating that there were not enough number of participants of each background to adequately explore differences and similarities within the group. Key informants were also asked about the “shared experience” of immigrating; some key informants who were refugees or immigrants themselves appeared to irk at the idea of examining immigrants as a single sample. Future research should acknowledge that there are significant differences in the experiences of immigrants, and should consider this difference when designing research. Specifically, this research revealed that there are large differences between different immigrant populations (e.g. skilled class immigrants versus refugee immigrants) in the way in which they adapt to the Region of Waterloo. Refugees deal with extra vulnerabilities, such as unplanned migration and limited resources. However, the sample was useful in identifying the shared aspects of the experience of migration. Future research should examine specific sub-groups of the population to understand additional individual and environmental determinants of food security.

A second limitation is the use of photovoice with the immigrant participants. Using photovoice proved to be a time-consuming process since it involved three separate meetings with each participant so they could first get the camera and the instructions, return the camera, and again to discuss the photographs. Future research using photovoice should take into consideration the time commitment that this data collection method needs. In addition, some participants shared the photovoice exercise with family members, such as children or friends. This likely biased the results, as some of the photographs do not reflect the views of the participants themselves. In addition, photovoice would have yielded better representations with a clearer indication of what participants were to photograph. In particular, it appears that the photographs do not seem to fully capture issues of food security or accessibility of the food environment. However, using photovoice enabled participants to illustrate the importance of sociocultural aspect of the food environment by taking photographs of their traditional food, which they were able to discuss in detail. Future users of this method should consider its significant time commitment and the

need to clearly define for themselves and for the participants how the photographs are to illustrate the issue of concern. With more time and space resources, this study would have benefitted from suggestions by Wang and colleagues (1998) for implementing photovoice in a community setting. This includes further collaboration with local community organizations and more time taken to develop themes to be photographed. Despite these limitations, photovoice proved to be a useful method of research to bring issues that are important for participants to light.

5.2 Addressing Research Objectives

5.2.1 How do Immigrants Navigate the Food Environment in the Region of Waterloo?

The findings mainly indicate that immigrants experience a diversity of barriers that make access to food difficult in the Region of Waterloo. The research was an attempt to also highlight assets of these populations for navigating the food environment. However, the findings revealed more obstacles than assets exist for immigrants. Primarily, the findings show that the economic and the political environments are the most significant determinants of the food security of immigrants, followed by the physical and sociocultural environments.

First, this study confirmed the relationship between income and food security. It is well known in the literature that economic access invariably predicts food security (McIntyre, 2004), an issue of particular concern to recent immigrants and refugees in Canada who are struggling to find adequate employment (Dean & Wilson, 2008). The economic circumstances of participants in this study may indicate the gravity of low economic status among recent immigrants in Canada, as most of the participants in this study reported their income as being in the lowest income bracket. Participants discussed how having low income affects all other aspects in their life, particularly their food security. In this respect, they discussed the need to strategize their budget to be able to feed the family and to have to resort to using food banks. Key informants were aware of difficulties that having low income presents for recent immigrants trying to afford the food of their preference. In addition, having low income was a barrier for immigrants who were interested in alternative food resources like community gardening due to

the high cost of these activities. **Overall these findings indicate that immigrant populations have unique economic needs that need to be met so they can be food secure.**

Participants also discussed facing multiple expenses that diminish their purchasing power. For instance, affording transportation was a constraint for participants who wanted to participate in a community garden. Key informants (or service providers) also discussed low income and associated expenses among immigrants and refugees in regards to the different areas in which they assist these populations. For example, some key informants who assist refugees in finding housing referred to a lack of affordable housing for immigrants and refugees living under the low income cut off in the Region. An Australian study by Foley and colleagues (2009) found similar results. They showed that housing tenure was associated with household food security, and a Canadian study by Kirkpatrick and Tarasuk (2011) indicated a direct relationship between household food security and income allocated to housing. Thus, the current findings echo past research of the impact of competing expenses such as housing on food security, which suggests the need for a systematic approach to food security. **Interventions that are not exclusively addressing access to food but also issues such as affordable housing and reliable public transportation could also have positive effects on the food security of immigrant populations. This highlights the importance of considering the social determinants of health for these populations.**

A number of participants discussed difficulties finding employment and the strain that competition in the Canadian market places upon their prospects of obtaining employment. This finding is aligned with results of the first Longitudinal Survey of Immigrants to Canada that shows it takes between two and five years to find employment in their area of expertise. This occurs to approximately half of new immigrants coming under the Skilled Worker program (Statistics Canada, 2007). Added pressures for the immigrant participants include their need to recommence their studies, language learning, and in some instances, changing careers. One participant illustrated this difficulty often faced by immigrants: “Find a job, study something else, change your field maybe, see what they need to study, sometimes you have to change.” (IP4) Furthermore, participants discussed receiving income in the form of financial support from the government that is not sufficient to cover their expenses. A similar finding was highlighted in a study

of the food security of Latin American immigrants in Toronto whereby the authors indicate that welfare payments were insufficient to support these immigrants (Vahabi & Damba, 2013). **This study contributes to the literature knowledge of the important role of social assistance for recent immigrants to the Region of Waterloo, and of the need to increase this assistance to incoming immigrant populations.**

Findings also indicate that even when earning moderate income, immigrant households may still be unable to afford high quality food. Both key informants and immigrant participants indicated the rising cost of healthy food in the Region of Waterloo, as well as the economic inaccessibility of ethnic food. Interestingly, when asked about their first impression of the food environment in the Region, contrary to anticipated responses emphasizing the physical infrastructure of the food environment, immigrant participants answered by emphasizing the high cost of food. In their responses, they also compared the cost of food in Canada with that in their countries of origin; one participant indicated that prior to her arrival to the Region she expected that food in Canada would be cheaper. Some key informants also acknowledged the high cost of healthy food and the low cost of unhealthy food, although one key informant indicated that the high cost of healthy food is an issue of public perception.

The high cost of healthy food appears to be more than public perception, however, as has been indicated in past research that investigated feeding practices among US Latin immigrant families (Lindsay, Sussner, Greaney, & Peterson, 2009). These findings have also been replicated in the Canadian context in research of the lack of affordability of food staples like milk (McIntyre, 2004). The Region of Waterloo Public Health issued a report on the health impacts of food security, and it argued that Canada has some of the lowest food prices in the world, but that the cost of a nutritious basket in the Region has increased by 16.9 per cent since 2006 (Region of Waterloo Public Health, 2008). In 2010, the cost of a nutritious food basket cost a family of four \$168.45, which even with recent minimum wage increases, some families are still unable to afford (Region of Waterloo, 2011). A contrasting view is that espoused by researchers in the US context who argue that the affordability of food depends on how affordability is measured and that healthy food is affordable at any income level (Carlson & Frazão, 2014). Under this

argument, it is thought that the affordability of food depends more on the demand of food over the supply of food, meaning that healthy food is offered to both low and high income households depending on the demand for this food. In the Canadian context, researchers argue that food price is the most important determinant of food purchasing for low income, food insecure households (Dachner, Ricciuto, Kirkpatrick, & Tarasuk, 2010). This research somewhat supports the latter argument, indicating that the high cost of food in the Region undermines the food security of immigrant populations. However, it contradicts it in indicating that the issue of *most concern* for immigrants is having the economic means to purchase food. In addition, the findings indicate that immigrants prioritize not only the cost of healthy food but also the cost of culturally appropriate food. **Whether and how that argument stands in the Region of Waterloo remains to be investigated.**

The findings support the view that the economic environment may not be the only determinant of how immigrants navigate the food environment (Gorton et al., 2009; Nord, 2014). They corroborate previous findings that the physical layout of the food environment determines how immigrants navigate the food environment (Gorton et al., 2009; Vahabi & Damba, 2013). For instance, key informants discussed food deserts and food swamps existing in the Region of Waterloo. Key informants highlighted the existence of food swamps, particularly in the City of Cambridge. Immigrant participants also mentioned the wide availability of fast food establishments near their homes. Photographs from some participants illustrated the issue of food swamps as unhealthy snacks that they believed were targeted to children were being sold in their local grocery store. These findings are in line with research in the Region of Waterloo that points to the high accessibility of poor food choices in food establishments and convenience stores (Minaker et al., 2013). **The current findings reveal that both food swamps and food deserts appear to be an issue of concern in the Region of Waterloo.**

This study identified political determinants of the food environment at the micro- and macroenvironmental scales. As anticipated, these were discussed at length by the key informants due to their extensive background in research and work associated with the food environment in the Region, and to a lesser degree by immigrant participants. Key informants mainly referred to gaps in policy and to

barriers within planning practice. In addition, they discussed resources at the neighborhood level that assist immigrants and refugees. In terms of gaps in policy, key informants discussed the lag in policies and bylaws that could in practice support the establishment of alternative resources of food, like temporary markets and community gardens. In addition, key informants criticized the inconsistency in the adoption of bylaws throughout the municipalities in the Region of Waterloo. These observations are on par with recent local studies of municipal land use bylaws that show the current inadequacies within the Region of Waterloo's policies. For example, a study by Long (2013) found that although the Region of Waterloo's Regional Official Plan (ROP) provides direction for the zoning of temporary markets and community gardens, it is up to the discretion of each municipality whether or not to designate different areas of the cities for these uses. This appears to be a barrier for immigrants who are dealing with a myriad of competing needs, for whom having to travel far distances to reach community gardens makes it difficult to engage. Interviews with immigrant participants indicated that these populations take interest in activities like community gardening and purchasing from the farmers' market if these spaces were situated nearer their place of residence. Overall, the results indicate that despite the strength of tools like community gardening, policies in the ROP are inconsistent and are not specific enough to provide clear direction for planners to make decisions on the locations of these land uses. **Thus, the findings indicate that up-to-date and consistent zoning regulation will likely have a positive impact on the food environment and on the food security of vulnerable populations.**

Largely discussed by some of the key informants is the importance of the role of planners in modifying the food environment. Some participants recognized that planning involves a systemic perspective of the food environment and health by looking at strategies for facilitating healthy food practices among citizens. Such a view has been adopted in the (ROP) and the Provincial Policy Statement (PPS) documents. For instance, the PPS promotes "sustainable economic development in a healthy natural environment within a provincial policy framework" (Government of Ontario, 2015, Section 1.1). Despite this commendable goal, in practice it is difficult for planners to fully implement policies that are comprehensive enough to improve the food environment. This is due to the co-existence of multiple,

complex factors that impact the role of planners, including a lack of framework for understanding food environment issues, a lack of funding and expertise to engage in this type of work, and limited interest in the food environment. The latter was one finding in the current study, however the former observations have been made by planning scholars in past research (Pothukuchi & Kaufman, 2000; Pothukuchi, 2004). This study revealed that the influence of market forces in planning is an added issue for planners to get involved in food environment planning. A market-systems approach to planning appears to prevent the development of potentially more successful food environment approaches to food security, such as a systems-based approach. According to key informants, individual market actors have negatively influenced the food environment in the Region of Waterloo by guiding the interpretation and implementation of bylaws. This issue was discussed in detail by two key informants who referred specifically to the implementation of bylaws in the Region that protect large grocery stores. Key informants also discussed the reluctance of planners to promote actions that could potentially hurt relationships with market actors who are landowners. Rydin (2013) calls this model “growth-dependent planning” and in her analysis she identifies some major flaws inherent in the current planning system. She states (pg. 8):

Planners thus often see little alternative to supporting market-led development, even at the cost of negative impacts on some of their local communities and environmental concerns, because otherwise the opportunity for urban change would disappear as the developer looks elsewhere for sites and more amenable local planning authorities

Within this planning model the assumption is that planners and politicians will make decisions on development that benefit enough people, even at the cost of a few. Without a clear framework, however, on how planners are to assess the benefits of a development proposal for instance on a primarily ethnic neighborhood, it is highly difficult for planners to make informed decisions. **The findings suggest the need for a framework that planners can refer to when considering development applications so that the interests of a broader range of people are adequately considered in the context of food security.**

Closely linked with this lack of framework is the poor coordination of action between different sectors that have a significant impact on the food environment. In this regard, it is argued that planning decisions are often made in an uncoordinated manner without much background knowledge of the impact of the food environment on the food security of residents, particularly those living in low-resource neighborhoods (Bournehon, 2007). This was highlighted in responses by multiple key informants, in stating that more coordinated action is required to take action. Moreover, research in planning on the integration of multi-ethnic groups has indicated the lack of knowledge among planners of how to integrate the needs of different ethnic groups (Sandercock, 2003). Such limited knowledge of the needs of different immigrant populations may explain current findings of the lack of targeted food security interventions for these populations. **Thus, a key recommendation from these findings is that planners should collaborate with other stakeholders in the food environment who have more knowledge of the specific needs of immigrant populations.**

Immigrant participants in turn talked mainly about government regulations of the food industry. Most participants appeared to be highly aware of food production practices that utilize chemicals, and few suggested that food production practices have changed at a global scale. Further, participants indicated that better regulation of food labeling would make it easier for the general population to know what is in their food and how their food is made. The main concern that these participants expressed in relation to food production is fear of the unhealthiness of this food. Past literature on the threat of disease from food production indicates that these fears by immigrant participants are well founded. A study by Matthew and McDonald (2006) indicated that centralized food production increases vulnerability to food-borne disease. It also indicated that modern global networks of food production are vulnerable at many points throughout the food production process. The authors suggest some areas of improvement through land use regulation and infrastructure planning, particularly through greater self-sufficiency on food production and consumption. **Within the Region of Waterloo context, this would mean better access to local, healthy, and affordable food options to all populations. Residents in the Region of Waterloo could benefit from community resources like temporary farmers' markets.**

The study also indicated a strong influence of the sociocultural environment on the food choice of participants. Key findings revealed the influence of social networks as buffers from a lack of food security and the role of pre- and post-migration experiences on food choices. Key informants were cognizant of these sociocultural determinants through their direct work with immigrants and refugees. They discussed the role of social networks for supporting immigrants by referring to the role of neighborhoods in information sharing and in the provision of community services. Specifically, key informants discussed the role of information sharing for informing recent immigrants about existing services in the community. Immigrant participants also discussed the importance of information sharing from friends in their decision to arrive to the Region of Waterloo and in finding community resources like employment assistance. These findings indicate that recent immigrants possibly experience a lack of exposure to existing resources in the community, as corroborated in past research (Vahabi & Damba, 2013). However, the findings add an extra dimension of the role of social networks for providing these resources to immigrant populations in need. **Future research on food security interventions that are targeted to immigrant populations could aim to address the role of social networks.**

In regards to the pre- and post-migration experiences of immigrants, key informants referred to the concept of “survival mode” to describe the mentality of immigrants and refugees who have experienced traumatic events. Key informants discussed how being on survival mode negatively influences the food choices of immigrants by leading them to deprioritize food. Interestingly, although immigrant participants did not directly refer to survival mode, the male participants in the study discussed the topics of “survival” and “living in peace”. This was best illustrated by one of the male participants: “I live like a soldier, a soldier is someone who is able to adapt to any situation, eat to survive, you will do whatever to survive, even if it’s not something I like but I have to eat it.” (IP1) This may illustrate that some immigrants, particularly refugees, who have experienced traumatic events like war may not deem eating healthy food as important in their daily life. Similarly, scholars like Diner (2003) refer to the role of pre- and post-migration experiences of food of immigrants such as food scarcity as important for understanding their choice of food later in life. Survival mode not only influenced the de-prioritization of

food among some of the immigrant participants but, according to key informants, also inform factors that immigrants and refugees consider in assessing the quality of food, such as the amount of food available over the type of food. This last argument did not emerge in interviews with immigrant participants since probing participants about quantity and quality of food was not a main focus of the research. It was clear from some of the interviews, however, that survival mode might be a factor of influence in the de-prioritization of healthy food among the male participants.

Immigrant participants discussed their sociocultural food practices at length by discussing how they actively maintain their traditional eating practices, even if changes have to be made. In this regard, they discussed the importance of maintaining their traditional food practices as central to their ethnic identity. This was a common theme among the women in the study, particularly in their perception of traditional food as healthier than Canadian food. These women were also keen on passing on their cultural food practices onto their children, although they recognized that their children, being second-generation immigrants, may not continue these practices as they grow into adulthood. These findings resonate with Holtzman's (2006) anthropological discussion of how food helps construct cultural identities and of the impact of "food-centered nostalgia" in providing immigrants a temporary return to the lands that they left when they immigrated. The theme of food-centered nostalgia has been explored in past research and in gastronomic literature. For instance, a study by Mankekar (2002) examined how grocery stores enable the construction of cultural identity in the contemporary context of transnationality—the movement of migrants through multiple nations. The author discusses gendered cultural food practices of immigrants, particularly the roles of immigrant women of fulfilling wifely duties and of maintaining the cultural food practices of the family. **Considering the great emphasis that immigrant participants placed on their cultural food practices, it appears that further research on the topic in the Canadian context is merited. This would aid in contributing to a comprehensive framework of the food environment.**

5.2.2 How may the Food Environment have an Impact on the Health of Immigrants?

This study also sheds light on how the food environment may influence the health of immigrants. Key to exploring the relationship between health and the food environment is identifying potential explanatory factors for the healthy immigrant effect (HIE). HIE is a theory that examines the superior health status of recent immigrants compared to non-immigrants and the decline of this health advantage over time in Canada (Newbold, 2006; Sanou et al., 2014). Researchers have found strong support for the HIE in regards to chronic conditions—nearly 56 per cent of the Canadian immigrant population reported a chronic condition in the 1994-1995 period and 69 per cent reported chronic conditions six years later (Newbold, 2006). Considering evidence of the impact of the food environment on dietary health (Caspi et al., 2012), it is important to examine this relationship from the perspective of consumers. This is highlighted in a systematic review by Caspi and colleagues (2012) where they found that objective measures of accessibility to unhealthy food outlets like GIS mapping did not correlate with actual consumption of unhealthy food. The findings in the current study corroborate previous findings that the food environment is an important determinant of food security and of the health outcomes of immigrants. In addition, the findings suggest that food security is an important SDH that has not been adequately investigated in HIE literature.

A holistic perspective of the food environment such as the one used in this study illustrates several, interrelated determinants of how the food environment may impact the health of immigrants. **Figure 8** provides a visual description of how the different determinants of the food environment at the micro- and macroenvironmental scales that were identified in this study may affect the health status of immigrants. The two main determinants affecting the health outcomes of immigrants appeared to be income and employment, and these influence the financial resources that immigrants have for fulfilling all other needs.

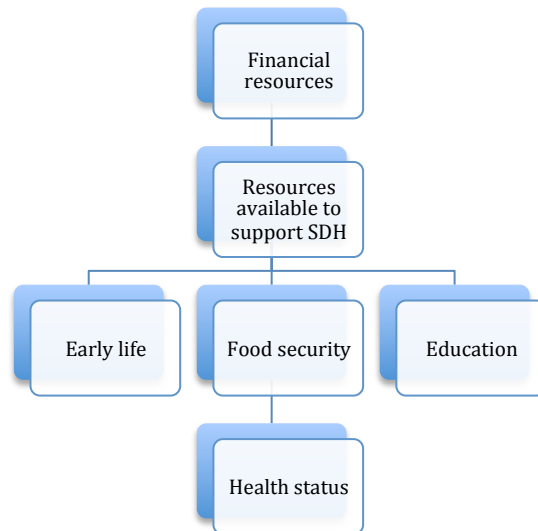


Figure 8 Social Determinants of Health (adapted from Bryant, 2004)

Prior to discussing the perceived relation between the food environment and health, it is important to examine the definitions of health that the immigrant participants used. When asked what health means to them, participants elaborated on the physical aspect of health, particularly absence of disease. Although mostly indirectly, participants also referred to the mental aspect of health, by discussing their ability to enjoy life and feel comfortable with themselves. It was clear from their responses that health is a priority for these participants. They discussed how health allows them to do things and to be independent—a concern for the older adult participants. Immigrant participants were asked to rate their health, using a measure that is known to be a robust, powerful predictor of morbidity and mortality (Cummins, Stafford, Macintyre, Marmot, & Ellaway, 2005). The majority of participants rated their health as good, and few rated their health as either excellent or poor. Most participants related their health outcomes to their diets, and two participants related them to both diet and physical activity. The older adult participants consistently related their health status to their age, specifically when talking about their chronic disease.

As indicated earlier in the discussion, low income coupled by the high cost of food influences the ability that immigrants have for maintaining a healthy diet. This is the first layer of the SDH and it was illustrated in the findings in the need for immigrants to resort to food banks to complement their

household food security needs. The limited nutritional quality of food offered by these establishments has been indicated in research based in Ontario (Tarasuk & Eakin, 2003). In addition, key informants indicated that even when ethnic food stores and farmers' markets are available to immigrant populations, they are still unable to purchase food from these sources due to the cost. Past research has corroborated the influence of economic opportunities for health. For instance, Cummins and colleagues (2005) found that people who reported having excellent or good health in a 1965 Longitudinal US survey were at higher risk of having fair or poor health nine years later if they lived in a poverty area. The authors suggest that the decline in health is due to a variety of socioeconomic variables, including food shopping opportunities and the physical environment of the neighborhood (Cummins et al., 2005). Researchers also point to the prevalence of high BMI in populations living in low income neighborhoods (Block, Scribner, & DeSalvo, 2004). Other economic determinants of the food environment appear to influence health indirectly. For instance, one participant discussed how having a unstable job made it difficult to budget for food due to unpredictability of income. Past research suggests that job insecurity may also have indirect effects on health. This is because job insecurity has a significant impact on health due to stress and an increase in risky healthy behavior such as unhealthy eating (Polanyi et al., 2004). **Together, the current findings indicate the relevance of examining the economic environment and its association with the health outcomes of immigrants over time in the Region of Waterloo. This area of research could be advanced using strict quantitative measures of health.**

Another key issue in the findings are the food resources that are available in the Region of Waterloo, including a wide accessibility to unhealthy food. Both key informants and immigrant participants identified elements of food swamps, by stating, for instance, that unhealthy food is widely available in neighborhoods. These findings correlate with past research indicating the existence of food swamps in the Region of Waterloo (Minaker et al., 2013). Past research indicates the negative effects of issues like food swamps on the population, where it was found that among women in the study, distance to a convenience store was most strongly associated with Body Mass Index (BMI), and affordability of food was strongly associated with BMI for men and women.

The current study, however, indicated that food swamps may have less repercussions on the health of immigrant populations. This is because despite the existence of food swamps in the Region, most participants chose to walk to their nearest grocery store, and none of them reported that they shop at convenience stores. They also indicated the importance that they attribute to maintaining their traditional ethnic diets, which may protect immigrant populations from engaging in unhealthy eating habits. **Hence, it may be a worthwhile future area of research to investigate the impact of food swamps on the health of immigrant populations.**

5.2.3 How can the Food Environment be Improved to Target Food Insecurity amongst Immigrant Populations?

This research, combined with previous literature (Collins et al., 2014; Health Canada, 2013) indicates that in order to establish strategies for improving the food environment, a framework is required to comprehensively examine the success of these strategies. This is particularly relevant when considering specific populations to be targeted, in this case immigrant populations who often have multiple, compounding needs. In addition, the findings illustrate the usefulness of evaluating individual perceptions of the food environment for developing an effective framework of the food environment. The current findings reveal that a comprehensive framework of the food environment would assist planners and other stakeholders of the food environment in making informed decisions about how the food environment will impact immigrant populations.

This study utilized a comprehensive framework of the food environment called ANGELO, integrated with the SDH framework. In its use, ANGELO was greatly beneficial in bringing attention to the broad dimensions of the food environment in relation to the individual and environmental determinants of the food environment. This also occurred through the analysis of the physical, economic, political, and sociocultural aspects of the food environment that ANGELO facilitated in this research. Such analysis improved the study in providing a systems-based perspective to the determinants of food security in the food environment of the Region of Waterloo. It also brought attention to the dimensions of

the food environment that may not have been consistently evaluated in previous research, such as the political environment (Dean & Elliot, 2011; Gorton et al., 2009). The simplicity of use of ANGELO highlights its applicability for use by practicing planners. However, due to the same simplicity, the ANGELO framework may not completely take into account elements of the food environment that are relevant for specific populations. This was salient in the difficulty when framing the results of responses from immigrants participants. For instance, immigrant participants greatly emphasized their pre- and post-migration experiences and how these influence their eating choices today. ANGELO, being mainly focused on environmental determinants, appeared to be less useful in understanding the integration of the immigration experience and the food environment. **This indicates a need to better encompass individual experiences of the environment. This could be done by adding a temporal component to ANGELO to capture the individual experience, or by using ANGELO in combination of a framework that encompasses individual components.**

ANGELO, and tools similar to this, should be evaluated for their inclusion of individual perceptions of the food environment. This study indicates that individual perceptions are important for two main reasons. First, broad frameworks can make it difficult to interpret the circumstances of specific populations. This study primarily examined the perceptions of the food environment of immigrant participants and key informants. Moreover, it assessed the perceptions of immigrant populations, which are often hard to reach populations. Assessing perceptions in this study was important for understanding the experiences of individuals in their context in a manner that may not be appropriately encompassed in existing frameworks. Second, individual perceptions of the food environment are important to examine the validity and relevance of objective measures of the food environment. This helps in improving frameworks like ANGELO. This is because, as Glanz and colleagues (2005) indicate, the reliance on objective measures of the food environment, such as the food shopping behavior patterns of individuals in correlation with neighborhood characteristics, may be oversimplifying the food environment. Other scholars agree with this argument, for instance, Caspi and colleagues (2012) state that: “it may be overly simplistic to categorize certain stores as protective or detrimental to health” (pg. 1185). The findings also

show that objective measures of the food environment need to include the ethnic food preferences of populations. This is because even when healthy food is available in the local grocery store, some population groups may still be reluctant to purchase this food due to their unfamiliarity with and rejection of it, as it was indicated from interviews with immigrant participants. **Assessing individual perceptions was a strength of this study, as the findings support the belief that, by taking into account individual perceptions of the food environment, we may better understand the association between the environment and individual dietary habits.**

The findings also indicate that similar frameworks that are used to understand the food environment and its impact on diets and health also need to be reviewed. This is especially the case for frameworks that are used inconsistently in research and practice to define complex concepts, particularly food security. A framework of food security is not yet established and researchers use a diversity of frameworks and definitions to understand food security. Among these are the WHO definition of food security (WHO, 2015) and the 5 A's framework of food security by the Centre for Food Studies (Centre for Studies in Food Security, 2014). Others have taken a simplistic approach of food security by defining it as "uncertainty of accessibility to nutritionally adequate food" (Buscemi, Beech, & Relyea, 2011, p. 149). Other scholars assert that when measuring food security researchers need to emphasize an access lens by paying attention to issues like poverty and social, political, and economic disenfranchisement (Barret, 2010). This was highlighted in these findings, as participants and key informants across the spectrum focused on systemic issues such as employment, income and affordable housing, while barely mentioning issues like availability of food. The findings resonate with Barret's (2010) argument that "aggregate food availability is a poor predictor of other food insecurity indicators" (pg. 827). Hence, the fact that availability of food was barely mentioned as a significant barrier or asset for food security suggests that food availability is not an accurate measure of food insecurity. **This research reveals that in order for planners to adequately address food insecurity among immigrant populations, they need a systems-based understanding of food security.** This has implications not

only conceptually but also in practice, since the way in which food security is understood will likely dictate the interventions that are put in place to address it.

Together, these findings indicate that in order to improve the food environment, interventions need to be initiated and established that address the needs of immigrant populations at both individual and environmental scales. Employing a consistent framework will aid to establish such interventions to ensure that they address existing barriers and assets of immigrant populations.

5.3 Summary

Together, the findings indicate that how immigrants navigate the food environment in the Region of Waterloo is determined by a set of complex, interrelated individual and environmental factors. These factors may have taken place in the past (pre-migration) and they are either carried over to the present (post-migration) or new factors emerge. The study suggests that research of the food environment and the practice that follows this research necessitates a comprehensive framework of the food environment that converges objective (e.g. geographic proximity) and subjective measures (e.g. cultural preferences). In addition the findings indicate that different populations may experience and act upon environmental contexts differently. Lastly, the food environment itself may have consequences for the health of immigrant populations.

Chapter 6 – Conclusions and Recommendations

6.1 Thesis Conclusions

Research presented in this study, including a review of the literature and results from the case study, demonstrate the need for a comprehensive framework of the food environment that extrapolates knowledge from multiple disciplines and from the community. This aids the planning field by incorporating a framework that can guide planning practice. Interviews from key informants who are well informed of the health, food, and immigration systems in Canada, as well as from recent, mid-term, and long term immigrants living in the Region of Waterloo indicate that the needs of immigrants ought to be considered within the planning and public health realms.

These needs arise from a position of vulnerability for immigrants post-migration, sometimes due to their experiences and resources acquired pre-migration, and sometimes due to their experiences and resources established post-migration. This research highlighted the need for a systems approach from planners to address determinants of the food environment. Issues such as affordable housing and food swamps are already on the radar for planners (Kaufman, 2004), however, planners need to consider these needs through equity lens that acknowledges the compounded vulnerability of immigrants. Further, planners and other public service workers can develop policies and programs that are founded on the assets that immigrants possess, including their utilization of social networks post-arrival. The findings of this study indicate that this is already happening at some level in the Region of Waterloo, through the regional government's efforts to link immigrants with others who understand their needs, through programs like the peer health worker program.

This research contributed to the field of planning by a) examining the food environment in the Region of Waterloo through a comprehensive integration of individual and environmental determinants, b) investigating the needs of immigrants and refugees living in the Region of Waterloo, and c) contributing to knowledge on the influence of planning decisions on the health of the immigrant population.

It contributed to knowledge of the food environment through an examination of perceptions of key informants from a diversity of fields and of immigrants from a diversity of backgrounds and length of stay in the Region. The findings indicated that immigrants have unique experiences, knowledge, and needs that have a great influence on how they perceive the food environment and how they interact with it. Key informants brought to light the importance of understanding and considering the needs of stakeholders who are affected by the decisions that are made at the federal, provincial, and municipal levels. Bringing these perspectives to the planning table ensures that one group is not negatively influenced by decisions that benefit another. For instance, immigrant participants discussed at length the high cost of food in the Region of Waterloo, whereas key informants understood this issue but stated that farmers are struggling to produce food in the face of large food producers that manipulate prices in the food production industry. Paying attention to the perspectives of participants helped in avoiding a narrow focus on a particular issue of interest, and in turn provided a contribution to the planning field that is broad and that offers interesting future areas of research.

The research also contributes to the planning field a unique perspective of the food environment through a broad examination of the perspectives and needs of immigrants and refugees living in the Region of Waterloo. Research on the food environment is just starting to emerge and is currently predominantly focused on building a framework to conceptualize and measure the food environment (e.g. Glanz et al., 2005). This study is contributing to this research by offering insight into individual perceptions of the food environment from a group of decision makers and from members from vulnerable immigrant populations.

In addition, this study contributed to knowledge of how the built environment impacts the dietary choices of immigrant populations, through a greater focus on individual experience. Past research has shown that the built environment has an impact on dietary choices by influencing what and how much food people consume at particular times and places (Sobal et al., 2007). Similar research shows that neighborhoods with low socio-demographic characteristics have more access to low nutritious food and less access to high nutritious food (Morland, Wing, & Diez Roux, 2002). This study contributed to

current literature of the built environment-diet relation through an examination of how having access to unhealthy food in their neighborhoods may influence the dietary choices of some immigrants without a strong attachment to their cultural food practices.

This study also explores how immigrants are likely to deal with food insecurity in the face of barriers in the environment through strategies such as maintaining their traditional ethnic diets in cost-effective ways. Further, the findings indicate the need for contextual research that puts regional (or other geographically scaled) differences in perspective, given the current emphasis in past research of large metropolitan cities like Toronto (Vahabi & Damba, 2013). Moreover it brings into the discussion the importance of the impact of transnational migration on the meaning of “traditional ethnic food” and the implications that this has on health and well-being. The findings largely question the overreliance on the acculturation model to explain dietary changes in immigrants over their time since arrival to Canada. Instead, they offer knowledge that can help build theories for how the food environment may influence dietary changes, coupled with individual perception and experience. This knowledge examines the physical, political, economic, and sociocultural determinants of the food environment. It suggests that financial resources are main determinants of how immigrants navigate the food environment and that these resources are influenced by a number of factors. Most significant of those factors are employment that meets the qualification of immigrants, affordable housing in the Region of Waterloo, and welfare assistance that can sustain immigrants while they find adequate employment. Other important determinants are the high cost of food, the tensions surrounding the cost of food, access to community resources that are influenced by land use decisions (e.g. community gardens and temporary markets), and social support from family and friends.

In addition, this research contributes to the planning field by offering possible scenarios of how the built environment may influence the health of immigrants. In particular, this research takes an approach that emphasizes the specifics of local environmental interactions and how individuals are situated within their environmental contexts (Leatherman & Goodman, 2005). This approach is supported by findings in a report by the WHO on the Social Determinants of Health (2003) based on thousands of

cross-sectional and longitudinal research reports that determined that behavior is shaped by the environment. Thus, this approach was helpful in understanding the health outcomes of the immigrants in this study in relation to how they interact with their food environment. The findings of this research support the largely established relationship between income and food security and they also indicate that other determinants of health suffer in the face of a lack of income. Further, they illustrate the resilience of immigrants and refugees through findings that speak to the assets and supports they utilize to overcome obstacles (e.g. by finding community organizations that serve immigrants).

6.2 Recommendations

One goal of this research is to provide recommendations for planners, public health, and community service providers at the theoretical and practical levels that can help address and improve the food environments of immigrants living in the Region of Waterloo. These recommendations are founded on interviews with key informants and immigrant participants, coupled with past literature.

6.2.1 Theoretical Recommendations

Future areas of research emphasized in this discussion based on the findings of this study include a) developing a systems-based approach to understanding food environments, b) examining the implication of food environments on the health outcomes of immigrant populations, c) the role of community-level food initiatives, and d) the role of planners for institutionalizing informal food practices, and the implications of this formalization.

6.2.1.1 Developing a systems-based approach of the food environment

The findings of this study point to the need to arrive at a systems-based approach for understanding the food environment. Collected in this study is a broad diversity of perspectives on the topic of the food environment and its impact on health. Anticipating that a single point of view on the issue would possibly not be sufficient to understand the question in its complexity, key informants who are knowledgeable in a diversity of topics were interviewed. In addition, the study includes interviews

with immigrants from a variety of immigration class and ethnic backgrounds, which was anticipated to aid in examining whether commonalities exist among immigrants from these different groups. The great diversity of perspectives that emerged from the interviews helped to gain a comprehensive understanding of the food environment in the Region of Waterloo. As the results show, the perspective that key informants have on public policy represents a broad, systems-based discussion of barriers and assets that the community has for improving the food environment. This perspective aligns with the SDH tenets in which food security is seen as an important aspect of health (Raphael, 2004). Interviews with key informants and immigrant participants included a wide range of topics related to the food environment—with some topics not initially considered as important for the food environment. For instance, key informants discussed issues of farming and agriculture, as well as national immigration policy. Learning this helped in painting a systemic picture of how the food environment operates, as well as the different stakeholders that are involved. **Future research of how the food environment operates to influence diet and health should adopt a systems-based perspective of the food environment.**

The need for further collaboration to conceptualize the food environment was also revealed by this research. This is because the determinants of the food environment that were identified in this research are not solely under the realm of planning practice. Issues such as employment and immigration policies affect immigrants at the federal and provincial legislative frameworks. However, planners could have a significant role in building knowledge for those conducting research of the food environment. As the results suggest, planning for a better food environment requires thinking “out of the box” and considering, as much as possible, the possible impacts of planning decisions on the community. Effective planning also considers how planning decisions affect specific populations in different contexts. In particular, scholars Born and Purcell (2006) state that the increasing awareness of the link between the role of cities and the food environment highlights the need for planners to focus on issues that depart from strictly looking at land use patterns. Issues such as safety and food security are also important to the job of planners. **Thus, this research advocates a collaboration between planners and others who are well informed about different aspects of the food environment.** Collaboration brings to light the

perspectives of all parties (as appropriate and feasible) and can aid in the alleviation of tensions between stakeholders.

6.2.1.2 Examining the impact of the food environment on the health outcomes of immigrant populations

A main purpose of this research is to provide insights into future research directions that investigate the factors influencing the Healthy Immigrant Effect (HIE). In particular, this research provided insights into how the food environment may be an important determinant of the health of immigrant populations.

In regards to the aspects of the food environment that have the most significant implications for health, this study revealed the relevance of examining the economic aspect of the food environment and its association with the health outcomes of immigrants over time in the Region of Waterloo. This study provided some insight into the relevance of food affordability to healthy diet consumption, also probed in past research (Inglis, Ball, & Crawford, 2008). Specifically, it indicated that immigrants maintain their traditional ethnic diets including the consumption of fruits and vegetables despite the perceived cost of these food items. Participants indicated utilizing a variety of cost-effective strategies to purchase this food, such as looking for sales and shopping in unexpensive places. However, it remains unclear the extent to which following these strategies will be effective for relieving food insecurity for this group of immigrants. This is particularly the case given that immigrants may continue purchasing the food that they need but at the cost of other potentially unmet needs. It also remains unclear how the economic environment will affect the health of immigrants over time. This research revealed that in addition to having low income, immigrants experience competing expenses post-arrival (e.g. finding housing) often in the face of limited employment opportunities. How these economic barriers affect the health of immigrants in the long term in the Region of Waterloo remains to be established. **Future research addressing the influence of the economic environment on the healthy immigrant effect would benefit from objective, longitudinal measures of health and income.**

An additional future area of research is to investigate how the built environment, particularly the food desert and food swamp phenomenons impact the health of immigrants. The extent to which these issues were discussed by some of the key informants, corroborated by previous research in the Region of Waterloo (Minaker et al., 2013), indicates the need to further address their impact on the health of vulnerable populations. In regards to immigrants, the findings of this study suggest that these populations may be more resilient to issues like food swamps than other populations due to their strong attachment to their traditional food. However, given the small scale of this study, it is difficult to clearly establish the strength of the relationship between being resilient to the built environment and personal preferences of traditional food. **Future research could advance this area of inquiry by investigating the impact of food swamps and food deserts on the health outcomes of immigrants over time.**

Additional theoretical recommendations for future areas of research relate to the pre- and post-migration experience of immigrants and the impact of these on their health outcomes. Considering the great emphasis that immigrant participants placed on their cultural food practices, it appears that further research on the topic in the Canadian context is needed. In particular, it appears that immigrant populations hold a strong attachment to maintaining connection to their cultural roots through food. However, maintaining their diets was a barrier for some of the participants. For instance, while some immigrant participants discussed their easy access to traditional ethnic food, other participants discussed their need to drive to different cities to obtain this food. This indicates that whereas some sub-groups of immigrant populations may have easy access to the ethnic food of their choice, this is not the case for other sub-groups of immigrants. **Future research should aim to investigate the role of pre- and post-migration experiences of traditional ethnic food attachment and access to this food on the health of immigrants.**

An additional area of future research is to examine additional vulnerabilities to chronic disease of immigrant populations to Canada. The findings reveal significant differences in how immigrants perceive food; for instance there were differences between males and females, such as how the women in the study prioritize eating healthy food versus the male participants. In addition, future

research could explore the interrelation between biological predisposition to chronic disease, such as diabetes, and environmental determinants of food access, and how this worsens the vulnerability to disease.

Lastly, the current study provides some indication of the higher vulnerability to food insecurity of recent immigrants. This result corresponds with findings based on national data (Health Canada, 2012). The findings also indicate the extra vulnerabilities of immigrants who have immigrated through different immigration class. For instance, whereas skilled immigrants deal with difficulties finding employment that meets their qualifications, as found in this study and in past research (e.g. Dean & Wilson, 2008), some refugees and refugee claimants arrive to Canada often without any previous education that can help them find employment. As indicate in this research, refugees and refugee claimants deal with compounded sources of vulnerability, such as traumatic experiences that these immigrants may have had pre-migration. **Future research should help to establish how the food insecurity of immigrants is likely to progress or diminish over the long term in Canada, particularly for the most vulnerable immigrants, refugees and refugee claimants.**

6.2.1.3 The role of community-level food initiatives

This research highlighted the continuing issues of power dynamics and of the interests of different stakeholders of the food environment. In particular, it indicated that key informants considered community gardens and temporary farmers' markets as positive for the community and as potential levelers of power inequalities by being inclusive of traditionally marginalized populations via grass roots community organizing and an increased social capital. However, immigrant participants indicated that they encountered multiple social, physical, and economic barriers to community gardens and temporary farmers' markets. The findings reveal a potential gap between what decision-makers prioritize as practical interventions to improve the food environment (e.g. community gardens) and the ubiquitous unmet needs of vulnerable populations. Scholars such as Collins and colleagues (2014) deem community food initiatives like community gardens as a means to address the wants and needs of empowered populations

like those of middle-income groups, while avoiding a critical evaluation of the roots of issues that lead to food insecurity. In contrast, others scholars like Emmet (2011) and Miedema and colleagues (2013) consider these initiatives as positive means of empowering vulnerable populations. **Future research should investigate the role of community-based food initiatives like community gardens for addressing the needs of the most disadvantaged immigrant populations.**

Similarly, this study highlights the potential of food policy councils as outlets for decision-making and communication between various community stakeholders. The local food policy council was regarded by key informants as a viable source of change at the food environment level. However, the means by which these councils can affect change, in particular by addressing the needs of immigrant populations, are unclear. Further, it is unclear how the inclusion of immigrants on these councils may help communicate the needs of these populations, and ultimately improve food security. Further, there is a need to examine how power dynamics between various stakeholders on these councils impacts decision-making about the food system, as well as who has the most influence on the food environment. **Future research is needed to understand the structures of local food policy councils and their role in improving the food security of marginalized populations such as immigrants.**

6.2.1.4 The role of planners for institutionalizing informal processes

The current study revealed barriers in the food environment for which planners have an important role. Namely the study identified gaps in policies (e.g. outdated zoning bylaws) and the need for better coordination across levels of government and between the municipalities in the Region of Waterloo. In particular, it indicated the existence of zoning bylaws that deter the establishment of food stores around large grocery stores, and the ambiguity of bylaws that hinder the establishment of alternative food resources like community gardens or food trucks. What appeared to be most relevant to immigrant populations is the existence of informal processes that perhaps enhance the food security of immigrants, specifically the establishment of uncertified food carts selling ethnic food in the City of Cambridge. These food carts may be meeting the needs of immigrant populations in Cambridge, a city in the Region

that was identified by one key informant as having food deserts. From the key informants, it appears that decision makers have turned a blind eye to these activities, but it is unclear whether this should continue or whether these practices should be formalized to enhance the health and safety of consumers. **Future research should address the role of informal processes like the establishment of ethnic food carts in the community for addressing the food security needs of immigrant populations, and the potential consequences of formalizing these activities.**

6.2.2 Practical Recommendations

One objective of this research is to provide future policy directions that emphasize the role of planners to increase the food security of immigrants in the food environment of the Region of Waterloo. These recommendations are based on in-depth interviews with key informants and immigrants in the Region of Waterloo, complemented by past literature.

6.2.2.1 Increasing attention to food security

In Canada, the field of food environments is currently under researched and lacks understanding by the planning profession (Health Canada, 2013). This may be in part due to the current lack of attention by planners of issues at the food environment level, as indicated by some of the key informants in this study. In 2004, a special issue published by the *Journal of Planning Education and Research* indicated the lack of planning focus on the food system and it asserted that planning scholars and practitioners need a better awareness of the food system (Kaufman, 2004). This perceived lack of connection between planners' interest in urban development and on the food environment of a community may rest on the overwhelming influence of the growth-dependent model of planning, a concept developed by Rydin (2013) in her criticism of the planning model. Thus, a reliance on the private sector can often result in a lack of systematic approaches in planning to address issues in the food environment. According to Rydin (2013), this may be the result of planners often being subdued to the wishes of market-led developers, in the planners' quest to secure urban change. In this way, planners might unwillingly disregard the

importance of issues like food security (Pothukuchi & Kaufman, 2000). This was clear in responses from key informants, who indicated the slow progress towards more up-to-date and consistent bylaws due to the fears in municipal government of losing business from large grocery stores. **However, there is potential to increase attention from planners to food security through the use of integrated frameworks that can aid planners in taking systems-based action towards the food environment.**

6.2.2.2 Creating a healthy built environment

A planning model that emphasizes the creation of a healthy built environment is one that takes a systems-based perspective of planning by incorporating all aspects of cities that are key to a healthy environment. Similarly, planning scholars Pothukuchi and Kayfman (2000) advocate for planning to integrate all aspects of cities, including food issues, by stating: “To be truly concerned about improving human settlements, planners need to incorporate food issues into their working model” (pg. 118).

Through such model, the needs of low income and vulnerable populations are met by addressing issues of concern to these populations, such as well-being and social inequalities. These issues are key to a healthy built environment, since as this study illustrated, they have great influence on the food environment and on its actors.

In contrast to previous research of the healthiness of the food environment (e.g. Dean & Wilson, 2008; Gorton et al., 2009), the key informants in this study emphasized the role of the political and economic environments on access to healthy food. They provided insight into changes needed at the structural level from within planning and also in the wider political environment. Overall, the findings are in line with Rydin’s (2013) criticism of the current planning model. When working within the constraints of the growth-dependent model, Rydin argues, planners are left with the difficult position of relying on private market forces to provide social services to the community, such as affordable housing. As the current study suggests, however, reliance on the market to provide services like affordable housing may be socially and economically unsustainable. In the case of affordable housing, this is because a) affordable housing has not been adapted to meet housing demands of the current demographic profile in

the Region of Waterloo, and b) a lack of structured attention to affordable housing can result in the geographic segregation of immigrants (Texeira, 2009). The current findings indicate that in order to create a healthy built environment we need a structured system that relies less on private market forces to provide social services. Rather, a structured system that is aimed at creating a healthy built environment would consider how different elements of the food environment operate, and would work to improve these elements. **It is therefore through a systems-based approach to the food environment that planners can create a healthy built environment. Planners have a role to play in addressing the SDH, including affordable housing, transit, and employment, that indirectly impact the food security of immigrant populations.**

6.2.2.3 Increasing economic access to food including the cost of food and housing

Increasing economic access to food corresponds to establishing financial resources for the population to access food. This requires initiatives at all government levels, but is it likely to have the most effect at the federal level. For instance, Collins and colleagues (2014) illustrate a food security model in Canada in which initiatives at the federal and provincial levels are focused on income. An income-support model of food security is suggested to have the most direct impact on household food security, and consequently, health. Such model encompasses methods of assistance including social assistance, childcare benefits, and housing supports (Collins et al., 2014). Also at the same level is the financial support of vulnerable populations to be food secure through key issues like housing affordability. In Canada, approximately 40% of residents spent more than 30% of the household income on housing in the year 2000 (Bryant, 2004) and in the Region of Waterloo housing affordability remains a problem to-date (Region of Waterloo, 2011). In addition, the erosion of the Canadian welfare state presents difficulties for significantly diminishing food insecurity; research indicates the need to advocate for the reestablishment of government-run social programs that can increase the economic means to food security (Tarasuk & Davis, 1996; Kirkpatrick & Tarasuk, 2011).

The current study contributed potential reasons for the vulnerability of recent immigrants to food insecurity, namely limited financial resources and a lack of employment opportunities in the Region of Waterloo. This research suggests that without addressing these vulnerabilities, the active participation of immigrants in the community is difficult. From this study it appears that better zoning regulation could open possibilities for immigrants in search of alternative food resources like community gardening (e.g. Long, 2013). However, the adoption of these strategies ought to be considered in light of potential barriers for immigrants. Despite the widespread support that municipal food initiatives like community gardening have garnered in Canada, some argue that these activities are impeding a true, critical evaluation of addressing the roots of food insecurity (Collins et al., 2014). Discussed by immigrant participants was the economic accessibility to alternative sources of food such as community gardening due to associated costs like transportation and the cost of gardening tools. This indicates the limited potential of community-based responses to alleviate food insecurity among immigrants without a comprehensive approach that addresses its root causes. This study indicates that by alleviating competing expenses that immigrants incur upon arrival, such as finding housing and purchasing basic household items, as well as by providing economic resources to immigrants while they find employment, the economic power of these populations can be improved. **Hence the need for planners to collaborate with other stakeholders at all levels of government to address the unique needs of immigrant populations, particularly those populations that are recent arrivals to the Region of Waterloo.**

6.2.2.4 Coordinating policies and filling gaps that lag behind land use practices, as well as a better coordination between sectors

One key informant discussed the need for a systems-based approach to planning through political and community support to develop coordinated policies: “What we try to do is make the environment in the community a healthy environment and of course to do that you do need to have the politicians and the support of the decision makers within the community.” (IP9) Scholars largely agree with the need for political support to adopt a systems-based approach, in positing that a community model that aims to

enhance food security requires “making food insecurity explicit in municipal food policy discourse [...] for developing a coordinated strategy for household food insecurity action” (Collins et al., 2014; pg. e139). One way to coordinate strategy is through the establishment of local food policy councils as a means of establishing public participation, addressing competing interests, and ensuring that initiatives are coordinated across the spectrum.

In the Region of Waterloo, the local food policy council is a local partnership driven by municipal government authorities, food activists, and local service providers. It is a board of 18 representatives including local farmers, emergency food providers, business and health professionals (The Waterloo Region Food System Roundtable, 2015). Their mandate is to create a healthier food system in the Region of Waterloo through priority activities like networking, coordinating the implementation of initiatives, and identifying policy changes as needed (The Waterloo Region Food System Roundtable, 2015). **Through continuous support of the local food policy council, it could be ensured that planning strategies that are aimed at creating a healthy built environment are coordinated between sectors, and that current lags in policy can be identified and filled.**

6.2.2.5 Improving accessibility to ethnic stores and fresh food, and diminishing the establishment of food swamps in the Region

The findings indicated the great emphasis that immigrant populations place on maintaining their traditional ethnic diet, and the great psychological and physical benefits that this may have on their health. A recommendation is to improve accessibility to ethnic stores in the Region of Waterloo, and to increase access to fresh food, which immigrant populations prioritize. Strategies like establishing farmers’ markets could aid in decreasing the cost of fresh food for immigrants and to increasing the physical accessibility to this food, as has been found in previous research (Larsen & Gilliland, 2009). In addition, food swamps can be diminished through strategies like corner store interventions in vulnerable neighborhoods of immigrants. Collaborative corner store interventions have been implemented in two immigrant communities in LA, USA with some success (Ortega, et al., 2015). In addition, food swamps and food

deserts can be reduced in the Region through better zoning regulations that encourage temporary farmers' markets (Long, 2013). **A short-term, feasible strategy for reducing food insecurity among immigrant populations is to improve access to fresh and ethnic food and to reduce the impact of food deserts and food swamps.**

6.2.2.6 Building upon the strength of local immigration partnerships to increase resources for immigrant populations

A key lesson from the findings is that the region has the capacity to ensure that there is an equitable distribution of community assets that can help improve the food security of immigrants. These assets can be distributed through community-based partnerships, which have been identified in previous research as crucial to take action on the food environment (Health Canada, 2013). Currently established partnerships that connect immigrants in the Region of Waterloo, such as the local immigration partnership, could be utilized to increase resources that improve the food security of immigrants. Key informants indicated that they have been engaged in connecting with community organizations that serve immigrants in an effort to create opportunities for community gardening. Further efforts not only for community gardening but also other aspects of the food environment such the creation of employment opportunities for new immigrants could be also integrated. As key informants indicated, the current immigration partnership between community organizations is very collaborative. Immigrants, in turn, discussed obtaining needed resources from these organizations. Thus, community partnerships may be an appropriate direction for increasing resources of immigrants. **Through further partnership with these organizations, not only the unique needs of immigrants can continue being identified, but also they can be addressed at the policy level.**

The findings indicated that partnerships also emerge at the grass-roots level. For instance, some key informants highlighted the strength of social networks for immigrants and how these serve as informational resources. By building upon the strength of social networks of immigrants, their adaptation and success in the Region of Waterloo can be facilitated. In particular, developing social networks will be

key for recent immigrants in their search of financial opportunities, such as employment. Social networks have been found in past research to be important to the employment opportunities of immigrants in Canada (Dean & Wilson, 2008; Grenier & Xue, 2011). Thus, social networks that span outside the immediate ethnic communities of immigrants, such as local food producers, are important for improving the food environment. **Social networks can be facilitated by establishing opportunities for networking between stakeholders of the food environment and immigrants who may benefit from these networks.**

6.4 Conclusion

The current planning model in Canada assumes that planners will make decisions that sufficiently address the needs of the community. In this regard, Rydin (2013) posits that, whereas it is almost impossible in practice to meet the needs of all residents when planning a future development, planners are not to simply disregard the needs of certain residents either. Specifically in regards to food insecurity of immigrant populations, this research demonstrates that, by overlooking the economic, sociocultural, and political aspects of the food environment that are the source of food insecurity among immigrants, planners are contributing to further food insecurity in this population. The research findings show that an emphasis on the physical attributes of the food environment, such as geographic access to grocery stores, ignores key socioeconomic and political issues that also determine the food environment.

This thesis examined the food environment from the perspectives of immigrants and key informants living and working in the Region of Waterloo. These perspectives, along with the research literature, aided the study in obtaining and delineating a broad picture of the determinants of the food environment in the Region of Waterloo. From the findings of this study, suggestions are offered that in the short-term can alleviate some of the food insecurity among immigrants, such as the continuous support for more community gardens and temporary markets. However, the study highlights changes required at the system level, such as employment, affordable housing, and financial supports for immigrants and refugees. Lastly, the study offers suggestions for reframing the planning model to an

alternative model of planning that seeks to create a healthy built environment. Such model will seek to positively influence the food security of those populations who are most vulnerable to poor health.

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Appendix A: Determinants of Pre- and Post-migration Experience

Pre-migration	Migration	Post-migration
Economic, educational, and occupational status in country of origin	Trajectory (route, duration)	Uncertainty about immigration or refugee status
Disruption of social support, roles, and network	Exposure to harsh living conditions	Unemployment or underemployment
Trauma	Exposure to violence	Loss of social status
Political involvement	Disruption of family and community networks	Loss of family and community social supports
Age and developmental stage at migration	Uncertainty about outcome of migration	Concern about family members left behind and possibility for reunification
Disruption of education	Separation from caregiver	Difficulties in language learning, adaptation, and acculturation
Separation from extended family and peer networks	Poor nutrition	Stresses related to family's adaptation
–	–	Difficulties with education in new language
–	–	Discrimination and social exclusion

Appendix B: Immigrant Interview Script

Construct	Question	Probes
<i>Participant Background/ Immigrant Experience</i>	Can you please tell me where you were born and how long you have lived in Canada? What made you decide move to Canada? Living in Waterloo- Why Waterloo?	Who did you move here with? How long at current residence?
	Tell me about your first days living in Waterloo and how that has changed	
<i>Food and Health/multiculturalism</i>	When I say the word “health”, what comes to your mind? How important would you say health is? What health issue do you think is of most concern to immigrants today?	Would you say your health is poor, good, or excellent? How is it poor/good/excellent? How would you rate the health of your friends and or family living here?
	Now, I would like you to tell me what your thoughts are about food and nutrition	How are diet or nutrition of concern to you? How would you say that your cultural background affects your eating habits?
	Tell me about a typical day in your house. What do you do to prepare your meals?	How would you describe your ability to cook from basic ingredients? Has the way in which you cook your meals changed since you arrived in Canada?

<i>Food security challenges</i>	Tell me about your experiences in obtaining food in the Region of Waterloo- any barriers?	affordable? Food options- quality, cultural appropriateness? Transportation? Housing? First impressions of food spaces? Alternative options for obtaining food in your area?
	In what ways do you think that these experiences are unique to immigrants?	Has this changed overtime for you or others?
<i>Food security facilitators</i>	What can you tell me about the programs or services in the community for access food?	Do you utilize these services or programs? How so? How do you enroll in that program? What does it do for you? helpful? How did you know about it?
	Tell me whether and how your social network (e.g. group of friends) has any impact on the way in which you obtain food	Are you involved in any local group that deals with food issues?
	What do you think are strategies that the local government is using to improve the access to food for immigrants? How are you involved or how would like to get involved?	Bylaws? Job accessibility? Local food markets?
<i>Final</i>	Any other comments you would like to make about access to food?	

Appendix C: Key Informant Interview I Script – Government and Community

Construct	Question	Probes
Intro- Work description	What is your current role in the community and how long have you worked in the Region of Waterloo?	What are your responsibilities? What motivated you to be involved in issues of food security?
The Region of Waterloo food system	How would you describe the current state of the Region in the context of food security?	Positive/negative attributes?
	Who is most at risk for food insecurity?	What about immigrants?
	Are there any unique challenges to immigrants?	
Food accessibility	In 2004, the Region published a report entitled “towards a healthy community food security”. One of the key goals listed in the report was “To ensure that all residents can afford to buy the food they need to sustain health”. What is the Region doing currently to meet this goal, particularly for immigrants?	Housing affordability? Social assistance? Other barriers to food security?
Food availability /adequacy/ acceptability	CBC article- food swamps, not meeting the food guidelines. In your work experience, what seem to be the major reasons for this problem?	The Region is also engaged in campaigns that support bylaws that encourage community gardens and temporary food markets. If successful, how do you envision this campaign helping the immigrant population?

		Supporting traditional ethnic food? Incorporating health aspect?
Tackling food insecurity	What is being done in the Region to tackle food insecurity?	What would you be doing different in the Region? Falling short?
	In your own words, can you describe the ideal food system for Waterloo residents?	
Final remarks	Anything else that I have not asked that you would like to add?	

Appendix D: Key Informant Interview Script II – Immigrant Front Line Workers

Construct	Question	Probes
Intro- Work description	What is your current role in the community and how long have you worked in the Region of Waterloo? Expertise?	What are your responsibilities? What motivated you to be involved in issues of immigration?
Immigrants in the Region of Waterloo	How would you describe the current state of immigrants in the Region?	Major barriers/issues/assets?
	In your experience, how have you seen immigrants cope with the challenges of immigrating to the Region?	Is this something unique to the Region?
	What resources are tailored for immigrants in the community?	Satisfy their needs?
Food security for immigrants	How important are issues of food access in the work you do for immigrants?	How does this issue compare to other issues that immigrants face?
	What do you think makes food security an issue for this population?	Housing affordability? Social assistance? Other barriers to food security?
Characterizing food security among immigrant subgroups	Are there any differences among different cultural/ethnic groups of immigrants in terms of food security?	
Tackling food insecurity	What strategies does your organization use to meet the dietary needs of immigrants?	What tools have you used that have been particularly effective in helping immigrants to access healthy food?

	What is being done in the Region to tackle food insecurity among immigrants?	Supporting traditional ethnic food? Incorporating health aspect?
	What policies/practices guide your work regarding the food access of immigrants in the region?	Publicly available?
	What would you be doing different in the Region?	Falling short? Opportunities?
Final remarks	Anything else that I have not asked that you would like to add?	

Appendix E: Photovoice



Healthy Food Environment:
My Favorite Photographs are of my Favorite Food (IP4)



Unhealthy Food Environment:
This is an Unhealthy Food Space in my Neighborhood (IP9)



Healthy Food Environment:
I Enjoy Eating Food from Different Cultures (IP11)



Healthy Food Environment:
I Learned about Healthy Food from Canada (IP3)



Unhealthy Food Environment:
Packaged Fruits and Candy in My Local Grocery Store (IP1)



Healthy Food Environment:
Sharing Home-made Food with Family (IP7)



Healthy Food Environment:
In Canada I can get the Food that I Need (IP7)



Healthy Food Environment:
I Learned about Kale from my Son (IP2)



Healthy Food Environment:
These are the Ingredients I Use (IP5)

Appendix F: Request for Gatekeeper Letter

Date

Address

Dear (name of person),

This letter is a request for (community organization) assistance with a project being conducted by Paulina Rodriguez under the supervision of Dr. Jennifer Dean and the collaboration of Drs. Sharon Kirkpatrick, Lisbeth Berbary, and Steffanie Scott from the University of Waterloo, and funded by the Propel Centre for Population Health Impact. The project is entitled “Experiences of the Local Food Environment Among Immigrants in the Region of Waterloo”. This project will explore the determinants of the accessibility to healthy food for immigrants and the subsequent impact on immigrant health. Knowledge and information generated from this study may help other researchers, programmers, and community members to address food security for immigrants.

It is our hope to connect with families who are engaged in the programs of the (name of organization) to invite them to participate in this research project. We believe that the participants and families of your program have unique understandings and stories relating to settling in Canada. During the course of this study, the student researcher Paulina Rodriguez will be conducting interviews with immigrant adults to gather their stories of accessing healthy food. The study will also involve the completion of two brief surveys by participants as well as a photography exercise, in which participants will be provided a disposable camera and will be asked to take photographs of their food environment. At the end of this study the publication of this thesis will share the knowledge from this study with other food system researchers, programmers, and community members.

To recruit participants, we would like to set up an information booth in your organization if space allows for the student researcher, as well as to provide the (name of organization) with information flyers to be distributed by the organization at their discretion. If someone is interested in participating they will be invited to contact the student researcher Paulina Rodriguez, to discuss participation in this study in further detail.

Participation is completely voluntary. Each participant will make their own independent decision as to whether or not they would like to be involved. All participants will be informed and reminded of their rights to participate or withdraw at any time in the study. Participants will receive an information letter including detailed information about this study, as well as informed consent forms.

To support the findings of this study, quotations and excerpts from the stories as well as photographs, will be used labelled with pseudonyms to protect the identity of the participants. Names of participants will not appear in the thesis or reports resulting from this study. Participants will not be identifiable, and only described by gender and as an immigrant living in the area. In addition, participants will be instructed not to take photographs of people.

If the (name of organization) wishes the identity of the organization to remain confidential, a pseudonym will be given to the organization. All surveys, paper field notes, and photographs collected will be retained locked in the

investigators' office at the School of Planning at the University of Waterloo. All the data collected will be confidentially destroyed after seven years. Further, all electronic data will be stored for seven years on a CD with no personal identifiers. Finally, only the investigators will have access to these materials. There are no known or anticipated risks to participants in this study.

Please be assured that this study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee. However, the final decision about participation belongs to the (name of organization) and the program participants. If you have any comments or concerns with this study, please feel free to contact the student investigator Paulina Rodriguez at 226-791-6947, email prodriagu@uwaterloo.ca and/or her supervisor, Dr. Jennifer Dean at 519-888-4567 ext. 39107, email jennifer.dean@uwaterloo.ca. You can also contact **Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca.**

We hope that the results of this study will be beneficial to the (name of organization), and to immigrants living in Canada, as well as the broader research community. We very much look forward to speaking with you and thank you in advance for your assistance with this project.

Yours sincerely,

Paulina Rodriguez Masters Candidate School of Planning University of Waterloo Phone: (226) 791-6947 Email: prodriagu@uwaterloo.ca	Sharon Kirkpatrick (Principal Investigator) Assistant Professor School of Public Health and Health Systems University of Waterloo Phone: 519.888.4567 x37054 sharon.kirkpatrick@uwaterloo.ca	Jennifer Dean (Thesis Supervisor) Assistant Professor School of Planning University of Waterloo Phone 519-888-4567 ext. 39107 Email jennifer.dean@uwaterloo.ca
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Lisbeth Barbary Assistant Professor Recreation & Leisure Studies University of Waterloo Phone: 519.888.4567 x35404 Email: lberbary@uwaterloo.ca	Steffanie Scott Associate Professor Geography University of Waterloo Phone: 519.888.4567 X 37012 Email: sdscott@uwaterloo.ca
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Appendix G: Immigrant Participants Consent Form

Experiences of the Local Food Environment Among Immigrants in the Region of Waterloo

Date

Dear potential participant:

You have been identified as someone who may be interested in participating in a research study on the experiences of immigrants accessing food in the Region of Waterloo. The research is being conducted by Paulina Rodriguez under the supervision of Dr. Jennifer Dean and the collaboration of Drs. Sharon Kirkpatrick, Lisbeth Berbary, and Steffanie Scott from the University of Waterloo, and is funded by the Propel Centre for Population Health Impact.

We are requesting your cooperation as a voluntary participant in this research. If you agree to participate, we will ask you take part in one interview session (60-90 minutes) at a time and place that is convenient for you. During the interview you will be asked about your experiences accessing food in the Region of Waterloo as well as general information about your health and links between your local environment and health. You will also be asked to complete two surveys. The results of the research may be published in a variety of formats such as posters and journal publications with your permission. You will be under no obligation to answer any specific questions and all of your responses will be kept completely confidential.

The overarching goal of this research is to understand the experiences of the local food environment across a diverse group of immigrants, and how local food options influence your health. You are under no obligation to participate in this study. Your level of participation in this study (e.g. if you choose not to participate or decide to withdraw at any point in the study) will not affect your ability to participate in any services or programs provided by the University of Waterloo. You will receive a \$25 gift card to a selection of local food stores. The amount received is taxable. It is your responsibility to report this amount for income tax purposes.

If you have any questions or concerns about this study, please feel free to contact us **or Dr. Maureen Nummelin in the Office of Research Ethics at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca.**

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Informed Consent Form

- I have read the Information Letter provided to me and agree to participate in the research outlined in the letter
- I understand that I will participate in one interview session lasting approximately 60-90 minutes
- I understand that I will complete two brief anonymous surveys
- I understand that the purpose of the study is to understand immigrants' experiences accessing food in the Region of Waterloo
- I understand that my participation in this study is voluntary and that I may withdraw from the study at any time for any reason without penalty
- I understand that I can refuse to answer any question without penalty
- I understand that all personal information will be kept strictly confidential, and that my name will not appear in any publications stemming from the research
- I understand that I may ask questions of the researcher at any time during the research process
- I understand that the results of this research may be published in research reports, academic journals, and conference presentations
- I understand that a summary of the results will be made available to me if I wish
- I understand that with my permission the interview session will be audio-recorded and transcribed
- I am aware that the audiotape will be used only by the researchers, it will be stored in a secure, locked cabinet, and that it will not have my name or any other identifying information

- I agree to the audio taping of this interview
- I have been given a copy of this consent form

Yes No

I, _____ (please print name), agree to take part in a qualitative study examining newcomers' experiences with food access.

Signature

Date

Appendix H: Immigrant Participants Recruitment Poster



**School of Planning
University of Waterloo**

**PARTICIPANTS NEEDED FOR
RESEARCH ON LOCAL FOOD AND HEALTH**

**ARE YOU A KITCHENER-WATERLOO RESIDENT WHO WAS BORN
OUTSIDE OF CANADA? DO YOU ENJOY TAKING PICTURES?**

We are looking for volunteers to take part in a study about immigrant experiences of the local food environment and impacts on health.

Participants will be asked to take part in two interview sessions, to complete two brief surveys, and a photography exercise.

Participants will receive a \$25 gift card in appreciation of their time.

For more information about this study, or to volunteer for this study,

please contact:

Paulina Rodriguez

School of Planning

at

Email: prodrigu@uwaterloo.ca

**This study has been reviewed by, and received ethics clearance
through a University of Waterloo Research Ethics Committee.**

Appendix I: Socio-demographic Survey

Tell Us More About You

Gender: Female Male **Country of Birth:** _____

Age:

18-24

25-29

30-34

35-39

40-44

45-49

50-54

55-59

60-64

65 and older

Marital Status:

Married/Living with a partner

Separated or Divorced

Widowed

Single/Never been married

Children:

No

Yes; How many? _____

Please indicate your income

Under \$5,000

\$5,000 to \$9,999

\$10,000 to \$14,999

\$15,000 to \$19,999

\$20,000 to \$29,999

\$30,000 to \$39,999

\$40,000 to \$49,999

\$50,000 to \$59,999

\$60,000 to \$79,999

\$80,000 to \$99,999

\$100,000 and over

What is your highest level of educational attainment? _____

College/University specialization, if applicable: _____

Prior to moving to Canada, what type of work did you do?

Under which program did you immigrate to Canada?

___ Skilled Worker Class

___ Business Class

___ Family Class

___ Refugee/Humanitarian Class

___ Other (student visa, work visa, visitor's visa)

How long have you lived in Canada? _____ Years _____ Months

Have you immigrated to any other countries before coming to Canada? _____

If yes, please list these countries and your length of stay in each

Country	Length of stay

Have you used immigrant services to help in accessing food? ___ Yes ___ No

If yes, what services have you used?

What services would be helpful in accessing food?

Do you or have you experienced chronic disease since you moved to Canada?

___ Yes ___ No

If yes, please indicate below which conditions you have:

<input type="checkbox"/> Asthma	<input type="checkbox"/> Other lung disease
<input type="checkbox"/> Heart disease	<input type="checkbox"/> Diabetes
<input type="checkbox"/> Arthritis or other rheumatic disease	<input type="checkbox"/> Cancer
	<input type="checkbox"/> Other chronic disease

Appendix J: Key Informants Informed Consent Form

Experiences of the Local Food Environment Among Immigrants in the Region of Waterloo

Date

Dear potential participant,

You have been identified as someone who may be interested in participating in a research study on the experiences of immigrants accessing food in the Region of Waterloo. The research is being conducted by Paulina Rodriguez under the supervision of Dr. Jennifer Dean and the collaboration of Drs. Sharon Kirkpatrick, Lisbeth Berbary, and Steffanie Scott from the University of Waterloo, and is funded by the Propel Centre for Population Health Impact.

Purpose of the research:

The overarching goal of this research is to understand the experiences of the local food environment across a diverse group of immigrants, and how local food options influence their health. You are being invited to participate because it is our belief that your knowledge of the factors that shape food access will provide us with a better understanding of the issues that immigrants face in regards to their food environment.

Procedures involved:

Participation in this study is voluntary. It will involve an interview of approximately one hour in length to take place in a mutually agreed upon location. The interview questions will be focused on your work in the Region of Waterloo on challenges that immigrants face when accessing healthy food. You may decline to answer any of the interview questions if you so wish. Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. **With your permission, the interview will be audio recorded to facilitate collection of information, and later transcribed for analysis.**

Confidentiality:

Shortly after the interview has been completed, we will send you a copy of the transcript to give you an opportunity to confirm the accuracy of our conversation and to add or clarify any points that you wish. All information you provide is considered completely confidential. Your name, position, and name of your organization will not appear in any thesis or report resulting from this study; however, with your permission anonymous quotations may be used. Data collected during this study will be retained for seven years in a locked office in the university. Only researchers associated with this project will have access.

Anticipated risks and benefits:

There are no known or anticipated risks to you as a participant in this study and the study will not benefit you directly. However the results of this study will lay the foundation for knowledge of the food environment and its impact on the health of immigrants in the Region of Waterloo.

We would like to assure you that this study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee. However, the final decision about participation is yours. If you have any comments or concerns regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact the student researcher, Paulina Rodriguez, at 226-791-6947, email prodri@uwaterloo.ca and/or her supervisor, Dr. Jennifer Dean at 519.888.4567 x39107 email jennifer.dean@uwaterloo.ca. contact Dr. Maureen Nummelin in the Office of Research Ethics at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca.

Yours Sincerely,

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