

Food Access in Saskatoon Community Report



Public Health Services



October 2010

Acknowledgements

We would like to thank Dr. Jennifer Cushon, Lynne Warren, Terry-Ann Keenan and Tanya Dunn-Pierce for their assistance.

Suggested Citation

Kershaw T., Creighton T., Markham T., Marko J. (2010). Food access in Saskatoon. Saskatoon: Saskatoon Health Region.

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Key Findings

Supermarkets

- Overall, 45% of the city of Saskatoon's population lives within walking distance (1km) of a supermarket. Neighbourhoods with the poorest access to supermarkets lie along the river, particularly on the west side, and on the edges of the city to the north, west and south.
- Seventeen percent of Saskatoon residents have more than one supermarket within walking distance. The greatest diversity is found along 8th Street East, in the Holliston/Brevoort Park/Grosvenor Park/Greystone Heights areas.

Fast Food Outlets

- 75% of the city's population lives within walking distance of a fast-food outlet. Areas along 22nd Street West and 8th Street East have particularly easy access to fast food outlets.
- The average resident has at least three fast food outlets within walking distance. The area of highest fast food diversity is along Idylwyld Drive North; for example, in the Kelsey Woodlawn/Mayfair neighbourhoods, some blocks have up to 17 fast food outlets within walking distance.

Food Balance

- Food balance scores measure how easy it is to choose healthy food stores compared to how easy it is to choose fast food outlets. Residents across the city of Saskatoon live approximately twice as far from a supermarket as they do from a fast food outlet.
- Access to food is most imbalanced in the Central Business District and along 22nd Street West in Caswell Hill, Riversdale, Westmount and Pleasant Hill where food balance ratios are as high as 58.8. This means that residents live 59 times closer to a fast food outlet than to a supermarket.

Food Deserts

- When people have trouble accessing healthy foods because of where they live *and* because of money problems, they are said to live in a "Food Desert." Saskatoon has a primary food desert in Saskatoon's core and surrounding neighbourhoods: Holiday Park, King George, most of Riversdale, portions of Caswell Hill, Pleasant Hill, Westmount, and Mount Royal.

Transportation

- The majority of Saskatoon residents (73%) live within a ten-minute bus ride to a supermarket. However, residents living in some areas of Saskatoon may have to travel up to 65 minutes to access a supermarket.

Table of Contents

Acknowledgements	1
Suggested Citation	1
Key Findings	2
Table of Contents	4
Purpose	5
Introduction	5
<i>Supermarkets</i>	5
<i>Fast Food</i>	6
<i>Food Deserts and Income</i>	6
<i>Transportation</i>	6
<i>Summary of Introduction</i>	7
Methods	7
<i>Summary</i>	7
<i>Measures</i>	8
Results	11
Discussion	18
Options for Action	18
References	20
Appendices	22

PURPOSE

When people have trouble accessing healthy foods because of where they live *and* because of money problems, they are said to live in a “Food Desert” (Reisig, 2000). The primary purpose of this report is to identify food deserts in Saskatoon, Saskatchewan. To do so, two measures were used: access to supermarkets based on the city block where you live (geographic access) and food balance scores¹, which were looked at in association with socio-economic variables (i.e., income, employment and occupation). The link between food access and public transit was also examined. This report will be presented to community stakeholders to identify which interventions should be adopted to increase food accessibility in Saskatoon.

INTRODUCTION

The World Food Summit (1996) proposed that food access is one component of food security, which can be defined as “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (Food and Agricultural Organization of the United Nations [FAO], 2006). Access to healthy and affordable food is an important public health issue as research has shown that poor access to healthy and affordable food contributes to poor nutrition, particularly for disadvantaged groups (Travers, 1995 as cited in Smoyer-Tomic, Spence & Armhein, 2006). Lack of access to healthy food has been found to be linked with health problems such as type II diabetes, heart disease and certain types of cancer. These health problems have been shown to get worse if the area has a high number of nearby fast food outlets (Gallagher Research and Consulting Group [GRCG], 2006; Larsen & Gilliland, 2008; Larson, Story & Nelson, 2009).

Supermarkets

Studies have found that living near a supermarket is linked with eating more vegetables and fruit, healthier diets and lower levels of obesity (Larson, 2009; Morland et al., 2002; Odoms-Young, 2009, Salis & Glanz, 2009; Zenk, 2009). This is likely because supermarkets provide a greater variety of healthy foods at lower prices than other food retailers (Apparicio et al., 2007; Burns & Inglis, 2007; Kaufman & Lutz, 1997). For example, convenience stores have been shown to be 1.6 times more expensive than supermarkets for the same items (Region of Waterloo, 2004). As a result of the greater variety and lower prices, low-income consumers, in particular, benefit from shopping in supermarkets compared to convenience stores, specialty stores or farmers markets (Ohls et al., 1999 as cited in Cassady & Mohan, 2004).

¹ Food balance scores measure how easy it is to choose healthy food stores compared to how easy it is to choose fast food outlets.

Fast Food

The food available at fast food outlets is often higher in calories, fat and sodium than food bought at a grocery store (Black & Macinko, 2008). Living close to fast food outlets has been linked with lower quality diets, obesity and other health problems (Davis & Carpenter, 2009; GRCCG, 2006; Hemphill, Raine, Spence & Smoyer-Tomic, 2008; Larson et al., 2009; Maddock, 2004; Salis & Glanz, 2009). Some studies have found that fast food outlets are more likely to be located in low-income neighbourhoods compared to high-income neighbourhoods (Block, 2004; Burns, 2007; Pearce, 2007). For example, residents of Edmonton's lowest income neighbourhoods were 2.3 times more likely to have a fast food outlet within a 5 to 10 minute walk than residents in the highest-income neighbourhoods (Smoyer-Tomic, 2008).

Food Deserts and Income

There has been a great deal of research within the last twenty years on whether low-income areas have less access to healthy and affordable foods. The research has resulted in mixed findings. In a systematic review of food access conducted in the United States in 2009, 18 of the 19 included articles found that areas with a large number of low-income residents had less access to supermarkets compared with areas with a large number of high-income residents (Beaulac et al., 2009). In contrast, studies conducted in Scotland found that low-income residents actually had better food access than high-income residents (Cummins, 1999; Smith, 2009). Research conducted on food access in Australia and New Zealand has been mixed. Some studies have found that residents living in more advantaged neighbourhoods have better access to supermarkets (Ball, 2009; Burns & Inglis, 2007), whereas another study found that access to supermarkets was better in more deprived neighbourhoods (Pearce et al., 2007) and another found no difference (Winkler, 2006).

Research results from Canada are also mixed. A study conducted in Edmonton found that, overall, inner-city neighbourhoods had better accessibility to supermarkets than the rest of Edmonton's neighbourhoods (Smoyer-Tomic, et al., 2006). Similarly, a study conducted in Montreal also found that low-income populations had better accessibility to supermarkets than the rest of the population (Apparicio et al., 2007). In contrast, researchers in London found that inner-city neighbourhoods had the poorest access to supermarkets by walking, although some high socioeconomic status census tracts also had poor access (Larsen & Gilliland, 2008).

The results of the above studies suggest that food access varies across cities and countries (Beaulac, 2009).

Transportation

Transportation is a key issue when it comes to accessing food, particularly for low-income residents since they are less likely to own a car. As a result, low-income residents are more likely to use other methods of transportation such as

a city bus (Hemphill et al., 2008; Winkler, 2006). For individuals that use buses, this means that they can not go to multiple supermarkets to find the lowest prices. It also means that they might not be able to buy items that are on sale for short periods of time (Clifton, 2004). In addition, as it is hard to carry large amounts of food on buses, individuals are not able to buy food in bulk and are more likely to make frequent trips to purchase the food they need (Region of Waterloo, 2004; Toronto Food Policy Council, 1996). This process may be even harder if the bus routes needed to get to and from the supermarket are not direct and involve transfers or waiting for the next bus (Region of Waterloo, 2004). Using a city bus takes more time and can be difficult for parents with small children or individuals who have trouble getting around such as the elderly or people with disabilities (Hemphill et al., 2008; Region of Waterloo, 2004; Smoyer-Tomic et al., 2006; Toronto Food Policy Council, 1996; Winkler, 2006).

City buses are only one method that individuals without access to a car use to access food. Another option is to use taxi-cabs; however, cab fares are expensive and low-income individuals may have to take money from somewhere else in their budgets to afford them (Clifton, 2004; Flournoy & Treuhaft, 2005; Smoyer-Tomic et al., 2006). Another type of transportation is to depend on family and friends, but this limits the amount of trips that can be made (Clifton, 2004; Flournoy & Treuhaft, 2005; Smoyer-Tomic et al., 2006).

Summary of Introduction

The key points from the literature we reviewed were:

- Poor access to healthy and affordable food is linked with negative health outcomes.
- Supermarkets provide a greater variety of healthy foods at lower prices, which is particularly important for low-income consumers.
- Fast food restaurants are more likely to be located in low-income neighbourhoods, compared to high-income neighbourhoods.
- Healthy food access for low-income residents varies across cities and countries.
- Transportation for accessing healthy food is a key issue for those without access to a car.

METHODS

Summary

Geographic locations for all major supermarkets and fast food chain outlets within the city of Saskatoon were collected. Three measures were used to determine access: proximity, diversity and variety. These three measures were then combined to create an index of accessibility for each city block in Saskatoon. A food balance score for each block was also calculated, which represents the ease of choosing between healthy food stores and fast food

outlets. Food balance and accessibility were then combined to identify food deserts in Saskatoon. Deprivation Index scores for Saskatoon were compared with the food deserts to identify primary and secondary food deserts. For an additional measure of access, public transit travel times to supermarkets were calculated for each city block.

Measures

Supermarkets

Supermarkets were defined as retail grocery outlets associated with one of the six major chain grocery-based retailers located within the city of Saskatoon. These include Extra Foods, Safeway, Sobey's, Co-Op, The Real Canadian Superstore, and The Real Canadian Wholesale Club.

In order to see where supermarkets in Saskatoon were located, the addresses of all supermarkets in Saskatoon (Appendix I) were collected using the 2007/08 Yellow Pages and were verified using company websites and global positioning systems (GPS), if needed. Smaller independent, ethnic and corner grocers, as well as other locations where groceries are purchased (e.g., Giant Tiger, Wal-Mart², Costco³), were not included because supermarkets provide a greater variety of healthy food options at competitive pricing (Apparicio et al., 2007; Kaufman & Lutz, 1997 as cited in Cassady & Mohan, 2004).

Fast Food Outlets

Fast Food outlets were defined as restaurants without waitstaff, where customers pay for meals before receiving them, and either carry the food to tables or take it out (Austin et al., 2005). The locations of all fast food chain outlets and convenience stores that prepare and serve hot food (Appendix II) were collected from the Safe Communities Department, Public Health Services, Saskatoon Health Region. The locations were verified with the Yellow Pages, company websites or GPS, if needed.

Socio-economic status

Socio-economic status was measured using a Deprivation Index developed by the Institut national de santé publique du Québec (INSPQ), which uses 2006 census data (Pampalon & Raymond G, 2000). The Deprivation Index measures two types of deprivation: material (e.g., income, employment) and social (e.g., marital status, lone parent family). Deprivation Index scores were calculated for each dissemination area⁴ in Saskatoon by the INSPQ. Deprivation Index scores

² At the time of data collection, the two Wal-marts in Saskatoon did not yet carry a full grocery selection. Therefore, they were not included in the analysis.

³ Costco was not included in the analysis as it requires a membership; therefore, it is not available to the entire population. In addition, there is no way to get to Costco without a vehicle (i.e., no public transportation, walking is not an option)

⁴ One or more neighbouring blocks, with a population of 400 to 700 persons.

were mapped by dissemination area, and the most deprived quintiles⁵ were used to define the primary and secondary food deserts.

Geographic Access

Three measures were used to examine geographic access to supermarkets based on a study done by Apparicio et al. (2007). Apparicio et al. argued that using only one measure does not provide a full picture of access in a population because access varies depending on how it is measured. By using three measures, we can more accurately describe access in a population.

The three measures used to assess geographic access to supermarkets were: proximity, diversity and variety (Apparicio et al., 2007).

1. Proximity was a direct measure of distance; specifically, the minimum distance from the centre of each city block to the nearest supermarket.
2. Diversity was the number of supermarkets within a walkable distance of less than 1000m, or a 15 minute walk from the centre of each city block; this was used to measure choice.
3. Variety was the average distance from the centre of each city block to the nearest three supermarkets of different chains. Variety was based on the assumption that different supermarkets have different products and a range of prices.

Food Balance

Food balance measures how easy it is to choose between supermarkets and fast food outlets. Areas that are 'balanced' are those where the nearest supermarket is the same distance from a resident's location as a fast food outlet, making it just as easy to choose one over the other (GRCCG, 2006). Literature suggests that health problems increase as areas become out of balance (Gallagher, 2007).

Food balance and access were examined separately in this study, based on the idea that an area can be balanced, but still have poor access to healthy food (e.g., you can live equally close to a supermarket and a fast food outlet, but if the supermarket is 10km away then you can still have poor access). In contrast, an area can have excellent access to healthy food but nearby fast food outlets may cause the area to become unbalanced. Areas which fell into either category were considered areas of concern for this study.

To calculate food balance scores, access to supermarkets (see above) and access to fast food outlets was needed. To measure access to fast food outlets, we used proximity; in other words, the minimum distance from the centre of each city block to the nearest fast food outlet. Food balance ratios were calculated by

⁵ Deprivation Index scores were divided into five categories, or quintiles, based on population size. Quintile 1 represents the least deprived areas of Saskatoon and quintile 5 represents the most deprived areas of Saskatoon.

dividing the minimum distance to a supermarket by the minimum distance to a fast food outlet. These scores were then mapped. Ratios of 1 mean that fast food outlets and supermarkets are the same distance from a city block, or are balanced. Higher ratios indicate less access to supermarkets, which may make it easier to choose fast food outlets.

Food Deserts

The three measures of geographic access (proximity, diversity, and variety) to supermarkets and food balance scores were combined to identify food deserts at the dissemination area level. These results were then compared with the most deprived quintiles of the material and social deprivation index scores for Saskatoon to identify primary and secondary food deserts in Saskatoon.

Public Transit

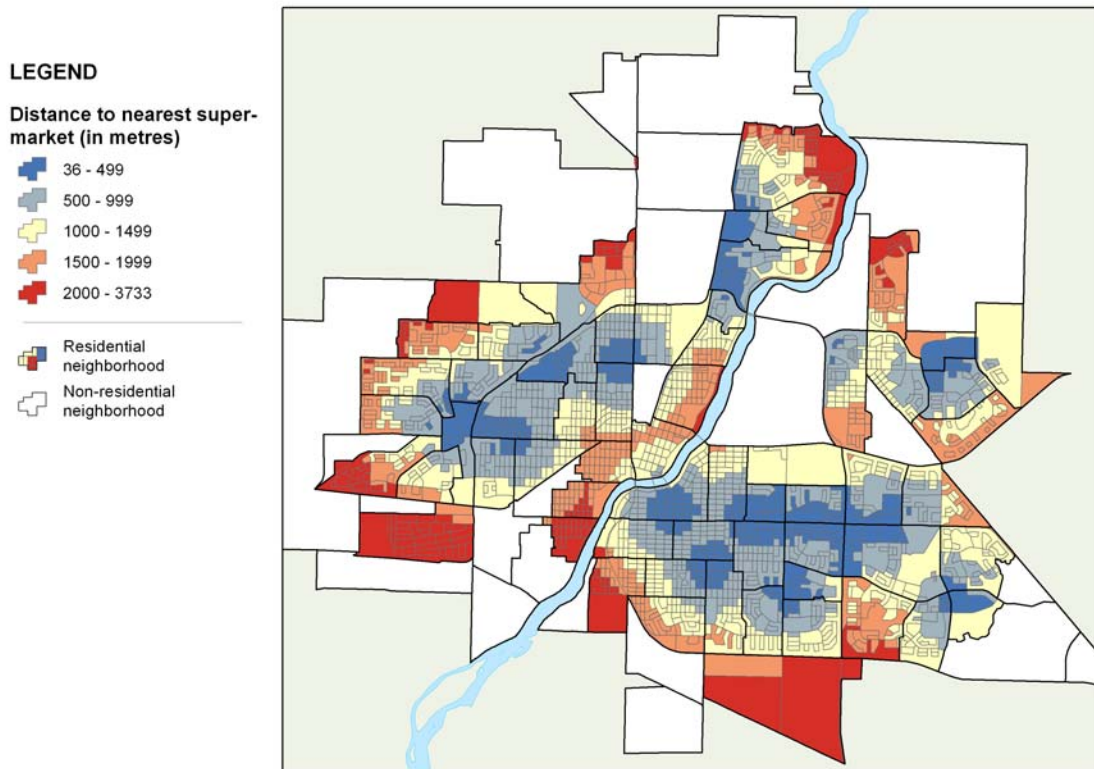
Saskatoon Transit bus routes and scheduling information were used to calculate travel times to the nearest supermarket, based on the regular daytime schedule in that direction of travel. Approximate walking time to the nearest bus stop, and all other bus stops within 100m were included in the calculations. Travel times were then mapped for each city block.

RESULTS

Proximity

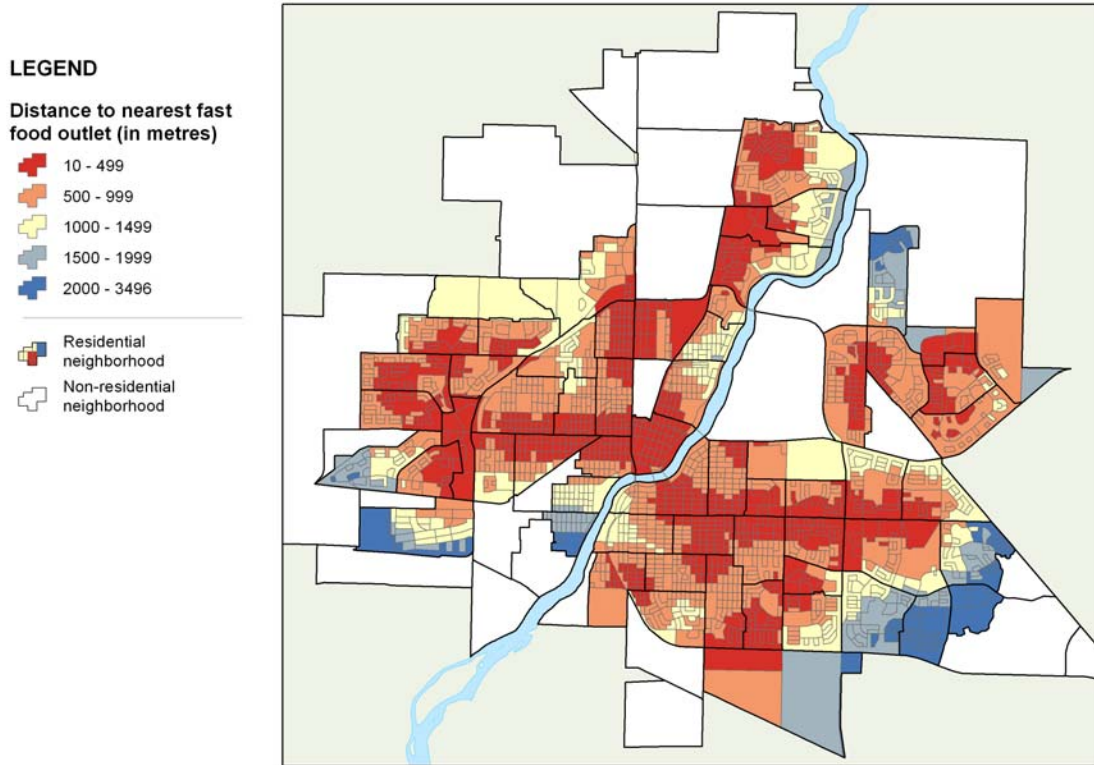
Overall, 45% of the city's population lives within walking distance (1km) of a supermarket. Neighbourhoods with the poorest access to supermarkets are along the river, particularly on the west side, and on the edges of the city to the north, west and south (Figure 1)

Figure 1: Proximity to nearest supermarket, Saskatoon, 2008



In comparison, 75% of the city's population lives within walking distance of a fast-food outlet. Areas along 22nd Street West and 8th Street East had particularly easy access to fast food outlets (Figure 2)

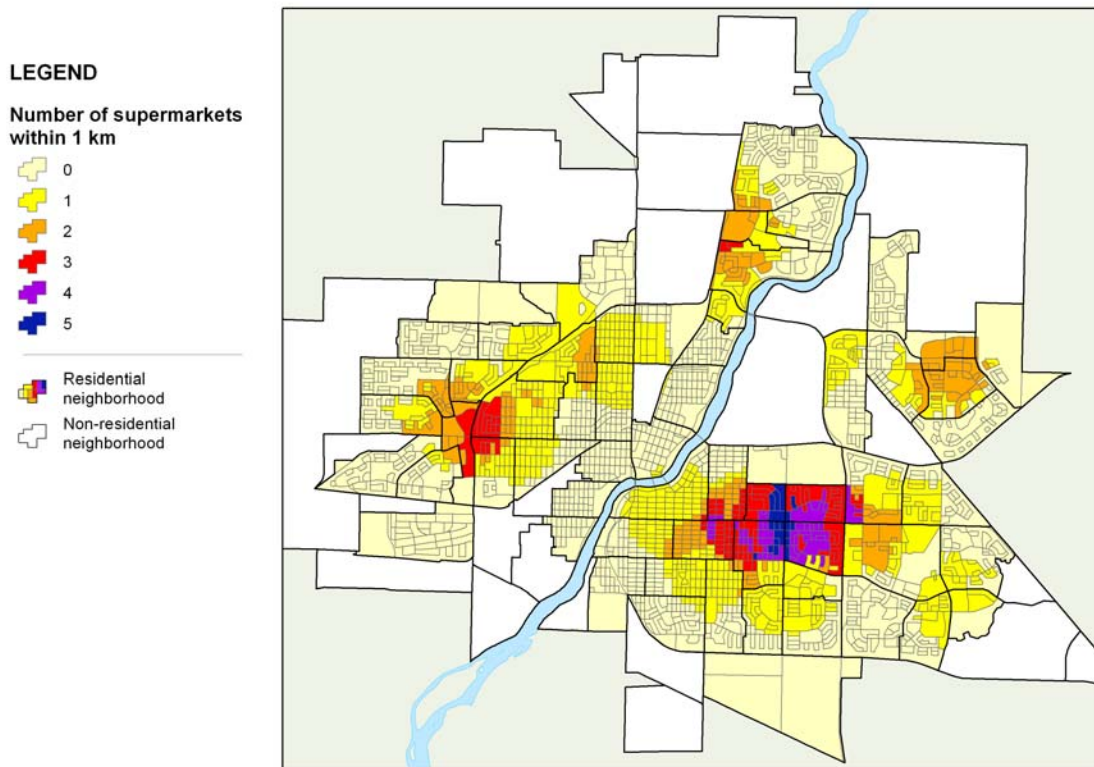
Figure 2: Distance to the nearest fast food outlet, Saskatoon, 2008



Diversity

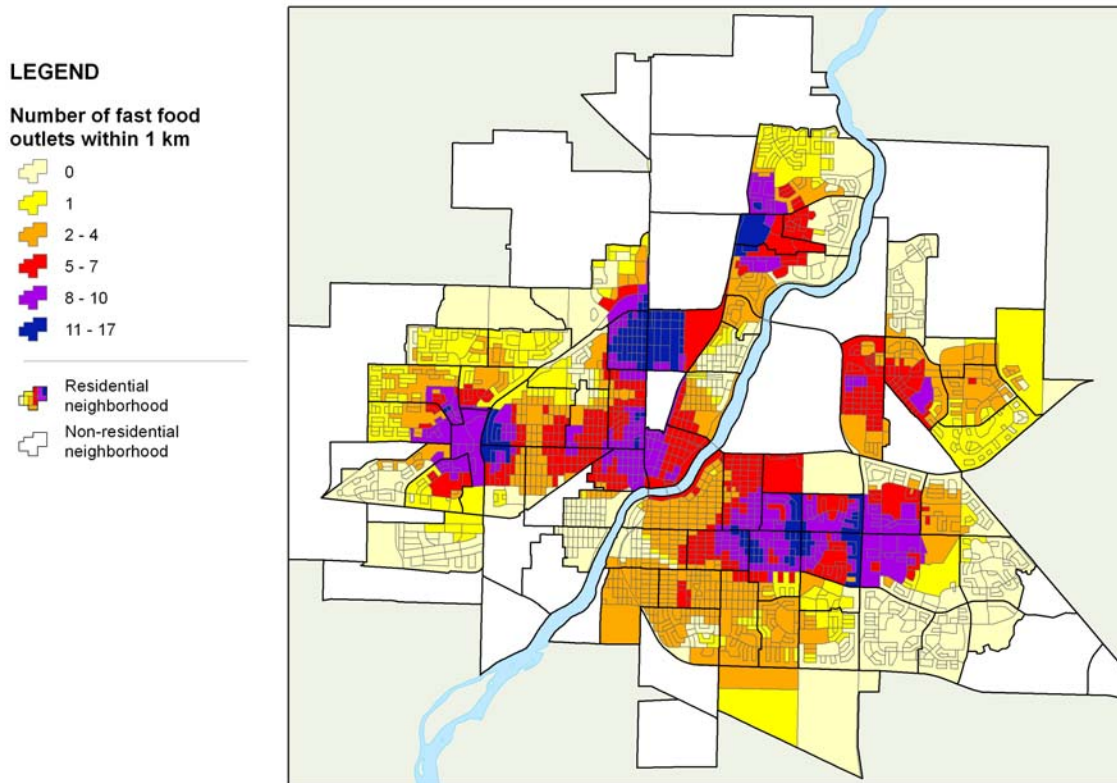
The average diversity score for all blocks was 0.7 (a score of 1 means that a block has one supermarket within walking distance). Only 17% of Saskatoon residents have more than one supermarket within walking distance. The greatest diversity is found along 8th Street East, in the Holliston/Brevoort Park/Grosvenor Park/Greystone Heights areas (Figure 3).

Figure 3: Number of supermarkets within one kilometre from the centre of each city block, Saskatoon, 2008



In comparison, the mean diversity score for fast food outlets was 3.3. This means that the average resident has at least three fast food outlets within walking distance. The area of highest fast food diversity is along Idylwyld Drive North, in the Kelsey Woodlawn/Mayfair neighbourhoods where some residents have up to 17 fast food outlets within walking distance (Figure 4).

Figure 4: Number of fast food outlets within one kilometre of the centre of each city block, Saskatoon, 2008



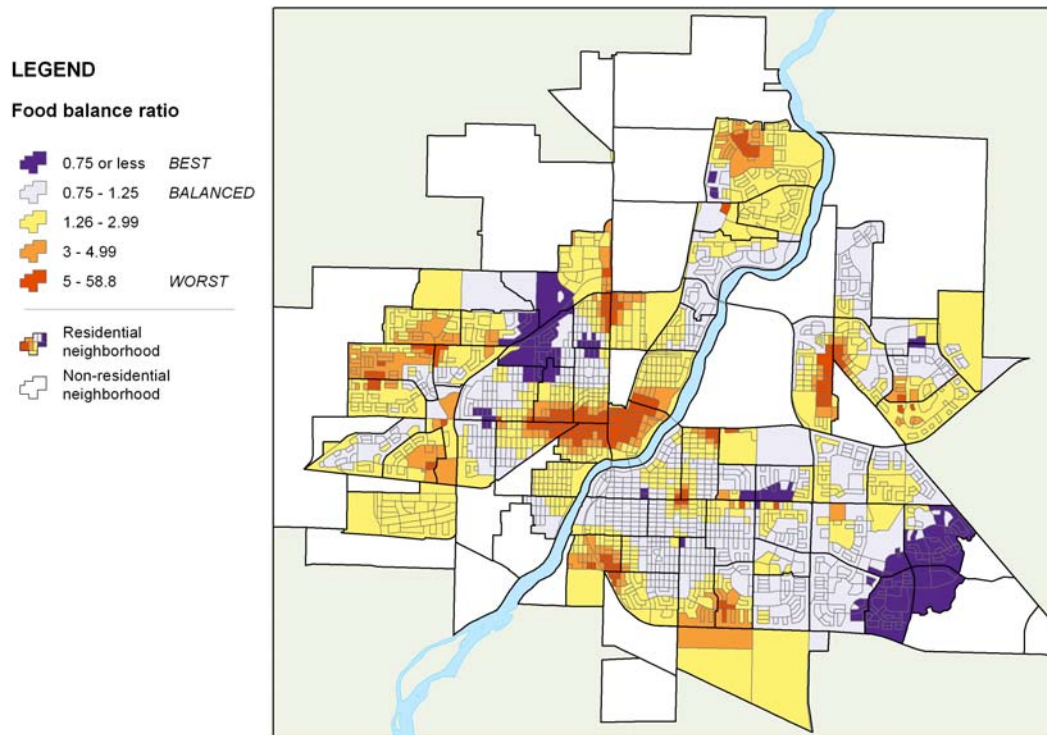
Variety

The overall average distance to the three nearest supermarket chains was 1671m. The lowest variety is in the neighbourhoods closest to the river and around the perimeter of the city.

Food Balance

The city-wide mean food balance ratio was 2.06. This means that residents live approximately twice as far from a supermarket as they do a fast food outlet. Access to food is most imbalanced in the Central Business District and along 22nd Street West in Caswell Hill, Riversdale, Westmount and Pleasant Hill. In these areas, food balance ratios are as high as 58.8, meaning that residents live 59 times closer to a fast food outlet than to a supermarket (Figure 5).

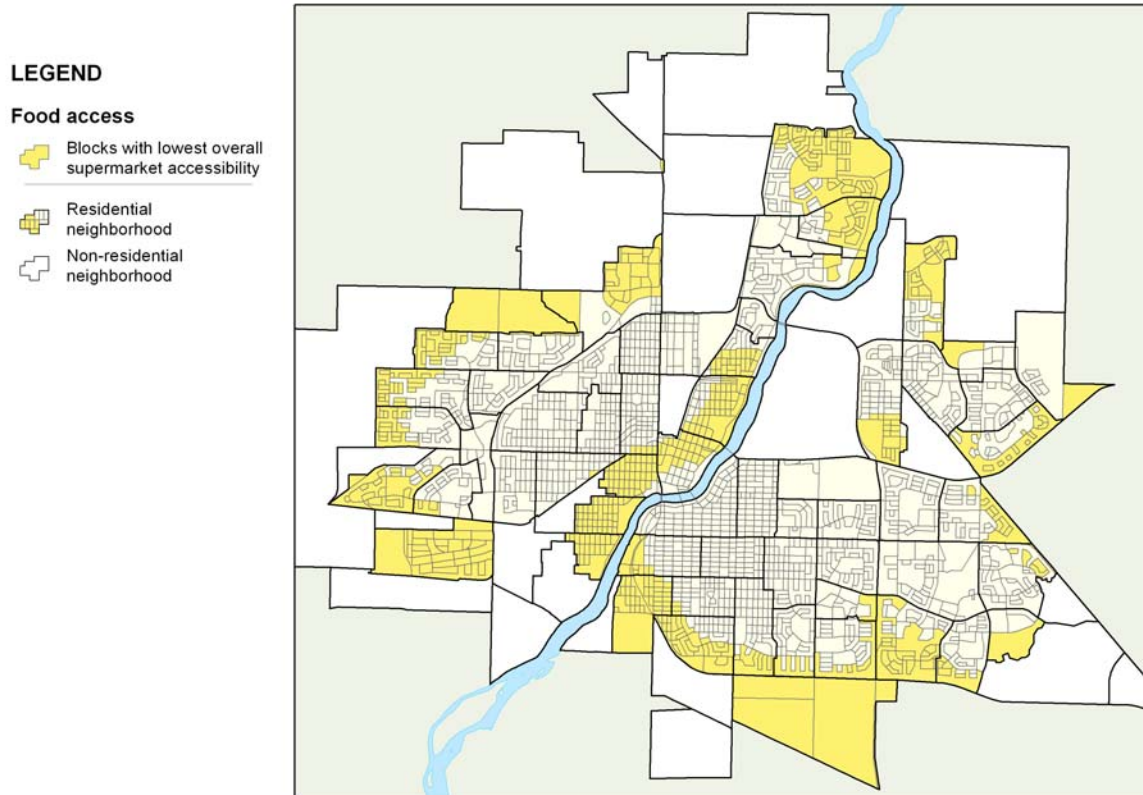
Figure 5: Food balance ratio, Saskatoon, 2008



Overall Accessibility

The three measures of food access (proximity, diversity, variety) were combined into an accessibility index (Figure 6). Areas of low supermarket access are found in the neighbourhoods adjacent to the river, from Holiday Park north through King George, Riversdale, Central Business District, City Park, and into North Park. There is also a ring of low access around most of the perimeter of the residential areas of the city, and an area of poor access in the southern half of Sutherland.

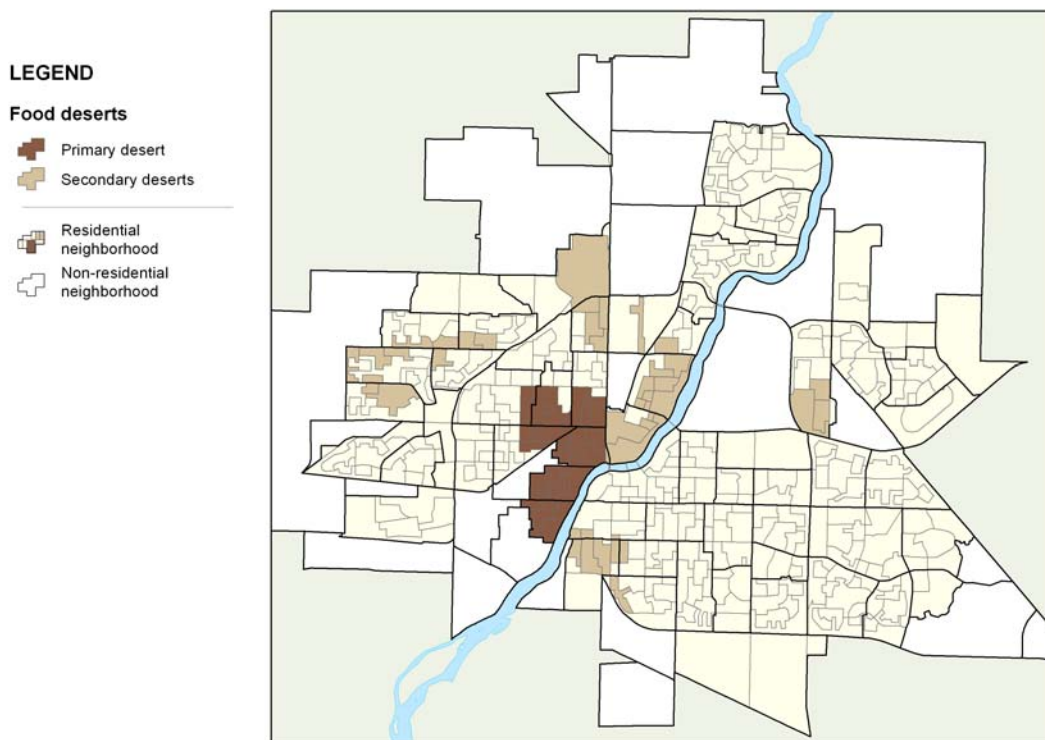
Figure 6: Overall Food Access, Saskatoon, 2008



Food Deserts

We identified that Saskatoon has food deserts (areas with the poorest material and social deprivation, as well as the poorest food access and highest food imbalance). The primary food desert was identified to be in Saskatoon's core and surrounding neighbourhoods: Holiday Park, King George, most of Riversdale, portions of Caswell Hill, Pleasant Hill, Westmount, and Mount Royal. Secondary food deserts were also identified throughout the city in small clusters, where both food access and food balance were an issue, but combined deprivation was not as severe (Figure 7).

Figure 7: Food deserts in the city of Saskatoon, Saskatoon, 2008



Access by Public Transit

The majority of Saskatoon residents (73%) live within a ten-minute bus journey of a supermarket. However, residents living in a large area covering the neighbourhoods of Holiday Park, King George, and the southern part of Riversdale may have to travel up to 42 minutes. Residents in the Airport Business Area may have to travel up to 44 minutes, and areas within Montgomery Place may have to travel up to 65 minutes.

DISCUSSION

Research has demonstrated that a healthy diet lowers the risk of obesity and many chronic diseases (Health Canada 2007; Larsen & Gilliland, 2008; Robertson, 2006). Research has also shown that lower socio-economic groups have poorer diets than other socio-economic groups (Ball et al., 2009; Robertson, 2006). Therefore, understanding reasons for the difference in diet between socio-economic groups is an important public health issue. In the past, the focus has generally been on examining differences in individual level factors. However, research has now begun to examine environmental factors that influence diet for different income groups such as food access (Winkler, 2006). After all, if people do not have access to the foods they need to maintain a healthy diet, how can they be expected to follow the recommended guidelines?

The results of our study are some of the few findings about food deserts in Western Canada. We found that the largest food desert in Saskatoon was in low-income neighbourhoods. This is different than findings from Edmonton and Montreal, which found that low-income neighbourhoods were not any more likely than other neighbourhoods to have a food desert (Apparicio et al., 2007; Smoyer-Tomic et al, 2006). Other food deserts were seen in Saskatoon, though these were in areas where material deprivation was not a major concern. Whether food deserts affect healthy food consumption and health outcomes is not clear in the literature (Salis & Glanz, 2009) and still needs to be determined in Saskatoon.

OPTIONS FOR ACTION

There are many options available for increasing access to healthy foods. From the literature, some of these options include:

- Including quality food retail outlets (e.g., supermarkets or large grocery stores) as part of the planning criteria for every new neighbourhood developed in the city (Toronto Food Policy Council, 1996)
- Taxation incentives for provision of food services in disadvantaged areas (Toronto Food Policy Council, 1996)
- Specialized transportation services to supermarkets or delivery programs (Smoyer-Tomic et al., 2006; Cassidy & Mohan, 2004).
- Mobile grocery stores (GRCCG, 2006).
- Cooking clubs (GRCCG, 2006).
- Establishment of food policy councils (Friedman, 2008)
- Start and sustain farmers' markets (Flournoy & Treuhaft, 2005)
- Evaluate what happens to healthy food consumption when new food stores either open or close in an area (Salis & Glanz, 2009)
- Evaluate healthy food consumption in relation to health outcomes in Saskatoon.

These options will serve as a starting point for discussion with the community on how to improve food access in Saskatoon.

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APPENDIX I

Supermarkets used in analysis

Name	Locations
Extra Foods	7
Safeway	6
Sobey's	3
Co-Op	3
The Real Canadian Superstore	2
The Real Canadian Wholesale Club	1
Total	22

APPENDIX II

Fast food outlets used in analysis

Type	Name	Locations
Major chains	Subway	16
	Tim Horton's	14
	McDonald's	10
	Dairy Queen	6
	Kentucky Fried Chicken	6
	A & W	5
	Robin's Donuts	5
	Taco Time	5
	Burger King	4
	Quizno's	4
	Mr. Sub	4
	Wendy's	3
	Arby's	2
	Bad Ass Jack's	2
	Extreme Pita	2
Pita Pit	2	
Convenience stores serving hot food	7-11	11
	Mac's	7
	Husky	2
	Buddies Pizza & Confectionery	1
	Esso	1
	Fas Gas	1
	Rainbow Petroleum	1
	Shell	1
Food courts	Centre at Circle & 8th	1
	Confederation Mall	1
	Mall at Lawson Heights	1
	Market Mall	1
	Midtown Plaza	1