

**Reducing Food Insecurity in Kingston:
An Evaluation of the Good Food Box Program
by
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**A thesis submitted to the Department of Community Health & Epidemiology
in conformity with the requirements for
the degree of Master of Science**

**Queen's University
Kingston, Ontario, Canada**

May, 1997

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0-612-20615-7

ABSTRACT

People have food insecurity when they are unable to acquire enough safe, nutritionally adequate food that they like to eat, or when they are unable to get this food in a manner which maintains human dignity. A food-buying club called “The Good Food Box” was initiated by members of the Kingston community in 1995 to address food insecurity.

The purpose of this study was to evaluate the Good Food Box program. The study had three objectives: (i) to determine whether the Good Food Box customers have food insecurity; (ii) to determine whether the Good Food Box program reduces food insecurity; and (iii) to determine the nature and extent of customer satisfaction with the program.

These objectives were addressed through a cross-sectional survey and a pre/post survey. Telephone interviews were conducted with 73 customers who bought a Good Food Box in September of 1996. Pre-intervention and follow-up telephone interviews were conducted with 12 new customers who bought their first Good Food Box in October, November, or December of 1996.

More than half of the respondents experienced household-level food insecurity and approximately one third lived in households with individual-level food insecurity. An even larger proportion were at risk of having food insecurity because of their low incomes. A significant proportion of the pre/post survey respondents revealed a change

in household-level food insecurity status from “insecure” to “secure” at a two month follow-up. The majority of respondents reported they were happy with the Good Food Box program. Most of their suggestions for improving the program concerned service delivery and the contents of the Good Food Box.

Several recommendations are made for future program planning that focus on enhancing the program’s potential to address food insecurity and evaluate its progress toward this goal. These include developing a customer database to track purchasing patterns, monitoring service delivery to identify problems in the implementation of the program that prevent delivery of intended services to the target population, making the program more accessible, and attracting more people with low incomes because they have a higher risk of food insecurity.

ACKNOWLEDGEMENTS

I gratefully acknowledge the guidance provided to me by my supervisors, Dr. Miu Lam, Dr. Malcolm Anderson, and Dr. Judith DeWolfe. Their contributions to this project were invaluable.

I would also like to thank the Kingston, Frontenac, Lennox and Addington Health Unit Studentship program for the financial support provided to conduct this study.

This project would not have been possible without the support of the Good Food Box planning committee, the volunteers who helped to recruit the study participants, and the Good Food Box customers who participated in the survey.

Finally, I would like to acknowledge my family and friends for their encouragement throughout the completion of this project, particularly my fiancé, Derek Zuraw, for his unremitting support.

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CHAPTER ONE: INTRODUCTION

People have food insecurity when they are unable to acquire enough safe, nutritionally adequate food that they like to eat, or when they are unable to get this food in a manner which maintains human dignity (1,2). Food insecurity in Canada generally stems from an inability to acquire enough nutritious food due to limited income (3). Results of a study in 1994 indicate that low-income residents of Kingston are concerned about a lack of sufficient income to buy enough nutritious food that they like to eat (4). Indeed, the Kingston, Frontenac, and Lennox and Addington (KFL&A) District Health Council has identified food security as a priority for the region (5).

In July of 1995, a Nutrition Working Group was formed from the Better Beginnings for Kingston Children Action Group (made up of community members and agency representatives) to address the need for community-based initiatives to help low-income residents of Kingston provide themselves and their families with affordable, nutritious food. A food-buying club called "The Good Food Box" was proposed by the Nutrition Working Group as one initiative to address food insecurity. A Good Food Box planning committee, made up of volunteers, was formed from the Nutrition Working Group.

The Good Food Box program was initiated to make high-quality fresh fruit and vegetables more affordable through a not-for-profit food distribution system. Although

the program targets people with low incomes because they are more likely to have food insecurity than people with high incomes, the program is open to anyone who chooses to participate to avoid the stigma associated with some programs for low-income people.

Customers pay \$10 or \$15 during the first three days of the month to order a small or large box of fresh fruit and vegetables. The Good Food Box planning committee uses this money to purchase high-quality fresh produce in bulk quantities from a local wholesale food supplier. On the 15th day of the month, the fresh produce is delivered to a central location where the food boxes are packed by volunteers and then distributed to over 30 host sites in Kingston. Customers pick up the Good Food Box from one of the host sites on the same day.

Volunteer host site coordinators are responsible for taking orders, collecting money, placing the order with the Good Food Box planning committee, and staffing the host site during the food box distribution hours. The specific contents of the Good Food Box vary each month due to fluctuations in market prices and the seasonal availability of fresh produce. The cost to the program for each Good Food Box also varies each month, but is usually about \$13 for the large box, which has a retail value of approximately \$25. Overhead expenses are covered by the difference between the price customers pay for the Good Food Box and the cost of the food. The demand for the program has grown significantly since it was first pilot tested in November of 1995, and there are currently over 500 Good Food Boxes ordered each month.

The purpose of this study was to evaluate Kingston's Good Food Box program. An outcome evaluation was conducted to determine whether the Good Food Box program is addressing food insecurity and to obtain feedback from the Good Food Box customers to provide direction for future program planning. The following research questions were identified through discussions with the Good Food Box planning committee: (i) Do the Good Food Box customers have food insecurity? (ii) Does the Good Food Box program reduce food insecurity? (iii) Are the Good Food Box customers satisfied with the program?

The following chapter reviews the literature on food insecurity. Chapter Three describes the study methodology, including the objectives, study design, survey approach, data collection procedures, and the statistical methods used to analyse the data. The results of the data analyses are presented in Chapter Four. This is followed by a discussion of the results and methodological issues in Chapter Five. The final chapter presents recommendations for future program planning and a summary of the evaluation.

CHAPTER TWO: LITERATURE REVIEW

2.1 Dimensions of Food Insecurity

Food insecurity may be experienced at the household and individual levels.

Household-level food insecurity exists when household food stores are depleted, when the food available in the household is unsafe or of low quality, when there is anxiety about how long the food supplies will last, or when the household food is acquired in a socially unacceptable way, such as through charity, begging, or stealing (6,7). *Individual-level* food insecurity exists when there is uncertain or limited ability to acquire, through conventional food sources (e.g., grocery store, restaurant, gardening), food which has adequate nutrients or which provides sufficient energy, or when an individual feels deprived or has restricted food choices (6,7). Food insecurity exists when one or more concerns are present (6-8).

2.2 Context of Food Insecurity

A household food security problem does not necessarily affect all household members (9). Research indicates that there is a progression in the severity of food insecurity from the household level to the individual level. Anxiety about the depletion of household food supplies generally occurs first, and the quantity and quality of a mother's diet deteriorates before her children experience food insecurity (6-8,10-13).

Individual food intake is largely determined by household food availability. The

adequacy of a household's food supplies depends mainly on food purchases, which are determined by the household's resources (e.g., money, time, information, health, social support network) and other household expenditures (e.g., housing, transportation, clothing). Beyond a selection of basic food which is sufficient to meet a family's energy needs, the food budget for better quality, more nutritious, or more preferred foods is sometimes perceived as flexible and secondary to other household expenditures (11,13). Food purchases are also affected by the quality and quantity of food available in a community and the cost and distance involved in accessing food. Multiple strategies for food acquisition are often employed to maximize the household's resources (9,12). A household, for example, may rely on other food sources, such as relatives, food banks, gardening, and scavenging, to maximize food availability over and above the household's food purchasing power.

2.3 Risk Factors for Food Insecurity

Low-income people with food insecurity report that the primary reason for running out of food is insufficient income (14-17). Studies have shown that low-income households which reported "not enough to eat" had significantly lower mean incomes than those with "enough food to eat" (18,19). Other studies have also documented an association between food insecurity and having a low income, expressed as below the low-income cutoff, a percentage of the poverty level or as household monthly gross per capita income (6,9,10). Studies have found that food insecurity is less likely among households in which at least one adult in a household is employed (9,10) and more likely

among households which are unable to pay their bills (10).

Research has also identified low food expenditures as a risk factor for food insecurity. A significant negative correlation has been found between household food security and per capita food expenditures (6). Another study found that households with significantly lower weekly household food expenditures were more likely to report “not enough to eat” (19). Households which spend a higher percentage of their income on food have been shown to be more likely to have food insecurity (10).

Estimates of relative risk were not presented in the results for any of the above studies. However, household size and available economic resources have been shown to be the best predictors of household-level food insecurity in a sample of low-income U.S. households containing at least one female member between 19 and 50 years old (19).

2.4 Potential Consequences of Food Insecurity

Food insecurity is considered to be a characteristic of an individual’s diet. It is, therefore, a core indicator of nutritional state rather than just a risk factor for a poor diet (20). The potential consequences of food insecurity are poor health status (including physical, social and psychological well-being) and poor quality of life (9,12,20-23). Food insecurity may affect health and quality of life outcomes directly or indirectly. In the latter case, for example, food insecurity can lead to physiological symptoms of sub-optimal nutritional status (e.g., malnutrition and under-nutrition) (20). Food insecurity,

however, does not necessarily result in malnutrition or under-nutrition (i.e., energy or nutrient deficits). An individual, for example, may not have access to nutritionally adequate and personally acceptable foods through conventional food sources such as grocery stores, but may still satisfy his/her energy and nutrient requirements by relying on other food sources that are less socially acceptable such as food banks. Negative health and quality of life outcomes may result from food insecurity even if clinical signs of malnutrition are not present or evident (9). Individuals experiencing food insecurity, however, are likely to have a higher risk of sub-optimal energy and nutrient intake if they are unable to acquire adequate nutrients and food which provides sufficient energy.

While research has documented the negative effect of poor nutritional status on health and quality of life outcomes, such as work performance, resistance to infection, and ability to heal or recover from illness (24), research has yet to investigate thoroughly the nature and extent of the relationship between food insecurity and its potential consequences. Research in Canada provides information only on the relationship between income and nutrient intakes. Studies have shown that low-income Canadians have a greater risk of nutrient deficiencies and sub-optimal nutritional status compared with Canadians in high-income groups (25-31). Several studies have shown that low-income Canadians are more likely than high-income Canadians to experience insufficient intakes of vitamin C, folate, iron, and calcium (25,29-31). The diets of low-income Canadians are also more likely to be deficient in vitamins A, B6, B12, riboflavin, and magnesium (30). Total energy and protein intakes of low-income Canadians have been

found to be below the recommended nutrient intakes, especially among people who receive social assistance and people in the lowest income decile (25). This greater risk of nutrient deficiencies among low-income households is more likely due to inadequate resources for sufficient caloric intake than to inefficient spending or poor food choices since low-income Canadians buy more nutrients and calories per food dollar, spend fewer of their food dollars on food outside the home, and more often use inexpensive nutritious foods, such as legumes, potatoes, and enriched grain products, than do higher income Canadians (25,31,32). Low-income mothers who are at greatest risk of nutrient deficiencies have the lowest caloric intakes (12) and caloric intake increases with per capita income (25).

Data from the United States support a more direct link not only between food insecurity and poor nutritional status in adults and children, but also between food insecurity and negative health and quality of life outcomes in children. Cristofar and Baslotis (19) found that low-income women aged 19 to 55 years and children aged 1 to 5 years who lived in households with “not enough to eat” had significantly lower mean nutrient intakes for several nutrients, including food energy, protein, carbohydrate, dietary fibre, vitamin C, and folacin. Another study showed a greater number of health problems experienced by children and a larger percentage of children with increased school absences among families with more food insecurity concerns (9).

2.5 Food Insecurity in Ontario

Although there have been no population-based studies of food insecurity in Canada, the experience of food insecurity has been documented recently by four surveys of low-income people living in various communities in Ontario (10,14,15,17). Data were collected through face-to-face interviews in all surveys. Results from these studies showed that food insecurity is a significant concern of low-income Ontario residents (Table 1). Generally, the highest proportions of respondents with specific food insecurity concerns were found in Peterborough, where the study group consisted of clients of not-for-profit agencies which primarily serve people with low incomes.

Table 1. Food Insecurity in Ontario

Indicator of Food Insecurity	London n=107	Woodstock n=100	West Elgin county n=49	Belleville n=110	Peterborough n=138	Small community in Southern Ontario n=52
Ran out of money to buy food	46%	52%	35%	37%	63%	--
Experienced food choice limitations	39%	82%	31%	--	--	--
Skipped meals or ate less	54%	59%	29%	--	75%	52%
Experienced anxiety or worried about running out of food	40%	50%	27%	--	80%	48%

2.6 Food Insecurity in the City of Kingston

Results of a study in 1994 indicate that low-income residents of Kingston are concerned about not having enough money to buy enough nutritious and personally acceptable food (4). The socio-demographic profile of Kingston residents based on 1991 census data (5,33) suggests that a large number of people may be at risk of having food insecurity: the proportion of families with low incomes was 16% in Kingston compared with the provincial average of 11%; 11% of Kingston residents aged 15 to 24 years were unemployed compared with the provincial average of 9%; and the proportion of single parent families with never-married children living at home was 37% in Kingston compared to the provincial average of 19%. In 1996, the Partners in Mission Food Bank provided food hampers to 8,428 households, which represented 26,968 individuals in the City of Kingston (34). Thus, there is considerable reason to believe that food insecurity is a critical issue to many people living in Kingston. This indicates a need for community-based initiatives to help Kingston residents address their food security needs.

2.7 Responses to Food Insecurity

Social and economic changes during the past fifteen years, including the gradual erosion of the Canadian welfare state (35-38), have contributed to the growth of community-based initiatives to address food insecurity. These responses to food insecurity fall into two categories: (i) charitable food assistance programs and (ii) food action programs.

2.7.1 Food Assistance Programs

The early 1980s were marked by the development of large scale charitable food distribution systems (3,36,37). Charitable food assistance programs include food banks, hot meal programs, school feeding programs and food voucher programs. It is now estimated that three million different people use Canadian food banks each year (39).

Tarasuk and MacLean (36) argue that dependence on food banks has become “institutionalized” and that reliance on food banks is a barrier to good health rather than a solution to food insecurity. Studies indicate that the majority of people using food banks do so repeatedly (40,41), and some more than once a month (42). Although charitable food assistance programs may help low-income people cope with acute food shortages, these programs are inadequate solutions to chronic income-related food acquisition problems (36). Food banks, for example, do not alleviate food insecurity because they are characterized by limited quantity, quality, and variety of food, a lack of personal choice in the food acquisition process, limited frequency of access, and feelings of humiliation and powerlessness among some food bank users. Moreover, it has been estimated that food banks are used by only 15% to 21% of people who have food insecurity (10,12).

2.7.2 Food Action Programs

In contrast to charitable food assistance programs, food action programs employ a self-help or community development approach to developing skills and improving

resources that are used in the acquisition and preparation of food. In addition to skill acquisition, food action programs provide the opportunity for social support, mutual aid and self-confidence/self-esteem development (3).

Community development has been defined as “people taking charge of their own futures...people identifying commonly-felt problems and needs, and taking steps to resolve the problems and meet the needs” (43). At the core of the community development approach is the belief that solutions identified by a community will have a longer lasting impact than solutions that are forced upon the community (44).

Community kitchens, community gardens and food-buying clubs are examples of food action programs. In two recent Canadian studies of food insecurity, over 30% of low-income respondents reported that they would participate in a food-buying club if one were available (14,16).

2.8 Impact of Food-Buying Clubs on Food Insecurity

Few studies have evaluated the impact of food-buying clubs on food insecurity. There is some evidence that the development of a community owned food co-operative in Halifax enhanced local food security since members were able to save 21% on their grocery order (45). An evaluation of the Good Food Box program in Toronto was conducted recently (46). Food insecurity was measured in terms of five specific concerns about providing enough healthy food for one's family (e.g., “I worry about whether the

food I can afford to buy for my household will be enough”). The results suggested that the Good Food Box program reduced food insecurity: 89% of current customers who had bought a Good Food Box only once or twice had one or more food insecurity concerns compared to 59% of those who had purchased a Good Food Box six or more times. Unfortunately, it was not possible to determine the proportion of current customers who had food insecurity concerns prior to participating in the Good Food Box program, and the analyses did not control for potential confounders. The researchers, however, are conducting follow-up interviews with new customers to determine whether the experience of food insecurity is reduced between the month they bought their first or second Good Food Box and six months later.

2.9 Summary

Before food security can be achieved in the long-term, issues such as unemployment, inadequate social assistance rates, and increasing costs of living need to be addressed at the social policy level to ensure that people have opportunities to obtain adequate incomes for themselves and their families (47). While higher wages, lower-cost housing or utilities, and higher welfare benefits are potential long-term solutions to food insecurity, recent cuts to social assistance and other reductions in government-funded programs have increased the need for effective short-term strategies which involve community members helping each other to alleviate food insecurity.

Food-buying clubs have an important role to play in providing access to

affordable food. Community-based food action initiatives which use collective food buying have rarely been evaluated to determine whether they alleviate food insecurity, and there are no published studies of food-buying clubs. Program evaluation is needed to determine whether food-buying clubs alleviate food insecurity.

CHAPTER THREE: METHODOLOGY

3.1 Evaluation Approach

Process evaluations monitor program implementation to assess whether the intended services are delivered to the target population, whereas outcome evaluations assess the extent to which a program produces change in the desired direction (48). The evaluation approach depends on the purposes for which the evaluation is being conducted. Useful evaluations focus on providing the information that stakeholders want (48,49). Discussions with the Good Food Box planning committee revealed an interest in conducting an outcome evaluation to obtain feedback from the Good Food Box customers to examine the impact of the program on food insecurity and to provide direction for future program planning.

3.2 Study Objectives

The first study objective was to determine whether the Good Food Box customers have food insecurity. It was important to determine whether the program is reaching its target population because this will influence the program's potential to alleviate food insecurity in Kingston. Prior to this study it was not possible to assess the proportion of program participants with food insecurity because the information on customers was limited to addresses and telephone numbers.

The second objective was to determine whether the Good Food Box program

reduces food insecurity. The Good Food Box program assumes that food insecurity can be alleviated by providing low-income people with access to fresh fruit and vegetables that are less expensive than those available in grocery stores. Low-income Canadians generally purchase and consume fewer fruits and vegetables than high-income Canadians (29,50). Studies confirm that the key issue is a lack of money to buy nutritious foods rather than a lack of knowledge about what foods are nutritious (4,10,51), or poor budgeting skills or food shopping habits (4,16). Studies have also shown that people do not eat fruit and vegetables everyday when they run out of money to buy food (14) and that the frequency of fruit and vegetable consumption decreases significantly with increasingly severe food insecurity (8). Although the Good Food Box may help people stretch their food dollars because fresh fruit and vegetables are sold at wholesale prices, it is unknown whether this alleviates food insecurity.

The third study objective was to determine the nature and extent of customer satisfaction with the Good Food Box program. The Good Food Box customer is a valuable source of feedback about the program. Information about customer satisfaction with service delivery can be used to guide future planning for program improvement.

3.3 Design and Study Groups

The study employed a cross-sectional survey and a pre/post survey to address the three study objectives. The cross-sectional survey was conducted with customers who bought a Good Food Box in September of 1996. A pre/post survey was conducted with

new customers who bought their first Good Food Box in October, November, or December of 1996.

3.4 Data Collection

3.4.1 Recruitment of Study Participants

When customers paid for the Good Food Box during the first three days of the month, the Good Food Box host site coordinators gave them a consent form that outlined information about the survey and requested consent (Appendix A and Appendix B). Customers who chose to participate in the study provided their names and telephone numbers on the consent form. Customers who chose not to participate were asked to provide some socio-demographic information so that selection bias due to differential participation could be assessed. Participants and non-participants returned their completed consent forms (in sealed individual envelopes) to the Good Food Box host site coordinators. These were subsequently returned to the investigator. Customers who ordered a Good Food Box for another household were asked by the host site coordinator to pass on the consent form. A stamped envelope was provided so that the completed consent form could be returned to the investigator.

3.4.2 Survey Approach

Information was collected through telephone interviews for both the cross-sectional and pre/post surveys. A telephone interview approach was used for several reasons: telephone interviews provide the investigator with more control over the data

collection time-frame; non-response to interview questions is less likely in a telephone interview than a mailed survey; and telephone interviews are less expensive to conduct than a mailed survey (52,53). The Good Food Box planning committee also believed the response rate would be higher if information were collected through telephone interviews as opposed to mailed surveys.

A script was followed when contact was made with a household (Appendix C). The respondent was the person in the household who usually did the food shopping. If the customer who provided written consent did not usually do the food shopping for the household, verbal consent was requested from the person who did. Six attempts were made to contact customers before they were considered to be non-respondents. Telephone calls were made on different days and at different times of the day. All telephone interviews were conducted by the investigator.

3.4.3 Data Collection Procedure for the Cross-Sectional Survey

Prior to the start of data collection, the customers who chose to participate were randomly assigned to be contacted either during the third week of September to pilot test the interview (to assess the clarity of the questions dealing with customer satisfaction) or during the last week of September or October (because it was not feasible to conduct all interviews during the last week of September). Ten customers were randomly assigned to the pilot test group and the others were randomly assigned, in equal proportions, to the September group or October group. Telephone interviews were conducted at the end of

each month to control for the possibility that the experience of food insecurity may vary throughout the month depending on the availability of money to buy food. Consent forms for six additional customers who chose to participate in the telephone interview were received during the first week of November. These customers, as well as the non-respondents from September and October, were telephoned during the last week of November (Table 2).

	September	October	November
third week:	pilot test	---	---
fourth week:	interview	interview	interview

A standardized telephone interview was conducted (Appendix D). Three types of information were gathered during the interview: (i) socio-demographic characteristics, including gender, education, household size and composition, number of children under 18 years old living at home, ages of household members, food expenditures, income sources, and income level; (ii) food insecurity, as measured by responses to 11 statements concerning anxiety about household food supplies, limited variety and depletion of household food, insufficient food intake, nutritional inadequacy of food intake, and the tendency of parents to skip meals or cut down the amount of food they eat to provide food their children; and (iii) customer purchasing patterns, overall satisfaction with the Good

Food Box program, and satisfaction with some specific aspects of the program. In total, telephone interviews were conducted with 73 of the 80 customers who chose to participate in the cross-sectional survey.

3.4.4 Data Collection Procedure for the Pre/Post Survey

New customers in October, November, and December who chose to participate in the pre/post survey were contacted for the pre-intervention interview in the week prior to picking up their first Good Food Box. The follow-up interview was conducted two months later, during the last week of that second month (Table 3). Thus, the new customers in the pre/post survey had the opportunity to buy a Good Food Box for a total of three months, including the month of their first purchase. New customers in September were excluded from the pre/post survey: it was not possible to conduct a pre-intervention interview with this group because the customer interview was not pilot tested until after the Good Food Box pick-up day in September.

Table 3. Time Frame for the Pre/Post Survey				
October	November	December	January	February
pre.....			post
	pre.....		post
		pre.....	post

The pre-intervention and follow-up interviews were conducted according to a standardized protocol (Appendix E). Three types of information were gathered during the

pre-intervention interview: (i) how respondents heard about the Good Food Box and why they had first decided to participate in the program; (ii) socio-demographic characteristics, including gender, education, household size and composition, number of children under 18 years old living at home, ages of household members, food expenditures, income sources, and income level; and (iii) food insecurity, as measured by responses to 11 statements concerning anxiety about household food supplies, limited variety and depletion of household food, insufficient food intake, nutritional inadequacy of food intake, and the tendency of parents to skip meals or cut down the amount of food they eat to provide food their children.

Three types of information were collected during the follow-up interview: (i) food insecurity, as measured by the same questions as those in the pre-intervention interview; (ii) customer purchasing patterns, overall satisfaction with the Good Food Box program, and satisfaction with some specific aspects of the program; and (iii) a question to determine whether respondents had experienced a change in the amount of money they had to spend on food. In total, the pre-intervention interview was conducted with 15 of the 18 eligible customers who chose to participate in the pre/post survey. The follow-up interview was conducted with 12 of the 15 customers who had completed the pre-intervention interview.

3.5 Instruments

3.5.1 Food Insecurity

Food insecurity was assessed by asking respondents whether 11 statements about providing enough nutritious food for themselves and their families were “never, somewhat or often true” of their current situation. One statement asked parents whether they skipped meals or cut down on the amount of food they ate to leave more for their children (10). This statement was included because studies suggest that the tendency of parents to deprive themselves to provide food for their children is an important component of food insecurity (10-12,19).

The remaining 10 statements came from the Radimer/Cornell Measure of Food Insecurity and Hunger (8). This instrument consists of a household-level scale to measure food insecurity at the household level, and an adult-level scale and a child-level scale to measure food insecurity at the individual level (see Appendix D). One item on the household-level scale assesses household food anxiety, another item assesses limited diversity of household food, and two items assess depletion of household food supplies. On each of the adult-level and child-level scales, two items assess insufficient food intake and one item assesses nutritional inadequacy of food intake.

The Radimer/Cornell instrument was used to assess the experience of household-level food insecurity and individual-level food insecurity. Household-level food security existed when a respondent reported that none of the statements on the household-level

scale were true, and household-level food insecurity existed when one or more of these statements were somewhat or often true. Individual-level food security existed when the adult-level statements and the nutritional inadequacy statement on the child-level scale were not true, and individual-level food insecurity existed when one or more of these statements were somewhat or often true but the two statements on the child-level scale which assess insufficient food intake were not true. When a respondent with one or more children reported that one or both of the food insufficiency statements on the child-level scale were somewhat or often true, then this indicated that the children were not getting enough to eat.

The Radimer/Cornell instrument has been assessed for three aspects of validity using a population-based sample of 200 women of varying socio-economic levels (8). The three scales have a high level of internal consistency: Cronbach's alpha was 0.84 for the household-level scale, 0.86 for the individual-level scale, and 0.85 for the child-level scale. Factor analysis supported the conceptual framework of the instrument, and therefore, its construct validity: a household factor included four household-level food insecurity statements, an adult factor included statements on the adult-level scale that concern diet quantity, a child factor included two statements on the child-level scale that concern diet quantity, and a diet quality factor included statements on the adult-level and child-level scales that concern diet quality. Criterion-related validity was supported by the finding that socio-demographic and dietary characteristics varied with food insecurity status in the expected direction: a significant negative linear trend was found for

household food availability and consumption of fruit and vegetables across food insecurity groups. This indicates that the instrument can be used to differentiate among groups of households experiencing progressively severe food insecurity.

3.5.2 Customer Satisfaction

A pool of 29 customer satisfaction attitude statements was developed based on survey questions used to evaluate the Good Food Box program in Toronto (46), with input also from Kingston's Good Food Box planning committee. The content validity of these statements was judged by seven professionals with expertise in program delivery or evaluation, and/or because of their research on food insecurity. The content validation process was based on previous research on customer satisfaction (54-56).

The judges were asked to assign each attitude statement to a content area that they felt was most representative of the statement. Items not assigned to one of the content areas were classified as rejects. Consensus was defined as agreement by at least five out of the seven judges. The judges were also asked to use a nine-point rating scale to evaluate the appropriateness of each statement to the assessment of customer satisfaction. A mean appropriateness score of 6.5 or greater on the nine-point scale was defined as consensus. Items were deleted on the basis of a lack of consensus about the content area or appropriateness, or because an item was classed as a reject by five or more judges. Sixteen attitude statements met the criteria established for content validation. Four of the statements were excluded because of overlapping content and one statement was

excluded because it referred to a Good Food Box newsletter that had not been developed. The remaining 11 statements were revised according to the judges' suggestions for rewording. After the customer satisfaction statements were pilot tested, one item was reworded to enhance clarity and an ambiguous item was deleted.

The response categories for the specific customer satisfaction statements were “never, sometimes, or always”. Positively and negatively worded items were included to control for a tendency of respondents to respond the same way to each statement. The four negatively worded attitude statements were reverse coded so that higher scores indicated greater satisfaction. Customers who indicated dissatisfaction with a particular aspect of the Good Food Box program were asked to explain why they were dissatisfied. Customers were also asked to indicate their overall satisfaction with the Good Food Box program. The response categories for this item were “very happy, somewhat happy, neutral, somewhat unhappy or very unhappy”. The customer satisfaction instrument included two open-ended questions to assist in the improvement of the program and to find out why customers who had previously stopped buying a Good Food Box did not continue with the program.

3.6 Sample Size

For the purposes of calculating the required sample size, it was expected that household-level food insecurity would be reported by 50% of the respondents. This estimate was based on research which used the Radimer/Cornell Measure of Food

Insecurity and Hunger (8). Kendall et al. (8) found the prevalence of household-level food insecurity to be 50% in a sample of households in a rural county in New York State.

A sample size formula for a proportion (57) was used to determine that the cross-sectional survey would require 97 respondents to have a 95% probability that the estimated proportion of households with food insecurity at the household level would be within 10% of the population value. Using a sample size formula for testing differences in proportions for a paired-sample design (58), it was found that the pre/post survey would require 76 respondents to have 80% power to detect a 20% reduction in household-level food insecurity (from 50% to 30%), given that the probability of a type I error would be 0.05.

3.7 Ethics

The research protocol was approved by the Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board (Appendix F). Written or verbal consent was obtained from all respondents. Each respondent was assigned an unique identification number. Although each respondent's name, telephone number and unique identification number were recorded on the consent forms, this sheet was shredded on completion of the telephone interview so that it was impossible to link each respondent's unique identification number with his/her name and telephone number. Completed customer interviews were kept in a locked filing cabinet. Information was entered into a database using only the respondent's unique identification number.

3.8 Analysis

3.8.1 Computing

The data were entered into a Paradox database on a personal computer. A check for accuracy was conducted by comparing the recorded responses on the customer interviews with a printout of the database. The database was then uploaded into the Queen's mainframe system and the SAS program (59) was used to analyze the data.

3.8.2 Objective # 1

The first objective was to determine whether the Good Food Box customers have food insecurity. Descriptive statistics were calculated to describe the socio-demographic characteristics of the Good Food Box customers and their food insecurity status. Means and standard deviations were calculated for continuous variables and percentages for categorical variables, including the proportion of respondents living in households with household-level food insecurity and the proportion living in households with individual-level food insecurity. Chi-square tests were used to examine the association between two categorical variables, and Wilcoxon rank-sum or Kruskal-Wallis tests were used to examine the association between a categorical and continuous variable (nonparametric tests were used because household size, number of children, and per capita food expenditures were somewhat positively skewed).

Since the Good Food Box program targets “people with low incomes” because they have a greater risk of experiencing food insecurity, it was important to examine the

association between food insecurity and low income while controlling for variables with the potential to confound this association. Based on research which indicated that insufficient income is the primary reason for running out of food (14-17), it was hypothesized that respondents with low incomes would have a higher risk of food insecurity even when controlling for variables that could potentially confound the relationship. To qualify as a confounder, a variable had to be associated with low income and be an independent risk factor for food insecurity (60).

Using data from the cross-sectional survey, multiple logistic regression analysis was applied to estimate the magnitude of the association between food insecurity and low income while simultaneously controlling for potential confounders. Respondents were categorized as having a low income if they reported that their gross household income was “close to” or “below” the low-income cutoff adjusted for household size (the two income level categories were collapsed because only seven respondents reported a household income that was “close to” the low-income cutoff). Two models were created, one for each of the two dimensions of food insecurity. The dependent variables were household-level food insecurity status and individual-level food insecurity status.

Covariates associated with food insecurity were evaluated first by conducting bivariate analyses. Chi-square tests were conducted to evaluate associations between the categorical socio-demographic variables and food insecurity status, and logistic regression was used to evaluate associations between the continuous socio-demographic

variables and food insecurity status. Crude odds ratios and their 95% confidence intervals were calculated.

Testing for potential confounders was then conducted. Variables found to be associated with food insecurity in the bivariate analyses ($p < 0.25$) were modeled with food insecurity using stepwise multiple logistic regression. Before these potential confounders were considered in the stepwise regression procedure, dummy variables were created for categorical variables that had more than two levels in order to facilitate the multiple logistic regression analysis. The significance level for remaining in the model was set at $p < 0.10$ to ensure the inclusion of all variables with the potential to confound the association between food insecurity and low income.

Multiple logistic regression was then used to describe the association between food insecurity and low income while controlling for the potential confounding variables. The appropriateness of the multivariate model was evaluated by the Hosmer and Lemeshow goodness-of-fit test. This test involved calculating the Pearson chi-square statistic to evaluate the null hypothesis that there is no difference between the observed outcome and the expected outcome produced by the logistic regression model. The model was considered “non-appropriate” for the data if the p-value was less than 0.05. Finally, the crude and adjusted odds ratios and their 95% confidence intervals were calculated for the association between food insecurity and low income.

3.8.3 Objective #2

The second objective was to determine whether the Good Food Box program reduces food insecurity. Using data from the pre/post survey, descriptive statistics were calculated to describe the experience of food insecurity among the new customers prior to receiving their first Good Food Box and two months later. McNemar's exact test for correlated proportions was used to determine whether the proportion of respondents who lived in households with household-level food insecurity decreased at the two month follow-up. The pre/post change in the proportion of respondents who lived in households with individual-level food insecurity was also examined using McNemar's exact test for correlated proportions.

3.8.4 Objective #3

The third objective was to determine the nature and extent of customer satisfaction with the Good Food Box program. Descriptive statistics were calculated to describe customer purchasing patterns, overall satisfaction with the program, and satisfaction with specific aspects of the program. Means and standard deviations were calculated for continuous variables and percentages for categorical variables. The open-ended questions were analyzed by grouping the responses into common themes.

Data from the cross-sectional survey were used to examine associations between customer satisfaction and customer characteristics, including socio-demographics, household-level and individual-level food insecurity, and the frequency with which

respondents bought a Good Food Box. A summary score for the customer satisfaction instrument was created by adding the scores for each item and calculating the mean score for each respondent. Since the mean satisfaction scores were somewhat negatively skewed, the Wilcoxon rank-sum or Kruskal-Wallis tests were used to examine the association between mean satisfaction scores and the categorical variables. Simple linear regression was conducted to examine the association between mean customer satisfaction scores and household size, number of children, and per capita monthly food expenditures.

CHAPTER FOUR: RESULTS

The results of the surveys are presented in the following four sections. The first section documents the response to the survey. This is followed by the socio-demographic, food insecurity and customer satisfaction results in the next three sections.

4.1 Cross-Sectional Survey

4.1.1 Survey Response

One hundred and sixty-five consent forms were collected for the cross-sectional survey. This included 23 consent forms collected when they were redistributed on the Good Food Box pick-up day to customers who bought the Good Food Box from the KFL&A Health Unit, the Better Beginnings for Kingston Children Office, or the North Kingston Community Health Centre. Socio-demographic information was obtained from 163 (98.8%) customers when they completed the consent form. Eighty (48.5%) customers agreed to participate in the telephone interview.

Using information that was provided on the consent form, the customers who completed the consent form during the first three days of September were compared with those who completed the form when they were redistributed on the Good Food Box pick-up day on September 15th. Chi-square tests were conducted to compare the categorical variables, and Wilcoxon rank-sum tests were performed to compare the continuous variables. Since the socio-demographic characteristics and overall satisfaction with the

Good Food Box program did not differ between the two groups ($p>0.05$), the data were combined.

Chi-square tests and Wilcoxon rank-sum tests were conducted to compare the characteristics of customers who agreed to participate in the telephone interview with the non-participants. The results for the categorical variables are presented in Table 4. Using the Bonferroni multiple comparisons procedure, the level at which differences were considered statistically significant was determined to be 0.006. The only difference that approached statistical significance was for household composition. The results of the Wilcoxon rank-sum tests showed no significant differences for household size ($p=0.56$) or number of children ($p=0.36$).

Telephone interviews were conducted with 73 (91.2%) customers who agreed to participate. Contact with five customers was not made after at least six attempts, one customer could not be contacted because the telephone number was not provided, and another customer had a hearing impairment which prevented the interview from being conducted. Overall satisfaction with the Good Food Box program and socio-demographic characteristics (using information collected on the consent form) of those respondents who were interviewed ($n=73$) and those who could not be contacted for an interview ($n=7$) were compared using Chi-square tests and Wilcoxon rank-sum tests. The results revealed no differences that had a p-value less than 0.05.

Table 4. Comparison of Customers who Agreed to Participate in the Telephone Interview with the Non-participants

Categorical Variables	Total (n=163)	Agreed to Participate (n=80)	Non-participants (n=83)	Chi Square p-value
Overall Satisfaction (%)	(n=158)	(n=80)	(n=78)	0.610
unhappy/neutral	15.19	13.75	16.67	
happy	84.81	86.25	83.33	
Household Composition (%)	(n=162)	(n=80)	(n=82)	0.008
single person	20.99	25.00	17.07	
single parent family	30.25	36.25	24.39	
couple without children	12.35	7.50	17.07	
couple with children	31.48	31.25	31.71	
other	4.94	0.00	9.76	
Sources of Household Income (%)				
<i>job</i>				0.668
no	57.06	58.75	55.42	
yes	42.94	41.25	44.58	
<i>social assistance</i>				0.102
no	61.35	55.00	67.47	
yes	38.65	45.00	32.53	
<i>pension</i>				0.601
no	82.82	81.25	84.34	
yes	17.18	18.75	15.66	
<i>other source(s)</i>				0.915
no	82.82	82.50	83.13	
yes	17.18	17.50	16.87	

Forty (54.8%) interviews were conducted in September, including the 12 respondents who had been telephoned to pilot test the interview during the third week of that month. Twenty-six (35.6%) interviews were completed during the last week of October, including one with a customer who had been randomly assigned to be telephoned in September but could not be reached during that month. The remaining seven (9.6%) interviews were conducted during the last week of November, including two with customers who had not previously been reached during the month to which they had been randomly assigned.

Chi-square tests were performed to determine whether the month during which respondents were interviewed was related to household-level food insecurity, individual-level food insecurity, overall satisfaction with the Good Food Box program, family composition, education level, housing tenure, per capita monthly food expenditures, income level, and sources of income. Kruskal-Wallis tests were conducted to determine whether household size and number of children differed by the month interviewed. No variables were related to the month interviewed with a p-value less than 0.05.

Chi-square tests and Wilcoxon rank-sum tests were then conducted to determine whether the same variables were related to whether or not respondents were interviewed during the month to which they had been randomly assigned (i.e., respondents were categorized as “not randomly assigned” if they were interviewed either during November because their Good Food Box host site coordinator did not return the completed consent

forms until the first week of November or during a month to which they were not randomly assigned because additional calls were made to non-respondents during the last week of October and November). Although the results showed a higher proportion of respondents with more than a high school education in the group that was interviewed during a month to which they had been randomly assigned (Fisher's exact $p=0.04$), the Bonferroni multiple comparisons procedure determined that the difference had to have a p-value less than 0.004 to be statistically significant. Since there were no statistically significant differences by month interviewed or by random assignment status, the data were combined.

Household-level food insecurity, individual-level food insecurity, overall satisfaction with the Good Food Box program, family composition, number of children, household size, education level, housing tenure, per capita monthly food expenditures, income level, and sources of income of the respondents in the pilot test group ($n=12$) were compared with those of the interviewed respondents who were not included in the pilot test ($n=61$). Chi-square tests showed that the categorical variables did not differ between the two groups ($p>0.05$). The Wilcoxon rank-sum tests for the continuous variables revealed that the respondents in the pilot test group lived in larger households ($p=0.02$) and had more children ($p=0.004$). The level for statistical significance determined by the Bonferroni multiple comparisons procedure was 0.004.

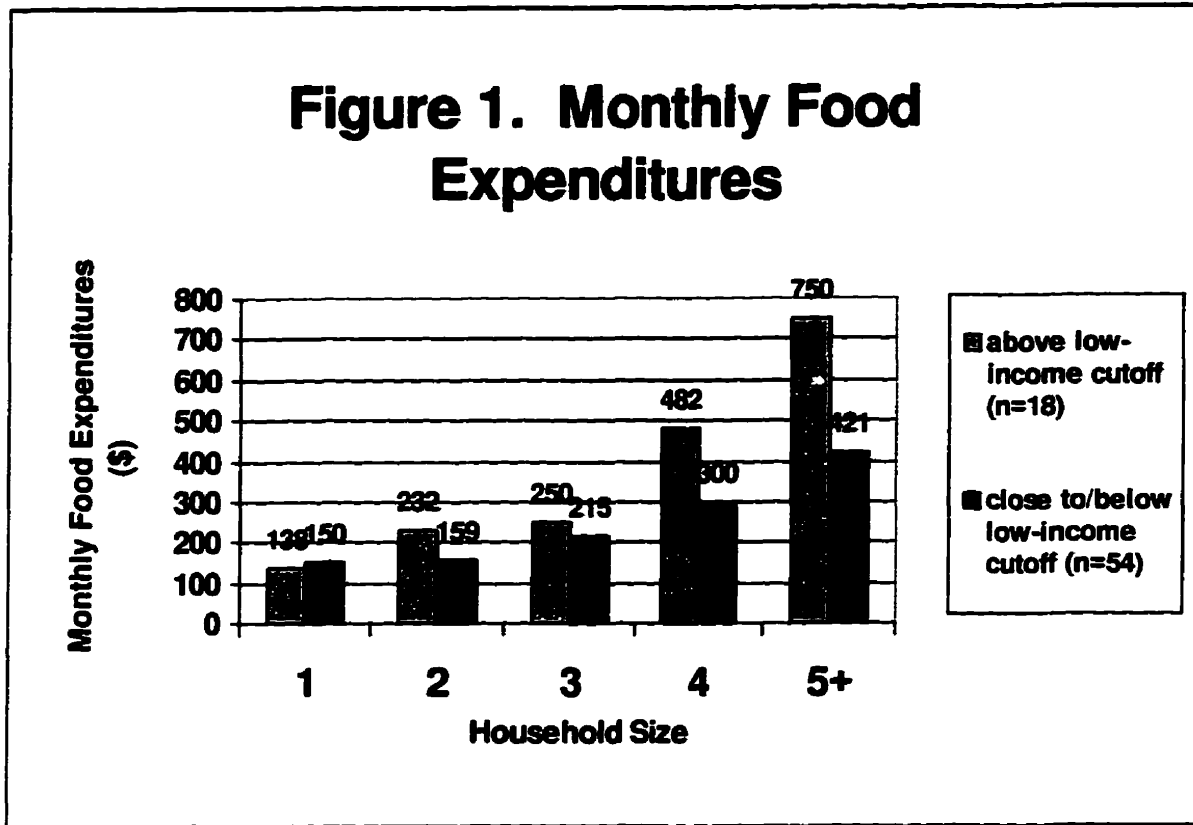
4.1.2 Socio-demographics

The socio-demographic information collected from the consent form (n=163) is summarized in Table 4. Additional socio-demographic information was obtained from the 73 customers who completed the telephone interview.

Almost all respondents were female (93.2%). The highest educational levels of the respondents were as follows: 23.3% had less than a high school education; 19.2% had graduated from high school; 23.3% had some post-secondary education; and 34.2% had earned a degree, diploma or certificate.

Statistics Canada's 1994 low-income cutoffs adjusted for family size (61) (see Appendix D) were used to determine that 47 (64.4%) respondents were living on a gross household income that was below the low-income cutoff, seven (9.6%) had a gross household income that was close to the low-income cutoff, and the gross household income for 18 (24.7%) respondents was above the low-income cutoff. Of the 33 households that received social assistance, 28 reported that their gross household income was below the low-income cutoff compared with 10 low-income households among the 29 that reported employment as a source of household income. Average monthly household food expenditures by income level and family size are presented in Figure 1.

Figure 1. Monthly Food Expenditures



Forty-nine (67.1%) respondents had one or more children under 18 living at home; 31 of these households had incomes that were below the low-income cutoff. Forty-four (60.3%) respondents lived in households with one or more children under thirteen years old; 29 of these respondents reported that their household income was below the low-income cutoff. Of the 19 households with one or more children under three years old, 14 had incomes below the low-income cutoff.

Six (8.2%) respondents were 65 years old or older or lived with an older adult 65 years old or older. Five of these households reported that a pension (other than a

disability pension) was their only source of income, and four had incomes that were below the low-income cutoff.

Thirty (41.1%) respondents lived in non-profit housing; 13 of these households were single parent families. Twenty-four (32.9%) respondents rented from a private landlord, and 19 (26.0%) owned their place of residence.

4.1.3 Food Insecurity

Forty-one (56.2%) respondents lived in households with household-level food insecurity, and 26 (35.6%) lived in households with individual-level food insecurity. In the 49 households with one or more children under 18 years old, seven (14.3%) respondents indicated that their children did not have enough food to eat. Food insecurity was more common among the 47 low-income households: 70.2% of these respondents indicated that there was household-level food insecurity, 48.9% reported individual-level food insecurity, and 22.6% of the 31 low-income respondents with one or more children indicated that their children did not have enough food to eat. McNemar's test for correlated proportions revealed that the odds of individual-level food insecurity were 16 times (95% C.I.=2.1, 120.6) greater among households with household-level food insecurity.

The most frequently reported food insecurity concern was worrying about running out of food before getting money to buy more (Table 5). Seventeen (41.5%) respondents

who lived in a household with household-level food insecurity reported all four household-level food insecurity concerns. Seven (36.8%) respondents with one or more children who lived in a household with individual-level food insecurity reported all four individual-level food insecurity concerns, whereas only one (14.3%) respondent without children responded positively to each of the three individual-level food insecurity concerns that were applicable to adults.

Association Between Household-Level Food Insecurity and Low Income

The associations between each of the potential confounders and household-level food insecurity are presented in Table 6. Education level, household composition, housing tenure, number of children, household size, per capita monthly food expenditures, employment earnings as a source of household income, social assistance as a source of household income, and having “other” sources of income met the criteria for inclusion into the stepwise procedure ($p < 0.25$) to evaluate potential confounders of the association between household-level food insecurity and low income. Per capita monthly food expenditures, housing tenure, and education level were the only variables that met the cutoff point of $p < 0.10$ for staying in the model. When these variables were entered into the model with income level, food insecurity was no longer associated with housing tenure ($p = 0.33$) or education level ($p = 0.23$). These variables were no longer considered to be potential confounders. The variable “per capita monthly food expenditures” was considered to be a potential confounder because it was an independent risk factor for food insecurity ($p = 0.01$), and the Wilcoxon rank-sum test showed a significant association

between per capita monthly food expenditures and income level ($p=0.01$).

Multiple logistic regression was used to describe the association between household-level food insecurity status and income level while controlling for the potential confounding effect of per capita monthly food expenditures. The Hosmer and Lemeshow goodness-of-fit test of the resulting model indicated that it was an appropriate model for the data ($p=0.19$). The crude and adjusted odds ratios for the association between food insecurity and income level are presented in Table 7. The 21.6% change in the odds ratio after controlling for per capita monthly food expenditures indicated that this variable confounded the crude association between income level and food insecurity status at the household level. The results of the multiple logistic regression revealed that respondents with household-level food insecurity were 9.8 times (95% C.I.=2.4, 40.0) more likely to report a lower household income, even after controlling for per capita monthly food expenditures.

Table 5. Indicators of Food Insecurity

Food Insecurity Item	Not True n (%)	Somewhat True n (%)	Often True n (%)
All Respondents (n=73)			
I worry whether the food will run out before I get money to buy more.	39 (53.4%)	18 (24.7%)	16 (21.9%)
We/I eat the same thing for several days in a row because we/I only have a few different kinds of food on hand and don't have money to buy more.	45 (61.6%)	18 (24.7%)	10 (13.7%)
The food that I bought just didn't last, and I didn't have money to get more.	46 (63.0%)	16 (21.9%)	11 (15.1%)
I ran out of the foods that I needed to put together a meal and I didn't have money to get more food.	45 (61.6%)	19 (26.0%)	9 (12.3%)
I can't afford to eat properly.	52 (71.2%)	11 (15.1%)	10 (13.7%)
I am often hungry, but I don't eat because I can't afford enough food.	62 (84.9%)	9 (12.3%)	2 (2.7%)
I eat less than I think I should because I don't have enough money for food.	55 (75.3%)	13 (17.8%)	5 (6.8%)
Respondents with Children (n=49)			
I cannot give my children a balanced meal because I can't afford that.	38 (77.6%)	10 (20.4%)	1 (2.0%)
My children are not eating enough because I just can't afford enough food.	44 (89.8%)	5 (10.2%)	0 (0.0%)
I know my children are hungry sometimes, but I just can't afford more food.	42 (85.7%)	5 (10.2%)	2 (4.1%)
I skip meals or cut down on the amount of food I eat to leave more for my children.	25 (51.0%)	11 (22.4%)	13 (26.5%)

Table 6. Relationships Between Household-Level Food Insecurity and the Potential Confounding Variables

Categorical Variable	Insecure (n=41)	Secure (n=32)	Chi Square p-value	Unadjusted Odds Ratio	Confidence Interval (95%)
Education (%)					
less than high school	29.27	15.63	0.171	2.234	0.70, 7.18
high school or higher	70.73	84.38			
Household Composition (%)					
single parent family	43.90	21.88	0.114 ^f	3.214	0.76, 13.94*
couple, no children	4.88	12.50	1.000 ^f	0.625	0.05, 5.90*
couple, children	31.71	34.38	0.756 ^f	1.477	0.37, 6.02*
single person	19.51	31.25		1.000	
overall significance			0.195 ^f		
Housing Tenure (%)					
rent	87.80	56.25	0.002	5.600	1.74, 18.00
own	12.20	43.75			
Sources of Household Income					
<i>job (%)</i>					
no	68.29	50.00	0.113	2.154	0.83, 5.60
yes	31.71	50.00			
<i>social assistance (%)</i>					
no	41.46	71.88	0.010	0.277	0.10, 0.75
yes	58.54	28.13			
<i>pension (%)</i>					
no	90.24	81.25	0.317 ^f	2.135	0.47, 10.21*
yes	9.76	18.75			
<i>other source(s) (%)</i>					
no	75.61	87.50	0.200	0.443	0.12, 1.57
yes	24.39	12.50			
Continuous Variable					
		Chi Square p-value	Crude Odds Ratio	Confidence Interval (95%)	
Household Size (unit=1 person)		0.100	1.308	0.95, 1.80	
Number of Children (unit=1child)		0.084	1.417	0.95, 2.11	
Per Capita Monthly Food Expenditures (unit=\$10)		0.004	0.840	0.75, 0.94	
^f Fisher's exact p-value					
* Cornfield's method					

Table 7. Crude and Adjusted Odds Ratios for the Association Between Household-Level Food Insecurity and Low Income					
	Insecure (n=41)	Secure (n=31)	Chi Square p-value	Crude Odds Ratio	Confidence Interval (95%)
Income Level (%)					
close to/below cutoff	92.68	51.61	<0.001	11.875	3.02, 46.75
above low-income cutoff	7.32	48.39		1.000	
	Parameter Estimate	Standard Error	Chi Square p-value	Adjusted^f Odds Ratio	Confidence Interval (95%)
Income Level (%)					
close to/below cutoff	2.28	0.72	0.002	9.769	2.39, 39.98
above low-income cutoff				1.000	
^f adjusted for per capita monthly food expenditures					

Association Between Individual-Level Food Insecurity and Low Income

Table 8 presents the associations between each of the potential confounders and food insecurity at the individual level. Education level, household composition, housing tenure, per capita monthly food expenditures, employment earnings as a source of household income, and social assistance as a source of household income met the criteria for inclusion into the stepwise procedure ($p < 0.25$) to evaluate potential confounders of the association between individual-level food insecurity status and income level. Housing tenure, education level, and per capita monthly food expenditures met the criteria for remaining in the model ($p < 0.10$). When these variables were entered into the model with income level, per capita monthly food expenditures and housing tenure were found to be independent risk factors for food insecurity at the individual level ($p < 0.05$), and education level was considered to be a potential independent risk factor ($p = 0.06$).

The Wilcoxon rank-sum test revealed a significant association between per capita monthly food expenditures and income level ($p=0.01$), and chi-square tests showed that income level was strongly associated with housing tenure ($p<0.01$) and moderately associated with education level ($p=0.05$).

Multiple logistic regression was used to describe the association between individual-level food insecurity status and income level while controlling for the potential confounding effects of per capita monthly food expenditures, housing tenure, and education level. The Hosmer and Lemeshow goodness-of-fit test of the resulting model was not significant ($p=0.64$). This indicates that it was an appropriate model for the data. Table 9 presents the crude and adjusted odds ratios for the association between individual-level food insecurity and income level. Although the crude odds ratio indicated that respondents with individual-level food insecurity were more likely to report a lower household income, the results of the multiple logistic regression revealed that income level was not significantly associated with individual-level food insecurity status after controlling for the potential confounders in the model. The 381% change in the odds ratio indicated that the crude association between income level and individual-level food insecurity status was confounded by housing tenure, education level, and per capita monthly food expenditures.

Table 8. Relationships Between Individual-Level Food Insecurity and the Potential Confounding Variables

Categorical Variable	Insecure (n=26)	Secure (n=47)	Chi Square p-value	Unadjusted Odds Ratio	Confidence Interval (95%)
Education (%)					
less than high school	34.62	17.02	0.089	2.581	0.85, 7.83
high school or higher	65.38	82.98			
Household Composition (%)					
single parent family	50.00	25.53	0.351 ^f	2.167	0.53, 9.32*
couple, no children	3.85	10.64	0.629 ^f	0.400	0.01, 5.12*
couple, children	23.08	38.30	0.732 ^f	0.667	0.14, 3.19*
single person	23.08	25.53		1.000	
overall significance			0.182 ^f		
Housing Tenure (%)					
rent	96.15	61.70	0.001	15.517	1.93, 124.64
own	3.85	38.30			
Sources of Household Income					
<i>job (%)</i>					
no	76.92	51.06	0.031	3.194	1.09, 9.38
yes	23.08	48.94			
<i>social assistance (%)</i>					
no	42.31	61.70	0.111	0.455	0.17, 1.21
yes	57.69	38.30			
<i>pension (%)</i>					
no	88.46	85.11	1.000 ^f	1.342	0.27, 7.34*
yes	11.54	14.89			
<i>other source(s) (%)</i>					
no	80.77	80.85	1.000 ^f	0.995	0.26, 3.98*
yes	19.23	19.15			
Continuous Variable			Chi Square p-value	Crude Odds Ratio	Confidence Interval (95%)
Household Size (unit=1 person)			0.897	1.020	0.76, 1.37
Number of Children (unit=1 child)			0.796	1.049	0.73, 1.51
Per Capita Monthly Food Expenditures (unit=\$10)			0.018	0.856	0.75, 0.97
^f Fisher's exact p-value * Cornfield's method					

Table 9. Crude and Adjusted Odds Ratios for the Association Between Individual-Level Food Insecurity and Low Income					
	Insecure (n=26)	Secure (n=46)	Chi Square p-value	Crude Odds Ratio	Confidence Interval (95%)
Income Level (%)					
close to/below cutoff	96.15	63.04	0.002	14.655	1.82, 118.07
above low-income cutoff	3.85	36.96		1.000	
	Parameter Estimate	Standard Error	Chi Square p-value	Adjusted^f Odds Ratio	Confidence Interval (95%)
Income Level (%)					
close to/below cutoff	1.11	1.18	0.344	3.046	0.30, 30.68
above low-income cutoff				1.000	
^f adjusted for per capita monthly food expenditures, housing tenure, and education level					

4.1.4 Customer Satisfaction

Thirty-seven of the 57 respondents who had bought a Good Food Box more than once reported that they usually bought the Good Food Box every month, and 18 bought it almost every month. Only two respondents reported that they did not buy the Good Food Box very often because of missed order dates or a lack of money. The two most frequently reported reasons for deciding to buy a Good Food Box were related to a perceived increased affordability of fresh fruit and vegetables: 42 (57.5%) respondents said they first bought a Good Food Box because it sounded like good value for the money and 17 (23.3%) said they had thought the Good Food Box would be a good investment for mid-month when food dollars are more limited.

Sixty-four respondents were “somewhat or very happy” with the Good Food Box

program. Four of the five respondents who were “somewhat or very unhappy” with the program mentioned that they would like to see more variety of produce and two indicated that they would like dairy products to be included in the Good Food Box. Four respondents reported that they were neither happy nor unhappy with the program.

Univariate statistics for each item on the customer satisfaction instrument (n=61) are presented in Table 10. The eight respondents who reported that buying a Good Food Box did not make fresh fruit and vegetable more available to them said they felt this way because they could buy the fresh fruit and vegetables from a store. The five respondents who had difficulties getting to the place where they pay for or pick up the Good Food Box said they felt this way because they needed to arrange a ride or arrange for someone else to take their place. The two respondents who reported that buying a Good Food Box did not make fresh fruit and vegetables more affordable for them said they felt this way because money was not problem for them.

Wilcoxon rank-sum and Kruskal-Wallis tests were used to examine the relationship between mean customer satisfaction scores and food insecurity at the household and individual levels, socio-demographics, and the frequency with which respondents bought a Good Food Box. No differences had a p-value that was less than 0.05. Simple linear regression revealed that mean satisfaction scores were also unrelated to household size, number of children, and per capita monthly food expenditures.

Table 10. Indicators of Customer Satisfaction for the Cross-Sectional Survey

Customer Satisfaction Item	Never n (%)	Sometimes n (%)	Always n (%)
It is easy for me to get to the place where I pay for my Good Food Box.	2 (3.3%)	8 (13.1%)	51 (83.6%)
It is hard for me to get to the place where I pick up my Good Food Box.	51 (83.6%)	7 (11.5%)	3 (4.9%)
I have to wait a long time when I pick up the Good Food Box.	54 (88.5%)	5 (8.2%)	1 (1.6%)
I feel like I'm going to a food bank when I pick up my Good Food Box.	54 (88.5%)	5 (8.2%)	0 (0.0%)
Some of the fruit and vegetables in the box are bruised or spoiled when I get my Good Food Box.	38 (62.3%)	22 (36.1%)	1 (1.6%)
My Good Food Box has all of the fruit and vegetables that are supposed to be in it.	0 (0.0%)	8 (13.1%)	47 (77.1%)
There are enough different kinds of fruit and vegetables in the Good Food Box.	0 (0.0%)	11 (18.0%)	50 (82.0%)
We/I eat the fruit and vegetables before they go bad.	1 (1.6%)	14 (23.0%)	45 (73.8%)
The Good Food Box makes fresh fruit and vegetables more affordable for me.	2 (3.3%)	5 (8.2%)	54 (88.5%)
The Good Food Box makes fresh fruit and vegetables more available to me.	8 (13.1%)	10 (16.4%)	43 (70.5%)

Respondents were asked for ideas to make the Good Food Box program better. The most frequently reported suggestion was to include a greater variety of fruit and/or vegetables from month to month (15.1%). Seven (9.6%) respondents provided each of the following suggestions: develop a Good Food Box containing other items such as dairy products, meat, and dry goods like sugar and pasta; include more fruit because it gets eaten quickly; and make people more aware of the Good Food Box through marketing and advertising. Just over eight percent of the respondents suggested home delivery (perhaps for a fee) for people who need it (e.g., disabled, no car, unable to take time off work). Six (8.2%) respondents thought that the Good Food Box should be offered twice a month. Better quality control when packing the boxes was also mentioned by six respondents; specific concerns included leaf rust on the lettuce, unripe fruit, and making sure that volunteers place the produce gently in the boxes when packing them. Seven (9.6%) respondents said they had no complaints or liked the Good Food Box program as it existed. Another 12 (16.4%) respondents provided no suggested changes or comments.

On completion of the telephone interview, respondents were asked if they wanted to make any additional comments. Some common themes provided additional information about customer satisfaction: 14 respondents reported they were happy or satisfied with the Good Food Box, provided general praise, or thought that the program provides a great service; seven mentioned that they had recommended the Good Food Box to other people; six said that the Good Food Box makes fresh fruit and vegetables more affordable; five indicated that they were pleased with the quantity and/or quality of

produce in the box; four hoped that the program will continue; and three thought that the Good Food Box program promotes healthy eating.

4.2 Pre/Post Survey

4.2.1 Survey Response

Fifty-one consent forms were collected for the pre/post survey (54.9% in October, 17.6% in November, and 27.5% in December). Twenty-one (41.2%) new customers agreed to participate in the telephone interview. The pre-intervention interview could not be conducted with five new customers because they returned their consent forms after they picked up their first Good Food Box.

The socio-demographic characteristics of the new customers who completed the consent form are presented in Table 11. Chi-square and Wilcoxon rank-sum tests were conducted to determine whether the customers who agreed to participate in the telephone interview differed from the non-participants. No differences had a p-value that was less than 0.05. The Wilcoxon rank-sum tests showed that the participants and non-participants did not differ in their household size ($p=0.91$) or number of children ($p=0.49$).

Table 11. Comparison of New Customers who Agreed to Participate in the Telephone Interview with the Non-participants

Categorical Variable	Total (n=47)	Agreed to Participate (n=18)	Non-participants (n=29)	Chi Square p-value
Household Composition (%)				0.697
single person	23.40	22.22	24.14	
single parent family	27.66	33.33	24.14	
couple without children	17.02	22.22	13.79	
couple with children	27.66	16.67	34.48	
other	4.25	5.56	3.45	
Sources of Household Income				
<i>job (%)</i>				0.055
no	51.06	33.33	62.07	
yes	48.94	66.67	37.93	
<i>social assistance (%)</i>				0.475
no	65.96	72.22	62.07	
yes	34.04	27.78	37.93	
<i>pension (%)</i>				0.277 [†]
no	78.72	88.89	72.41	
yes	21.28	11.11	27.59	
<i>other source(s) (%)</i>				0.403 [†]
no	85.11	77.78	89.65	
yes	14.89	22.22	10.34	
[†] Fisher's exact p-value				

Pre-intervention interviews were completed by 15 of the 16 new customers who agreed to participate and returned the consent form prior to picking up their first Good Food Box. Post-intervention interviews were conducted with 12 of the 15 new customers who had completed the pre-intervention interview because one had moved from Kingston, one could not be contacted after more than six attempts, and the telephone

service for the other respondent had been disconnected.

Socio-demographic characteristics of those respondents who completed both the pre-intervention and the follow-up interviews (n=12) were compared with those who agreed to participate and who provided socio-demographic information on the consent form but did not complete the pre-intervention and/or follow-up interview (n=6). The results of the Chi-square tests and the Wilcoxon rank-sum tests revealed no differences with a p-value that was less than 0.05. The month during which customers bought their first Good Food Box did not differ between the respondents and non-respondents (p=0.24). The proportion of respondents who reported household-level food insecurity prior to picking up their first Good Food Box was not significantly different for the group who completed the pre-intervention interview but not the follow-up interview (n=3) compared with those who completed both interviews (n=12) (Fisher's exact p=1.00). The two groups also did not differ in the proportion of respondents living in households with pre-intervention food insecurity at the individual level (Fisher's exact p=1.00).

4.2.2 Socio-demographics

The socio-demographic characteristics of the new customers who provided information on the consent form (n=47) are summarized in Table 11. Additional socio-demographic information was obtained from the 15 customers who completed the pre-intervention interview. All respondents were female. Two had less than a high school education, two had graduated from high school, seven had some post-secondary

education, and four had earned a degree, diploma or certificate. The single person households spent an average of \$90 on food purchases in a month. The average monthly food expenditures were \$206 for the two-person households, \$340 for the three-person households, and \$367 for the four person households.

Ten (66.7%) respondents reported a gross household income that was below Statistics Canada's 1994 low-income cutoff adjusted for family size (61) (see Appendix E). The gross household income for one (6.7%) respondent was close to the low-income cutoff, and the remaining four (26.7%) respondents had incomes that were above the low-income cutoff. All of the respondents who lived in a household that reported social assistance as a source of income were living close to, or below, the low-income cutoff compared with 55.6% of respondents living in a household with employment earnings. Eight (53.3%) respondents had one or more children under 18 years old living at home, and half of these households had a gross income that was below the low-income cutoff. Thirteen (86.7%) respondents rented their place of residence; eight rented from a private landlord and five lived in non-profit housing. All of the non-profit housing residents reported a gross household income that was below the low-income cutoff.

4.2.3 Food Insecurity

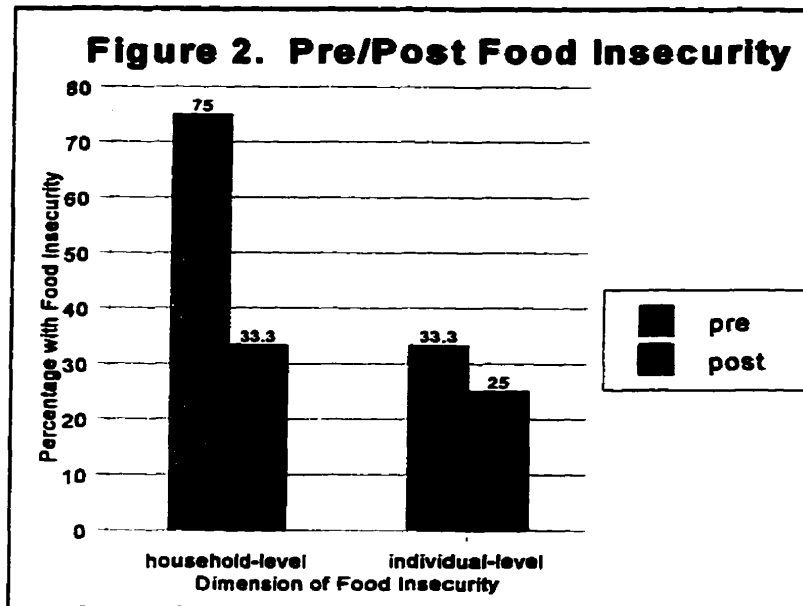
Prior to picking up their first Good Food Box, nine (75%) respondents reported that food insecurity was experienced at the household level, four (33.3%) reported individual-level food insecurity, and among the eight respondents with one or more

children, two (25%) indicated that their children were not getting enough food to eat. The most frequently reported food insecurity indicator was running out of food needed to make a meal and not having the money to buy more (Table 12).

The pre/post comparisons for household-level food insecurity and individual-level food insecurity are presented in Figure 2. McNemar's exact test for correlated proportions revealed that a significant proportion of respondents reported a change from "insecure" to "secure" for household-level food insecurity ($p=0.03$) but not for individual-level food insecurity ($p=0.05$). Pre-intervention food insecurity status at the household and individual levels were not related to the month during which respondents bought their first Good Food Box (Fisher's exact p -values were 0.54 and 0.76, respectively). Follow-up food insecurity status at the household and individual levels were also unrelated to the month during which respondents completed the follow-up interview (Fisher's exact p -values were 0.76 and 0.54, respectively).

Table 12. Indicators of Pre/Post Food Insecurity

Food Insecurity Item	Pre-intervention somewhat/often true n (%)	Follow-up somewhat/often true n (%)
All respondents (n=12)		
I worry whether the food will run out before I get money to buy more.	5 (41.7%)	2 (16.7%)
We/I eat the same thing for several days in a row because we/I only have a few different kinds of food on hand and don't have money to buy more.	5 (41.7%)	2 (16.7%)
The food that I bought just didn't last, and I didn't have money to get more.	5 (41.7%)	2 (16.7%)
I ran out of the foods that I needed to put together a meal and I didn't have money to get more food.	7 (58.4%)	4 (33.3%)
I can't afford to eat properly.	4 (33.3%)	3 (25.0%)
I am often hungry, but I don't eat because I can't afford enough food.	2 (16.7%)	2 (16.7%)
I eat less than I think I should because I don't have enough money for food.	2 (16.7%)	2 (16.7%)
Respondents with children (n=7)		
I cannot give my children a balanced meal because I can't afford that.	2 (28.6%)	2 (28.6%)
My children are not eating enough because I just can't afford enough food.	2 (28.6%)	2 (28.6%)
I know my children are hungry sometimes, but I just can't afford more food.	2 (28.6%)	1 (14.3%)
I skip meals or cut down on the amount of food I eat to leave more for my children.	2 (28.6%)	2 (28.6%)



4.2.4 Customer Satisfaction

The most frequently reported reason for deciding to buy a Good Food Box was its good value (58.3%). One respondent bought the Good Food Box three times (including their first purchase), and five respondents bought the Good Food Box twice during the study period. Six respondents did not continue to buy a Good Food Box after their first purchase: three respondents missed the order dates, two found that there was too much produce to eat before it spoiled, and one did not have enough money.

Seven of the 12 respondents who completed the follow-up interview reported that they were “very happy” with the Good Food Box program overall, three were “somewhat

happy”, and two were neither happy nor unhappy with the program. Overall satisfaction did not differ between respondents who bought the Good Food Box more than once (n=6) and those who did not continue buying the Good Food Box after their first purchase (n=6) (Fisher's exact p=0.46).

Two respondents indicated that it was difficult for them to get to the place where they paid for the Good Food Box because they worked during the hours for placing orders at the host site. One of these respondents also had difficulty picking up the Good Food Box for the same reason. All 12 respondents reported that they never had a long wait when picking up the Good Food Box and they always ate the fruit and vegetables before they spoiled. One respondent reported that she sometimes felt like she was going to a food bank when she picked up the Good Food Box. Another respondent reported that the Good Food Box did not have all of the fruit and vegetables that were supposed to be in it. Two respondents reported that they had received bruised or spoiled produce in the Good Food Box. Two respondents indicated that there were not always enough different kinds of fruit and vegetables in the Good Food Box. Although the majority (91.7%) reported that buying a Good Food Box always makes fresh fruit and vegetables more affordable and available, one respondent disagreed because she could buy the produce at the store and she bought fruit and vegetables more than once a month.

Respondents provided a variety of suggestions to improve the Good Food Box: include more fruit; have a flyer that can be picked up with the Good Food Box to indicate

when and where to place orders for the next month; provide host sites at both ends of Kingston; include more variety of vegetables that are commonly used; offer the Good Food Box more than once a month; expand the times for ordering and picking up the Good Food Box; and allow customers to order the Good Food Box for three months in advance.

When asked if they had any additional comments, four respondents indicated that they were pleased with the program and two mentioned that they liked the convenience of getting the fresh produce all at once. One respondent thought that the Good Food Box was good for people who cannot always afford to buy fruit and vegetables or people who usually do not eat a lot of fresh produce, but it did not meet the needs of people who usually buy fruit and vegetables more than once a month. Another respondent thought that buying a Good Food Box was good value since it provided a variety of fresh fruit and vegetables for less money than it would cost to buy the produce at a store.

CHAPTER FIVE: DISCUSSION

The focus of this chapter is to use the results presented in Chapter Four to address each of the three research objectives: (i) to determine whether the Good Food Box customers have food insecurity; (ii) to determine whether the Good Food Box program reduces food insecurity; and (iii) to determine the nature and extent of customer satisfaction with the program. The chapter concludes with a discussion of the methodological issues.

5.1 Objective #1

5.1.1 Food Insecurity among the Good Food Box Customers

The results indicate that the Good Food Box program is serving people with food insecurity. More than half of the respondents reported that food insecurity was experienced at the household level: respondents worried about running out of food before getting money to buy more, experienced a limited variety of household food, and/or had run out of food before getting money to buy more. Approximately one third of the respondents indicated that food insecurity was experienced at the individual level: respondents reported that they did not have enough food to eat because they did not have enough money and/or that they could not afford to eat properly.

The finding that food insecurity was most often experienced at the household level is consistent with previous research which found evidence of a progression in the

severity of food insecurity from the household level to the individual level (6-8,10-13).

Also consistent with this research is the finding that the likelihood of experiencing individual-level food insecurity was higher among households with household-level food insecurity.

The finding that all four household-level food insecurity concerns were reported by over 40% of the respondents with household-level food insecurity indicates severe food insecurity at the household level for a significant proportion of Good Food Box customers. There was also evidence that individual-level food insecurity was more severe among families with children since a greater proportion of respondents with one or more children reported all individual-level food insecurity concerns compared with respondents without children.

Within households with individual-level food insecurity, the experience of hunger at the child level is considered to indicate very severe individual-level food insecurity. Previous research has shown that mothers reduce the quantity and quality of their food intake to prevent their children from experiencing hunger (6-8,10-13). This study also found that the proportion of cross-sectional survey respondents with children who reported having eaten an insufficient quantity or inadequate quality of food was higher than the proportion who indicated that their children were sometimes hungry.

There is evidence that severe food insecurity exists at the individual level among

the Good Food Box customers since some respondents indicated that they could not afford to provide enough food for their children. Among households with individual-level food insecurity, hunger at the child-level existed in some families even though the majority of respondents in these families reported that they skipped meals or cut down on the amount of food they ate to leave more for their children.

5.1.2 Risk Factors for Food Insecurity among the Good Food Box Customers

The socio-demographic characteristics of the respondents suggest that the Good Food Box program is reaching people who are at risk of having food insecurity. Low income is considered to be the primary reason for food insecurity (2-4,6,8-10,20,44). The large majority of respondents had a household income that was close to, or below, Statistic Canada's low-income cutoff adjusted for household size, and the proportion of low-income households among the respondents was higher than the average for Kingston (5). Consistent with the literature, a strong association was found between household-level food insecurity and low income, and between individual-level food insecurity and low income. Whereas previous studies reported only the crude association between low income and food insecurity (6,9,10,18,19), this study found that household-level food insecurity was more likely among low-income households, even after controlling for per capita monthly food expenditures. Although the association between individual-level food insecurity and low income was not statistically significant after controlling for per capita monthly food expenditures, housing tenure, and education level, low statistical power to detect the association and possible misclassification of food insecurity status

may provide some explanation for this finding. These methodological issues will be discussed in section 5.4.

More than half of the customers who provided information on the consent form for the cross-sectional survey or pre/post survey lived in a household without employment income, and over a third received social assistance. Consistent with previous studies which found that food insecurity is more likely in households without employment income (9,10), household-level food insecurity was more likely to be experienced among households with social assistance income, and households with individual-level food insecurity were more likely to be without employment income.

The large majority of survey respondents rented their place of residence, and the proportion of renters was larger than in the general Kingston population (33). The odds of having food insecurity at the household level was greater among households that rented rather than owned the place where they lived. A strong association was also found between individual-level food insecurity and renting.

Respondents generally spent less money on food for a month than the cost of Agricultural Canada's thrifty nutritious food basket (based on brand name prices) (62). Data from the cross-sectional survey revealed that four-person households, for example, spent an average of \$367 per month on groceries compared with the average cost of approximately \$450 per month for Agricultural Canada's thrifty nutritious food basket for

feeding a family of four in Kingston. Families of four with household-level food insecurity spent an average of \$291 per month on groceries and four-person households with individual-level food insecurity spent an average of \$246 per month on groceries compared with \$472 for families of four with food security. Both household-level and individual-level food insecurity were associated with lower per capita monthly food expenditures. This is consistent with previous research which found that food insecurity is more likely among households with lower food expenditures (6,19).

5.2 Objective #2

The results of the pre/post survey suggest that the Good Food Box program reduces household-level food insecurity since there was a change in food insecurity status from “insecure” to “secure” at the two month follow-up for a significant proportion of respondents, and the change in the proportion of households with individual-level food insecurity was nearly significant. A number of factors, however, must be considered when interpreting the results. Three of the five respondents who reported that household-level food insecurity was no longer a concern at the two month follow-up did not continue to buy the Good Food Box after their first purchase. One of these three respondents reported an increase in the amount of money she had to spend on food during the study period. Although the other two respondents ordered the Good Food Box twice, one of these two respondents also reported an increase in money available to spend on food. These findings indicate that the observed reduction in the proportion of new customers with household-level food insecurity may not be attributed to the Good Food

Box program.

Although factors besides participation in the Good Food Box program may explain the results of the pre/post survey, some of the customer feedback provided information about the potential of the program to reduce food insecurity. The two most frequently reported reasons for deciding to buy a Good Food Box were “good value for money” and “good investment for mid-month”. This finding shows a perceived increase in the affordability of fresh fruit and vegetables. In fact, the overwhelming majority of respondents reported that buying the Good Food Box makes fresh fruit and vegetables more affordable to them. This suggests that the Good Food Box program increases access to affordable food, which is a well-documented food insecurity concern.

Food insecurity is also indicated by an inability to acquire food in a manner which maintains human dignity. In order for the Good Food Box program to reduce all aspects of food insecurity, customers must feel good about participating in the program. Although this outcome was not measured directly, the overwhelming majority of respondents reported that they never felt like they were going to a food bank when they picked up the Good Food Box.

Additional information about the potential impact of the Good Food Box program on food insecurity comes from a comparison of the most frequent food insecurity concern of the pre/post versus cross-sectional survey participants. Whereas the cross-sectional

survey respondents were most often worried about running out of food and not having the money to buy more food, the most frequently reported indicator of pre-intervention food insecurity among the new customers was running out of food needed to prepare a meal and not having the money to get more food. This suggests that the Good Food Box program helps people to avoid actually running out of food, although they may still worry about running out of food before getting money for groceries.

5.3 Objective #3

Feedback from customers about the Good Food Box program was generally very positive. It has been argued that a high level of satisfaction may indicate a positive response bias, which limits some of the utility of using satisfaction as an outcome measure in program evaluations (63). The results of this evaluation, however, suggest that the Good Food Box customers did identify areas of dissatisfaction. For example, 38% of the respondents reported that they had received bruised or spoiled produce in their Good Food Box, and 30% did not always find that the Good Food Box program made fresh fruit and vegetables more available to them.

When the respondents were asked about specific aspects of the Good Food Box program, they tended to indicate that they were satisfied. The responses they gave to the open-ended question about changes to improve the Good Food Box program, however, tended to indicate some dissatisfaction. Although 82% of the respondents reported that there were always enough different kinds of fruit and vegetables in the Good Food Box,

for example, the most frequently reported suggestion to improve the Good Food Box was to include a greater variety of produce in the box. This suggests that more insight into the nature of customer satisfaction may be gained by respondents' suggestions to improve the Good Food Box program.

A major customer satisfaction issue concerned the quality and variety of fruit and vegetables in the Good Food Box. While only a handful of respondents mentioned better quality control when asked for suggestions to improve the program, the finding that over a third of the cross-sectional survey respondents had received bruised or spoiled produce in their Good Food Box suggests that more emphasis needs to be placed on quality control when the boxes are packed. All but one of the cross-sectional survey respondents who were unhappy with the program thought that the program could be improved by including a greater variety of produce in the Good Food Box. In fact, this was the most frequently reported suggestion among all of the cross-sectional survey respondents. This suggests a need to include more variety from month to month to increase the satisfaction of customers who feel that there are not enough different kinds of produce in the Good Food Box.

Although the majority of respondents reported that they had no difficulty getting to the place where they ordered or picked up the Good Food Box, many of the recommendations for improving the program related to increasing the accessibility of the program. These included selling the Good Food Box twice a month, and the desire for

more days and/or hours to order the Good Food Box, more host sites, and home delivery for people who need it.

The finding that not everyone used all of the produce before it spoiled is a significant concern because it means that the program's potential to address food insecurity is limited. Respondents offered a number of suggestions to help customers use all of the produce before it spoils. These included providing a list of the contents of the Good Food Box before the pick-up day so that grocery lists and meals could be better planned, providing information about preparation and storage of fruit and vegetables, and alternating months for the inclusion of items such as potatoes and onions that are less likely to be used up in one month.

5.4 Methodological Issues

5.4.1 Survey Response

Although nearly all of the customers who returned the consent form for the cross-sectional and pre/post surveys provided socio-demographic information, just under half chose to participate in the telephone interview. There are several factors which may have contributed to the low response rates for the cross-sectional and pre/post surveys.

The low response rates may be due to the methods used to recruit participants. Although the Good Food Box customers provide their names, addresses, and phone numbers when they order a food box, the investigator did not have access to this

information for reasons pertaining to confidentiality. It was necessary, therefore, to distribute consent forms with information about the survey to the customers so that they could give informed consent before providing their name and phone number to the investigator.

Since there were about 20 host sites throughout Kingston at the time the data were collected and some of these host sites had the same days and times for taking Good Food Box orders, the investigator could not be at each host site to recruit subjects, even if this had been considered ethical. Thus, recruitment of participants for the surveys relied on host site coordinators asking customers to read the information sheets and indicate whether or not they would participate. This was a fairly large commitment in addition to taking orders and handling the money. Although the host site coordinators agreed to take on the role of recruiting survey participants and they were reminded (via mail and/or phone) to hand out the flyers, they may have forgotten or been too busy on the order days.

Since the evaluation of the Good Food Box program in Toronto (46) also obtained a low response rate (39%), it is likely that the low response rate cannot be explained entirely by the methods used to recruit participants. Research has demonstrated that non-coverage is generally highest among single-person households or very large households, low-income households, and households that rent their place of residence (64,65). Non-coverage is also likely when the head of the household is very young, very old, single or divorced, unskilled, or unemployed. Since the socio-demographic profile of the Good

Food Box customers reflects many of these same characteristics, it is likely that the low response rate is at least partially due to the nature of the population served by the program. Low literacy and not having access to a telephone may also have been barriers to participation in the surveys.

5.4.2 Representativeness of the Sample

The cross-sectional and pre/post survey respondents appeared to be representative of the Good Food Box customers who provided information on the consent forms but chose not to participate in the telephone interview. The finding of no statistically significant socio-demographic differences between customers who agreed to participate in the telephone interview and the non-participants suggests that there is no evidence of selection bias due to differential participation. Participants and non-participants for the cross-sectional survey also did not differ in their overall satisfaction with the Good Food Box program (this could not be assessed for the pre/post survey because the consent forms were distributed to the new customers prior to receiving their first Good Food Box). These findings support the generalizability of the results of the telephone interview to the group of customers who returned the consent form but did not choose to participate in the telephone interview.

It can be assumed that the sample of respondents was representative of the population of Good Food Box customers only if the group who completed the consent forms did not differ from those who did not return the consent form. Unfortunately, there

is no way to determine whether there were systematic differences between the customers who completed the consent form and those who did not return it to the investigator. The size of this group is also unknown because the Good Food Box planning committee does not track the number of customers or households served.

5.4.3 Sample Size

The sample size for the cross-sectional survey was large enough to provide a reasonably reliable estimate of the proportion of Good Food Box customers experiencing food insecurity. The 95% confidence interval for the true proportion of households with household-level food insecurity based on the sample of 73 is 56.2% plus or minus 11.4%. This means that the proportion of Good Food Box customers with household-level food insecurity would fall between 44.8% and 67.6% ninety-five percent of the time if the survey were repeated. The 95% confidence interval for the true proportion of households with individual-level food insecurity based on the sample of 73 is 35.6% plus or minus 11%. If the survey were repeated, the proportion of Good Food Box customers living in a household with individual-level food insecurity concern would fall between 24.6% and 46.6% ninety-five percent of the time.

Although the sample size was sufficient to determine that household-level food insecurity was more likely among low-income households even after controlling for per capita monthly food expenditures, there was limited statistical power to detect an association between individual-level food insecurity and low income while controlling for

potential confounding variables. A sample size table for multiple logistic regression (66) was used to estimate that 290 respondents would have had to have been interviewed to have 80% power to detect an odds ratio of 3.0 for the association between individual-level food insecurity and low income ($\alpha = 0.05$). Although this is a conservative estimate of the required sample size, it indicates that the sample size of the cross-sectional survey was not nearly sufficient to have enough power to detect a significant association between individual-level food insecurity and low income after controlling for per capita food expenditures, housing tenure, and education level.

While there was sufficient statistical power to detect a significant pre/post difference in household-level food insecurity, a larger sample size is required to be able to detect a significant reduction in individual-level food insecurity. A larger sample size would also enhance the generalizability of the results and provide more insight into the impact of the Good Food Box program on food insecurity because sub-analyses could be conducted, such as the association between a positive change in food insecurity status and the number of times customers bought a Good Food Box.

The sample size for both surveys was limited by the low response rate as discussed in section 5.4.1. The small sample size for the pre/post survey may also have been due simply to there being few new customers in October, November, and December. Unfortunately, there is no way to verify this because the Good Food Box planning committee does not track the number of new customers each month.

5.4.4 Possible Misclassification of Food Insecurity Status

The fact of having a low income may have affected the accuracy with which respondents provided information when asked about food insecurity concerns. People may not want to admit that they are unable to provide enough nutritious food for their family, especially when asked about the quantity and quality of food they feed their children. This means that it is more likely that respondents reported having food security when they did not than classified as experiencing food insecurity when they had food security. Since people with low rather than high incomes would be less likely to afford enough nutritious food, it is more likely that low-income people indicated that they had food security when they actually experienced food insecurity.

This “non-random misclassification” provides some explanation for the finding of an insignificant association between individual-level food insecurity and low income after controlling for per capita food expenditures, housing tenure, and education level. The adjusted odds ratio for the association between individual-level food insecurity and low income may have been underestimated if errors in the classification of food insecurity status depended on the income level of a respondent.

CHAPTER SIX: SUMMARY

6.1 Summary

The Good Food Box program was initiated to address food insecurity in Kingston. More than half of the respondents experienced household-level food insecurity and approximately one third lived in households with individual-level food insecurity. An even larger proportion were at risk of having food insecurity because of their low incomes. A significant proportion of the pre/post survey respondents revealed a change in household-level food insecurity status from “insecure” to “secure” at a two month follow-up. The majority of respondents reported they were happy with the Good Food Box program. Most of their suggestions for improving the program concerned service delivery and the contents of the Good Food Box. The following section presents several recommendations for future program planning that focus on enhancing the program’s potential to address food insecurity and evaluate its progress toward this goal.

6.2 Recommendations

1. In addition to recording the total number of boxes sold each month, the Good Food Box planning committee needs to track some other basic statistics on the program, including the number of households served, the number of new customers each month, and the number of boxes sold at each host site. A customer database could be developed to track purchasing patterns, including the number of new customers who continue to purchase a Good Food Box regularly. The Good Food Box planning committee should

set targets to be reached in the future to measure its progress.

2. The Good Food Box planning committee should consider conducting a process evaluation to monitor service delivery to identify problems in the implementation of the program that prevent delivery of intended services to the target population. A process evaluation would involve describing the program operation, comparing service delivery between different host sites, and assessing the consistency between actual service delivery and the way the Good Food Box planning committee intended the program to be implemented. This information could be used to facilitate expansion of the program to additional host sites or locations. Since process evaluations provide information about how the program is implemented, they are also useful for understanding the results of outcome evaluations. For example, a program may fail to produce the desired changes because of problems with program implementation.

Assessment of program coverage is another aspect of program monitoring which would help to determine the extent to which the Good Food Box program is addressing food insecurity in Kingston. Program coverage refers to the extent to which the Good Food Box program is reaching people with food insecurity. Although this study has produced data on the proportion of Good Food Box customers with food insecurity, the program's coverage is unknown. To calculate the proportion of Kingston residents with food insecurity who use the Good Food Box program, it is necessary to know the prevalence of food insecurity in Kingston and the total number of Good Food Box

customers.

3. More research is required to determine the impact of the Good Food Box program on food insecurity. Other outcome measures may include reductions in household food budgets, savings on purchases of fruit and vegetables, increases in household food availability, and decreases in the use of food banks.

Another objective of a future outcome evaluation may be to determine how people change their consumption of fresh fruit and vegetables through their participation in the Good Food Box program. Although the Good Food Box program has the potential to help people eat more nutritiously by providing access to affordable fresh fruit and vegetables, program evaluation is needed to determine the impact of the program on consumption of fresh produce. Outcome measures may include increases in the amount and variety of fresh fruit and vegetables purchased and consumed.

The design of future outcome evaluations would be improved by including a comparison or control group to better isolate changes in outcome measures that can be attributed to participation in the Good Food Box program. To obtain a larger sample size in future evaluation studies, a better method of recruiting respondents to maximize the survey response must be developed and barriers to survey participation need to be addressed.

4. The Good Food Box program will have a greater opportunity to address food insecurity in Kingston by increasing the participation of people with low incomes because they are at greater risk of experiencing food insecurity. A marketing strategy could be developed which focuses on reaching more people with low incomes. The finding that most customers first bought the Good Food Box to save money and/or invest for mid-month suggests that these aspects need to be emphasized when the program is promoted. An in-depth consumer evaluation of Toronto's Good Food Box program indicated that program promotion materials need to be of high-quality and visually-appealing to combat the impression that the Good Food Box program is just a way to direct poor quality produce to people with low incomes (67). Objectives for program promotion and marketing activities may include increasing awareness of the Good Food Box program among low-income neighbourhoods and increasing the number of new customers who have low incomes because they are at risk of having food insecurity.

5. The evaluation indicated a need to make the Good Food Box program more accessible. If the Good Food Box program aims to reduce food insecurity in Kingston by providing access to affordable fresh fruit and vegetables, the program must be accessible to people who are at risk of having food insecurity. Several options to address the issue of accessibility were suggested by the Good Food Box customers, such as expanding the days and/or hours for orders and pick-up, offering the Good Food Box twice a month, and increasing the number of host sites.

6.3 Conclusion

Food-buying clubs, such as Kingston's Good Food Box program, have an important role to play in addressing food insecurity by providing access to more affordable food. This study has shown that Kingston's Good Food Box program is reaching people who have, or who are at risk of having, food insecurity. Customer feedback suggests that the program increases access to affordable fresh produce and that food insecurity may be alleviated by providing people with access to fresh fruit and vegetables that are less expensive than those available in grocery stores. However, more research is needed to examine the impact of collective food buying on food insecurity using a larger study group.

REFERENCES

1. Davis B, Katamay S, Desjardins E, Sterken E, Pattillo M: Nutrition and food security: a role for the Canadian Dietetic Association. *J Can Diet Assoc* 1991;52:141-145.
2. Ontario Public Health Association Food Security Work Group: Food for Now and the Future. A Food and Nutrition Strategy for Ontario. Toronto: The Association, 1995.
3. Davis B, Tarasuk V: Hunger in Canada. *Agric Human Values* 1994;11:50-57.
4. Hargrove D, DeWolfe JA, Thompson L: Food security: what the community wants. Learning through focus groups. *J Can Diet Assoc* 1994;55:188-191.
5. Kingston, Frontenac, Lennox and Addington District Health Council: Good Intentions and Rhetoric Are Not Enough: A KFL&A Health Promotion Plan for the 90's and Onward. Kingston: KFL&A District Health Council, 1996.
6. Radimer KL, Olson CM, Greene JC, Campbell CC, Habicht J: Understanding hunger and developing indicators to assess it in women and children. *J Nutr Educ* 1992;24:36S-44S.
7. Radimer KL, Olson CM, Campbell CC: Development of indicators to assess hunger. *J Nutr* 1990;120:1544-1548.
8. Kendall A, Olson CM, Frongillo EA: Validation of the Radimer/Cornell measures of hunger and food insecurity. *J Nutr* 1995;125:2793-2801.
9. Wehler CA, Scott RI, Anderson JJ: The community childhood hunger identification project: a model of domestic hunger. Demonstration project in Seattle, Washington. *J Nutr Educ* 1992;24:29S-35S.
10. Badun C, Evers S, Hooper M: Food security and nutritional concerns of parents in an economically disadvantaged community. *J Can Diet Assoc* 1995;56:75-80.
11. Tarasuk V, Maclean H: The food problems of low-income single mothers: An ethnographic study. *Can Home Econ J* 1990;40:76-82.
12. Campbell C, Desjardins E: A model and research approach for studying the management of limited food resources by low income families. *J Nutr Educ* 1989;21:162-171.

13. **Travers K: Nutrition experiences of social disadvantaged women. Proceedings of the Nutrition and Women's Health New Perspectives Conference, 1993 Mar 23.**
14. **Donovan U, Clemens R, Kosky S, Payne J: Thames Valley Region Food Security Survey. London: Middlesex-London Health Unit, 1996.**
15. **Peterborough Social Planning Council: A Report on Hunger in Peterborough. Peterborough: The Council, 1996.**
16. **Olson KW: Food Security in Edmonton. Organizing for Action. Edmonton: Edmonton Food Policy Council, 1992.**
17. **Community Development Council of Belleville and District: Hunger in Belleville. Belleville: The Council, 1992.**
18. **Briefel RR, Woteki CE: Development of food sufficiency questions for the Third National Health and Nutrition Examination Survey. J Nutr Educ 1992;24:24S-28S.**
19. **Cristofar SP, Basiotis PP: Dietary intakes and selected characteristics of women ages 19-50 years and their children ages 1-5 years by reported perception of food sufficiency. J Nutr Educ 1992;24:53-58.**
20. **Campbell C: Food insecurity: a nutritional outcome or a predictor variable? J Nutr 1991;121:408-415.**
21. **Campbell C, Kalamay S, Connolly C: The role of nutrition professionals in the hunger debate. J Can Diet Assoc 1988;49:230-235.**
22. **Anderson SA: Core indicators of nutritional state for difficult-to-sample populations. J Nutr 1990;120:1559-1600.**
23. **Beaton GH: Evaluation of nutrition interventions: methodologic considerations. Am J Clin Nutr 1982;35:1280-1289.**
24. **Welsh J: Hunger in Canada: consequences and challenges. National Institute of Nutrition Rapport 1989;4:1-2.**
25. **Campbell CC, Horton SE: Apparent nutrient intakes of Canadians: continuing nutritional challenges for public health professionals. Can J Public Health 1991;82:374-380.**

26. **Greene-Finestone L, Feldman W, Luke B: Prevalence and risk factors of iron depletion and iron deficiency anemia among infants in Ottawa-Carleton. J Can Diet Assoc 1991;52:20-23.**
27. **Richard L, Sevigny J, Roberge AG: Energy and nutrient intakes of 362 adults of the metropolitan Quebec area. J Can Diet Assoc 1984;45:222-229.**
28. **Robbins I, Zafiriou M: The spending patterns of Canadian consumers - an overview. Food Market Commentary 1987;9:43-54.**
29. **Myres AW, Kroetsch D: The influence of family income on food consumption patterns and nutrient intake in Canada. Can J Public Health 1978;69:208-221.**
30. **Bureau of Nutritional Sciences: Report on the Relationship Between Income and Nutrition. Ottawa: Health and Welfare Canada, 1975.**
31. **Matheson A, Robichon-Hunt L: Food Expenditure Patterns and Apparent Nutrient Intakes with Particular Reference to Low Income Families in Canada, 1974 -1978. Ottawa: Food and Nutrition Service of Agriculture Canada, 1983.**
32. **Lehmann F, Gray-Donald D, Mongeon M, Di Tommaso S: Iron deficiency anemia in 1-year-old children of disadvantaged families in Montreal. Can Med Assoc J 1992;146:1571-1577.**
33. **Statistics Canada: Profile of Census Divisions and Subdivisions. Census of Canada, 1991. Ottawa: Statistics Canada, 1991.**
34. **Beeler T: Personal Communication. March 14, 1997.**
35. **Riches G: Food Banks and the Welfare Crisis. Ottawa: Canadian Council on Social Development, 1986.**
36. **Tarasuk VS, Maclean H: The institutionalization of food banks in Canada: a public health concern. Can J Public Health 1990;81:331-332.**
37. **Tarasuk V, Davis B: Responses to food insecurity in the changing welfare state. J Nutr Educ 1996;28:71-75.**
38. **Riches G: Responding to hunger in a wealthy society: issues and options. J Can Diet Assoc 1989;50:150-154.**
39. **Canadian Association of Food Banks: How the Government of Canada is Withdrawing from Canada's Social Programs. Toronto: The Association, 1996.**

40. Hunter D: *What Next? A Survey of Singles Who Use the Food Bank*. Edmonton: Edmonton Gleaners Association, 1988.
41. Levens BR, Clague M: *Food Bank Users: A Profile of the Hunger in British Columbia*. Vancouver: Social Planning Council of British Columbia, 1986.
42. Daily Bread Food Bank Foundation of Toronto: *Will the Ontario Government Create More Hunger?* Toronto: The Foundation, 1995.
43. Four Worlds International Institute for Human and Community Development: *Community Development*. Lethbridge: The Institute, 1989.
44. Kalina L: *Building Food Security in Canada: A Community Guide for Action on Hunger*. Kamloops: Kamloops Food Share, 1993.
45. Archibald E, Yeadon C, Gaudet K, Travers K, Burke L, Gillis A: Development of a community owned food co-operative. *J Can Diet Assoc* 1994;55:22.
46. Smaller Worlds Communications: *An Evaluation of Foodshare's Field to Table Program*. Richmond Hill: Smaller Worlds Communications, 1997.
47. Dodds JM, Parker SL, Haines PS: Hunger in the '80s and '90s: a challenge for nutrition educators. *J Nutr Educ* 1992;24:2S.
48. Rossi PH, Freeman HE: *Evaluation: A Systematic Approach*. Newbury Park, CA: Sage Publications, 1993.
49. Lawrence JES, Cook TJ: Designing useful evaluations: the stakeholder survey. *Eval Prog Planning* 1982;5:327-336.
50. Statistics Canada: *Family Food Expenditure in Canada*. Ottawa: Minister of Industry, Science and Technology, 1994.
51. Reicks M, Randall JL, Haynes BJ: Factors affecting consumption of fruits and vegetables by low-income families. *J Am Diet Assoc* 1994;94:1309-1311.
52. Frey JH: *Survey Research by Telephone*. Newbury Park, CA: Sage Publications, 1989.
53. Lavrakas PJ: *Telephone Survey Methods*. Newbury Park, CA: Sage Publications; 1993.

54. Schwartz NE: Development of a scale to measure client satisfaction with ambulatory nutritional care. *J Can Diet Assoc* 1988;49:163-168.
55. Zyzanski SJ, Hulka BS, Cassel JC: Scale for the measurement of "satisfaction" with medical care: modifications in content, format and scoring. *Medical Care* 1974;12:611-620.
56. Holcomb WR, Adams NA, Ponder HM, Reitz R: The development and construct validation of a consumer satisfaction questionnaire for psychiatric inpatients. *Eval Prog Planning* 1989;12:189-194.
57. Kelsey JL, Thompson WD, Evans AS: *Methods in Observational Epidemiology*. New York: Oxford University Press, 1986.
58. Connor RJ: Sample size for testing differences in proportions for the paired-sample design. *Biometrics* 1987;43:207-211.
59. SAS Institute: *SAS/STAT Software: Changes and Enhancements, Release 6.10*. Cary, NC: SAS Institute Inc., 1994.
60. Hennekens CH: *Epidemiology in Medicine*. Boston: Little, Brown and Co., 1987.
61. Statistics Canada: *Income Distribution by Size in Canada, 1994*. Ottawa: Minister of Industry, 1995.
62. Khana A: *The Cost of Eating Well in Kingston: Can You Afford It?* Kingston, 1997 (UnPub).
63. Ware JE, Davies-Avery A, Stewart AL: The measurement and meaning of patient satisfaction. *Health Med Care Ser Rev* 1978;1:1-15.
64. Trewin D, Lee G: International comparisons of telephone coverage. In *Telephone Survey Methodology* (ed. RM Groves, PP Biemer, LE Lyberg, JT Massey, WL Nicholls, J Waksberg), pp. 25-49. New York: John Wiley and Sons, 1988.
65. Thornberry OT, Massey JT: Trends in United States telephone coverage across time and subgroups. In *Telephone Survey Methodology* (ed. RM Groves, PP Biemer, LE Lyberg, JT Massey, WL Nicholls, J Waksberg), pp. 9-24. New York: John Wiley and Sons, 1988.
66. Hsieh FY: Sample size tables for logistic regression. *Statistics Med* 1989;8:795-802.

67. **Informa Inc: Field to Table Social Marketing Program: An In-depth Consumer Evaluation of Field to Table Services. Toronto: Informa Inc, 1994.**

APPENDIX A: CROSS-SECTIONAL SURVEY CONSENT FORM

Who is doing this study?

- Lisa Ciccarelli, a graduate student at Queen's University
- Lisa is doing the study for the volunteers who organize the Good Food Box program
- the volunteers will hand out this sheet and will collect the attached page

What is the purpose?

- to learn about the Good Food Box customers
- to improve the Good Food Box

Who can do the survey?

- people who usually do the food shopping for their household

What is involved?

- Lisa will telephone you in September, October OR November

How long will the telephone call last?

- 15 minutes

What will Lisa ask?

- whether you are happy with the Good Food Box
- concerns about healthy eating
- food shopping, education, and about your household, such as the number of people you live with and the sources of household income

Will I have to answer all of the questions?

- answer only the questions that you want to answer

Who will see my answers?

- only Lisa will see your answers
- Lisa will keep your answers in a locked box and only Lisa will have a key
- Lisa will give you a code number so your name will not be linked with your answers

Where will the information go?

- a summary will be given to people who are interested
- the information will be used to plan the Good Food Box

Do I have to do the survey?

- no
- you can still buy a Good Food Box if you do not do the survey

Who can I telephone if I want to know more about the survey?

- Lisa Ciccarelli at 541-1826 or Dr. Lam (Lisa's supervisor) at 545-6000 ext. 7460

Please give this page to the person who takes your money for the Good Food Box.

I want to do the telephone survey.

Your name: _____

Phone number: _____ The best time to call is: _____

Do you usually do the food shopping for your household? no yes

I do not want to do the telephone survey, but I want to answer the questions in the box.

I do NOT want to do the telephone survey. I do not want to answer the questions in the box.

<p>Overall, how happy are you with the Good Food Box program?</p> <p><input type="checkbox"/> very unhappy</p> <p><input checked="" type="checkbox"/> somewhat unhappy</p> <p><input type="checkbox"/> neutral</p> <p><input type="checkbox"/> somewhat happy</p> <p><input type="checkbox"/> very happy</p> <p>Do you usually do the food shopping for your household?</p> <p><input type="checkbox"/> no</p> <p><input type="checkbox"/> yes</p> <p>How many people live in your household, including yourself? _____</p> <p>How many children (under 18) live in your household? _____</p>	<p>What best describes your household?</p> <p><input type="checkbox"/> single person living alone</p> <p><input checked="" type="checkbox"/> single parent family</p> <p><input type="checkbox"/> couple with no children</p> <p><input type="checkbox"/> couple with children</p> <p><input type="checkbox"/> other: _____</p> <p>What are all of the sources of income for your household?</p> <p><input type="checkbox"/> a job or self-employment</p> <p><input checked="" type="checkbox"/> social assistance</p> <p><input type="checkbox"/> disability pension</p> <p><input type="checkbox"/> other type of pension</p> <p><input type="checkbox"/> child support</p> <p><input type="checkbox"/> money from friends or relatives</p> <p><input type="checkbox"/> other: _____</p>
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APPENDIX B: PRE/POST SURVEY CONSENT FORM

Who is doing this study?

- Lisa Ciccarelli, a graduate student at Queen's University
- Lisa is doing the study for the volunteers who organize the Good Food Box program
- the volunteers will hand out this sheet and will collect the attached page

What is the purpose?

- to learn about the Good Food Box customers
- to improve the Good Food Box
- to find out if the Good Food Box helps people

Who can do the survey?

- people who usually do the food shopping for their household

What is involved?

- Lisa will telephone you before the Good Food Box pick up day AND three months from now

How long will the telephone calls last?

- 10 minutes

What will Lisa ask?

- whether you are happy with the Good Food Box
- concerns about healthy eating
- food shopping, education, and about your household, such as the number of people you live with and the sources of household income

Will I have to answer all of the questions?

- answer only the questions that you want to answer

Who will see my answers?

- only Lisa will see your answers
- Lisa will keep your answers in a locked box and only Lisa will have a key
- Lisa will give you a code number so your name will not be linked with your answers

Where will the information go?

- a summary will be given to people who are interested
- the information will be used to plan the Good Food Box

Do I have to do the survey?

- no
- you can still buy a Good Food Box if you do not do the survey

Who can I telephone if I want to know more about the survey?

- Lisa Ciccarelli at 541-1826 or Dr. Lam (Lisa's supervisor) at 545-6000 ext. 7460

Please give this page to the person who takes your money for the Good Food Box.

- I want to do the telephone survey.
Your name: _____
Phone number: _____ The best time to call is: _____
Do you usually do the food shopping for your household? no yes

- I do not want to do the telephone survey, but I want to answer the questions in the box.

- I do NOT want to do the telephone survey. I do not want to answer the questions in the box.

<p>Do you usually do the food shopping for your household?</p> <p><input type="checkbox"/> no <input type="checkbox"/> yes</p> <p>How many people live in your household, including yourself? _____</p> <p>How many children (under 18) live in your household? _____</p>	<p>What best describes your household?</p> <p><input type="checkbox"/> single person living alone <input type="checkbox"/> single parent family <input type="checkbox"/> couple with no children <input type="checkbox"/> couple with children <input type="checkbox"/> other: _____</p> <p>What are all of the sources of income for your household?</p> <p><input type="checkbox"/> a job or self-employment <input type="checkbox"/> social assistance <input type="checkbox"/> disability pension <input type="checkbox"/> other type of pension <input type="checkbox"/> child support <input type="checkbox"/> money from friends/relatives <input type="checkbox"/> other: _____</p>
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APPENDIX C: INTERVIEW PROTOCOL

Respondent has provided written consent:

Hi! May I please speak to _____? (name of person who completed consent form).
not available.... I'll call back later. When is the best time to call? _____
yes... continue...

My name is Lisa Ciccarelli. I'm calling about the Good Food Box customer survey. When you paid for the Good Food Box in September, you gave us your name and phone number to tell us that you want to do the telephone survey. The survey will take about 10/15 minutes. Is this a convenient time?

no... when can I call you tomorrow? _____
yes... continue

Before we begin, I want to remind you that all of your answers will be confidential. I will give you a code number so that it will not be possible to link your name with your answers. Also, you don't have to answer any questions that you don't want to.

Do you have any questions about the survey?

yes... refer to information sheet or go to verification of interview or credentials
no... start interview

Need verbal consent from person who usually does the food shopping:

Hi! My name is Lisa Ciccarelli and I'm calling about the Good Food Box customer survey. When you paid for the Good Food Box in September, you gave us your name and phone number to tell us that you want to do the telephone survey. You also said that usually do not do the food shopping for your household. Since some of the questions are about food shopping, we have to talk to the person in your household who usually does the food shopping. Would it be possible to talk with this person?

not available.... I will call back later. When is the best time to call? _____
no... thank you for your time
yes... continue

Hi! My name is Lisa Ciccarelli and I'm calling about the Good Food Box customer survey. When _____ (name of person who gave written consent) paid for the Good Food Box in September, _____ said that he/she wanted to do the telephone survey. Since some of the questions are about food shopping, I'd like to talk to you instead because _____ told me since you are the person who usually does the food shopping. Are you interested in hearing more about the Good Food Box telephone survey?

no... thank you for your time
yes... continue with information

INFORMATION

Cross-Sectional:

I am a graduate student at Queen's University. I am working with the volunteers who organize the Good Food Box to do this telephone survey. The purpose is to learn about the Good Food Box customers and to improve the Good Food Box.

I will ask about your concerns about healthy eating and whether you are happy with the Good Food Box. I will also ask about food shopping, education, and about your household such as the number of people you live with and the sources of household income. Answer only the questions that you want to answer.

The telephone survey will take 15 minutes. Only I will see your answers. I will give you a code number so that it will not be possible to link your name with your answers. You don't have to do the telephone survey. You can still buy a Good Food Box if you don't want to do the survey.

Do you have any questions?

yes... refer to information sheet or go to verification of interview or credentials

no... continue with verbal consent

Pre/Post:

I am a graduate student at Queen's University. I am working with the volunteers who organize the Good Food Box to do this telephone survey. The purpose is to learn about the Good Food Box customers, to improve the Good Food Box, and to find out if the Good Food Box helps people.

I will ask about your concerns about healthy eating and whether you are happy with the Good Food Box. I will also ask about food shopping, education, and about your household such as the number of people you live with and the sources of household income. I will ask the same questions before you pick up your first Good Food Box and three months from now. The telephone calls will last 10 minutes each. Answer only the questions that you want to answer.

Only I will see your answers. I will give you a code number so that it will not be possible to link your name with your answers. You don't have to do the telephone survey. You can still buy a Good Food Box if you don't want to do the survey.

Do you have any questions?

yes... refer to information sheet or go to verification of interview or credentials

no... continue with verbal consent

VERBAL CONSENT

Do you want to do the telephone survey?

no.... Thank you for your time.

yes... continue

The survey will take about 10/15 minutes. Is this a convenient time?

no... when can I call you tomorrow? _____

yes... start interview

VERIFICATION OF INTERVIEW OR CREDENTIALS

You may call my supervisor, Dr. Miu Lam, at 545-6000 extension 7460.

Pre/Post Survey: follow-up

Hi! May I please speak to _____? (name of person who completed consent form).
not available.... I'll call back later. When is the best time to call? _____
yes... continue...

My name is Lisa Ciccarelli. I'm calling about the Good Food Box customer survey. I talked to you in _____ [insert month] when you did the first part of the telephone survey. I'm calling to do the second part of the survey. The survey will take about 10 minutes. Is this a convenient time?

no... when can I call you tomorrow? _____
yes... continue

Before we begin, I want to remind you that all of your answers will be confidential. I gave you a code number so that it is not possible to link your name with your answers. Answer only the questions that you want to answer.

Do you have any questions about the survey?

yes... refer to information sheet or go to verification of interview or credentials
no... start interview

APPENDIX D: CROSS-SECTIONAL SURVEY

RECORD OF CALLS

ID #: _____				
	Date	Time	Result	Result Codes
1				1 = completed interview
2				2 = incomplete interview
3				3 = refusal
4				4 = callback required
5				5 = busy
6				6 = no answer/answering machine
7				7 = communication barrier
8				8 = other result

1. How did you find out about the Good Food Box? [do NOT read categories]

- 1 family member/relative
- 2 friend/neighbour
- 3 host site coordinator
- 4 community agency staff member (dietician, etc.)
- 5 flyer
- 6 newspaper
- 7 tv/radio
- 8 booth at a shopping centre (health fair)
- 9 other: _____
- 88 refused
- 99 don't know

2. Why did you first decide to buy a Good Food Box?

3. What month did you first start buying the Good Food Box? [do not read categories]

- 1 November (1995)
- 2 December
- 3 January (1996)
- 4 February
- 5 March
- 6 April
- 7 May
- 8 June
- 9 July
- 10 August
- 11 September
- 88 refused
- 99 don't know

4. Do you usually buy the large box? How many? _____

5. Do you usually buy the small box? How many? _____

4. Do you buy a Good Food Box every month, almost every month or not very often?

- 1 every month
- 2 almost every month
- 3 not very often
- 4 new customer in September
- 77 not applicable
- 88 refused
- 99 don't know

CUSTOMER SATISFACTION

The next section is about your experiences with the Good Food Box. I am going to read several statements. Please tell me if you have the same experiences always, sometimes, or never.

1. It is easy for me to get to the place where I pay for my Good Food Box.

- 0 never (explain: _____)
- 1 sometimes
- 2 always
- 88 refused
- 99 don't know

2. It is hard to get to the place where I pick up my Good Food Box.

- 2 never
- 1 sometimes
- 0 always (explain: _____)
- 88 refused
- 99 don't know

3. I have to wait a long time when I pick up my Good Food Box.

- 2 never
- 1 sometimes
- 0 always (explain: _____)
- 88 refused
- 99 don't know

4. I feel like I'm going to a food bank when I pick up my Good Food Box.

- 2 never
- 1 sometimes
- 0 always (explain: _____)
- 88 refused
- 99 don't know

5. Some of the fruit and vegetables in the box are bruised or spoiled when I get my Good Food Box.

- 2 never
- 1 sometimes
- 0 always (explain:_____)
- 88 refused
- 99 don't know

6. My Good Food Box has all of the fruit and vegetables that are supposed to be in it.

- 0 never (explain:_____)
- 1 sometimes
- 2 always
- 88 refused
- 99 don't know

7. There are enough different kinds of fruit and vegetables in the Good Food Box.

- 0 never (explain:_____)
- 1 sometimes
- 2 always
- 88 refused
- 99 don't know

8. I/We eat the fruit and vegetables in the Good Food Box before they go bad.

- 0 never (explain:_____)
- 1 sometimes
- 2 always
- 88 refused
- 99 don't know

9. The Good Food Box makes fresh fruit and vegetables more affordable for me.

- 0 never (explain:_____)
- 1 sometimes
- 2 always
- 88 refused
- 99 don't know

10. The Good Food Box makes fresh fruit and vegetables more available to me.

- 0 never (explain:_____)
- 1 sometimes
- 2 Always
- 88 refused
- 99 don't know

Overall, how satisfied are you with the Good Food Box? Are you happy, neutral, or unhappy? Are you very happy/unhappy or somewhat happy/unhappy?

- 1 very unhappy
- 2 somewhat unhappy
- 3 neutral
- 4 somewhat happy
- 5 very happy
- 88 refused
- 99 don't know

How can we make the Good Food Box program better? (Prompt: Do you have any ideas for changes to the Good Food Box program?)

You said earlier that you buy a Good Food Box not very often. Why do you stop buying a Good Food Box? [ask only if applicable]

FOOD INSECURITY

The next section deals with concerns about healthy eating. I am going to read several statements. Please tell me if you believe the statement to be not true, somewhat true, or often true of your *current* situation.

HOUSEHOLD-LEVEL SCALE

1. I worry whether the food will run out before I get money to buy more.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

2. We eat the same thing for several days in a row because we only have a few different kinds of food on hand and don't have money to buy more.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

3. The food that I bought just didn't last, and I didn't have money to get more.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

4. I ran out of the foods that I needed to put together a meal and I didn't have money to get more food.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

ADULT-LEVEL SCALE

5. I can't afford to eat properly.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

6. I am often hungry, but I don't eat because I can't afford enough food.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

7. I eat less than I think I should because I don't have enough money for food.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

The next four statements are for families with children. Are there any children under 18 living in your household?

- 0 no - skip to next section
- 1 yes - continue

CHILD-LEVEL SCALE

8. I cannot give my children a balanced meal because I can't afford that.

- 0 not true
- 1 somewhat true
- 2 often true
- 77 not applicable
- 88 refused
- 99 don't know

9. My children are not eating enough because I just can't afford enough food.

- 0 not true
- 1 somewhat true
- 2 often true
- 77 not applicable
- 88 refused
- 99 don't know

10. I know my children are hungry sometimes, but I just can't afford more food.

- 0 not true
- 1 somewhat true
- 2 often true
- 77 not applicable
- 88 refused
- 99 don't know

ADDITIONAL FOOD INSECURITY ITEM

11. I skip meals, or cut down on the amount of food I eat to leave more for my children.

- 0 not true
- 1 somewhat true
- 2 often true
- 77 not applicable
- 88 refused
- 99 don't know

Food Insecurity Status (code at end of interview)

Insecure at household level (score=1 or 2 on items 1,2,3, or 4)

- 0 no
- 1 yes

Insecure at individual level (score =1 or 2 on items 5,6 or 7--OR--on item 8 but not 9 or 10)

- 0 no
- 1 yes

Child hunger (score=1 or 2 on items 9 or 10)

- 0 no
- 1 yes

SOCIO-DEMOGRAPHICS

The last sections asks questions about you.

1. Gender of survey respondent [do NOT read]

- 0 male
- 1 female

2. What is the highest grade or year of school you have completed? [do NOT read categories]

- 1 no formal schooling
- 2 some primary school
- 3 primary school (grade 8)
- 4 some secondary/high school
- 5 graduated secondary/high school (grade 12 or OAC)
- 6 some college or university
- 7 have a degree, diploma and/or certificate
- 8 other: _____
- 88 refused
- 99 don't know

3. How many people live in your household, including yourself? ____

4. How many children under 18 live in your household? ____

5. Without telling me any names, could you please tell me the ages of everyone in your household?

- person 1 ____ person 4 ____ person 7 ____ person 10 ____
- person 2 ____ person 5 ____ person 8 ____ person 11 ____
- person 3 ____ person 6 ____ person 9 ____ person 12 ____

6. What best describes your household?

- 1 single
- 2 single parent family
- 3 couple with no children
- 4 couple with children
- 5 other: _____
- 88 refused
- 99 don't know

7. About how much money does your household usually spend on food in a month? _____

8. Do you rent or own the place where you live?

- 1 own (skip to question 10)
- 2 rent
- 3 mortgage payments (skip to question 10)
- 88 refused
- 99 don't know

9. Do you have a private landlord or do you live in non-profit housing?

- 1 private landlord
- 2 non-profit housing
- 77 not applicable
- 88 refused
- 99 don't know

10. Now I am going to read a list of sources of income. Please say yes if it is a source of income for your household. [read categories]

- 1 a job or self-employment
- 2 general welfare assistance/family benefits/mother's allowance
- 3 worker's compensation
- 5 unemployment insurance (UIC)
- 6 disability pension
- 7 other type of pension (CPP, Old Age Security, Widow)
- 8 child support from an absent parent
- 9 support from friends or relatives
- 10 other: _____
- 88 refused
- 99 don't know

11. Considering income from all sources, would you say was your before taxes household income is above, close to, or below \$ _____ per month (or per year)?

- 0 above
- 1 close to
- 2 below
- 88 refused
- 99 don't know

Household Size	Average Monthly Income	Annual Income
1 person	\$ 1,180	\$ 14,162
2 people	\$ 1,475	\$ 17,702
3 people	\$ 1,835	\$ 22,016
4 people	\$ 2,220	\$ 26,650
5 people	\$ 2,483	\$ 29,791
6 people	\$ 2,744	\$ 32,931
7 or more people	\$ 3,006	\$ 36,072

That is the end of the survey. Is there anything else that you would like to add?

Thank you very much for your time.

APPENDIX E: PRE/POST SURVEY

PRE-INTERVENTION

RECORD OF CALLS

ID #: _____ <input type="checkbox"/> New in October <input type="checkbox"/> New in November <input type="checkbox"/> New in December				
	Date	Time	Result	Result Codes
1				1 = completed interview
2				2 = incomplete interview
3				3 = refusal
4				4 = callback required
5				5 = busy
6				6 = no answer/answering machine
7				7 = communication barrier
8				8 = other result

1. How did you find out about the Good Food Box? [do NOT read categories]

- 1 family member/relative
- 2 friend/neighbour
- 3 host site coordinator
- 4 community agency staff member (dietician, etc.)
- 5 flyer
- 6 newspaper
- 7 tv/radio
- 8 booth at a shopping centre (health fair)
- 9 other: _____
- 88 refused
- 99 don't know

2. Why did you first decide to buy a Good Food Box?

FOOD INSECURITY (PRE)

The next section deals with concerns about healthy eating. I am going to read several statements. Please tell me if you believe the statement to be not true, somewhat true, or often true of your *current* situation.

1. I worry whether the food will run out before I get money to buy more.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

2. We eat the same thing for several days in a row because we only have a few different kinds of food on hand and don't have money to buy more.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

3. The food that I bought just didn't last, and I didn't have money to get more.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

4. I ran out of the foods that I needed to put together a meal and I didn't have money to get more food.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

5. I can't afford to eat properly.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

6. I am often hungry, but I don't eat because I can't afford enough food.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

7. I eat less than I think I should because I don't have enough money for food.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

The next four statements are for families with children. Are there any children under 18 living in your household?

- 0 no – skip to next section
- 1 yes – continue

8. I cannot give my children a balanced meal because I can't afford that.

- 0 not true
- 1 somewhat true
- 2 often true
- 77 not applicable
- 88 refused
- 99 don't know

9. My children are not eating enough because I just can't afford enough food.

- 0 not true
- 1 somewhat true
- 2 often true
- 77 not applicable
- 88 refused
- 99 don't know

10. I know my children are hungry sometimes, but I just can't afford more food.

- 0 not true
- 1 somewhat true
- 2 often true
- 77 not applicable
- 88 refused
- 99 don't know

11. I skip meals, or cut down on the amount of food I eat to leave more for my children.

- 0 not true
- 1 somewhat true
- 2 often true
- 77 not applicable
- 88 refused
- 99 don't know

Food Insecurity Status (code at end of interview)

Insecure at household level (score=1 or 2 on items 1,2,3, or 4)	
0	no
1	yes
Insecure at individual level (score =1 or 2 on items 5,6 or 7--OR--on item 8 but not 9 or 10)	
0	no
1	yes
Child hunger (score=1 or 2 on items 9 or 10)	
0	no
1	yes

SOCIO-DEMOGRAPHICS

The last sections asks questions about you.

1. Gender of survey respondent [do NOT read]

- 0 male
- 1 female

2. What is the highest grade or year of school you have completed? [do NOT read categories]

- 1 no formal schooling
- 2 some primary school
- 3 primary school (grade 8)
- 4 some secondary/high school
- 5 graduated secondary/high school (grade 12 or OAC)
- 6 some college or university
- 7 have a degree, diploma and/or certificate
- 8 other: _____
- 88 refused
- 99 don't know

3. How many people live in your household, including yourself? _____

4. How many children under 18 live in your household? _____

5. Without telling me any names, could you please tell me the ages of everyone in your household?

- person 1 _____ person 4 _____ person 7 _____ person 10 _____
- person 2 _____ person 5 _____ person 8 _____ person 11 _____
- person 3 _____ person 6 _____ person 9 _____ person 12 _____

6. What best describes your household?

- 1 single
- 2 single parent family
- 3 couple with no children
- 4 couple with children
- 5 other: _____
- 88 refused
- 99 don't know

7. About how much money does your household usually spend on food in a month? _____

8. Do you rent or own the place where you live?

- 1 own (skip to question 10)
- 2 rent
- 3 mortgage payments (skip to question 10)
- 88 refused
- 99 don't know

9. Do you have a private landlord or do you live in non-profit housing?

- 1 private landlord
- 2 non-profit housing
- 77 not applicable
- 88 refused
- 99 don't know

10. Now I am going to read a list of sources of income. Please say yes if it is a source of income for your household. [read categories]

- 1 a job or self-employment
- 2 general welfare assistance/family benefits/mother's allowance
- 3 worker's compensation
- 5 unemployment insurance (UIC)
- 6 disability pension
- 7 other type of pension (CPP, Old Age Security, Widow)
- 8 child support from an absent parent
- 9 support from friends or relatives
- 10 other: _____
- 88 refused
- 99 don't know

11. Considering income from all sources, would you say was your before taxes household income is above, close to, or below \$ _____ per month (or per year)?

- 0 above
- 1 close to
- 2 below
- 88 refused
- 99 don't know

Household Size	Average Monthly Income	Annual Income
1 person	\$ 1,180	\$ 14,162
2 people	\$ 1,475	\$ 17,702
3 people	\$ 1,835	\$ 22,016
4 people	\$ 2,220	\$ 26,650
5 people	\$ 2,483	\$ 29,791
6 people	\$ 2,744	\$ 32,931
7 or more people	\$ 3,006	\$ 36,072

That is the end of the first part of the survey. I'll call you at the end of _____ to do the follow-up survey of your experiences with the Good Food Box. Is there anything else that you would like to add right now?

Thank you very much for your time.

POST-INTERVENTION

RECORD OF CALLS

ID #: _____ <input type="checkbox"/> New in October <input type="checkbox"/> New in November <input type="checkbox"/> New in December				
	Date	Time	Result	Result Codes
1				1 = completed interview
2				2 = incomplete interview
3				3 = refusal
4				4 = callback required
5				5 = busy
6				6 = no answer/answering machine
7				7 = communication barrier
8				8 = other result

4. After you bought your first Good Food Box in _____, did you buy a Good Food Box in _____ (November and December/ December and January/ January and February)?

- 1 both months
- 2 second month but not third
- 3 third month but not second
- 4 did not continue after first month
- 88 refused
- 99 don't know

5. Do you usually buy the large box? How many? _____

6. Do you usually buy the small box? How many? _____

7. Why did you stop buying a Good Food Box (ask only if applicable)?

CUSTOMER SATISFACTION

The next section is about your experiences with the Good Food Box. I am going to read several statements. Please tell me if you have the same experiences always, sometimes, or never.

1. It is easy for me to get to the place where I pay for my Good Food Box.

- 0 never (explain: _____)
- 1 sometimes
- 2 always
- 88 refused
- 99 don't know

2. It is hard to get to the place where I pick up my Good Food Box.

- 2 never
- 1 sometimes
- 0 always (explain:_____)
- 88 refused
- 99 don't know

3. I have to wait a long time when I pick up my Good Food Box.

- 2 never
- 1 sometimes
- 0 always (explain:_____)
- 88 refused
- 99 don't know

4. I feel like I'm going to a food bank when I pick up my Good Food Box.

- 2 never
- 1 sometimes
- 0 always (explain:_____)
- 88 refused
- 99 don't know

5. Some of the fruit and vegetables in the box are bruised or spoiled when I get my Good Food Box.

- 2 never
- 1 sometimes
- 0 always (explain:_____)
- 88 refused
- 99 don't know

6. My Good Food Box has all of the fruit and vegetables that are supposed to be in it.

- 0 never (explain:_____)
- 1 sometimes
- 2 always
- 88 refused
- 99 don't know

7. There are enough different kinds of fruit and vegetables in the Good Food Box.

- 0 never (explain:_____)
- 1 sometimes
- 2 always
- 88 refused
- 99 don't know

8. I/We eat the fruit and vegetables in the Good Food Box before they go bad.

- 0 never (explain:_____)
- 1 sometimes
- 2 always
- 88 refused
- 99 don't know

9. The Good Food Box makes fresh fruit and vegetables more affordable for me.

- 0 never (explain:_____)
- 1 sometimes
- 2 always
- 88 refused
- 99 don't know

10. The Good Food Box makes fresh fruit and vegetables more available to me.

- 0 never (explain:_____)
- 1 sometimes
- 2 Always
- 88 refused
- 99 don't know

Overall, how satisfied are you with the Good Food Box? Are you happy, neutral, or unhappy? Are you very happy/unhappy or somewhat happy/unhappy?

- 1 very unhappy
- 2 somewhat unhappy
- 3 neutral
- 4 somewhat happy
- 5 very happy
- 88 refused
- 99 don't know

How can we make the Good Food Box program better? (Prompt: Do you have any ideas for changes to the Good Food Box program?)

FOOD INSECURITY (POST)

The next section deals with concerns about healthy eating. I am going to read several statements. Please tell me if you believe the statement to be not true, somewhat true, or often true of your *current* situation.

1. I worry whether the food will run out before I get money to buy more.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

2. We eat the same thing for several days in a row because we only have a few different kinds of food on hand and don't have money to buy more.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

3. The food that I bought just didn't last, and I didn't have money to get more.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

4. I ran out of the foods that I needed to put together a meal and I didn't have money to get more food.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

5. I can't afford to eat properly.

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- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

6. I am often hungry, but I don't eat because I can't afford enough food.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

7. I eat less than I think I should because I don't have enough money for food.

- 0 not true
- 1 somewhat true
- 2 often true
- 88 refused
- 99 don't know

Complete the next four statements if there are any children under 18 living in the household:

8. I cannot give my children a balanced meal because I can't afford that.

- 0 not true
- 1 somewhat true
- 2 often true
- 77 not applicable
- 88 refused
- 99 don't know

9. My children are not eating enough because I just can't afford enough food.

- 0 not true
- 1 somewhat true
- 2 often true
- 77 not applicable
- 88 refused
- 99 don't know

10. I know my children are hungry sometimes, but I just can't afford more food.

- 0 not true
- 1 somewhat true
- 2 often true
- 77 not applicable
- 88 refused
- 99 don't know

11. I skip meals, or cut down on the amount of food I eat to leave more for my children.

- 0 not true
- 1 somewhat true
- 2 often true
- 77 not applicable
- 88 refused
- 99 don't know

Food Insecurity Status (code at end of interview)

Insecure at household level (score=1 or 2 on items 1,2,3, or 4)	
0	no
1	yes
Insecure at individual level (score =1 or 2 on items 5,6 or 7--OR--on item 8 but not 9 or 10)	
0	no
1	yes
Child hunger (score=1 or 2 on items 9 or 10)	
0	no
1	yes

Has the amount of money you have to buy food increased, stayed the same or decreased since we talked on the phone three months ago?

- 0 stayed the same
- 1 increased
- 2 decreased
- 88 refused
- 99 don't know

That is the end of the survey. Is there anything else that you would like to add?

Thank you very much for your time.