FOOD SECURITY AMONG RURAL NEWFOUNDLAND SENIORS

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Food Security Among Rural Newfoundland Seniors

by

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Dedication

I would like to thank my fiancé
Billy, and both my parents
Diane and Gerald, for their
continuous encouragement and
financial support over the last
few years. Without you this
dream would not have been
possible.

Abstract

The proportion of seniors in the Canadian population is increasing and will continue to rise in the future. Nutrition plays a very important role for seniors because it can improve quality of life, decrease mortality and morbidity rates, and improve overall health status. As seniors age they are at a greater risk of developing chronic disease and nutrition plays an important role in helping to decrease this risk. However, a number of barriers have been identified that can effect food security and the nutritional health of this group. These include financial resources, social support, transportation, and access to nutrition services.

The purpose of this study was to survey seniors in rural Newfoundland communities to identify factors which may predispose them to food insecurity. The study was a cross-sectional descriptive study of seniors residing in several rural communities in Newfoundland within Economic Zone 17. The definition of senior for the purpose of this study included individuals who were 65 years and older. Seniors' were recruited using seniors groups, churches, clinics and Health and Community Services sites. The convenient study sample consisted of 144 seniors with a response rate of 39%. The data was collected using a questionnaire that seniors completed themselves and the EPI-Info Program was used for data analysis.

Seniors were considered to be food secure when no problems were identified with respect to food availability, accessibility or consumption of food. Overall, the majority of seniors

in this sample were food secure and no major issues were identified that predisposed this group to be at risk for food insecurity. Ninety-two percent of participants indicated they were eating enough of the foods that they wanted to eat. Eighty-six percent of participants reported they were food secure and that they did not have to resort to any coping strategies to deal with food insecurity. A very small percentage of seniors indicated they may be at risk of experiencing food insecurity. Some seniors reported resorting to coping strategies to offset food security and these included: 2.1% took money out of savings, 2.1% borrowed money, 0.7% bought food on credit, 3.5% bought or prepared meals that cost less, 0.7% borrowed food from family or friends and 1.4% ate at the homes of family and friends. As well, 0.7% reported that sometimes they do not have enough to eat. There were no barriers identified with respect to transportation, social support, physical mobility and income. Overall, there were no problems with food availability or accessibility to food.

Among seniors in Economic Zone 17 who participated in this study, no barriers were identified that may predispose them to be at risk for food insecurity. However, the sample was limited to seniors who were accessed through their participation in a variety of community activities. Seniors who are unable to participate in such activities may be at greater risk for food insecurity. Recommendations were made to further assess the food security situation in other rural areas in Newfoundland and Labrador at a later time.

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Chapter 1

Introduction

1.1 Seniors and Food Security

Demographic trends indicate that the number of seniors within Canada is increasing and this rapid growth will continue. The definition of a senior for the purpose of this study includes those who are 65 years of age and over. In 1998 there were 3.7 million Canadians or 12.3% of the population who were 65 years of age or older (Jenkins, Plouffe & Donaldson, 1999). The baby boomer generation is gradually aging and Statistics Canada estimates that in the year 2016 there will be 6 million seniors or a total of 16 % of the population (Jenkins et al, 1999).

With the trend of an increasingly aged population, Weddle and Kuczmarski-Fanelli (2000) suggest that health professionals should focus on implementing polices and programs to enhance seniors' nutritional health and improve the quality of their life. Successful aging has been identified in the literature as being free from disease and cognitively well, having the capacity to function physically and being actively involved in life (Rowe & Kahn, 1997). However, as seniors get older, they may become isolated due to several factors such as lack of transportation or few social networks in the community (Wolfe, Olson, Kendall & Frongillo, 1996; Quant & Rao, 1999). It has been suggested that part of the continuum of care for seniors should include services and

programs that will help them maintain their independence in the community (Weddle & Kuczmarski-Fanelli, 2000).

While seniors comprise only 12% of the total Canadian population, evidence suggest that they account for 30% to 40% of health care costs (Burke, 1991). Malnutrition among seniors has been identified as one of the predictors for seniors being hospitalized or re-admitted after release from hospital (Mowe & Bohmer, 1996; Chima, Barco, Dewitt, Maeda, Teran & Mullen, 1997). Nutrition is an important factor in the prevention of many chronic diseases (Gillespie, 1995; Anderson, Palombo & Earl, 1998; Weddle & Kuczmarski-Fanelli, 2000; Williams, 2002) and several chronic diseases such as diabetes, heart disease, osteoporosis, cancer and hypertension (Jenkins et al, 1999) are more prevalent in seniors than in younger adults. In 1995, 37.2% of men and 32.5% of women aged 65-74 years died due to heart disease (Jenkins et al, 1999). These numbers increased to 45.1% for men and 51.2% for women in those 85 years and over (Jenkins et al, 1999). A similar trend was seen for cancer, diabetes and osteoporosis among this age group. Ensuring proper nutrition, partly through addressing food security issues, is important for seniors because it can reduce the number of seniors who are nutritionally compromised. If seniors are food secure and their nutritional needs are being met then unnecessary costs to the health care system can be reduced.

The American Institute of Nutrition defines food security as:

> Access by all people at all times to enough food for an active, healthy life and includes at a minimum: a) the ready availability of nutritionally adequate and safe foods, and b) the assured ability to acquire acceptable foods in socially acceptable ways

> (e.g., without resorting to emergency food supplies, scavenging, stealing, and other coping strategies). Food insecurity exists whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain (Anderson 1990:1560).

A similar definition by the Ontario Public Health Association is as follows:

> People have food security when they can get enough to eat that is safe, that they like to eat and that helps them to be healthy. They must be able to get this food in ways that make them feel good about themselves and their families (Brink 2001: 37).

Research has identified several barriers that may prevent seniors from having access to an adequate food supply. These barriers include financial resources, limited social networks (family and friends), inadequate transportation services (Wolfe et al 1996; Arcury, Quandt, Bell, McDonald & Vitolins, 1998; Wolfe, Olson, Kendall, &Frongillo, 1998; & Quant & Rao, 1999) and characteristics of local grocery stores such as limited variety and high prices (Reisig & Hobbiss, 2000). Seniors living in rural areas may have a greater risk of food insecurity because of their geographic location and limited access to transportation and other services (Torres-Gil, 1996; Wolfe et al, 1996; Quant & Rao, 1999; McDonald, Quandt, Arcury, Bell & Vitolins, 2000; Quandt, McDonald, Arcury, Bell, & Vitolins, 2000). These factors may prevent the aging rural population from obtaining sufficient and appropriate food and may predispose seniors to unnecessary health related problems due to inadequate nutrition. Thus, an individual being food insecure is a barrier for them achieving optimal health. Therefore, determining if these barriers exist is essential to enhance health, quality of life and capacity for successful

aging of rural seniors.

Food security for rural seniors is the result of several factors, including the availability of food in local stores; the accessibility to food, which is influenced by income, transportation, mobility, social support; and the consumption of food by seniors. The relationships among these factors must be understood if the issue of food security is to be addressed. The purpose of this study is to survey seniors within select rural communities in Newfoundland to provide a preliminary profile of food security and to identify factors that may predispose them to be food insecure.

1.2 Rationale and Relevance of Research

Food security is important because adequate food is essential to the well being and quality of life for all individuals. Lack of food interferes with nutritional requirements (vitamins, minerals and energy) that are required by all individuals to maintain their health. Poor nutritional status then leads to other health-related problems, such as chronic disease and unnecessary hospitalization and institutionalization (Chima, Barco, Dewitt, Maeda, Terran & Mullen, 1997; Robinson, Goldstein, & Levine, 1987; McKay, Wilson, Martin, Bouret-Lundberg, Blumberg & Holay, 2000). This subsequently contributes to increased medical costs and poorer quality of life, consequences that may have been avoided if the problem had been addressed earlier. Once a group has been identified as being at risk for food insecurity, action can be taken to address the issue.

This may include assessing current programs, implementing new programs or developing polices that will benefit the group at risk.

Rural seniors have been identified as a group that may be at risk for food insecurity due to several factors such as their geographic location, inadequate transportation, income and limited access to nutritional programs (Grant & Rice, 1983; Peterson & Maiden, 1991; Wolfe et al, 1996; Arcury et al, 1998; Qunadt & Rao, 1999). While there has been some research completed in Canada on food security (Statistics Canada, 1998/99; Statistics Canada 2000/01), it did not directly assess the food security situation among rural seniors or the barriers that rural seniors may experience that may predispose them to food insecurity. There is therefore a need to address these issues in more detail among the population of rural seniors in Canada.

1.3 Purpose and Objectives

The purpose of this study was to survey seniors in rural Newfoundland communities (Economic Zone 17) with respect to food security and to identify barriers which may put them at an increased risk of food insecurity. The specific objectives were:

1. to describe the sample of respondents with respect to age, living arrangements, income, family support, community residence, and distance from urban areas;
2. to determine if the food required by seniors is readily available in the grocery store;
3. to determine if seniors can afford to buy the food they need to maintain their

nutritional health;

4. to describe the experience of respondents with respect to food security, including (a) access to nutritious food, (b) access to food services, and barriers experienced, including income, transportation, etc.; and (c) food utilization, at least two servings of food being consumed from the four food groups in Canada's Food Guide to Healthy Eating;

5. to explore the relationship between the reported food security among seniors and socioeconomic characteristics of the sample;

6. to determine if seniors have any additional problems accessing the food they need.

Chapter 2

Literature Review

This chapter will discuss the increasing number of seniors in the population, the importance of senior's having good nutritional health, barriers that increase a senior's risk of food insecurity, indicators of food insecurity and the current status of monitoring food insecurity in Canada. This literature review will provide a summary of the findings of several relevant studies and implications for each. The conceptual framework of food insecurity is also discussed to provide a clearer picture of how all these factors interrelate.

2.1 The Aging Population

A review of the literature indicates that the proportion of seniors in the total population is increasing. This increase has been attributed to several factors, including improved rate of survival in the younger years, better immunization programs, improved treatment of infectious disease, and access to safer food and water (Wael & Seidner, 1999). Most seniors are living longer, healthier lives with little change to their physical and mental health (Jenkins et al, 1999).

In 1981, there were approximately 2.4 million seniors in Canada and in 1998 it was estimated that 3.7 million Canadians fell into the age category of 65 years or older (Lilley & Campbell, 1999). In 1998, 11.4% of the total population of Newfoundland and

Labrador consisted of seniors (Statistics Canada, 1998). The population continues to increase and it has been estimated that many of the baby boomers will be reaching the age of 65 approximately in 2010-2020 (Jenkins et al, 1999). This gives an estimated six million seniors or 16% of the total Canadian population consisting of seniors in 2016 (Jenkins et al, 1999). It has been estimated that in 2011 18.2% of people in the province will be seniors (Lilley & Campbell, 1999). This percentage of seniors for Newfoundland and Labrador will have doubled by 2036, with the proportion of seniors projected at 40.2% of the total province population (Lilley & Campbell, 1999).

The majority of seniors are living in urban areas, but 20% of seniors reside in rural or remote areas in Canada (Jenkins et al, 1999). With a rural population of 237,973 in Newfoundland and Labrador, a recent population estimate suggests that 40,566 of these are seniors (Newfoundland and Labrador Statistical Agency, 2001).

2.2 Nutrition and Seniors' Health

Seniors have specific nutritional needs that must be met to maintain their health. These nutritional needs can be met by following Canada's Food Guide to Healthy Eating. Canada's Food Guide consists of four food groups; grain products, vegetables and fruits, milk products and meat and alternatives (Health Canada, 1992). The suggested servings per day for each group are; 5-12 servings of grain products, 5-10 servings of vegetables and fruits, 2-4 servings of milk products and 2-3 servings of meat and alternatives

(Health Canada, 1992). Seniors should consume a variety of foods from the four food groups in Canada's Food Guide to Healthy Eating to ensure that their nutritional requirements are met.

Inadequate nutritional status among the elderly has been associated with increased mortality (Refai & Seidner, 1999; Devlin, 2000). Poor dietary intakes and resultant nutritional health is influenced by several factors which include physical status (Rowe & Kahn, 1997), psychosocial and environmental changes (Refai & Seidner, 1999). Nutritional well being is an important part of health, productivity, self-sufficiency and quality of life (Anderson et al, 1998; Weddle & Kuczmarkski-Fanelli, 2000).

The aging process makes seniors more susceptible to the development of chronic disease and poor nutritional status among this population may further increase their health related problems (Horwath, 1991). Some of these health problems include impaired immune response, cancer, cardiovascular disease, hypertension, osteoporosis and diabetes (Weddle & Kuczmarski-Fanelli, 2000). It is estimated that 37.2% of men and 32.5% of women over the age of 65 years in Canada suffer from cardiovascular disease and 10% of seniors suffer from diabetes (Jenkins et al, 1999). Diet is one of the lifestyle factors that can be modified to help decrease the risk of developing chronic disease (Weddle & Kuczmarski-Fanelli, 2000).

In 1989, the population health approach was introduced and it suggests that there are

several health determinants that interact together that can influence an individual's health (Towards A Common Understanding, 1996). These determinants include income and social status, social support networks, education, employment/working conditions, social environments, physical environments, personal health practices and coping skills, healthy child development, biology and genetic endowment, health services, gender and culture (Towards A Common Understanding, 1996). For example, the health determinants income, social support networks and education play a huge role on influencing a senior's nutritional health and food security. If seniors have sufficient income then they can buy the foods they need to be healthy. As well, for those seniors who may have limited physical mobility (they are unable to get to the grocery store or prepare their own meals) or if they have no vehicle, then having social support networks in the community can help to complete these tasks. Education is important too because if they have the knowledge that programs exist such as meals on wheel etc. they can take advantage of these programs and get the food they need to help improve their nutritional health. It is evident that several of these health determinants work together to influence the complex dynamic of food security.

In summary, poor nutritional practices can have an impact on the well being, health and quality of life for many seniors in the community (Rowe & Kahn, 1997; Weddle & Kucamzrkski-Fanelli, 2000). Identifying those seniors who may be at high risk of poor nutritional status is important in order to address this issue and establish appropriate nutrition programs (Keller & McKenzie, 2003; Weddle and Kuczmarkski-Fanelli, 2000).

Seniors are a group within society that need to have access to a continuum of programs and health related services specific to their needs (Anderson et al, 1998; Kerschner & Pegues, 1998; Weddle & Kuczmarkski-Fanelli, 2000).

2.3 Nutritional Status and Health Service Utilization Among Seniors

There have been studies that examined the nutritional status of senior patients and its effect upon hospital length of stay, costs and readmission (Robinson, Goldstein, and Levine, 1987; Chima, Barco, Dewitt, Maeda, Teran and Mullen, 1997). Robinson et al (1987) and Chima et al (1997) found that those individuals who were malnourished had a longer length of stay in hospital and there were increased medical costs associated with their stay. Chima et al (1997) also found that those who were malnourished had an increased chance of using home health services upon discharge. Although these studies were limited by factors including a small sample size, a short time frame for determining a change in the patient's nutritional status and other medical factors which were not considered yet likely influenced the length of stay for those participants, the results suggest that medical costs associated with poorly nourished patients may be reduced if nutrition intervention is started early, prior to individuals reaching the malnourished state.

McKay, Wilson, Martin, Bourdet, Blumberg and Holay (2000) provided further evidence that poor nutrition among the senior population is an indicator for rehospitalization after discharge. In the study 25 participants aged 62 years and over were provided with two

home delivered meals and two snacks daily for 60 days upon discharge from the hospital. However, at the end of the 60 days only 13 participants remained due to those who removed themselves from the study and some of the participants were readmitted to hospital. Lab values collected at the end of the 60 days indicated that there was an increase in their serum albumin (indicator for malnutrition), demonstrating improved nutrition. These participants were not readmitted to hospital. Despite a small sample size (n=13), this study suggests that the provision of two meals and two snacks for a relatively short period of time has the potential to improve the nutritional status among seniors. Clearly this strategy has the potential to decrease the rate of hospital readmission for seniors and to decrease health care costs.

In summary, the literature suggests that there is a relationship between nutritional status and health service utilization among seniors. Further research is needed to determine which interventions are necessary to improve nutritional status and its impact on health service use in this population.

2.4 Current Status of Monitoring Food Insecurity in Canada Among Seniors

Both the National Population Health Survey (NPHS) (1998/99) and the Canadian Community Health Survey (CCHS) (2000/01) have addressed the issue of food insecurity across Canada. These studies suggested that the majority of individuals, including seniors in Canada and in Newfoundland and Labrador were food secure.

There have been some Canadian studies that have assessed nutritional risk among seniors (MacLellan and Van-Til, 1998; Keller and Hedley, 2002; Keller and McKenzie, 2003; Roebothan, Friel and Healey, 1994; DeWolfe and Millian, 2003). These studies assessed various components of nutritional health.

MacLellan & Van-Til (1998), Keller & Hedley (2002) and Keller & McKenzie (2003) identified health related factors that can influence nutritional risk among elders. The most common barriers that were identified to increase nutritional risk among seniors in the community included taking several medications, eating alone, low food intake and limited fruit and vegetable consumption. Other barriers included weight loss (Keller & Hedley, 2002; Keller & McKenzie, 2003) and problems with chewing food, cooking and shopping for groceries (Keller & McKenzie, 2003). These studies concluded that nutritional risk exists among vulnerable seniors in the community and that further investigation into this issue is necessary.

Dietary intake among the senior Canadian population has been documented (Roebothan, Friel and Healey, 1994; DeWolfe and Millian, 2003). The rural seniors in the Roebothan et al study (1994) were age 67 to 83 years of age and data was collected at a seniors club. The majority (71% for grain products and 66.7% for meat & alternatives) of the sample did not meet the minimum requirements as suggested by Canada's Food Guide to Healthy Eating (Roebothan et al, 1994). Also, inadequate consumption of milk products (33.3%) and fruits and vegetables (29.2%) was reported (Roebothan et al, 1994).

DeWolfe & Millian (2003) found that women were consuming below the recommended servings from the four food groups, while men were consuming adequate servings from the food groups except for milk products. These studies suggest that seniors are not consuming the recommended amounts of servings from the four food groups and that seniors may benefit from interventions or programs that are aimed at improving their dietary intake. Overall, nutrition screening in Canada suggests that the senior population is at nutritional risk likely due to poor dietary intakes and this is influenced by several factors.

Within Canada several studies have been completed that assess nutritional risk and to a small degree food security among this population. However, there appear to be gaps in the literature with respect to specifically addressing seniors particularly those living in rural areas, their experience with food insecurity in Canada and the barriers that may predispose this group to food insecurity. This study tries to address this issue on a small scale.

2.5 Canadian Population Based Studies on Food Security

The (NPHS) (Statistics Canada, 1998/99) is a longitudinal survey that began in 1994. It surveyed 17,000 people across Canada, collecting socio-economic and demographic information. Other information was collected on health status, health care needs, smoking, alcohol use and income regarding food insecurity. A comparison of Canadian

seniors to those residing in Newfoundland and Labrador with respect to the food security questions is discussed below.

In 1998/99, 97% of seniors in Canada and 96% in Newfoundland and Labrador did not worry about having enough money to purchase food. When seniors were asked if they ever did not have enough to eat because of lack of money, 98.6% of Canadian seniors and 98.5% of seniors in the province said 'no'. Seniors were also asked if the food they ate was unsatisfactory because there was not enough money to buy food. Again, 97.2% of Canadian seniors and 94.1% of seniors in the province reported 'no'. These results suggest that only a very small percentage of seniors are experiencing food insecurity within the Province. Seniors were also asked how they rated their own health. Approximately, 23% of Canadian seniors reported their health to be 'fair' or 'poor' compared with 20.3% for seniors in Newfoundland and Labrador.

The findings suggest that the vast majority of seniors within Canada and Newfoundland and Labrador are food secure. However, the questions addressing the issue of food security for seniors were limited to income. The NPHS did not address any other barriers that were previously identified in the literature which may predispose seniors to be food insecure such as lack of transportation, limited social support and resources (meals on wheels). The data provided represents all seniors and it is not specific to rural seniors.

The CCHS (Statistics Canada, 2000/01) is a cross-sectional study that began in

September 2000. In the first year of initiation it collected information on 130,000 individuals at the national level and in the second year 30,000 individuals provided information at the provincial level. This study collected information on health determinants, health status, and service utilization on those who were 12 years and over. A few questions were asked regarding food security among this population and the results are described below.

In Canada, 94.2% of seniors reported they never worried that there would not be enough to eat and 96.4% of seniors in Newfoundland and Labrador reported the same. The majority of Canadian (96.2%) and provincial (97.3%) seniors indicated that they always had enough food to eat. When seniors were asked if there were times that they did not eat the quality and variety of food they wanted, 93.3% of Canadian seniors said 'never' and 96.6% of seniors in Newfoundland and Labrador indicated the same. These seniors were asked if they had experienced food insecurity in the past 12 months. Again, the majority (91.8%) of Canadian seniors and 92.9% of seniors in the province said 'no'. As well, seniors were asked to rate their own health. The results were very similar, 29.7% of seniors in Canada and 30.1% in Newfoundland and Labrador rated their health as 'poor' or 'fair'.

Overall, the results suggest that the majority of seniors in Canada and the province are food secure but a small percentage of seniors are experiencing food insecurity. However, the study did not distinguish between rural or urban seniors experiencing food insecurity.

Another problem with the CCHS is that it did not address any of the other barriers that can increase a senior's risk of being food insecure. Further research and a more detailed questionnaire regarding the concepts of food security within the CCHS may help to provide additional information on the experience of food insecurity among the rural senior population.

2.6 Indicators of Food Insecurity

Tarasuk (2001) summarizes the direct and indirect indicators of food insecurity. A "direct indicator is used in reference to direct measures of household or individual-level food insecurity" and an "indirect indicator is used to refer to measures that are not of food insecurity but from which some level of vulnerability to food insecurity might reasonably be inferred". Tarasuk summarizes four instruments that have been developed and used to assess food insecurity within North America over the past few decades. These are, in order of development: (1) the Food Sufficiency Status Questionnaire; (2) the Community Childhood Hunger Identification Project (CCHIP); (3) the, Radimer/Cornell Questionnaires; and (4) the U.S Food Security Core Module. Each of these questionnaires was built on the previous questionnaires to enhance the validity, reliability and the scope of questions being asked to determine the experience of food insecurity in the population. Initially questions in the study just examined if participants were consuming some food (quantitative) and it did not consider any other indicators of food insecurity. The questionnaires then advanced to including both quantitative and

qualitative data to get a further understanding of food insecurity. The most current tool to determine food insecurity is the U.S Food Security Core Module. It classifies its participants as food secure, food insecure without hunger, food insecure with moderate hunger and food insecure with severe hunger.

It must be noted that the survey tools used to assess food insecurity have their limitations. Each survey tool only addresses one part of the food security framework, which is unavailability of food due to limited resources (income). It does not address other indicators such as problems with access to food due to limited physical mobility, transportation and lack of a social support system. As well, the survey tools were designed to be generalized to the entire population, including children and adults and do not address food security for a specific group in the population. Hence, indicators that predispose seniors to be food insecure may not be captured in the survey tool. However, Tarasuk (2001) suggests that the U.S Food Security Core Module does provide a good base for assessing food insecurity within the Canadian population.

As was discussed in the previous section both the CCHS and the NPHS asked questions about food security among the Canadian population. However, these survey tools only addressed one specific factor influencing food security, which was income. These studies in Canada did not consider any other factors that may predispose individuals to be at risk at risk for food insecurity. Thus, the results are based on using only one indicator of food insecurity.

Indirect measures of food insecurity as described by Tarasuk (2001) include limited resources such as income (living below the poverty line), experiencing financial hardships (such as evictions, homeless, utility termination etc.) and increased usage of food banks and meal programs (meals on wheels, community kitchens etc.). These indicators can be used to determine the rate of food insecurity in the population. The situations described above also suggest that individuals may have a compromised financial situation, thus increasing their risk of experiencing food insecurity. Other indicators that may be used to determine if seniors are food insecure include having to make a choice between buying food and/or paying bills and purchasing medications (Arcury et al, 1998).

2.7 Factors Influencing Food Security Among Seniors

2.7.1 Barriers to Food Security

Several studies have examined the factors that influence food security among the elderly (Wolfe, Olson, Kendall and Frongillo, 1996; Arcury, Quandt, Bell, McDonald &Vitolins, 1998; Quandt and Rao, 1999; McDonald, Quandt, Arcury, Bell and Vitolins, 2000). Barriers to food security among the senior population included: (1) health problems and disabilities (Wolfe et al, 1996; Quandt & Rao, 1999), (2) social support (Wolfe et al, 1996; Quandt & Rao, 1999; McDonald et al, 2000), (3) limited resources (e.g. income) (Wolfe et al, 1996; Arcury et al, 1998; Quandt & Rao, 1999), (4) geographic location

(Arcury et al, 1998; Quandt & Rao, 1999), (5) limited access to nutrition programs (Arcury et al, 1998; Quandt & Rao, 1999), (6) transportation (Arcury et al, 1998) and (7) lack of knowledge that programs existed (Arcury et al, 1998). These studies concluded that rural seniors have several barriers that may increase their risk of food insecurity. However, limitations with these studies included small sample size; data collection in rural areas of the United States rather than Canada, and variation in methodology with respect to different questionnaires being used to collect data.

In summary, factors which have been identified as common barriers to food security among rural seniors are their income, place of residence, access to transportation, social support and health status. Each is summarized below.

2.7.1.1 Income

Statistics Canada provides evidence that there is variation in senior's incomes across Canada (Statistics Canada, 2004). When compared to the rest of the country, Atlantic Canada had a lower income range for seniors (Statistics Canada, 1997). In 1997, 19% of seniors in Newfoundland and Labrador were living on a low income (Statistics Canada, 1997). In 1999, 4.8% of seniors in Newfoundland and Labrador were living on a low income, after taxes (Newfoundland and Labrador Statistical Agency, 2002). However, differences in the consumer price index across Canada result in variation in the cost of living among the provinces (Statistics Canada, 2004).

Most of a senior's income is spent on the basics of life, which include shelter, food, and transportation. The percentage of distribution of income for each is as follows: shelter 21%, food 16% and transportation 17% (Statistics Canada, 1997). The income of seniors is a factor that influences their nutritional intake and hence is identified as a barrier to ensuring food security (Wolfe et al, 1996; Wallace, Pascarella & Voica, 1997; Arcury et al, 1998). If a senior does not have an adequate income then he/she may be limited in the amount and type of food purchased. As well, Arcury et al (1998) found that competing expenses such as bills (mortgage) and medications may leave limited financial resources for seniors to purchase food. As a result, income is a factor that has an influence on senior's nutritional needs and places them at risk for food insecurity.

2.7.1.2 Rural Location

Seniors who live in rural areas have additional barriers that may affect their nutritional intake (Salmon, Nelson & Rous, 1993; Ellis & Roe, 1993). Salmon, Nelson & Rous (1993) found that the variety and number of services offered (e.g. home aide services, mental health services, home delivered meals and congregate meal program) are greater for urban versus rural seniors. Also, Ellis and Roe (1993) found that meal programs were aimed toward those communities with a higher number of elders and that the most served communities were not those with the highest rate of poverty among seniors. These surveys suggest that geographically isolated, poorer areas with few seniors living in the community, often have limited seniors programs available.

Limitations with these studies included differences with respect to population of communities assessed, poverty statistics, geographical size, number of participants and data obtained from the United States versus Canada.

In summary, geographic isolation is correlated with limited resources, too few volunteers, limited variability of nutrition programs, and inadequate financial resources all of which impact on the availability and accessibility of programs that are offered to rural seniors (Wolfe et al, 1996; Arcury et al, 1998; Quandt & Rao, 1999). It is evident that seniors living in rural areas have different needs than seniors in urban areas (Krout, 1986). The literature suggests that rural seniors may have a need for formal nutrition programs such as meals on wheels and congregate meal programs in their area and the barriers preventing such programs should be addressed. However, most of the evidence available was gathered in the United States, which has a very different social welfare safety net than Canada, and findings may therefore not be directly applicable to the Canadian population of rural seniors.

2.7.1.3 Transportation

Availability of transportation is important to the aging population because it gives seniors a sense of control and independence over the quality of their lives (Plouffe, 1993). Lack of transportation has been identified as another barrier for many seniors who live in both rural and urban areas (Grant, 1983; Grant & Rice, 1983; Krout, 1983; McGhee, 1983;

Plouffe, 1993; Arcury et al, 1998; Quandt & Rao, 1999).

When service use for seniors was compared for rural and urban areas, there was a slight difference with respect to geographic location (Krout, 1983). Transportation for rural seniors was more of a problem in accessing services in the community when compared to urban seniors, possibly because urban seniors may be able to walk to the services provided and/or public transportation is available for them to use (Krout, 1983).

A study in Canada by Grant and Rice (1983) and in the United States by McGhee (1983) have assessed the transportation needs of seniors. These studies concluded that transportation was a problem among the senior population. As well, those who were likely to have transportation problems were those individuals who lived alone, did not own or drive a car, were experiencing poor health, had low incomes, lacked social contacts and were residents of a small town. The findings suggest that program providers should consider the personal characteristics (income, social support and mobility) of the population they are addressing when designing programs and policies because these factors influenced the transportation needs of this sample. Limitations with these studies include small sample size, results not being applicable to all rural seniors and McGhee's research being conducted in the rural United States versus Canada.

With respect to urban areas, the Friday Friendship Club is a non-profit seniors group that holds meetings in St. John's, Newfoundland and Labrador and discusses important issues

to seniors. Subsequently, a transportation survey was conducted in the St. John's region. Several problems experienced by seniors were identified. The survey indicated that 40% thought transportation was too expensive, 37% found that the transportation available was difficult to use, and 35% felt that appropriate means of transportation were not available (Seniors Forum on Transportation, 1993). Some of the issues that were identified as problems with transportation by seniors in the St. John's region may be relevant to seniors living in rural areas. Limitations to this study included a small sample size and data collection was from an urban area.

In summary, studies from rural areas have shown that seniors do experience problems with transportation and that these problems have a major impact on their lives (Grant, 1983; Grant & Rice, 1983). Approximately one quarter of seniors over the age of 75 no longer drive (Jenkins et al, 1999). This leads to difficulty with shopping, socializing and completing other daily tasks associated with living in their community. If seniors do not have their own vehicle they must rely on family and friends to help them get to their destination. This reliance on others to provide a means of transportation takes away seniors' independence (Jenkins et al, 1999). As well, seniors who are at a disadvantage because of transportation are more likely to be isolated, lonely, and report their health as poor (Grant, 1983; Grant & Rice, 1983).

If seniors have access to appropriate transportation they can remain active in the community, be independent, and maintain social contacts, all important factors for

successful aging (Rowe & Kahn, 1997). However, rural areas do experience unique problems with transportation such as not having public transit systems or taxi services. If seniors have problems with access to transportation it could be difficult to go to a grocery store and thus another barrier to food security can arise.

2.7.1.4 Social Support and Health Status

Social support and the mobility status of seniors were identified as additional barriers that predispose them to being food insecure (Wolfe et al, 1996; Arcury et al, 1998; McDonald et al, 2000). Family members often provide transportation to the grocery store for those who may not own a vehicle or who do not drive (Wolfe et al, 1996; Arcury et al, 1998; McDonald et al, 2000). If seniors are unable to go to the store themselves or are unable to prepare their own meals due to limited mobility or other health related problems, family members will often complete these tasks for them (Wolfe et al, 1996; Arcury et al, 1998; McDonald et al, 2000). Family members or friends can often provide money for food or even supply food to those who may need it (Quandt & Rao, 1999). Health problems and/or limited social support increase a senior's chance of experiencing food insecurity.

2.7.2 Barriers Associated with the Use of Nutrition Programs

Peterson and Maiden (1991) and Wallace, Pascarella & Voica (1997) identified barriers that may impede awareness of and use of nutrition programs among rural seniors. The

results suggest that individuals most at need for nutrition programs are those with lack of knowledge that nutrition programs were available (Peterson & Maiden, 1991), with limited social resources (area of residence, income level, age, social support and access to transportation) (Peterson & Maiden, 1991; Wallace et al, 1997), and those who are isolated geographically (Peterson & Maiden, 1991; Wallace et al, 1997).

These studies suggest that rural seniors are a group that will continue to need nutritional assistance and that seniors ten to use these programs and services if they are available and accessible. However, limitations of these studies include not being able to generalize the results to all rural seniors and data collected was in the United States. This suggests that further investigation on the food security situation among rural seniors in Canada is necessary.

In summary, the previously discussed studies by Arcury et al (1998) and Quandt & Rao (1999) suggest that many rural seniors are food insecure and that several factors contribute to this situation. As well, Peterson & Maiden (1991) and Wallace et al (1997) note that although programs have been put in place to address the issue of food insecurity for seniors, barriers to accessing these programs exist for some seniors. Overall, the literature indicates that food security is a concern among rural seniors and there is a need to offer programs that are easily accessible and readily available to help seniors maintain their nutritional health.

2.7.3 Programs Implemented to Address Food Insecurity

Power (1999) suggests that the two approaches to address the issue of food security in Canada are the antipoverty approach and the sustainable food system approach. The antipoverty approach considers the fact that food insecurity exists because of an insufficient income to buy food that is available, where as food sustainability considers problems with food processing, production and retail of the food available (Power, 1999). In the past the main response to food insecurity has been an antipovery one, wherein services are provided to the groups of individuals who are most at risk of nutritional problems (Tarasuk & Davis, 1996).

Programs designed to address food insecurity can be classified into a food security continuum, which is composed of three stages (Kalina, 2001; MacRae 1994). Stage 1 provides short-term relief to food insecurity (e.g. food banks, improving access to social services); Stage 2 is based on capacity building (e.g. the development of community kitchens and gardens) and Stage 3 which incorporates the implementation and development of food security polices (Kalina, 2001; MacRae, 1994). The most common types of programs to address the issue of food insecurity for seniors are short term relief strategies which include providing food directly to seniors or providing seniors with transportation that enables them to access food. These two types of programs are described below.

2.7.3.1 Direct Provision of Food

Several programs have been implemented to address the issue of hunger and food insecurity among the elderly but there is much variation in the type of services offered throughout Canada and the United States. The United States provides many nutritional programs and services to seniors that have been implemented since the Older Americans Act was established in 1965 (Smith, Mullins, Mushel, Roorda, & Colquitt, 1994). The identified goals of these nutritional programs include: (1) providing affordable meals in both the home and community setting; (2) providing nutritious meals to those most in need e.g., those who have inadequate incomes and limited social contacts; and (3) recognizing the importance of social interaction for seniors (Smith et al, 1994).

Programs that are available to seniors and that aid them to live independently in the community include food pantries, food stamps, grocery bag programs and home delivered meals all of which are short-term strategies (Wolfe et al, 1996). Food pantries (food banks) operate by providing food to those in need and are available to individuals in the community, but these are viewed as an emergency food resource only (Molner, Duffy, Claxton, & Bailey, 2001). Food stamps are similar to cash and are given to those who demonstrate a need (eligibility requirements) and the stamps are used to purchase food at a grocery store (U.S Department of Agriculture, 2003). The grocery bag program varies from state to state and can have several names. For example, in Boston, Massachusetts, there is a brown bag program. Its goal is to help elders and families in the

community by providing a 10 to 15 pound bag of nutritious groceries once a month. The target is those who live on an annual income below the poverty line (The Greater Boston Food Bank, 2002). A similar program implemented in Salinas, California, was called the senior food bag program (Food Bank for Monterey County, 2002). This is a 10-month program where seniors receive fresh produce and bread. The eligibility requirements include age 60 years and over, residence in the area where the program is offered and an application fee. Most seniors who receive goods from this program do live on a limited income.

Nutrition food programs in the United States (congregate meal and home delivered meals) were developed to meet seniors' needs by providing a low cost nutritious meal, while meeting one third of the Recommended Dietary Allowance for nutrients (Neyman, Sidenberg-Cherr & McDonald, 1996). The congregate meal program was designed to emphasize the importance of social interaction by offering seniors the opportunity to have a meal together (Hinton, Heimindger & Foerster, 1990). The eligibility requirements to participate in the program include living on a fixed income and being 60 years of age or older. Due to the social component associated with the congregate meal program, these programs are to some degree seen as Stage 2 on the food security continuum. The home delivered meal program delivers hot nutritious meals directly to the homes of those who have reduced mobility, are bedridden, have no transportation and/or for those who can not prepare their own meals (Administration on Aging, 2002). The requirements to participate in this program include living in an area where the program is offered and

being 60 years of age or older (Administration on Aging, 2002). How often the food is delivered to seniors in the community varies from area to area.

In Canada, Tarasuk and Davis (1996) discuss food assistance programs and self-help and community development programs. Food assistance programs include food banks, meal programs such as meals on wheels and congregate meal programs. However, these programs vary from province to province. Self help or community development groups are limited in number and these include collective kitchens, food buying clubs, and community gardens. These programs were developed with the intention to provide individuals with the necessary skills in food preparation and food acquisition (Tarasuk & Davis, 1996). Thus, these programs are classified as Stage two tactics (MacRae, 1994; Kalina, 2001) because they empower individuals to take some control over their current food insecurity situation.

2.7.3.2 Transportation to Where Food is Available

Caraher, Dixon, Lang, and Carr-Hill (1998) and Robinson, Caraher, and Lang (2000) identified that limited transportation influences dietary intake by limiting the choice and amount of food being purchased. Examples of programs implemented to address this issue include a grocery bus service in St. John's, Newfoundland and Labrador (Seniors Forum on Transportation, 1993); Rural Transportation Assistance Program, Saskatchewan (Grant, 1983); and other programs that are based on volunteer drivers in

the Unites States (Grant & Rice, 1983). These programs provide transportation to seniors to enable them to purchase their food with the added component of socialization.

2.7.3.3 Limitations with Programs to Address Food Security for Seniors in Canada

As was discussed earlier there are three important stages to address food insecurity within a population. Most of the programs that exist to address the issue of food insecurity only provide short-term relief such as meals on wheels or food banks. These programs are not always available in rural areas to off-set food insecurity even as a short-term relief measure (Quandt & Rao, 1999; Arcury et al, 1998). Most of the programs designed to enhance capacity building (community kitchen and gardens) are directed toward low-income younger families (Tarasuk, 2001). Thus, seniors are overlooked at this level. With respect to the development and implementation of policies to address food security in Canada, the government has established a plan called, Canada's Action on Food Security (Agriculture & Agri-Food Canada, 1996). However, to date this plan has not been put into action (Kalina, 2001).

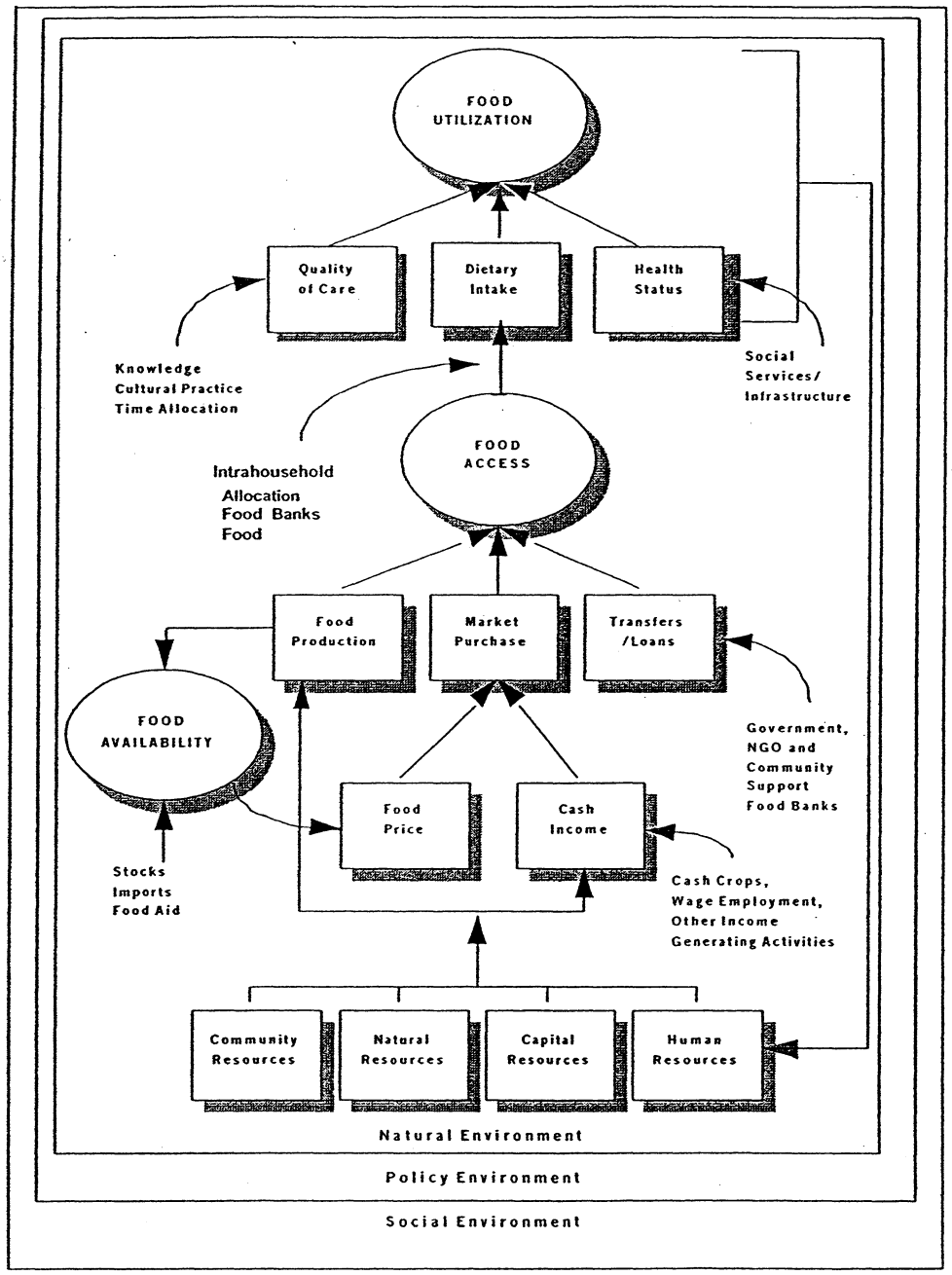
2.8 Conceptual Framework for Food Security

The concept of food security is complex because several dimensions including the physical environment and socioeconomic factors influence it. Reily, Mock, Cogill, Bailey & Kenefick (1999) identified three main inter-related dimensions that must be

considered when measuring food security and these are food availability, food access and food utilization (see Figure 1). Definitions of the above terms as proposed by the United States Agency for International Development are as follows; (1) food availability "is achieved when sufficient quantities of food are consistently available to all individuals within a country. Such food can be supplied through household production, other domestic output, commercial imports, or food assistance" (Reily et al, 1999, pg 8). (2) Food access "is ensured when households and all individuals within them have adequate resources to obtain appropriate foods for a nutritious diet. Access depends on income available to the household, on the distribution of income within the household, and on the price of food" (Reily et al, 1999, pg 8). (3) Food utilization "is the proper biological use of food, requiring a diet providing sufficient energy and essential nutrients, water, and adequate sanitation. Effective food utilization depends in large measure on knowledge within household of food storage and processing techniques, basic principles of nutrition and proper child care, and illness management" (Reily et al, 1999, pg 8).

Wolfe et al (1996) discuss how food availability and food access for seniors in rural areas are greatly influenced by other factors not mentioned in the above definitions. For example, seniors who have health problems or have restricted mobility have a greater risk for food insecurity because they have limited access to the food supply (Wolfe et al, 1996). These seniors may have increased costs for medications and they may also need more expensive specialized foods due to health problems. Second, reduced or restricted mobility among seniors can make it difficult for them to prepare meals, creating a

Figure 1: Conceptual Framework Model of Food Security



Source: Reily, F., Mock, M., Cogill, B., Bailey, L., & Kenefick, E. (1999)

challenge for seniors to get to the grocery store (Wolfe et al, 1996). As well, restricted mobility can affect seniors who may need to resort to other food management strategies to help cope with food insecurity (Wolfe et al, 1996). For example, if they do not drive because of limited mobility, then this makes it difficult for seniors to access senior meal programs and food banks that are available in the community (Wolfe et al, 1996). This situation then causes seniors to be reliant on family, neighbours and friends to purchase their groceries or take them shopping. Wolfe et al (1996) identified family as playing an important role in helping seniors address food insecurity. Neighbours and friends were important also if family are not available, as these individuals may bring food to seniors, provide transportation to a grocery store, or even bring the seniors to places where they could access food, such as a food bank or church (Wolfe et al, 1996).

Services offered in the community such as transportation services, food programs and accessible and affordable grocery stores have been identified as essential to reduce food insecurity for seniors (Wolfe et al, 1996). Some seniors choose to use the local convenience or locally owned grocery store to buy their groceries. This in turn may place rural seniors at a disadvantage for food availability, as smaller stores usually have a limited variety of food and higher prices (Wolfe et al, 1996). The establishment of food programs in the community, such as home delivered meals is important. If such programs are not available for those seniors who may need them, then food availability may be impacted (Wolfe et al, 1996).

In summary, the framework suggests that food security consists of several dimensions. To eliminate food insecurity and develop programs to address food security among the senior population, a detailed understanding of the dimensions of food availability, food access and food utilization is necessary.

For the purpose of this study seniors will be classified as being food secure when: (1) there are no problems with food availability in the store, (2) when there are no problems with access to food with respect to income, transportation, mobility and adequate social support if needed and (3) if seniors are consuming foods from the four food groups.

Chapter 3

Methodology

3.1 Research Design

The study was a cross-sectional descriptive study of seniors residing in several rural communities in Newfoundland and Labrador. Seniors' groups, churches, clinics and Health and Community Services Sites were utilized to recruit a variety of seniors living in the community. The time frame for the study was December 10, 2002 to February 29, 2003.

3.2 Setting

This study was conducted in several rural communities in Newfoundland which are part of Economic Zone 17 (specific geographic area of province). Economic Zone 17 has a total population of 44,195 people with 5990 (13.6%) of these being seniors 65 years and over (Newfoundland and Labrador Statistical Agency, 2001). Due to financial constraints, the investigator was limited to the rural communities on the Northern Avalon Peninsula. However, the communities chosen were rural, of varying distances from a major urban area and allowed the investigator to stay within budget. Communities included in this study were located in three areas. Area 1 is closet to a major urban area of St. John's (1-1.5 hour drive) and includes the communities of Bay Roberts, Riverhead,

Harbour Grace, Carbonear, Victoria, Clarkes Beach, Spaniards Bay, Freshwater, and Whitbourne. Area 2 is the next closest to St. John's and includes Heart's Delight-Islington, Winterton, New Perlican, and Heart's Content. Area 3 is the furthest away from St. John's and includes Bay de Verde, Broad Cove, Red head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kinston, and Western Bay (Figure 2). Overall, the communities vary in their distance from a major urban centre, thus providing a range of rural communities.

Figure 2: Map of Economic Zone 17 (Study Area)

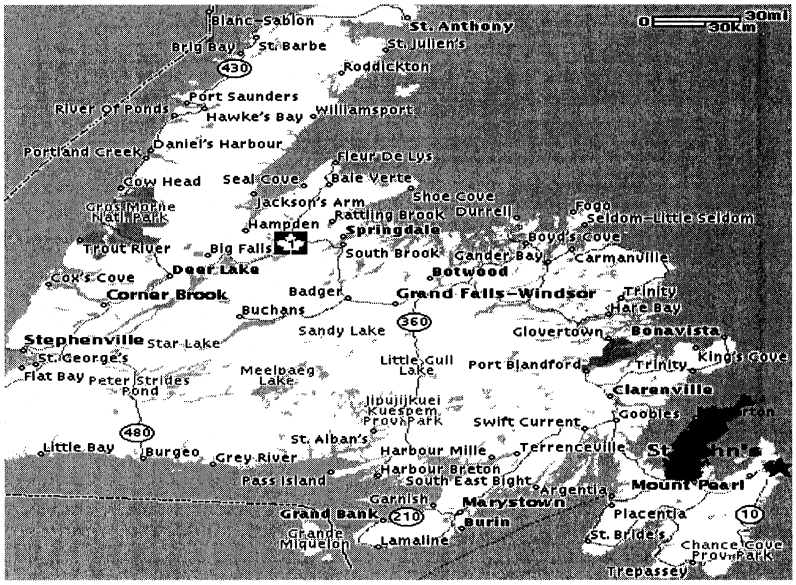
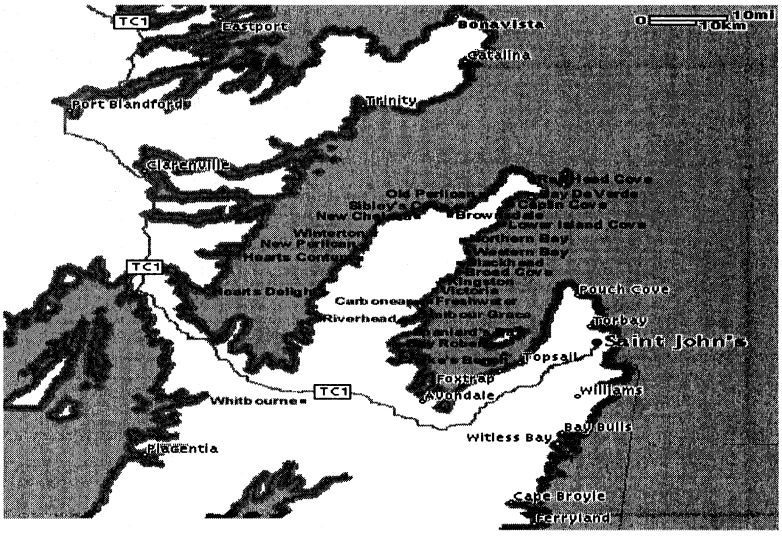


Figure 3: Detailed Community Map of Economic Zone 17



Source: Map Quest

3.3 Sample

A convenience sample was drawn using seniors aged 65 years and older from several church and senior's organizations, medical clinics and three Health and Community Services Sites in rural communities of Economic Zone 17 in Newfoundland and Labrador.

Several methods were utilized to recruit the sample. The first method involved using seniors groups that meet on a weekly basis in several communities. Initial contact was made with the president of each group to set up a time and date to attend a meeting. The investigator attended the meeting and distributed the questionnaires to those who wanted to participate. Those who took the questionnaire were instructed to complete the questionnaire and place it in an envelope and return it to next week's meeting to be collected by the president of the group. The investigator picked up the completed questionnaires at a later time.

The second method involved going to churches in several towns and asking the members of the church who were 65 years of age or older to complete the questionnaire. Initially, a contact with the minister/priest was made, requesting permission for the investigator to attend the service and distribute the questionnaire. The minister/priest announced during services that the questionnaire was available at the church and then asked the members to participate. Those seniors who were willing to complete the questionnaire were asked to

place it in a sealed envelope and leave it with the minister/priest to be picked up at a later date by the investigator.

The third method included using two medical clinics in the rural communities. At these clinics the questionnaires were distributed by the secretary to those who were 65 years of age and older who had come to the clinic for a doctor's appointment. Those who were willing to complete the questionnaire were asked to place it in an envelope and to return it to the secretary. This process was followed over a period of two and a half months and the investigator picked up the questionnaires at the end of this period.

The fourth method involved using several Health and Community Services sites. After contact with the nursing manager, permission was granted to place a poster at each site. The poster contained the necessary information regarding the study (consent letter was attached), and it requested individuals who were 65 years of age or older to complete the questionnaire. If the senior was willing to complete the questionnaire he/she was instructed to place it in an envelope and deposit it in a box provided at the Health and Community Services Site. The investigator picked up the questionnaires from these sites approximately two months after the drop off date.

With both the medical clinics and Health and Community Services sites, questionnaires were left at each site and recruitment of participants in the study involved a poster. The return rate on this method was expected to be much lower than those who were

personally distributed by the investigator. Nonetheless, using the Health and Community Services sites provided access to seniors who may have been more isolated in the community and therefore not regularly attend church or social activities in the community.

Selection of rural communities of varying distance away from a major urban centre (St. John's) and utilization of a number of different recruitment strategies was undertaken to provide access to a heterogeneous sample of rural seniors.

3.4 Ethical Review

This study was reviewed and approval granted by the Memorial University of Newfoundland Faculty of Medicine Human Investigation Committee (HIC) (See HIC approval, Appendix A). The questionnaire contained no personal information so that anonymity and confidentiality of all participants was maintained at all times. A consent letter was attached to each questionnaire. If the questionnaire was completed and returned the respondent was considered to have consented to participate in the study.

3.5 The Instrument

A 56-item questionnaire was developed for the study. The questionnaire examined specific areas of food security in seniors and this included availability of food,

accessibility to food (adequate income, transportation and social support) and other factors influencing food security (services available and use of services). Other topics covered on the questionnaire included demographics and specific questions regarding nutrition, including availability of food in stores, seniors' ability to afford the food they need, and seniors' ability to get to the store to purchase the food (Appendix C).

3.5.1 Validity

The majority of questions used in the questionnaire were taken from previously used questionnaires. Questions were taken from Canada's Health Promotion Survey (CHPS, 1990) which is a public use questionnaire and permission to use was not needed. Other questions were taken from Dr. Sara Quandt's study (1999), who gave permission to use the questionnaire from her study, Hunger and Food Security among Older Adults in a Rural Community (1999). However, acknowledgement must also be given to the Urban Institute who funded her project. Dr.Quandt did not complete any formal validation of her questions directly. Her survey items were derived from previous studies including some questions taken from NHANES III (personal communication, February 17, 2004). As well, some questions were modified from Dr. Grant and Rices' study, Transportation Problems of the Rural Elderly: a Needs Assessment (1983). The investigator did not have the original questionnaire that was used in the study because of the length of time that elapsed since the Grant and Rice study had taken place. However, the investigator was able to develop a question from the tables and discussion contained in the article.

With respect to validity, Dr. Grant did indicate that his questions were validated through replication with past results (construct validity) and he also completed a pilot study to determine if respondents understood the questions (content validity) (personal communication February 21, 2004). The investigator developed the remainder of the questions in consultation with her supervisory committee. A summary of the questions used and the sources are as follows: questions 1-3, 4 and 9 were taken from the CHPS; questions 6-8, 10-14, 25-28, 30-31, 35-38, and 41-54 were taken from Quandts' questionnaire; question 29 was adapted from Grant & Rices' study and 15-24, 32-34, 39, 40, 55 and 56 were developed by the investigator.

The instrument was reviewed and approved by the Human Investigation Committee. Minor revisions were requested and subsequently addressed by the investigator prior to data collection.

3.6 Data Analysis

All questionnaires were assigned a code number and the data was entered into the EPI-INFO computer programs version 6.04d. This program was used to determine descriptive results, such as frequencies and percentages on all questions used in the questionnaire.

Chapter IV

Results

The findings are presented with respect to the study objectives. Responses to the questionnaires in frequencies and percentages are presented in Tables 1 through 16 and on the questionnaire (See Appendix C). For some questions multiple answers were possible and these are indicated with an asterisk on the questionnaire. Missing responses are indicated on the questionnaire as well.

4.1 Response Rate

The response rate was used to calculate the number of respondents who participated in the study by dividing the number of questionnaires returned by the number distributed.

A number of seniors groups and churches were contacted to recruit seniors to participate. At these sessions the investigator personally distributed 239 questionnaires and 124 were returned. The questionnaires that were personally distributed to seniors by the investigator had a response rate of 51.8% (Table 1A). In addition, questionnaires were left at various sites, which included, medical clinics and Health and Community Services. The return rate using this method was 15.4% (See Table 1B). For the purpose of this study, both methods of distribution (response and return rate) were combined and indicates that 39% (n=144) of all questionnaires were returned. A total of 149 questionnaires were returned but only 144 were used as other five respondents were under 65 years of age.

Table 1A

Response Rate Calculated based on Questionnaires Personally Distributed by Investigator

Location	# distributed	# returned	Response Rate (%)
Seniors 50+ Club Harbour Grace	16	12	75
Seniors 50+ Club Carbonear	25	18	72
Seniors 50+ Club Bay Roberts	21	9	43
United Church Bay Roberts	18	14	78
United Church Harbour Grace	14	8	57
Roman Catholic Church Riverhead Harbour Grace Spaniards Bay	39	22	56
United Church New Perlican Winterton Heart's Delight-Islington	35	19	54
Anglican Church Winterton New Perlican Heart's Content	49	15	31
Roman Catholic Church Bay de Verde Red Head Cove	22	7	32
Total	239	124	52

Table 1B

Response Rate Calculated based on Questionnaires Left by Investigator at Various Sites

Location	# distributed	# returned	Return Rate (%)
Western Bay Clinic	50	7	14
Old Perlican Clinic	50	13	26
HCS [a]-Heart's Delight	10	0	0
HCS-Bay Roberts	10	0	0
HCS-Harbour Grace	10	0	0
Total	130	20	15

[a] HCS represents Health and Community Services

4.2 Characteristics of the Sample

Table 2 presents the characteristics of the sample including, distance of the community of residence from St. John's, gender, age, income, marital status and education.

Table 2

Characteristics of the Sample

	Area 1 n=76	**Area 2** n=32	**Area 3** n=25	**Overall** n=144
Average Distance to St. John's (km)	93	128	144	122
Response Rate*	62.4%	31.8%	40.5%	51.8%
Gender				
Male	25(32.9%)	8(25.0%)	7(28.0%)	42(29.2%)
Female	49(64.5%)	24(75.0%)	17(68.0%)	99(68.7%)
Missing	2(2.6%)	0	1(4.0%)	3(2.1%)
Age Distribution				
65-74 years	45(59.2%)	16(50.0%)	8(32.0%)	75(52.1%)
75-84 years	27(35.6%)	12(37.5%)	10(40.0%)	54(37.5%)
85+ years	3(3.9%)	4(12.5%)	6(24.0%)	13(9.0%)
Missing	1(1.3%)	0	1(4.0%)	2(1.4%)

* Response Rate was calculated based on individuals who were personally contacted by the investigator through church groups and seniors groups. Those who picked up the questionnaire from physician clinics and HCS were not included in the response rate because this involved a different method of distributing the questionnaires and this provided the return rate. Although, no response rate could be measured, both methods of distribution were combined to summarize findings which provided 39% (n=144) of all questionnaires distributed being returned.

Table 2

Characteristics of the Sample (cont'd)

	Area 1 n= 76	Area 2 n=32	Area 3 n=25	Overall n=144
Annual Household Income				
$15,000 or less	26(34.2%)	11(34.4%)	9(36.0%)	50(34.7%)
$15,001-$25,000	19(25.0%)	11(34.4%)	6(24.0%)	37(25.7%)
$25,001-$35,000	7(9.2%)	5(15.6%)	2(8.0%)	14(9.7%)
$35,001 and above	10(13.2%)	2(6.3%)	5(20.0%)	17(11.8%)
Missing	14(18.4%)	3(9.3%)	3(12.0%)	26(18.1%)
Martial Status				
Single	2(2.6%)	0	0	2(1.4%)
Married	44(57.9%)	20(62.5%)	8(32.0%)	73(50.7%)
Widowed	30(39.5%)	11(34.4%)	16(64.0%)	63(43.8%)
Separated or Divorced	0	1(3.1%)	0	5(3.5%)
Missing	0	0	1(4.0%)	1(0.6%)
Education				
≤ grade 4	6(7.9%)	5(15.6%)	2(8.0%)	15(10.4%)
5^{th}, 6^{th},7^{th}, or 8^{th} grade	17(22.4%)	10(31.3%)	7(28.0%)	37(25.7%)
9^{th}, 10^{th}, or 11^{th}	30(39.5%)	11(34.4%)	9(36.0%)	54(37.5%)
completed high school	11(14.5%)	1(3.1%)	4(16.0%)	18(12.5%)
some college	10(13.2%)	5(15.6%)	2(8.0%)	17(11.8%)
college degree	1(1.3%)	0	0	1(0.7%)
Missing	1(1.2%)	0	1(4.0%)	2(1.4%)

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content
Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

Area 1 was the closest to an urban area (St. John's), while Area 3 was the farthest from an urban area (St. John's).

In this study there were 68.8% female participants and 29.2% male participants. Each of the three study areas had more female participants.

The total sample had a majority of seniors who were 65-74 years of age (52.1%), 37.5% were 75-84 years of age, and 9% were 85 years of age and over. Area 3 had more seniors that were in the age category 85 years and over (24%) compared with both Area 1 (3.9%) and Area 2 (12.5%).

Seniors were asked to estimate their total household income for 2001 for all household members. Thirty-five percent of the entire sample lived on an annual income that was $15,000 or less. Approximately twenty-six percent (25.7%) had an income level between $15,001 and $25,000, 9.7% were living on an income between $25,001 and $35,000 and 11.8% had an income that was $35,000 and above. However, 18.1% of participants chose not to answer this question. Area 3, however, had 20% of seniors with incomes that were above $35,001.

Half of the respondents were married (50.7%) and 43.8% were widowed. Only 3.5% of the sample were separated or divorced and 1.4% was single. Again, when comparing the three areas, Area 1 and 2 had the majority of seniors being married while Area 3 had the

highest percentage of widows.

Over one third of the sample (37.5%) reported an education level between grade 9 and 11. Approximately twenty-six percent (25.7%) of the sample had an education level between the 5th and 8th grade, and 25% were high school graduates and/or had some level of post-secondary education.

The seniors were asked how long they had lived in their community (Table 3). The two most common answers included, they lived there 'all their life' (45.8%) or that they lived in the community 'more than 10 years but not all their life' (43.8%). Table 3 also indicates that the majority of seniors owned their homes (86.8%).

Seniors were asked how many people were currently living in their home. Overall, the majority of seniors had at least one person living with them (51.4%), while 28.5% lived alone and 18.1% had 3 or more individuals living in their homes with them.

In summary the majority of participants were female, married, were between 65 and 74 years of age and their annual household income was $15,000 or less.

Table 3

Living Arrangements of Rural Seniors

	Area 1 n=76	Area 2 n=32	Area 3 n= 25	Overall n=144
Length of time in Community				
All your life	36(47.4%)	14(43.8%)	14(56.0%)	66(45.8%)
> than 10 years but not all your life	33(43.4%)	18(56.2%)	10(40.0%)	63(43.8%)
5 to 10 years	2(2.6%)	0	1(4.0%)	3(2.1%)
3 up to 5 years	1(1.3%)	0	0	1(0.7%)
1 up to 3 years	2(2.6%)	0	0	2(1.4%)
6 months up to 1 year	1(1.3%)	0	0	2(1.4%)
< than 6 months	0	0	0	0
Missing	1(1.4%)	0	0	7(4.8%)
Living Accommodations				
Own home	69(90.8%)	31(96.9%)	21(84.0%)	125(86.8%)
Rent house	0	0	0	0
Apartment you own	1(1.3%)	0	0	3(2.1%)
Apartment you rent	3(3.9%)	0	2(8.0%)	4(2.8%)
Mobile home/trailer	0	0	0	0
Room and board, boarding house	0	1(3.1%)	0	1(0.7%)
No residence	0	0	0	0
Other	2(2.6%)	0	2(8.0%)	4(2.8%)
Missing	1(1.4%)	0	0	7(4.8%)
Number of People in Home				
1 (live alone)	18(23.7%)	8(25%)	8(32.0%)	41(28.5%)
2	40(52.6%)	19(59.4%)	11(44.0%)	74(51.4%)
3	9(11.8%)	4(12.5%)	3(12.0%)	16(11.1%)
4	4(5.3%)	0	1(4.0%)	5(3.5%)
5	1(1.3%)	1(3.1%)	1(4.0%)	3(2.1%)
6 or more	1(1.3%)	0	1(4.0%)	2(1.4%)
Missing	3(4.0%)	0	0	3(2.0%)

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content
Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

When asked to rate their own health (Table 4) many seniors felt that their health was 'very good' (38.2%). However, there may be differences in the proportion of seniors who rated their health as 'excellent' and 'fair' across the communities; however statistical analysis of this data was not performed. In Area 3, 16% of respondents reported their health as 'excellent' and 16% who rated it as 'fair'. Area 1 had 6.6% of respondents who rated their health as 'excellent' and 27.6% who indicated 'fair'.

Table 4

Rural Seniors' Perception of Their Health

	Area 1 n=76	**Area 2** n=32	**Area 3** n=25	**Overall** n=144
Excellent	5(6.6%)	4(12.5%)	4(16.0%)	14(9.7%)
Very good	29(38.2%)	11(34.4%)	8(32.0%)	55(38.2%)
Good	20(26.3%)	10(31.3%)	7(28.0%)	38(26.4%)
Fair	21(27.6%)	7(21.8%)	4(16.0%)	34(23.6%)
Poor	1(1.3%)	0	1(4.0%)	2(1.4%)
Missing	0	0	1(4.0%)	1(0.7%)

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content
Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

4.3 Access to Food

Seniors were asked several questions regarding access to nutritious food (Table 5 and Table 6). When asked if they grew any of their own food, the majority (73.6%) responded, 'don't grow any food'. Approximately, 17% said 'grew a little of the food you eat', and 6.9% said 'grow a fair amount of the food you eat'. Only 0.7% said 'grow a great deal of the food you eat'.

Respondents were asked if the store offered a variety of fruits, vegetables, grain and dairy products. Eighty-eight percent said 'always' for fruit, 89.6% said 'always' for vegetables, 97.2% said 'always' for milk and 95.8% said 'always' for grain products.

Seniors were also asked if they bought fruit and vegetables when they went to the grocery store and reasons for not buying fruit, vegetables, milk and grain products. As shown in Table 7, nearly all participants (64.6%) said, 'always' for buying fruit and 66.7% said, 'always' for buying vegetables. The most popular answer as to why they are not buying these food items included, fruits (9.7%), vegetables (4.2%) and grain products (3.5%) were 'too expensive to buy.' The most popular answer for milk was 'doesn't like to drink milk' (5.6%) (Table 8).

Table 5

The Percentage of Rural Seniors within Economic Zone 17 Who Grow Their Own Food

	Area 1 n=76	**Area 2** n=32	**Area 3** n=25	**Overall** n=144
Grow Your Own Food				
Don't Grow Any	58(76.3%)	24(75.0%)	15(60.0%)	106(73.6%)
Grow Little	8(10.5%)	5(15.6%)	10(40.0%)	24(16.7%)
Grow Fair Amount	7(9.2%)	3(9.4%)	0	10(6.9%)
Grow a Great Deal	1(1.3%)	0	0	1(0.7%)
Missing	2(2.7%)	0	0	3(2.1%)

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content
Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

Table 6

Availability of Fruits & Vegetables, Milk and Grain Products for Rural Seniors

	Area 1 n=76	Area 2 n=32	Area 3 n= 25	Overall n=144
Variety of Food Available (either fresh, frozen, or canned)				
Fruit				
Always	67(88.2%)	30(93.8%)	21(84.0%)	127(88.2%)
Sometimes	6(7.9%)	2(6.2%)	3(12.0%)	13(9%)
Never	0	0	1(4.0%)	1(0.7%)
Missing	3(3.9%)	0	0	3(2.1%)
Vegetables				
Always	68(89.5%)	30(93.8%)	21(84.0%)	129(89.6%)
Sometimes	5(6.6%)	2(6.2%)	3(12.0%)	10(6.9%)
Never	1(1.3%)	0	1(4.0%)	2(1.4%)
Missing	2(2.6%)	0	0	3(2.1%)
Milk				
Always	73(96.1%)	31(96.9%)	25(100.0%)	140(97.2%)
Sometimes	1(1.3%)	1(3.1%)	0	3(2.1%)
Never	0	0	0	0
Missing	2(2.6%)	0	0	1(0.7%)
Grain Products				
Always	73(96.1%)	31(96.9%)	24(96.0%)	138(95.8%)
Sometimes	1(1.3%)	1(3.1%)	1(4.0%)	3(2.1%)
Never	0	0	0	0
Missing	2(2.6%)	0	0	3(2.1%)

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content
Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

Table 7

The Percentage of Rural Seniors Who Purchase Fruit and Vegetables

	Area 1 n=76	**Area 2** n=32	**Area 3** n= 25	**Overall** n=144
Do You Buy				
Fruit				
Always	50(65.8%)	19(59.4%)	18(72.0%)	93(64.6%)
Sometimes	26(34.2%)	13(40.6%)	7(28.0%)	50(34.7%)
Never	0	0	0	1(0.7%)
Missing	0	0	0	0
Vegetables				
Always	53(69.7%)	19(59.4%)	17(68.0%)	96(66.7%)
Sometimes	20(26.4%)	13(40.6%)	8(32.0%)	45(31.2%)
Never	0	0	0	0
Missing	3(3.9%)	0	0	3(2.1%)

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content
Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

Table 8

Reasons Why Foods Are Not Purchased by Rural Seniors

	Area 1 n=76	**Area 2** n=32	**Area 3** n= 25	**Total** n=144
Fruit*				
Expensive	6(7.9%)	3(9.4%)	3(12.0%)	14(9.7%)
Don't like to eat	0	0	0	0
Fresh fruit not available	1(1.3%)	0	0	2(1.4%)
Do not like canned/frozen fruit	2(2.6%)	2(6.3%)	1(4.0%)	5(3.5%)
Spoils quickly	6(7.9%)	0	2(8.0%)	10(6.9%)
No fruit available (frozen, canned or fresh)	1(1.3%)	0	0	1(0.7%)
Missing**	65(85.5%)	27(84.4%)	21(84.0%)	120(83.3%)
Vegetables*				
Expensive	3(3.9%)	0	2(8.0%)	6(4.2%)
Fresh vegetables not available	2(2.6%)	0	0	2(1.4%)
Do not like canned/frozen vegetables	2(2.6%)	2(6.3%)	0	5(3.5%)
Spoils quickly	5(6.6%)	1(3.1%)	2(8.0%)	9(6.3%)
No vegetables available (frozen, canned, or fresh)	0	0	0	0
Missing**	67(88.2%)	29(90.6%)	22(88.0%)	126(87.5%)
Milk*				
Expensive	2(2.6%)	0	1(4.0%)	4(2.8%)
Don't like milk	4(5.3%)	3(9.4%)	1(4.0%)	8(5.6%)
Not available	1(1.3%)	0	0	1(0.7%)
Spoils quickly	2(2.6%)	0	0	2(1.4%)
Think it may cause constipation	2(2.6%)	0	0	2(1.4%)
Missing**	67(88.2%)	29(90.6%)	23(92.0%)	129(89.6%)

Table 8 (cont'd)

Reasons Why Foods Are Not Purchased by Rural Seniors

	Area 1 n=76	**Area 2** n=32	**Area 3** n=25	**Overall** n=144
Grain Products*				
Expensive	4(5.3%)	0	0	5(3.5%)
Don't like these	0	0	0	0
No variety offered at store	3(3.9%)	1(3.1%)	0	4(2.8%)
Spoils quickly	1(1.3%)	0	0	1(0.7%)
Missing**	70(92.1%)	31(96.9%)	25(100.0%)	136(94.4%)

* Multiple Responses

**In this question, there are a large number of "missing" responses because the majority of the sample indicated they always buy these types of foods, as shown in Table 7.

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
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Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

4.4 Food Utilization

In this study, food utilization was measured by asking seniors if they consumed two servings from each of the four food groups as suggested by Canada's Food Guide to Healthy Eating (Table 9). The majority responded 'yes' to each of these questions (eighty-five percent for fruit and vegetables, 97.9% for bread and cereals, 72.2% for dairy products and 86.8% for meat and alternatives group) with little difference across the areas.

Table 9

Percentage of Rural Seniors Who Reported Consuming at Least Two Servings [a,b] of Various Foods from Canada's Food Guide to Healthy Eating

	Area 1 N=76	Area 2 n=32	Area 3 n= 25	Overall n=144
Fruits & Vegetables				
Yes	67(88.2%)	27(84.4%)	21(84.0%)	123(85.4%)
No	7(9.2%)	4(12.5%)	2(8.0%)	15(10.4%)
Don't remember	1(1.3%)	1(3.1%)	1(4.0%)	4(2.8%)
Missing	1(1.3%)	0	1(4.0%)	2(1.4%)
Grain Products				
Yes	73(96.1%)	32(100%)	25(100%)	141(97.9%)
No	2(2.6%)	0	0	2(1.4%)
Don't remember	0	0	0	0
Missing	1(1.3%)	0	0	1(0.7%)
Dairy Products				
Yes	59(77.6%)	20(62.5%)	17(68.0%)	104(72.2%)
No	13(17.2%)	12(37.5%)	8(32.0%)	36(25%)
Don't remember	1(1.3%)	0	0	1(0.7%)
Missing	3(3.9%)	0	0	3(2.1%)
Meat and Alternatives				
Yes	67(88.2%)	28(87.5%)	21(84.0%)	125(86.8%)
No	7(9.2%)	3(9.4%)	4(16.0%)	16(11.1%)
Don't remember	0	0	0	0
Missing	2(2.6%)	1(3.1%)	0	3(2.1%)

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content
Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants
[a] Two servings were used because this was the minimum number of servings in Quandt & Rao study (1999) and not the minimum requirements as suggested by Canada's Food Guide to Healthy Eating.
[b] Definition of a serving included ½ cup of fruit, 1 slice of bread, 1 cup of milk and piece of meat the size of a deck of cards.

4.5 Transportation

Table 10 presents the findings with respect to transportation, i.e. if transportation to the grocery store is a problem for seniors, if seniors drive, how far they live from a grocery store and the most common method used to get groceries.

The majority of seniors (86.1%) indicated that they had no problem getting to the grocery store. Only, 1.4% of seniors reported that it was a major problem.

Over half of the seniors reported they currently drive. In Areas 1 and 2 there were 32.9% and 34.4% of the respondents who currently reported they don't drive, whereas in Area 3 there were 56% of respondents that reported they currently don't drive.

Area 3 had the lowest percentage (36%) that lived less than one mile from a grocery store when compared to Area 1 (56.6%) and Area 2 (56.3%).

The most common method used by seniors in this sample to get their groceries was using their own car (64.6%) and getting a ride with a friend (21.5%) (Table 11). However, Area 3 had 32% of seniors who got a ride with a friend or relative and 16% who had a relative or friend bring food home to them.

Table 10

The Percentage of Rural Seniors Who Have a Problem with Access [a] to a Grocery Store

	Area 1 n=76	Area 2 n=32	Area 3 n= 25	Overall n=144
Problem Getting to Store				
Major problem	0	0	2(8.0%)	2(1.4%)
A problem	3(3.9%)	2(6.3%)	2(8.0%)	8(5.6%)
A small problem	1(1.3%)	3(9.4%)	2(8.0%)	6(4.2%)
No problem	69(90.8%)	27(84.3%)	18(72.0%)	124(86.1%)
Missing	3(4.0%)	0	1(4.0%)	4(2.7%)
Seniors Driving				
Drive Now	44(57.9%)	17(53.1%)	7(28.0%)	74(51.4%)
Able to drive, drive very little	4(5.3%)	3(9.4%)	4(16.0%)	11(7.6%)
Don't drive	25(32.9%)	11(34.4%)	14(56.0%)	55(38.2%)
Missing	3(3.9%)	1(3.1%)	0	4(2.8%)
Distance to Store				
Less than one mile	43(56.6%)	18(56.3%)	9(36.0%)	75(52.1%)
1 to 3 miles	26(34.2%)	5(15.6%)	1(4.0%)	36(25%)
3 up to 6 miles	5(6.6%)	1(3.1%)	7(28.0%)	14(9.7%)
6 up to 10 miles	2(2.6%)	3(9.4%)	6(24.0%)	12(8.3%)
10 miles or more	0	5(15.6%)	2(8.0%)	7(4.9%)
Missing	0	0	0	0

[a] Access means: Is getting to the grocery store a problem for the senior? Can seniors drive themselves to the grocery store? How far does the senior have to go to get to the grocery store?

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content
Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

Table 11

Percentage of Rural Seniors Who Reported Using Different Methods to Get Groceries

	Area 1 n=76	Area 2 n=32	Area 3 n= 25	Overall n=144
Method Used for Grocery Shopping *				
On foot	3(3.9%)	0	1(4.0%)	5(3.5%)
Own car	53(69.7)	23(71.9%)	11(44.0%)	93(64.6%)
Public transportation	0	0	0	0
Borrowed car	0	0	0	0
Ride with friend or relative	15(19.7%)	5(15.6%)	8(32.0%)	31(21.5%)
Taxi service	0	1(3.1%)	0	1(0.7%)
Store delivers	0	1(3.1%)	0	2(1.4%)
Food shopping van	0	0	0	0
Friend or relative brings food to home	3(3.9%)	2(6.3%)	4(16.0%)	9(6.3%)
Don't shop for food at all	0	0	3(12.0%)	3(2.1%)
Other	1(1.3%)	1(3.1%)	0	3(2.1%)
Missing	2(2.6%)	1(3.1%)	0	3(2.1%)

* Multiple responses

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
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Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

4.6 Food Shopping Habits

Respondents were asked about the amount they spent weekly on groceries, who does most of the shopping, where they are buying their food, and are they able to shop for their own food. A summary of the findings is presented in Table 12.

Seniors were asked how often they bought groceries and how much they spend each time. Responses to these two questions were combined and this provides the amount that seniors spend weekly on groceries. The majority of seniors (56.9%) shop for groceries once a week and 42% spend between $50-$99 each week on groceries. The most popular places for seniors to buy their groceries were supermarkets.

Mobility for seniors is important because this indicates they can shop for their own food. The majority of the sample could leave home without help from another person (88.9%) and 91.7% still shopped for their food. When comparing the three areas, Area 3 had a higher percentage of seniors who could not shop for their own food (28%) and 32% who still relied on help from others to leave their home.

Table 12

Rural Seniors and Food Shopping Habits

	Area 1 n=76	Area 2 n=32	Area 3 n= 25	Overall n=144
Frequency of Grocery Shopping **				
Less than once a week	7(9.2%)	0	3(12.0%)	11(7.6%)
Once a week	52(68.4%)	16(50%)	10(40.0%)	82(56.9%)
Once in two weeks	10(13.2%)	11(34.4%)	7(28.0%)	30(20.8%)
Once a month	3(3.9%)	1(3.1%)	2(8.0%)	7(4.9%)
Other	3(3.9%)	6(18.8%)	3(12.0%)	15(10.4%)
Missing	2(2.6%)	1(3.1%)	0	3(2.1%)
Amount Spent on Groceries				
$0-$49	6(21.1%)	9(28.1%)	4(16.0%)	33(22.9%)
$50-$99	34(44.7%)	13(40.6%)	12(48.0%)	61(42.4%)
$100-$199	14(18.4%)	4(12.5%)	7(28.0%)	28(19.4%)
$200-$299	1(1.3%)	0	1(4.0%)	2(1.4%)
$300 or more	2(2.6%)	3(9.4%)	0	5(3.5%)
Combined categories*	0	2(6.3%)	0	2(1.4%)
Missing	9(11.9%)	1(3.1%)	1(4.0%)	13(9%)
Amount Spent Weekly on Groceries				
$0-$49	18(24.0%)	10(31.0%)	5(20.0%)	39(27.0%)
$50-$99	32(42.0%)	13(41.0%)	15(60.0%)	61(42.0%)
$100-199	13(17.0%)	0	1(4.0%)	16(11.0%)
Missing	13(17.0%)	9(28.0%)	4(16.0%)	28(20.0%)

** Some participants picked more than one category in response to that question.
* Combined Categories indicates some participants picked two categories in response to that question.

Table 12

Rural Seniors and Food Shopping Habits (cont'd)

	Area 1 n=76	Area 2 n=32	Area 3 n= 25	Total n=144
Shopping Done By				
Self	53(69.7%)	20(62.5%)	10(40.0%)	93(64.6%)
Other household member	16(21.1%)	5(15.6%)	8(32.0%)	30(20.8%)
Friend or relative	1(1.3%)	3(9.3%)	2(8.0%)	6(4.2%)
Home worker	0	0	1(4.0%)	1(0.7%)
You do it with others	2(2.6%)	2(6.3%)	3(12.0%)	7(4.9%)
Other	1(1.3%)	2(6.3%)	1(4%)	4(2.8%)
Missing	3(4.0%)	0	0	3(2.0%)
Place of Shopping ▪				
Supermarket	72(94.7%)	23(71.9%)	22(88.0%)	126(87.5%)
Local Grocery Store	1(1.3%)	8(25%)	3(12.0%)	15(10.4%)
Convenience Store	0	1(3.1%)	0	2(1.4%)
Specialty Store	1(1.3%)	0	0	2(1.4%)
Food Co-op	0	0	0	1(0.7%)
Food Warehouse	0	0	0	2(1.4%)
Don't shop for food at all	0	0	0	1(0.7%)
Missing	3(3.9%)	0	0	3(2.1%)
Able to Shop for Own Food				
Yes	72(94.7%)	31(96.9%)	18(72.0%)	132(91.7%)
No	2(2.6%)	0	7(28.0%)	9(6.3%)
Sometimes	0	0	0	1(0.7%)
Missing	2(2.7%)	1(3.1%)	0	2(1.3%)
Able to Leave Home without Assistance				
Yes	70(92.1%)	30(93.8%)	17(68.0%)	128(88.9%)
No	4(5.3%)	2(6.2 %)	8(32.0%)	14(9.7%)
Missing	2(2.6%)	0	0	2(1.4%)

▪ Multiple responses

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne

Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content

Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay

Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence

Missing=these were questions that were not answered by the participants

4.7 Nutrition Services: Availability and Use

Seniors were asked several questions regarding the availability of nutrition services and how often they used these services (Table 13).

Seniors were asked if the local grocery store delivered groceries. Over half (56.3%) of the participants reported no. Approximately half of the participants in Area 1 (50%) and Area 2 (43.8%) indicated that the local store did not deliver compared with 92% in Area 3. Of those seniors who did use the local grocery delivery service, Area 2 had the highest usage rate with 9.4% of seniors getting their groceries delivered once a week.

Questions regarding implementing a grocery delivery service were also asked. When seniors were asked if they would pay extra to have their groceries delivered, 47.2% said 'yes, if needed' while 30.5% said 'no'. A similar question asked if seniors would use a delivery service where volunteers bought groceries to their home. Fifty-seven percent said 'yes, if needed' and 20% said 'no'.

Three questions were asked about meals on wheels (MOW's). Seniors were asked if they had ever received MOW's, if not, why they had not, and if so were there any problems with using the program. Overall, 94% indicated that they had never used MOW's. Area 3 had two people (8%) who indicated that they had received MOW's and both said 'they never had any problems with the program'. Of the two respondents who indicated they

were receiving MOW's in Area 3, additional comments were written on the questionnaire. The participants indicated that 'family and friends delivered meals' and 'when participant lived in Ontario, MOW's delivered meals'. However, when the majority was asked why they never received MOW's, 77.8% said that they 'never needed them' and 19.4% stated 'program not available'. Area 1 (88%) and Area 2 (78%) had the majority of respondents indicating that they 'never needed a MOW program'. Only 56% of the respondents from Area 3 stated 'they never needed a MOW program'. Forty four percent of the participants in Area 3 indicated that a MOW's program was 'not available' in their area, compared with only 28% in Area 2 and 7% in Area1.

Table 13

Availability and Use of Nutritional Services by Rural Seniors

	Area 1 n=76	**Area 2** n=32	**Area 3** n= 25	**Overall** n=144
Local Grocery Store Delivers				
Yes	25(32.9%)	17(53.1%)	1(4.0%)	46(31.9%)
No	38(50%)	14(43.8%)	23(92.0%)	81(56.3%)
Missing	13(17.1%)	1(3.1%)	1(4.0%)	17(11.8%)
Frequency of Use of Delivery Service				
More than once a week	0	0	0	0
Once a week	1(1.3%)	3(9.4%)	0	4(2.8%)
Once in two weeks	1(1.3%)	0	0	1(0.7%)
Once a month	2(2.6%)	1(3.1%)	0	4(2.8%)
Never use this service	19(25%)	10(31.2%)	1(4.0%)	30(20.8%)
Missing	16(21.1%)	4(12.5%)	1(4.0%)	25(17.4%)
No delivery service available	37(48.7%)	14(43.8%)	23(92.0%)	80(55.5%)
Would you pay extra to have groceries delivered				
Yes	7(9.2%)	2(6.3%)	0	9(6.3%)
Yes, if needed	37(48.7%)	15(46.9%)	11(44.0%)	68(47.2%)
No	19(25%)	9(28.1%)	12(48.0%)	44(30.5%)
Missing	13(17.1%)	6(18.7%)	2(8.0%)	23(16%)

Table 13

Availability and Use of Nutritional Services by Rural Seniors (cont'd)

	Area 1 n=76	Area 2 n=32	Area 3 n= 25	Overall n=144
Would you use a grocery delivery service where volunteers brought groceries to your home				
Yes	6(7.9%)	2(6.3%)	1(4.0%)	9(6.3%)
Yes, if needed	43(56.6%)	21(65.6%)	13(52.0%)	82(56.9%)
No	15(19.7%)	2(6.3%)	8(32.0%)	29(20.1%)
Missing	12(15.8%)	7(21.8%)	3(12.0%)	24(16.7%)
Have you ever received Meals on Wheels				
Yes, now	0	0	1(4.0%)	1(0.7%)
Yes in the past, not now	0	0	2(8.0%)	2(1.4%)
Never	73(96.1%)	32(100.0%)	21(84.0%)	136(94.4%)
Missing	3(3.9%)	0	1(4.0%)	5(3.5%)
Why have you never received Meals on Wheels*				
Not available	5(6.6%)	9(28.1%)	11(44.0%)	28(19.4%)
Never needed them	67(88.2%)	25(78.1%)	14(56.0%)	112(77.8%)
Not comfortable applying to program	0	0	0	1(0.7%)
Meal cost high	0	0	0	1(0.7%)
Applied but not eligible	0	0	0	0
No space available in program	0	0	0	0
Not like food served	0	0	0	0
Not like people coming into your home	0	0	0	0
Other	0	1(3.1%)	1(4%)	3(2.1%)
Missing	5(6.6%)	0	3(12%)	10(6.9%)

* Multiple answers

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content
Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

4.8 Indicators of Food Insecurity Among Rural Seniors

Table 14 summarizes the self reported appropriateness and adequacy of the food that seniors have eaten in the last month. Overall, 91% of participants indicated that they ate 'enough of the kinds of food you want to eat'. However, 6.9% of seniors indicated that they have 'enough but not always the kinds of food they want to eat'.

Table 15 summarizes the decisions that respondents may have made in the past, that impact upon food security. An example of this question included, "have you ever had to choose between buying food or buying medications". 'No, never' (93.8%) was the most popular answer indicated by the group. A similar question was also asked, "have you ever made the choice between buying food and paying your bills?" Again there were 94.4% of the respondents who said 'no, never' to making the choice between purchasing food or paying their bills. Only a small percentage (1.4%) indicated that this was an issue for them.

When the sample was asked if they have ever reduced the size of their meals in the last twelve months, 92.4% said 'no'. They were also asked if there had been days when they ate nothing at all, 93.1% said 'no never'.

Table 14

Self Reported Appropriateness and Adequacy of Food by Rural Seniors

	Area 1 n=76	**Area 2** n=32	**Area 3** n= 25	**Overall** n=144
Which statement best describes the food you ate in last month				
Enough of the kinds of food you want to eat	70(92.1%)	30(93.8%)	20(80.0%)	131(91.0%)
Enough but not always the kinds of food you want to eat	4(5.3%)	2(6.2%)	4(16.0%)	10(6.9%)
Sometimes not enough to eat	1(1.3%)	0	0	1(0.7%)
Often not enough	0	0	0	0
Missing	1(1.3%)	0	1(4.0%)	2(1.4%)

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content
Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

Table 15

Decisions Made by Rural Seniors to Cope with Food Insecurity

	Area 1 n=76	Area 2 n=32	Area 3 n= 25	Overall n=144
Have you ever had to choose between buying food or buying medications				
Yes, in past month	0	0	0	0
Yes, in past 6 months, but not in past month	3(3.9%)	0	1(4.0%)	4(2.8%)
Yes, in past 6 months	0	0	1(4.0%)	1(0.7%)
No, never	72(94.7%)	30(93.8%)	22(88.0%)	135(93.8%)
Missing	1(1.4%)	2(6.2%)	1(4.0%)	4(2.7%)
Choose between buying food or paying bills				
Yes, in past month	1(1.3%)	0	0	2(1.4%)
Yes, in past 6 months, but not in past month	2(2.6%)	0	0	2(1.4%)
Yes, in past 6 months	0	0	1(4.0%)	1(0.7%)
No, never	72(94.7%)	31(96.9%)	23(92.0%)	136(94.4%)
Missing	1(1.4%)	1(3.1%)	1(4.0%)	3(2.1%)
Cut size of meals in last 12 months				
Yes	2(2.6%)	0	0	2(1.4%)
No	68(89.5%)	31(96.9%)	24(96.0%)	133(92.4%)
Don't know	1(1.3%)	0	0	1(0.7%)
Missing	5(6.6%)	1(3.1%)	1(4.0%)	8(5.5%)

Note: If answered "no" to cut the size of meal because there was not enough money for food (Question 51), then for question 52 "how often this happened in the last 12 months" was a skip.

Table 15

Decisions Made by Rural Seniors to Cope with Food Insecurity (cont'd)

	Area 1 n=76	**Area 2** n=32	**Area 3** n= 25	**Overall** n=144
Days when ate nothing				
Yes, in past month	1(1.3%)	0	0	1(0.7%)
Yes, in past 6 months, but not in past month	0	0	0	0
Yes, in past 6 months	0	1(3.1%)	0	1(0.7%)
No, never				
Missing	70(92.1%)	31(96.9%)	23(92.0%)	134(93.1%)
	5(6.6%)	0	2(8.0%)	8(5.5%)

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content
Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall =all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

4.9 Strategies Used by Rural Seniors to Cope with Food Insecurity

The respondents were then asked, in the past 12 months if anyone in their household were ever in the situation that there wasn't enough to eat, or where they thought that they soon might not have enough to eat (Table 16). Nearly all the sample responded with 'I/we are never in this situation' (86.1%), thus indicating they were food secure. However, there were some respondents that were taking action to cope with this food insecurity situation. Nearly, 4% said 'buy or prepare meals that cost less', 2.1% indicated they 'borrow money to buy food', 2.1% 'take money out of savings', 1.4% 'eat at homes of friends or relatives' and 0.7 % 'borrow food from a friend or family'.

Table 16

Actions Taken by Rural Seniors Because There Was Not Enough Food*

	Area 1 n=76	Area 2 n=32	Area 3 n= 25	Total n=144
I/We were never in this situation	67(88.2%)	31(96.9%)	17(68.0%)	124(86.1%)
Eat at a seniors community meal program	0	0	0	0
Apply for meal on wheels	0	0	0	0
Get food from food bank	0	0	0	0
Eat samples at grocery store	0	0	0	0
Ask restaurants for leftovers	0	0	0	0
Take money out of savings	1(1.3%)	0	1(4.0%)	3(2.1%)
Borrow money to buy food	1(1.3%)	0	1(4.0%)	3(2.1%)
Buy food on credit	0	0	1(4.0%)	1(0.7%)
Work extra hours	0	0	0	0
Buy or prepare meals that cost less	3(3.9%)	0	2(8.0%)	5(3.5%)
Serve smaller meals	0	0	0	0
Borrow food from family or friend	1(1.3%)	0	0	1(0.7%)
Eat at homes of family or friends	1(1.3%)	0	1(4.0%)	2(1.4%)
Other	1(1.3%)	0	0	2(1.4%)

* Multiple responses were provided by respondents for this question.

Area 1= Bay Robert's, Riverhead, Hr.Grace, Carbonear, Victoria, Clarke's Beach, Spaniard's Bay, Freshwater, Whitbourne
Area 2= Heart's Delight-Islington, Winterton, New Perlican, Heart's Content
Area 3= Bay de Verde, Broad Cove, Red Head Cove, Northern Bay, Lower Island Cove, Old Perlican, Sibley's Cove, New Chelsea, Caplin Cove, Blackhead, Brownsdale, Kingston, Western Bay
Overall=all respondents from Area 1, 2 & 3 and an additional 11 participants who did not specify community residence
Missing=these were questions that were not answered by the participants

Chapter V

Discussion

The literature suggests that several barriers may put rural seniors at an increased risk of experiencing food insecurity (McDonald et al, 2000; Quandt & Rao, 1999; Arcury et al 1998; Wolfe et al, 1996). Some of these include inadequate income, lack of social support, transportation problems and limited access to nutritional services (meal programs etc.). There is limited research in the area of food insecurity among rural seniors in Canada. This study addressed this issue on a small scale within one Economic Zone and thus provides a profile on the current food security situation in this region among rural seniors, while a range of rural areas were accessed there is no guarantee that it is representative of that region.

In this study, the vast majority of respondents reported being food secure. This finding is discussed in light of the study sample and findings from similar studies. The discussion of findings is organized according to the study objectives and will include, whenever possible, reference to similar studies which examined seniors and food security.

5.1 Characteristics of the Sample

This study sample was slightly different with respect to gender, age distribution (for those seniors 85 and above) and home ownership when compared to the province and

Economic Zone 17. However, with respect to length of residence and home ownership there was a significant percentage difference when compared to Quandt (1993) (a similar study that had taken place in rural United States), as seen in Table 17.

Table 17
Summary of Sample Characteristics

	Study Sample	Economic Zone 17	Newfoundland & Labrador	Quandt Study[1]
Gender*				
% Male	29.2%	44.0%	44.0%	31.0%
% Female	68.8%	56.0%	56.0%	69.0%
Ages > 65 years*				
65-74	59.2%	52.0%	56.0%	Not Available
75-84	35.6%	37.0%	34.0%	
85 +	3.9%	11.0%	10.0%	
Income*				Not Available
<$15,000	34.7%	Not Available	46.0%	
> $15,000	47.9%		54.0%	
Length of Residence**				
All your life	45.8%	Not Available	Not Available	60.0%
> than 10 years but not all your life	43.8%			36.0%
Home Ownership	90.8%	Not Available	84.0%	68.7%

* some respondents chose not to answer
**other categories found in Table 3 in the results section and data may not not equal 100% due to some participants chose not to answer that question.

[1] Qunadt (1993). Unpublished data.

Newfoundland and Labrador statistics indicate a higher number of senior females than senior males living in the province for each age category and this is similar to the statistics for Economic Zone 17. This study sample had a higher percentage of females than males respond to the questionnaire then would be expected based on provincial and economic zone statistics. The literature suggests that women have a higher rate of participation in leisure activities outside the home (Krout, 1986), which again may help to explain the higher number of female seniors who participated in this survey.

The median income as reported by the Newfoundland and Labrador Statistics Agency (1998) for seniors 65-74 years is $13,200 and for those 75 years and over it is $12,500. The study sample had approximately one-third of the sample (35%) falling within this income range ($15,000 or less) and 48% were above this income range. This study sample also had 62.5% of seniors who indicated having an education level of grade 9 and above. Possibly many of the seniors in this study may have retired from higher paying jobs that provided a sufficient pension plan upon retirement and thus an adequate income to ensure food security.

Nearly half (45.8%) of the seniors indicated they had been living in the same community all their life and 43.8% lived in their current community for more than 10 years but not all of their lives. Again, this may suggest that some seniors may have worked out of the area or province where they were employed in an industry for a period of time and then returned to their hometown to retire.

The majority of the seniors in this study owned their homes and hence these seniors did not have a monthly mortgage payment that deferred income away from food. Quandt & Rao (1999) found that 46% of their senior subjects were food insecure because they were making a house payment. This was not an issue for most of the seniors in this study.

The sample was also different from provincial and national reports of self-rated health among seniors. In this study approximately 65% of seniors rated their health as 'good' or 'very good' compared with 59% of Canadian seniors (Statistics Canada, 2000). The provincial statistics for self-rated health were slightly lower with 58.2% of seniors reporting 'good' or 'very good' health (Statistics Canada, 2000/01). The literature suggests that rural seniors usually have poorer health than urban seniors due to a lack of adequate resources such as having a lower income, less access to transportation, housing and recreational facilities (Krout, 1986). However, findings from this study suggest that many rural seniors have adequate resources within the community to maintain their health; therefore they feel healthy overall.

5.2 Availability of Food in the Communities

Availability of food in the store is an important aspect of food security. Seniors need to have access to a variety of foods from the four food groups to help meet their nutritional needs. Seniors in this study were asked several questions pertaining to food availability in the grocery store. The majority of seniors did not report having any issues with

availability or variety of foods (grain products, fruit and vegetables, or milk products) offered in the grocery store. This suggests that foods in these three foods groups are generally available in the stores in the communities represented in this study.

5.3 Access to Food

Having access to food is essential for an individual to be food secure. However, several factors can influence this situation and these include income, transportation, social support and mobility. These factors were explored in the questionnaire.

5.3.1 Income

Access to food is influenced by income. In this sample the majority of seniors did fall above the median income as suggested by the Newfoundland and Labrador Statistical Agency (Newfoundland & Labrador Statistical Agency, 1998). As well, the low-income cut-off for rural areas for one person is $13,021 and for two people $16,275 (Statistics Canada, 2002). Again, the majority of seniors in this sample were living on an income above this range, thus suggesting an adequate income to purchase food.

Over-half of the seniors reported always purchasing fruit and vegetables when grocery shopping. These seniors did not identify any major reasons why they may not purchase grain products, fruit and vegetables, and milk products. Only a small percentage indicated they do not buy these foods because they are expensive. However, it should be noted that

in this table there is a high percentage of "missing" for the various categories of fruit, vegetables, milk and grain products when seniors were asked reasons for not buying these food products. This might be due to an error with the wording of those questions (17, 20, 22, and 24) which led many of the participants not to answer those specific questions. Missing data may distort the findings and suggest inappropriately that the majority of seniors in this region are buying food and have no identified problems regarding access to food. Respondents may not be truly representative of seniors residing in the area. Overall, respondents indicated that they were purchasing foods from the four groups on a regular basis.

The recent food costing study, the Newfoundland Nutritious Food Basket, portrays actual buying patterns of the public, but it does not include "highly processed convenience foods, snack foods with little nutritional value and food away from home" (Government of Newfoundland and Labrador, 2003). It must be noted that the basket does "not constitute a recommended diet", but it was designed to be representative of buying patterns and costs associated with purchasing 63 specific food items (Government of Newfoundland and Labrador, 2003). The weekly cost for this nutritious food basket for rural residents in the Eastern Region of Newfoundland and Labrador was $37.65 for males aged 50-74 years, $34.90 for males 75 years and over, $30.15 for women aged 50-74 years and $29.08 for women aged 75 plus. Using this as a guideline, some seniors in this study appear to be spending more than what has been recommended for nutritious groceries. It appears that many seniors have an adequate income to buy food and they

appear to be spending more money on food than what is suggested by the Newfoundland Nutritious Food Basket.

Growing vegetables in rural areas is often a common practice. For those who may have a limited food supply, growing food could help to off-set food insecurity. In this study 73.6% of the seniors did not grow any of their own food and only 16.7% indicated that they grow a little of the food they eat. These findings are different from the Newfoundland and Labrador Provincial Nutrition Survey (Roebothan, 2003), which found 35% of Newfoundland and Labrador residents between the ages of 65 and 74 years did grow their own food. Quandt (1993) found 52.6% of the total sample did not grow any food, while 36.2% grew a little of the food they eat.

In addition, 46.5% of seniors in this study were 75 years and older where as Roebothan's (2003) sample was limited to seniors under 75 years of age, thus the high percentage of older seniors in this study may help to explain the lower number of seniors growing their own food. Another possible explanation for the lower rates of growing food in this study could be that most seniors responding to this survey had an adequate income to buy food, therefore didn't have a need to grow any food. As well, inadequate land to grow their own food may also be a contributing factor. As well, the majority of seniors in this study were female, and being female may be a contributing factor to them being less likely to grow their own food.

5.3.2 Transportation

Transportation is important because it provides access to food for seniors. Most of the subjects (86.1%) reported 'no problem' with getting to the grocery store. However, there was a small number (9.8%) of seniors who did report that transportation to the store was 'a problem' or 'a small problem'. A study by Grant and Rice (1983) asked a similar question to seniors regarding transportation, and 21.2% of the participants in that study indicated that transportation was 'a big problem' or 'a problem'. Overall, the majority of seniors in both studies did not seem to have any major transportation issues. However, it must be considered that Grant and Rice (1983) used a general question with regards to transportation and it was not specifically directed to transportation to the grocery store.

Most seniors (52.1%) indicated that they were less than one mile away from the nearest supermarket. Quandt (1993) found only 15.9% of her sample of seniors lived less than one mile from a supermarket, while most seniors (54%) were at least 1 to 3 miles away from the closest supermarket. However, the Quandt & Rao (1999) study had taken place in a typical rural setting in the United States. In this study, Area 1 does have supermarkets that are located in that vicinity. However, Area 2 and 3 are a significant distance from a supermarket. It is possible that seniors in this sample may have reported their neighbourhood or small local grocery store as a supermarket. Overall, it appears that the seniors who responded to this survey do have access to a grocery store close to their home.

The ability of seniors to drive themselves is another factor that influences food security, as it may facilitate access to food more often. In this study, over 50% of seniors reported driving a higher percentage than that reported by Quandt (1993) who found almost half (45.8%) of seniors in her study reported they did not drive. In this study, those seniors who did not drive, reported relying on social contacts in the community. This finding is different from Quandt & Rao (1999) who found that only a small portion of seniors reported using social contacts in the community. The seniors in this study seemed to have a supportive social network, which assisted with transportation when necessary.

5.3.3 Food Shopping Habits

Nearly all (87.5%) of the respondents in this study bought their food at a supermarket, while 10.4% used the local neighbourhood or small grocery store, similar to findings from the Quandt (1993) and Caraher et al (1998). However, the Caraher et al (1998) study was not limited to seniors. The fact that most seniors in this study are buying their food at supermarkets may explain why no issues regarding food availability were identified.

Reduced or restricted mobility affects food security among seniors because it can make it difficult to prepare and shop for food (McDonald et al, 2000; Wolfe et al 1996). Mobility was not a concern for most of the seniors in this sample. Similar to Quandt (1993) most seniors were able to shop for their own food and not dependent on others to

leave their home. Quandt (1993) found that 81% could shop for their own food and 80.4% could leave their home without assistance. The results are very similar for both studies.

5.3.4 Nutrition Services: Availability and Use

Food assistance programs have been implemented in many areas to address the issue of food insecurity. These programs are important for those seniors who may have limited resources (income, social support, vehicle etc.) because they provide access to food. Seniors in this study were asked several questions regarding availability and use of several nutrition programs or services. Over half of the respondents indicated the local grocery store did not deliver. However, in each of the areas studied there was at least one or several local stores that did deliver groceries. This discrepancy may be due to the fact that most seniors reported purchasing their groceries at supermarkets (which are further away). Therefore, they may have been unaware that the local store delivers groceries. Use of the grocery delivery service was also low in this sample. Again, this is likely due to lack of awareness of the availability of this service or because most seniors in this sample had their own vehicle, thus they had no need for this type of service. The lack of awareness in this sample may be due to the fact that seniors did not need to use this service and therefore there was no need for them to investigate into the existence of such a service to meet their needs.

Questions were asked regarding implementing a program if there was a demonstrated need. Approximately half of the respondents expressed willingness to pay extra to have groceries delivered to their home (47.2%) and 56.9% indicated they would use a grocery delivery service where volunteers brought groceries to their home if they felt they needed this service. These results were quite different from the Quandt (1993) study. Only 11.9% of the seniors in this study reported that they would pay to have groceries delivered and 23.7% would use a volunteer grocery delivery service. These differences may be due to the greater number of seniors living on a low income in the Quandt & Rao (1999) study. As well, some seniors may have a negative out-look on such programs because they are seen as a hand-out (Arcury et al, 1998).

Meals-on-wheels (MOW) usage was low in this sample with only 2.1% indicating that they had used this service at some point. Quandt (1993) found similar results with 7.8% having received meals-on-wheels now or in the past. However, participation in the MOW's program in this study may be low due to several reasons. First, the MOW program is limited to a few communities in Area 1 and it is not available in Areas 2 and 3. Secondly, seniors in Area 1 may be unaware that this program even exists because the majority of seniors in this study appear to be fairly food secure and therefore do not need this service.

In summary the majority of seniors in this study did not need to use a meal program to ensure food security. Use of meal programs to address food security issues is only

considered to be a short term relief strategy only, because they directly provide food and the underlying issue of why food insecurity exists is not addressed, thus no policies are developed (Kalina, 2001). Nonetheless, within Areas 2 and 3, even short term strategies to address food insecurity for seniors were not available.

5.3.5 Indicators of Food Insecurity Among Seniors

Seniors were asked to describe the food that they ate. Nearly all (91.0%) seniors reported they are eating enough of the kinds of food they want to eat. For many of the seniors in this study sample it suggests that their diet is not compromised because they indicate they are satisfied with the food they eat. However, Quandt (1993) found 71.5% who reported that they were 'eating enough of the food they wanted' and 27.4% indicated 'eating enough food but not the food they wanted to eat'. A small number (0.7%) in this study reported that sometimes there is not enough to eat. When this was compared to the Provincial survey, 4% of males (65-74 years) and 1% of females (65-74 years) stated they often did not have enough to eat (Roebothan, 2003). This suggests that food insecurity in Newfoundland and Labrador is not a big concern. The difference in this study and the results that Quandt (1993) found can possibly be explained by the established social safety net in Canada for seniors which include income programs such as old age pension, widow allowance and a guaranteed income supplement for low income elderly (Tarasuk & Davis, 1996). These programs help to ensure that seniors can

meet their basic needs of food and shelter (Human Resources Development Canada, 1994).

The Newfoundland Adult and Community Health Survey (2001) asked a similar question regarding the quality and amount of food that seniors are consuming. The question asked, "How often did you or someone else in your household not eat the quality or variety of foods that you want to eat because of lack of money?" The response for Economic Zone 17 was 95% reporting 'never'. Again, this supports the finding that seniors within this area are largely food secure. Nearly all the seniors in this sample reported 'never' to making the choice between buying food and paying bills or purchasing their medications. Again, the results were very similar to Quandt (1993) who found 85% of the seniors reporting that they 'never' had to make the choice between buying food and purchasing their medications and 95.4% said 'never' to making the choice between buying food and paying their bills.

5.3.6 Strategies Used to Cope with Food Insecurity

Several strategies have been identified to help seniors cope with food insecurity. These may include purchasing food on credit, borrowing money, eating at meal programs or at homes of family or friends (Quandt & Rao, 1999).

Another coping strategy of seniors may include making smaller meals or even skipping meals to make the food they currently have last longer. Most seniors (92.4%) in this

sample reported never had to use this coping strategy. However, Quandt and Rao (1999) reported 5% who skipped meals because of lack of food in the home. Quandt and Rao (1999) provided categories of personal action taken by those seniors who reported being food insecure. A summary of these findings includes 35% buying food on credit, 23% made cheaper meals, 21% made smaller meals, 13% borrowed money, 12% of the seniors used a seniors meal program, 9% of seniors ate at the homes of family or friends, 6% borrowed food, 5% used a food pantry/food bank, 4% used a home delivered meal program and 3% took money out of savings. In this study most seniors reported that they were never in the situation to have to resort to using any of the above coping strategies.

However, there were a small number of seniors who did report taking action such as taking money out of savings, borrow money, prepare cheaper smaller meals and borrow food from a friend to cope with a shortage of food in the home. As well, there were indicators such as having to choose between buying food or paying bills and buying medication that suggest that some seniors were at risk of food insecurity. This may provide evidence that within the community there may be more seniors who are vulnerable to being food insecure and that further investigation into the situation could provide additional insight on this topic.

Most of the data for this study has been compared to a similar study that had taken place in the United States. However, as noted previously Canada has an established welfare system that was developed after the Great Depression (Tarasuk & Davis, 1996). Canada

and the United States have very different social support systems established and the action taken by each government to address the issue of food insecurity varies slightly (Tarasuk & Davis, 1996). The Canadian government usually provides assistance to society through direct funds such as income (e.g. Old Age Security, Canada Pension Plan, Guaranteed Income Supplement) (Tarasuk & Davis, 1996). However, the government system in the United States has established food programs by providing food directly to those who have a need (e.g. senior meal or congregate meal programs) or by providing food stamps (Tarasuk & Davis, 1996). Overall, Canada does not provide those who are food insecure with direct food assistance, but it does provide direct funds to individuals. This may help to explain why the seniors participating in this study indicated they were food secure compared with seniors in American rural areas. These seniors may also be receiving sufficient funds either through private retirement pension plans to purchase the food they need to be food secure.

Other research suggests that our social safety net may be failing due to the increased number of individuals placing a demand on food banks and the increased reliance of society on the charitable food sector to address the issue of hunger (Tarasuk, 200l; Rainville & Brink, 2001). The increase in the charitable food sector has been attributed to decreased government funding (Rainville & Brink, 2001). Further investigation may be necessary to determine which groups in society are food insecure, given the findings in this study.

The published literature suggested that seniors living in a rural areas are at a greater risk of being food insecure. This is due to factors such as location, limited resources such as meal programs, transit systems, taxi service, grocery stores and lack of social support due to relatives out-migrating to urban areas (Grant & Rice, 1983; Wolfe et al, 1996; Wolfe et al, 1998; Arcury et al, 1998; Quandt & Rao, 1999). However, this study suggests that these factors were not concerns for rural Newfoundland seniors who participated in this study. Even though there were limited resources (such as meals on wheels and food banks) many seniors reported that they had adequate amounts of food to eat. As well, seniors who were unable to drive and/or were limited in mobility, reported having adequate social support to help ensure that their basic needs were being met. Thus, this study suggests that the rural seniors in this study were not at risk for being food insecure.

5.4 Food Utilization

Food utilization or consumption of food is another important aspect of food security. Consumption of food from the four groups helps to ensure that an individual is meeting their nutritional requirements (Roebothan et al, 1994). Therefore, seniors were asked if they were consuming at least two servings from each of the four food groups following Canada's Food Guide to Healthy Eating. Two servings was the quantity examined in this study, following the lead of the Quandt (1993) study, which asked American seniors the same question. Table 18 summarizes several studies with respect to the percentage of

seniors who consumed a minimum of two servings from Canada's Food Guide to Healthy eating.

Table 18

Percentage of Seniors Who Consumed a Minimum of Two Servings from Canada's Food Guide to Healthy Eating Food Groups

	Study Sample	Quandt (1993)[2]	Roebothan, Friel, & Healy (1994)	DeWolfe & Millan (2003)
Vegetables & Fruit	88.2%	90.5%	Not Applicable*	Not Applicable*
Grain Products	96.1%	92.2%	Not Applicable*	Not Applicable*
Dairy Products	77.6%	80.6%	33.3%	77.0%
Meat & Alternatives	88.2%	64.3%	66.7%	76.0%

* Not applicable-these studies used a different minimum number of servings for that category

The study sample was similar to Quandt (1993) in that the majority of seniors indicated they were consuming vegetables and fruit, grain products and dairy products. The participants in this study had a higher percentage of seniors who were meeting their nutritional requirements in the dairy group when compared to Roebothan's participants (Roebothan et al, 1994). As well, this study sample had a higher number of seniors who were consuming the minimum recommended servings from the meat and alternatives group when compared to the other three studies. Overall, the findings suggest that seniors in this study are consuming at least two servings from the four groups, thus helping to meet some of their nutritional requirements.

[2] Quandt (1993). Unpublished data.

5.5 Relationship Between the Reported Food Security Among Rural Seniors and Socioeconomic Characteristics

The majority of seniors (n=124, 86.1%) reported being food secure (i.e. never having to resort to using any coping strategies). Only eight participants indicated that they had to use one or more coping strategies which may have included buying or preparing meals that cost less (3.5%), taking money out of savings (2.1%), borrow money to buy food (2.1%), borrowing food (1.4%), eat at the home of a family member or friend (1.4%) and/or buy food on credit (0.7%). There were 12 participants who chose not to respond to this question. Further analysis of this objective was not pursued.

5.6 Limitations

This study used a sample of convenience. Although the sample appeared to be representative of the population of the region with respect to demographic characteristics, the most common method the investigator used to collect the data was through churches and seniors' groups. This method may have only included active outgoing seniors in the community, thus excluding those less active seniors and/or housebound who don't attend these places and who may be less food secure. As well, the sample could have a bias with respect to literacy levels. Seniors who are unable to read could have declined participation or could have taken the questionnaire and not returned it.

Health and Community Services offices within the various regions were initially contacted and the public health nurses were asked to distribute the questionnaire on their home visit. This approach would have provided additional data on those seniors who

may have been housebound, limited mobility, literacy, transportation and/or social support issues. However, due to unforeseen circumstances at the start of the study, the public health nurses were unable to distribute the questionnaire. Thus, an alternate method was used which involved placing the questionnaire at the various Health and Community Services sites. No questionnaires were returned using this method, indicating this is not a good approach for recruiting seniors to answer a questionnaire. Strategies such as involving public health nurses or social workers within the community to overcome the challenge experienced with questionnaire distribution may help to reach seniors who are illiterate, housebound and who may be food insecure.

With self-reported data, there is always the concern about information inaccuracy. It can be questioned if the respondents are reporting their situation as it actually is or are they reporting what they think the investigator wants to hear or information they think is acceptable. The literature suggests that many seniors' life experiences reflect how they perceive food insecurity (Wolfe et al, 1996). For example, if a senior experienced the great depression, it was quite common for that individual to decrease his/her food intake and this was a personally acceptable behaviour. Therefore, it is possible that seniors in this study may have limited their food intake or consumption due to similar reasons but not perceive this behaviour as a coping strategy and not indicate this on the questionnaire (Wolfe et al, 1996). As well, seniors may not report issues with food or income due social desirability bias and feelings of pride. Consequently, the senior's actual situation may not be reflected in the data.

There were also concerns with the questionnaire itself: a) In the questionnaire a definition of a 'supermarket' was not given for question 30, and may have caused problems for some seniors when answering this question and b) there were some questions that could be rephrased to avoid the large number of 'missing' as seen in Table 8. These questions included 17, 20, 22 and 24. These questions asked seniors "If you do not buy" a certain food please indicate the reasons why. Since, most seniors will buy these foods sometimes, a better approach to these questions could have been "when you do not buy" these foods. Rephrasing these questions may help to provide fewer missing responses. There were two questions relating to buying food products that were not addressed and these included "Do you buy (milk and grain products) when you go to the grocery store?" This would have provided additional information on how often seniors would buy these food products. d) Another question that was not asked pertained to availability of a variety of foods from the meat and alternatives group. The availability and variety of all other food groups were addressed in the questionnaire. e) In the questionnaire, the minimum number of servings for vegetables and fruit and grain products (as suggested by Canada's Food Guide to Healthy Eating) was not used when asking seniors about the servings they ate daily.

This study used a previously validated question from the Quandt and Rao study (1999) which instead asked if seniors ate two servings from each of the food groups. f) Questions 25 through 29 addressed seniors consuming at least two servings from the four food groups. Most seniors indicated that they were consuming foods from the four food

groups; however there may have been some limitation with the results due to the design of these questions. Seniors were asked to think back to what they ate yesterday, but was yesterday representative of their usual dietary intake and therefore is it a reflection of their true food security situation? An example of a serving was provided to help seniors answer those questions as accurately as possible. However, there may also be some error due to the senior's interpretation of a serving size for foods that were not provided as an example with the question. g) In this study, all questions were close-ended. This can be a limitation as it does not allow the participant to elaborate on their choice, thus a true reflection of the food insecurity situation they may be experiencing may not be captured.

The data can only reflect the food security situation for those seniors similar to respondents in this study in Economic Zone 17 in the province. Limitations in the sample obtained limit the generalizability of the findings.

Chapter 6

Summary, Conclusions and Recommendations

6.1 Summary

This study examined several factors that can affect food security among rural Newfoundland seniors. These included income, health, mobility, transportation, social support, availability of food and access to nutrition programs. This group of seniors reported that overall they were food secure although unfortunately a small percentage of subjects identified problems related to food security. Issues that were identified and might put seniors in Area 3 of Economic Zone 17 at an increased risk of food insecurity were that a higher percentage were older seniors, a high number reported that they did not drive, many resided far away from a grocery store and there were no available meal program (MOW's). As well, those seniors who have an income less than $15,000 may be at a greater risk of experiencing food insecurity and many of the subjects fell within this income bracket.

As the conceptual framework describes, food security consists of several components that determine if an individual is food secure. These include food availability, food access and food utilization.

Food availability for this group considered the availability of food in the store and the availability of food assistance programs. Most seniors reported that the food from the four food groups was always available for them to buy. However, there was limited availability of food assistance programs in this study area. Only a few communities within Area 1 had access to meals-on-wheels and Area 2 and 3 had no access to this service. But, all communities had the availability of a grocery delivery service. The problem with the grocery delivery service was that most seniors were unaware that this service existed within their community. Even though food assistance programs may be limited in this rural area, there was no identified need to have such programs in place. As well, all three areas had at least a small convenience store or a small local grocery store that was available for buying groceries if needed.

Income, mobility, transportation and social support influence seniors having access to food. One-third of the seniors questioned were living on an annual income that was below $15,000. However, the low-income cut-off for rural areas for one person is $13,021 and for two people $16,275 (Statistics Canada, 2002). Therefore, it seems that the majority of the rural seniors in this study had a sufficient income to be food secure. Two thirds of the sample were above the low income cut off and this may be explained in part by the educational level of these seniors. Approximately 62% of the population had an education level at grade 9 and above.

Physical mobility was not an issue for most seniors studied. Most were still able to shop for their own food and they did not need assistance when leaving their home. Transportation was not a problem for this group. Nearly all the seniors were driving or could drive. This means that for most seniors this was not a barrier for access to the grocery store.

For those seniors who reported restricted mobility and transportation problems, social support was a contributing factor to those seniors being food secure. These seniors relied on their social network system to either take them grocery shopping or bring their groceries home to them.

Although it is not possible to calculate the respondent's daily nutritional intake from the data available, the responses to the food utilization questions suggest that seniors are consuming at least two servings daily from the four food groups, thus helping to meet their nutrient and energy requirements. This suggests that further investigation regarding the dietary intake of seniors may help to determine if their diet is adequate and if they are meeting the minimal requirements as suggested by Canada's Food Guide to Healthy Eating.

Area 3 in this study had some differences when compared to Areas 1 and 2 that indicate seniors in this area might be at higher risk for food insecurity. Area 3 had more older seniors (85 and over), widows, seniors who could not drive and those with incomes over

$35,000 compared with the other areas. As well, there were a lower number of seniors who did not own a car, but a higher percentage who got a ride with a family member or friend or family or friend brought groceries home to them. Area 3 had a higher number of older seniors' which may help to explain these differences.

The seniors in this study sample were more food secure when compared to the Quandt & Rao study (1999). The Quandt & Rao study was conducted in the USA, where the social safety net is quite different from that of Canada. The Quandt & Rao (1999) study involved an area, which was economically deprived, geographically isolated from urban areas and with above average rates of poverty and unemployment when compared to other rural areas. However, the findings of this study are similar to those of the NPHS (Statistics Canada, 1998/99) and the CCHS (Statistics Canada, 2000/01) who also found that the majority of seniors in this Province are food secure.

Again, it must be noted that a very small percentage of seniors reported not having enough to eat and that some seniors were resorting to coping strategies to help off-set this situation. This suggests that food insecurity may be an issue for some seniors in this region.

Overall, those seniors who are classified as older seniors (75 years and over), live on an income less than $15,000, those who live further away from an urban centre (these seniors most likely have limited resources available to them such as meals on wheels and

only local grocery store) and no social support in the community are more likely to be at higher risk of experiencing food insecurity.

6.2 Conclusions

The seniors in this study reported no problems with availability of food in the grocery store. The majority of seniors who participated in this study appeared to have appropriate resources which included adequate income, vehicle ownership, grocery delivery service and a significant amount of social support to ensure they have access to food. In addition, no problems with food utilization were identified. Overall, the evidence suggests that the majority of seniors within this sample were food secure and no major issues were identified to place these seniors at risk for developing food insecurity. Nevertheless it should be a concern that a small percentage of seniors residing in Economic Zone 17 in the province may have food security issues. Further attention to this group of individuals is important because all individuals in society should have access to adequate, personally acceptable, safe nutritious food.

6.3 Recommendations

There are several recommendations that should be considered to help ensure that food security among this population is maintained. Reassessing the food security situation among seniors in Area 3 within a few years would be beneficial. Area 3 had the most significant difference among the seniors when compared to the other areas. This included

a higher number of older seniors and most seniors who did not drive and relied more on social support. These seniors may be at an increased risk of developing food insecurity in the future.

Repeating this study within another Economic Zone in the province would be important. Since this study cannot be generalized to the entire province, choosing another area would help to determine if seniors are food secure throughout the province. Another approach may be to focus on a specific area that may be at higher risk of experiencing food insecurity such as a more remote rural area in the Province or seniors living alone.

In this study seniors were accessed through church, seniors groups and some medical clinics. However, these seniors may be viewed as very active and outgoing. Strategies to access those seniors who may be less active or housebound may include: asking the public health nurses in Health and Community Services to take questionnaires on their home visits; obtaining access to those seniors who use food banks and a meals-on-wheels program; and/or involving more medical clinics in several other communities.

Although most seniors were food secure in all three Areas in this sample, further nutrition screening within the province may be necessary to identify seniors who may be at risk for poor nutritional health due to food insecurity. Various tools have been developed to assess the food security situation in the population, but these tools have limitations such as being developed for the entire population, as opposed to focusing on a subset, such as

seniors. The development of a food security tool for seniors which addresses the direct and indirect indicators that can influence a seniors' food security situation may help provide a more accurate picture of the food security among this population for the province and Canada.

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APPENDIX A

Letter of Approval From Human Investigative Committee

Memorial
University of Newfoundland

Office of the Dean
Faculty of Medicine
The Health Sciences Centre

September 5, 2003

TO: **Ms. C. Callahan**

FROM: Dr. F. Moody-Corbett, Assistant Dean
Research & Graduate Studies (Medicine)

SUBJECT: Application to the Human Investigation Committee - #02.214

The Human Investigation Committee of the Faculty of Medicine has reviewed your proposal for the study entitled "**The nutritional health of rural seniors: Are they food secure**".

Full approval has been granted for one year, from point of view of ethics as defined in the terms of reference of this Faculty Committee.

For a hospital-based study, it is **your responsibility to seek necessary approval from the Health Care Corporation of St. John's**.

Notwithstanding the approval of the HIC, the primary responsibility for the ethical conduct of the investigation remains with you.

F Moody-Corbett

F. Moody-Corbett, PhD
Assistant Dean

FMC/jjm

cc: Dr. C. Loomis, Vice-President (Research), MUN
Mr. W. Miller, Director of Planning & Research, HCCSJ

APPENDIX B

Letter of Participation In Study

December 7, 2003

Dear Sir or Madam:

I am a graduate student in the Division of Community Health at Memorial University. I am doing a study on Rural Seniors and Food Security as part of the requirements for my degree. The purpose of this study is to describe the experience of seniors in a number of rural Newfoundland communities with respect to food safety and identify factors, which may be associated with food safety and poor nutritional health.

If you are willing to participate in this study you are asked to complete this questionnaire. The questionnaire has 56 questions and takes approximately 20 minutes to complete. However, if you feel that a question may be inappropriate you can choose to leave it blank. Once completed, you can put the questionnaire in the sealed envelope, which has been provided and return it to the person who gave it to you. To ensure privacy no names will be used and all information is confidential. As well, some individuals may need assistance with completing the questionnaire.

If you have any questions you may contact me at 368-4234 or 596-6238 or my supervisor Dr. Doreen Neville at 777-6215. Thank you for consideration.

Thank you,

Cynthia Callahan (Masters Student)
Community Health
Faculty of Medicine
Memorial University of Newfoundland

APPENDIX C

Survey Questionnaire

Survey Questionnaire

Below you will find the questionnaire used in the survey. The questions will be followed with the frequency and then the percentage. Some questions may have skipped, missing and combined data and this will be indicated. Skipped represents a question that did not apply to the respondent and missing represents the participant chose not to answer that question. Asterisk's after some questions will indicate that there were multiple responses to that question. The number of participants recruited for this study was n=144.

Questionnaire for Senior's on their Nutritional Health

Thank you for agreeing to answer this questionnaire. You do not need to place your name on this survey and all your answers are confidential. When you have completed the questionnaire please place in envelope provided and seal. Please tick the box with one answer unless otherwise indicated. Thank you.

Demographics

1. Are you:

❑ Male	42(29.2%)
❑ Female	99(68.7%)
❑ Missing	3(2.1%)

2. Are you:

❑ single	2(1.4%)
❑ married	73(50.7%)
❑ widowed	63(43.8%)
❑ separated/divorced	5(3.5%)
❑ Missing	1(0.6%)

3. How old are you:

❑ 65-74 years of age	75(52.1%)
❑ 75-84 years of age	54(37.5%)
❑ 85 years of age and over	13(9%)
❑ other. Specify age_____	
❑ Missing	2(1.4%)

4. How do you rate your own health? (check one)

❑ excellent	14(9.7%)
❑ very good	55(38.2%)
❑ good	38(26.4%)
❑ fair	34(23.6%)
❑ poor	2(1.4%)
❑ Missing	1(0.7%)

5. Where do you live (check one):

❑ Old Perlican * See Table 2 Indicating Area and Frequency
❑ Bay de Verde
❑ Western Bay
❑ Bay Robert's
❑ Carbonear
❑ Hr.Grace
❑ Heart's Content
❑ Heart's Delight
❑ other_____

6. How long have you lived in this community? (check one)

❑ all your life	66(45.8%)
❑ more than 10 years, but not all your life	63(43.8%)
❑ 5 to10 years	3(2.1%)
❑ 3 up to 5 years	1(0.7%)
❑ 1 up to 3 years	2(1.4%)
❑ 6 months up to one year	2(1.4%)
❑ less than 6 months	0
❑ Missing	7(4.8%)

7. Do you live in (check one):

❑ a house that you own	125(86.8%)
❑ a house you rent	0
❑ an apartment that you own	3(2.1%)
❑ an apartment that you rent	4(2.8%)
❑ a mobile home or trailer	0
❑ a room and board, rooming house, lodging home, boarding house	1(0.7%)
❑ no residence	0
❑ other _____	0
❑ Skip	4(2.7%)
❑ Missing	7(4.9%)

8. How much school have you completed? (please check the highest level of education received):

❑ never attended school or left before completing 1st grade	0
❑ 1st, 2nd, 3rd, or 4th grade	15(10.4%)
❑ 5th, 6th, 7th, or 8th grade	37(25.7%)
❑ 9th, 10th, or 11th grade	54(37.5%)
❑ high school graduate (high school diploma or equivalent)	18(12.5%0
❑ some college but no degree	17(11.8%)
❑ college degree or higher	1(0.7%)
❑ Missing	2(1.4%)

9. What is the best estimate of the total income of all household members from all sources in 2001 before taxes and deductions: (check one)

❑ $15,000 or less	50(34.7%)
❑ $15,001-$25,000	37(25.7%)
❑ $25,001-$35,000	14(9.7%)
❑ $35,001 and above	17(11.8%)
❑ Missing	26(18.1%)

Social Support

10. How many people live in your home? (check one)

❑ 1, just you, live alone→ **go to question 12**	41(28.5%)
❑ 2	74(51.4%)
❑ 3	16(11.1%)
❑ 4	5(3.5%)
❑ 5	3(2.1%)
❑ 6 or more	2(1.3%)
❑ Missing	3(2.1%)

11. Who are the other people who live in your home? (please check **all that apply**): *

❑ your husband/wife	68(47.2%)
❑ your child or children	22(15.3%)
❑ your grandchild or grandchildren	9(6.3%)
❑ your son/daughter-in-law	12(8.3%)
❑ your grandson/granddaughter-in-law	1(0.7%)
❑ your brother(s) or sister(s)	2(1.4%)
❑ your parent or parents	2(1.4%)
❑ other relatives	0
❑ friend(s)	0
❑ boyfriend/girlfriend	0
❑ other → please describe_____	0
❑ Missing	0

12. **If you live alone**, how often do you get together with neighbours, friends, or relatives? (check one)

❑ every day	15(10.4%)
❑ every other day	9(6.3%)
❑ two or three times a week	12(8.3%)
❑ about once a week	3(2.1%)
❑ two or three times a month	2(1.4%)
❑ about once a month	0
❑ less than once a month	1(0.7%)
❑ Skipped	100(69.4%)
❑ Missing	2(1.4%)

13. Where do you usually go to socialize outside of your home? *

❑ local community centre	39(27.1%)
❑ friend's house	53(36.8%)
❑ visiting family	78(54.2%)
❑ attending church functions	84(58.7%)
❑ other _____	36(25.2%)

Access to Food

14. Some people are able to grow a lot of the food they eat. How much of the food you eat do you or your family grow yourself? (check one)

❑ don't grow any food	106(73.6%)
❑ grow a little of the food you eat	24(16.7%)
❑ grow a fair amount of the food you eat	10(6.9%)
❑ grow a great deal of the food you eat	1(0.7%)
❑ Missing	3(2.1%)

15. When you go to the grocery store, does the store offer a variety of fruit (either canned, fresh, or frozen fruit) for you to buy? (check one)

❑ always	127(88.2%)
❑ sometimes	13(9%)
❑ never	1(0.7%)
❑ Missing	3(2.1%)

16. Do you buy fruit when you go to the grocery store? (check one)

❑ always	93(64.6%)
❑ sometimes	50(34.7%)
❑ never	1(0.7%)
❑ Missing	0

17. If you do not buy fruit, please check boxes to describe the reasons why you do not? (You can check more than one box) *

❑ too expensive to buy	14(9.7%)
❑ don't like to eat fruit	0
❑ fresh fruit not available and I only like fresh fruit	2(1.4%)
❑ do not like to eat canned/frozen fruit	5(3.5%)
❑ spoils quickly	10(6.9%)
❑ no fruit available (either fresh, canned or frozen)	1(0.7%)
❑ Missing	120(83.3%)

18. When you go to the grocery store, does the store offer a variety of vegetables (either canned, frozen, or fresh vegetables) for you to buy? (check one)

❑ always	129(89.6%)
❑ sometimes	10(6.9%)
❑ never	2(1.4%)
❑ Missing	3(2.1%)

19. Do you buy vegetables when you go to the grocery store? (check one)

❑ always	96(66.7%)
❑ sometimes	45(31.2%)
❑ never	0
❑ Missing	3(2.1%)

20. If you do not buy vegetables, please check boxes to describe the reasons why you do not? *

❑ too expensive to buy	6(4.2%)
❑ fresh vegetables not available and I only like fresh vegetables	2(1.4%)
❑ do not like to eat canned/frozen vegetables	5(3.5%)
❑ spoils quickly	9(6.3%)
❑ no vegetables available (either fresh, canned or frozen)	0
❑ Missing	126(87.5%)

21. When you go to the grocery store, does the store offer a variety of milk (either fresh milk, canned milk or skim milk powder) for you to buy? (check one)

❑ Always	140(97.2%)
❑ Sometimes	3(2.1%)
❑ Never	0
❑ Missing	1(0.7%)

22. If you do not buy milk, please check boxes to describe the reasons why you do not? (You can check more than one box). *

❑ too expensive to buy	4(2.8%)
❑ don't like to drink milk	8(5.6%)
❑ not available to buy	1(0.7%)
❑ spoils quickly	2(1.4%)
❑ I think it may cause constipation	2(1.4%)
❑ Missing	129(89.6%)

23. When you go to the grocery store, does the store offer a variety bread products such as; bread, cereals, crackers, rice etc? (check one)

❑ always	138(95.8%)
❑ sometimes	3(2.1%)
❑ never	0
❑ Missing	3(2.1%)

24. If you do not buy bread, cereals, crackers, pasta and rice, please check boxes to describe the reasons why you do not? (You can check more than one box). *

❑ too expensive to buy	5(3.5%)
❑ don't like to eat bread, cereals, crackers or rice	0
❑ the grocery store does not have different varieties of bread, cereals, crackers and rice available	4(2.8%)
❑ spoils quickly	1(0.7%)
❑ Missing	136(94.4%)

Now think back to what YOU ate yesterday

25. Did you eat at least 2 servings of any fruits, vegetables, and juices yesterday? (e.g.; 1 serving includes: one piece of fresh fruit, or ½ cup of canned fruit)

❑ Yes	123(85.4%)
❑ No	15(10.4%)
❑ Don't remember	4(2.8%)
❑ Missing	2(1.4%)

26. Did you eat at least 2 servings of any Bread and Cereals (also include, tortillas, spaghetti, rice, macaroni, patotoes) yesterday? (e.g.; 1 serving includes: 1 slice of bread, ½ cup of cereal, or 1 cup of rice or pasta)

❑ Yes	141(97.9%)
❑ No	2(1.4%)
❑ Don't remember	0
❑ Missing	1(0.7%)

27. Did you eat at least 2 servings of dairy products (such as: milk, cheese yogurt, cottage cheese or ice-cream) yesterday? (e.g.; 1 serving includes: 1 cup of milk, 2 slices of cheese, or ¾ cup of yogurt)

❑ Yes	104(72.2%)
❑ No	36(25%)
❑ Don't remember	1(0.7%)
❑ Missing	3(2.1%)

28. Did you eat at least 2 servings of Meat, Fish, or Poultry (also include eggs, nuts, and dry beans) yesterday? (e.g.; 1 serving includes: a piece of meat the size of a deck of cards, 1 egg, or 1 cup of beans)

❑ Yes	125(86.8%)
❑ No	16(11.1%)
❑ Don't remember	0
❑ Missing	3(2.1%)

Transportation

29. Do you find getting where you need to go (such as the grocery store is usually:

❑ a major problem	2(1.4%)
❑ a problem	8(5.6%)
❑ a small problem	6(4.2%)
❑ no problem	124(86.1%)
❑ Missing	3(2.7%)

30. How far is it to the nearest supermarket? (check one)

❑ less than one mile	75(52.1%)
❑ 1 to 3 miles	36(25%)
❑ 3 up to 6 miles	14(9.7%)
❑ 6 up to 10 miles	12(8.3%)
❑ 10 miles or more	7(4.9%)
❑ Missing	0

31. How is MOST of your grocery shopping done? *

❑ on foot	5(3.5%)
❑ using your own car	93(64.6%)
❑ using public transportation	0
❑ using a borrowed car	0
❑ get a ride with a friend or relative	31(21.5%)
❑ using a taxicab or hired car service	1(0.7%)
❑ the grocery store delivers	2(1.4%)
❑ using the food shopping van or bus from the place where you live, the Seniors Center, etc.	0
❑ friend/relative/aide brings groceries to you home	9(6.3%)
❑ don't shop for food at all	3(2.1%)
❑ other →please describe_____	3(2.1%)
❑ Missing	3(2.1%)

Food Shopping

32. How often do you buy groceries? *

❑ less than once a week	11(7.6%)
❑ once a week	82(56.9%)
❑ once in two weeks	30(20.8%)
❑ once a month	7(4.9%)
❑ other_____	15(10.4%)
❑ Missing	3(2.1%)

33. When you buy your groceries, how much do you spend each time? *

❑ $0-$49	33(22.9%)
❑ $50-$99	61(42.4%)
❑ $100-$199	28(19.4%)
❑ $200-$ 299	2(1.4%)
❑ $300 or more	5(3.5%)
❑ Missing	13(9%)
❑ Combined categories	2(1.4%)

34. Who does MOST of the shopping in your household? (check one)

❑ you do it	93(64.6%)
❑ other household member	30(20.8%)
❑ friend/relative living outside your home does it	6(4.2%)
❑ homemaker's aide does it	1(0.7%)
❑ you do it with others	7(4.9%)
❑ other→ please describe _____	4(2.7%)
❑ Missing	3(2.1%)

35. Where does your household buy MOST of its food? (What type of store?) *

❑ supermarkets	126(87.5%)
❑ neighborhood groceries (small grocery store)	15(10.4%)
❑ convenience stores (seven-eleven, corner store)	2(1.4%)
❑ speciality stores (bakeries, vegetables stand, meat market)	2(1.4%)
❑ food co-ops, farmer's market	1(0.7%)
❑ food warehouse, bulk/volume discount store	2(1.4%)
❑ don't shop for food at all	1(0.7%)
❑ Missing	3(2.1%)

36. Are you able to shop for your own foods?

❑ Yes	132(91.7%)
❑ No	9(6.3%)
❑ Sometimes	1(0.7%)
❑ Missing	2(1.3%)

37. Are you able to leave your home without help from another person?

❑ Yes	128(88.9%)
❑ No	14(9.7%)
❑ Missing	2(1.4%)

38. Are you able to drive a car by yourself?

❑ you drive a car yourself now	74(51.4%)
❑ you are able to drive, but you actually drive very little	11(7.6%)
❑ you don't drive	55(38.2%)
❑ Missing	4(2.8%)

Service Use

39. Does the local grocery store offer a home delivery service?

❑ YES (if yes state the fee $_____)	46(31.9%)
❑ NO	81(56.3%)
❑ Missing	17(11.8%)

40. If you use this service, how often? (check one)

❑ more than once a week	0
❑ once a week	4(2.8%)
❑ once in two weeks	1(0.7%)
❑ once a month	4(2.8%)
❑ never use this service	30(20.8%)
❑ Missing	25(17.4%)
❑ Skip Question	80(55.5%)

41. Would you pay extra to have groceries delivered? (check one)

❑ Yes	9(6.3%)
❑ Yes, if needed	68(47.2%)
❑ No	44(30.5%)
❑ Missing	23(16%)

42. Would you use a grocery delivery service where volunteers brought groceries to your home? (check one)

❑ Yes	9(6.3%)
❑ Yes, if needed	82(56.9%)
❑ No	29(20.1%)
❑ Missing	24(16.7%)

43. Have you ever received meals that were already prepared such as, home-delivered meals or used a meal-on-wheels program? (check one)

❑ Yes, now	1(0.7%)
❑ Yes in the past, but not now	2(1.4%)
❑ Never (skip to question 46)	136(94.4%)
❑ Missing	5(3.5%)

44. Have you ever had any of the following problems using the home delivered meals program? (please check all that apply)

❑ you never had any problems	2(1.4%)
❑ not liking the foods delivered by the program	0
❑ not being able to eat the foods served because of medical problems	0
❑ not feeling comfortable having someone bring you food	0
❑ having to do too much preparation before you can eat (e.g., defrosting, heating, re-heating)	0
❑ meal cost is too high	0
❑ not getting food on weekends	0
❑ other→ please describe _____	0

45. Do (did) you always eat meals that are (were) delivered? (check one)

❑ you usually eat all of the meal	3(2.1%)
❑ you usually eat some of the meal	0
❑ you receive meals but only sometimes eat them	0
❑ you receive meals but rarely eat them	0

45. Why have you never received meals-on-wheels? *

❑ program not available	28(19.4%)
❑ you never needed them	112(77.8%)
❑ you do not feel comfortable applying for the program	1(0.7%)
❑ the cost of the meal is high	0
❑ you applied but you were not eligible to get the meals	0
❑ there is no space available at the program	0
❑ you do not like the food served by the program	0
❑ you do not like other people coming into your home	0
❑ other→ please describe _____	3(2.1%)
❑ Missing	10(6.9%)

Strategies to Cope with Food Security

47. Do you ever have to choose between buying food and buying medications? (check one)

❑ Yes-- in the past month	0
❑ Yes – in the past 6 months, but not in the past month	4(2.8%)
❑ Yes, but not in the past 6 months	1(0.7%)
❑ No, never	135(93.8%)
❑ Missing	4(2.7%)

48. Do you ever have to choose between buying food and paying your utilities bills? (check one)

❑ Yes-- in the past month	2(1.4%)
❑ Yes – in the past 6 months, but not in the past month	2(1.4%)
❑ Yes, but not in the past 6 months	1(0.7%)
❑ No, never	136(94.4%)
❑ Missing	3(2.1%)

49. Which of these statements best describes the food you ate in the last month? (check one)

❑ enough of the kinds of food you want to eat	131(91.0%)
❑ enough but not always the kinds of food you want to eat	10(6.9%)
❑ sometimes not enough to eat	1(0.7%)
❑ often not enough to eat	0
❑ Missing	2(1.4%)

50. In the last 12 months has anyone in your household done any of the following **because there wasn't enough food to eat**, or you thought that soon you might not have enough food? (please check **all that apply**): *

❑ I/we are never in this situation	124(86.1%)
❑ borrow food from friend or family	1(0.7%)
❑ eat at the homes of friends or relatives	2(1.4%)
❑ take money out of savings to buy food	3(2.1%)
❑ borrow money to buy food	3(2.1%)
❑ buy food on credit	1(0.7%)
❑ work extra hours or jobs	0
❑ buy or prepare meals that cost less	5(3.5%)
❑ serve smaller meals	0
❑ eat at a senior community meal program	0
❑ apply to a program to get meals delivered to your home	0
❑ get food from a food bank, food hamper, food pantry, church food bank or from charity	0
❑ ask restaurants for leftovers	0
❑ eat sample foods at grocery stores	0
❑ other→ please describe _____	2(1.4%)
❑ Missing	12(8.3%)

51. In the last 12 months, did you ever cut the size of your meals or skip meals because there wasn't enough money for food?

❑ Yes	2(1.4%)
❑ No (skip question 52)	133(92.4%)
❑ Don't know (skip question 52)	1(0.7%)
❑ Missing	8(5.5%)

52. How often did this happen in the last 12 months?

❑ almost every month	0
❑ some months but not every month	2(1.4%)
❑ only 1 or 2 months	0
❑ don't know	0
❑ Skip Question	134(93.1%)
❑ Missing	8(5.5%)

53. Have there been days when you did not eat anything at all? (check one)

❑ Yes-- in the past month	1(0.7%)
❑ Yes – in the past 6 months, but not in the past month	0
❑ Yes, but not in the past 6 months	1(0.7%)
❑ No, never (skip question 54)	134(93.1%)
❑ Missing	8(5.5%)

54. Why did you eat nothing at all on these days? (check all that apply): *

❑ not hungry	0
❑ not enough money for food	0
❑ had no food in the house	0
❑ unable to shop	0
❑ could not prepare food	0
❑ too sick or ill to eat	1(0.7%)
❑ too unhappy or depressed to eat	0
❑ no one to eat with	0
❑ your doctor told you not to eat	1(0.7%)
❑ other→ please describe_____	0
❑ Missing	8(5.6%)
❑ Skip question	133(92.4%)

55. Where did you get this survey?

❑ at church	85(59%)
❑ attended group meeting at Church (UCW/ACW/CWA)	0
❑ Senior's Group	38(26.4%)
❑ Doctor's Clinic	19(13.2%)
❑ Public Health Nurse	0
❑ other_____	1(0.7%)
❑ Missing	1(0.7%)

56. Please tell me how this survey was filled out: (check one)

❑ someone interviewed you; she or he asked you the questions and you gave the answers	17(11.9%)
❑ you did it yourself; you read the questionnaire and checked the answers yourself	109(75.7%)
❑ someone read you the questions and you checked the answers on your copy	12(8.2%)
❑ you read the interview with the interviewer and pointed to the answers while she or he asked questions	3(2.1%)
❑ Missing	3(2.1%)

Thank you for completing this questionnaire. I really appreciate your help. If you would like a summary of the results, please tick a box below and a summary will be sent to the president of your group, public health nurse or the minister/priest of the community where you are located.

I would like a summary of the results:

❑ Yes (44.4%)

❑ No (30.6%)

❑ Did not indicate (25%)