First Nations Food, Nutrition and Environment Study (FNFNES):

Results from Webequie First Nation, Ontario

University of Northern British Columbia
Université de Montréal
Assembly of First Nations

Draft October 25, 2013

“Healthy Environment and Healthy Foods for Healthy First Nations”

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The information and opinions expressed in
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do not necessarily reflect the official views of Health Canada.

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GLOSSARY

The following abbreviations and terms are used in this report:

Abbreviations:

- FN= First Nations
- HH= household
- n= number of participants or number of food, water, or hair samples analyzed
- min= minimum or lowest value
- max= maximum or highest value
- TF= traditional food

Definitions of terms:

- **Aesthetic objective**: The level of substances in drinking water or characteristics of drinking water (such as taste, odour, or colour) that can affect its acceptance by consumers. Aesthetic objective levels are below levels considered to be harmful to health.
- **Background level**: The level of a chemical (or other substances) that is normally found in the environment.
- **Body Mass Index (BMI)**: Calculated by dividing the weight (in kilograms) by the square of the height (in metres), this index is used to define normal weight (between 18.5-24.9), overweight (25-29.9) and obesity (30 and over). Overweight and obesity are degrees of excess body weight, carrying increased risks of developing health problems such as diabetes and heart disease.

- **Ecozone**: An area defined by the distribution patterns of plants, animals, geographical characteristics and climate.
- **Food Security**: Access by all people at all times to enough food for an active, healthy life. It can be estimated by questionnaire.
- **Guideline value**: In Canada, guideline values are set for the protection of environmental and human health as well as for the protection of aquatic life. For example, there are guidelines for chemicals in human tissues (such as blood and hair), animal tissues (fish, mammals and birds), drinking water, recreational water, and soil. These values are based on the most current scientific data available for the parameter of interest.
- **Maximum Acceptable Concentration (MAC)**: The concentration or level of a particular substance at which exposure may cause harmful effects on health.
- **Median**: A statistical term used to describe the middle value obtained when all values in a dataset are placed in numerical order; at most half the observations in a dataset are below the median and at most half are above the median.
- **Mean (arithmetic)**: A statistical value obtained by adding all the values in a data set and dividing by the number of observations; another word for “average”.
- **Surface water**: All water situated above-ground (for example, rivers, lakes, reservoirs, streams, seas, etc).
- **Tolerable Daily Intake or Provisional Tolerable Daily Intake**: is an estimate of the amount of a substance in air, food or drinking water that can be absorbed or consumed over a lifetime without appreciable health

risk. TDIs or PTDIs are calculated on the basis of laboratory toxicity data to which uncertainty factors are applied.

- **Water treatment plant**: The facility that treats water so that it is clean and safe to drink.
- **Water treatment system**: Includes all water delivery components such as the raw water intake, water treatment plant, distribution system, hydrants, etc.
- **µg/g**: Micrograms (1 millionth or 1/1,000,000 of a gram) per gram; in the mercury in hair results, this measurement represents the weight of mercury measured per gram of hair. In the food contaminant results, this represents the weight of a contaminant per gram of food.
- **µg/L**: Micrograms (1 millionth or 1/1,000,000 of a gram) per liter; found in the drinking water results, this measurement represents the weight of trace metals measured per litre of water.
- **ng/g**: Nanograms (1 billionth or 1/1,000,000,000 of a gram) per gram; found in the food contaminant results, this measurement represents the weight of a contaminant measured per gram of food.
- **ppm**: Parts per million; this is approximately equivalent to one drop of water diluted into 50 liters (roughly the fuel tank capacity of a small car).
- **ppb**: Parts per billion; this is approximately equivalent to one drop of water diluted into 250- 55 gallon containers.
- **pg/kg/day**: Picograms (1 trillionth or 1/1,000,000,000,000 of a gram) per kilogram per day; in the food contaminant results, this represents the weight of contaminants per kilogram body weight that is being consumed per day. This value is used for risk assessment.

EXECUTIVE SUMMARY

In recent years, First Nations have been concerned about the impacts of environmental pollution on the quality and safety of harvested traditional foods. Although some studies have been carried out in collaboration with First Nations, very little is known about the diet of First Nations or about the level of contaminants that may be present in traditional foods. This study attempts to fill the gap in knowledge about the eating habits and food security of First Nations peoples living on-reserve, south of the 60th parallel. In addition, baseline information on human and veterinary pharmaceuticals in surface waters, such as where fish are being harvested or where water is being taken for drinking purposes, is being collected.

This study, called the First Nations Food, Nutrition and Environment Study (FNFNES) is being implemented region by region over a 10-year period. Data collection was conducted in the fall of 2011 and 2012 in 18 randomly selected First Nation (FN) communities in Ontario (ON). Individuals 19 years of age and over, living on-reserve and who self-identified as First Nations were invited to participate in the study. This report documents the data collected from Webequie First Nation. A regional report presenting the aggregated results for all 18 First Nations in Ontario will be published, with a print copy mailed to your First Nation and made available electronically on the FNFNES website (www.fnfnes.ca).

The FNFNES includes five components:

1) Household interviews to collect information on dietary patterns, lifestyle and general health status, environmental concerns, and food security
2) Drinking water sampling for trace metals
3) Surface water sampling for pharmaceuticals
4) Hair sampling for exposure to mercury
5) Traditional food sampling for contaminant content

This study was guided by the principles of Ownership, Control, Access and Possession (OCAP^{TM}), the Canadian Institutes of Health Research Guidelines, “Health Research Involving Aboriginal peoples” and the Tri-Council Policy Statement, “Ethical Conduct for Research Involving Humans”. Ethical approval has been granted by the Research Ethics Board of Health Canada, the University of Northern British Columbia and the Université de Montréal.

Results

There were 98 participants (one participant per household) from Webequie First Nation (53 women and 45 men). From the 18 participating First Nations communities in Ontario, there were a total of 1433 participants (899 women and 534 men).

The average age of Webequie First Nation participants was 40 years old for women and 44 years old for men. The median number of years of school completed in Webequie First Nation was nine years and 41% of participants were on social assistance.

Overall, the rates of excess body weight were higher than in the general Canadian population, which leads to increased risk of diabetes and heart disease. In Webequie First Nation, 42% of participants were overweight and 34% were obese. One third (33%) of Webequie First Nation participants reported having diabetes.

The amount of traditional food consumed in Webequie First Nation when averaged over all days of the year, was 140 grams (approximately half a cup) per person, per day. Walleye, moose, and whitefish are the most popular traditional foods eaten in Webequie First Nation. Almost all families (95%) reported that they would like to have more traditional food. However, multiple barriers to increased use were reported including financial costs of harvesting and lack of a hunter in the household.

The majority of families in Webequie First Nation are food insecure; 52% of households are moderately food insecure and 23% are severely food insecure. The high cost of food is a contributing factor to high food insecurity and survey results showed that the cost of groceries per week to feed a family of four in Webequie First Nation ($361) was almost double compared to both Ottawa ($205) and Thunder Bay ($201). This indicates that financial constraints attributed to low household income, along with high food prices may be the main reasons for the high levels of food insecurity in this community.

In terms of overall diet quality, First Nations adults in Ontario do not meet the amounts and types of food recommended in Canada's Food Guide. The number of food guide servings for the Meat and Alternatives group is higher than recommended. For the other three food groups (Milk and

Alternatives, Vegetables and Fruit, and Grain Products), intakes are lower than recommended, particularly among women. Many nutrients that are needed for good health and prevention of disease, including fibre, vitamin A, vitamin D, vitamin C, vitamin B6, calcium, and magnesium, are at risk of insufficient intake.

Dietary quality was much improved on days when traditional foods were consumed, as traditional foods are important contributors of protein, iron, zinc, vitamin D, and other essential nutrients. When only market food was consumed, intakes of saturated fat (the type of fat associated with heart disease) and salt were significantly higher than when traditional food was included in the diet. Overall, fat and salt consumption was often too high.

At the time of the survey, Webequie First Nation reported that the water treatment plant was operational. No boil water advisories were identified.

In Webequie First Nation, tap water samples from 20 participants' homes were collected and analyzed on-site for chlorine, pH and temperature. Chlorine was detected in all samples. The pH measurements for most water samples were within the optimal range. Temperature measurements showed that two of the 20 tap water samples collected were above 15°C with a maximum value of 16.8°C.

Tests for trace metal levels that would affect the quality of drinking water with respect to human health found all values of flushed samples to be below guideline levels in all 20 households which were sampled. Tests for levels of trace metals that would affect the taste, colour or smell of the water also found elevated aluminum levels in nine homes. The levels found would pose no threat to health.

A total of four surface water samples were collected to test for 42 pharmaceutical products. Low levels of four pharmaceuticals (atenolol, caffeine, cimetidine, and ketoprofen) were detected in the surface water samples collected near Webequie First Nation. These low levels should not be a concern for human health.

Mercury was measured in hair samples collected from 27 participants from Webequie First Nation (749 participants in Ontario). The average hair mercury concentration among study participants in Webequie First Nation was within acceptable levels for most participants. Six adults from

Webequie First Nation had an elevated hair mercury level in at least one of the three hair segments measured (4 females in child-bearing years, 1 older man and 1 older woman). Mercury concentrations from 16 hair samples across Ontario were above Health Canada guidelines. Letters were sent to these individuals explaining the results and suggestions on how to decrease mercury exposure.

A total of 105 traditional food samples representing 29 different food species were collected from Webequie First Nation for contaminant analysis. Results showed levels of contaminants typically found in Canada, with no safety concern associated with eating traditional food at the current rate. However, some food samples were found to have higher levels of metals. For example, some samples of Canada goose and grey partridge contained lead, most likely from lead shot used in hunting. People who eat these foods frequently may have increased risk of lead exposure. Cadmium was found to be present in moose kidney samples, and frequent consumption could lead to excess cadmium in the body. Some fish, such as walleye/pickerel, were found to have relatively high mercury concentrations and eating them often can result in increased risk of mercury exposure.

Thus far, this study has been a valuable tool in addressing the gaps in knowledge about the foods consumed, including traditional foods, and the environmental contaminants to which First Nations in Ontario are exposed through food and water. It should be noted that this is the first study of this type to be done on a regionally representative scale across the country. The data collected will serve as a benchmark for future studies to determine if changes in the environment are resulting in an increase or decrease in concentrations of chemicals of concerns and how diet quality will change over time.

For more information, please contact:

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SUMMARY OF RESULTS FOR WEBEQUIE FIRST NATION

First Nations Food, Nutrition and Environment Study (FNFNES)

Ontario 2011-2012 Draft Results

University of Northern British Columbia
Université de Montréal
Assembly of First Nations

Draft Summary of Results: Webequie First Nation, Ontario

What was the study about?

A study was conducted in **18 ON First Nations** communities during the fall of 2011 and 2012 to find out:

- What kinds of traditional and market foods are people eating?
- How well are people eating?
- Is the water safe to drink?
- Are the levels of pharmaceuticals in the water safe?
- Are people being exposed to harmful levels of mercury?
- Is traditional food safe to eat?

Who participated?

- 1433 adults from Ontario.

In Webequie First Nation:

- 98 adults (53 women and 45 men)
- average age: 40 years old (women) 43 years old (men)

Which communities participated?

- Asubpeeschoseewagong Netum Anishinabek
- Wauzhushk Onigum Nation
- Kitchenuhmaykoosib Inninuwug First Nation
- Webequie First Nation
- Fort William First Nation
- Kingfisher Lake First Nation
- Sagamok Anishnawbek First Nation
- Martxen Falls First Nation
- Atikameksheng Anishnawbek
- Garden River First Nation
- Webequie First Nation
- Fort Albany First Nation
- Attawapiskat First Nation
- Moose Cree First Nation
- Aamjiwnaang First Nation
- Munsee-Delaware Nation
- Six Nations of the Grand River
- Mohawks of Akwesasne

What kinds of traditional and store-bought foods are people eating?

Top 5 traditional and store-bought foods eaten in Webequie First Nation:
(based on grams per person per day)

Top traditional foods:	Top store-bought foods:
1. Walleye/pickerel	1. Cereal
2. Moose	2. Soup
3. Whitefish	3. Pasta
4. Canada Geese	4. Potatoes
5. Northern pike	5. Chicken





Thank you to everyone who participated!

In Webequie First Nation: 42% of adults are overweight and 34% are obese.

In Webequie First Nation: 33% of adults have diabetes.

75% of Webequie First Nation households experience food insecurity.

- **80%** said that they could not afford to eat balanced meals.
- **72%** worried that their food would run out before they could buy more.
- **71%** said that food they bought didn't last and there wasn't any money to buy more.

Average weekly cost of groceries to feed healthy meals to a family of four:

Webequie First Nation 

Thunder Bay

How well are First Nations in Ontario eating compared to the recommendations?

Food Group	Gender	Current intake by First Nations In Ontario	Canada's Food Guide Recommendations
		Food Guide servings per day	
Vegetables & Fruits	men	4	7 - 10
	women	3	7 - 8
Grain Products	men	6	7 - 8
	women	5	6 - 7
Milk & Alternatives	men	1	2 - 3
	women	1	2 - 3
Meat & Alternatives	men	4	3
	women	3	2

The intake of 3 out of the 4 food groups is below what is needed for good health. The high intake of meat might contribute to higher fat intake.

Recommendations:

- Eat more vegetables and fruit, including wild plants and berries.
- Choose whole grain cereals, baked bannock, rice, and pasta more often.
- Drink milk or beverages fortified with calcium and vitamin D every day.
- Choose leaner meats, and wild game and fish.*

* For fish consumption guidelines, contact the Sport Fish Contaminant Monitoring Program (1-800-820-2716) or find up-to-date information online at www.ontario.ca/fishguide.

Is the water safe to drink?

The results from the 20 tap water samples collected from Webequie First Nation showed that 9 households had elevated levels of aluminum but this is not a health concern. Two households had elevated levels of lead but levels were normal after a 5 minute flush. It is recommended to run the tap water until the water is cold before drinking it or using it for cooking.

Are the levels of pharmaceuticals in the water safe?

Low levels of atenolol (heart medication), caffeine (from pain relief medication and tea/coffee), cimetidine (ulcer medication), and keto-profen (arthritis medication) were found in the surface water samples collected from Webequie First Nation. However, the levels are not harmful to human health.

Are people being exposed to harmful levels of mercury?

A total of 27 hair samples were collected from Webequie First Nation. All but 6 samples had levels of mercury that were below Health Canada's guideline normal acceptable range. Letters were sent to these participants (5 women and 1 man) with suggestions on how to reduce their exposure to mercury.

Is traditional food safe to eat?

A total of 105 traditional food samples were collected from Webequie First Nation for contaminant analyses.

Traditional food is safe to eat and healthy for you.

Recommendations:

- To limit mercury exposure, choose trout more often. Maintain the current monthly consumption rate for fish with elevated mercury (walleye, northern pike, sturgeon) or about 4 cups in total for adult females and 7 cups for adult men. Consult the Sport Fish Contaminant Monitoring Program for specific advice at (416-327-6816, 1-800-820-2716, or sportfish.moe@ontario.ca).
- Do not eat more than half a cup of moose kidney per month.
- Use steel instead of lead shot. Eating wild game contaminated by lead shot can be harmful to the brain, especially in children.

Key Results For All Participating First Nations in Ontario:

1. Diet quality is overall inadequate but is improved when traditional food is consumed.
2. Overweight/obesity, smoking, and diabetes are major issues.
3. Household food insecurity is a major issue.
4. Water quality, as indicated by the trace metals and pharmaceutical levels, is overall satisfactory, but close monitoring is warranted as water sources and water treatment vary greatly.
5. Mercury exposure, as measured in hair samples and calculated through dietary estimates, is not a serious health concern.
6. Chemical contamination of traditional food is not worrisome, but it is important to have the data from this study for future monitoring of trends and changes.

More information can be found on the FNFNES website: www.fnfnes.ca

If you have any questions about these results or the project itself, please contact:
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INTRODUCTION

Traditional food is nutritionally, culturally, and economically important for First Nations peoples. However, as people eat less traditional food and more store-bought food, there is a risk of a decrease in diet quality, which could lead to an increase in nutrition-related health problems such as anemia, heart disease, obesity, osteoporosis, cancer, infections, diabetes, and tooth decay (Kuhnlein and Receveur, 1996). Currently, there is a move away from eating traditional foods that has been attributed to a multitude of factors including but not limited to: loss of control over traditional territories; ecosystem degradation and changes in access to and availability of foods as a result of human activities (forestry, fishing, mining, hydro, farming, urban growth); climate change; change in lifestyles; loss of traditional knowledge; and economic constraints that limit ability to participate in harvesting.

Increasing industrialization in the last 60 years has led to global distribution of pollutants, now evident in all ecosystems. First Nations communities from different geographical areas in Canada face their own unique environmental problems due to the nature of point sources of environmental pollution, the effects of climate change and the degree to

which their diet is obtained from the local environment. It has been suggested that major health problems (such as cancer, diabetes, and low infant weight) may also be related to the amount of chemical contaminants in the environment (Hectors, 2011; Lee et al, 2011; Institute of Medicine, 2007). However, the risks and benefits of traditional food must be better understood before recommendations can be made. Unfortunately, both the nutritional composition of the average diet of most First Nations and the levels of contaminants in their traditional foods are largely unknown.

Although there have been a number of dietary studies conducted in First Nations communities since the 1970s that provide a general understanding of the types of foods consumed by some First Nations on reserves, research to date has not succeeded in providing reliable regional information on First Nations' food and nutrient intake and food–related exposures to environmental hazards. This gap is targeted by this study titled the "First Nations Food, Nutrition and Environment Study (FNFNES)".

The main objectives of this 10-year study are to provide reliable information on First Nations' food and nutrient intake, and food and water-related exposures to environmental contaminants from 100 First Nations

communities across Canada. The goal of this study is to provide information needed for the promotion of healthy environments and healthy foods for healthy First Nations. Results of this study will be useful for targeting dietary advice and guidance on food intake for First Nations. The information on exposure to environmental contaminants is also essential for First Nations as a monitoring tool at the community level. Results of this study are expected to empower communities to make informed decisions to address and decrease health risks including those related to the environment.

FNFNES aims to be representative of all First Nations south of the 60th parallel at a regional level in Canada. This study is supported by a resolution passed by the Chiefs-in-Assembly in Halifax, Nova Scotia in 2007 and a motion passed by the Chiefs of Ontario in 2011. The study was first implemented in 2008 and 2009 in British Columbia, with data collection in 21 First Nations in British Columbia. During the fall of 2010, data collection was conducted in nine First Nations in Manitoba. The results of both studies are published in reports that are available on the FNFNES website (www.fnfnes.ca). During the fall of 2011 and 2012, data collection

was conducted in 18 First Nations in Ontario. This report presents the results from Webequie First Nation.

METHODS

To ensure that the cultural and ecosystem diversity of First Nations in Canada is represented in this study, communities were selected using an ecozone and 'culture area' framework. Ecozones are large scale divisions of the earth's surface based on the distribution of plants and animals. In Ontario, there are 3 ecozones (Boreal Shield, Hudson Plains and Mixed Wood Plains (Smith, et al., 1995). More information can be found at www.ecozones.ca. "Culture Areas" is an older concept developed by anthropologists in the nineteenth century to identify geographic areas within which Indigenous communities shared a greater number of cultural affinities than from those outside the area. In Ontario, there are 2 identified culture areas (Subarctic and Northeast).

In Ontario, 18 communities were randomly selected and invited to participate from the four ecozone/culture areas: Hudson Plain/Subarctic, Boreal Shield/Subarctic, Boreal Shield/Northeast and Mixed Wood Plain/Northeast (Figure A). The 18 participating communities were: Asubpeeschoseewagong Netum Anishinabek, Wauzhushk Onigum Nation, Kitchenuhmaykoosib Inninuwug First Nation, Kingfisher Lake First Nation,

Webequie First Nation, Fort William First Nation, Batchewana First Nation of Ojibways, Sagamok Anishnawbek First Nation, Atikameksheng Anishnawbek, Garden River First Nation, Marten Falls First Nation, Fort Albany First Nation, Attawapiskat First Nation, Moose Cree First Nation, Aamjiwnaang First Nation, Munsee-Delaware Nation, Six Nations of the Grand River, and Mohawks of Akwesasne. Within each community, households were randomly selected. From each household, one adult was randomly selected, therefore making our sample representative of First Nations in Ontario.

Webequie First Nation was one of six communities randomly sampled to represent communities within the Boreal Shield Subarctic area. In early 2011, the Assembly of First Nations invited your community to participate in the study. In the summer of 2011, Chief and Council agreed to participate and a community research agreement was signed. In September, Community Research Assistants (CRAs) were recruited and trained to complete the work outlined below during the months of September to December. During this time, they were supported by the community coordinator, Elsie Macdonald, and a Nutrition Research Coordinator (NRC) contracted by the FNFNES.

Figure A. Map of 18 participating First Nations in Ontario and ecozones

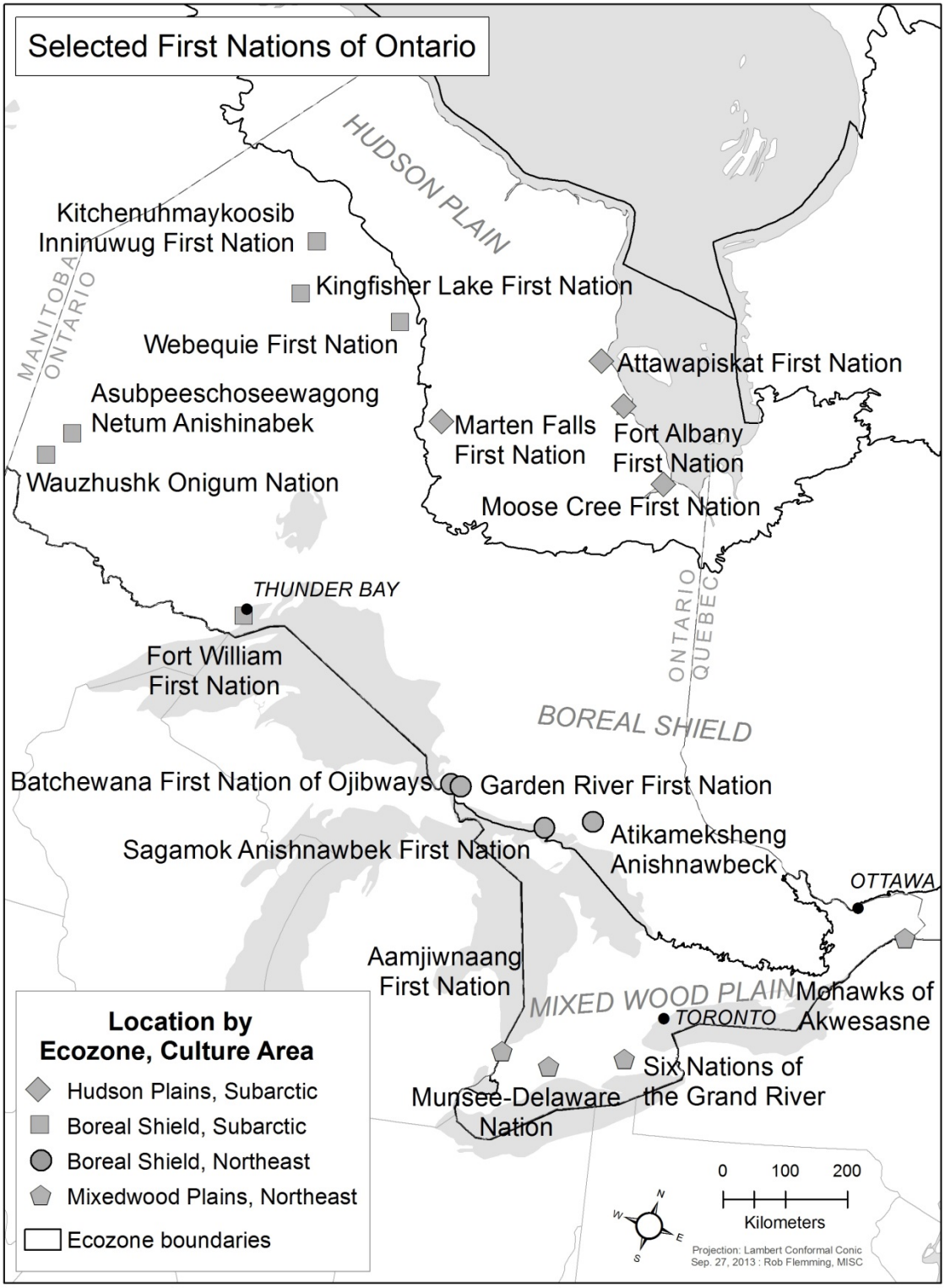
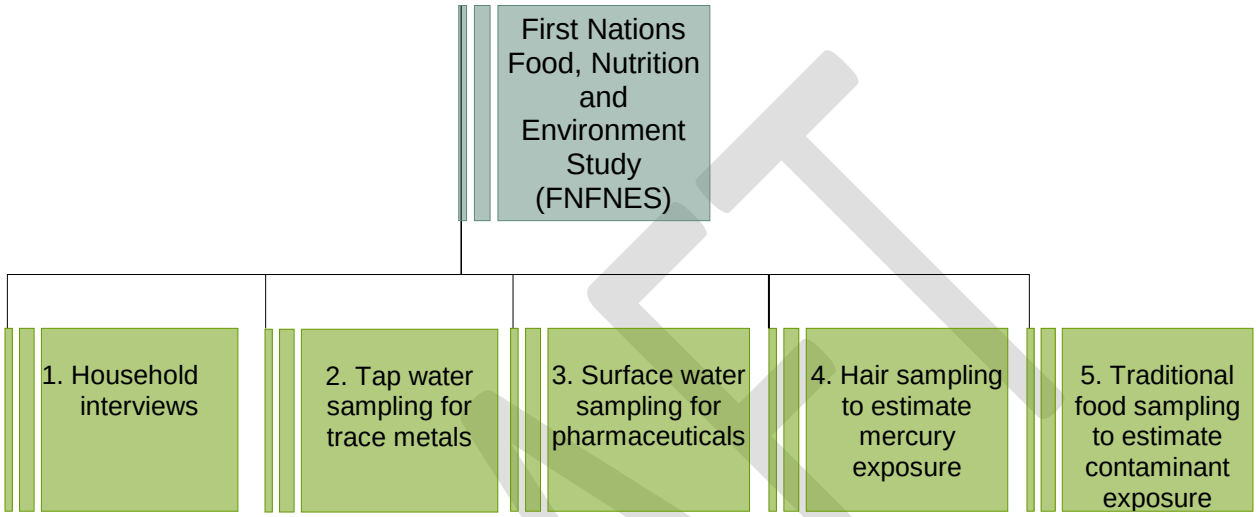


Figure B outlines the five components of the FNFNES. Each of these components is described below in further detail.

Figure B. The five study components of the FNFNES



1. Household Interviews

In each community, community research assistants were asked to complete up to 100 household interviews. Households were randomly selected from available community housing lists. In each home, the adult asked to participate:

- was 19 years of age or older
- was able to provide written informed consent
- self-identified as a First Nations person living on-reserve in Ontario
- had the next birthday.

Before starting the interview, the CRA explained the purpose of the study. If the person agreed to participate, an informed consent form was completed. Each person who completed an interview was asked a series of questions about traditional and store-bought food, health, lifestyle, household, education, income, climate change, and affordability of food. More detail on these questionnaires is provided below. Complete interview forms are available at the study's website: www.fnfnes.ca.

Traditional Food Frequency Questionnaire (TFFQ)

The TFFQ asks the participant to describe how frequently they ate up to 150 kinds of traditional food available throughout Ontario over the past four seasons. The traditional food list was developed based on a review of existing information about traditional food available in Ontario and after discussion with representatives of each participating community. The following chart was used as an aid when the respondent had difficulty coming up with a precise estimate of how often a food was eaten.

Frequency	**Average days/season**
Very Rarely (< 1 day/month)	2 days/season
Rarely (1-2 days/month)	6 days/season
Quite Often (1 day/week)	12 days/season
Often (2-3 days/week)	30 days/season
Very Frequently (4-5 days/week)	54 days/season
Almost every day (5-7 days/week)	72 days/season

24-Hour Food Recall

This questionnaire requires the participants to report all the foods and beverages (except alcohol-containing beverages) consumed 24 hours prior to the interview. The data collected provides information on the amounts and types of foods consumed, which allows for the

assessment of diet quality, including intake of nutrients.

Socio/Health/Lifestyle Questionnaire (SHL)

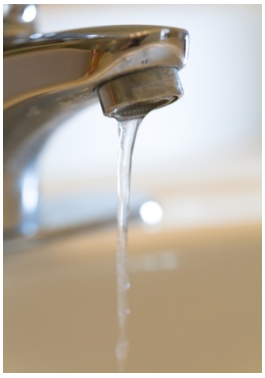
The SHL questionnaire included questions on the following topics:

- General health
- Height and weight (either measured or self-reported)
- Vitamin and dietary supplement use
- Physical activities
- Smoking
- Traditional food availability
- Socio-demographic characteristics
- Economic activity

Food Security Questionnaire

The food security questionnaire is a tool used to measure a household's ability to purchase enough food to feed their families. It consists of 10 questions for adult household members plus 8 questions for households with children. The questionnaire used in this project is the US Household Food Security Survey Module developed by the USDA (United States Department of Agriculture, Economic Research Service) and further adapted for Aboriginal households (Lawn et al., 2004).

2. Tap Water Sampling



To measure the level of trace metals[1] in the community water system(s), 20 households that participated in a household interview were asked to provide drinking water samples. Households were asked to collect a drinking water sample after the water had not been used overnight and a second water sample was taken after the tap had been left open to let the water run for five minutes.

Selection of sampling sites was based on what would be considered representative of the distribution system, i.e. at the ends of pipelines and at miscellaneous points in-between the ends of the pipelines and the treatment plant. Maps were used to help with site selection. In addition, if a household in the community was accessing a source of drinking water that was not part of the community water supply system, such as a well, nearby spring, or a trucked in water source, these were also sampled.

In addition to sample collection and analysis, a survey was conducted to obtain information from community-based treatment plant operators about

[1] This study determines the chemical safety of the community water supplies. The bacteriological safety is monitored regularly by Environmental Health Officers (EHO).

water treatment and distribution. The purpose of this survey was to obtain a profile of the water supply system of the participant communities, which can be used to help interpret the results of lab testing of the water samples.

The FNFNES measured nine metals that are of concern to human health when the maximum acceptable concentration (MAC) of the Guidelines for Canadian Drinking Water Quality (Health Canada, 2010) is exceeded:

- Antimony
- Arsenic
- Barium
- Boron
- Cadmium
- Chromium
- Lead
- Selenium
- Uranium

In addition, six metals not considered hazardous to health, but for which an aesthetic objective has been set by Health Canada, were also measured. These are: aluminum, copper, iron, manganese, sodium and zinc.

3. Surface Water Sampling for Pharmaceuticals

Webequie First Nation was sampled for 42 pharmaceuticals used for human health, veterinary purposes, or aquaculture. Samples were collected from the shoreline at three surface water sites chosen by the community.

The sampling sites were three sites on the Winisk River:

1. near the northern water intake
2. near the waste lagoon discharge area
3. near the southern drinking water intake

4. Mercury in Hair Sampling

A bundle of hair approximately the diameter of a pencil (0.5cm) was isolated and cut from the back of the participant's head. The hair bundle (full length, as cut from the scalp) was placed in a polyethylene bag and fastened to the bag with staples near the scalp end of the hair bundle. The hair sample, accompanied by a duly filled in Chain of Custody form, was sent by the study coordinator to the Ottawa laboratory of the First Nations and Inuit Health Branch (FNIHB), Health Canada for analysis. No information that could be used to identify the participant was sent to the Health Canada lab.

Resulting values, in parts per million (ppm) were converted to equivalent values for mercury in blood that are expressed in parts per billion (ppb) in the result tables. This conversion was done in order to compare each community's results with those recently published for the general Canadian population.

5. Food Sampling for Contaminants[2]

Traditional food samples were collected on the basis of a traditional food list compiled by knowledgeable community members and the traditional food frequency questionnaires so that collected foods represented at least 80% of the traditional foods consumed that season/year in the region. The food-sampling strategy was as follows:

- Up to 30 food samples were to be collected from each participating community.
- The community was to identify the most commonly consumed food; the foods that are of the most concern from a nutrition, environmental

[2] FNFNES is studying the chemical safety of traditional food. The bacteriological safety is monitored by the community's EHO.

or cultural perspective; and, based on existing knowledge, foods that are known to accumulate higher concentrations of contaminants.

- Each of the food samples was a combination of samples from up to five different animals or plants.

The traditional food samples collected were analyzed for the following categories of toxic chemicals:

- Perfluorinated compounds (PFCs)
- Polycyclic aromatic hydrocarbons (PAHs)
- Organophosphate and organochlorine pesticide residues
- Polychlorinated biphenyls (PCBs)
- Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/Fs)
- Polybrominated fire retardants (PBDEs)
- Trace elements and heavy metals

Fact sheets of the contaminants measured in this study can be found in Appendix A at the end of this report.

RESULTS

The results presented in this report are from a representative sample of 98 households from Webequie First Nation. In many of the sections, your community's results are compared to the overall results for First Nations in Ontario. For the purposes of this report, the data for all of Ontario are labelled as "First Nations in Ontario" in the tables and figures. However, some results are presented for all First Nations participants in Ontario with no comparison values for your community when there were an insufficient number of surveys for proper analyses at the community level.

1. Household Interviews

a) Sample Characteristics

Across Ontario, a total of 1,433 participants participated in this study with 98 participants from Webequie First Nation (Table 1). Table 2 shows that CRAs attempted to contact and interview an adult in 104 households in Webequie First Nation. A total of 99 people agreed to be interviewed, however, 98 interviews were considered complete; 53 women and 45 men completed an interview.

The participation rate (the number of people who participated divided by the number of people who were contacted and eligible to participate) for Webequie First Nation was 94% (98 out of 104 households). Your community's participation rate was higher compared to the overall rate of 79% for Ontario (1433 out of 1815 households).

Table 1. List of participating First Nations communities in Ontario and number of participants

Name of participating community	Number of participants
Asubpeeschoseewagong Netum Anishinabek	70
Wauzhushk Onigum Nation	37
Kitchenuhmaykoosib Inninuwug First Nation	50
Kingfisher Lake First Nation	55
Webequie First Nation	98
Fort William First Nation	49
Batchewana First Nation of Ojibways	63
Sagamok Anishnawbek First Nation	87
Atikameksheng Anishnawbek	100
Garden River First Nation	98
Marten Falls First Nation	51
Fort Albany First Nation	94
Attawapiskat First Nation	38
Moose Cree First Nation	83
Aamjiwnaang First Nation	100
Munsee-Delaware Nation	30
Six Nations of the Grand River	142
Mohawks of Akwesasne	188
Total participants from on-reserve First Nations communities in Ontario	1433

Table 2. Number of households surveyed and participation rate in Webequie First Nation compared to First Nations in Ontario*

Population and Participation Statistics		Webequie First Nation	First Nations in Ontario*
On-reserve population[1]		721	37,514
No of occupied households		146	8,570
No. of HHs selected to participate		125	2,892
No. of HHs contacted		104	1,925
	Not eligible	0	31
	Reason for non-eligibility	n/a	Not First Nations, under-age, unable to give informed consent, illness, deaf
	No. of vacant homes	0	79
No. of eligible HHs		104	1815
HH Non-response	Refused	3	290
	Not home during interview period	2	55
	No. of incomplete records	1	37
No. of HHs (participants) that participated		**98**	**1,433**
	No. of participating females	53	899
	No. of participating males	45	534
HH Participation rate (# participating HHs / # eligible HHs)		**94%**	**79%**

*Information for First Nations in Ontario is from a representative sample (data were collected for 18 participating communities in FNFNES).

**(AANDC, 2011)

b) Socio-Demographic Characteristics

The average age of participants from Webequie First Nation was similar for the women (40 versus 38 years old) but older for the men (44 versus 38 years old) compared to all participants (Table 3). When grouped by age categories, there was a higher percentage of younger females in the 19-30 age category (32%) and fewer females in the 51-70 age category (21%) from Webequie First Nation compared to all female First Nations participants from Ontario (Figure 1a). There were fewer male participants from Webequie First Nation in the 51-70 age category compared to the results for all of Ontario (Figure 1b).

In participating Webequie First Nation households, 60% of individuals were between the ages of 15-65 years of age (Figure 2). A higher percentage of children (less than 15 years of age) were reported to be living in Webequie First Nation households (32%) compared to First Nations households in Ontario (19%). A similar percentage of elders (8%) reported to be living in Webequie First Nation households compared to all households (10%).

The median number of people in each household was four. This means that half of the households in Webequie First Nation had four people living

in them, compared to three people living in a household for all First Nations in Ontario (Table 4). The highest (maximum) number of people reported to be living in a household in your community was 10 people, compared to 16 people for all First Nations households in Ontario.

In terms of education, half of the participants from Webequie First Nation reported completing nine years of school which was two years less compared to all Ontario households (Table 4). Figure 3 displays further results on education. A similar percentage of people from Webequie First Nation had obtained a vocational training certificate (10%), compared to all First Nations in Ontario (8%). However, fewer participants from Webequie First Nation had obtained a high school diploma (21% vs. 48%) or a General Education Diploma (GED) (6% vs. 25%).

At the time of the study, about two out of three households (60%) in the community reported employment of any kind (Figure 4). In contrast, 75% of households across Ontario reported at least one person with some type of employment. Only 41% of households in your community and 66% across Ontario reported that at least one adult was working full-time.

The main source of income in the community was social assistance, followed by wages, and workers' compensation or EI (employment insurance) (Figure 5). The percentage of participants on social assistance (41%) in Webequie First Nation was almost triple the rate found for First Nations in Ontario.

Table 3. Average age of participants

Gender	Average age in years (min, max)	
	Webequie First Nation (n=98)	First Nations in Ontario (n=1433)
Women	40 (19, 73)	38 (19, 88)
Men	44 (19, 82)	38 (19, 88)

Figure 1a. Age group distribution of female participants

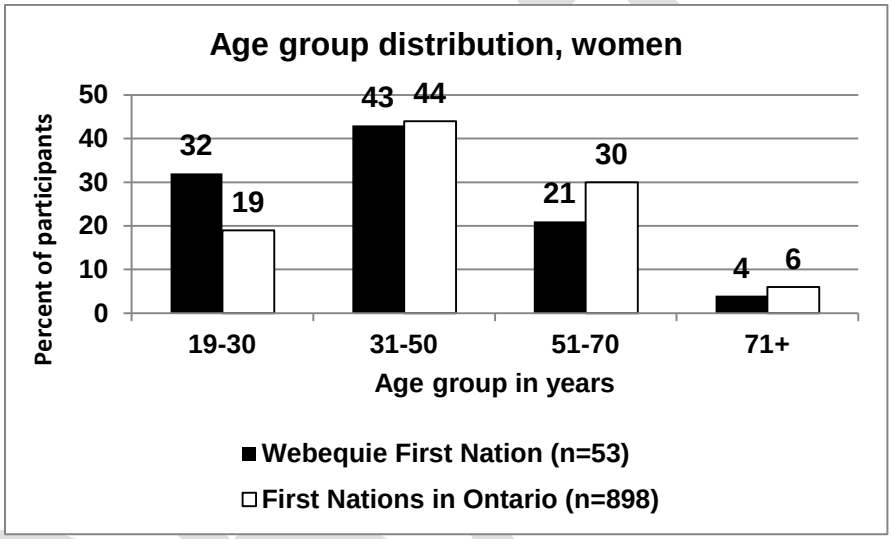


Figure 1b. Age group distribution of male participants

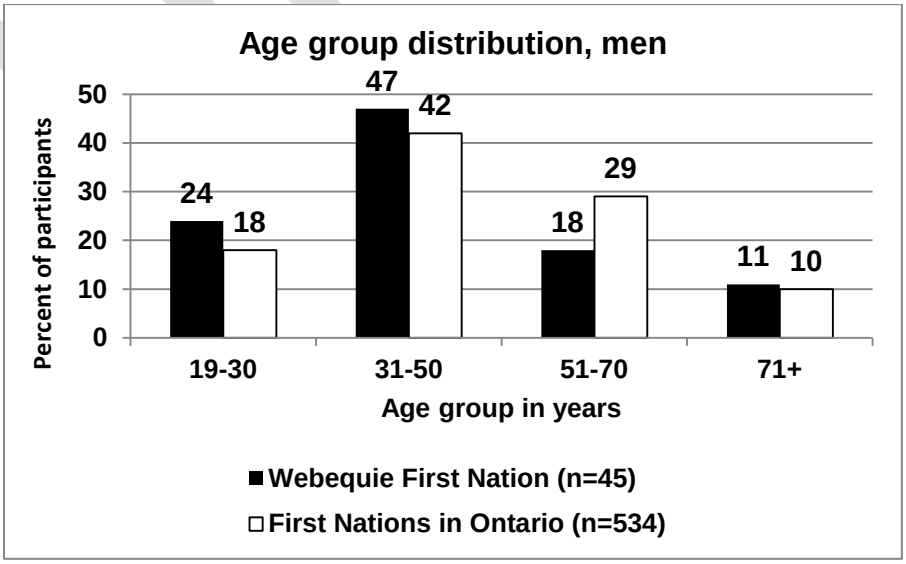


Figure 2. Percent of household members by age group, Webequie First Nation compared to all First Nations in Ontario

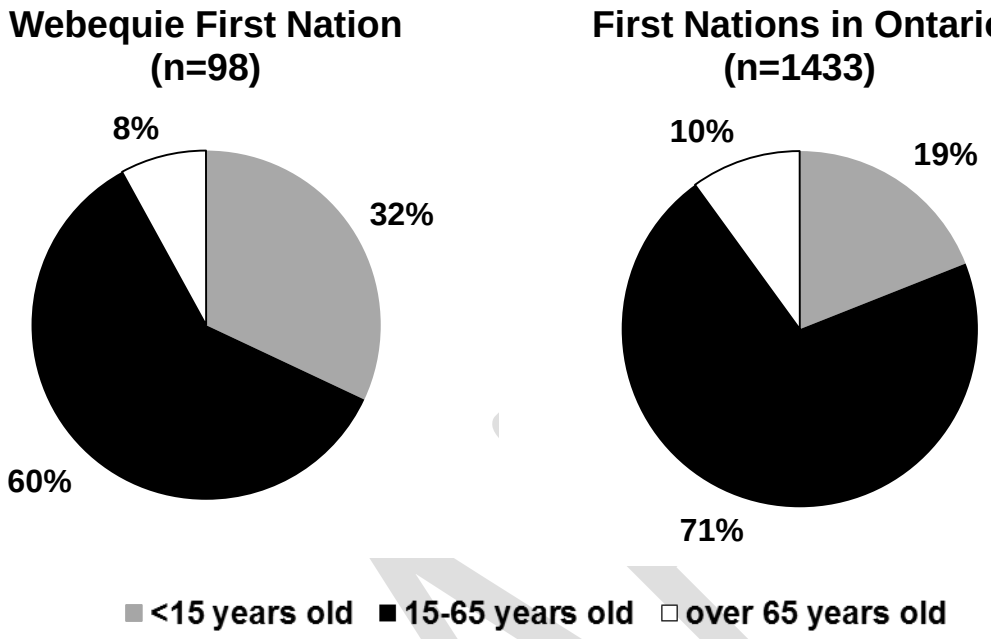


Table 4. Household size and education, Webequie First Nation compared to all First Nations in Ontario

Socio-demographic characteristics	Median (min, max)	
	Webequie First Nation (n=98)	First Nations in Ontario (n=1433)
Number of people in the household	4 (1, 10)	3 (1, 16)
Number of years of school completed	9 (0, 17)	11 (0, 30)

Figure 3. Diplomas, certificates and degrees obtained, Webequie First Nation compared to all First Nations in Ontario

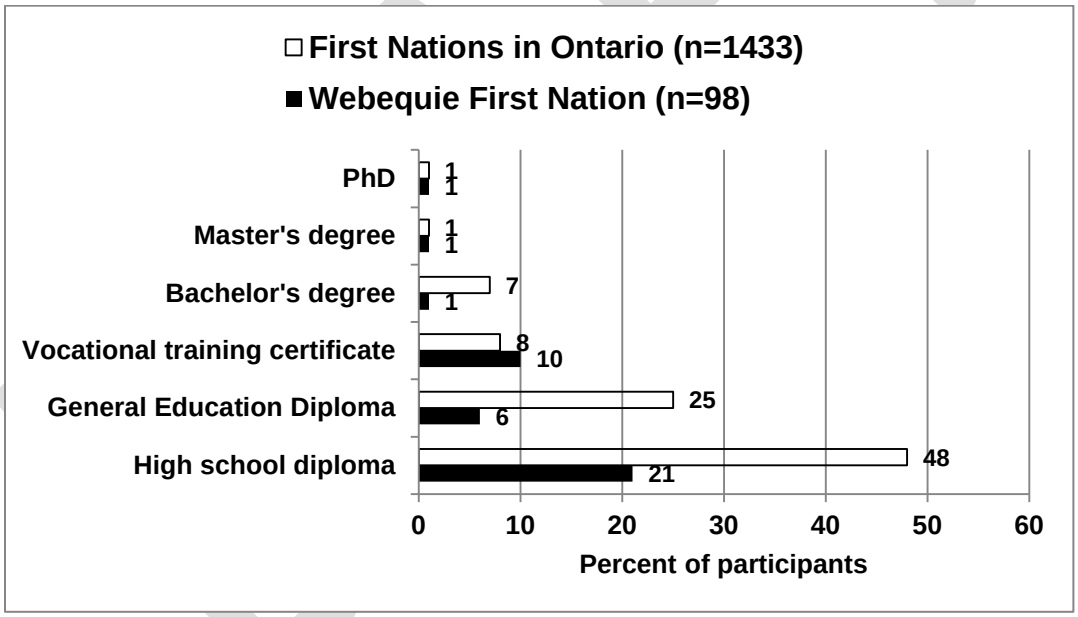


Figure 4. Percent of households with at least one person working, Webequie First Nation compared to all First Nations in Ontario

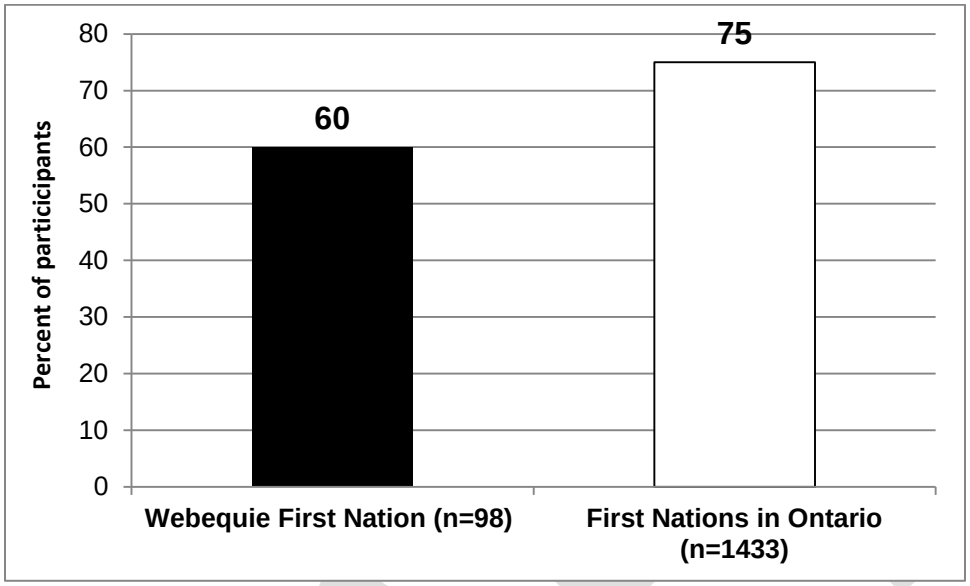
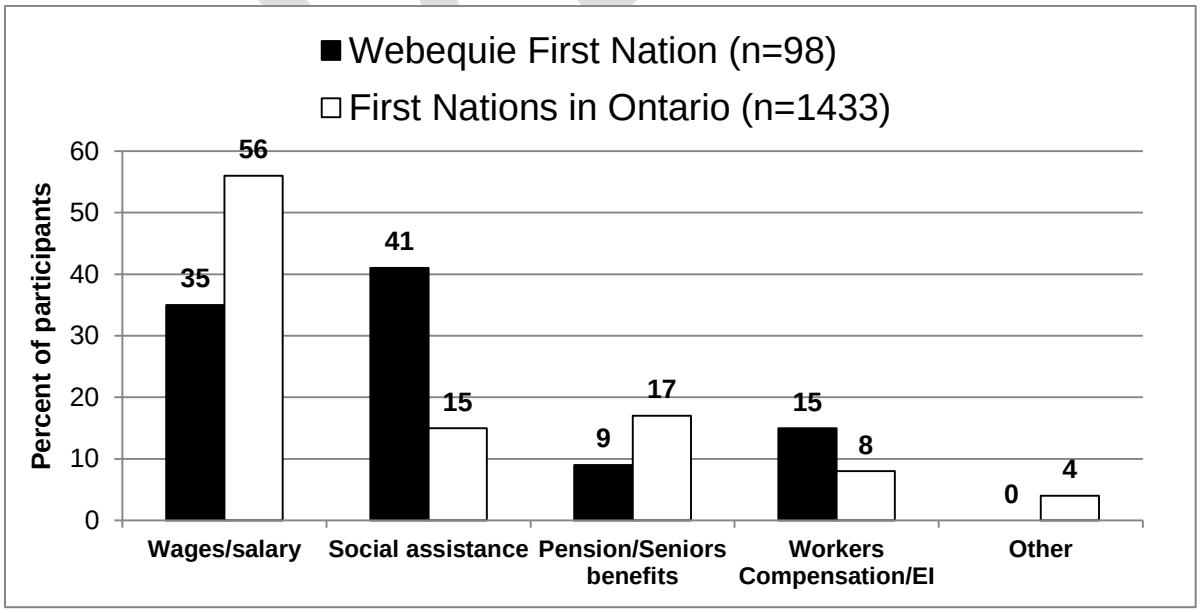


Figure 5: Main source of income for participants in Webequie First Nation compared to all First Nations in Ontario



c) Health and Lifestyle Practices

Due to the small number of participants among men or women of certain age groups, results in this section could not be analyzed by age and gender. Results are presented for all participants from Webequie First Nation (n=98) compared to all First Nations participants in Ontario (n=1433) and only the strongest trends can be commented on.

Body Mass Index, Obesity, and Diabetes

A common method to assess whether health risk is elevated for both an individual and a population is the Body Mass Index (BMI). The BMI is calculated using a ratio of body weight to height and is an indirect measure of body fat relative to muscle mass. A BMI less than 18.5 categorizes a person as underweight, while a BMI between 18.5 and 24.9 categorizes a person as normal weight. A BMI over 25 categorizes a person as overweight and a person with a BMI over 30 is obese. People who are underweight, overweight or obese are more likely to develop health problems (see Appendix B for further information on the BMI).

Based on the BMI, 24% of adult participants from Webequie First Nation had normal or healthy weights, while 42% were overweight, and 34% were

obese (Figure 6). In this study, 49% of all First Nations participants in Ontario were classified as obese. These results are similar to those found in other studies where 48% of First Nations adults in Ontario (Chiefs of Ontario, 2012) and 40% of First Nations adults across Canada (First Nations Information Governance Centre, 2013) are considered obese. The obesity rate for First Nations in Canada is almost double that of the general Canadian population where 25% of adults are obese (Public Health Agency of Canada, 2011).

Obesity is a major risk factor for diabetes and heart disease. One third (33%) of participants from Webequie First Nation and 29% of all participants reported having been told by a health care provider that they had diabetes (Figure 7a). Type 2 diabetes was the most common form reported for all Ontario participants (Figure 7b). In the Ontario Region Report of the First Nations Regional Health Survey (RHS), 22% of First Nations adult participants reported having been diagnosed with diabetes (Chiefs of Ontario, 2012). Figure 8 shows that about one in ten participants (13%) from Webequie First Nation reported that they were dieting to lose weight the day before the interview. Overall, 12% of Ontario First Nations participants were dieting.

Smoking

The majority of participants from this community (61%) indicated that they were smokers: this greatly exceeds the regional rate of 49% reported in both this study (Figure 9) and in the Ontario Region Report of the First Nations RHS (Chiefs of Ontario, 2012). These rates are over triple the national smoking rate of 17% for all Canadians aged 15 and over (Health Canada, 2010) and higher than the 57% smoking rate reported nationally in the First Nations RHS Phase 2 (2008/2010) (First Nations Information Governance Centre, 2013). The high rates of smoking and diabetes are troubling from a health perspective: both cause hardening of the arteries and damage to the blood vessels, thus increasing the risk of heart disease for those who smoke and have diabetes. In fact, the risk of having a heart attack is 2-3 times greater for a smoker with diabetes compared to a non-smoker with diabetes, especially in women (Willett, et al., 1987).

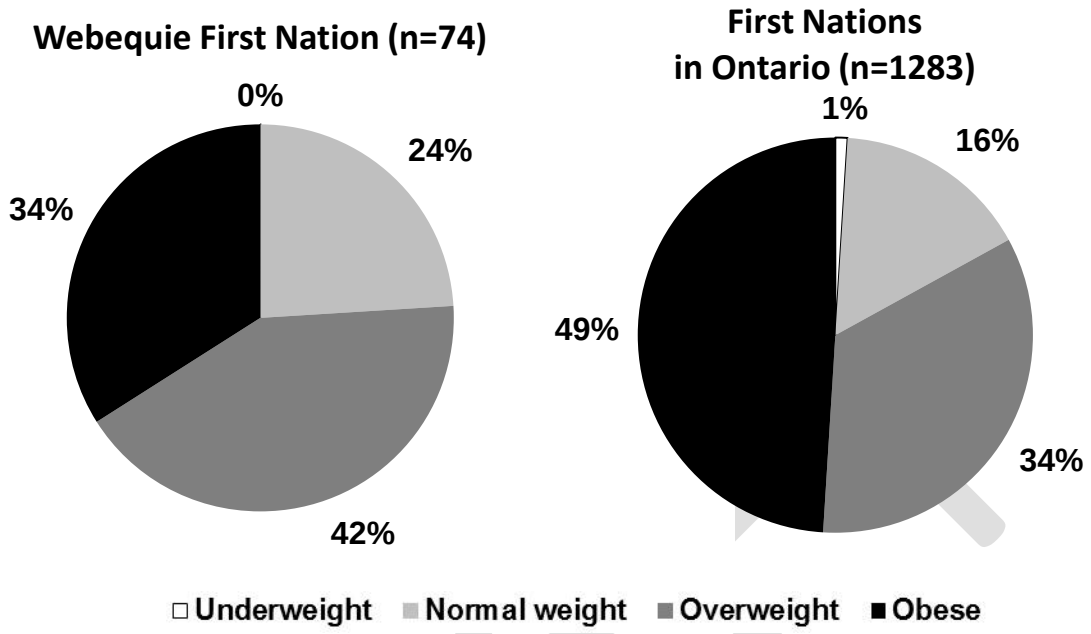
Physical Activity

In your community and for all of Ontario, most people reported that they were ‘sedentary’ or ‘somewhat active’ (Figure 10). One third (33%) of Webequie First Nation participants reported that they were ‘moderately’ (23%) or ‘highly active’ (10%), compared to 37% (26% moderately active and 11% highly active) for all communities.

Self-Reported Health

The large majority of participants in your community (80%) reported their health to be “good” or better compare to 68% for Ontario (Figure 11). In the general Canadian population aged 12 years and older, 88% reported that their health was good or better (Health Canada, 2010). In your community, 21% of adults perceived that their health was “very good” or “excellent” compared to 24% of all First Nations participants in Ontario. In contrast to these findings, almost 40% of adults reported that their health was “very good” or “excellent” in the 2008/2010 Ontario Region Report of the First Nations RHS (Chiefs of Ontario, 2012). No participants from your community said that their health was poor.

Figure 6. Overweight and obesity, Webequie First Nation compared to all First Nations in Ontario[2]



[2]Classified using Health Canada's BMI categories; results include both measured and reported weight and height values; excludes pregnant and breastfeeding women

Figure 7a. Rate of diabetes in Webequie First Nation compared to all First Nations in Ontario

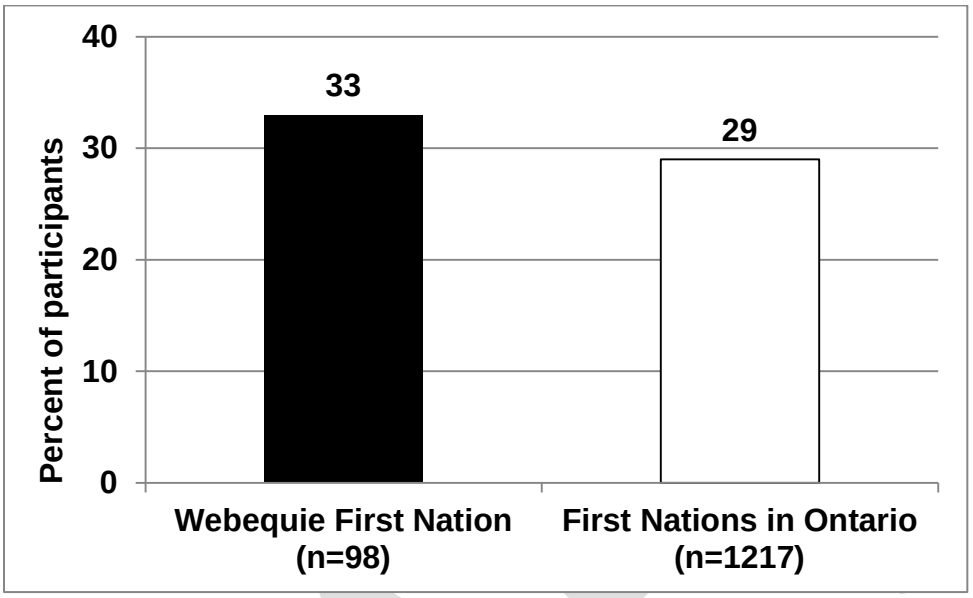


Figure 7b. Type of diabetes for those reporting to have diabetes

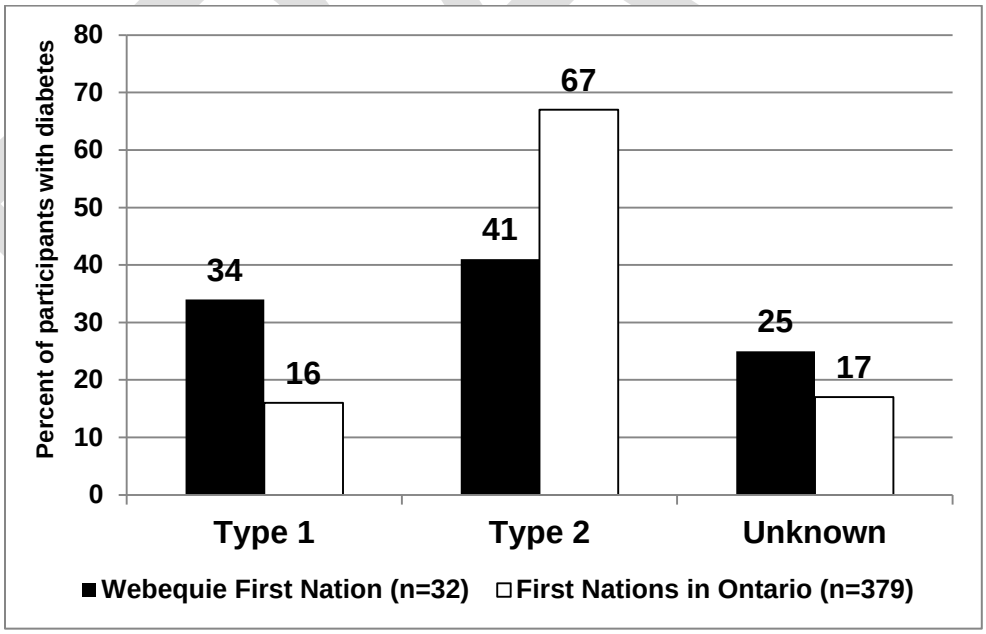


Figure 8. Percent of participants dieting (to lose weight) on the day before the interview, Webequie First Nation compared to all First Nations in Ontario

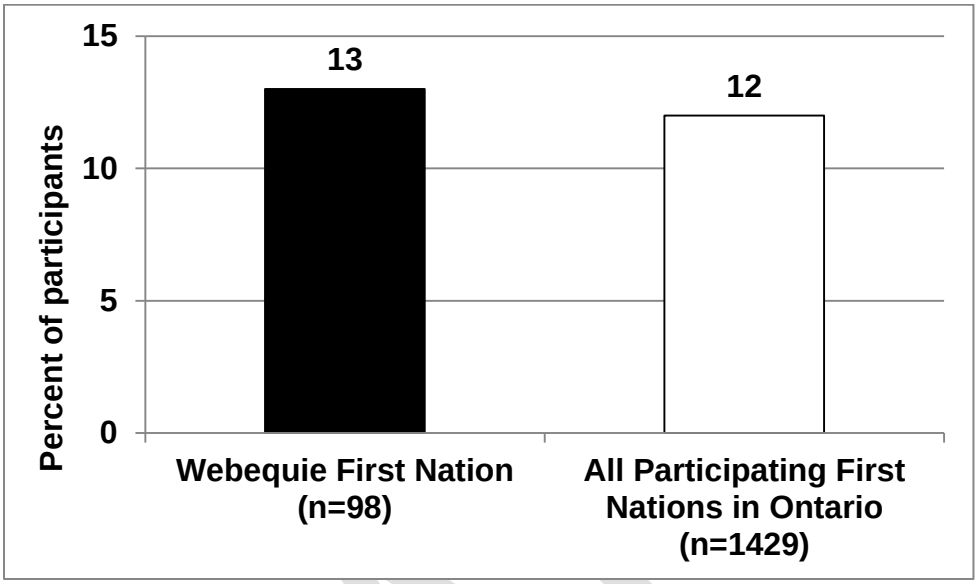


Figure 9. Percent of participants who smoke in Webequie First Nation compared to all First Nations in Ontario

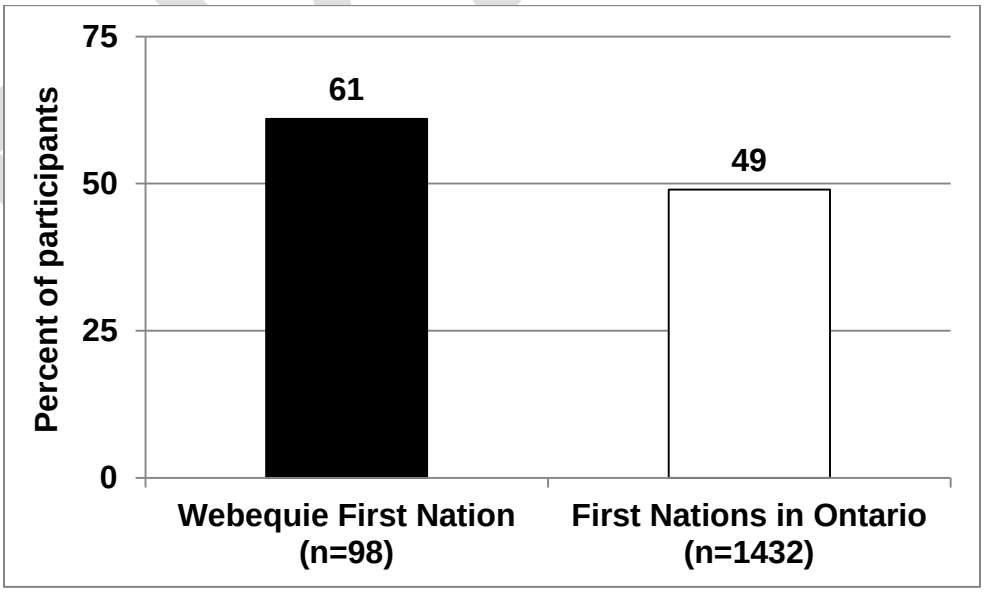


Figure 10. Self-reported activity level, Webequie First Nation compared to all First Nations in Ontario

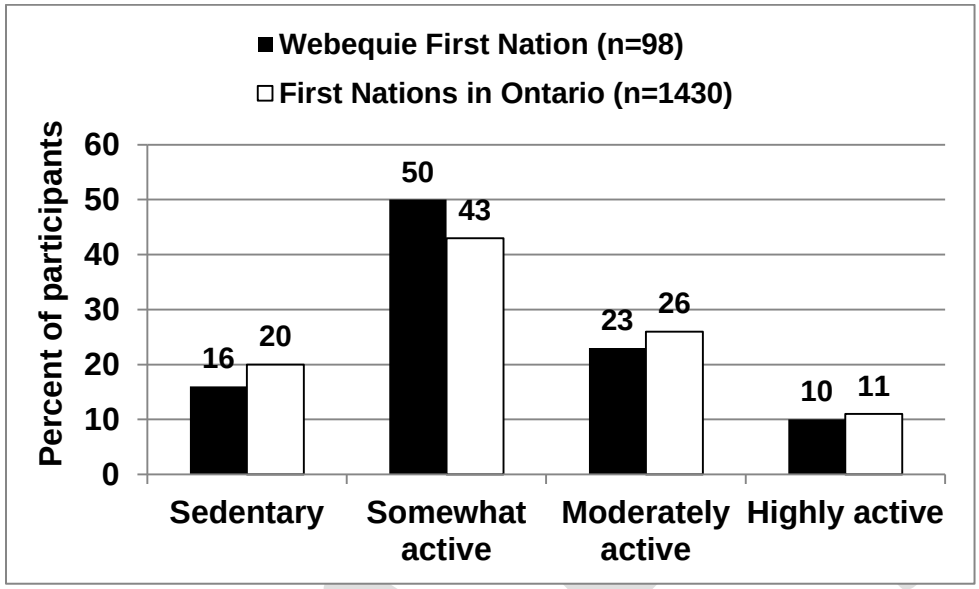
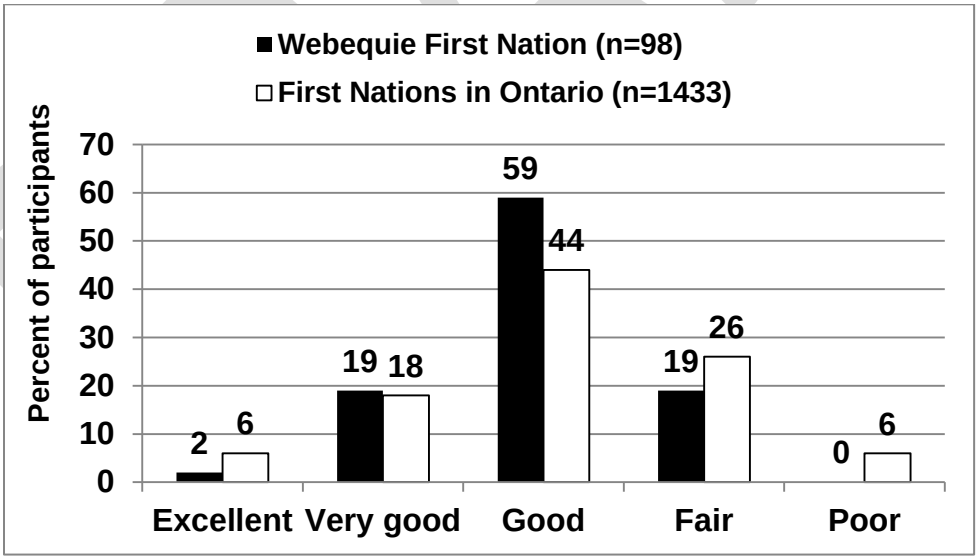


Figure 11. Self-perceived health, Webequie First Nation compared to all First Nations in Ontario



d) Food Security

Food security has been defined by the Food and Agricultural Organization of the United Nations in the State of Food Insecurity 2001 as: "... when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (Food and Agriculture Organization, 2002). Food insecurity can present itself in many ways including, but not limited to: worrying that there will be some food shortages before more money is available, limiting the variety of foods that you would like to serve your family, cutting down or skipping meals or not eating for a whole day.

First Nation communities and Indigenous communities around the world have relied exclusively on their traditional food systems for thousands of years. Families now also rely heavily on store-bought foods, however the continued use of traditional food remains critical to the nutrition and food security of communities [see Sections e) Traditional Food Use and f) Nutrient intake]. In this study, the food security of households was determined based on responses to an 18-item market (store-bought) food security questionnaire. A series of questions were also asked about

traditional food harvesting practices, access and adequacy of supplies to inform the larger picture of food security in communities [see Section e) Traditional Food Use].

In your community, the majority of households struggle to feed their families (Table 5). In 2011, three out of four households or 72% of participants worried that their food would run out before they could get more, 71% reported that food purchased did not last, and 80% stated that they could not afford to eat balanced meals. One out of three respondents (30%) reported that they ate less than they felt they should because there wasn't enough money for food.

Households were classified as food secure or food insecure based on their responses to the adult and child food security questions in Table 5. Households were food secure if they answered "yes" to no more than one question on either the adult or child food security questions. Households experiencing *moderate* food insecurity answered "yes" to 2-5 adult questions or 2-4 child questions while households experiencing *severe* food insecurity answered "yes" to 6 or more adult questions or 5 or more

child questions (Office of Nutrition Policy and Promotion, Health Canada 2007).

Based on the answers to the questions in Table 5, only one out of four or 25% of households are food secure, meaning that they do not have to worry about or have any difficulty purchasing enough food (Figure 12). Most families (75%) in your community struggle to put food on the table: half of the families (52%) are *moderately* food insecure meaning that they may need to purchase smaller amounts of some food and/or choose lower quality foods; and one in four families or 23% have *severe* food insecurity, meaning that they are likely to regularly experience food shortages. A higher level of food insecurity was found in households with children (81%) (Figure 13) compared to households without children (60%) in your community (Figure 14).

The degree and depth of food insecurity in your community is much greater than that found across Ontario. Overall, 29% of households on-reserve in Ontario are classified as food insecure (21 % moderately food insecure and 8% severely food insecure). In stark contrast, 8% of households in Ontario and across Canada are considered food insecure

(6% moderately and 2% severely), rising to a rate of 21% in Aboriginal off-reserve households (Tarasuk et al., 2013).

The cost of food relative to income is a contributing factor to high food insecurity. In each participating community, a Nutrition Research Coordinator (NRC) asked permission from the local grocery manager to undertake food costing using Health Canada's 2008 National Nutritious Food Basket Tool (Health Canada, 2009). The purchase prices of 67 food items were obtained from grocery stores in or near each participating Ontario First Nation, as well as in Thunder Bay for comparison. The total costs of these items were used to calculate the weekly costs of a healthy food basket for a family of four consisting of two adults (aged 31-50 years) and two children (one male teenager aged 14-18 and one female child aged 4-8).

The estimated weekly cost of feeding healthy meals to a family of four was found to be $361 which was almost double the cost ($201) compared to Thunder Bay (Figure 15). The high rate of food insecurity can be explained by the high cost of food for community members coupled with the lack of employment opportunities.

Table 5. Percent of participants who responded affirmatively to food security questions (in the last 12 months) in Webequie First Nation

	Percent of participants who answered "yes" to the food security questions		
Adult Food Security Questions	**All Households (n=83)**	**Households with Children (n=58)**	**Households without Children (n=25)**
You and other household members worried food would run out before you got money to buy more	72	79	56
Food you and other household members bought didn't last and there wasn't any money to get more	71	78	56
You and other household members couldn't afford to eat balanced meals	80	83	72
You or other adults in your household ever cut the size of meals or skipped meals	19	17	24
You or other adults in your household ever cut the size of meals or skipped meals in 3 or more months	14	12	20
You (personally) ever ate less than you felt you should	30	29	32
You (personally) were ever hungry but did not eat	22	22	20
You (personally) lost weight	12	12	12
You or other adults in your household ever did not eat for a whole day	6	5	8
You or other adults in your household ever did not eat for a whole day in 3 or more months	6	5	8
Child Food Security Questions	**All Households (n=83)**	**Households with Children (n=58)**	**Households without Children (n=25)**
You or other adults in your household relied on less expensive foods to feed children	51	72	-
You or other adults in your household couldn't feed children a balanced meal	39	55	-
Children were not eating enough	28	40	-
You or other adults in your household ever cut the size of any of the children's meals	10	14	-
Any of the children were ever hungry but you just couldn't afford more food	8	12	-
Any of the children ever skipped meals	7	10	-
Any of the children ever skipped meals in 3 or more months	4	5	-
Any of the children ever did not eat for a whole day	2	3	-

(-) not applicable

Figure 12. Degree of food insecurity in Webequie First Nation households compared to results for all First Nations in Ontario

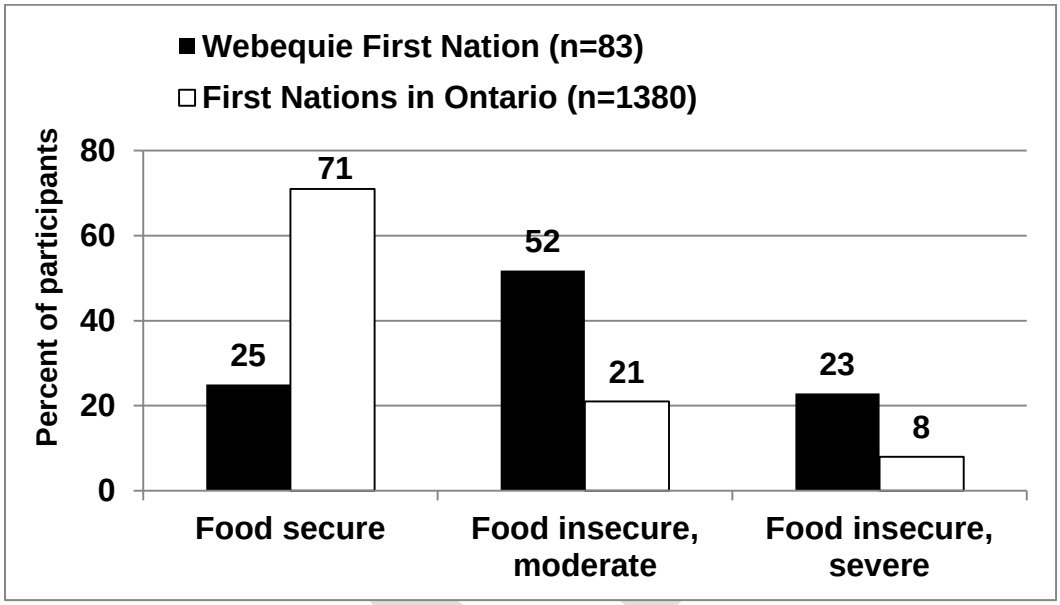


Figure 13. Degree of food insecurity in households with children, Webequie First Nation compared to all First Nations in Ontario

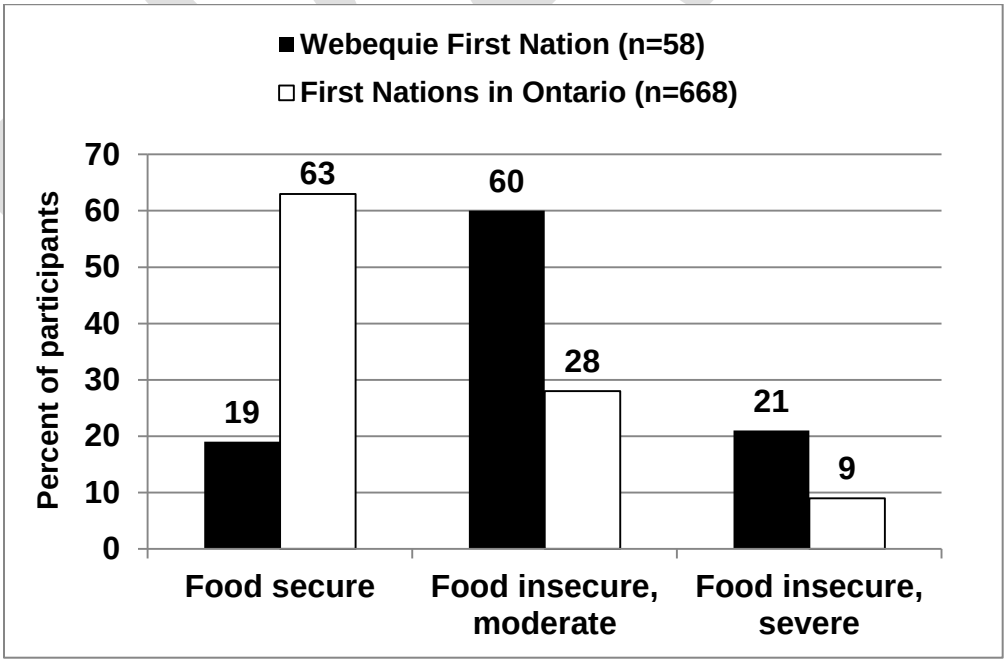


Figure 14. Degree of food insecurity in households without children, Webequie First Nation compared to all First Nations in Ontario

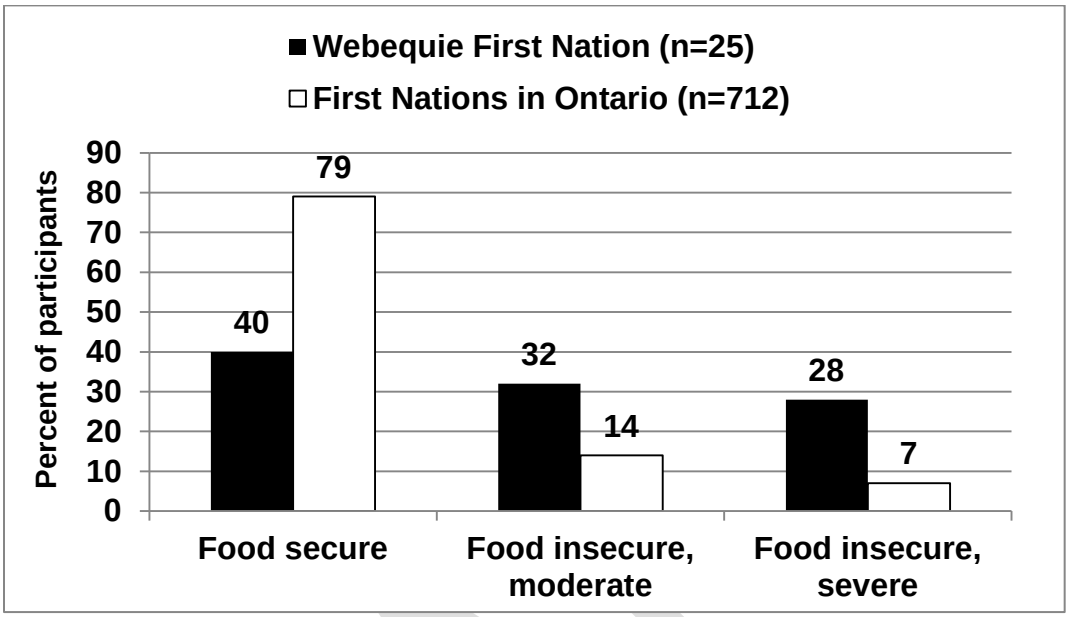


Figure 15. Estimated weekly cost of a healthy food basket for a family of four*, Webequie First Nation compared to Thunder Bay

Webequie First Nation **Thunder Bay**

*A family of four was defined as two adults (1 male, 1 female) aged 31-50, one male teenager aged 14-18, and one female child aged 4-8 years old.

d) Traditional Food Use and Gardening

In Ontario, both traditional food harvesting (hunting, fishing, and gathering of wild plants) and cultivation of plants, especially in southern Ontario, are important parts of the traditional food systems and food security of First Nations communities. Participating community members described, by season, how often they consumed more than 150 traditional food items for the last 12 months. Participants also shared information about their participation in traditional food harvesting and gardening practices along with their perceptions about the adequacy of their current traditional food supply. Together, this information demonstrates the value of community food activities to the health of First Nations.

First Nations in Ontario reported eating a variety of traditional foods over the past 12 months and the types varied across communities. In Table 6, traditional foods are grouped into the following categories: Fish, Land Mammals, Birds, Berries, Wild Plants (Greens, Roots, and Shoots), Tree Products, and Mushrooms. The list of traditional foods consumed by Webequie First Nation adults is compared against the total for First Nations in Ontario and listed in descending percentage of consumption.

In Webequie First Nation, fish, game meat, and berries were eaten at least once in the last year by the majority of adults. Almost all of the adults surveyed (98%) consumed fish (mainly walleye and whitefish), everyone ate land mammals (mainly moose), 99% reported eating wild birds (mainly Canada Geese and ducks), 89% percent of the adults reported eating wild berries (mainly blueberries), 34% used wild plant foods (mainly Labrador tea leaves), 16% reported consumption tree-based foods (mainly cedar tea), and no one reported eating mushrooms. In Webequie First Nation, the percentage of adults who reported eating fish, land mammals, wild birds, and wild berries was higher compared to all First Nations in Ontario, and lower for tree foods and mushrooms.

A summary of the foods consumed most frequently and by the greatest percentage of adults in your community is listed in Table 7. Walleye, moose, and whitefish appear to be the most readily accessible and available traditional foods in your community. On average, walleye is eaten 41 times per year or over three times per month, moose is eaten about three times per month, while whitefish is eaten twice per month.

The amount of each of the traditional foods eaten on a daily basis was calculated by multiplying the frequency of use of traditional food (Table 6) by the average portion sizes (Table 8) reported in Ontario. The estimated average intake of major traditional foods in grams per person per day is presented in Table 9. On average, 125 grams of traditional food per day were consumed by women and 155 grams of traditional food per day (or half a cup per day) were consumed by men in Webequie First Nation. Overall, all participants from First Nations in Ontario consumed an average of 43 grams of traditional food per day.

The majority of households in your community reported harvesting food in the past year. Sixty-two percent said that they had fished, 51% reported hunting/setting snares, and 21% collected wild plant foods such as berries (Figure 16). Although no Webequie First Nation participant reported planting a garden, more than half (59%) of participants said that they had eaten vegetables or fruits from a private or community garden (Figure 17). This indicates that the community garden is a significant contributor to the intake of vegetables and fruits in Webequie First Nation. For Ontario, 19% of all participants reported planting a garden and 50% or half of all participants reported eating vegetables from a private or community

garden. The different kinds of garden vegetables and fruits reported to be eaten by all participants are listed in Appendix C.

Almost all Webequie First Nation participants (95%) would like to eat more traditional foods (Figure 18). Similarly to concerns about store-bought food running out, most households at the time of the survey worried that their own traditional food supply would either run out before they could get more (Figure 19) or that it would not last and they could not get more (Figure 20).

While almost all households would like to be able to eat more traditional food, economic constraints (cost and lack of equipment and/or transportation), along with an absence of active family hunters were identified as major barriers to increased use (Figure 21a). Across Ontario, participants also identified that in addition to time constraints, the lack of a hunter in the household and the lack of equipment/transportation were major barriers to increased traditional food use (Figure 21b). Additionally, when asked from a list of possible factors previously identified in First Nation communities as affecting or limiting access to traditional food harvesting, participants stated that mining operations, recreational

boaters/fishers as well as oil and gas operations, were major barriers (Figure 22).

When asked what the most important benefits of traditional foods were, the top 3 responses from your community were: healthy, cheap, and fresh (Figure 23a). The top responses given by all First Nations in Ontario were: healthy, natural, and cheap (Figure 23b). For store-bought food, the most important benefit reported by your community was that it was an alternative food source (Figure 24a), compared to their availability and convenience for all First Nations in Ontario (Figure 24b).

Table 6. Percent of on-reserve First Nations in Ontario consuming traditional foods in the past year, Webequie First Nation compared to all First Nations in Ontario (listed in descending order, by category)

Traditional Food	Webequie First Nation (n=98)	First Nations in Ontario (n=1433)
	Percent consumption	
FISH	98	73
Walleye (yellow pickerel)	96	58
Lake whitefish	78	26
Lake sturgeon	68	14
Northern pike	61	19
White Sucker	39	5
Trout (not specified)	19	21
Brook (speckle) trout	16	5
Ling (Burbot or Maria)	6	3
Red (longnose) sucker	6	2
Lake trout	4	14
Round whitefish	2	2
Muskie	2	0
Rainbow trout	1	5
Largemouth Bass	1	4
Land Mammals	100	68
Moose meat	100	53
Moose liver	63	10
Moose kidney	38	6
Caribou meat	31	8
Rabbit meat	31	14
Beaver meat	30	8
Caribou liver	12	1
Caribou kidney	12	1
Muskrat meat	3	1
Other land mammals (moose tongue, heart, and nose, squirrel, porcupine, deer heart)	2	1
Black bear fat	1	0
WILD BIRDS	99	39
Geese, Canada	99	23
Ducks (all combined)	46	16
Mallard	41	14
Grouse (Blue, Ruffed, Sharp-tailed)	33	9
Grey Partridge	15	13
Ring necked Duck	13	1
Geese, Snow	13	7

Traditional Food	Webequie First Nation (n=98)	First Nations in Ontario (n=1433)
Scoter (surf, white winged, black)	9	1
Loon	6	1
Merganser	6	1
Golden eye	5	1
Bufflehead	3	1
Wood Duck	2	1
Northern Pintail	2	1
Redhead	1	0
American Wigeon	1	0
Gadwall	1	0
American black	1	1
WILD BERRIES OR NUTS	89	60
Blueberries	85	42
Wild Strawberry	30	31
Gooseberry/currant	28	3
Raspberry	23	26
Serviceberry (juneberry, Saskatoon)	8	3
Black raspberry	3	6
Cranberry (low-bush/lingonberry, bog)	3	5
Crowberry	2	0
Bearberry	2	0
Blackberry, large	2	8
Blue huckleberry	2	0
Cherry (pin, chokecherry, sand)	2	4
Hawthorn	2	0
Juniper	2	1
Bunchberries	1	0
Thimbleberries (salmonberry)	1	1
Highbush Cranberry (Squashberry, Mooseberry)	1	2
WILD PLANTS	34	32
Labrador Tea leaves	19	6
Muskrat root	10	7
Wild rice	2	12
Mint leaves	2	3
Dandelions	1	2
Wintergreen (teaberry) leaves	1	1
TREE FOODS	16	21
Other Tree Products (cedar tea)	32	7
Maple syrup	2	17
Poplar (cottonwood) inner bark	2	0
Pine needle tea (Jack and white)	1	2
Poplar buds	1	0

Traditional Food	Webequie First Nation (n=98)	First Nations in Ontario (n=1433)
Spruce (black or white) inner bark	1	0
MUSHROOMS	0	2

Table 7. Seasonal frequency of top ten consumed traditional food items for consumers and non-consumers combined, based on average days per year, Webequie First Nation (n=98)

Traditional Food	Percent of consumers	Average days per season (min, max)				Average days per year (min, max)
		Summer	Spring	Winter	Fall	
Walleye (yellow pickerel)	96	16 (0, 75)	9 (0, 75)	8 (0, 30)	9 (0, 30)	41 (0, 210)
Moose meat	100	9 (0, 66)	7 (0, 72)	8 (0, 54)	9 (0, 52)	33 (0, 208)
Lake whitefish	78	9 (0, 54)	6 (0, 30)	5 (0, 30)	6 (0, 30)	26 (0, 144)
Canada geese	99	5 (0, 30)	14 (0, 72)	3 (0, 30)	4 (0, 30)	25 (0, 120)
Northern pike	61	6 (0, 54)	4 (0, 54)	4 (0, 30)	5 (0, 30)	18 (0, 168)
White sucker	39	3 (0, 40)	2 (0, 40)	2 (0, 40)	3 (0, 40)	10 (0, 160)
Moose liver	63	2 (0, 50)	2 (0, 50)	3 (0, 50)	3 (0, 50)	10 (0, 200)
Moose kidney	38	2 (0, 40)	2 (0, 40)	2 (0, 40)	2 (0, 40)	7 (0, 160)
Blueberries	85	6 (0, 40)	0 (0, 12)	0 (0, 12)	0 (0, 12)	7 (0, 48)
Sturgeon	68	3 (0, 30)	1 (0, 30)	0 (0, 30)	1 (0, 30)	5 (0, 120)

Table 8. Mean daily portion sizes of traditional food categories, by gender and age group, based on 24hr recalls from First Nations in Ontario living on-reserve

Traditional food category	Ontario First Nations Women			Ontario First Nations Men		
	Age 19-50	Age 51-70	Age 71+	Age 19-50	Age 51-70	Age 71+
	Mean grams/serving			Mean grams/serving		
Fish	190	172	185	203	306	293
Land mammals	204	141	200	234	229	260
Land mammal fat (moose)*	43	43	43	43	43	43
Wild birds	183	183	183	183	183	183
Bird egg**	144	144	144	144	144	144
Wild berries	159	159	159	140	140	140
Wild rice*	95	95	95	95	95	95
Wild plants, roots, shoots or greens	1	1	1	0.4	0.4	0.4
Maple syrup	54	54	54	54	54	54
Tree foods***	1	1	1	1	1	1
Mushrooms***	48	48	48	48	48	48

Notes: portion sizes for wild birds, wild berries, wild plants, and maple syrup were based on mean values by total or gender due to the low number of observations

***estimated portion size from 1 participant

**estimated portion size from Canadian nutrient file values for goose egg; Health Canada, 2010.

***estimated values from Chan et al, 2011.

Table 9. Estimated average intake of major traditional foods (g/person/day), based on traditional food frequency results, Webequie First Nation compared to all First Nations in Ontario (refer to Appendix D for conversion from grams to usual household measures)

Traditional Food	Average grams of TF per person/day			
	Total Webequie First Nation (n=98)	**Webequie First Nation Women (n=53)**	**Webequie First Nation Men (n=45)**	**First Nations in Ontario (n=1433)**
Total traditional food	**140.52**	**125.26**	**155.32**	**42.71**
Walleye/Pickerel	27.62	19.19	35.81	7.11
Moose meat	20.36	19.46	21.23	5.74
Lake whitefish	17.68	12.7	22.52	2.86
Canada geese	13.67	13.27	14.06	2.64
Northern pike	13.23	9.92	16.44	1.51
White sucker	6.97	6.16	7.75	0.54
Moose liver	6.19	6.48	5.9	0.59
Moose kidney	4.45	5.48	3.45	0.44
Caribou meat	4.42	5.29	3.57	0.71
Blueberries	3.19	3.83	2.57	2.42
Lake sturgeon	3.13	1.87	4.36	0.41
Caribou liver	2.18	2.88	1.51	0.16
Grouse	1.96	2.23	1.71	0.34
Beaver meat	1.94	1.81	2.07	0.29
Caribou kidney	1.88	2.96	0.84	0.16
Rabbit meat	1.77	1.92	1.62	0.43
Snow geese	1.23	2.24	0.25	0.64
Gooseberries	0.96	1.14	0.79	0.08
Brook (speckle) trout	0.95	0.31	1.57	0.22
Raspberries	0.92	1.11	0.73	1.24
Ducks, all	0.84	0.37	1.3	0.62
Burbot	0.77	1.14	0.41	0.23

Traditional Food	Average grams of TF per person/day			
	Total Webequie First Nation (n=98)	Webequie First Nation Women (n=53)	Webequie First Nation Men (n=45)	First Nations in Ontario (n=1433)
Wild strawberry	0.58	0.44	0.71	1.64
Grey partridge	0.54	0.57	0.51	0.31
Red longnose sucker	0.47	0.07	0.86	0.1
Trout (not specified)	0.34	0.04	0.63	0.16
Loon	0.25	0.38	0.12	0.02
Muskrat meat	0.21	0.37	0.05	0.03
Other land mammals	0.17	0.2	0.14	0.03
Round whitefish	0.16	0.32	0	0.11
Black raspberries	0.15	0.12	0.17	0.2
Merganser	0.12	0.11	0.12	0.01
Juniper berries	0.11	0	0.22	0.12
Goldeneye	0.09	0.02	0.16	0.03
Highbush cranberries	0.09	0	0.17	0.04
Blue huckleberries	0.09	0.12	0.06	0.01
Saskatoon berries	0.09	0.04	0.14	0.03
Low bush cranberries	0.08	0	0.15	0.28
Cherries, pin/choke	0.08	0	0.15	0.15
Muskie	0.07	0.08	0.06	0.01
Bufflehead	0.07	0	0.15	0.02
Wild rice	0.07	0.03	0.11	0.23
Lake trout	0.06	0.12	0.01	1.21
Blackberries, large	0.05	0.07	0.03	0.3
Largemouth bass	0.04	0.08	0	0.11
Crowberries	0.04	0.08	0	0.01
Maple syrup	0.04	0	0.07	0.35
Rainbow trout	0.03	0.05	0	0.28
Bearberries	0.03	0.05	0	0.01
Other plants	0.03	0.05	0.01	0

Traditional Food	Average grams of TF per person/day			
	Total Webequie First Nation (n=98)	Webequie First Nation Women (n=53)	Webequie First Nation Men (n=45)	First Nations in Ontario (n=1433)
Black bear fat	0.02	0.03	0	0
Bunchberries	0.02	0.04	0	0
Other tree products	0.02	0.02	0.02	0
Thimbleberries	0.01	0	0.03	0.05
Hawthorn	0.01	0	0.02	0
Wild iris	0.01	0.01	0	0
Labrador tea leaves	0.01	0.01	0.01	0

Note: this list excludes foods that were not reported to be consumed by any participant from Webequie First Nation

Figure 16. Traditional food harvest practices in Webequie First Nation (n=98) compared to all First Nations in Ontario (n=1433)

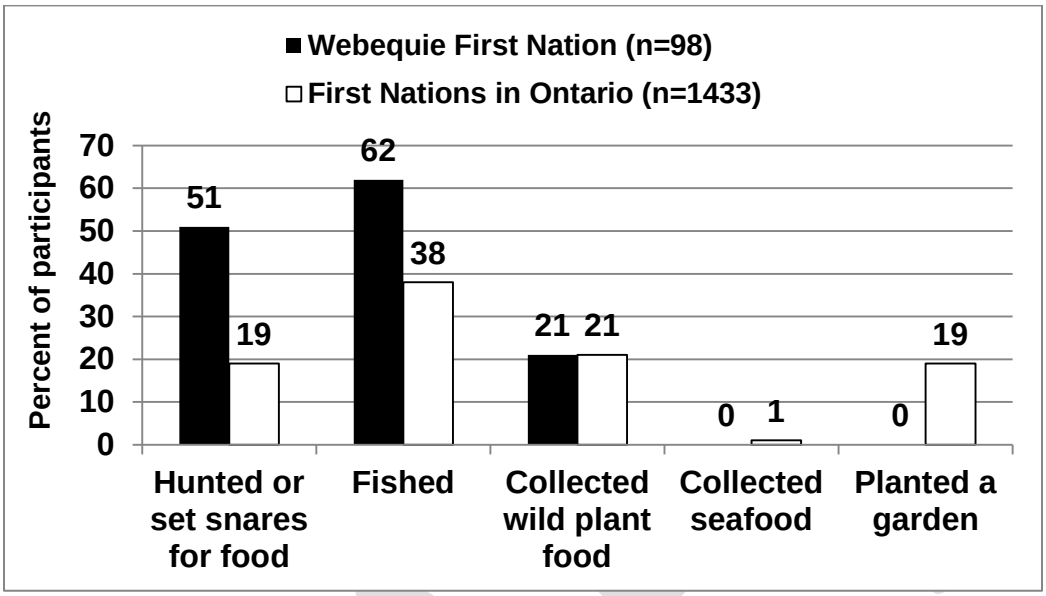


Figure 17. Percent of participants who ate vegetables and/or fruits from their garden or a community garden (on-reserve), in Webequie First Nation compared to all First Nations in Ontario

59% Webequie First Nation (n=98)

50% First Nations in Ontario (n=1433)

Figure 18. Percent of participants whose households would like more traditional food, Webequie First Nation compared to all First Nations in Ontario

→ **95% Webequie First Nation (n=98)**

→ **73% First Nations in Ontario (n=1433)**

Figure 19. Percent of participants who, in the past 12 months, worried that their traditional food would run out before they could get more

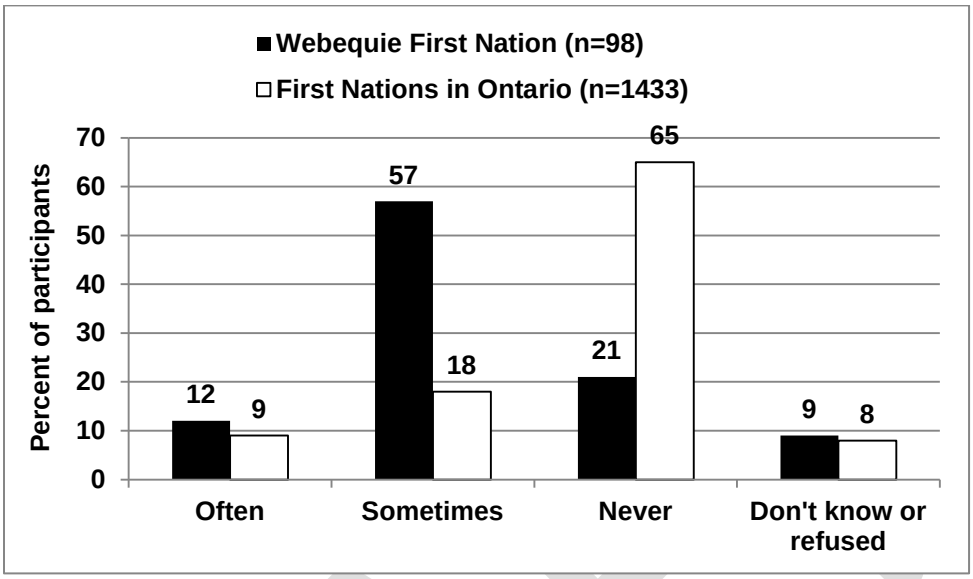


Figure 20. Percent of participants who, in the past 12 months, worried that their traditional food just didn't last and they couldn't get more

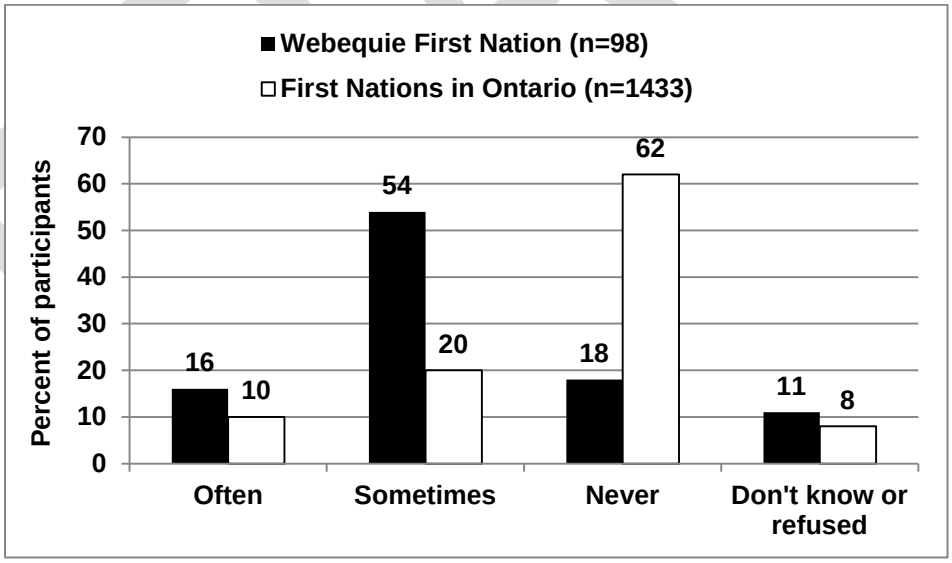


Figure 21a. Top 5 barriers preventing households from using more traditional food, Webequie First Nation

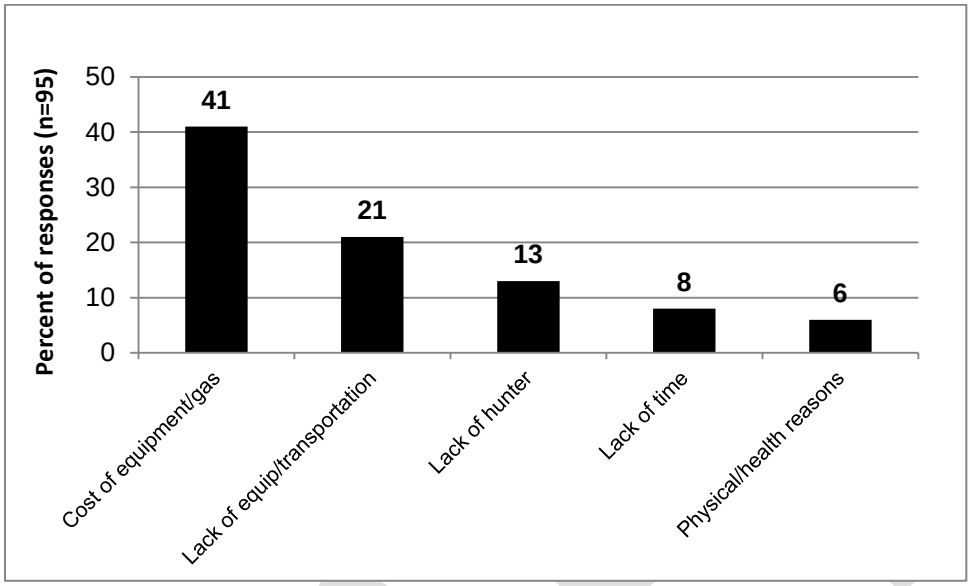


Figure 21b. Top 5 barriers preventing First Nations' households in Ontario from using more traditional food

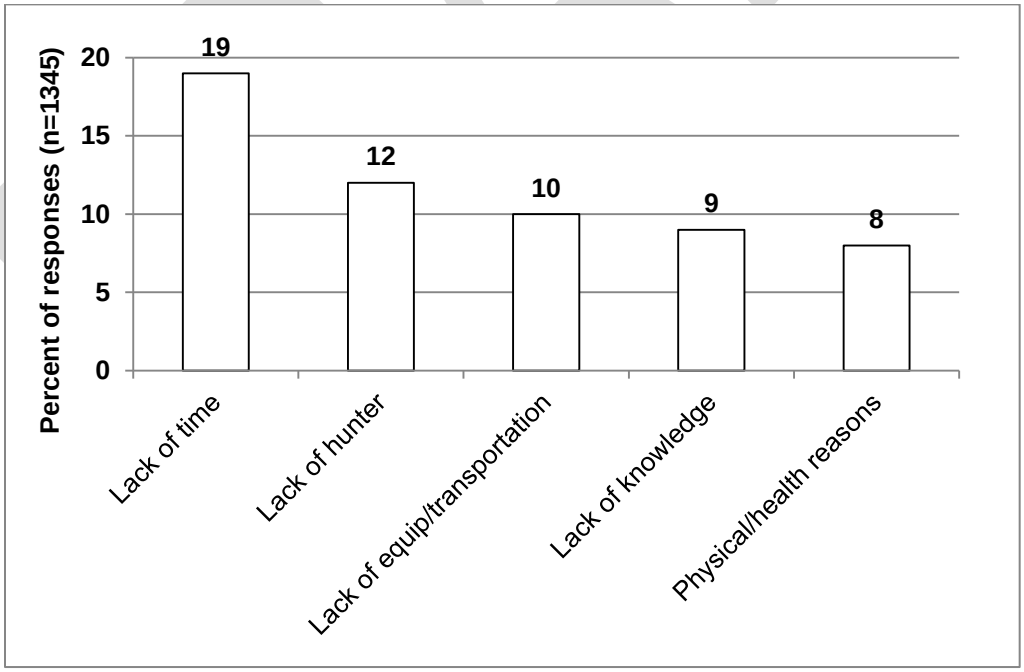


Figure 22. Percent of Webequie First Nation participants who reported that the following affected (or limited) where they could hunt, fish or collect berries, compared to all First Nations in Ontario

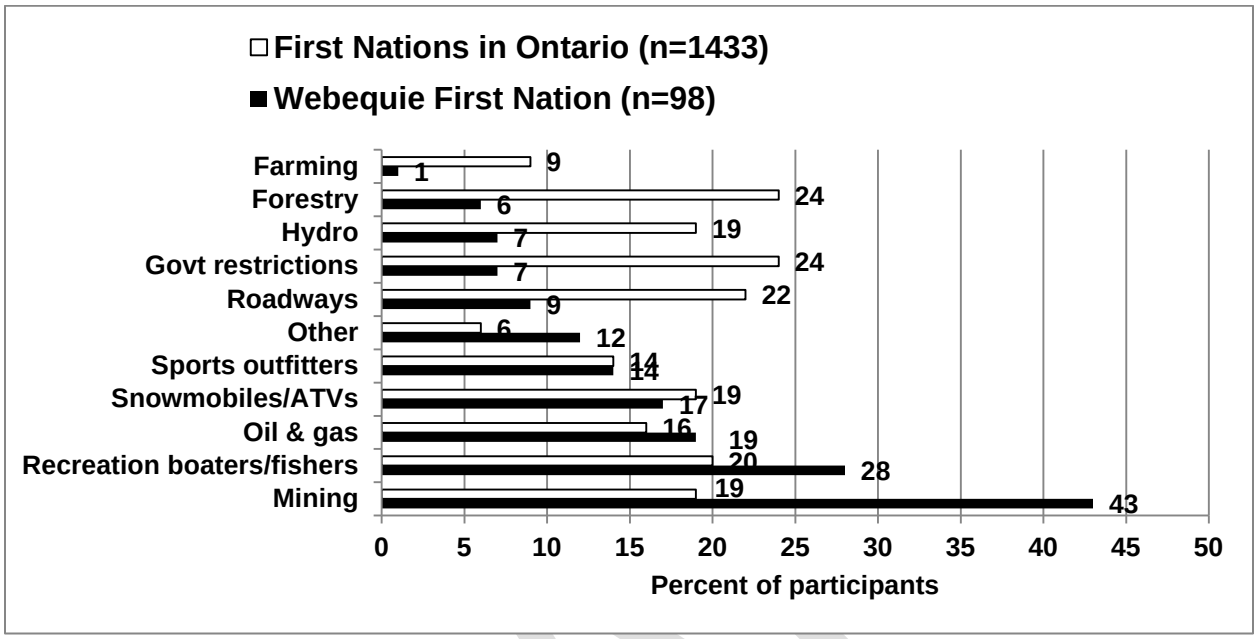


Figure 23a. Top 5 benefits of traditional food, Webequie First Nation

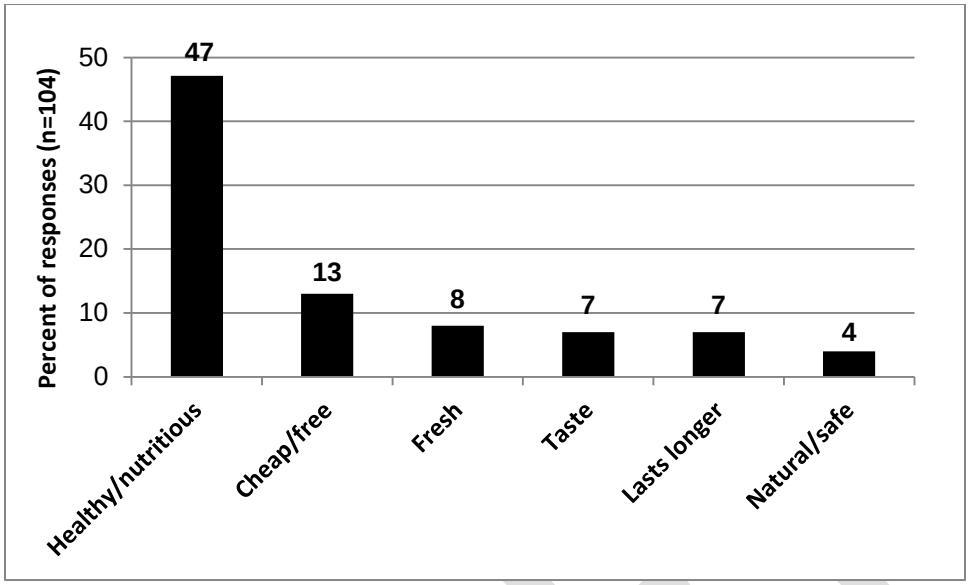


Figure 23b. Top 5 benefits of traditional food for all First Nations in Ontario

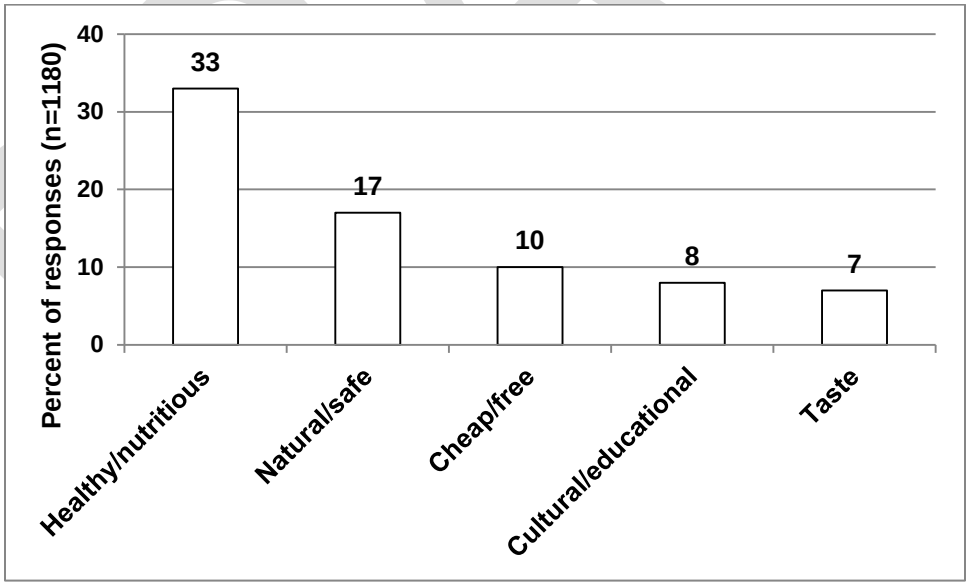


Figure 24a. Top 5 benefits of store-bought food, Webequie First Nation

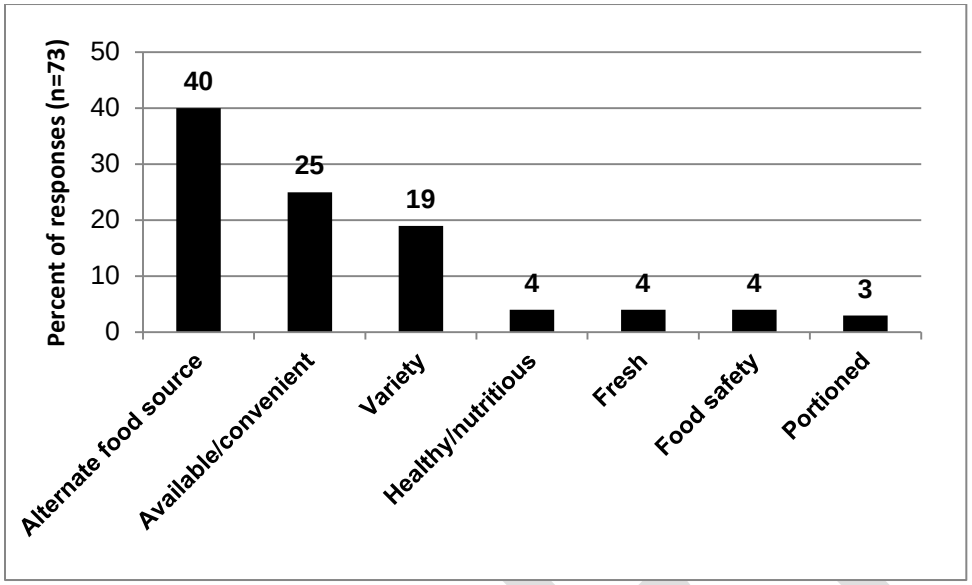
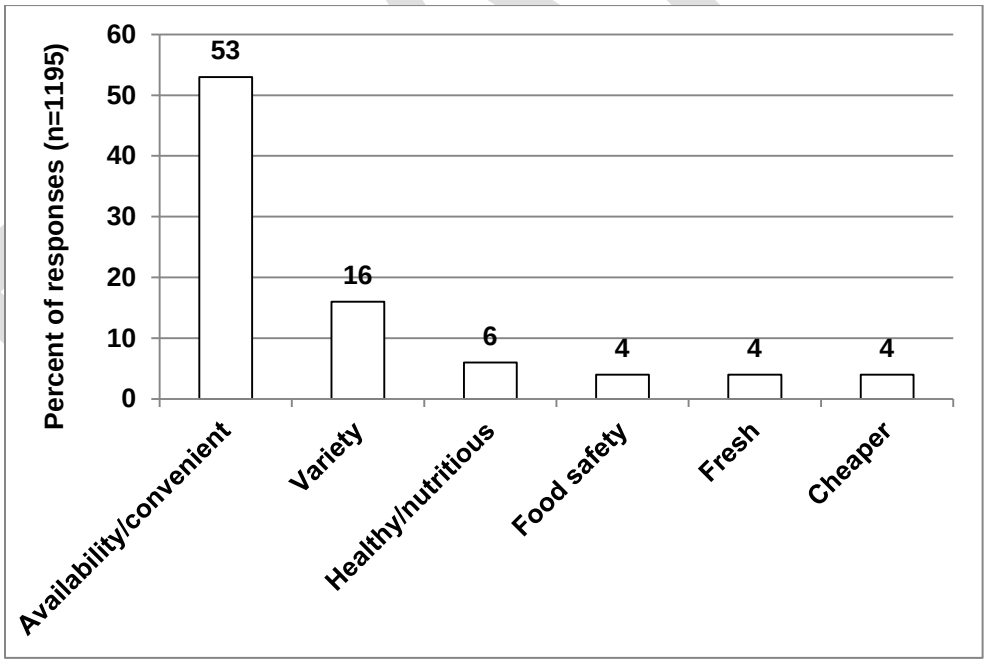


Figure 24b. Top 5* benefits of store-bought food, for all First Nations in Ontario



Note: verbatim comments to this open-ended question were grouped according to similar categories.
*Top 6 answers displayed due to tied responses.

f) Nutrient Intake

In order to understand how well First Nations in Ontario are eating, each participant was asked to describe the types and amounts of food and beverages they consumed within a one day period (24 hours). This information was analysed and compared to healthy eating guidelines to describe the diet quality of First Nations in Ontario. The nutrients consumed from the foods were compared to recommendations to describe the adequacy of nutrient intake. Given the limited number of surveys at the community level, a statement about diet quality and nutrient adequacy can only be made at the Ontario region level.

Eating Well with Canada's Food Guide - First Nations, Inuit and Métis (Health Canada, 2007) describes the amount and types of food needed on a daily basis to supply the nutrients needed for good health and to lower the risk of obesity, Type 2 diabetes, heart disease, some cancers, and osteoporosis. There are four food groups in the Canada's Food Guide (CFG-FNIM): Vegetables and Fruit, Grain Products, Milk and Alternatives, and Meat and Alternatives. A copy of Canada's Food Guide is in Appendix E and is available online at Health Canada's website (http://www.hc-sc.gc.ca/fn-an/pubs/fnim-pnim/index-eng.php#a .)

When compared to CFG-FNIM, First Nations in Ontario do not appear to be meeting the recommendations for healthy eating (Table 10). First Nations adults in Ontario consumed more than the recommended number of servings from the Meat and Alternatives group and below the recommended intake for the other three food groups (Milk and Alternatives, Vegetables and Fruit, and Grain Products), particularly among women. The following describes the eating patterns of First Nations in Ontario compared to the guidelines in more detail:

Vegetables and Fruit group: CFG-FNIM recommends that adult males have 7-10 Food Guide Servings daily while females have 7-8 Food Guide Servings of vegetables and fruit per day (A Food Guide serving is equivalent to ½ cup (4 ounces) of a fresh, frozen or canned vegetable, berries, fruit or 100% fruit juice or 1 cup (8 ounces) of raw leafy greens). Adults from First Nations in Ontario consumed about half the minimum recommended amounts (4 servings per day by First Nations men and 3 servings per day by First Nations women). Not eating the recommended amount of fruits and vegetables on a regular basis can lead to low intakes of several nutrients, including fibre, vitamin A, vitamin C, magnesium and folate. These nutrients are important for several functions within the body,

including: maintaining healthy skin (vitamins A and C); regulating blood pressure and bone mass (magnesium); producing healthy blood (folate and vitamin C); and reducing the risk of infection (vitamins A and C) and some cancers (fibre).

Grain Products: CFG-FNIM recommends that adult males, have 7-8 Food Guide Servings a day, while females have 6-7 Food Guide Servings of grain products per day; half of these servings should be whole grain foods. Examples of a Food Guide Serving from the Grain Products include 1 slice of bread, a 2” x 2” x 1” piece of bannock, ½ a bagel or pita, or tortilla, and ½ cup of cooked rice. Whole grain foods, such as brown rice, wild rice, barley and oats, are a good source of fibre and have many health benefits. Foods high in fibre can help us feel full longer, maintain a healthy body weight, as well as reduce the risk of heart disease, diabetes and cancer. Grain products are also an important source of several nutrients necessary for good health including riboflavin, thiamin, zinc, folate, iron, magnesium and niacin. First Nations men and women from Ontario fell short of the recommended number of servings from this group by 1 Food Guide serving a day.

Milk and Alternatives group: CFG-FNIM recommends that adult males and females aged 19-50 consume 2 servings from this food group per day. Adults aged 51+ are recommended to have at least 3 Food Guide Servings a day. Examples of a Food Guide serving from this group include: 1 cup of milk or fortified soy beverage, ¾ cup of yogurt and 1 ½ ounces of cheese. This food group contains the primary sources of calcium and vitamin D which are essential for building and maintaining healthy bones and teeth. In Ontario, both male and female participants reported having 1 serving per day. This low intake poses a concern for inadequate intakes for calcium and vitamin D.

Meat and Alternatives Group: CFG-FNIM recommends that adult men consume 3 Food Guide Servings of food from the meat and alternates food group every day, while the recommendation for women is 2 servings per day. A Food Guide Serving from the Meat and Alternatives Group is equivalent to 2 eggs or 2 ½ ounces (½ cup) of wild or store bought meat, fish, poultry, shellfish, or ¾ cup of cooked beans (lentils, black beans, split peas), or 2 tablespoons of peanut butter. In this study, men consumed an average of 4 Food Guide Servings from this food group daily and women consumed 3 servings per day. Consuming more than the daily

recommended amount of foods from the Meat and Alternatives group can contribute to a high fat intake and replace foods from other food groups which are consumed in low amounts.

Overall, the food choices of Ontario First Nations men and women are very similar, except for yogurt (which is consumed more often by women). Within each of the four food groups, only a limited number of foods appear frequently (Table 11). The low consumption of whole grains, fresh berries and fruit, and the low consumption of fresh and frozen vegetables relative to the use of potatoes, is particularly problematic and points towards the need to find ways to increase their consumption to improve intake of fibre, vitamins and minerals but decrease sodium.

Whether or not nutrients were consumed in adequate, low, or high amounts was determined from nutrient content calculations for the food and beverages consumed by participants. The population's intake for each nutrient was compared against dietary intake recommendations (Institute of Medicine, 2000). In terms of overall nutrient intakes for First Nations in Ontario, there are:

- High intakes of fat and sodium;
- Low intakes of fibre, vitamin A, vitamin C, vitamin D, calcium, and magnesium
- Low intake of folate for all women and for men aged 51 and over;
- Low intake of vitamin B6 for women aged 51-70 and men over 51; and
- Adequate intakes for iron, vitamin B12, riboflavin, niacin, thiamine, zinc and phosphorous.

Detailed information on the daily intake of each nutrient by First Nations in Ontario will be presented in the FNFNES Ontario Regional Report to be released in 2014.

Excess, as well as inadequate, nutrient intakes can have serious consequences on health. High intake of fat is linked to obesity and saturated fat is particularly associated with heart disease. High intake of sodium (salt) has been linked to high blood pressure, which can also lead to heart disease. People with diabetes are 2-3 times more likely to develop heart disease than those without. Reducing intake of foods high in fat and sodium are key steps to promoting better health.

Table 12 shows the foods that are the most important contributors to nutrients. As mentioned above, fat and salt intakes were above the recommended levels. The main source of fat (both total and saturated) in the diet came from beef, followed by processed meats such as cold cuts and sausages. The main source of salt came from canned soups, followed by processed meats. Replacing processed meat with non-processed wild game and beef, pork, chicken, and fish would help in reducing both fat and salt intake. Making homemade soups and choosing canned soups marked as ‘low sodium’ would also reduce salt intake. Increasing consumption of vegetables and fruit would help to increase intakes of vitamin A, vitamin C and fibre and could help to lower salt and fat in the diet overall. Increasing intake of foods such as: fish (whitefish, trout, salmon); milk, and milk products (such as vitamin D fortified yogurt); calcium and vitamin D fortified beverages (such as soy beverages); bannock (made with baking powder) and dark green vegetables and wild plants (calcium rich sources) would increase intakes of vitamin D and calcium. Finally, eating more whole grain products such as whole grain breads, cereals, and pasta would increase intakes of folate and fibre.

Table 12 also shows that traditional foods are important sources of nutrient intake as they were major contributors to protein, vitamin D, iron and zinc, which are required for strong bones (vitamin D), proper growth, healthy blood and maintenance of muscles. The important contribution of traditional food to nutrient intake is further illustrated in Table 13, where highlighted nutrients are those that were significantly higher on days with traditional food and underlined nutrients are those that were significantly higher on days with just store-bought food. Even though the average intake of traditional food for all First Nations in Ontario was 43 grams (or approximately 1 ½ ounces or 3 tablespoons) and 141 grams in Webequie, on days that traditional food is eaten, intakes of most nutrients are significantly higher than on days that only included store-bought food was eaten. This indicates that the diet is healthier when traditional food is included. High intakes of saturated fat, sugar, and sodium (salt) are associated with many illnesses and intakes of these nutrients were significantly higher on days when only store-bought food was consumed.

Table 14 shows the average quantities of the main store-bought foods consumed for First Nations in Ontario overall and Webequie First Nation participants. Cereal was the store-bought food consumed in largest

amounts in Webequie First Nation compared to soup (canned or dried soup mix) for all First Nations participants in Ontario. In Webequie First Nation, tea was the most popular beverage (average intake about 1 and 1/2 cups per day), followed by coffee, and fruit-flavoured/sweetened drinks. It should be noted that sugar-sweetened beverages such as soft drinks, fruit-flavoured drinks, lemonade, sweetened iced tea, sports drinks, and energy drinks can increase the risk of being overweight, thereby increasing the risk of diabetes and heart disease (Hu et al, 2010). Drinking water instead would be a healthier alternative.

In Webequie First Nation, 26% of participants took nutrient supplements compared to 34% of all participants (Figure 25). The list of nutrient supplements reported to be taken by total participants is presented in Appendix F. Overall, the most commonly reported supplement was vitamin D, followed by multivitamin/mineral supplements and vitamin B. The intake of vitamin D, calcium, and multivitamin supplements can help in reducing nutrient inadequacy when the diet quality is low. For example, the need for vitamin D increases over the age of 50. As such, Heath Canada recommends that men and women over 50 take a vitamin D supplement of 10 µg (400 IU) per day (Health Canada, 2007).

Table 10. Average number of Food Guide Servings per day for First Nations in Ontario (n=1433) compared to Canada's Food Guide recommendations

Food Group	Gender	Ontario First Nations current intake	Canada's Food Guide Recommendations
		Servings per day	
Vegetables & Fruits	men	4	7-10
	women	3	7-8
Grain Products	men	6	7-8
	women	5	6-7
Milk & Alternatives	men	1	2-3
	women	1	2-3
Meat & Alternatives	men	4	3
	women	3	2

Table 11. Top 5 contributors to Canada's Food Guide (% of total group intake), for First Nations women and men, living on-reserve in Ontario

Gender	Canada's Food Guide Food Groups			
	Fruit/Vegetable (%)	**Meat & alternates (%)**	**Grain products (%)**	**Milk & alternates (%)**
Women	Potatoes 20.0	Beef meat 4.7	White bread 14.7	Fresh milk 21.9
	Fresh/frozen Vegetable* 17.1	Ham/sausages 12.6	Whole wheat/ Rye bread 11.4	Cheddar cheese 13.2
	Fresh fruits 12.8	Eggs 11.5	Pasta/macaroni 10.4	Yogurt 7.8
	Fruit juices 9.9	Chicken meat 11.2	Hot cereal 7.7	Mashed potatoes 6.8
	Vegetable soups 8.3	Moose/ Caribou meat 5.5	Rice 5.0	Macaroni & cheese 6.2
Men	Potatoes 26.3	Beef meat 19.1	White bread 21.8	Fresh milk 27.3
	Fresh/frozen Vegetable 13.9	Eggs 12.0	Pasta/macaroni 19.6	Cheddar cheese 14.1
	Vegetable soups 11.6	Ham/sausages 10.3	Whole wheat/ Rye bread 14.1	Mashed potatoes 12.0
	Fresh fruits 9.5	Chicken meat 10.0	Hot cereal 7.6	Macaroni & cheese 9.1
	Fruit juices 9.2	Moose/ Caribou meat 9.0	Rice 6.9	Pizza/ Lasagna 6.0

*** This category does not include canned vegetables**

Table 12. Ten most important food contributors to nutrients for First Nations living on-reserve in Ontario

a) Energy		b) Protein		c) Fat		d) Carbohydrates	
FOOD	**% of total**	**FOOD**	**% of total**	**FOOD**	**% of total**	**FOOD**	**% of total**
Bread, white	6.3	Chicken	13.5	Beef	8.3	Bread, white	9.8
Chicken[1]	6.0	Beef	12.8	Cold cuts/sausages	8.1	Pasta/noodles	8.1
Pasta/noodles	5.8	Pasta/noodles	5.6	Chicken	8.0	Carbonated drinks (pop)	7.3
Beef[2]	5.5	Pork	4.8	Margarine	5.6	Cereal	7.0
Cereal	4.3	Cold cuts/sausages	4.7	Eggs	4.5	Jam/honey/syrup/sugar	5.6
Cold cuts/sausages	4.1	Bread/buns, white	4.5	Pork	4.3	Bread, whole wheat	5.0
Pizza	3.5	Eggs	4.3	Salty snack food	4.3	Potatoes[4]	3.9
Bread, whole wheat	3.4	Moose meat	4.1	Pizza	4.2	Hash browns, French fries, onion rings	3.8
Carbonated drinks, regular	3.4	Bread, whole wheat	3.9	Hash browns, French fries, onion rings	3.2	Fruit drinks	3.7
Salty snack food[3]	3.0	Fish	3.9	Vegetable oil	3.0	Cakes/pies/pastries	3.4

e) Saturated Fat		f) Monounsaturated Fat		g) Polyunsaturated Fat		h) Cholesterol	
FOOD	**% of total**	**FOOD**	**% of total**	**FOOD**	**% of total**	**FOOD**	**% of total**
Beef	10.4	Beef	9.9	Chicken	9.8	Eggs	34.5
Cold cuts/sausages	9.2	Cold cuts/sausages	9.8	Margarine	9.0	Chicken	11.7
Chicken	6.2	Chicken	8.6	Salty snack food	9.0	Beef	10.0
Cheese	5.8	Margarine	6.5	Salad dressing	5.5	Cold cuts/sausages	5.5
Butter	5.1	Eggs	4.9	Hash browns, French fries, onion rings	5.2	Pork	4.0
Pizza	4.7	Pork	4.9	Bread/buns, white	5.1	Sandwiches	3.5
Pork[5]	4.7	Vegetable oil	4.9	Vegetable oil	4.2	Fish	3.0
Cream	4.3	Pizza	4.4	Cold cuts/sausages	4.1	Moose meat	2.4
Eggs	4.1	Salty snack food	4.2	Cakes/pies/pastries	3.7	Cheese	2.3
Hash browns, French fries, onion rings	3.2	Cakes/pies/pastries	3.2	Eggs	3.7	Milk	2.1

i) Total Sugars		j) Fibre		k) Vitamin A		l) Vitamin C	
FOOD	**% of total**	**FOOD**	**% of total**	**FOOD**	**% of total**	**FOOD**	**% of total**
Carbonated drinks, regular	19.4	Cereal	13.5	Vegetables	19.7	Fruit drinks	27.1
Jam/honey/syrup/sugar	15.5	Bread, whole wheat	12.7	Eggs	13.1	Fruit juice	17.4
Fruits	6.6	Vegetables	8.1	Milk	10.8	Vegetables	14.7
Milk	6.1	Bread, white	7.3	Margarine	9.3	Fruits	11.9
Fruit juice	4.3	Pasta/noodles	6.4	Moose liver	6.0	Potatoes	5.3
Fruit drinks	4.2	Fruits	6.1	Cold cuts/sausages	5.0	Hash browns, French fries, onion rings	3.4
Cakes/pies/pastries	4.0	Hash browns, French fries, onion rings	5.0	Soup	3.9	Soup	2.2
Cereal	3.4	Potatoes	4.6	Cheese	3.6	Salty snack food	2.1
Iced tea	3.4	Salty snack food	4.6	Butter	3.5	Pasta/noodles	2.0
Bread/buns, white	2.5	Pizza	3.4	Cream	3.2	Spaghetti/tomato sauce	1.2

m) Vitamin D		n) Folate		o) Calcium		p) Iron	
FOOD	**% of total**	**FOOD**	**% of total**	**FOOD**	**% of total**	**FOOD**	**% of total**
Fish	20.4	Pasta/noodles	17.7	Milk	15.5	Cereal	13.0
Milk	20.3	Bread, white	16.8	Bread, whole wheat	11.5	Bread, white	10.4
Margarine	16.9	Pizza	6.1	Bread, white	7.5	Beef	7.8
Eggs	11.7	Vegetables	5.5	Cheese	7.4	Pasta/noodles	6.1
Pasta/noodles	5.1	Bread, whole wheat	5.0	Pizza	5.6	Bread, whole wheat	4.8
Cold cuts/sausages	4.2	Cereal	5.0	Pasta/noodles	4.9	Chicken	4.2
Pork	2.9	Eggs	5.0	Cereal	2.8	Moose meat	3.5
Chicken	2.6	Sandwiches	3.0	Vegetables	2.6	Pizza	3.5
Milk, evaporated	1.7	Tea	3.0	Sandwiches	2.5	Soup	3.4
Beef	1.6	Soup	2.4	Fruit drinks	2.4	Vegetables	2.8

q) Sodium		r) Zinc	
FOOD	**% of total**	**FOOD**	**% of total**
Soup	10.4	Beef	21
Cold cuts/sausages	9.6	Moose meat	6.4
Bread, white	9.1	Cereal	6
Pizza	4.8	Chicken	6
Bread, whole wheat	4.5	Pasta/noodles	4.6
Chicken	4.5	Cold cuts/sausages	4.3
Pasta/noodles	4.2	Bread, whole wheat	3.9
Sandwiches	3.9	Pork	3.7
Pork	2.8	Milk	3.5
Cheese	2.7	Pizza	3.2

[1]chicken= roasted, baked, fried and stewed
[2]beef= ground, steak, ribs and brisket
[3]salty snack food=potato chips, pretzels, popcorn
[4]potatoes= boiled, baked, mashed
[5]pork= loin, chops and ribs

Table 13. Comparison of nutrient intake (mean ± SE) on days with and without traditional food (TF), for First Nations adults living on-reserve in Ontario

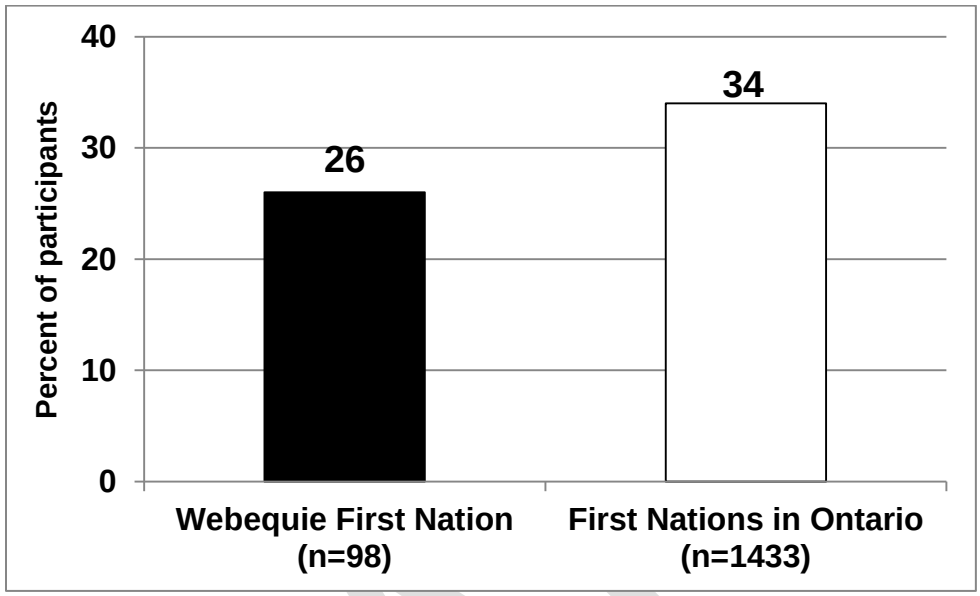
Nutrient	Days with TF (n=202 recalls)	Days without TF (n=1231 recalls)
	mean ± SE	
Energy (kcals)	2018 ± 68	1972 ± 28
Protein (g)***	121 ± 5	82 ± 1
Fat (g)	77 ± 4	81 ± 1
Carbohydrate (g)	219 ± 8	235 ± 4
Total sugars (g)**	66 ± 4	82 ± 2
Fibre (g)	15 ± 0.7	15 ± 0.3
Cholesterol (g)**	380 ± 23	318 ± 7
Total Saturated Fat (g)***	21 ± 1	26 ± 0.5
Total Monounsaturated Fat (g)	31 ± 2	31 ± 1
Total Polyunsaturated Fat (g)	17 ± 1	16 ± 0.3
Linoleic acid (g)	13 ± 1	13 ± 0.3
Linolenic acid (g)***	2 ± 0.18	1.5 ± 0.04
Calcium (mg)	673 ± 36	693 ± 13
Iron (mg)***	20 ± 1	14 ± 0.3
Zinc (mg)***	17 ± 1	11 ± 0.2
Magnesium (mg)***	307 ± 11	258 ± 4
Copper (mg)***	1.6 ± 0.07	1.2 ± 0.03
Potassium (mg)***	2987 ± 107	2407 ± 36
Sodium (mg)*	2707 ± 142	3089 ± 50
Phosphorus (mg)***	1532 ± 58	1151 ± 16
Vitamin A (µg)	718 ± 148	471 ± 20
Vitamin D (µg)***	9.5 ± 1.1	4 ± 0.11
Vitamin C (mg)*	59 ± 5	72 ± 3
Folate (µg)	323 ± 15	335 ± 6
Thiamin (mg)	1.1 ± 0.08	1.1 ± 0.04
Riboflavin (mg)***	2.4 ± 0.09	2.0 ± 0.03
Niacin (mg)***	49 ± 2	39 ± 0.6
Vitamin B6 (mg)**	1.8 ± 0.09	1.5 ± 0.03
Vitamin B12 (µg)***	12 ± 0.84	5 ± 0.52

*significantly different, unpaired t-test, p<0.05; **p<0.01; ***p<0.0001

Table 14. Top 10 consumed store-bought food (g/person/day), ranked by overall decreasing amount of consumption, Webequie First Nation compared to all First Nations in Ontario (refer to Appendix D for conversion from grams to usual household measures)

Webequie First Nation (n=98)		First Nations in Ontario (n=1433)	
Store-bought Food	**g/person /day**	**Store-bought Food**	**g/person/ day**
BEVERAGES		**BEVERAGES**	
Tea	413	Coffee	395
Coffee	253	Water, tap	373
Carbonated drinks, regular	155	Tea	205
Fruit-flavoured drinks	150	Carbonated drinks, regular	177
Water, tap	145	Water, bottled	170
Carbonated drinks, diet	47	Milk	89
Milk	43	Fruit drink	81
Water, bottled	36	Carbonated drinks, diet	67
Fruit juice	16	Fruit juice	36
Iced tea	15	Iced tea	30
FOOD		**FOOD**	
Cereal	111	Soups	88
Soups	101	Pasta	74
Pasta	96	Vegetables	63
Potatoes	46	Cereal	63
Chicken	43	Chicken	55
Eggs	36	Fruits	48
Bread/buns, white	33	Potatoes	47
Cold cuts/sausages	33	Bread/buns, white	45
Hash browns, French fries, onion rings	33	Beef	42
Vegetables	30	Eggs	32

Figure 25. Nutritional supplement use in Webequie First Nation compared to all First Nations in Ontario



g) Environmental Concerns

Many First Nations communities have reported observations of climate change in their local environment. About two thirds or (63%) of participants from Webequie First Nation reported that significant climate changes have occurred compared to 73% of all participants (Figure 26). Climate change was mainly perceived to decrease the availability of traditional foods and affect the growth and life-cycle pattern of plants and animals (Figure 27).

Figure 26. Percent of all participants who noticed any significant climate change in their traditional territory in the last 10 years, Webequie First Nation compared to all First Nations in Ontario

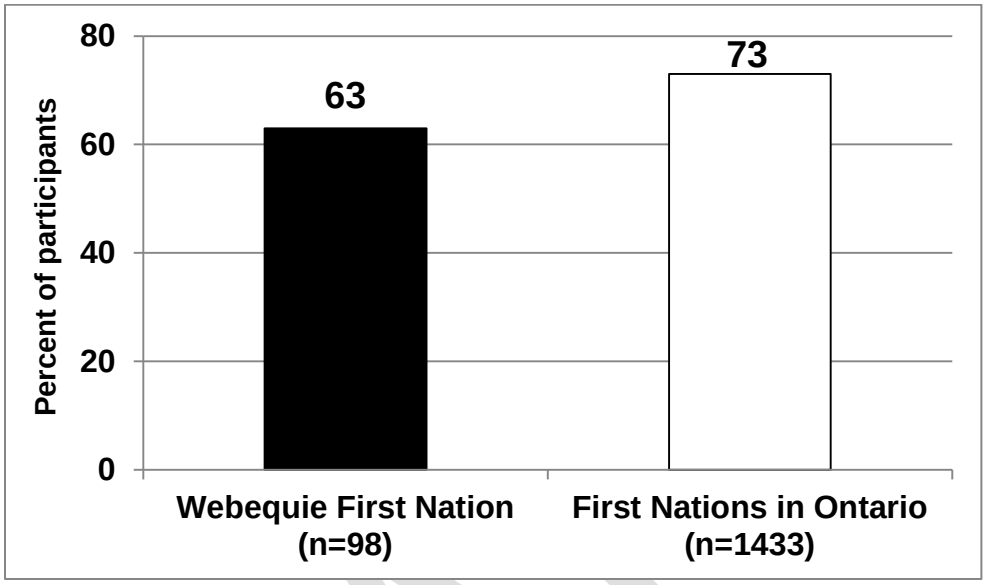
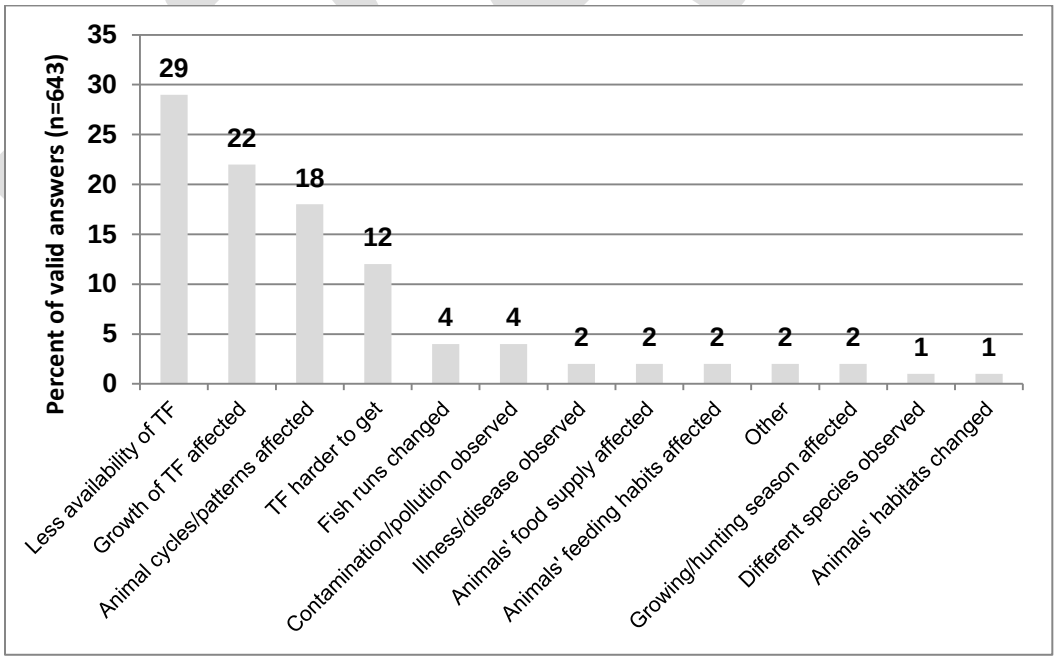


Figure 27. How climate change is perceived to have affected traditional food availability in on-reserve First Nations' households in Ontario



2. Tap Water Sampling Results

Almost all households (97%) have tap water in their homes (Figure 28) and most do use the tap water for both drinking (88%) and cooking (94%). However, of the households that did have tap water, almost three-quarters (73%) did report that the taste of chlorine always (23%) or sometimes (50%) limits their use of tap water for drinking purposes (Figure 29). These results are higher to what was reported across Ontario where 43% or 2 out 5 households stated that the taste of chlorine always or sometimes prevented them from using it for drinking. In Webequie First Nation and in the other participating First Nation communities in Ontario, the tap water is mainly supplied from the treatment plant (Figure 30). Across Ontario, if tap water was not available or not consumed, 85% drank bottled water (Figure 31) and 77% used bottled water to cook with (Figure 32).

Table 15 reports the characteristics of all First Nations participants' households and plumbing systems in Ontario. The average participant's house was built in 1991, with the oldest house in the study built in 1893 and the newest house in 2012. A total of 20% of households had upgraded plumbing, 32% of households treated their household water (mainly by

using filters or boiling it), and 16% had water storage tanks. The majority of households (48%) had plastic pipes under their kitchen sink.

In Webequie First Nation, tap water samples from 20 participants' homes were analyzed on-site for chlorine, pH and temperature using test strips. Chlorine is added to water treatment systems for disinfection and the minimum acceptable level for disinfection is 0.2 mg free chlorine/L of water. The pH is a measure of how acidic or alkaline the water is. The optimal range for pH in drinking water is within 6.5 to 8.5. Exposure to extreme high or low pH values can irritate the skin, and in sensitive individuals, may irritate the stomach. High water temperatures can accelerate the corrosion of pipes, resulting in higher than normal levels of trace metals in the water.

In all 20 samples, free chlorine was detected in the range of 0.32 mg/L to 1.73 mg/L. The pH measurements for all water samples ranged from 6.2 to 7.2, which is close to the optimal range. Seven of the samples were measured at 6.2 pH and an additional sample that was not from the tap was measured at 6.3 pH. While slightly outside of the optimal range, this is not expected to be of concern.

Health Canada has set 15°C as the maximum temperature for drinking water as an aesthetic objective (i.e. acceptance by consumers for taste). Two of the 20 tap water samples collected were above 15°C, with the maximum at 16.8°C. The duplicate used for quality assurance and quality control of the 16.8°C sample was measured at 23.3°C which may be due to hot water being mixed with the cold at the tap.

Table 16 indicates the results of testing for trace metals in drinking water that would affect human health in the 20 water samples from Webequie First Nation. Two first draw samples (representing stagnant water) were found to exceed the Maximum Acceptable Concentration (MAC) for lead. All levels of the five minute flushed samples were found to be below guideline levels. Table 17 presents the results of testing for trace metals in drinking water from Webequie First Nation which would affect its appearance, taste, odour, or colour. Elevated levels of aluminum were found in nine homes. The levels found would pose no threat to human health.

There is generally no concern regarding the trace metal levels in the drinking water. It is recommended that the tap water be flushed once in the

morning before consumption. In addition, flushing the toilet or using the shower before drinking tap water, will also reduce levels of exposure to metals from indoor plumbing.

Table 18 shows the results from the Public Works Questionnaire and provides information about the drinking water distribution system in Webequie First Nation. The treatment plant obtains its water from Winisk Lake. In addition to some people purchasing their water at the Northern Store, an unknown number of people access water directly from Winisk Lake.

There is one water treatment plant located on the reserve. The water distribution pipes are made of PVC plastic. In 2011 there were no boil water advisories issued and no water shortages were reported other than when construction or major breakdown occurred. The treatment plant was considered to be up to date by the community, but was expected to require upgrades within a few years.

Figure 28. Household water source and use, Webequie First Nation compared to all First Nations in Ontario

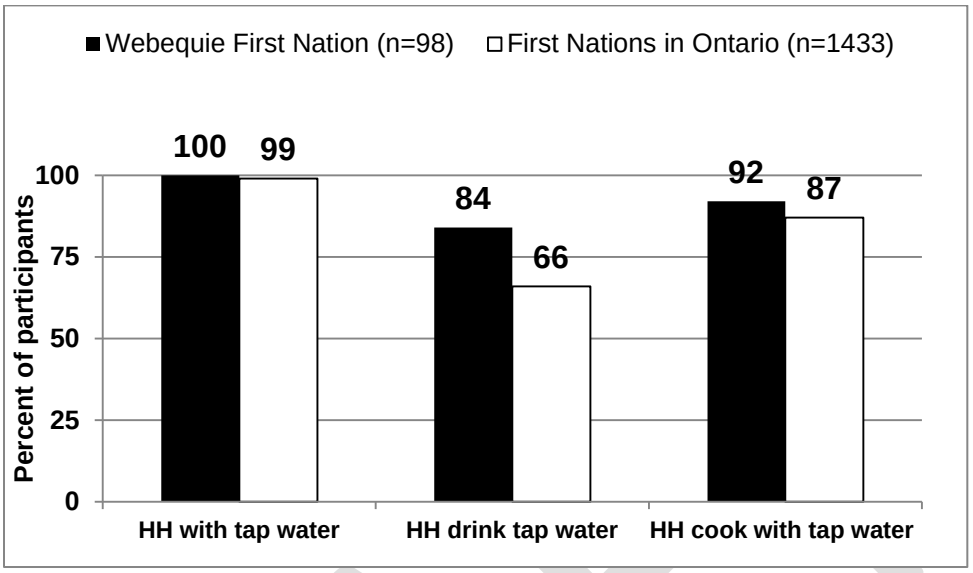


Figure 29. Does the taste of chlorine prevent you from drinking the tap water?

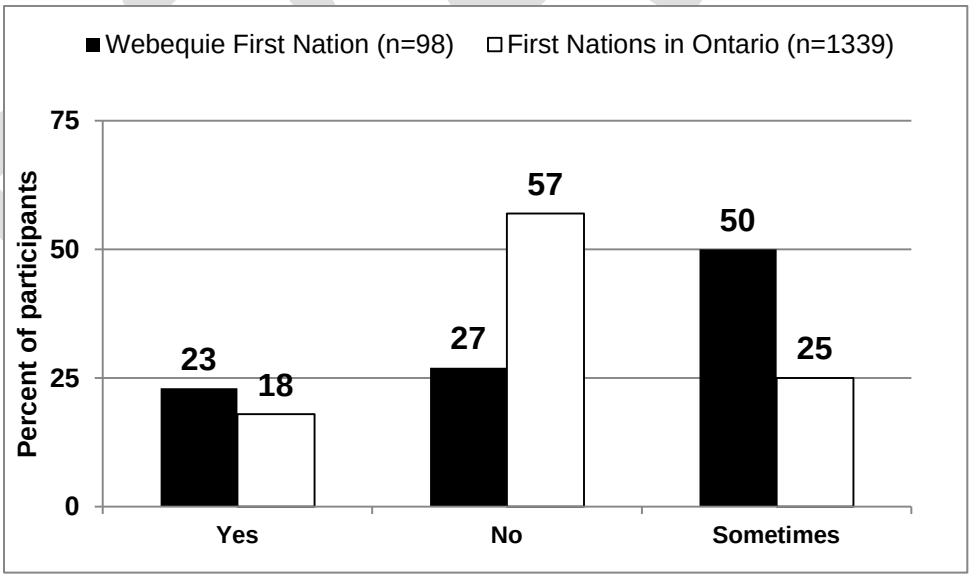


Figure 30. Source of tap water, Webequie First Nation compared to all First Nations in Ontario

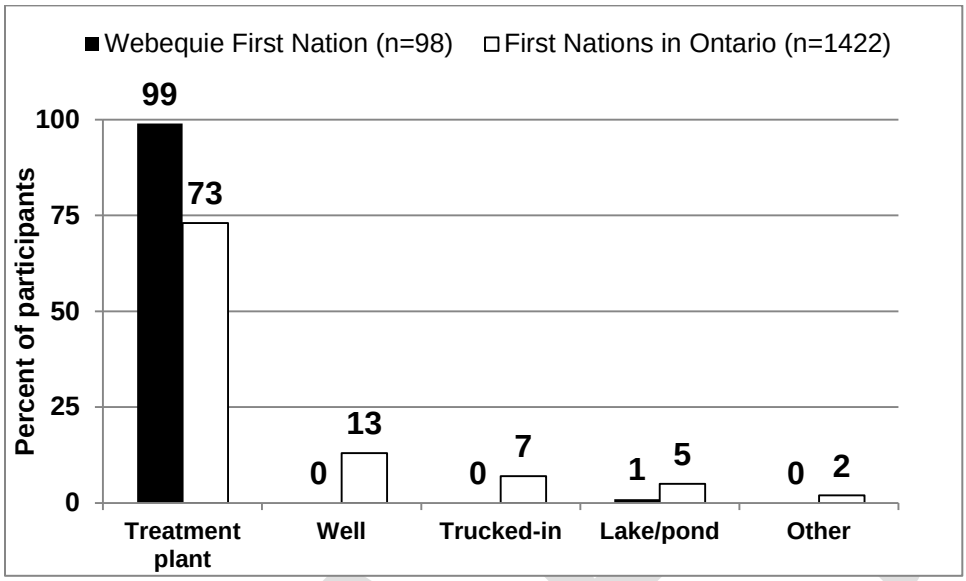
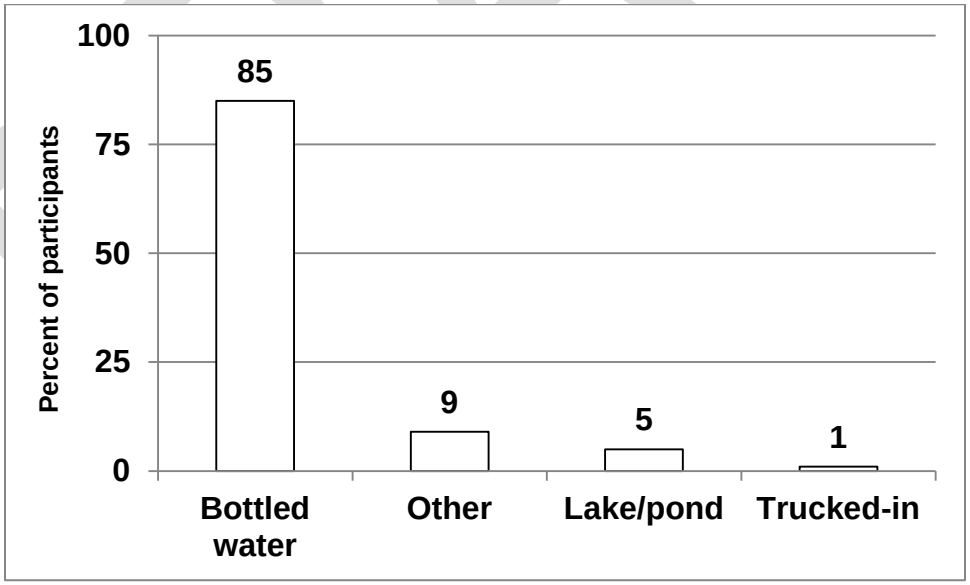
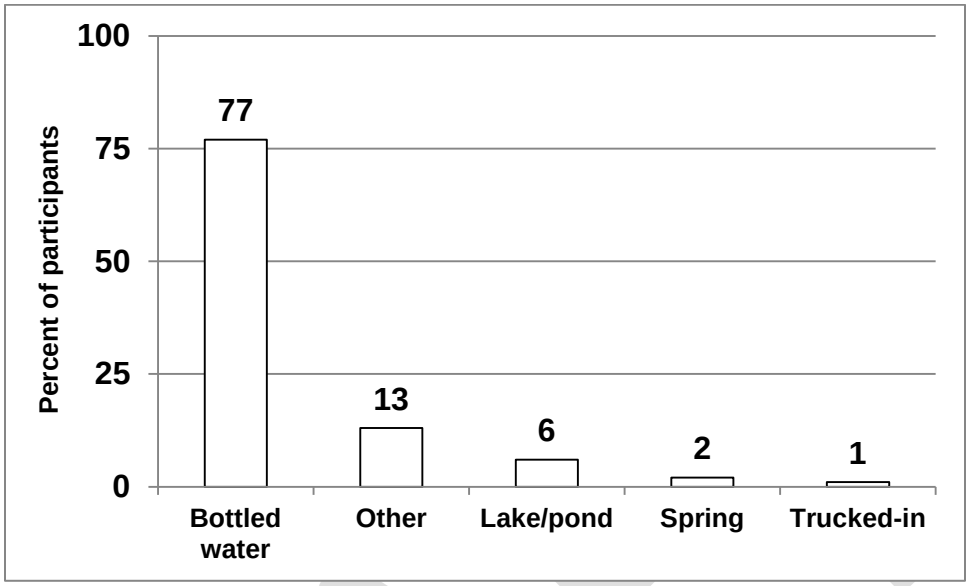


Figure 31. Alternative sources of drinking water used in households in Ontario that do not have or use tap water (n=400)



Other= water treatment plant, spring, stream/river

Figure 32. Alternative sources of water for preparation of food or beverages in households in Ontario that do not have or use tap water (n=145)



Other= water treatment plant, reverse osmosis

Table 15. Characteristics of homes and plumbing, First Nations living on-reserve in Ontario

Characteristic	Answer
Average year home was built (Range) (n=1021)	1991 (1893, 2012)
Percent of households (HH) with upgraded plumbing (n=1433)	20%
Average year plumbing upgraded (Range) (n=213)	2005 (1965, 2012)
Percent of HH that treat water (e.g. with filters, boiling, etc.) (n=1432)	32%
Percent of HH with a water storage system (n=1431)	16%
Location of water storage system (n=213):	
Inside	55%
Outside	45%
Type of water storage system (n=213):	
Able to be carried (bucket)	35%
Fixed in place	65%
Percent of type of pipes under kitchen sink (n=1386)	
Metal	18%
Plastic	48%
Plastic with metal fittings	10%
Copper with braided flex line	21%

Table 16. Results of testing for levels of trace metals in drinking water that would affect health, Webequie First Nation

Trace Metal Detected	Maximum Detected (ug/L)	Detection Limit (DL) - ug/L	MAC - Maximum Allowable Concentration - GCDWQ, 2012- (ug/L)	Total Number of Samples in Exceeding guideline value			Comments
				First Draw	Flushed (5 Min)	Duplicate	
Antimony, Sb	0.06	<0.02	**6**	0	0	0	Below guideline value.
Arsenic, As	0.40	<0.02	**10**	0	0	0	Below guideline value.
Barium, Ba	10.5	<0.04	**1,000**	0	0	0	Below guideline value.
Boron, B	0	<50	**5,000**	0	0	0	Below guideline value.
Cadmium, Cd	0.277	<0.005	**5**	0	0	0	Below guideline value.
Chromium, Cr	0	<0.1	**50**	0	0	0	Below guideline value.
Lead, Pb	40.3	<0.005	**10**	2	0	0	Flushed samples below guideline value
Selenium, Se	0	<0.04	**10**	0	0	0	Below guideline value.
Uranium, U	0,64	<0.002	**20**	0	0	0	Below guideline value.

Table 17. Results of testing for levels of trace metals in drinking water that would affect its appearance, taste, odour, or colour, Webequie First Nation

Trace Metal Detected	Maximum Detected (ug/L)	Detection Limit (DL) - ug/L	AO - Aesthetic Objective - GCDWQ, 2012- (ug/L)	Total Number of Samples in Excess		Comments
				First Draw	Flushed (5 Min)	
Aluminum, Al	248	<0.2	**100/200***	3	9	Above guideline. Elevated levels pose no health concern.
Copper, Cu	702	<0.05	**1,000**	0	0	Below guideline value.
Iron, Fe	72	<1	**300**	0	0	Below guideline value.
Manganese, Mn	5.27	<0.05	**50**	0	0	Below guideline value.
Sodium, Na	4,680	<10	**200,000**	0	0	Below guideline value.
Zinc, Zn	646	<0.1	**5,000**	0	0	Below guideline value.

Table 18: Public Works Questionnaire Results

Question	Answer
1) Community Name:	Webequie First Nation
2) Does your community have a water distribution system (pumping system with water mains) (Y/N)?	Yes
3) Does the community have a water treatment plant (filtration and/or chemicals added) (Y/N)?	Yes
4) What year was the water treatment plant built?	1992-1993
5) What is the name and type of water source that provides water to the community? A. Name of water source. B. Type of water (stream, lake spring, ground water)	A. Winisk Lake B. Lake
6) Is the source water filtered at the water treatment plant (Y/N)? If yes, please specify the type of filtration	Yes, Sand and anthracite
7) Is the water chlorinated/disinfected at the water treatment plant (Y/N)? If yes, please specify the type of chlorination. If yes, is chlorination manual or automatic	Yes, liquid Javex, automatic chlorination
8) Indicate all chemicals used for water treatment at the plant:	Sternpac (alum), magnafloc (polymer), Javex 12 (chlorine)
9) In the past year have there been problems concerning procurement of treatment plant chemicals; replacement parts, maintenance services; testing supplies or services (Y/N)? Describe.	Yes, more money for testing supplies needed
10) In your opinion, is your treatment plant up-to-date (Y/N)	Yes – although the system will need to be updated within a few years
11) In the last year, how many “boil water advisories” were issued? Who issued the boil water advisory? What was the reason for the boil water advisory?	0
12) Are there periods when water is not available to households (interruptions in service) (Y/N)? If yes, please explain:	Yes, during maintenance to some parts of distribution
13) What are the pipes of the water distribution system made of?	PVC
14) Are there any water storage tanks on-reserve (Y/N)? If yes, indicate number, volume and type of tank:	No

Question	Answer
15) Are there additional (alternative) sources of drinking water available for community use (Y/N)? a) If yes, please describe each (on reverse side) and if possible estimate the number of people accessing water from these sources, or if the water from each source is mixed, describe each. b) Is this water tested for fecal coliforms (Y/N)?	Yes, A. The Northern Store and Lake Water. B. Unknown
16) Is the water system serving your community staffed and maintained by a trained (certified) water treatment plant operator?	Not certified, but trained with 10 years of experience.

3. Surface Water Sampling for Pharmaceuticals

Webequie First Nation was sampled for 42 pharmaceuticals used for human health, veterinary purposes and aquaculture in three surface water sites chosen by the community. These sites were three locations on the Winisk River (from north to south): near the northern water intake, near the waste lagoon discharge area and near the southern drinking water intake. Four pharmaceuticals were detected in the surface water samples in the vicinity of Webequie First Nation: atenolol (heart medication), caffeine (from pain relief medication and tea/coffee), cimetidine (ulcer medication), and ketoprofen (arthritis medication). Table 19 lists the 32 pharmaceuticals that were found in surface water samples collected on reserves in Ontario. These low levels of exposure to pharmaceuticals should not cause any impact on human health (World Health Organization, 2012).

Table 19. Pharmaceuticals measured in surface water near Webequie First Nation

Pharmaceutical Detected in Ontario	Max (ng/L) in Webequie First Nation	Detection Limit (ng/L)	Number of Samples Collected in Webequie First Nation	Number of Samples Non-detected
Acetaminophen	<10	10	4	4
Atenolol	**13.1**	5.0	4	0
Atorvastatin	<5	5.0	4	4
Bezafibrate	<0.5	0.50	4	4
Caffeine	**316**	5.0	4	2
Carbamazepine	<0.5	0.50	4	4
Cimetidine	**2.7**	2.0	4	1
Ciprofloxacin	<20	20	4	4
Clarithromycin	<2	2.0	4	4
Codeine	<5	5.0	4	4
Cotinine	<5	5.0	4	4
Dehydronifedipine	<2	2.0	4	4
Diclofenac	<15	15	4	4
Diltiazem	<5	5.0	4	4
Diphenhydramine	<10	10	4	4
Erythromycin	<10	10	4	4
17-alpha-Ethinylestradiol	<0.2	0.20	4	4
Fluoxetine	<5	5.0	4	4
Furosemide	<5	5.0	4	4
Gemfibrozil	<1	1.0	4	4
Hydrochlorothiazide	<5	5.0	4	4
Ibuprofen	<20	20	4	4
Ketoprofen	**2.4**	2.0	4	3
Metformin	<10	10	4	4
Metoprolol	<5	5.0	4	4
Naproxen	<5	5.0	4	4
Pentoxifylline	<2	2.0	4	4
Ranitidine	<10	10	4	4
Roxithromycin	<5	5.0	4	4
Sulfamethazine	**<5**	5.0	4	4
Sulfamethoxazole	<2	2.0	4	4
Trimethoprim	<2	2.0	4	4
Warfarin	<0.5	0.50	4	4

4. Mercury in Hair Results

Among the 1433 FNFNES participants in Ontario, 770 individuals consented to hair sampling for mercury (54% of the total). After excluding samples from participants who did not provide their age, did not complete the questionnaire or the 24 hour recall and samples with too little hair, a total of 749 samples were included in the analyses.

A total of 28 hair samples (17 from women and 11 from men) were collected from Webequie First Nation; 27 participants completed all aspects of the study. Table 20 compares the results from the 27 Webequie First Nation participants to Health Canada's proposed guidance values for health risk associated with mercury exposure. Results show that the risk of mercury exposure is currently low among participants in Webequie First Nation.

Health Canada has a mercury guideline of 2 µg/g in hair for children and women of childbearing age and 6 µg/g in hair for adult males and older women. Adults are more likely to have a higher level of mercury in hair if they eat larger walleye or northern pike often. In this study, a three centimetre long piece of hair was collected to measure mercury intake over

a three month period. If the person had very short hair, only 1 centimetre of hair was taken (representing the last 30 days). The one centimetre segments of hair were analyzed separately: an individual's usual intake of mercury was calculated from the average of the three separate samples or the single sample provided from people with short hair.

Overall, six individuals (five women and one man) had hair mercury levels that were above Health Canada's acceptable safe level on one or more segments of the hair sample provided. However the amounts were below levels that would result in illness. Letters were sent to these individuals because there was at least one month where the mercury levels exceeded the guidelines. Suggestions were given on how to reduce mercury intake.

Figure 33 shows the average blood equivalent concentration of mercury in hair of 27 participants from Webequie First Nation. Hair concentrations were converted to blood equivalent concentration using a conversion factor of 0.004 to facilitate the comparison with previous data.

Figure 34 shows the concentrations of mercury in hair for men and women over the age of 50. These figures show that when hair levels were

converted to a blood equivalent, only two adults exceeded the 20 ppb Health Canada mercury in blood guideline.

Due to the susceptibility of the fetus to mercury toxicity, the Health Canada mercury in blood guideline for women of childbearing age is lower at 8 ppb. Figure 35 shows the concentrations of mercury in hair (at a blood equivalent concentration) of the 11 women of childbearing age (from Webequie First Nation who provided hair samples. This figure shows that when hair levels were converted to a blood equivalent, 27% (3 of 11) women of childbearing age exceeded the 8 ppb Health Canada mercury in hair guideline.

Table 21 compares Webequie First Nation mercury in hair results to those of past studies in Webequie First Nation where mercury levels were measured. The mercury levels found in this study were similar to the levels found in past Health Canada studies in Webequie in the 1970s and 1980s.

Table 22 shows that the Webequie First Nation mercury levels are significantly higher than the Canadian average as measured in the Canadian Health Measures Survey (2007-2009), Health Canada 2010.

Table 20. Average total mercury concentrations (converted to blood equivalents in parts per billion) for all Webequie First Nation participants and for women of childbearing age compared to Health Canada's proposed blood guidance values

Group	Average total mercury concentration (ppb) Webequie First Nation participants	Mercury in blood Guidance value (ppb) Health Canada
Webequie population	10.30	20.00
Women of childbearing age (19-50 years old)	6.99	8.00

Figure 33. Concentration of mercury in hair (converted to blood equivalents) of Webequie First Nation participants (n=27)

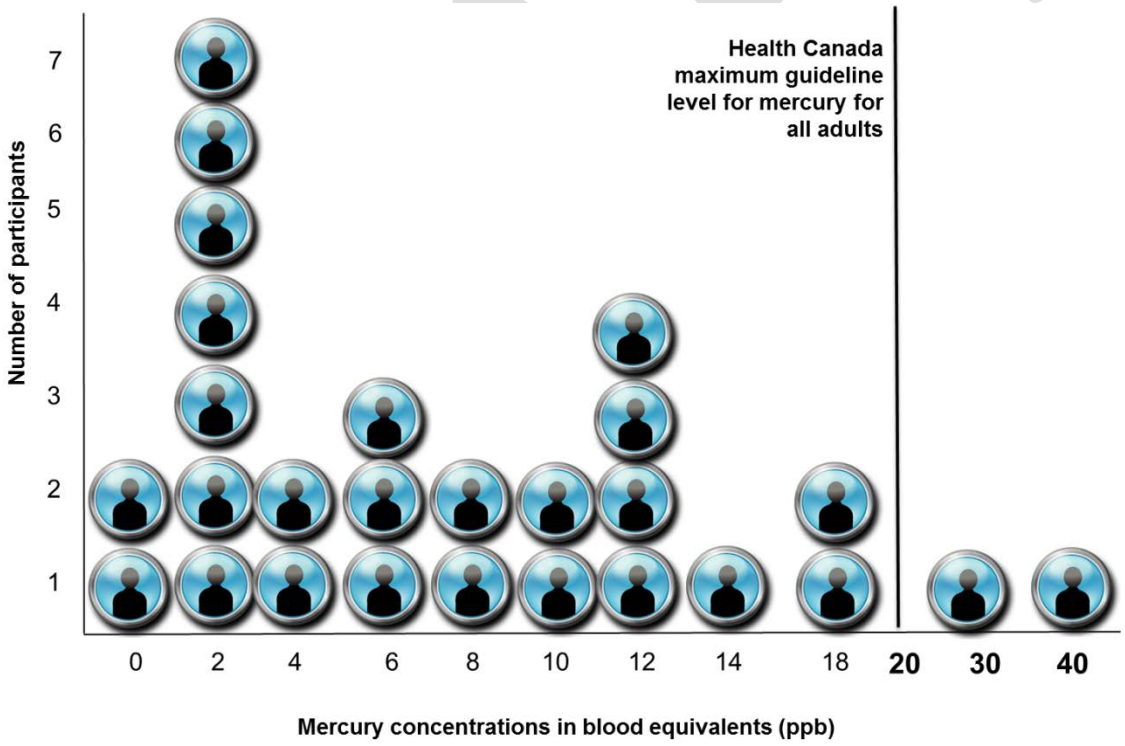


Figure 34. Concentration of mercury in hair (converted to blood equivalents) from men and postmenopausal women, Webequie First Nation (n=16)

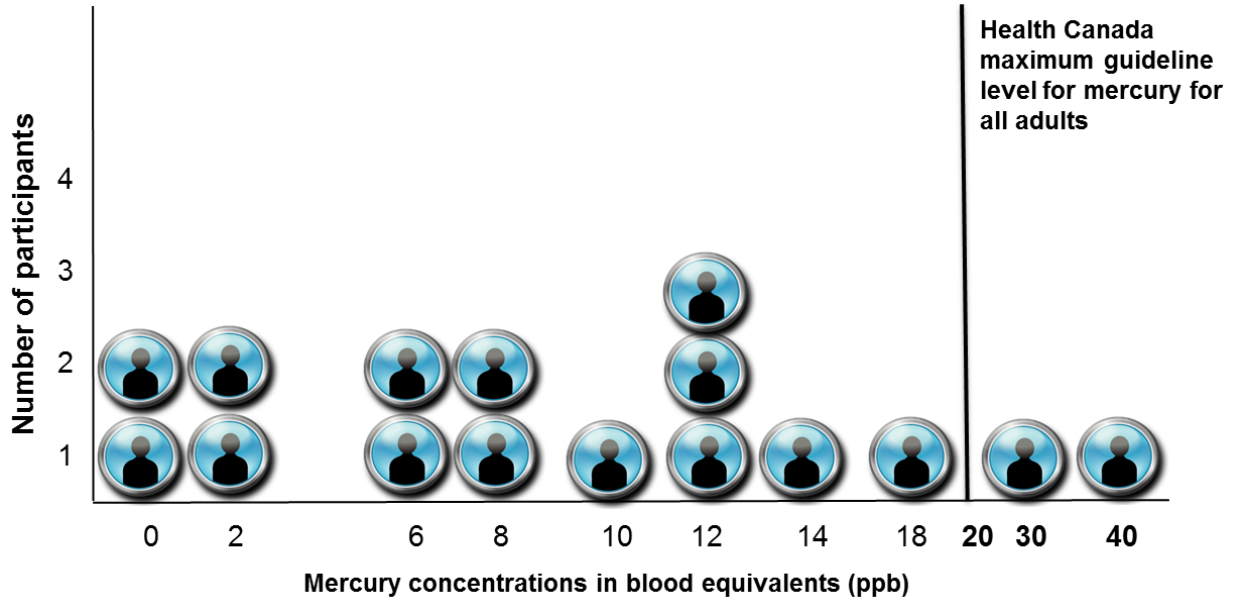


Figure 35. Concentration of mercury in hair (converted to blood equivalents) of female participants of childbearing age in Webequie First Nation (n=11)

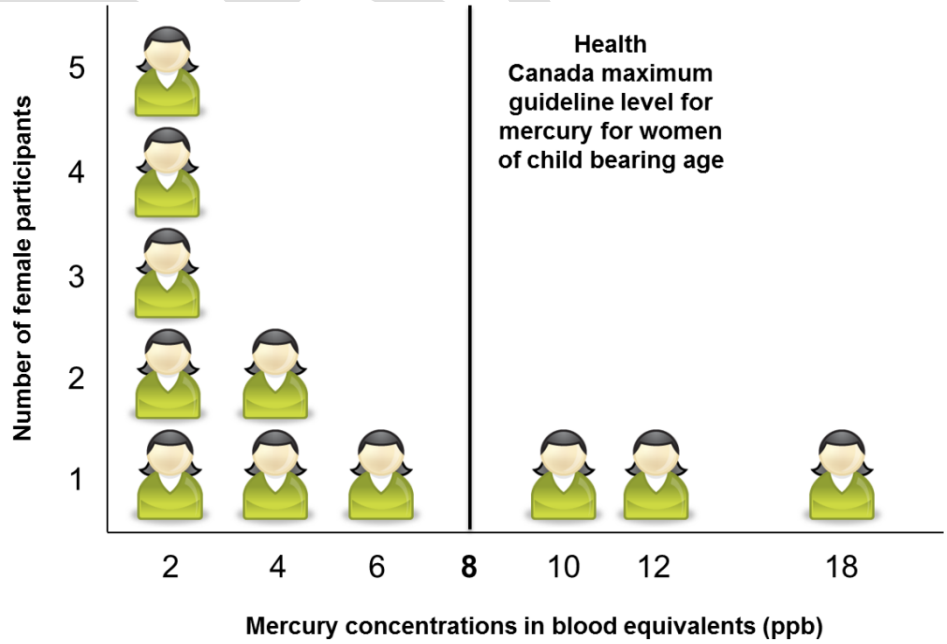


Table 21. Mercury levels in Webequie First Nation from past studies* compared to current study

		Hair levels converted to blood level equivalents in ppb (ug/L)					
Year	No of total samples	0-19 ppb	20-29 ppb	30-39 ppb	40-49 ppb	>50 ppb	Maximum level
1977	2	2					0-19
1979	265	202	33	9	18	8	80-89
1980	14	11	3				20-29
1981	12	12					0-19
1982	28	27	1				20-29
1983	2	2					0-19
2011	27	25		1	1		40.76

*Methylmercury in Canada, Exposure of First Nations and Inuit Residents to Methylmercury in the Canadian Environment Volumes 1-3, 1979, 1984 and 1999.

Table 22. Average mercury levels in blood for the general Canadian population* by age group

General Canadian population, sorted by age group	Average mercury levels in blood (ppb)
20-39	1.28
40-59	1.88
60-79	1.55
Webequie First Nation	10.30

*Health Canada, 2010. Canadian Health Measures Survey Cycle I (2007-2009).

5. Food Contaminant Results

A total of 105 traditional food samples from 29 different species were collected from Webequie First Nation for contaminant analyses. To estimate the daily contaminant intake from traditional food, the average amount of traditional food consumed per day was first calculated (Table 9). These values were then multiplied by the amount of contaminants measured in the food samples (Tables 23, 25-29). Contaminant values from Webequie First Nation's food samples were used when available. When food items were reported to be consumed but no food sample was collected from Webequie First Nation, the average concentrations of the food samples collected from the other participating First Nations in Ontario were used as substitutes.

Table 23 presents the concentrations of four toxic metals in the Webequie First Nation traditional food samples, including arsenic, cadmium, lead, and mercury, which is further analyzed to quantify the more toxic form of methyl mercury.

Table 24 shows the main sources of arsenic, cadmium, lead, and mercury in traditional foods. The main sources of arsenic were from whitefish, white

sucker, and walleye/pickerel. However, the arsenic accumulated in animal tissues is mainly in a non-toxic organic form known as arsenobetaine and should not be of any safety concern (Agency for Toxic Substances and Disease Registry (ATSDR). The main source of cadmium was from moose kidney. Higher concentrations of cadmium are found in the liver and kidneys of mammals as this metal tends to accumulate in organ meat.

Higher concentrations of lead were found in Canada Geese and mallard samples (Table 23) and Canada Geese were the main source of lead (Table 24). This is likely to be a result of lead residuals from lead shot or lead-containing ammunition. Higher levels of mercury, mostly in the form of methylmercury, were found in walleye/pickerel samples, and the main source of mercury is walleye/pickerel. These higher levels of mercury are likely due to the fact that walleye eat other fish which further increases their levels of contaminants.

Table 25 presents the concentrations of polycyclic aromatic hydrocarbons (PAHs) in selected traditional food samples from Webequie First Nation. Higher concentrations were found in suckerfish, mallard meat, and whitefish. Some contamination from oil and gas production facilities could

be a factor. Further investigation would be required to determine whether there is any local pollution causing these higher levels of PAH. However, the consumption rate of these foods is relatively low, and should have no adverse effects on the health of people consuming these foods.

Table 26 shows the concentrations of organochlorines including: hexachlorobenzene, *p,p*-DDE, total PCBs, *trans*-Nonachlor and toxaphene in selected traditional food items. All concentrations were very low at the parts per billion level and the variations in concentrations were largely due to the different fat content in different foods. PCB levels are very low and should not be of any concern.

Concentrations of the fire retardant chemicals polybrominated diphenyl ethers (PBDEs) are presented in Table 27. The concentrations were all very low at the parts per billion level. The highest concentration was found in moose meat. However, there is no concern with exposure to PBDEs from eating any of the food sampled.

Table 28 presents the concentration of perfluorinated compounds (PFCs) in selected traditional foods. The highest concentration was found in sucker.

However, there is no concern with exposure to PFCs from eating any of the food sampled.

Table 29 presents the concentrations of dioxins and furans expressed as a toxic equivalent quotient (TEQ) in selected traditional foods. Only trace amounts were found in most foods. The highest concentrations among the Webequie First Nation samples were found in mallard and teal meat. The reason for this is not known, however, there is no concern of dioxin and furans exposure from any of the food sampled.

The average daily intakes of the four toxic metals are presented in Table 30. The estimated intakes were compared to the guideline level presented as provisional tolerable intake (PTDI) as a hazard quotient (HQ=intake/PTDI). The risk will be negligible if the HQ is 1 or less. The average (average/PTDI) and high end (95^{th} percentile/PTDI) HQ values for arsenic, mercury, and lead intakes were all lower than 1, therefore the risk of toxicity is negligible. However the HQ value for cadmium for high consumers was 2.69, indicating that high consumption of moose kidney (more than half a cup per month) may increase the risk of cadmium exposure.

Table 31 shows the exposure estimates for mercury for the female participants of child bearing age. Due to the susceptibility of the fetus to mercury toxicity, the PTDI for women of child bearing age is lower at 0.2 µg/kg/day. The HQ for the average intake was below 1, which means that risk of mercury exposure is low in the average consumer. For high end consumers (95th percentile) the HQ value was 1.95, indicating that women of child bearing age who often eat walleye/pickerel (more than a cup per week) can be at increased risk of mercury exposure. Long term health effects of high mercury intake include damage to the brain, kidney, and immune functions. Three out of 11 female participants who were of child bearing age had hair mercury concentrations above the Health Canada guidelines. These women were sent letters which provided advice on how to limit mercury exposure. To limit mercury exposure, women of child bearing age are advised to eat smaller size walleye/pickerel and not more than once a week, or to eat trout instead.

Table 32 shows the result of estimated daily intake of organic contaminants including HCBs, DDE, PCB, Chlordane, Toxaphene, PAHs, PFOS, PBDE, Dioxin and Furans using the respective average concentrations. All the

HQs were below 1, indicating that there is negligible risk of exposure to these contaminants through consumption of traditional food.

Table 23. Levels of toxic trace metals in traditional food samples collected from Webequie First Nation (ug/g fresh weight)

Traditional Food	Number of samples	Arsenic	Cadmium	Lead	Mercury	Methyl Mercury
Barrow's Golden Eye Duck Meat	1	0.028	ND	ND	0.029	0.034
Beaver Meat	4	0.006	0.004	ND	ND	ND
Black Partridge	3	0.011	0.017	0.015	ND	NM
Blueberries	5	0.006	0.012	ND	ND	NM
Brown Partridge Meat	2	0.012	0.008	0.005	ND	NM
Canadian Goose Kidney	5	0.046	0.016	0.028	0.001	ND
Canadian Goose Meat	5	0.031	0.003	1.190	0.002	NM
Cedar Leaf	2	0.001	ND	0.001	ND	NM
Goose Fat	1	0.011	0.039	0.009	ND	NM
Gooseberries	3	0.006	0.038	ND	ND	NM
Labrador Leaf	5	0.002	ND	0	ND	NM
Mallard Meat	3	0.015	0.008	1.430	0.015	0.012
Moose Fat	4	0.006	0.004	ND	ND	NM
Moose Intestine	3	0.028	0.008	ND	ND	NM
Moose Kidney	2	0.008	11.600	ND	0.007	NM
Moose Liver	3	0.006	1.150	0.007	0.006	ND
Moose Meat	5	0.008	0.008	0.021	0.001	ND
Northern Pike Meat	5	0.023	ND	0.004	0.181	NM
Ptarmigan Meat	1	0.026	0.002	ND	ND	NM
Rabbit Meat	2	0.008	0.245	ND	0.011	NM
Ruffed Grouse Meat	5	0.011	0.011	0.009	ND	NM
Sockeye Meat	2	0.038	0.007	0.013	0.071	NM
Sturgeon Meat	5	0.243	0.004	0.009	0.190	NM
Sucker Eggs	5	0.022	ND	ND	0.007	NM
Sucker Meat	5	0.201	0.004	0.067	ND	NM
Teal Meat	2	0.010	0.011	ND	0.058	0.062
Trout Meat	2	0.022	0.002	0.004	0.043	NM
Walleye Meat	5	0.036	ND	ND	0.196	NM
Whitefish Meat	10	0.098	0.004	0.012	0.064	NM

ND = Not Detectable
NM = Not Measured
*ng/g fresh weight

Table 24. Top 10 contributors to contaminant intake, Webequie First Nation

Arsenic		Cadmium		Lead		Mercury	
Traditional Food	%	Traditional Food	%	Traditional Food	%	Traditional Food	%
Whitefish Meat	28.5	Moose kidney	86.3	Canada Goose Meat	69.6	Walleye/Pickerel	56.0
White sucker	23.0	Moose liver	12.2	Gray partridge	25.1	Northern pike	23.8
Walleye/Pickerel	16.6	Rabbit Meat	0.7	White sucker	1.9	Whitefish Meat	11.6
Sturgeon Meat	13.4	Moose meat	0.3	Moose meat	1.8	Sturgeon Meat	6.6
Canada Goose Meat	7.1	Whitefish Meat	0.1	Whitefish Meat	0.9	Moose liver	0.4
Northern pike	4.7	Gray partridge	0.1	Northern pike	0.2	Canada Goose Meat	0.3
Moose meat	2.8	Canada Goose Meat	0.1	Moose liver	0.2	Moose kidney	0.3
Caribou meat	0.6	Blueberries	0.1	Sturgeon Meat	0.1	Moose meat	0.2
Moose kidney	0.6	Gooseberries	0.1	Caribou meat	0.1	Lake trout	0.2
Moose liver	0.6	White sucker	0.05	Ruffed Grouse Meat	0.1	Rabbit Meat	0.2

Table 25. Levels of PAHs in traditional food samples collected from Webequie First Nation (ng TEQ/g fresh weight)

Traditional Food	Number of samples	PAH
Canadian Goose Meat	5	149.35
Mallard Meat	3	841.01
Moose Meat	5	7.33
Northern Pike Meat	5	12.61
Sturgeon Meat	5	15.58
Sucker Meat	5	1018.07
Teal Meat	2	25.38
Trout Meat	2	9.26
Walleye Meat	5	27.90
Whitefish Meat	10	766.90

Table 26. Levels of organochlorines in traditional food samples collected from Webequie First Nation (ng/g fresh weight)

Traditional Food	Number of samples	Hexachlorobenzene	*p,p*-DDE	Total PCBs	Total Toxaphene	*trans*-Nonachlor
Barrow's Golden Eye Duck Meat	1	3.160	6.390	13.780	0	ND
Beaver Meat	4	0.349	0		0	ND
Canadian Goose Kidney	5	0.252	2.540	0.120	0.045	0.311
Goose Fat	1	0.967	0		0	ND
Mallard Meat	3	1.160	8.490	11.680	0	1.470
Moose Fat	4	2.190	0		0	ND
Moose Intestine	3	1.260	0		0	ND
Moose Meat	5	0.118	0		0	ND
Northern Pike Meat	5	0.143	0.955	0.900	0	0.149
Ruffed Grouse Meat	5	0.150	0		0	ND
Sturgeon Meat	5	1.250	2.905	3.040	0.258	ND
Sucker Eggs	5	0.405	5.054	8.140	0	0.352
Sucker Meat	5	0.638	2.251	2.060	0	0.326
Trout Meat	2	0.500	0.600	0.700	0	ND
Walleye Meat	5	0.167	0.456	0.220	0	0.089
Whitefish Meat	10	0.733	1.725	1.760	0	0.352

ND = Not Detectable

Table 27. Levels of PBDE in traditional food samples collected from Webequie First Nation (ng/g fresh weight)

Traditional Food	Number of samples	Total PBDEs
Canadian Goose Meat	5	0.438
Mallard Meat	3	2.389
Moose Meat	5	3.578
Northern Pike Meat	5	0.897
Sturgeon Meat	5	0.338
Sucker Meat	5	2.170
Teal Meat	2	0.731
Trout Meat	2	0.946
Walleye Meat	5	0.311
Whitefish Meat	10	0.844

Table 28. Levels of Perfluorocarbons in traditional food samples collected from Webequie First Nation (ng/g fresh weight)

Traditional Food	Number of samples	Total Perfluorocarbons
Canadian Goose Kidney	5	16.760
Moose Kidney	2	12.190
Moose Meat	5	15.370
Northern Pike Meat	5	10.710
Sucker Meat	5	43.010
Walleye Meat	5	12.400

Table 29. Levels of Dioxins and Furans in traditional food samples collected from Webequie First Nation (ng TEF/kg fresh weight)

Traditional Food	Number of samples	Total Dioxins & Furans
Barrow's Golden Eye Duck Meat	1	0
Canadian Goose Meat	5	0.297
Mallard Meat	3	9.631
Moose Meat	5	0
Northern Pike Meat	5	0.964
Sturgeon Meat	5	1.214
Sucker Meat	5	0.190
Teal Meat	2	8.921
Trout Meat	2	0.066
Walleye Meat	5	0.970
Whitefish Meat	10	1.172

Table 30. Exposure estimates (µg/kg body weight/day) for metals from traditional food using average concentrations, Webequie First Nation (n=98)

Metal	PTDI (ug/kg/day)	n>PTDI	Average	Median	95th percentile	HQ Average/PTDI	HQ 95th/PTDI
Arsenic	1	0	0.06	0.03	0.285	0.06	0.28
Cadmium	1	15	0.62	0.04	2.695	0.62	2.69
Mercury	0.5	4	0.10	0.06	0.39	0.21	0.78
Lead	3.6	0	0.21	0.15	0.56	0.06	0.16

Table 31. Exposure estimates (µg/kg body weight/day) for mercury from traditional food (using average concentrations) among Webequie First Nation women of child bearing age (n=40)

Level of mercury concentration	PTDI (ug/kg/day)	n>PTDI	Average	Median	95th percentile	HQ Average/PTDI	HQ 95th/PTDI
Average	0.2	1	0.10	0.06	0.39	0.52	1.95

Table 32. Exposure estimates (µg/kg body weight/day) for organics from traditional food using average concentrations, Webequie First Nation (n=98)

Organics*	PTDI (ug/kg/day)	n>PTDI	Average	Median	95th percentile	HQ Average/PTDI	HQ 95th/PTDI
HCBs	0.27	0	0.0004	0.0002	0.001	0.001	0.005
DDE	20	0	0.0009	0.0004	0.004	0.0001	0.0002
PCB	1	0	0.001	0.0004	0.005	0.001	0.005
Chlordane	0.05	0	0.00025	0.0001	0.001	0.003	0.014
Toxaphene	0.2	0	0.0001	0	0.0005	0.0003	0.002
PAHs	40	0	0.257	0.115	1.346	0.006	0.03
PFOS	0.08	3	0.016	0.008	0.065	0.204	0.82
PBDE	0.1	0	0.001	0.001	0.0053	0.015	0.053
Dioxin and Furans	2.3 pg/kg/day	0	0.001	0.0004	0.0036	0.0004	0.002

*PAHs, PFOS, PBDE, Dioxin and Furans TDI are reference dose used by Health Canada, 2005

CONCLUSION

This is the first comprehensive study addressing the gaps in knowledge about the diet and traditional food of First Nations in Ontario and the environmental contaminants to which they are exposed. The overall results indicate that traditional food is safe to eat and contributes important nutrients to the diets of First Nations in Ontario. However, on average, there are excess intakes of fat and sodium, and inadequate intakes of fibre, vitamin A, vitamin C, vitamin D, vitamin B6, folate, calcium, and magnesium. Obesity, smoking, and diabetes are major health issues for this community as well as for First Nations in Ontario. Moreover, food insecurity is a major concern in almost all of the surveyed communities and especially in Webequie First Nation. These findings highlight the need to strengthen ongoing efforts at the community, regional, provincial and national level to improve food security and nutrition in First Nations communities. It is recognized that there are many community-led initiatives currently addressing these issues, such as community gardens, and the Health Canada supported Canada Prenatal Nutrition Program and the Aboriginal Diabetes Initiative. Beyond the need for increased income at the household level, other potential activities include: subsidized traditional

food harvesting and community agriculture (such as greenhouses and freezers), bulk buying programs (such as the *Good Food Box and Buying Club programs*), and nutrition education and cooking programs (such as community kitchens). Policies that promote healthy meals at preschool, school and community events would also reinforce the importance of healthy food choices for better health of all community members. *Eating Well with Canada's Food Guide for First Nations, Inuit and Métis* and *Healthy Food Guidelines for First Nations Communities*, by the First Nations Health Council in B.C. (both available online) are two resources designed to assist communities to promote and serve healthier food in schools and at community events. Both can assist communities in developing healthy food policies. The Healthy Food Guidelines provide an expanded list of appropriate foods for all kinds of community settings. Appendix G of this report, adapted from the First Nations Health Council's Healthy Food Guidelines, contains a listing of the types of foods to serve (and not serve) at community events.

There is generally no concern with the trace metal levels in the drinking water collected. It is recommended that the tap water be flushed (run until the water is cold) once in the morning before consumption. No

pharmaceuticals were found in the surface water and, as such, there is no risk to human health.

Contaminant levels in all traditional food samples collected were at low levels and should pose no health risk to the consumer when consumed at the current rate. There may be occasional contamination of lead by gun shot in game meat (such as partridge) therefore consumers should be aware of the potential risk of eating game killed by lead shot. Hunters should be using steel shot, rather than lead shot to avoid exposure to lead that could be potentially hazardous to both children and adults.

High intakes of moose kidney can increase the risk of cadmium exposure. It is recommended to limit intake to half a cup per month, especially among smokers since smokers are already exposed to high levels of cadmium from cigarettes.

The diet estimate results showed that on average, there is currently minimal concern of mercury exposure. However, the hair results show that some individuals might have higher mercury exposure; community members who eat walleye frequently (more than 1 cup a week for women and children, or twice a week for males and older females). Women who

are pregnant, breastfeeding, or who could become pregnant (including teenage girls) are advised to eat smaller size walleye/pickerel (less than 18 inches in length) less often or to eat trout instead. The Ministry of the Environment (Sport Fish Contaminant Monitoring Program) has information on fish consumption advisories for specific lakes and rivers in your area (Mameigwess Lake and Winisk Lake). Contact the Sport Fish Contaminant Monitoring Program (1-800-820-2716) or find up-to-date information online at www.ontario.ca/fishguide. Higher levels of PAH were found in suckerfish, mallard ducks, and whitefish. Further investigation of the source is needed.

The data collected in this report will serve as a benchmark for future studies of this type to determine if changes in the environment are resulting in an increase or decrease in concentrations of chemicals of concerns, and how diet quality will change over time.

Highlights of results:

1. Diet quality is overall inadequate but is improved when traditional food is consumed.
2. Overweight/obesity, smoking, and diabetes are major issues.
3. Household food insecurity is a major issue.
4. Water quality, as indicated by the trace metals and pharmaceutical levels, is overall satisfactory, but close monitoring is warranted as water sources and water treatment vary greatly.
5. Mercury levels in all local fish were low. Slightly elevated levels of mercury are found in local walleye and pike because they eat other fish. However, there were some individuals with higher mercury exposure, as measured in hair samples, but did not show high intake of walleye and pike, suggesting that there might be another source of mercury such as canned tuna and shrimp that was not measured in this study.
6. Chemical contamination of traditional food is not worrisome, but it is important to have the data from this study for future monitoring of trends and changes.

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Appendix A: Summary of contaminant information

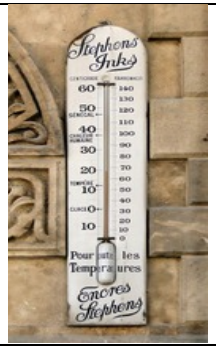
There are many sources of environmental contaminants other than traditional food, some of which we do not have control over. Tables A.1 and A.2 list the most common contaminants (persistent organic pollutants and metals) found in the Canadian environment, where they are found and potential harmful effects on human health. The last column in both tables lists the ways that we can personally minimize exposure, as it is often continuous exposure over a long period of time that can lead to health problems.

Table A.1. Persistent Organic Pollutants (POPs)

Name of POP	Where are they used?	Example of use	Where are they found?	Potential harmful effects	Guideline levels	How to minimize exposure
Polychlorinated biphenyls (PCBs)	Used in electrical equipment, lubricants, sealing and caulking compounds, paints		Fats in foods of animal origin such as some fish, meat and dairy products	May cause liver and kidney cancer; developmental problems in children	TDI=0.001 mg/Kg BW/day	• Choose lower fat foods such as lean meats and low fat milk products
Dichlorodiphenyl -trichloroethane (DDT)	Pesticide now banned in Canada and many other countries but still in use in some developing countries		Fats in foods of animal origin such as some fish, meat and dairy products	Can be toxic to the nervous and immune systems; can interfere with endocrine (hormone) system	TDI=0.01 mg/Kg BW/day	• Choose lower fat foods • Wash fruits and vegetables before eating
Polybrominated diphenyl ethers (PBDEs)	Flame retardant; added to some plastics, electrical and electronic equipment, upholstered furniture, non-clothing textiles and foam products		Air; water; indoor dust; animal fat	May cause problems with thyroid hormone and memory; permanent learning damage; hearing problems; delayed puberty; decreased sperm count; birth defects; possibly cancer	no guideline level for PBDE from Health Canada	• Choose lower fat foods • Dust regularly in the home
Dioxins and furans	Emissions from large-scale waste incinerators and small-scale burning of plastics, diesel fuel, and treated wood; a product of cigarette smoke		Meat, milk, dairy, eggs and fish	Can inhibit the immune system of animals and humans; likely causes cancer	TDI=2.3 pg/Kg BW/day	• Choose lower fat foods • Avoid smoking or exposure to cigarette smoke • Avoid burning garbage

Name of POP	Where are they used?	Example of use	Where are they found?	Potential harmful effects	Guideline levels	How to minimize exposure
Polycyclic aromatic hydrocarbon (PAHs)	Comes from the incomplete burning of many substances		Air; contaminated water; grilled or charred meats	Can damage lungs, liver, kidneys and skin of humans; can damage red blood cells and weaken the immune system	MAC=0.01 µg/L Benzo[a]pyrene (a PAH) in drinking water	• Avoid smoking or exposure to cigarette smoke • Avoid eating charred parts of grilled food
Perfluorinated compounds (PFCs)	Used to make materials stain and stick resistant		Grease-resistant food packaging and paper products, such as microwave popcorn bags and pizza boxes; Scotchguard treated carpet, furniture, and clothing; Teflon coated cookware; shampoo; dental floss; denture cleaners; Gore-Tex clothing	May cause birth defects and affect fertility	no guideline level for PFCs from Health Canada	• Avoid treated carpet and furniture, non-stick cookware (especially if scratched), microwave popcorn

Table A.2. Metals

Metal	Example of use	Where is it found?	Potential harmful effects	Guideline levels	How to minimize Exposure
Cadmium		Cigarette smoke; shellfish; large mammal liver and kidneys; air near a waste incinerator; batteries; PVC plastic; metal coatings	May cause kidney and lung damage, fragile bones and cancers	drinking water guideline for Cd is 0.005 mg/L; TDI=0.008 mg/kg BW/day	• Avoid smoking or exposure to cigarette smoke • Avoid eating large amounts of land mammal organ meats such as liver and kidney
Lead		Some airplane fuel; paint; pipes; lead shot ammunition; car batteries; toys; solder; PVC plastic	May cause problems with nervous and reproductive systems; anemia; impaired intelligence in young children (who are especially sensitive to lead)	drinking water guideline for lead is 0.01 mg/L; TDI=0.0036 mg/kg BW/day	• Avoid lead shot for hunting; use steel shot instead
Mercury		Thermometers; dental fillings; compact fluorescent lights; waste incineration; coal and fossil fuel burning; cement production; mining and smelting A form of mercury called methyl mercury, is more harmful to people; found in some large, predatory fish (such as pike, walleye, lake trout, albacore) and shellfish	May cause brain, kidney and immune system damage; may affect vision, hearing and memory; women of childbearing age and children are most at risk	drinking water guideline for mercury is 0.001 mg/L; pTWI for methylmercury= 1.6 µg/kg BW pTDI for inorganic mercury= 4 µg.kg BW TDI for methylmercury=0.47 mg/kg BW/day for adults and 0.2 µg/kg BW/day for women of child bearing age	• Eat smaller walleye or northern pike • Choose small, non-fish eating fish such as whitefish, rainbow trout or yellow perch instead
Arsenic		Found everywhere in low levels in air, food and water; also found in pressure treated wood, pesticides, cigarette smoke and coal burning facilities	Can irritate the throat and lungs; cause numbness in hands and feet, nausea and vomiting; can decrease production of blood cells; skin irritation; loss of movement; can increase the risk of skin, liver, bladder and lung cancer; can affect development in children	MAC in drinking water is 0.01 mg/L; oral slope factor for arsenic is 1.7 mg/Kg BW/day	• Avoid smoking or exposure to cigarette smoke

Reference: First Nations Food, Nutrition and Environment Study. Chemical Factsheets. 2012. Available Online: <www.fnfnes.ca/download> Accessed 27 Apr 2012. TDI= Tolerable Daily Intake; pTWI=provisional Tolerable Weekly Intake; MAC=Maximum Allowable Concentration.

Appendix B. Body Mass Index (BMI)

The Body Mass Index (BMI) uses a person's weight (in kilograms) and height (in metres) to calculate his or her risk of developing health problems.

$$\text{BMI} = \frac{\text{weight (kg)}}{\text{height (m) x height (m)}}$$

Categories of BMI and Health Risk

BMI	Classification	Risk of developing health problems
< 18.5	Underweight	Increased
18.5 - 24.9	Normal Weight	Least
25.0 - 29.9	Overweight	Increased
30.0 - 34.9	Obese class I	High
35.0 - 39.9	Obese class II	Very high
>= 40.0	Obese class III	Extremely high

Notes: The BMI is not used for pregnant or lactating women. These BMI categories are not used for children less than 18 years of age. For people aged 65 and over, the "normal weight" classification may range from a BMI of 18.5 to 29.9. Other factors such as lifestyle habits, fitness level and the presence or absence of other health risk conditions need to be taken into consideration to determine an individual's risk. Source: Health Canada. Canadian Guidelines for Body Weight Classification in Adults. Ottawa: Minister of Public Works and Government Services Canada; 2003. Available from: http://www.hc-sc.gc.ca/fn-an/nutrition/weights-poids/guide-ld-adult/bmi_chart_java-graph_imc_java-eng.php

How to calculate your BMI:

Step 1: Determine your weight in kilograms.

To convert weight from pounds to kilograms, divide by **2.2:**

$$\frac{\textbf{weight (pounds)}}{\textbf{2.2}} = \textbf{weight (kg)}$$

Step 2: Determine your height in metres.

To convert height from feet and inches to metres:
a) Multiply height in feet times **12** to get height in **inches**
b) Add any **additional height** in inches to the value obtained in a)
c) Multiply value in b) times **0.0254** to get height in **metres**

Step 3: Take your weight in kilograms (value from Step 1) and divide by your height in metres (value from Step 2) squared.

$$\frac{\textbf{weight (kg)}}{\textbf{height (m}^2\textbf{)}} = \textbf{BMI}$$

Step 4: Compare your BMI to the classification chart to determine your health risk.

Example: *Let's calculate the BMI of someone who weighs 160 pounds and is 5'8" tall:*

Step 1:

To convert from pounds to kilograms, divide by 2.2:

$$\frac{160 \text{ pounds}}{2.2} = 72.7 \text{ kg}$$

Step 2:

To convert height from 5'8" to metres:
a) multiply 5 feet x 12 inches per foot= 60 inches
b) 60 + 8 inches= 68 inches
c) 68 x 0.0254= 1.73 metres

So 5 feet 8 inches = 1.73 metres

Step 3:

$$\frac{72.7 \text{ kg}}{(1.73\text{m} \times 1.73\text{m})} = 24.3$$

Step 4:

According to the chart, a BMI of 24.3 falls within 18.5 - 24.9, the normal weight range that has the least risk to developing health problems.

Appendix C. Types of fruits and vegetables consumed from personal or community gardens

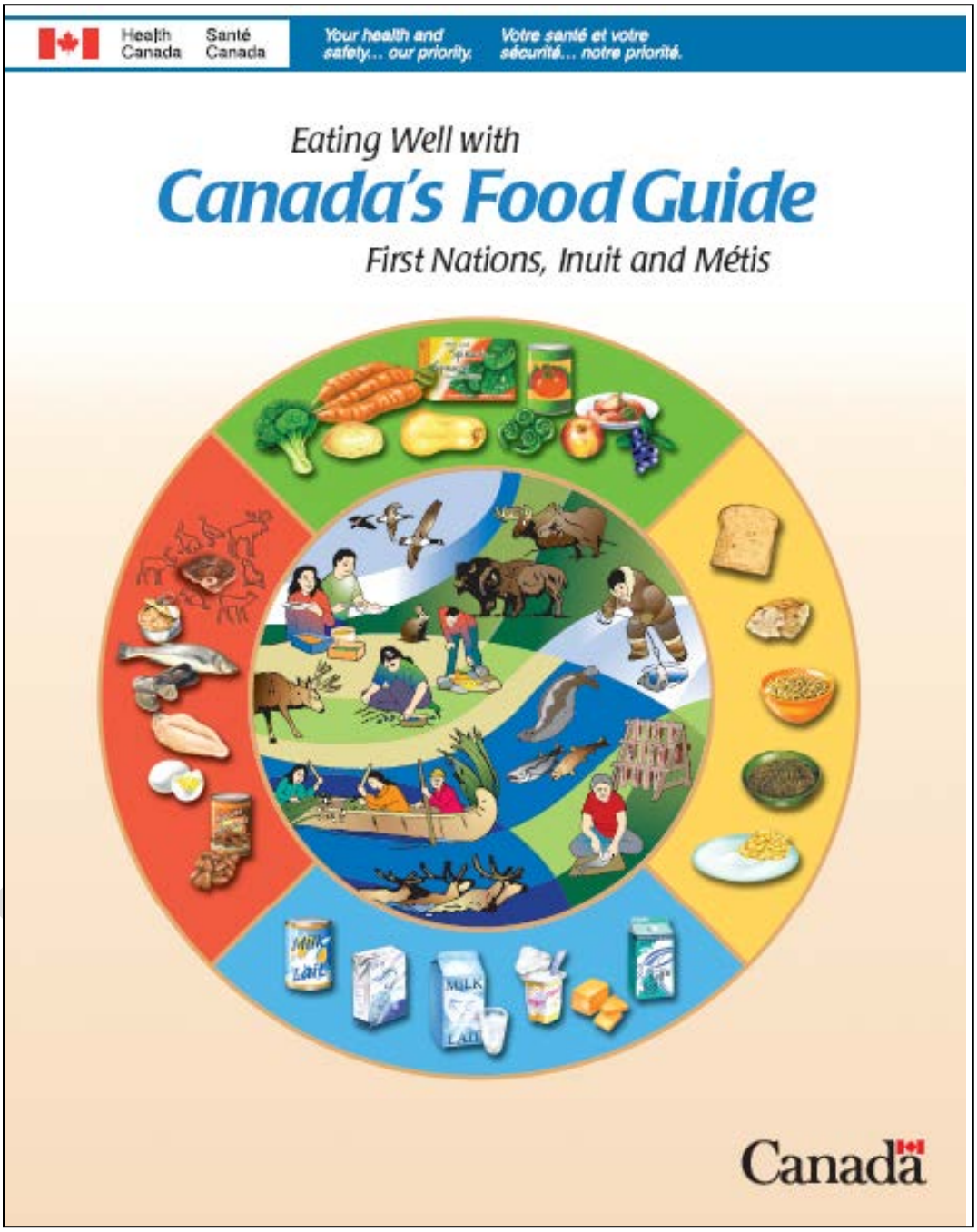
Types of fruits and vegetable eaten from gardens	% (n= 2745 total responses)
Tomatoes	17.3
Cucumbers	13.5
Potatoes	10.1
String Beans (green and yellow)	8.2
Onions (onions, shallots, chives, and scallions)	7.0
Peppers	5.9
Carrots	5.6
Corn	5.1
Squash	4.3
Zucchinis	2.7
Lettuce	2.6
Berries (strawberries, raspberries, blueberries, blackberries, thimbleberries, and elderberries)	2.5
Radishes	1.6
Beets	1.5
Pumpkins	1.4
Melons (cantaloupe and watermelon)	1.3
Cabbage	1.0
Peas	1.0
Apples	0.9
Rhubarb	0.8
Turnips	0.7
Celery	0.6
Broccoli	0.5
Herbs (cilantro, basil, mint, dill, oregano, sage, thyme, rosemary, and parsley)	0.5
Spinach	0.5
Garlic	0.4

Types of fruits and vegetable eaten from gardens	% (n= 2745 total responses)
Legumes (kidney, potato, cranberry, navy, and black beans)	0.3
Grapes	0.3
Eggplants	0.3
Swiss Chard	0.3
Kale	0.2
Cauliflower	0.2
Leeks	0.2
Cherries	0.1
Plums	0.1
Brussel Sprouts	0.1
Asparagus	0.1
Sunflowers	0.1
Mushrooms	0.1
Rutabaga	0.04
Greens	0.03

Appendix D: Conversion of Grams to Usual Household Measures

Grams	Usual household measures	
5 grams	1 teaspoon	
10 grams	2 teaspoons	
15 grams	1 tablespoon	
30 grams	2 tablespoons	
60 grams	¼ cup	
75 grams	1/3 cup	
125 grams	½ cup	
180 grams	¾ cup	
250 grams	1 cup	
375 grams	1 ½ cups	
500 grams	2 cups	

Appendix E. Eating Well with Canada's Food Guide First Nations, Inuit and Métis



How to use Canada's Food Guide

The Food Guide shows how many servings to choose from each food group every day and how much food makes a serving.

1. Find your age and sex group in the chart below.
2. Follow down the column to the number of servings you need for each of the four food groups every day.
3. Look at the examples of the amount of food that counts as one serving. For instance, 125 mL (1/2 cup) of carrots is one serving in the Vegetables and Fruit food group.

What is one Food Guide Serving?

Look at the examples below.

Eating Well Every Day

Canada's Food Guide describes healthy eating for Canadians two years of age or older.

Choosing the amount and type of food recommended in Canada's Food Guide will help:

- children and teens grow and thrive
- meet your needs for vitamins, minerals and other nutrients
- lower your risk of obesity, type 2 diabetes, heart disease, certain types of cancer and osteoporosis (weak and brittle bones).

	Recommended Number of Food Guide Servings per day			
	Children 2–3 years old	Children 4–13 years old	Teens and Adults (Females)	Teens and Adults (Males)
Vegetables and Fruit Fresh, frozen and canned.	4	5–6	7–8	7–10
Grain Products	3	4–6	6–7	7–8
Milk and Alternatives	2	2–4	Teens 3–4 Adults (19–50 years) 2 Adults (51+ years) 3	Teens 3–4 Adults (19–50 years) 2 Adults (51+ years) 3
Meat and Alternatives	1	1–2	2	3

Vegetables and Fruit

Eat at least one dark green and one orange vegetable each day. Choose vegetables and fruit prepared with little or no added fat, sugar or salt. Have vegetables and fruit more often than juice.

Dark green and orange vegetables
125 mL (1/2 cup)

Other vegetables
125 mL (1/2 cup)

Leafy vegetables and wild plants
cooked 125 mL (1/2 cup)
raw 250 mL (1 cup)

Berries
125 mL (1/2 cup)

Fruit
1 fruit or 125 mL (1/2 cup)

100% Juice
125 mL (1/2 cup)

Grain Products

Make at least half of your grain products whole grain each day. Choose grain products that are lower in fat, sugar or salt.

Bread
1 slice (35 g)

Bannock
35 g (2" x 2" x 1")

Cold cereal
30 g (see food package)

Hot cereal
175 mL (3/4 cup)

Cooked pasta
125 mL (1/2 cup)

Cooked rice
White, brown, wild
125 mL (1/2 cup)

Milk and Alternatives

Drink 500 mL (2 cups) of skim, 1% or 2% milk each day. Select lower fat milk alternatives. Drink fortified soy beverages if you do not drink milk.

Milk
Powdered milk, mixed
250 mL (1 cup)

Fortified soy beverage
250 mL (1 cup)

Canned milk
(evaporated)
125 mL (1/2 cup)

Yogurt
175 g (3/4 cup)

Cheese
50 g (1 1/2 oz.)

Meat and Alternatives

Have meat alternatives such as beans, lentils and tofu often. Eat at least two Food Guide Servings of fish each week.* Select lean meat and alternatives prepared with little or no added fat or salt.

Traditional meats and wild game
75 g cooked (2 1/2 oz)/125 mL (1/2 cup)

Fish and shellfish
75 g cooked (2 1/2 oz)/125 mL (1/2 cup)

Lean meat and poultry
75 g cooked (2 1/2 oz)/125 mL (1/2 cup)

Eggs
2 eggs

Beans – cooked
175 mL (3/4 cup)

Peanut butter
30 mL (2 Tbsp)

When cooking or adding fat to food:

- Most of the time, use vegetable oils with unsaturated fats. These include canola, olive and soybean oils.
- Aim for a small amount (2 to 3 tablespoons or about 30-45 mL) each day. This amount includes oil used for cooking, salad dressings, margarine and mayonnaise.
- Traditional fats that are liquid at room temperature, such as seal and whale oil, or ooligan grease, also contain unsaturated fats. They can be used as all or part of the 2-3 tablespoons of unsaturated fats recommended per day.
- Choose soft margarines that are low in saturated and trans fats.
- Limit butter, hard margarine, lard, shortening and bacon fat.

*Health Canada provides advice for limiting exposure to mercury from certain types of fish. Refer to www.healthcanada.gc.ca for the latest information. Consult local, provincial or territorial governments for information about eating locally caught fish.

Respect your body... Your choices matter

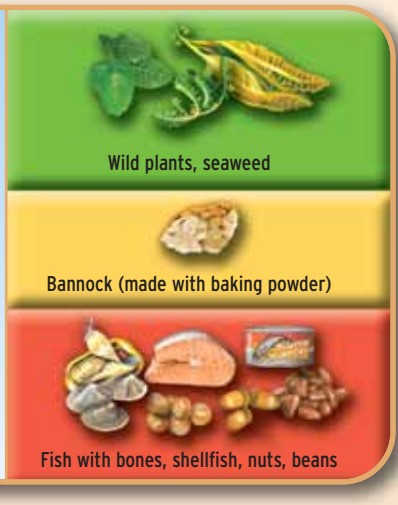
Following Canada's Food Guide and limiting foods and drinks which contain a lot of calories, fat, sugar or salt are important ways to respect your body. Examples of foods and drinks to limit are:

- pop
- fruit flavoured drinks
- sweet drinks made from crystals
- sports and energy drinks
- candy and chocolate
- cakes, pastries, doughnuts and muffins
- granola bars and cookies
- ice cream and frozen desserts
- potato chips
- nachos and other salty snacks
- french fries
- alcohol

People who do not eat or drink milk products must plan carefully to make sure they get enough nutrients.

The traditional foods pictured here are examples of how people got, and continue to get, nutrients found in milk products. Since traditional foods are not eaten as much as in the past, people may not get these nutrients in the amounts needed for health.

People who do not eat or drink milk products need more individual advice from a health care provider.



Women of childbearing age

All women who could become pregnant, and pregnant and breastfeeding women, need a multivitamin with **folic acid** every day. Pregnant women should make sure that their multivitamin also contains **iron**. A health care provider can help you find the multivitamin that is right for you.

When pregnant and breastfeeding, women need to eat a little more. They should include an extra 2 to 3 Food Guide Servings from any of the food groups each day.

For example:

- have dry meat or fish and a small piece of bannock for a snack, or
- have an extra slice of toast at breakfast and an extra piece of cheese at lunch.

Women and men over the age of 50

The need for **vitamin D** increases after the age of 50.

In addition to following Canada's Food Guide, men and women over the age of 50 should take a daily vitamin D supplement of 10 µg (400 IU).

For strong body, mind and spirit, be active every day.

This guide is based on *Eating Well with Canada's Food Guide.*

For more information, interactive tools or additional copies visit Canada's Food Guide at: **www.healthcanada.gc.ca/foodguide**

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Également disponible en français sous le titre : Bien manger avec le Guide alimentaire canadien – Premières Nations, Inuit et Métis

This publication can be made available on request on diskette, large print, audio-cassette and braille.

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Appendix F: List of nutritional supplements taken by Ontario First Nations participants

Types of supplements reported to be taken	% of all supplements reported (n=849)
Vitamin D	17.95
Multivitamin/Mineral Supplement	14.78
Vitamin B (B1, B3, B6, B12, Complex)	10.67
Omega Fatty Acids	9.27
Calcium	8.22
Vitamin C	7.28
Iron	4.55
Prenatal Vitamin	2.71
Herbal Supplements	2.62
Magnesium	1.75
Traditional Medicine	1.65
Co-Enzyme Q	1.25
Glucosamine	1.25
Weight Loss Supplement	1.18
Protein Supplement	0.95
Vitamin E	0.92
Ginger	0.75
Flax Seed Oil	0.72
Probiotics	0.70
Potassium	0.58
Garlic	0.53
Alpha Lipoid Acid	0.52
Selenium	0.52
Ca & Mg	0.51
Cyanocobalamin	0.46
Zinc	0.46

Types of supplements reported to be taken	% of all supplements reported (n=849)
Acai Smoothie	0.44
Folic Acid	0.43
Vitamin K	0.40
Ca-Vit D	0.38
Chromium	0.35
Biotin 1000mg	0.33
Cranberry Extract	0.32
5 HTP	0.27
Ginko Biloba	0.27
Greens Organic Powder	0.26
Reds Organic Powder	0.26
Ca, Vit D& Mg	0.18
Chorella	0.17
Greens Alkalized Detoxify	0.17
Life Hh1-Zyme Digestive Aid	0.17
Lorna Vanderhaeghe Meno Smart Plus	0.17
Swiss Sources Naturelles	0.17
Systemic Enzymes	0.17
Replavite	0.15
Corn Silk- Homemade	0.13
Gold Thread	0.13
Turmeric	0.13
Cinnamon plus chromium	0.11
Anti-Stress, Ultimate, Brad Kings	0.10
Trivita Nerve Formula,	0.10
Aconitum Napellus Homeopathic Medicine	0.09
Airborne Immunity Booster	0.09
Greens	0.09

Types of supplements reported to be taken	% of all supplements reported (n=849)
Mega Joint Wellness	0.09
Melaleuca	0.09
Melaleuca Replenex Extra Strength	0.09
Monavie Nutritional Gel Acai Blend	0.09
Natrol Fruit Festiv	0.09
Natrol Juice Festiv-Veggie Festiv	0.09
Ningxia Red	0.09
Perfect Eyes With Lutein Nature's Sunshine	0.09
Pharmanex Ageloc Vitality	0.09
Prarie Naturals Serratonin Pepsidase Enzyme	0.09
Methsulformethanone	0.08
Elderberry Juice	0.04
Reliv Herbal Harmony Digestive Health	0.04
Reliv Innergize Sports Drink	0.04
Shark Cartilidge	0.04
Collagen Sunn Herbal	0.03
Bee Pollen	0.01
Enzymedica	0.01
Isagenix Ageless Joint Support	0.01
Isagenix Brain Boost And Renewal	0.01
Isagenix Product B	0.01
Isagenix Rejuvute	0.01
Vitamins (Dialysis)	0.01

Appendix G. Healthy Food Guidelines for First Nation Community Events[3]

Guidelines for Communities

Food is part of celebration, ceremony, social functions, learning functions and is one of our best ways to bring people together. With many opportunities to offer and share food, we have plenty of opportunity to promote healthy choices by ensuring that healthy foods are available almost all of the time.

Serving healthy foods in communities means having healthy food selections at all community activities that include food such as: community programs, gatherings, meetings and special events as well as at daycares and schools and even as part of fundraising events. Serving healthy foods starts with the types of food offered as well as the amount of food offered.

The following table of foods was based on the Guidelines for Food and Beverage Sales in British Columbia Schools and further adapted from a document created by the First Nations Health Council in BC. It has been modified for this report to assist communities in the promotion of healthy food choices at community events. The table is broken into Food Categories based on nutrition criteria that assess the calories and amount of sugar, fat and salt (sodium) in these foods. The first category, "Leave off the Table", contains foods that are generally high in fat and sugar and/or salt. The second category, "Better on the Table", includes foods that may be low in fat or salt (sodium) but do not meet all of the criteria of foods that fit within the third category, "Great on the Table Anytime".

In order to promote healthy eating, we encourage communities to make and serve the types of foods listed under "**Better on the Table**" and "**Great on the Table Anytime"** as often as possible**.** Foods listed under "**Leave off the Table**" should be offered as little as possible or only at special occasions.

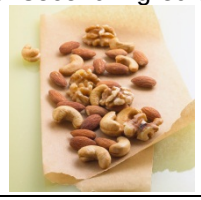
[3] Adapted with permission from First Nations Health Council. 2009. Healthy Food Guidelines for First Nations Communities. The complete guidelines are available through the First Nations Health Council http://www.fnhc.ca/ in their nutrition section.

Food Category	Leave off the Table	Better on the Table	Great on the Table Anytime
Grains			
Grains must be the first or second ingredient (not counting water) Grain ingredients may include: - flours made from wheat, rye, rice, potato, soy, millet, etc. - rice, pasta, corn, amaranth, quinoa, etc 	• Flavoured or Instant rice • Fried Bannock, White bread, White buns • Baked goods and pastries (ex. Commercial muffins with a diameter more than 2 inches, cakes, cookies, danishes, croissant, cinnamon buns) • High fat crackers • Commercial or home-made pasta salads made with lots of dressing • Instant noodles (packages, cup) with seasoning mix • Microwave popcorn and fried snack foods e.g. Potato, tortilla chips	• White rice • Baked bannock, enriched breads, buns, bagels, tortillas, English muffins, pancakes, etc • Lower fat baked goods that are small in size (2 inch muffins, mini loaves • Low-fat crackers (no trans fat) • Pasta salads made with very little dressing • Other rice noodles • Trans-fat free, low-fat baked grain and corn snacks (baked tortilla chips, popcorn)	• Brown, wild or mix of brown & white rice • Whole grain baked bannock, breads, buns, bagels, tortillas, English muffins, pancakes, etc • Some small baked lower fat items with whole grains, fibre, fruit or nuts, such as loaves, muffins • Low-fat whole grain crackers • Most whole grain pastas • Whole grain and corn snacks (cereal mix, tortilla chips, hot air popcorn with no butter)
Note: Foods high in starches and sugars (natural or added) can remain stuck on teeth and put dental health at risk. Grain food choices of concern are sugary cereals, granola and granola bars, crackers, cookies and chips (corn, wheat, rice, etc). The Canadian Dental Association suggests eating these foods only at mealtimes and not as a snack.			

Food Category:	Leave off the Table	Better on the Table	Great on the Table Anytime
Vegetables & Fruit			
A vegetable or fruit or fruit puree must be the first or second ingredient, not counting water 	• Raw, canned or cooked fresh/frozen fruits and vegetables served with condiments or add-ins that don't meet Better on the Community Table/Great on the Table Anytime criteria (ex. Fruit in heavy syrup, most canned vegetables) • Fruit with a sugar based coating (e.g., yogurt- or chocolate-covered raisins) • Dried fruit (e.g., fruit roll-ups/leathers/chips) or fruit juice snacks (e.g., gummies) • Regular potato/vegetable chips • Coated/breaded and deep fried vegetables (e.g., French-fried potatoes, onion rings) • High Salt (sodium) Pickles (see Condiments)	• Raw, canned or cooked fresh/frozen fruits and vegetables (including wild greens and berries) that are cooked or prepared with low salt, low-fat sauces (e.g, low-fat milk-based) or meet Better on the Table Criteria (ex. Fruit in light syrup, low sodium canned vegetables) • Some sweetened baked fruit slices • Low-salt, baked potato/vegetable chips • Low salt (sodium) pickles	• Raw, canned or cooked fresh/frozen berries, fruit and vegetables (including wild greens and berries) that are served plain or with the minimum amount of dressing/serving recommended in the Condiment Section • Homemade salsa with fresh tomatoes or canned diced tomatoes and minimal salt
Note: Foods high in sugars and starches (natural or added) can leave particles clinging to teeth and put dental health at risk. Vegetable/fruit choices of concern include fruit leathers, dried fruit, and chips (potato or other).			

Food Category:	Leave off the Table	Better on the Table	Great on the Table Anytime
Vegetable & Fruit Juices			
A vegetable or fruit juice or puree must be the first ingredient (not counting water): -may be diluted with water or carbonated water -may have added food ingredients, e.g. Fruit pulp, fruit puree -may not be fortified with vitamins other than Vitamin C, or with minerals other than calcium. 	• Most "drinks", "blends", "cocktails", "splashes" and "beverages" (if sweetened with added sugars) • Most regular tomato and vegetable juices • Fruit smoothies made with leave off the community table ingredients • Slushy drinks and frozen treats (e.g., frozen fruit juice bars) with added sugars (note that concentrated fruit juice is considered an added sugar when it is not preceded by water in the ingredient list) • Juice drinks with added caffeine, guarana or yerba	• 100% fruit juice • 100% fruit + vegetable juices • Some lower-sodium tomato and vegetable juices • Fruit smoothies made with better and great on the table ingredients • Slushy drinks and frozen treats (e.g., frozen fruit juice bars) with no added sugars • Diluted or sparkly juice drinks, no added sugars	• Natural berry juices with water but no added sugar
Note: 100% juice and other fruit drinks contain sugars and acids (natural or added) that dissolve tooth enamel when sipped frequently. To avoid prolonged exposure to these sugars and acids, choose plain water over fruit juice.			

Food Category:	Leave off the Table	Better on the Table	Great on the Table Anytime
Milk-based and Calcium Containing Foods			
For milk-based foods, milk must be the first ingredient; cream is NOT considered a milk ingredient 	• Candy flavoured ice creams, sundaes and many frozen yogurts • Frozen 'yogurt' not based on milk ingredients (see "Candies, Chocolates, etc" food grouping) • Most ice milks, ice creams, and frozen novelties • Some puddings/custards • Some higher fat cheeses • Most cream cheese and light cream cheeses and spreads (see condiment section) • Most processed cheese slices and spreads made without milk • Whole fat cottage cheese	• Small portions of some ice milks and frozen yogurts – simply flavoured • Small portions of sherbert • Puddings/custards made with low fat milk and limited added sugar • Pudding/custards/ice milk bars with artificial sweeteners (not for young kids) • Most flavoured yogurts • Yogurt with artificial sweeteners • Processed cheese slices made with milk • 1-2% milk fat cottage cheese	• Low fat, low sugar flavoured yogurts • Plain yogurt (low-fat) • Most regular and reduced fat or light cheeses, cheese strings (unprocessed) • Low-sodium cottage cheese (1% milk fat.) • Canned salmon with bones
Note: Individuals who do not eat or drink milk products should seek advice from a health care provider.			
Milk & Calcium Containing Beverages			
Milk must be the first ingredient; cream is NOT considered a milk ingredient. Fortified soy drinks contain protein and calcium and are included in this food grouping. 	• Most candy flavoured milks • Most eggnogs • Most hot chocolate mixes made with water (see also "Other Beverages") • Smoothies made with Leave off the Community Table ingredients • Some blended sweetened regular and decaf coffee drinks	• Most basic flavoured milks and fortified soy drinks • Yogurt drinks • Some eggnogs if lower in sugar • Most hot chocolates made with milk • Smoothies made with Better on the Community Table ingredients	• Plain, unflavoured fortified soy and rice drinks • Skim, 1% and 2% milk • Some hot chocolates made with milk and very little added sugar • Smoothies made with ingredients from the "Great on the Table Anytime" list • Decaffeinated, unsweetened tea/coffee latté
Note: Whole milk (3.25%) is recommended for children less than 2 years of age. Lower fat milks are suitable for children older than 2 years of age. Individuals who do not eat or drink milk products should seek advice from a health care provider.			

Food Category	Leave off the Table	Better on the Table	Great on the Table Anytime
Meat & Alternatives			
A meat or meat alternative must be the first or second ingredient (excluding nuts and seeds*). Meat and meat alternatives include: beef, pork, poultry, fish, game meats, eggs, soybeans, legumes, tofu. *See the "Nuts & Seed Mixes or Bars" category for guidelines on these items 	• Many products deep fried in hydrogenated or partially hydrogenated oils or in vegetable shortening • Marbled or fatty meats • Many cold cuts and deli meats (deli chicken, deli beef, pepperoni, bologna, salami, etc) if high in salt or contain nitrates • Canned meats (Kam, Klik, corned beef, ham, etc) • Some seasoned chicken or tuna salads • Most regular wieners, sausages, smokies, bratwurst • Most pepperoni/chicken sticks • Some jerky • Bacon	• Some breaded and baked chicken/fish/meat • Some marinated poultry • Some fish canned in oil • Some deli meats if not too salty • Some chicken or tuna salads, lightly seasoned • Some lean wieners, sausages • Lean pepperoni/chicken sticks • Some jerky, lightly seasoned • Some egg salads, lightly seasoned • Legume salads, lightly seasoned • Some refried beans	• Chicken, turkey • Fish, seafood, fresh or canned in water/broth • Lean meat (beef, bison, pork, lamb) • Game meats and birds (moose, caribou, duck, etc) • Eggs • Tofu • Chicken salads if lower salt and fat • Lean wieners if lower salt • Jerky (plain) • Beans, peas, lentils • Most legume salads if lower salt • Refried beans (lower fat)
Note: Many processed meats are high in saturated fat, salt and nitrates. Choose non-processed, lean meat, poultry or fish instead. Wild game meats and fish are lower in saturated fat and contain no added salt or nitrates.			
Nuts & Seeds (Mixes or Bars)			
Peanuts, nuts or seeds must be the first or second ingredient. 	• Nuts with a sugar based coating (eg. Chocolate, yogurt covered nuts) • Salty or sugary nut/seed bars and mixes (e.g. sesame snap bars) • Nuts/seeds that are highly salted or flavoured and roasted in additional oil	• Nuts/seed bars and mixes with nuts/seeds or fruit as the first ingredient and no sugar based coatings	• Nut/seed bars and mixes with nuts/seeds or fruit as first ingredient • Nuts/seeds, natural or dry roasted

Food Category:	Leave off the Table	Better on the Table	Great on the Table Anytime
Mixed Entrée Foods			
Note: Some trans fats occur naturally in meats like beef, lamb, goat, deer, moose, elk, and buffalo. Naturally occurring trans fats are considered healthy. 	• Sandwiches with deli or processed meats • Subway style sandwiches greater than 6 inches • Some pizzas (4 cheese/double cheese, meat lover) • Pizza pockets • Meat pot pies • Sausage/vegetable rolls • Pasta with a cream based sauce	• Most sandwiches • Short (e.g. 6 inch) submarine sandwiches, and burgers made with lean roasted meats (turkey, chicken, beef), but few vegetables • Whole wheat pizza topped with lean meat and vegetables and lightly topped with cheese • Baked pizza pockets, pizza pretzels, pizza bagels • Some curries, moderately salted • Stir fries prepared with low sodium sauces • Sushi • Pilaf (rice and meat) • Pasta with milk or vegetable based sauce • Hard tacos with meat or bean filing	• Sandwiches, short (6 inch) submarine sandwiches, and burgers made with whole grain breads and lean meats (turkey, chicken, beef) and plenty of vegetables and whole grain bread/buns • Whole wheat pizzas with vegetables • Stews, chillies, curries (lower sodium) • Stir fries on rice, if sauce is low in sodium • Pilaf (with vegetables) • Pasta with vegetable and meat based sauce • Burritos (bean or meat) • Soft tacos filled with “Great on the Table” ingredients • Some low sodium frozen entrees
Candies, Chocolates			
	• Most regular packages • Most very small packages of candies/chocolates • Very small portions of dessert gelatins	• Sugar-free gum or mints or cough drops • Diabetic candies (adults only)	None

Food Category	Leave off the Table	Better on the Table	Great on the Table Anytime
Soups			
Includes dry, canned and fresh 	• Some instant soups, plain or seasoned • Regular canned soups, broth or milk based • Many canned soups, broth or milk based • Ramen noodles	• Home-made soups made with soup bouillon/stock and other ingredients from the "Great on the Table Anytime" list • Hamburger soup made with regular fat meat • Some low-sodium canned or instant soups	• Home-made soups made without soup bouillon/stock • Hamburger soup made with lean meat (lean ground beef, moose or deer meat) • Some soups made with meat or beans/lentils • Some low-sodium canned or instant soups made with meat or beans/lentils
Other Beverages* (Non-Juice/Non-Milk based)			
	• Most drinks with sugars as the first ingredient (not counting water) – e.g. iced teas, fruit 'aides', pops • Most sport drinks* • Most hot chocolate mixes made with water	• Water (flavoured or not) minimally sweetened • Soda water ** • Diet decaffeinated soft drinks and diet non-carbonated drinks (Secondary schools only) • Decaffeinated tea • Decaffeinated coffee	• Water, plain • Lemon/lime water • Soda water ** • Sparkling/carbonated water or water with added flavours (no added sugar and/or no artificial sweeteners) • Labrador Tea • Fruit/mint flavoured unsweetened teas

*Sport/electrolyte drinks containing added sugars are not recommended. These beverages may be useful during sports events lasting more than 1 hour on hot days. Plain water is the best beverage when exercising.

*Other Beverages may provide excess calories, caffeine, artificial sweeteners, or acids and often displace healthier food/beverage choices. These beverages often contain acids (natural or added) that may dissolve tooth enamel when sipped frequently. To reduce risk of damage to tooth enamel, choose water most often as a beverage.

Limit portion sizes of "Other Beverages" (except plain water) to: 250 mL or less per serving for children (aged 5-12) and 360 mL or less for children aged 12 and older.

**If serving soda water, check the sodium content as some brands may have higher levels.

Food Category	Use in Moderation	Generally No Limits
Condiments & Add-Ins		
	• Soy sauce: ½ teaspoon (2 - 3 mL) • Hot sauce: 5 - 10 mL • Table salt: ¼ - ½ mL • Soft margarine, butter: 5 - 10 mL • Cream: 5 - 15 mL Whipped Cream (from cream): 15 - 30 mL • Regular/light cream cheese or processed cheese spread: 5 - 15 mL • Regular sour cream: 15 - 30 mL • Low-fat sour cream: 15 – 45 mL • Fat-free sour cream: 15 – 60 mL • Low-fat/fat-free dips, dressings, spreads (e.g., mayonnaise, miracle whip, sandwich spread): 5 - 15 mL • Regular dips, dressings, spreads: 5 - 10 mL • Oil for sautéing or dressing (e.g., homemade vinegar and oil): 5 - 10 mL • Ketchup, mustard, relishes : 10 - 15 mL • Pickles (regular): 10-15 ml (Low sodium pickles: no limit) • Horseradish: 10 - 45 mL • Jarred salsa, sauerkraut: 10 - 30 mL (fresh salsa can fit into the Vegetables and Fruit food grouping) • Salad toppers (e.g. Bacon bits): 5 - 10 mL Croutons: 25 - 50 mL • Sugars, honey, jams/jellies, molasses, syrups (e.g., pancake): 15 mL • Flavoured syrups (e.g. for lattes): 1 pump (10 mL)	• Herbs and salt-free seasonings, garlic, pepper, lemon juice, Mrs. Dash
Condiments and add-ins can be used to enhance the flavour of Better on the Table and Great on the Table Anytime items. Condiments and add-ins should be served on the side whenever possible.		