



Labrador-Grenfell  
Health

**May 2010**

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International Polar Year Inuit Health Survey: Health in Transition and Resiliency

with the

Nunatsiavut Steering Committee and contributions from  
CINE staff members and graduate students

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## Acknowledgements

We would like to thank all Nunatsiavummiut adults whose participation in the Inuit Health Survey in 2008 contributed to its great success. We would also like to thank the community offices and community health centers for their support in making the survey possible.

We extend a special thank you to the Nunatsiavut Steering Committee, which was made up of individuals representing the Nunatsiavut Government Departments of Health and Social Development; Land and Natural Resources; Labrador-Grenfell Regional Health Authority; University of Toronto and McGill University. Their support and guidance throughout all phases of the project were indispensable and appreciated. Specifically, we would like to mention Michele Wood, Maureen Baikie, Carol Brice-Bennett, Michelle Kinney, Gail Turner, Marina Biasutti-Brown, Tina Buckle and Kue Young.

We thank Brian Ward of McGill University for his expert guidance with the *parasitic diseases* module and Hope Weiler of McGill University for her expertise in vitamin D.

For providing photo documentation for this report we would like to thank Stephanie McDonald.

We extend special thanks to CINE staff members and students, Zhirong Cao, Louise Johnson-Down, Donna Leggee, Helga Saudny, Nelofar Sheikh, Yella Zahirovich-Jovich, Jennifer Jamieson and Amy Pronovost for the excellent support provided in preparing the document.

We also acknowledge and thank Eric Loring of the Inuit Tapiriit Kanatami (ITK), who also serves as Governing Board Member of CINE. ITK remains a constant source of guidance and has been very helpful with results communication and knowledge translation.

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# Table of Contents

Acknowledgements .....	3
Table of Contents .....	4
Executive Summary .....	6
Overview .....	9
Results from Home-Based Questionnaire .....	10
Home Environment .....	10
Homelessness and Crowding .....	10
Language .....	11
Smoking in Households .....	11
Food Security .....	11
Country Food and Food Sharing Networks .....	12
Availability of Country Food .....	13
Cost of Living .....	14
References .....	15
Results from Individual Questionnaires .....	16
Overview .....	16
Dental Health .....	16
Reported Family Health .....	17
Heart Attack .....	17
Stroke .....	17
Diabetes .....	18
High Blood Pressure .....	18
Cancer .....	18
High Cholesterol .....	18
Participants' Medical Information .....	19
Diabetes .....	19
Cancer .....	19
High Blood Pressure .....	19
High Cholesterol .....	19
Reproductive Health .....	20
Physical Activity .....	21
Smoking Habits .....	21
Social Demographic Information .....	22
Marital Status .....	22
Education .....	22
Personal Income .....	22
Employment .....	23
References .....	23

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Clinical Findings .....	24
Healthy Body Weight .....	24
Waist Circumference .....	24
Standing Height .....	25
Sitting Height .....	25
Blood Lipids .....	25
Blood Pressure .....	26
Type 2 Diabetes Mellitus .....	27
References .....	27
What Adults Ate .....	28
Country Food .....	28
Market Food .....	29
Calories, Fat, Protein, and Carbohydrates .....	30
Folate .....	31
Iron Status and Anemia .....	31
Vitamin D .....	32
Sun Exposure .....	33
References .....	33
Parasitic Diseases and <i>Helicobacter pylori</i> .....	34
Parasitic Diseases .....	34
Bacteria .....	35

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# Executive Summary

**T**his report provides a summary of the results from the Adult Inuit Health Survey: Health in Transition and Resiliency conducted in Nunatsiavut in 2008.

## BACKGROUND

Nunatsiavummiut have expressed a desire to have health information that is of practical relevance so that informed decisions can be made in the face of the rapid changes that are affecting all dimensions of life in Arctic communities. In response to these concerns, a multifaceted participatory health research project for those 18 years of age and above was developed and undertaken in 5 communities in Nunatsiavut in 2008. The goal of the survey was to obtain an overview of the health status and living conditions of Nunatsiavummiut.

## FUNDING

Funding for this project was received from the Government of Canada's Program for International Polar Year, Canadian Institutes of Health Research, Health Canada, University of Toronto, Indian and Northern Affairs and ArcticNet.

## ETHICS APPROVAL

All work was approved by McGill's Institutional Review Board and the Nunatsiavut Steering Committee.

## RESULTS

A total of 239 households and 310 individuals participated.

### *Home environment*

60% of the participants lived in private housing. Many homes were in need of major repairs. Families with children experienced overcrowding.

### *Language*

English was reported as the dominant language spoken in Nunatsiavut homes.

### *Smoking*

The majority of homes in Nunatsiavut had smokers.

### *Food insecurity*

Food insecurity was a problem in homes in Nunatsiavut; unemployment, low income and high food costs were the main reasons for food insecurity.

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*Country food and food sharing*

Food sharing networks were strong and the majority of households shared their country food with others in their community. About 25% of households preferred country food.

*Cost of living*

Participants spent more money on food and shelter than other Canadian households.

## HEALTH

*Self-reported health*

Over 70% of participants reported their health to be good, very good or excellent.

*Reported family health*

Heart disease, diabetes, high blood pressure, cancer and high cholesterol were common health problems for parents and siblings of participants.

*Participants' health history*

Very few participants reported having been told by a health professional they had heart disease or had had a stroke but diabetes, cancer, high blood pressure and high cholesterol were common health problems.

*Physical activity*

In the week prior to the survey, 86% of participants walked on average on 5 days for at least 20 minutes.

*Smoking*

At the time of the survey smoking was very common among participants.

*Education*

54% of participants completed secondary school.

*Personal income and employment*

The main source of income was work related and 39% of participants had full-time employment.

## CLINICAL FINDINGS

*Weight*

The majority of participants were classified as overweight or obese.

The majority of women had an "at-risk" waist circumference.

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*Blood lipids*

The majority of participants had healthy lipid levels.

*Blood pressure*

The majority of participants had high blood pressure.

*Type 2 diabetes mellitus (honey-sweet)*

8% of participants had a fasting glucose level that was too high and 8% had a 2-hour oral glucose tolerance test with a glucose level that was too high, suggesting either pre-diabetes or Type 2 diabetes.

## NUTRITION

*Country food*

Older participants ( $\geq 40$  years of age) ate more country food than younger participants ( $< 40$  years of age).

*Market food*

Almost 75% of adults reported consuming pop in the month prior to the survey and they reported drinking 2 - 3 cans of soft drink per day.

*Folate*

Folate in red blood cells showed adequate levels for women of reproductive age.

*Iron Status and Anemia*

Iron deficiency is more common among women, especially younger women.

*Vitamin D*

The majority of Nunatsiavummiut need more vitamin D.

## PARASITIC DISEASES AND *HELICOBACTER PYLORI*

*Parasitic diseases*

Parasitic diseases are not common in Nunatsiavut. Few people tested positive for Echinococcosis, Trichinosis, Toxocariasis or Toxoplasmosis.

*Bacteria*

The majority of participants tested positive for *Helicobacter pylori*.

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## OVERVIEW

- The Inuit Health Survey in Nunatsiavut was conducted in 2008.
- The goal of the survey was to obtain an overview of the health status and living conditions of Inuit living in Nunatsiavut.
- A total of 239 households (representing 868 people) and 310 individuals 18 years of age or older participated. An average of 1.3 people per household participated.

**Nunatsiavut participation**

	Age		Gender	
	<40 yr	≥40 yr	Men	Women
Number of participants	113	197	108	202

- Average age of participants in the survey was 44 years. More women than men and more individuals over 40 years of age took part in the survey.
- Five communities participated:
  - Nain
  - Hopedale
  - Postville
  - Makkovik
  - Rigolet
- All data presented are based on the actual number of participants (n = number of participants).
- The number of participants varies throughout the report depending on the information that was available from each participant.
- Not every household was available to participate; 57% did participate, while 43% were unavailable or refused to participate.



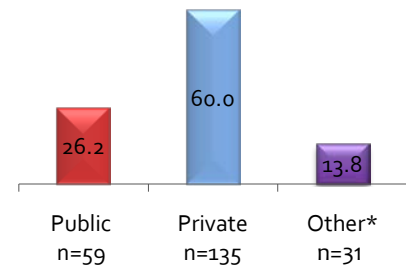
## RESULTS FROM HOME-BASED QUESTIONNAIRES

### Home Environment

- The home environment is important for the health and well-being of Nunatsiavummiut.
- 60% of the participants in Nunatsiavut lived in private households.
- 22% of participants (n=52) lived in homes needing major repairs such as a new roof, structural repairs, plumbing repairs.
- Mold was reported as a problem in 12% of homes (n=28).
- Both mold and need for major repairs were reported as problems in 19% of homes (n=43).



Type of housing (%)



\* Includes housing provided by a third party such as government or a company.

### Homelessness and Crowding

*Families with children experience overcrowding in Nunatsiavut.*

- During the 12 months prior to the survey, 11% of homes (n=26) provided shelter to homeless persons. An average of 1.7 people stayed a median of 6.5 weeks.
- Household size for participants ranged from 1 to 10 people and averaged 3.6. In other Canadian households the average number is 2.5 (1).
- Each home reported having an average of 3 bedrooms; half of the homes had more than 2 people per bedroom.



- Based on Statistics Canada's definition of crowding (1), which is having more than one person per room where rooms include kitchen, living room and bedrooms, more than 11% of homes were crowded.
- 53% of homes (n=118) had children and of those homes, 20% (n=23) were crowded.
- In contrast, among the 106 homes without children, there were no crowded dwellings.
- According to the 2006 Census, only 3% of non-Aboriginal people lived in a crowded dwelling (1).

## Language

- English was reported as the predominant language spoken at home. In Nunatsiavut 98% of participants (n=233) spoke English at home.
- Inuktitut/Inuttitut was spoken in 7% of homes (n=17).



## Smoking in the Household

- Of the 239 households surveyed, 74% (n=176) had smokers, and there were on average two smokers per home.
- Smoking indoors was forbidden in 70% of homes (n=121).

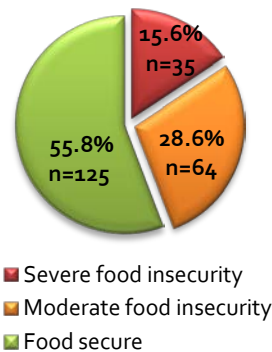
## Food Security

*Food insecurity is a problem in homes in Nunatsiavut communities.*

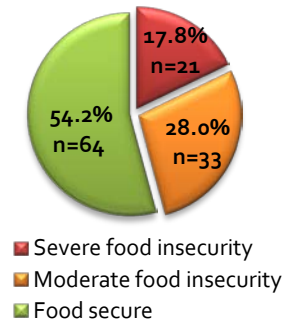
- The food security questionnaire, developed by the United States Department of Agriculture, was used (2). Indian and Northern Affairs Canada (INAC) modified the questionnaire based on discussions with Inuit interviewers (3).
- More than half of the households reported that they had enough food to eat (food secure).
- Severe food insecurity is defined as disrupted eating patterns and reduced food intake among adults and/or children (3). About 16% of households reported severe food insecurity.



Overall household food security (%)



Food security in households with children (%)



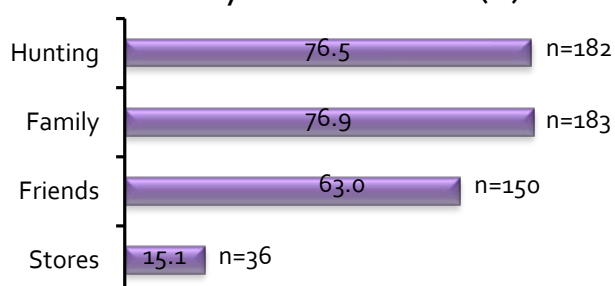
- According to the Canadian Community Health Survey 2004, 9% of Canadian households reported moderate or severe food insecurity (3).
- 46% of households with children (n=54) were food insecure.
- Unemployment, low income and high food costs were the main reasons for food insecurity.

## Country Food and Food Sharing Networks

*Food sharing networks are strong. The majority of households share their country food with others.*

- More than 75% of households said they had an active hunter in the home; over 80% of households with children had an active hunter.
- Most households (80%) shared their country food with others in their community.
- Most households said they obtained country food from hunting and their families. Other important ways to obtain country food were from friends and stores.
- About 25% of households preferred mainly country food, while the rest preferred a mix of both country and store-bought foods.
- About 20% of households in Nunatsiavut worry about contaminants in country food.

How country food was obtained (%)



Community garden in Makkovik

## Availability of Country Food

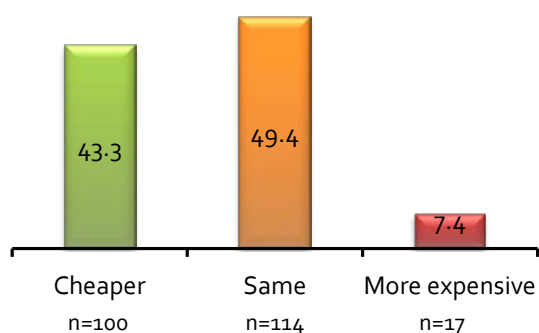
*Nunatsiavummiut prefer to eat country food, but the high cost of obtaining it makes it difficult.*

- Most households (75%) preferred to eat more country food than they could get.
- There were many reasons why participants could not get country food. The primary reasons were not having an active hunter in the home, not having a skidoo or boat, and the high cost of supplies and gas to go hunting and fishing. (see table)
- When households ran out of country food, about two thirds received food from family and friends. Almost half bought more store food, many went hunting or fishing (41%), and about 20% went without country food.
- Many households (43%) felt getting country food was cheaper than store-bought food. About 50% said country food was as costly as store-bought food, and 7% thought country food was more expensive. (see graph)

**Limitations to getting country food\***

	n	%
No active hunter	57	33.1
No transportation	83	48.3
Gas & supplies too expensive	55	32.0
Scarce/hard to harvest	35	20.4
Weather/no time	23	13.4
Other	11	6.4
*Percentages do not add up to 100 because participants could give more than one answer.		

**Cost of country food vs store food (%)**



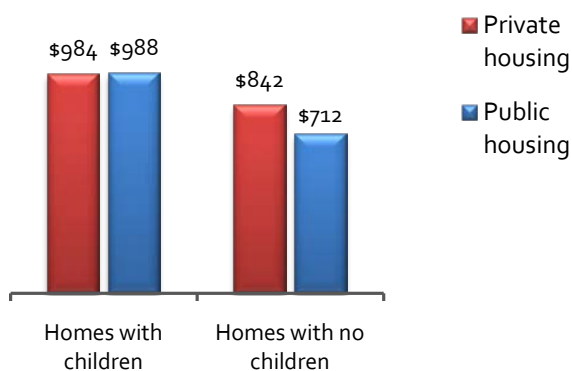
## Cost of Living

*Nunatsiavut households spend more on food and shelter than other Canadian households.*

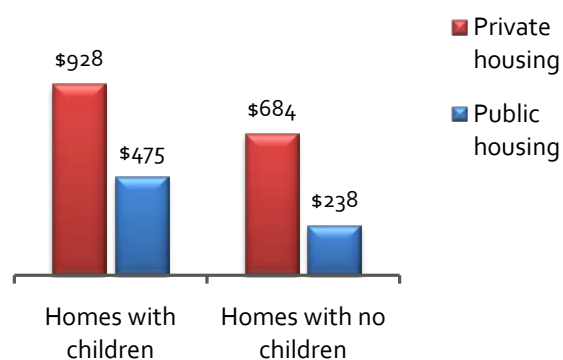
- In the month prior to the survey, one third of households (n=79) had someone receiving income support.
- The average household surveyed in Nunatsiavut spent \$880 per month on food. For households with children, the monthly food bill was \$980.
- In 2007 the average amount spent for food in other Canadian households was about \$609 per month (4).
- The average household surveyed in Nunatsiavut spent \$713 per month on shelter. This amount includes rent or mortgage, electricity, heating fuel, gas, water and sewage, and garbage.
- According to Statistics Canada's Survey of household spending, the average Canadian household spent \$1,137 per month on shelter in 2007 (4).



**Money spent on food per household each month**



**Money spent on shelter per household each month**



- Household size ranged from one to ten people.
- The Low Income Cut-off (5) is the minimum level of income necessary for an adequate standard of living in Canada.

**Low Income Cut-off (LICO) (5)**

Size of household	Minimum necessary household income
1 person	\$22,171
2 persons	\$27,601
3 persons	\$33,933
4 persons	\$41,198
5 persons	\$46,727
6 persons	\$52,699
7 persons	\$58,673
More than 7 persons, for each additional person, add	\$5,974

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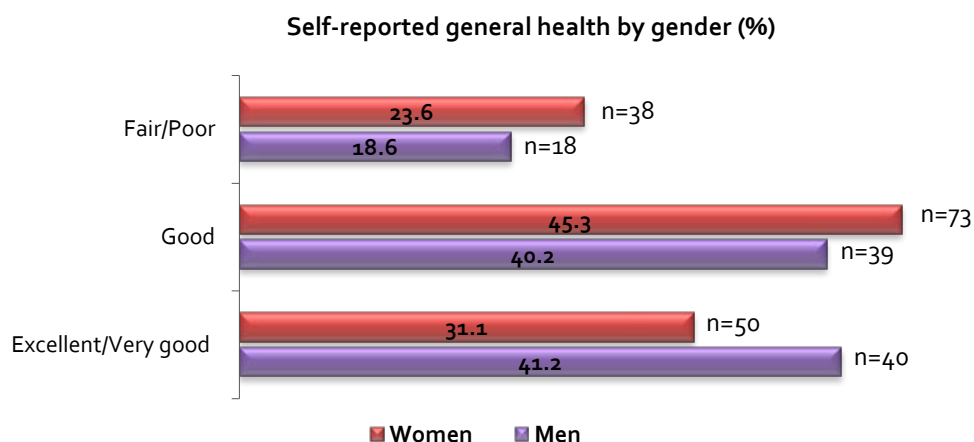
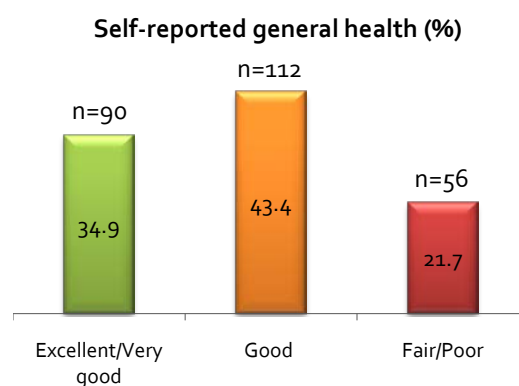


## RESULTS FROM INDIVIDUAL QUESTIONNAIRES

*The majority of participants thought their health was good to excellent.*

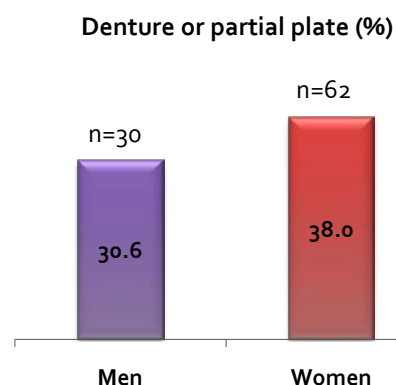
### Overview

- 35% of the participants thought their health was excellent or very good.
- According to the Aboriginal Peoples Survey, 2006, half of Inuit aged 15 and over self-reported to be in excellent or very good health but were less likely to report excellent or very good health than their Canadian counterparts (1).



### Dental Health

- The survey found that more than half (53%) of participants felt that their gums and teeth needed some work or had an ongoing problem.
- Many participants had dentures or partial plates, especially female participants.





## REPORTED FAMILY HEALTH

*Participants were asked about the health of their parents and siblings.*

*Heart disease is a common health problem among parents and siblings of participants.*

### Heart Attack

- 17% of participants reported that their parents were told by a doctor or a nurse that they had had a heart attack.
- 6% of participants had siblings who were told they had had a heart attack.

### Stroke

- 24% of participants reported their parents were told by a doctor or a nurse they had had a stroke.
- 6% of participants had siblings who were told they had had a stroke.

**Reported family health history**

	Parents		Siblings	
	n*	%	n*	%
Heart attack	40	17.0	15	6.2
Stroke	56	23.8	15	6.2
Other	29	12.8	14	5.9

\* n = number of participants

*Diabetes, high blood pressure, cancer and high cholesterol are common health problems for parents and siblings of participants.*

## Diabetes

- 18% of participants reported that their parents were told by a doctor or nurse that they had diabetes.
- 14% of participants had siblings who had been told they had diabetes.

## High Blood Pressure

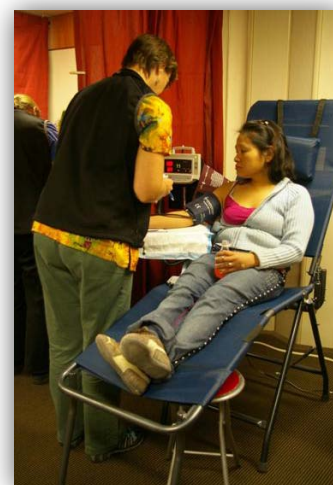
- 53% of participants had parents who had been told by a doctor or nurse that they had high blood pressure.
- 31% of participants had siblings who were told they had high blood pressure.

## Cancer

- 40% of participants had parents who had been told that they had a cancer.
- 20% of participants had siblings who had been told they had a cancer.

## High Cholesterol

- 29% of participants had parents who had been told by a doctor or nurse that they had high cholesterol.
- 22% of participants had siblings who had been told they had high cholesterol.



**Reported family health history**

	Parents		Siblings	
	n*	%	n*	%
Diabetes	42	18.3	32	13.7
High blood pressure	113	53.1	67	30.7
Cancer	96	39.5	48	19.8
High cholesterol	50	28.9	43	21.5

\* n = number of participants

## PARTICIPANTS' MEDICAL INFORMATION

*Participants were asked about their own health.*

*Very few participants reported having been told they had heart disease or had had a stroke.*

*Diabetes, cancer, high blood pressure and high cholesterol are common health problems among participants in Nunatsiavut.*

### Diabetes

- 10% of all participants had been told by a doctor or nurse that they had diabetes. Only 3% of participants less than 40 years of age had been told they had diabetes, while 13% of those age 40 and above had been told they had diabetes.
- More women (12%) reported having diabetes than men (6%).
- The prevalence of diabetes in Canada was 5.8% in 2007 (2).
- The majority of participants with diabetes used medication as the main treatment.

### Cancer

- More than 8% of participants 40 years of age and above reported they had been told they had a cancer; 9% of women and 2% of men reported having cancer.

### High Blood Pressure

- More than 40% of participants 40 and above had been told they had high blood pressure; 32% of women and 28% of men reported having high blood pressure.
- According to the Canadian Community Health Survey (CCHS), about 16% of Canadians suffered from high blood pressure in 2007 (2).
- The majority of participants with high blood pressure used medication as the main treatment. Diet and exercise were also important treatments.

### High Cholesterol

- High cholesterol was a common health problem, especially for those 40 and over.
- The majority of participants with high cholesterol followed a treatment of medication. Many also followed a program of diet and exercise.

## Participants' health history

	Age				Gender			
	<40 yr		≥40 yr		Men		Women	
	n	%	n	%	n	%	n	%
Diabetes	3	3.3	22	13.1	6	6.1	19	11.7
Cancer	3	3.3	14	8.3	2	2.0	15	9.2
High blood pressure	9	9.8	70	41.7	27	27.6	52	32.1
High cholesterol	5	5.6	41	24.9	17	17.9	29	18.2

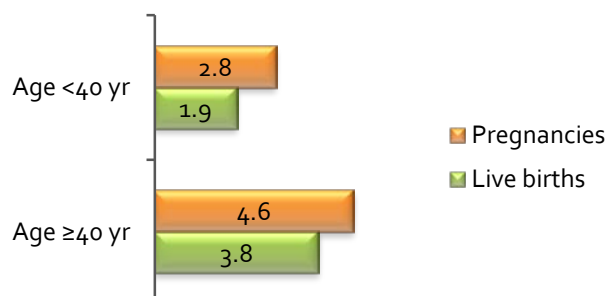
## Reproductive health

- Most women had had a Pap test within two years of the survey; however, 3% of women had never had a Pap test.
- Women 40 years of age and above had had 4.6 pregnancies and 3.8 live births, while women below 40 years of age had had 2.8 and 1.9, respectively.

## Time of most recent Pap test

	Age			
	<40 yr		≥40 yr	
	n	%	n	%
Last 2 years	54	88.5	88	87.1
More than 2 years	4	6.6	6	5.9
Never or more than 5 years	3	4.9	7	6.9

## Pregnancies and live births (N)



## Physical activity

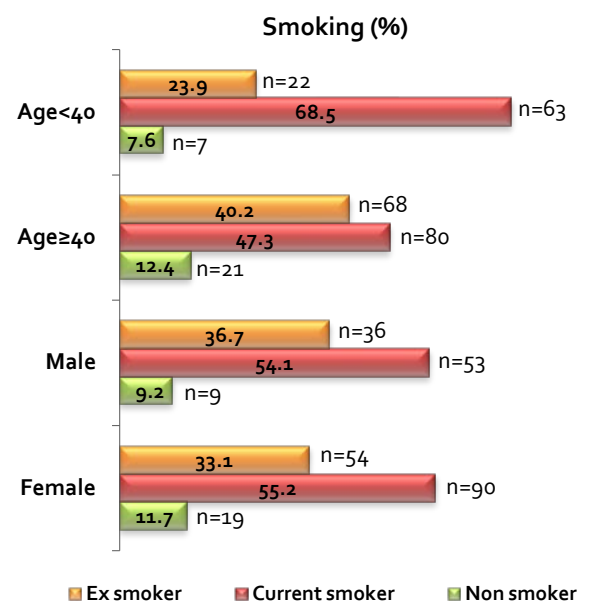
- On average 86% of participants walked on 5 days for at least 20 minutes in the week prior to the survey. Men walked for almost 133 minutes on these days and women walked for 68 minutes.
- 48% of respondents to the 2005 Canadian Community Health Survey, aged 12 and older, reported that they walked less than half an hour each day in their leisure time (3).



## Smoking habits

*Smoking is very common in Nunatsiavut.*

- At the time of the survey, 55% of participants reported that they smoked cigarettes.
- In comparison, 22% of other Canadians smoked in 2007 (4).
- 34% of participants had already stopped smoking.
- On average, men smoked 14 and women 11 cigarettes per day.
- The average age when participants began smoking was 15 years.
- It is well known that smoking causes cancer, emphysema, and heart disease. Quitting smoking is the best thing you can do to improve your health and quality of life (5).

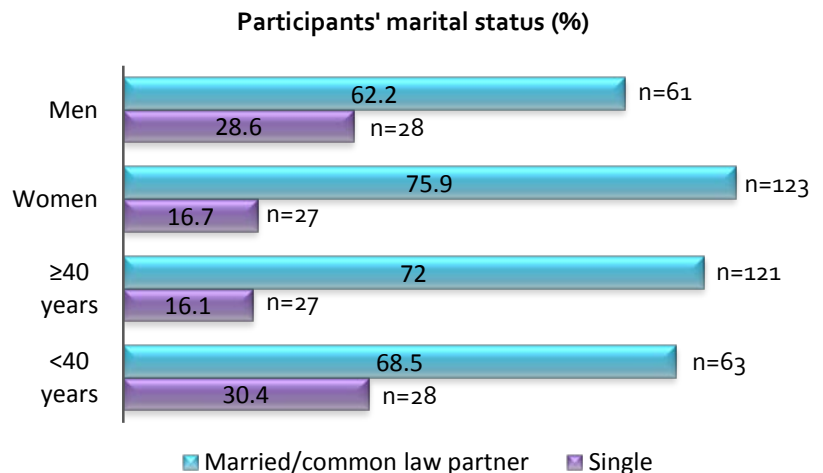


## SOCIAL DEMOGRAPHIC INFORMATION

### Marital Status

*The majority of participants in Nunatsiavut are married or have a common law partner.*

- This survey found that the majority of participants (> 70%) were married or had a common law partner.



### Education

- 54% of participants in Nunatsiavut completed secondary school.

#### Highest level of schooling completed

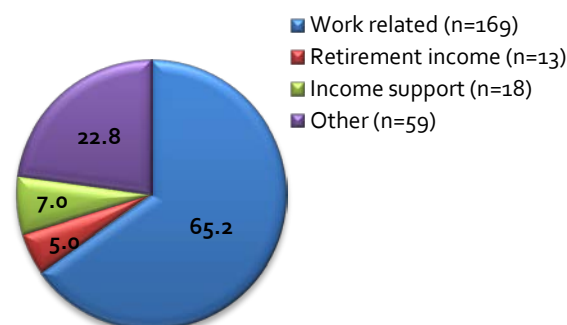
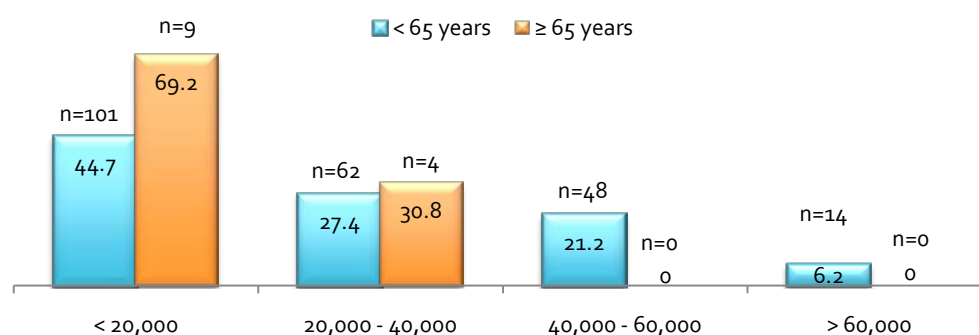
	n	%
Less than secondary	117	44.8
Secondary completed	71	27.2
Any post secondary	73	28.0

### Personal Income

*The main source of income was work related and 39% of participants had full-time employment.*

- 65% of participants in Nunatsiavut received their income from wages and salaries, self-employment, carving, sewing, crafts/arts and home daycare.
- For 7% of participants, their main source of income was income support.

- 5% of participants received their income from pensions, benefits from Canada pension plan, superannuation and annuities.
- 23 % of participants received their income from other sources (employment insurance, workers' compensation, hunter support program, child support, alimony, dividends, interest, and child tax benefit).
- 45% of participants less than 65 years of age estimated their personal income to be less than \$20,000 per year.
- 69% of participants 65 years of age and older estimated their personal income to be less than \$20,000 per year.

**Main source of income(%)****Personal income (%)**

## Employment

- At the time of the interview 39% of participants had full-time employment.

**Employment status**

	n	%
Full time	100	39.1
Part-time /occasional work	73	28.5
Other	83	32.4

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## Clinical Findings

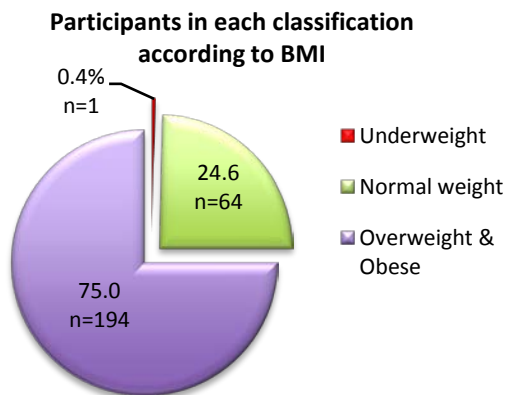
During the health survey, participants had their standing height (without shoes) and sitting height measured, as well as their weight and waist circumference.

### Healthy Body Weight

- Body mass index (BMI) is commonly used to assess whether one has a healthy body weight for one's height. BMI is calculated by taking weight in kilograms and dividing it by [(height in meters) x (height in meters)].

$$\text{BMI} = \frac{\text{Wt (kg)}}{[\text{ht(m)} \times \text{ht(m)}]}$$

- 25% of Nunatsiavummiut (n=64) had a healthy body weight.



**Health Risk classification according to BMI (1)**

BMI	Classification	Risk of developing health problems
< 18.5	Under weight	Increased
18.5-24.9	Normal weight	Least
> 24.9	Overweight & Obese	Increased

### Waist Circumference

- A waist circumference greater than 102 cm for men and greater than 88 cm for women is associated with a greater risk for health problems.
- In Nunatsiavut, 74% of women (n=120) and 35% of men (n=34) had an "at-risk" waist circumference.



## Standing Height

Average height of participants

	cm	ft/in
Men (n=87)	166.5	5'6"
Women (n=180)	155.3	5'1"



## Sitting Height

- Because BMI is influenced by leg length, someone with long legs will have a lower BMI than someone with shorter legs but a similar size torso.
- When BMI was adjusted by sitting height, the percentage of participants in the healthy weight category went up and the percentage in the obese and overweight categories went down slightly.

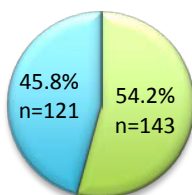
## Blood Lipids

- The type and amount of lipids circulating in the blood stream provide an indication of a person's risk for cardiovascular disease.
- Nurses collected fasting blood samples in the morning from participants. These samples were used to assess total cholesterol, low density lipoprotein cholesterol (LDL-cho) which is the unhealthy cholesterol, high density lipoprotein cholesterol (HDL-cho) which is the healthy cholesterol, and triglycerides.
- 46% of Nunatsiavut participants had a level of total cholesterol that was too high. 25% had high levels of the unhealthy cholesterol (LDL-cho). 24% had low levels of healthy cholesterol (HDL-cho). Triglyceride levels were too high for 22% of participants.



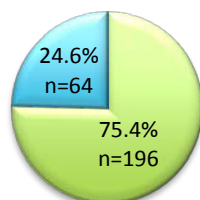
Participants' Lipid Levels

Total cholesterol



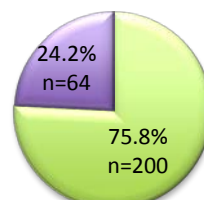
■ Good ■ Too high

LDL-cholesterol



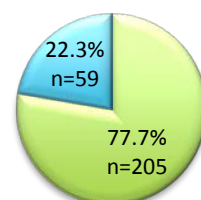
■ Good ■ Too high

HDL-cholesterol



■ Good ■ Too low

Triglycerides

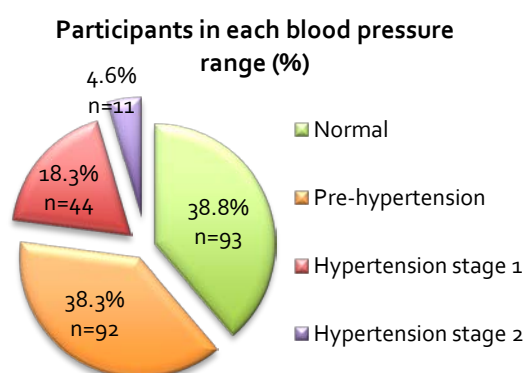


■ Good ■ Too high

## Blood Pressure

*A survey cannot diagnose hypertension, but does give a picture of the likely extent of blood pressure problems in Nunatsiavut.*

- Blood pressure is the force needed to deliver blood to all parts of our body. Blood pressure is always given as two numbers, systolic pressure and diastolic pressure, a higher number over a lower number.
- Nurses measured the systolic blood pressure (the pressure when the heart is squeezing and sending blood to the rest of the body = the higher number) and the diastolic blood pressure (the pressure when the heart is relaxing and filling up with blood again = the lower number).
- Blood pressure was measured 3 times when participants were at rest.
- It is important to keep blood pressure at “normal” levels because with high blood pressure or hypertension the heart has to work harder and your blood vessels take a beating (2).
- Untreated high blood pressure is a risk for heart disease and stroke (2).



Blood pressure category	Systolic pressure	Diastolic pressure
Normal	< 120	< 80
Pre-hypertension	120 - 139	80 - 89
Hypertension stage 1	140 - 159	90 - 99
Hypertension stage 2	≥ 160	≥ 100

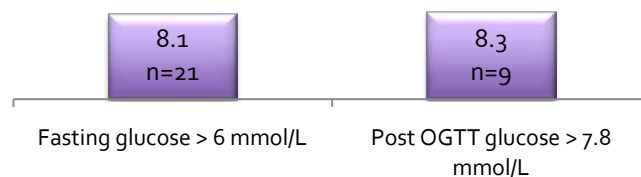
## Type 2 Diabetes Mellitus

*A survey cannot diagnose diabetes. However, results suggest that about 8% of participants have fasting glucose levels that are too high, suggesting either pre-diabetes or Type 2 diabetes.*

- When blood sugar is too high it is a sign that the cells in the body are not getting the fuel they need to function properly, and that a person may have pre-diabetes or Type 2 diabetes.
- Fasting blood samples were used to test for blood sugar (glucose).
- About 40% of the survey participants had a second blood sample taken two hours after drinking a flavoured glucose sugar drink. The test is called an oral glucose tolerance test (OGTT) and is a way of seeing how the body handles glucose.



### Participants with "at risk" glucose levels



- The survey found that 8% of participants in Nunatsiavut had a fasting glucose level that was too high (> 6 mmol/L) which indicates either pre-diabetes or Type 2 diabetes. 8% had a 2-hour OGTT glucose level that was too high (>7.8 mmol/L) which indicates pre-diabetes or Type 2 diabetes.

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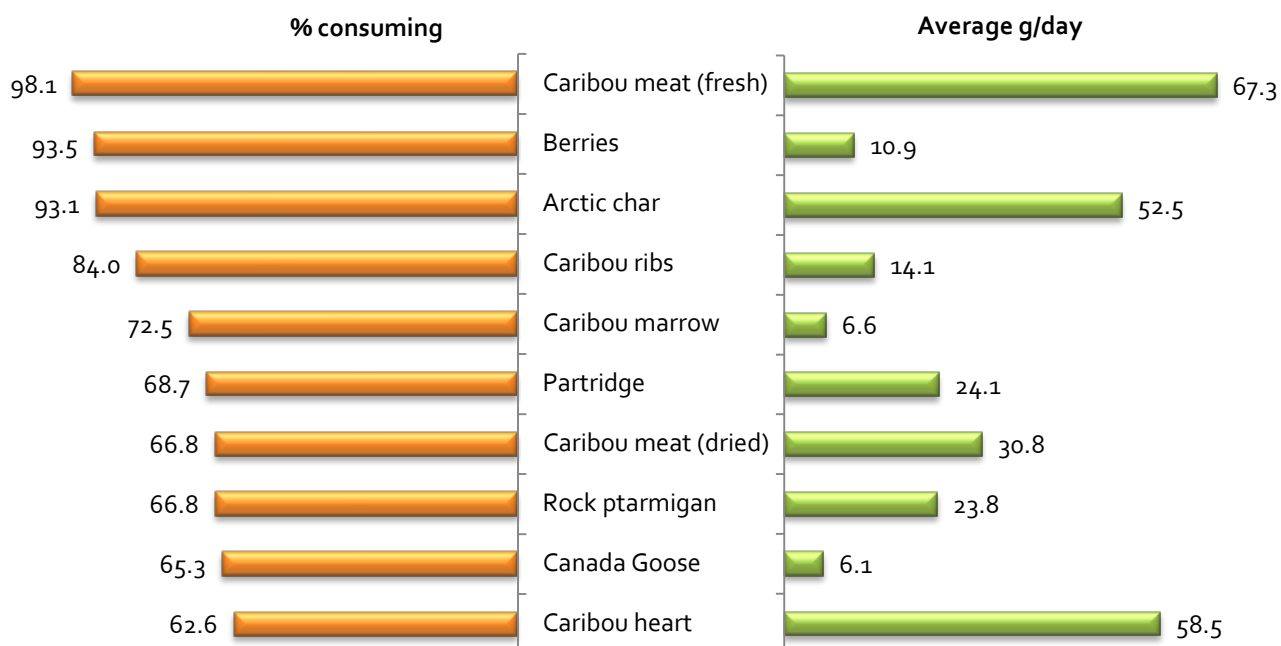
## WHAT ADULTS ATE

### Country Food

*Country food is a rich source of nutrients.*

- What we eat and drink along with other lifestyle factors, has the potential to protect us from or increase our risk of chronic diseases such as heart disease, diabetes (high blood sugar) and osteoporosis (weak bones).
- Country food consumption in the 12 months prior to the survey:
  - Men ate more country food than women.
  - Older adults ( $\geq 40$  years of age) ate more country food than younger adults ( $< 40$  years of age).
  - Fresh and dried caribou meat and char were country foods that were eaten often and in large quantities.

### Most commonly consumed country food in Nunatsiavut

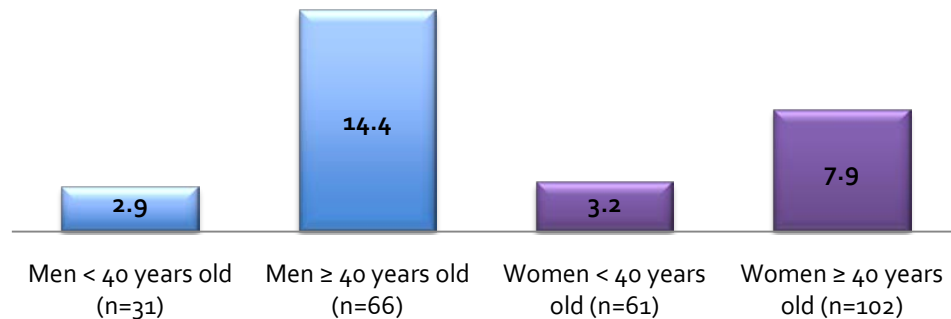


*This column shows the proportion (%) of participants, who reported eating each of the country foods listed.*

*This column shows on average, how much of each country food was eaten by each participant who reported consuming these foods.*

- Country food consumption the day before each participant was interviewed for the survey:
  - The average proportion of total Calories that came from country food was higher among older participants than younger participants.
  - Country food intake has decreased in the past decade (1).

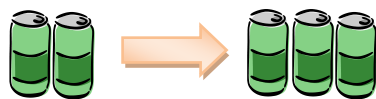
**% Calories from country food on the day before the interview**



## Market Food

*Many studies have shown that higher intakes of sugar, especially the sugar from soft drinks, are associated with an increased risk of obesity (too much body fat), heart disease, and diabetes (2,4,5,6)*

- Foods such as chips, pop, sweet drinks (made from crystals), and chocolate bars/candy are high in “empty Calories” – this means they are not healthy foods to eat on a daily basis. Many adults consumed these foods on the day before the interview.
- The most commonly consumed market food was regular pop - almost 75% of adults reported drinking pop in the month prior to the interview.



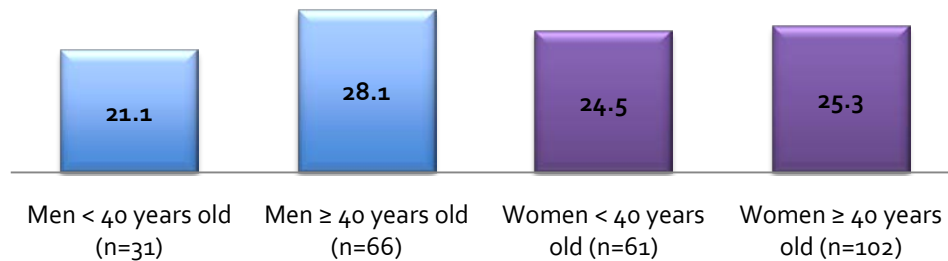
*Participants reported drinking 2 – 3 cans of soft drinks per day.*



*One can contains 9 teaspoons of sugar.*

- Milk has more nutrients than sugary drinks, but was consumed less often and in smaller quantities than sugary drinks.
- One quarter to one third of total Calories consumed came from high sugar foods and drinks.

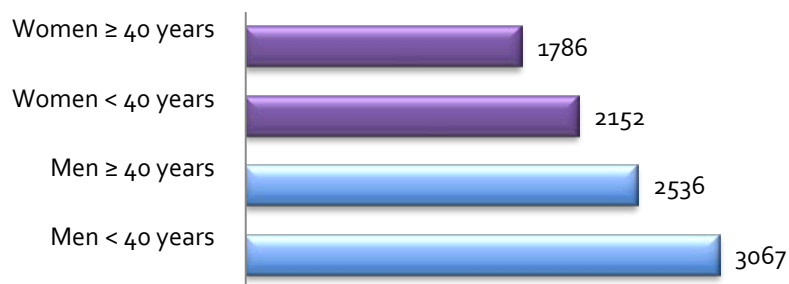
**% Calories from foods with more than 25% of energy as sugar on the day before the interview**



### Calories, Fat, Protein and Carbohydrates

- Men consumed more Calories than women, and younger adults consumed more Calories than older adults.
- Average Caloric intake was higher among participants in Nunatsiavut compared with the rest of Canadians in the 2004 Canadian Community Health Survey (CCHS) (2).

**Average Caloric intake**

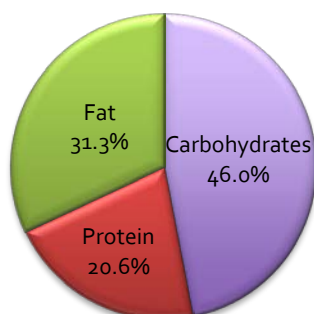


- Calories consumed as carbohydrate, protein and fat were similar for men and women.

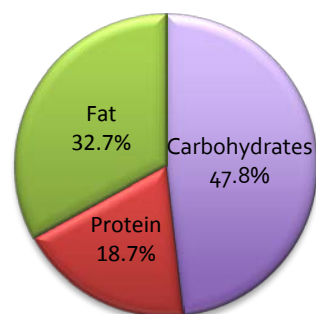
**Acceptable intake ranges for carbohydrate, protein, and fat (3)**

Carbohydrate	Protein	Fat
45 – 65 %	10 – 35%	20 – 35%

**Men (n=97)**



**Women (n=163)**



## Folate

- Folate is important for healthy pregnancies.
- Folate in red blood cells showed adequate levels for women of reproductive age.

## Iron Status and Anemia

*Iron deficiency is more common among women, especially young women.*

- Iron has many functions in our body.
- One important function is transporting the oxygen we breathe in throughout the body.
- Not having enough iron in your blood can make you feel weak, tired, and cold.
- Not eating enough iron can lead to iron deficiency, the most common nutritional deficiency in the world.
- Country foods like caribou meat, liver, duck, dried meat, and fish are good sources of iron. Beef, ham, and chicken are also high in iron.
- Men appear to have good iron status.

**Iron status among Nunatsiavummiut**

Definitions		Men (%)	Women (%)
Anemia (weak blood)	Low hemoglobin in blood	13	21
Iron deficiency	Low iron stores in the body	7	17
Iron deficiency + Anemia	Very low iron stores and low hemoglobin	3	12

## Vitamin D

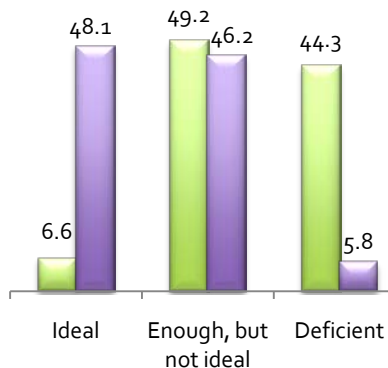
*The majority of Inuit need more vitamin D.*

- Vitamin D is important for good bone health. Not getting enough can lead to brittle bones.
- Foods containing vitamin D include arctic char, blubber, liver, fatty fish, and vitamin D fortified milk.
- Levels of 25-hydroxyvitamin D in the blood stream are used to determine vitamin D status.

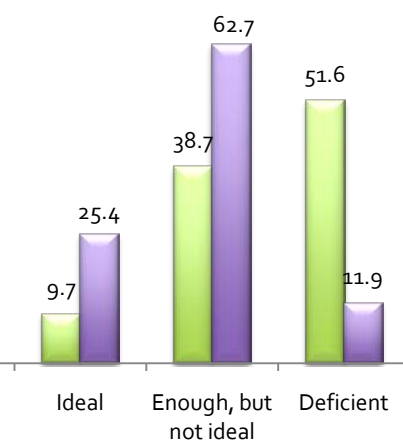
**Vitamin D status measured in blood**

25(OH)D nmol/L	Status
> 75	Ideal
37.5 – 75	Enough, but not ideal
< 37.5	Deficient

**Women's vitamin D status (%)**



**Men's vitamin D status (%)**



■ < 40 yrs old

■ ≥ 40 yrs old



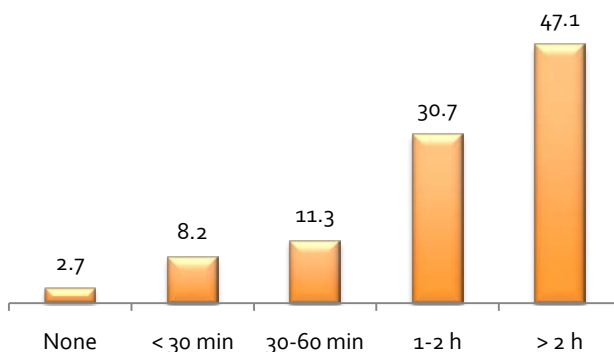
## Sun Exposure

*People should get some sun every day for more vitamin D.*

- The body can make vitamin D when the skin is exposed to sunlight during the summer months.
- The survey found that more than 47% of participants spend more than 2 hours in the sun during the summer months, while 3% of participants do not spend any time in the sun.
- Exposing arms and legs to direct sunlight for 5 to 30 minutes between 10:00 AM and 3:00 PM twice a week in the summer appears to be sufficient to make vitamin D. The time required depends on the time of day, season, latitude and skin pigmentation. (7)



**Summer months sun exposure (%)**



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6. Schulze, MB, Manson JE, Ludwig DS, et al. 2004. Sugar-sweetened beverages, weight gain, and incidence of type 2 diabetes in young and middle-aged women. *JAMA.* 292(8):927-34.
7. Holick, MF. 2007. Vitamin D deficiency. *NEJM.* 357(3):266-81.

## PARASITIC DISEASES AND *HELICOBACTER PYLORI*

- Blood samples from participants were tested to determine exposure to several parasites and to the bacteria called *Helicobacter pylori*.
- It is important to remember that a positive test indicates exposure at some time during the person's life, and does NOT necessarily mean an active infection.

### Parasitic Diseases

#### *Echinococcosis*

- Caused by *Echinococcus sp.*, a tape worm. The form found in northern communities exists in wolves, moose and caribou.
- Eating meat from infected animals or contact with dog feces are the routes for human infection.
- The infection is very rare. Only one person had a positive test.



#### *Trichinosis*

- Caused by *Trichinella nativa*, a parasitic worm found in most bears and in 15-20% of walruses in northern communities.
- This parasite can survive prolonged freezing.
- The primary cause of infection is eating raw or poorly cooked meat from an infected animal.
- Again, the infection is very rare. Only three people tested positive for *Trichinella* exposure.



#### *Toxocariasis*

- In northern communities, people are exposed to a form of *Toxocara*, a parasitic worm that exists in dogs.
- This form is spread by contact with dog feces, especially from puppies.
- Toxocariasis is very rare. Only three participants had positive tests.

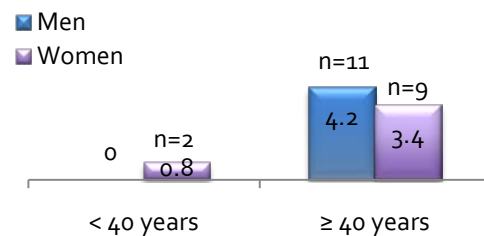


### Toxoplasmosis

- Caused by *Toxoplasma gondii*, one of the most successful parasites in the world. There are more than 2 billion people infected globally.
- Any animal can be infected, so raw and poorly cooked meat, as well as exposure to cat feces, can be sources of infection.
- Freezing at very low temperatures for a long time may kill the parasite, but is not a guarantee.
- Toxoplasmosis is the most common parasitic infection in the North, but not common in Nunatsiavut (8%).
- A total of 22 people tested positive.
- Infection is life-long, but is not usually a problem except for women who become infected during pregnancy and for people with compromised immunity.



Participants with a positive test for Toxoplasmosis (%)

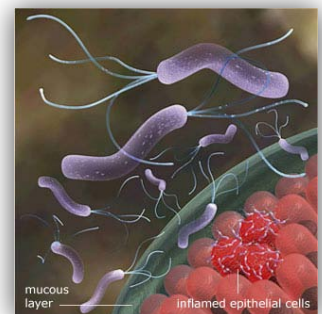


### Bacteria

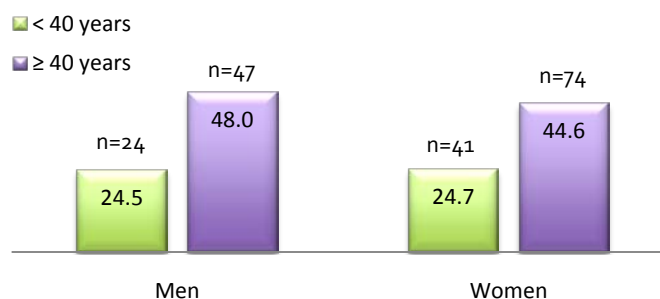
#### *Helicobacter pylori*

*H. pylori* infection is common in Nunatsiavut where 71% of all participants tested positive.

- *H. pylori* is a bacterium that lives in the lining of the stomach and is associated with low level inflammation.
- It is spread person-to-person through close contact and is likely related to household crowding.
- Infection is common in Nunatsiavut where 71% of all participants tested positive for *H. pylori*.
- Infection usually produces no symptoms, but can cause stomach pain and possibly ulcers. In rare cases it can cause stomach cancer.



Participants positive for *H. pylori* (%)





## IPY – INUIT HEALTH SURVEY

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