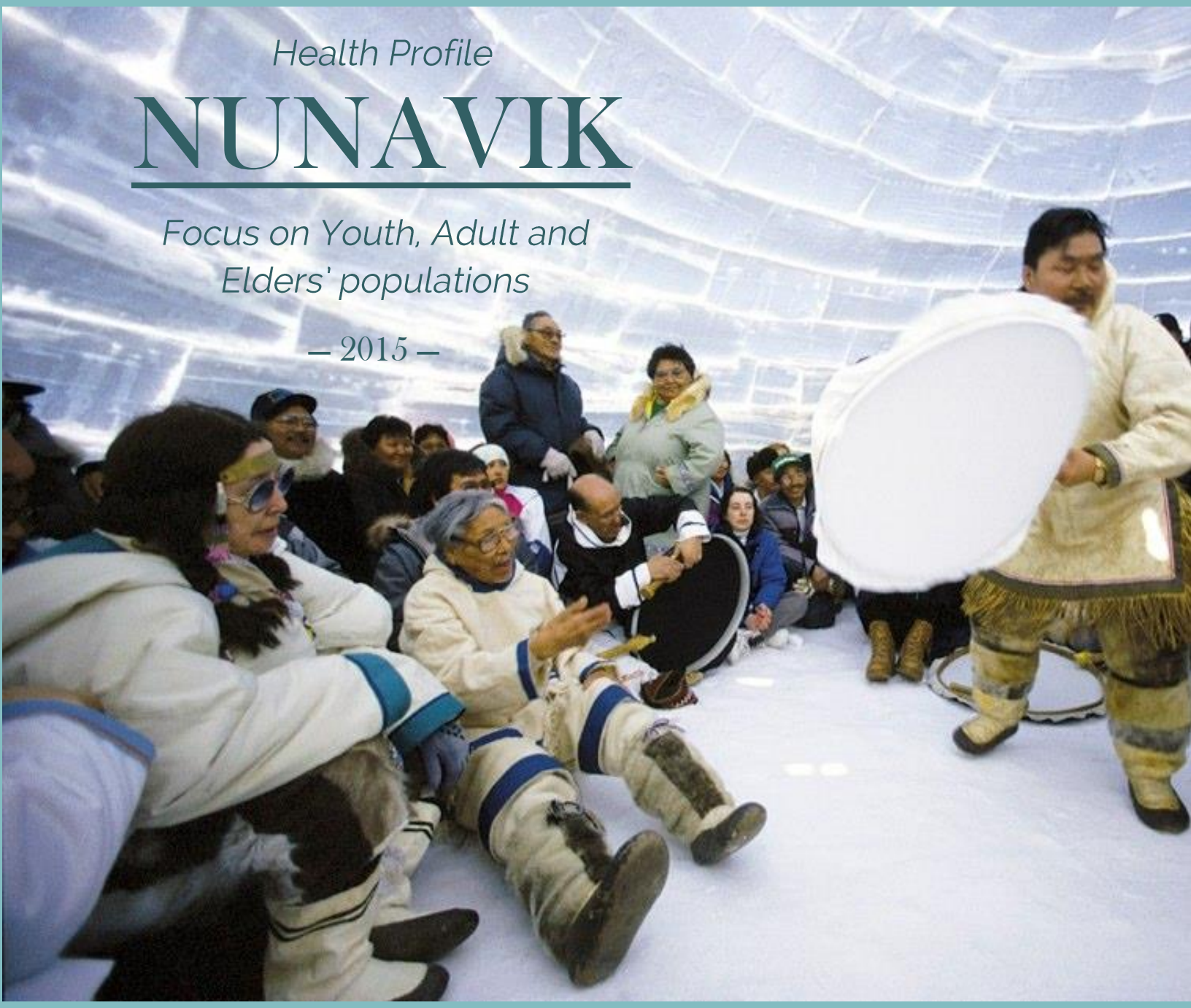

Health Profile

NUNAVIK

Focus on Youth, Adult and Elders' populations

– 2015 –

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RÉGIE RÉGIONALE DE LA SANTÉ ET DES SERVICES SOCIAUX DU NUNAVIK
NUNAVIK REGIONAL BOARD OF HEALTH AND SOCIAL SERVICES

Québec

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Québec

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Photo credit: Marites N. Sison, 2011, Anglican Journal

Director's Message

Although this Profile was prepared to fulfill a legal obligation assigned to the Director of Regional Public Health, it is also designed to provide regional directors—in health, social services, and other sectors—and Nunavik citizens with the necessary information for decision-making in order to improve the state of health and well-being of Nunavimmiut.

Third of a series[1], this installment on the health of adults and youth outlines many factors whose decisional levers are outside the health domain, but that nevertheless have considerable consequences on the state of health of Nunavik's population. This text is intended as a reference document, and as such is lengthy and detailed.

Enjoy!

[1] This report is the third in a series. The first report examines the socio-demographic situation of Nunavik's population, and the second describes the health of young children and their families.

Key messages

Nunavik youths: striving, yet facing many challenges

- Although large proportions of Nunavimmiut enjoy good self-esteem and cultural pride, levels of psychological distress in the region are appreciable, and youth are the group most strongly affected. High levels of distress tend to be linked to drug and alcohol use, as well as to violence and suicide, for which Nunavik has the tragic distinction of having the highest rate in Canada.
- Hospitalization rates from violence are currently far above the Québec average, and more than half of the population report having experienced violence as adults. Similarly, unintentional injuries rates are higher in Nunavik than in any other rural region of the province, and the highest rates are in young men. The most common cause is, by far, motor vehicle crashes, involving cars, trucks, ATVs, or snowmobiles. Alcohol is an important contributor.
- Nunavik's rates of **chlamydia and gonorrhea** are far above the Québec average, rates that appear to be rising again after a long period of decline. Although rates of chlamydia tend to be similar from one community to the next, only a few communities present markedly higher rates of gonorrhoea than the rest. HIV numbers are so small that they cannot even be released — a very different situation than in the other provinces, where Aboriginal people are thought to be greatly over-represented in the HIV/AIDS numbers.

Adults and elders in Nunavik are increasingly affected by chronic disease

- The conditions that predominantly affect youth persist throughout the adult years, but often at diminishing rates. In contrast, chronic conditions tend to be diseases of adulthood, while disabilities become a serious issue in later life. For example, cancer hospitalization rates in Nunavik are comparable to the Québec average, but rates of lung cancer far exceed the provincial average, a situation likely explained by the extremely high smoking rate in the region.
- Similarly, respiratory ailments are the leading cause of hospitalization in Nunavik, with one death in four in the elderly attributable to some type of respiratory disease. Contributing factors probably include tobacco smoke and crowded housing. Tuberculosis rates in Nunavik are now far lower than they were in the 1950s, and mortality from the disease is almost zero. But rates are still far higher than in southern Canada, and while some communities have very low TB rates, there have been two community outbreaks in the region since 2007.
- Diabetes rates appear to remain lower in Inuit than in other Aboriginal groups, but they are still slightly above the national rate. Cardiovascular disease rates, however, are above the Québec average, and constitute the most common type of chronic condition in Nunavik. Decrease consumption of traditional diet, the shift to a sedentary lifestyle and high smoking rates all suggest that diabetes and cardiovascular disease rates could rise in the years to come.
- Although digestive conditions cause few deaths in the region, they are the second-largest cause of hospitalization, after respiratory conditions, far above the levels seen in the rest of Québec. Gastroenteritis is among the most prevalent causes, likely linked to crowded housing and consumption of contaminated water or food.
- The proportion of elders (65+) in Nunavik's population is low, but rapidly increasing. Information is lacking for the time being on the health profile of this specific age group, but it is suspected that disabilities will be an increasing concern in the years to come. For example, hearing loss is very prevalent in the adult and elderly population, secondary to chronic ear infections and noise exposure.
- Many of the aforementioned conditions are associated with the loss of the traditional way of life, and increasing prevalence of smoking, substance use and psychological distress. However, interventions aimed at these specific health behaviours or ailments are unlikely to succeed unless the underlying social, cultural, and economic determinants are also concomitantly addressed. In this regard, meaningful commitment to improving access to housing, employment, and culturally safe health services will become as important as addressing the collective consequences of intergenerational trauma in making significant contributions to health and well-being for all Nunavimmiut in the region.

Contents

List of Maps and Tables

List of Figures

List of Text Boxes

Introduction

The Inuit of northern Québec have survived and even thrived for millennia.
Plan Nunavik, 2010

At the time of the James Bay and Northern Quebec Agreement in 1975, Nunavik's population consisted of about 4,000 Inuit, the vast majority of whom pursued traditional harvesting activities and followed a way of life that had ensured Inuit survival for generations (Kativik Regional Government & Makivik Corporation, 2010). Some 40 years later, the population has almost tripled, and the region has been propelled into the 21st century. In this short span, residents have had to adapt to social, economic, and cultural changes to their way of life that took centuries to evolve in other societies. Although these changes have brought some tangible benefits, we must admit that there is still a significant gap in health and well-being between Nunavik and the non-Inuit regions of Canada.

Existing research suggests that these health disparities are in large part a symptom of poor socioeconomic and living conditions in Inuit communities: high poverty rates, lack of access to higher education, limited employment opportunities, and inadequate housing situation. This report considers these factors as well as other that are central in shaping health and well-being in Nunavik, and hence presents the latest health statistics against the backdrop of this social context.

This document was prepared as part of public health's mandate to monitor and report on the health of the population. Its purpose is to inform local decision-makers and health staff as they plan programs and make decisions about services for individuals and groups in the region. We seek to summarize the information for each health issue, flag emerging trends, and describe needs that should be addressed by health initiatives.

We begin from the premise that the conditions in which people are born, live, and work—the social determinants—have a major impact on health. After providing basic information on the methodology employed, and the limits of the data presented in Chapter 1, this conceptual framework forms the topic of Chapter 2. From there, we move to detailed consideration of the factors that shape health in Nunavik, considered under three perspectives: society-level determinants, community-level determinants, and individual determinants.

The final portion of the report presents statistics on the major health issues in youth and adult populations: Chapter 4 presents some summary measures of overall health; Chapter 5 focuses on conditions that are particularly common in youth; and Chapter 6 describes the major health problems in adults and Elders.

This division is not based on strict age criteria (i.e. the statistics were not calculated on specific age groups); rather this way of presenting the information only aims at summarising the most prevalent health and well-being issues at various life stages. We hope that this can help orient priorities in a context where needs constantly exceed resources.

Taken together, these chapters provide a detailed consideration of health status and seek at identifying the factors that affect it in the region. Our hope is that this information will support the development of policies and initiatives that are Inuit-specific, and thereby will improve health status in Nunavik's communities.

Methodological aspects

Choice of health indicators

Nunavik's unique characteristics influenced our choice of indicators for this report. A two-stage process was used to select indicators. We began with recent reports on health surveillance and the tracking of health inequalities, including Québec government reports (Institut national de santé publique du Québec, 2011), the World Health Organization (WHO) report *Closing the Gap in One Generation* (World Health Organization, 2008), and an Inuit Tapiriit Kanatami discussion paper on the determinants of Inuit health (Inuit Tapiriit Kanatami, 2007). Following this review, we drew on the knowledge of experts in Inuit health and health surveillance, in both the INSPQ and the Nunavik Regional Board of Health and Social Services, who provided feedback on the availability, validity, and utility of various indicators. The final list contained a wide range of indicators, ranging from hospitalization rates to people's report on their own eating habits.

Comparisons inside Nunavik and to other regions

Nunavik's 14 villages are spread along the Hudson and Ungava coasts, allowing the two coastal areas to be compared. However, the population of each village varies (from about 350 to 2,200 inhabitants),[2] as does the proportion of non-Inuit residents (from 0 to 20%), and these variations can affect the figures for each coastal area in its entirety. The prime example is Kuujjuaq: its 2,375 residents make up 44% of the population of the Ungava Coast, and 20% of Nunavik's total population. Since over a fifth of Kuujjuaq's residents are non-Inuit, the community tends to stand out, especially in the socio-economic figures.

We also present comparisons between the Nunavik region as a whole and other areas. In this report, we typically compare Nunavik to the Quebec average, and to the James Bay Cree region. The latter comparison is particularly interesting, since Nunavik and the Cree region share some important similarities. Both are remote regions with young populations. And both are signatories to the James Bay and Northern Québec Agreement, giving them a common legal framework for how health services are organized and funded. In some instances, we also compare Nunavik's figures to those of the other Inuit regions in Canada.

The comparisons between Nunavik and other regions of Quebec employ age-standardized rates. Age-standardization is a statistical method that controls for the impact that a population's age structure (i.e. its proportion of young and elderly people) has on its health statistics. This standardization allows for more valid comparisons between regions that have radically different age structures—as do Nunavik and the rest of Québec. Standardized figures may also be used to make comparisons over time. In this report, rates have been standardized to the population composition of Nunavik as of 2006. Because standardised rates are not "real" population rates, graphs presenting them will not indicate the rates per say.

In very rare cases, crude rates are being compared. This is because complete data by age-groups was unavailable and hence age adjustment impossible to perform. In these cases, the reader will be reminded that part of the discrepancies observed could be attributed to differences in age structures between the populations compared.

[2] More information on socio-demographic conditions can be found in the first booklet of this series.

Data Sources & Limitations

The report draws data from a variety of different sources. Readers should note that some of these sources contain data for *all* residents of Nunavik, both Inuit and non-Inuit. Others—notably sources such as the Aboriginal Peoples' Survey—provide data only on the region's *Inuit* residents. This is an imperfect situation, but not a huge issue in methodological terms, since Inuit comprise 90% of Nunavik's population.

Administrative data banks

This report draws on a variety of administrative files:

- The data on population and births are from the Institut de la statistique du Québec and the Ministère de la Santé et des Services sociaux du Québec, respectively. The population file provides estimates of the population up to June 30th, 2006, and projections thereafter.
- Some indicators of income are drawn from the Institut de la statistique du Québec; these income figures do not distinguish between Inuit and other residents.
- Mortality figures (1981-2010) are from the Deaths File maintained by the Ministère de la Santé et des Services sociaux. They do not distinguish between Inuit and others.
- Hospitalization figures are from the Med-Echo files maintained by the Ministère de la Santé et des Services sociaux. These are compiled by fiscal year (April 1 to March 31), with the most recent five-year period being 2007-08 to 2011-12. The Med-Echo file does not list hospitalizations of Québec residents that occur outside the province, so its figures may differ from those shown in other sources. However, these differences are minimal for Nunavik and the James Bay Cree region.

As with all statistical reports, limitations of the various data sources need to be considered when interpreting the findings. The limits of most of the administrative data banks used here are described in the *Portrait du Québec et ses régions* 2011 (Institut national de santé publique du Québec, 2011). Generally speaking, we have no reason to believe that the Nunavik data extracted from these sources are any less valid than those for other regions—except insofar as small population size affects the precision of the figures.

Additional precaution regarding hospitalisation data

Readers should bear in mind that hospitalization data are only a rough measure of true morbidity for mainly three reasons: First, Québec-wide, the data are subject to certain errors in how diagnoses are assigned. In addition, hospitalization data mainly reflect health problems that are sufficiently acute and symptomatic, or at an advanced stage of the disease, as to require hospitalisation. They therefore often underestimate the less severe conditions.

And finally, the data for isolated regions can be further affected by differences in admission practices: because access to specialized services is limited, practitioners in rural regions often tend to admit people to hospital for illnesses that, in southern regions, would be treated in an outpatient setting. For example, if a community has no X-ray facilities, practitioners will tend to admit people to hospital for any injury where a fracture is suspected. Similarly, patients with respiratory infections will be admitted if there is any chance that their condition could deteriorate rapidly.

These precautionary measures tend to artificially raise the hospitalization rates in rural areas, so that they reflect not just differences in health, but also differences in access to second line health care. Since Nunavik is the province's most isolated region, it is reasonable to believe that its data are more strongly affected by this bias than those of other regions—–a factor that complicates inter-regional comparisons.

Canadian Census

The Census is a standard source of socio-economic data. The data collected by Censuses over the years was comparable up until the 2006 Census. Thereafter, the compulsory Census "long form" questionnaire was replaced by the voluntary National Household Survey. The resulting data cannot be compared to previous Censuses, since they contain more variation due to people refusing to respond. For example, the non-response rate to the Census questionnaire for Nunavik was reported as "below 10%" in 2006, whereas it reached 15% in 2011. Exactly how this affects the data is difficult to say, but it should be kept in mind when interpreting the Census data in the present report.

Health Surveys

Many standard Québec and Canadian health surveys omit Nunavik for administrative, methodological, or geographic reasons. Consequently, Nunavik has less survey data than most other regions. Most of the recent data on health status and health-related behaviours in Nunavik come from one of three surveys:

1) Santé Québec's 1992 *Inuit Health Survey* (Santé Québec, 1994)
2) The *Qanuippitaa* health survey of 2004, which surveyed more than 1,000 Inuit age 15 and older, in all 14 communities (Rochette and Blanchet, 2007)
3) Statistics Canada's *Aboriginal Peoples Survey*. This Canada-wide survey of Aboriginal peoples was carried out in 1991, 2001, and 2006. It includes health-related data, along with social and economic measures.

The data limitations associated with these surveys are described in their respective publications. It must be mentioned, however, that the *Qanuippitaa* survey's participatory methodology, and the care taken in preparing and translating culturally sensitive questionnaires, make it particularly robust (although no survey is completely free of social desirability and memory biases).

Québec Public Health Infocentre

Currently reserved for members of the healthcare network, the Public Health Infocentre provides a portal to different data sources, including administrative files, the census, and Canadian and Québec surveys. Some indicators in this report came from the Infocentre, since it offers easy access to standardized information on definitions and calculation of public-health measures.

Inuit Kaujisarvingat Knowledge Centre: Naasautit Inuit Health Statistics

The Naasautit site[3] publishes and disseminates statistics on Inuit health drawn from various sources, especially the Census and Aboriginal Peoples Surveys. Some of the Census and other data presented in this report was drawn from Naasautit.

Statistical analyses

Because Nunavik has a relatively small population, some of the measures in this report are based on small absolute numbers. This complicates analysis, since rates that are based on small numbers are unstable—a change of even a few people can produce a seemingly-large change in the rate. For this reason, we have employed a series of techniques to make the rates more stable and ensure that the findings are as robust as possible:

- First, to increase statistical power, we have aggregated the numbers, typically combining the numbers for five-year periods, or aggregating the numbers for both coasts, for both sexes, or for age groups.
- To help interpretation of the statistics presented, we also include measures of precision such as the coefficient of variation and follow Statistics Canada's guidelines for flagging measures that are imprecise: rates

[3] www.inuitknowledge.ca/naasautit

with a coefficient of variation between 16.66% and 33.33% are flagged as "interpret with caution"; those with a coefficient of variation over 33.33% are not presented in the text. We do, however, show the Annual Average Number in these instances. (The more detailed tables in the appendices include all the coefficients of variation.)

- When discussing differences between groups or time periods, we will indicate statistical significance using (*) symbols, that is if their 95% confidence intervals show no overlap or if they are statistically significant at the .05 level when a statistical Z-test is performed.
- Finally, please note that standard practice does not require that Census data be subjected to statistical significance testing, as they supposedly represent populational data.

For further details on the methodology, readers are invited to consult the *Cadre méthodologique du Plan commun de surveillance* (Institut national de santé publique du Québec, 2013).

Photo credit: Valérie Courtois, 2009, Canadian Caribou Initiative

1. Defining health and what affects it in Nunavik

In this section, we present data on the health of Nunavimmiut[4] and on some of the factors that strongly affect people's health in the region. Because of the uniqueness of the region, these elements are discussed prior to presenting the resulting health profile information.

1.1. Inuit views of health and wellbeing

> "Inuit ways of thinking about health include a dimension that can be called 'economic' in that it gives a central role to connections with the land (nuna) and animals in the health and well-being of the person."
>
> — Kirmayer and Paul, 2007

From an Inuit perspective, health and wellness depends on a strong sense of identity and belonging, an understanding of one's purpose and role in serving others and contributing to the common good (Tagalik, 2009-2010). In this view, health is holistic (has physical, psychological, intellectual, and spiritual dimensions), resulting from balanced interconnections between all aspects of life and the environment (Tagalik, 2009-2010; Inuit Tapiriit Kanatami, 2007). This collective vision of health and wellness is rooted in Inuit cultural tradition and has sustained Inuit over generations.

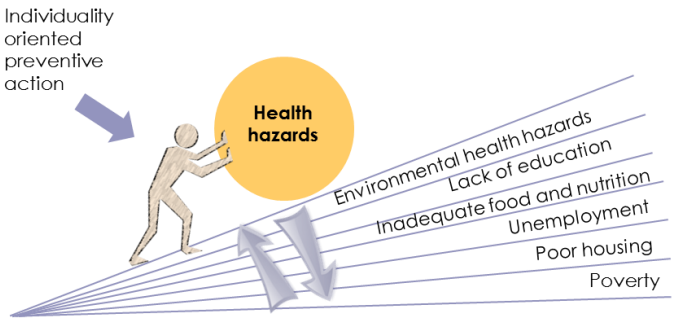
Epidemiology has a limited ability to measure complex, multidimensional concepts such as the Inuit view of health and well-being. Nonetheless, to properly describe the health of Nunavimmiut, we need to keep this broad concept of health in mind, and to adopt a strengths-based perspective. This report attempts to do this by making sure that, instead of solely describing problems, we also included information on (1) factors causing them and (2) potential solutions:

1) ***Many contextual factors influence health problems in Nunavik***: by reminding the reader of the social, economical, political, cultural and environmental factors (often called social determinants of health, see next section) which contribute to disease in the first place, we hope to draw attention on the constant challenges many Nunavimmiut face when living in such unfavourable environments (this information is usually found in **brown**-coloured boxes);

> "The choices individuals make are shaped by the choices they have."
>
> — WritingPartners, 2011

2) ***There exists potential solutions to many of these problems***: in fact, many are already in place and will be mentioned throughout the text (in **blue** boxes); additional promising interventions are also proposed in the discussion part of the report. By doing so, we also hope to emphasize the fact that interventions aimed solely at individuals will only have limited impact unless the contextual factors are also improved.

Figure 1
The Health Gradient



Source: Making Partners: Intersectorial Action for Health 1988 Proceedings and outcome of a WHO Joint Working Group on Intersectorial Action for Health. The Netherlands

[4] In this text, the term "Nunavimmiut" refers to the Inuit residents of Nunavik.

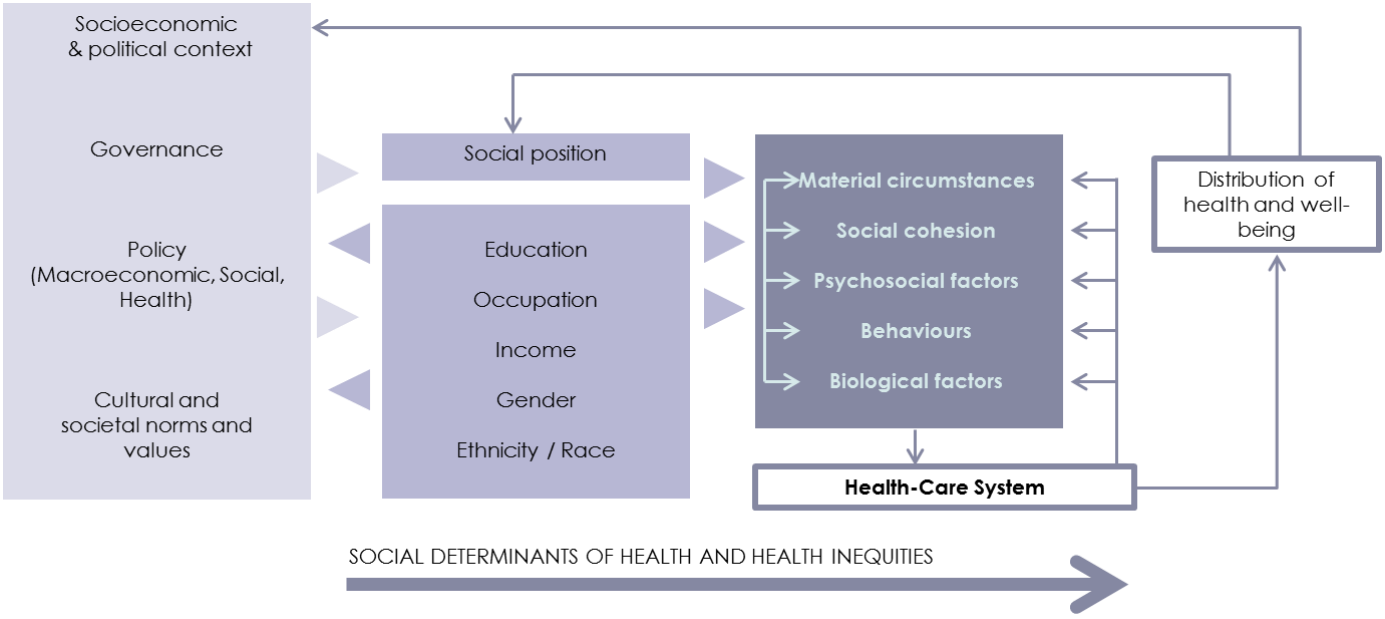
1.2. The social determinants of health

A perspective that also considers the person's living environment

Western researchers are now also increasingly realizing that the health of population largely depends on its environment and living conditions (Figure 2)—this is called the social determinants of health theory (Marmot, 2007). The World Health Organization defines these social determinants as "*the conditions in which people are born, grow, live, work and age, including the health system.*" (World Health Organization, 2009).

This broader understanding of what creates health in populations offers a better fit with Inuit conceptions of health, since it considers not just individual factors, but also all the social, historical, and political factors that underlie differences in health status (Loppie-Reading and Wien, 2009; Kirmayer and Valaskakis, 2009). This social determinant lens will therefore be adapted in order to describe the multitude of different factors contributing to disease in Nunavik.

Figure 2
Conceptual framework: the social determinants of health



Adapted from Solar and Irwin, 2007

Applying this vision of health determinants to the Nunavik context

One common way of thinking about these factors is to group them into *levels*, such as society-level, community-level, and individual/family level factors (Figure 3). In this report, we will focus on the determinants described in Figure 3 next page, which were adapted from a 2005 workshop of the Nunavut Department of Health and Social Services (Inuit Tapiriit Kanatami, 2007). Although this framework was not developed specifically for the Nunavik region, we hope that it will allow us to shed light on the multiple historical and current factors that created and sustain Inuit populations' health gaps.

Figure 3
A health determinants model applied to Nunavik

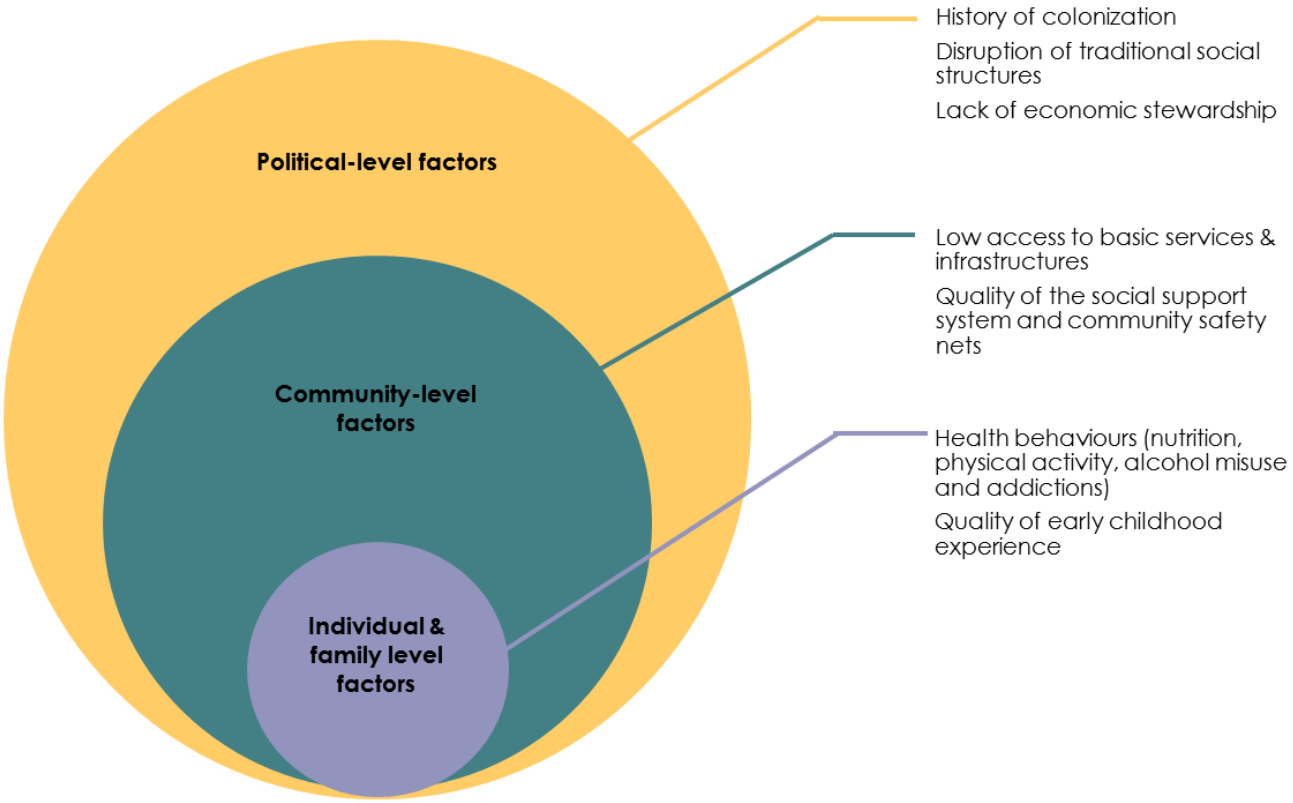


Photo credit: Hans-Ludwig Blohm, Voices of Natives

2. Describing the social determinants of health in Nunavik

2.1. The Nunavik region: An overview

The Nunavik region is located north of the 55th parallel, and covers approximately a third of Québec's land mass (Kativik Regional Government & Makivik Corporation, 2010). Access is limited: the region can be reached only by airplane or (in summer) by boat.

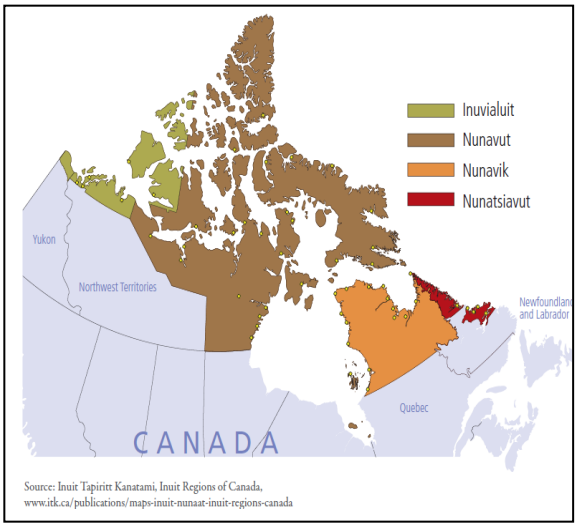
Nunavik's population is 90% Inuit, and is fast-growing: it has more than doubled in the past 30 years.[5] At present, the region is home to some 10,750 Inuit, spread over 14 villages[6] — seven located along Hudson Bay and Hudson strait, and the other seven along the coast of Ungava Bay (Map 1). Puvirnituq is the principal administrative centre for the Hudson Coast, while Kuujjuaq fills this role for the Ungava Coast and more broadly for the Nunavik region as a whole.

Map 1
Nunavik's communities

Source: Makivik Corporation

The Inuit in Nunavik are part of a larger whole: they share a cultural heritage with Canadian Inuit living in Nunavut, Nunatsiavut (Labrador), and the Inuvialuit region of the Northwest Territories—an area collectively designated "Inuit Nunangat" (Map 2). Nunavik's people make up approximately a fifth of Canada's total Inuit population (2011 Census).

Map 2
Inuit Nunangat

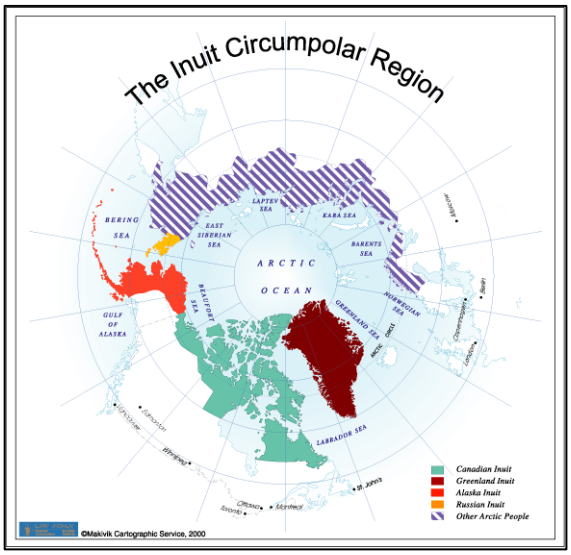


More broadly, as shown in Map 3, Nunangat Inuit are part of a community that spans the circumpolar regions of Chukotka (Russia), Alaska (USA), and Greenland (Denmark). Archeological evidence shows that, over time, Inuit have crossed the entire region, establishing a way of life with a common cultural identity and territory (Bjerregaard, Young, et al., 2004).

[5] For more information on the socio-demographic distribution of the population, see booklet 1 in this series.

[6] These are indeed villages rather than "reserves," since Inuit are not subject to the Indian Act.

Map 3
The inuit circumpolar region



Source: Makivik Corporation

As with other Inuit populations around the world, the health of Nunavimmiut has changed substantially over the past five centuries mainly as a result of interaction with non-Inuit peoples. This process accelerated considerably in the latter half of the twentieth century (Bjerregaard, Young, et al., 2004). The incidence of infectious diseases has declined over time, although rates are still high as compared to southern Canada. On the other hand, chronic diseases are on the rise, while a pattern of injuries, suicides, violence, and substance abuse is also increasingly seen in many Inuit communities.

The next few sections look at a variety of factors that influence these health patterns —beginning with structural factors, moving on to community-level ones, and concluding with factors that relate to individuals and families.

2.2. Political level determinants of health

History of colonization and acculturation

As mentioned briefly in the introduction, loss of the traditional way of life took place very rapidly for the Inuit in Nunavik. Until the 1950s, most Inuit lived on the land with their extended family in small, transient camps that moved with the seasons and the wildlife. Men and women had clearly defined roles. Identity was strongly tied to the land, with traditional knowledge and values passed from Elders to youth through stories and by example (Inuit Tapiriit Kanatami, 2007).

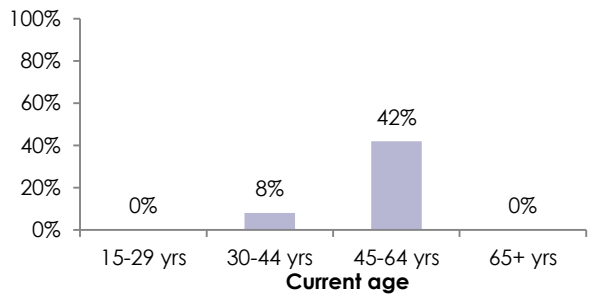
During the 1950s, the Canadian government pressured Inuit to settle in permanent communities, where cheap housing, medical facilities, and modern stores were built. Many Inuit became dependent on social assistance and on the limited jobs available in the communities; fewer and fewer lived entirely off the land. This transition from subsistence to wage economy radically disrupted people's relationships with each other and with the environment, and contributed to social marginalization and acculturative stress (Kirmayer and Valaskakis, 2009; Wexler, 2011).

> "In many traditional Aboriginal world views, the land, the animals, and the elements are all in transaction with self. (…) Damage to the land, appropriation of land, and spatial restrictions (...) simultaneously threatens both livelihood and identity."
>
> — Kirmayer et al., 2007: 60-61

To these stresses was added the impact of the federal and provincial school system. In Nunavik, children were obliged to attend residential school to obtain anything beyond basic elementary education. The children boarded at these schools for nine months of the year, during which they were forbidden to speak Inuktitut and had few opportunities to eat traditional foods or participate in traditional activities. Many students lost their connections with their family, community, and culture; some experienced mental, physical, or sexual abuse (Kativik Regional Government & Makivik Corporation, 2010). Parenting skills suffered as a generation of children grew up outside a family environment.

Even today, more than half of Inuit children age 6–14 have a relative who attended a residential school (Statistics Canada, 2006 Aboriginal Peoples Survey) (Figure 4).

Figure 4
Percent of Inuit adults in Nunavik who attended residential schools in their youth, by age group



Source: 2006 Aboriginal Peoples Survey data as shown in www.inuitknowledge.ca/naasautit

Self-determination

Nunavik was the first of Canada's four Inuit regions to sign a land claim: the 1975 James Bay and Northern Québec Agreement. One objective was to obtain regional and municipal services (infrastructure, community services, housing, education, health care, police, and justice) of the same type and quality as those available to the Inuit communities of the Northwest Territories.

Beyond this, the Agreement enabled Inuit to have a voice in the decisions that affect their lives and the development of their communities and region. It provided tools and resources that enable Nunavimmiut to exercise a certain degree of control over their lives. This is significant, because research suggests that preserving cultural heritage and exerting control over one's own destiny are important protective factors for Aboriginal communities (see Text Box 1).

A central aspect of the Agreement was the transfer of responsibility for services from the federal to the Québec government, and the establishment of a measure of local control over health and other services. As a result, the region then created its own Nunavik Board of Health and Social Services, whose role is to plan and deliver health and social services in the various communities (see Text Box 2).

Text Box 1
The James Bay and Northern Quebec Agreement: The first modern treaty

In 1971, when Québec announced its decision to develop the North's resources for hydroelectric power, the Cree and Inuit residents of the area immediately expressed their opposition. Québec proceeded with its hydroelectric ambitions in the face of numerous reports and court opinions stating that the Aboriginal groups had certain rights, and that Québec needed to negotiate with them. The rationale was that the project was in the "public interest," i.e. that the majority's rights should trump those of a smaller group (Kativik Regional Government and Makivik Corporation, 2010).

It took two years of intense negotiations for the seven parties involved—the Inuit, the Cree, the Québec and Canadian governments, Hydro-Québec, the *Société d'énergie de la Baie James*, and the *Société de développement de la Baie-James*—to reach a final agreement in November 1975. The Agreement provided for the Nunavik region to have legal status and a specific form of governance, and covered issues of compensation, lands, and entitlement to traditional practices.

Text Box 2
Cultural continuity

The work of Chandler and Lalonde (2008) suggests that local control and collective efficacy in Aboriginal communities are key determinants of community well-being. In their studies, the predictors of mental health and resilience include:

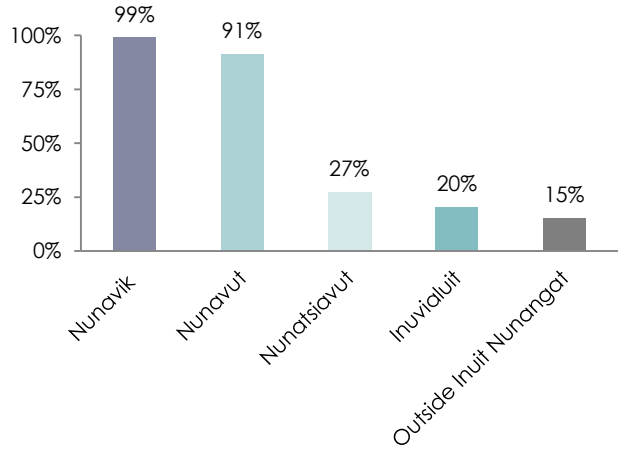
- Securing legal title to traditional land;
- Establishing self-government;
- Controlling local education, police, fire, and health facilities;
- Preserving and promoting traditional practices;
- Involving women in local governance; and
- Having control of child and family services.

Preservation of language

Researchers believe that language retention is an important indicator of a community's identity and resilience. Retention can mean routine use of the language (e.g. in everyday speech, in local media, on signs, etc.). It may also involve initiatives to preserve or revitalize language and traditions, such as culturally appropriate education or efforts to reinforce the connection between Elders and youth.

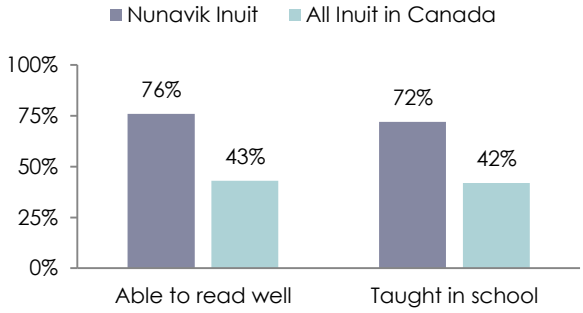
The evidence suggests that the Inuit regions—and Nunavik in particular—have been successful in preserving their traditional languages. Nunavik has put legal structures in place to ensure that Inuktitut is recognized as the region's official language, and that it is taught in the schools. As a result, statistics show that a remarkable 99% of Nunavimmiut have good knowledge of Inuktitut—a much higher proportion than in the other regions. Moreover, the proportion of adults in Nunavik who report that they have been taught Inuktitut in school and are able to read it well is significantly above the average for Inuit in Canada (Figure 5 and Figure 6).

Figure 5
Percent of Inuit able to speak an Inuit language, by region, 2006



Source: 2006 Census

Figure 6
Percent of adults taught Inuktitut in school, and able to read it well: Nunavimmiut compared to Canadian Inuit in general



Source: Statistics Canada, 2006 Aboriginal Peoples Survey

The socio-economic context[7]

The past 50 years have seen a rapid transition for Inuit society from a close relationship with the land to one where Nunavik's people are no longer full stewards of their traditional territory; although they may still hunt and fish on the land, they do not have full authority to develop its resources. Nor are the profits from the extraction and processing of resources by others shared equally with the regional population.

Nunavik today has a mixed economy, with both wage employment and some land-based ways of earning a living. Nonetheless, harvesting activities alone cannot sustain a family these days; people need money to pay for food, transport, and household goods. Consequently, they need access to salaried jobs or business opportunities.

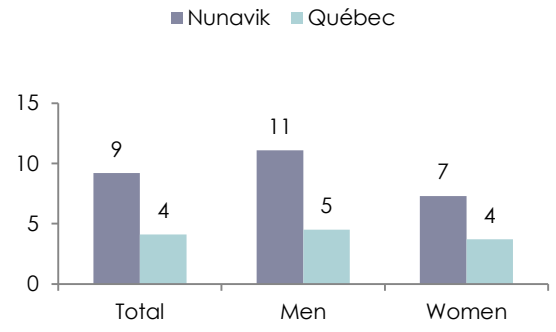
Employment

The dearth of jobs in Nunavik brings few opportunities to earn income (Duhaime, 2008). This is so despite the fact that Nunavik's public service sector has expanded steadily since the sedentarisation of the 1960s and the implementation of the James Bay Agreement in 1978. However, a great many of the new full-time

[7] The first report in this series, *Health Profile of Nunavik: Demographic and Socioeconomic Conditions*, contains further information on this topic.

jobs have gone to people from outside the region, who bring qualifications that the local residents do not always have (Duhaime, 2008). The result is a situation in which, although Inuit form the vast majority of the population, they occupy barely more than half the full-time jobs (Duhaime, 2008). Consequently, unemployment rates are high (Figure 7).

Figure 7
Long-term unemployment (percent of adults who did not work in 2010 or before), by sex



Source: Statistics Canada, 2011 National Household Survey

Harvesting activities

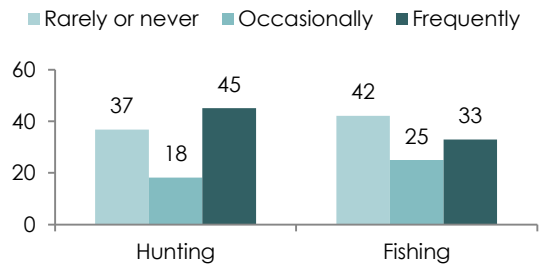
Despite all of the changes that Nunavik has undergone over the past decades, hunting, fishing, and gathering resources from the land and sea continue to be important activities for many Nunavimmiut (Figure 7). In fact, the Inuit Tapiriit Kanatami recommends "productivity" as a more accurate term for Canadian Inuit than "employment," because so many Inuit still work by harvesting country food, producing goods for their families, and providing voluntary services in their communities (Inuit Tapiriit Kanatami, 2007).

For example, in 2004 (see Figure 8):

- 45% of adults—especially men—reported hunting "frequently." This proportion rose to 54% in men age 50 and over.
- One-third of residents (33%) fished frequently.
- Approximately half the population—especially women— participated in berry picking.

However, these activities appear to be practiced more frequently by older, married couples and among those with a higher personal annual income (Furgal and Rochette, 2007; Duhaime, Chabot and Gaudreault, 2002). Local informants suggest that these activities have decreased appreciably since 2004, due to the cost of equipment, a loss of knowledge, and environmental changes (unstable ice, changes in wildlife populations and migration patterns).

Figure 8
Frequency of hunting and fishing among Nunavimmiut age 15+, 2004



Source: Anctil, 2008

Participation in traditional harvesting has been observed to have a positive impact on Inuit health. Not only are traditional foods very nutritious (Lawn and Harvey, 2003), but harvesting enhances food security. Further, the socio-cultural aspects of harvesting are vital to Inuit well-being: it reinforces the bond with the land that traditionally formed the foundation of Inuit culture, identity, and feelings of self-reliance. Post-harvesting activities strengthen family and community bonds, because Inuit have a deeply embedded practice of sharing country food with other members of the family and community (Statistics Canada, 2006; Willows, 2005).

Income, cost of living and food security

Many Nunavik families live in poverty. In 2006, more than one family in five fell below the low-income line—double the Québec average. Individual incomes vary substantially between communities, with those on the Hudson Coast

being generally poorer than those in the Ungava region.[8]

The situation is exacerbated by the high cost of living in the north. For example, Nunavimmiut pay 57% more for their food than people in other parts of Québec (Duhaime and Caron, 2012). Further, the cost of hunting and fishing equipment may prevent a low-income family from bolstering its food security with country food. Consequently, food insecurity is a common problem in the region, with one person in four saying they have suffered from it in the past month (Blanchet and Rochette, 2008). Almost a third of the children under five in Nunavik have gone hungry at some point (Naasautit, n.d.).

The natural environment

> "If the health of the land is endangered then so is the health of the people."
>
> —Nunavut Department of Health and Social Services, 2005

Because they have such a close relationship with the land, Inuit are strongly affected by contamination of soil, water, and country foods, and by the impact of climate change on Nordic regions.

Environmental contamination

> "The role of hunting, fishing and the traditional foods and food-gathering practices goes far beyond nutrition and is intimately tied up with Inuit spirituality and identity as a people; thus the pollution of the arctic ecosystem is of great concern."
>
> — Elliott and Macauley, 2004: 24

Many contaminants that originate from human activity in southern latitudes (such as hydroelectric dams and industries) are carried north by air and water. These toxins then make their way into the food chain, where they build up at each level (Willows, 2005). This build-up is particularly important in predatory species of fish and marine mammals, such as pike, lake trout, seal, and beluga (Dewailly, Dallaire, et al., 2007). Because the traditional Inuit diet relies heavily on fish, marine mammals, and game, Inuit are more exposed to these toxins than people living in southern regions. Contaminants of concern in the region include mercury, lead, cadmium, and persistent organic pollutants (POPs) (see Text Box 3).

Text Box 3
Why worry about contaminants?
Possible effects of mercury, lead, cadmium and POPs

- Methyl mercury mainly affects the nervous system; it can cause paresthesia (pins and needles), ataxia (loss of coordination) and tunnel vision in adults. Prenatal exposure can affect fetal brain development.
- Environmental lead exposure may affect nerves, muscles, and cognitive function in adults. In children, it can irreversibly damage cognitive, behavioural, and fine motor function.
- Cadmium accumulates in kidneys and damages the filtering mechanism.
- POPs are long-lasting harmful substances—some of which are now banned from production—such as PCBs, dioxins, dibenzofurans, and chlorinated pesticides. They have been found to cause cancer, damage the liver, and affect the reproductive, immunological, and neurodevelopmental systems (Dewailly, Dallaire, et al., 2007)

Environmental contamination and exposure to heavy metals have long been a major concern for public health authorities and residents of Nunavik (Nunavik Regional Board of Health and Social Services, 2011). As a result, many studies have been conducted over the past decades.

Generally speaking, these studies have shown that, although levels of contaminants in Nunavik Inuit have fallen appreciably since the 1990s,[9] some contaminants are still found at higher-than-recommended levels in human tissue.

As of the latest study in 2004 (the *Qanuippitaa* survey) there were concerns about:

[8] For more information on incomes, please see the first report in this series.

[9] This drop is consistent with a decline in seafood consumption, and a general drop in contaminant levels in the arctic environment.

Mercury: Nunavik health surveys indicated a significant decrease in blood mercury levels between 1992 and 2004, most probably reflecting the drop in the traditional food consumption. Yet, in 2004, 28% of Inuit were above the recommended blood level for mercury. Among women of childbearing age (for whom the acceptable level is lower), 72% exceeded the recommended level (see Text Box 4).

Although most country foods in Nunavik are actually low in mercury, these high mercury levels were mostly associated with intake of traditional foods, mostly beluga meat, lake trout or seal liver. It is therefore recommended that pregnant women and those of childbearing age should decrease their consumption of these foods. In fact, some communities have started providing free fish that are low in mercury for pregnant women to encourage observance of this recommendation.

Lead: A ban on the sale of lead shots was adopted by major Nunavik organizations in 1998, which contributed to a marked decrease in blood lead levels in adults and newborns. Yet, close to 10% of Inuit were above the recommended level in 2004. This also held true for 2% of women of childbearing age. In fact, recent monitoring data indicated that the ban is no longer effective, and widespread use of lead shot has resumed (Couture, 2010).

Cadmium: In 2004, one third of Nunavik Inuit—including women of childbearing age—had blood readings above the recommended level of cadmium. Cigarettes contain cadmium, and people's cadmium levels seem to be related to their smoking habits (Bobet, 2013).

Text Box 4
About contaminant levels

The standards for "acceptable" contaminant levels have a large safety margin built in. A result 'above recommended level' does not automatically mean that the person's health is affected. Rather, it means that he or she is entering the range where health risks are possible.

POPs: 14% of women of childbearing age still have blood readings above the "concern" level set by Health Canada. The Inuit are exposed to these compounds primarily through the consumption of marine mammal fat. Since international regulations came into effect in 2004, most of the contaminants accumulating in fats (PCBs and chlorinated pesticides) have greatly decreased both in wildlife and among Inuit populations in the Arctic (NRBHSS, 2011).

Although there have been many research projects on toxin levels in the region, there is little evidence that the contaminants are actually affecting Nunavimmiut health. And this is why experts continue to send a reassuring message that the advantages of consuming traditional foods largely outweigh the risks of contamination (Berti et al., 1998; Chan, Kim, et al., 1995; Chan, Trifonopoulos et al., 1999; Dewailly, Dallaire, et al., 2007; Duhaime, Chabot, et al., 2004; Van Oostdam, Donaldson, et al., 2005; Willows, 2005; Earle, 2011).

In actual fact, experts increasingly agree that the benefits of moderate fish consumption (lowered risk of cardiovascular disease, and positive effects of the DHA Omega-3 fats found in fish on fetal brain development) far outweigh the risks associated with mercury contamination (Mozaffarian and Rimm, 2006). And this is particularly true, if we consider the added beneficial effects of traditional diets on physical activity, cultural identity, and reduction of health-damaging behaviours (see Text Box 5).

Text Box 5
Country foods

Country foods are central to Inuit culture and replete in several nutrients important for health at all lifestages and for healthy pregnancies. Marine mammal fats, Arctic char, beluga mattaa and fish eggs are exceptional sources of omega-3 fatty acids and/or vitamin D. Clams, seal meat, walrus meat, caribou meat and offals, and wildfowl are excellent sources of iron and may better prevent anemia than market foods and supplements. Inuit are being faced with the need to balance the benefits conferred by this readily available source of essential nutrients and vitamins against the health risks from the contaminants they

Climate change

Climate change is a concern throughout Canada, but its effects are particularly visible in the Arctic regions. Greater fluctuations in temperature and unusual weather patterns have been linked to injury, stress, and even death—due, for example, to the increasing difficulty of predicting ice and weather conditions during hunting trips (Cameron, 2011). Thinning of the ice cover, changes in wildlife migration routes (particularly caribou and beluga), and the decline of some species all have an impact on people's ability to use the land and its resources (Furgal and Rochette, 2007; Kraemer, Berner, et al., 2005).

Researchers also note challenges related to northern home design: climate change may affect the stability of structures built on permafrost, while the lack of ventilation in homes causes heat stress among the elderly on warm days (Furgal and Seguin, 2006).

Researchers have documented the seroprevalence of certain parasites among the adult Inuit population of Nunavik. In fact, climate changes tend to modify the ecology of these parasites, and consequently increase their ability to survive in the Nordic environment. Warmer temperatures, moreover, could result in new species of biting insects, possibly pathogen vectors, migrating north and eventually reaching Nunavik (Lowe, 2014).

2.3. Community-level determinants: Infrastructure, services, and the psychosocial environment

Because the social determinants of health are all inter-related, community-level determinants can be seen as:

1) Consequences of the structural determinants discussed in the preceding section; and
2) The cause of some of the family and individual-level determinants that will be discussed in the next section.

The social environment

Health, for Inuit, is part of a network of relationships that includes the land, culture, and other people. So it is somewhat artificial to separate discussion of the social environment from the physical one (Parkes, 2010). Nonetheless, it is important to consider separately how Nunavik's communities have changed over time, and how the community's new social environment currently affects residents.

For Inuit, "community" was originally based on the extended family. Over time, the concept of "community" has broadened, and the nature of communities has changed. Some authors argue that these changes have strained the traditional support networks. For example, family relationships have changed because of the removal of children to residential schools and the resulting problems. Many families continue to be affected by this disruption, and suffer from problems such as addictions and violence. These authors also point to statistics showing that crimes against the person (assault, sexual assault, robbery) are from 2.5 to 5 times more common in Nunavik than in the rest of Québec, and that women are from 6–10 times more likely to suffer domestic violence (Duhaime, 2008).

In contrast, other authors contend that because most Inuit communities are small, the extended family is still a strong social unit. In support of this view, they underline that children are often shared between homes, living with grandparents or other relatives in the community (Inuit Tapiriit Kanatami, 2008).

They also point to the evidence of high levels of social capital in the communities (see Text Box 6). Although complete measures of social capital are not available, a 2004 survey in Nunavik did ask respondents about some elements of this concept, with mixed results (Kirmayer and Paul, 2007):

- More than half of all Nunavimmiut (57%) reported "often" sharing their catch with other members of the community, reflecting a strong tradition of sharing;

- Almost 7 out of 10 (69%) respondents said that there was a "strong" or "very strong" feeling of togetherness in their village;
- However, only one in four (24%) adults said they often take part in activities to benefit the community; and
- Almost two thirds of respondents said they rarely or never have anyone to turn to when they need emotional support. This compares unfavourably to the Québec average, although the comparison is not perfect because of differences in how the questions were worded.

Housing

There is more and more evidence that housing can affect both physical and mental health (Moloughney, 2004). The strongest evidence is for links between certain housing conditions (cold, damp, moulds, allergens, sidestream tobacco smoke), and a variety of respiratory ailments, particularly in children (Moloughney, 2004; Clark, Riben and Nowgesic, 2002; Inuit Tapiriit Kanatami, 2007; Canada Mortgage and Housing Corporation, 2004). In fact, the 2004 Nunavik health survey found a statistically significant association between the number of persons per bedroom and parents' reports of wheezing in children (Lajoie, Lévesque and Rhainds, 2007).

Evidence is also emerging that crowded housing can affect mental health, contributing to sleep deprivation, depression, and family problems (Bailie and Wayte, 2006; Moloughney, 2004). Crowded living conditions also seem to have an impact on child development and educational outcomes (Moloughney, 2004) (see Text Box 7).

Seen in this light, the housing situation in Nunavik is alarming. According to the 2006 Census, 49% of Nunavimmiut live in crowded dwellings (Figure 9). This is the highest proportion of any of the Inuit regions, and more than five times the figure for Nunavik's non-Inuit population. The housing shortage in Nunavik is longstanding: the crowding statistics have been in the same range since 1991, and actually worsened slightly between 2001 and 2006 (Figure 10). Meanwhile, the state of repair of the housing stock, which was close to the Canadian average in 1996, appears to have plummeted since that time (Figure 11) (See Text Box 8).

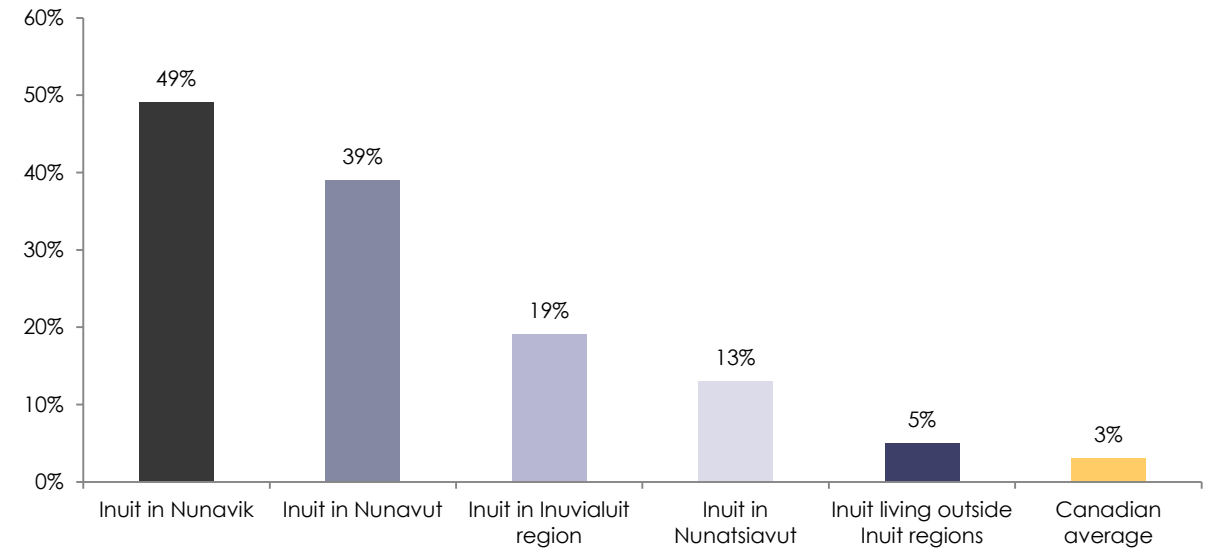
Text Box 6
Social capital

"Social capital" is a term used to describe the relationships, level of trust, culture of community participation in an area. The term captures elements of sharing and reciprocity that are central to many Aboriginal communities (Mignone and O'Neill, 2005). Numerous studies suggest that communities or states with high levels of social capital have lower suicide rates and longer life expectancy (Berkman and Kawachi, 2000; Kawachi and Berkman, 2001).

Text Box 7
Measuring crowding

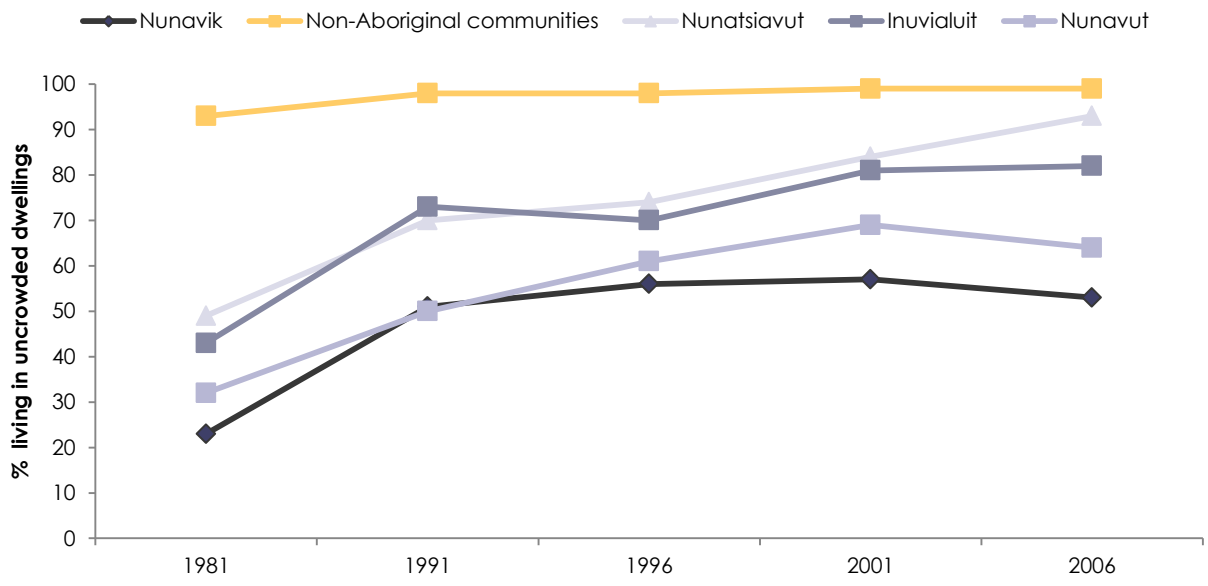
Currently, Statistics Canada defines households as "crowded" when they have more than one person per room. Standard definitions like this leave no room for cultural differences in what is considered crowded. In fact, international comparisons make it clear that the North American average (about half a person per room) is the exception rather than the rule. But despite their limitations, these kinds of comparative measures can be a useful way to draw attention to social inequalities.

Figure 9
Percentage of population living in crowded dwellings, 2006: Inuit populations by region and Canadian average



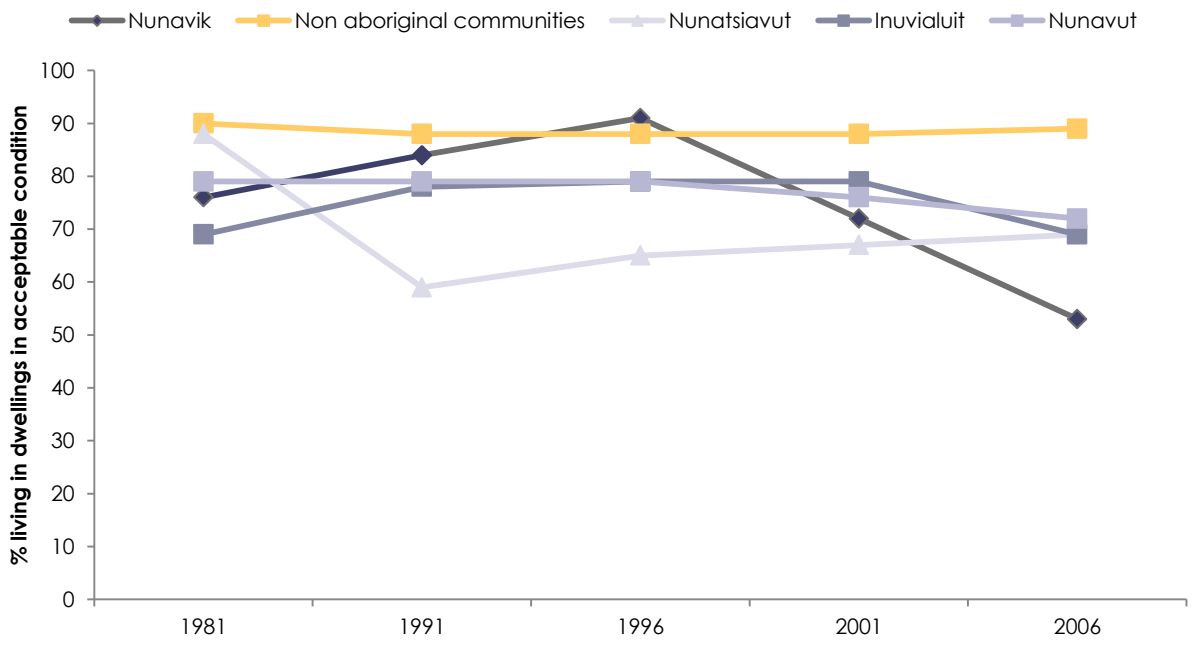
Source: Statistics Canada, 2006 Census of population. Table 9: Percentage of the Inuit and non-Aboriginal populations living in crowded dwellings, Canada and regions, 2006. www12.statcan. gc.ca/census-recensement/2006/assa/ 97-558/table/t9-eng.cfm

Figure 10
Proportion of the population living in dwellings that are NOT crowded, Inuit and other Canadian communities, 1981-2006



Source: Penney, O'Sullivan and Senécal, 2012. Based on Census data.

Figure 11
Proportion of the population living in dwellings that are in an acceptable state of repair, Inuit and other Canadian communities, 1981-2006



Source: Penney, O'Sullivan and Senécal, 2012. Based on Census data.

Text Box 8
Structural solutions of Nunavik's housing crisis

Ever since Nunavik's Inuit began to settle in year-round villages in the 1950s and 1960s, housing has been a challenge for them (Health Council of Canada, 2012).

The poor quantity and quality of housing at the time of the James Bay Agreement was the result of years of underfunding by Canada—particularly during the 1973–1975 period while negotiations were underway. The problem was exacerbated when the Canadian government cut funding for social housing in the early 1990s (Inuit Tapiriit Kanatami, 2004b; Knotsch and Kinnon, 2011; Kativik Regional Government & Makivik Corporation, 2010).

Since 2000, agreements with federal and provincial governments have permitted some catch-up in social housing construction, but it appears that the increase in need has outstripped the pace of catch-up: as of 2013, an estimated 900 housing units were still required (Kativik Municipal Housing Bureau, 2013).

Québec's *Logement abordable* program subsidized people who wanted to become homeowners. But despite the subsidy, Nunavik homeowners had to take on costs that were two or three times higher than for people living in the Québec City area. Costs for insurance, municipal taxes, heating oil and electricity are prohibitive. (Despite their proximity to generating stations, Nunavik's communities are *not* linked to the province's electrical grid. As a result, they must burn fossil fuels both to heat buildings and to generate electricity.)

The housing crisis in Nunavik also contributes to the high proportion of Inuit in Montreal's homeless population. Many Nunavimmiut move to escape either the housing shortage or a dysfunctional social environment at home, only to end up on the streets of Montreal, struggling to access services delivered in a language that is not their own (Knotsch and Kinnon, 2011).

Community water systems

At present, all Nunavik communities have water treatment facilities. In fact, all communities except Kuujjuaq, Aupaluk, Ivujivik, and Kuujjuaraapik have a system of effective treatment to ultraviolet (UV) rays to destroy not only bacteria and viruses, but also parasites. The installation of this type of treatment system is planned for the fall of 2014 in Aupaluk and Ivujivik, and in 2015-2016 in Kuujjuaq. Kuujjuaraapik draws its water from groundwater sources and therefore does not require UV treatment (KRG, Comm. Pers.).

Since permafrost makes the installation and operation of underground pipes challenging, tanker trucks deliver water to residential storage tanks each day. Limited community resources for water and waste management occasionally result in conditions that pose a risk to the health of Nunavimmiut: in 2013, Nunavik communities issued 149 boil-water advisories—100 on the Hudson coast, and 49 in the Ungava region (KRG, Comm. Pers.).

It must be noted, however, that the vast majority (96%) of these advisories are due to the lack of weekly sample testing of the drinking water performed by the local operator (rather than poor performance on testing). This situation is of concern as it is known that repeated boil-water notices erode the population's trust in the system and end up being ignored. Failure to respect such notices, however, could result in serious infections should the water turns out to be contaminated with pathogens (viruses, bacteria, parasites) (Groupe scientifique sur l'eau, 2003).

Many families also draw their water from natural sources such as lakes and rivers (Martin, et al. 2005), and store it in plastic containers. Some do so because they don't like the taste of tap water. The purity of this water can vary with the source, the season, how often the containers are cleaned, and whether the family uses any treatment such as filters or boiling (Messier et al, 2008). With the upgrade of the water plants, many communities (all except Kuujjuaq, Aupaluk, Ivujivik and Kuujjuaraapik) are now equipped with an outside public faucet that distribute treated water from which the chlorine have been removed using activated carbon filters. Such system will be available during the fall 2014 in Aupaluk and Ivujivik and in 2015-2016 in Kuujjuaq. The use of these facilities varies widely from a community to another; residents from conservative communities will prefer water directly from the land (KRG, Comm. Pers.).

Education

> "Nunavik had an education system long before the arrival of European missionaries in 1872. Inuit successfully educated themselves in meaningful and practical ways. Their curriculum was based on their needs and what was required to ensure survival."
>
> — Kativik Regional Government & Makivik Corporation, 2010

Around the world, higher levels of education generally go with better jobs, incomes, housing, and health (Berkman and Kawachi, 2000), and studies have shown that this also holds true for Inuit (Kirmayer, Malus and Boothroyd, 1996). In the Inuit context, however, education should not refer solely to formal education and literacy. Traditional knowledge and survival skills are also likely to improve health, since knowing how to make a living from the land contributes to self-efficacy and self-esteem (Kirmayer and Valaskakis, 2009; Wexler, 2006; Inuit Tapiriit Kanatami, 2007).

Prior to the James Bay Agreement, federal and provincial schools provided basic primary education to Nunavik's children. These schools used southern curricula, and often taught in English or French. With the creation of the Inuit-controlled Kativik School Board, this situation

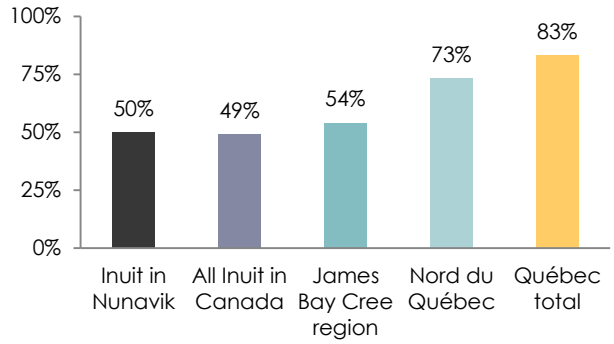
quickly changed. The Board immediately implemented "culturally competent" curricula. Material in Inuktitut has been developed for all levels, and the schools strive to integrate Inuit culture and skills. The region now has:

- An all-Inuktitut curriculum for children for the first three years of schooling (after this, students can choose to continue in either English or French)
- Education through high school in all communities
- A program that prepares students for postsecondary education
- A teacher-training program
- Adult education, distance education, and professional/technical training in some communities.

Despite these substantial improvements, Inuit in Nunavik still face numerous barriers to higher education. Crowded housing makes it difficult to find quiet space to study, and some students lack parental support for education (especially if their parent's experience was unsuccessful or traumatic). Literacy standards are typically somewhat lower in Inuit schools, and graduates complain that they have to take one to two years of upgrading before they are ready for university (Korhonen, 2006). A final barrier is the absence of postsecondary programs in the region: students interested in higher education typically have to move to cities in southern Canada, and this is a significant deterrent.

Consequently, there is still a large gap in education between Inuit and other Canadians. In 2006, only half the adults (25 and over) in Nunavik had completed high school. Although this proportion is similar to other Aboriginal groups, it is far below the provincial average (Figure 12).

Figure 12
Percent of adults who had a high school diploma or more in 2006: Nunavimmiut compared to other groups and regions



Source: Statistics Canada, 2006 Census

However, the past two decades have seen gains in both school attendance and education levels in Nunavik (as in the rest of Québec). For instance, the proportion of Nunavimmiut age 20-64 with a postsecondary degree (technical certificate, CEGEP or university degree) rose from 29% in 2001 to 36% in 2006 (Duhaime, 2008).

Access to health care

> "Geography is a determinant of health. (...) Access to health care also is a problem, not only because of distances, but because these communities struggle to attract and keep nurses, doctors and other health care providers.... let alone accessing diagnostic services and other more advanced treatments. (…) People must travel in order to access the care they need. This often means days or weeks away from family and social support as well as the added cost of accommodation and meals."
>
> —- Romanow, 2002

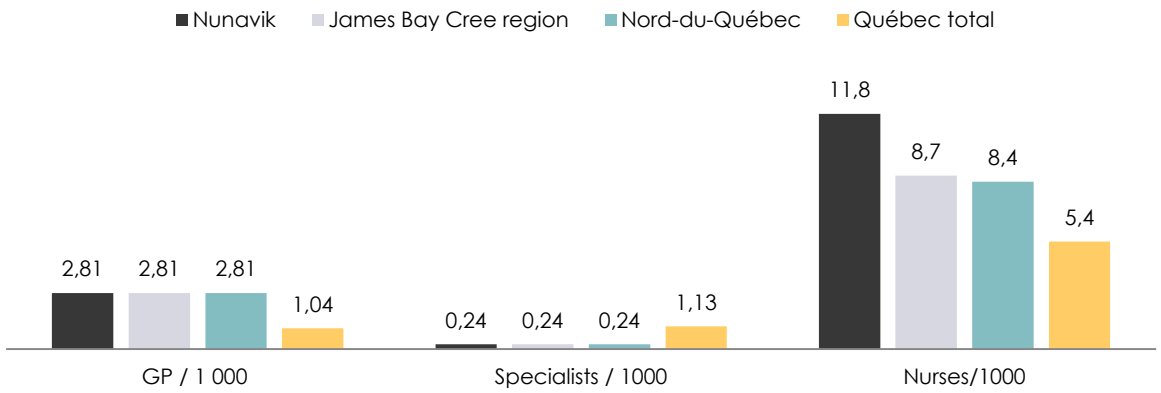
Although a population's health depends on many things besides health care, access to medical services does contribute to restoring health when one is sick. Planning and coordinating health services for Nunavik's 14 communities, however, can be a challenge. Issues of geography, program design and funding, capacity, language, and culture all have an impact.

Access to primary health care

Since 1975, primary health care has been under the control of the Nunavik Regional Board of Health and Social Services. Administratively, the region is divided into two areas—Ungava Bay and Hudson Bay—each with a small hospital. The Tulattavik Health Centre in Kuujjuaq serves the Ungava Bay area, while the Inuulitsivik Health Centre in Puvirnituq serves the Hudson coast. The remaining communities all have local health centers (called "CLSC's").

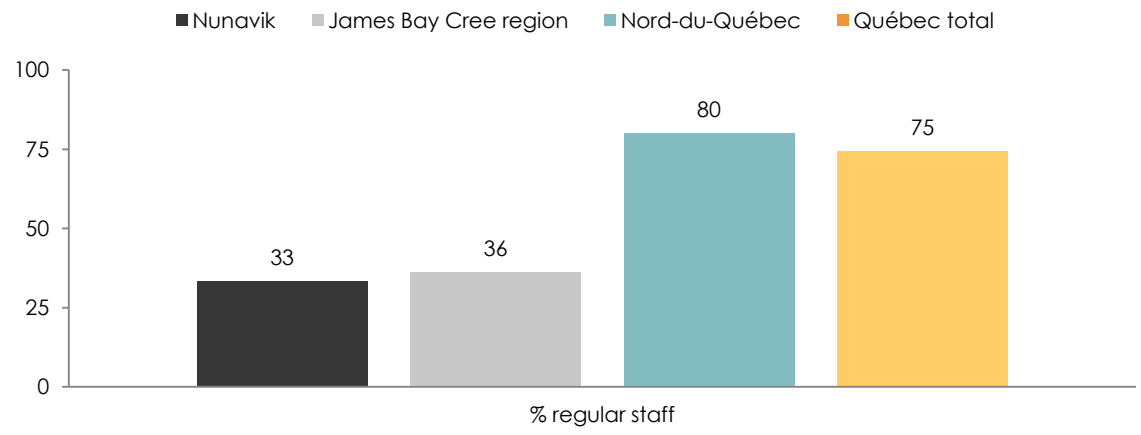
Surprisingly, the data suggest that Nunavik has far more nurses and GP's per capita than the rest of Québec (Figure 13). The difference is that many of these health workers are not regularly employed in the region: they are people flown in on short-term contracts (Figure 14). This probably explains why Nunavimmiut are much less likely than other Canadians—or even Inuit living in southern Canada—to report having seen a doctor in the past year (Figure 15).

Figure 13
Availability of health staff per 1,000 residents: Nunavik and other regions



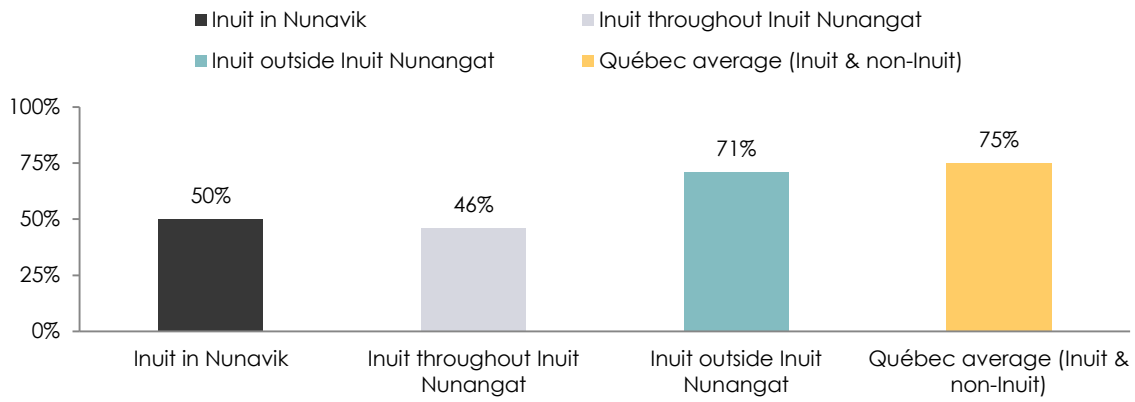
Source: Commissaire à la santé et au bien-être du Québec, 2013

Figure 14
Percent of health staff with regular positions, Nunavik compared to other regions



Source: Commissaire à la santé et au bien-être du Québec, 2013

Figure 15
Percent of adults who saw a GP or Family Practitioner in the past year: Nunavik Inuit compared to other regions, 2006



Source: Statistics Canada. Inuit data are for the "Inuit identity" population age 15+ from the 2006 *Profile of Aboriginal Children, Youth, and Adults*, at www12.statcan.gc.ca/census-recensement/2006/dp-pd/89-635. Québec data are for people age 12+ who had "contact with a medical doctor in the past 12 months" as of 2005, Cansim table 105-0461

Few of the nurses and none of the visiting doctors are Inuit, which can at times create cultural and linguistic barriers for patients. To minimize these obstacles, non-Inuit professionals are supported by Inuit community workers and interpreters. Also, the Inuulitsivik Health Centre's maternity program has employed Inuit midwives since 1986; the program has reintroduced perinatal services to the Hudson Bay region and provided women with the opportunity to give birth closer to home.[10] The region hopes to increase the proportion of Inuit health care staff in the coming years (Kativik Regional Government & Makivik Corporation, 2010), a practice which has been shown to greatly improve the cultural safety of services (see box) (Health Council of Canada, 2012).

Access to traditional medicine appears to be much lower in Nunavik than in the other Inuit regions. Just 21% of Inuit in Nunavik report that traditional forms of care are available in their community, compared to 59% in the other Inuit regions.

Access to specialized services and long-term treatment programs

Access to anything beyond primary health care is limited in Nunavik, as in many northern areas. People must fly to southern cities for a wide range of diagnostic and screening services, medical treatments, palliative, and other types of health care. This creates significant social and emotional costs, along with financial costs for the individual and the health care system (Cameron, 2011.

The region has little ability to offer ongoing, long-term treatment programs—such as those for alcohol or substance abuse—because staffing shortages are severe, turnover rates are high, and funding is sporadic. The good news is that new initiatives to improve some of these services are underway in the region (see Text Box 9).

Text Box 9
Ilusiliriniqmi Pigutjiutini Qimirruniq

This Inuktitut term designates a process of reviewing health and social services with a view to improving them. Three main "projects" have been prioritized under this initiative: services for youth, mental health, and addiction.

[10] Booklet 2 in this series (which deals with the health of young children and their families) contains further information on Nunavik's midwifery program.

2.4. Individual and family-level determinants of health

> "While risk behaviors such as alcohol abuse and smoking no doubt injure health, their prevalence in Inuit communities is symptomatic of deeper social and economic problems. Thus, underlying socioeconomic inequalities causing serious daily stress and unhealthful coping mechanisms should be viewed as the fundamental determinants of health."
>
> — Inuit Tapiriit Kanatami, 2007

Individual behaviours that can affect health—such as smoking, drinking, diet, and physical activity—have been extensively researched. But the premise of many of these studies is that the behaviour is an individual "choice" independent of the social context (Burke et al., 2009). This premise is questionable in general, and especially so for understanding the situation in Nunavik, for we know that for most people, these behaviours occur in a social situation that:

1. Has norms about what constitutes socially acceptable and expected behaviour (eating a salad or biking with a helmet is something only "qallunaat"[11] would do)
2. Provides opportunities (or not) to engage in certain behaviours (an evening walk is not tempting in the absence of safe walking paths)
3. Creates stress that leads people to adopt certain behaviours to cope in the short term (drinking can be a way to numb the pain of having no place to go in the face of conjugal violence).

There is increasing evidence that health-related behaviours are socially patterned and often cluster with one another (Spring, Moller and Coons, 2012). For instance, many people who drink also smoke cigarettes, while people who have a healthy diet also tend to be physically active. Similarly, people who live in poverty, have low levels of education, or are socially marginalized are more likely to engage in wide range of risky behaviours. These observations have led many experts to abandon the term "populations at risk" and speak instead of "situations that place individuals at risk" (Berkman and Kawachi, 2000).

Finally, if we wish to understand the pattern of "risky" behaviours in Nunavik, we need to understand how risks build up over a person's lifetime. Difficult experiences in early childhood (poverty, neglect, abuse) set children up for poor school performance and distress. These in turn can lead to use of substances and risky behaviours in adolescence, and to unemployment, addiction, poverty, and distress in adult life. In other words, early disadvantage not only affects a child's health at the time, but also paves the way for later experiences that will similarly threaten health.

Seen in this context, it is clear that behavioral interventions will be more effective on the long term if they are part of a comprehensive strategy addressing broader determinants that promote or restrain the adoption of these behaviors. It is also clear that it is useless to blame individuals for their circumstances, and for the behaviours and health problems that result from those circumstances. Rather, we should emphasize the tremendous resilience that individuals and communities display in the face of their hardships.

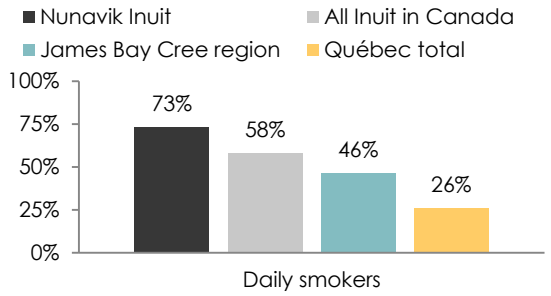
Tobacco use

Smoking is widespread in Nunavik, where nearly three out of four adults are daily smokers—a far higher proportion than in the rest of Québec. However, the majority (82%) of these people are "light or moderate" smokers, at fewer than 20 cigarettes per day. In both of these respects, Nunavik's pattern resembles that of other Aboriginal groups in Canada[12] (Figure 16).

[11] Qallunaat, term referring to non inuit and non aboriginal persons, considered as a group.

[12] It should be noted that, contrary to the situation on-reserve First Nations of Canada, the tobacco in Nunavik is subject to the same taxes as the rest of the province. Therefore, the high rate of smoking cannot be attributed to a lower price, as is often done for the situation among First Nations elsewhere in the country.

Figure 16
Percent of daily smokers in the population: Nunavik Inuit compared to other groups



Source: Statistics Canada. Data for Inuit from 2006 Aboriginal Peoples Survey; data for Cree and Québec populations from the 2003 Canadian Community Health Survey

Some authors assert that sharing cigarettes and smoking in Aboriginal populations can sometimes become a sign of belonging to a group, and a way of reinforcing the bonds between family members (Bottorff et al., 2010). Efforts to lower smoking rates among Inuit are also complicated by the widespread belief that smoking is a traditional cultural practice (as it is among First Nations). Organizations like Pauktuutit Inuit Women's Organization and Inuit Tapiriit Kanatami are working to challenge this belief, pointing out that tobacco does not grow in the Arctic.

> "Smoking reflects and strengthens social bonds, and enables family life by helping individuals manage the stresses of disadvantage as well as shared losses."
>
> — Bottorff et al., 2010

Besides its social functions, smoking may also be used to cope with the stresses of daily life in the region. So it is not surprising that smoking rates are somewhat lower (63% vs 75%) in the more prosperous Ungava region than in the Hudson Bay area.

The fact that smoking is a very common behaviour in Nunavik, usually begun at an early age, makes it harder for smokers to give up the habit (Plaziac and Hamel, 2007). In a 2004 survey, almost half of smokers (42%) reported that they had tried to quit at some point, but without long-term success. Further, some cessation strategies that work well in non-Aboriginal groups—such as nicotine replacement and telephone support lines—are less effective in Aboriginal communities (Varcoe et al., 2010; Greaves et al., 2006) (see Text Box 10).

Text Box 10
Reducing smoking rates: A case of modifying community norms

Culturally sensitive, community-based strategies are particularly critical in efforts to address tobacco use. Some researchers point to the social aspects of smoking, and contend that no effort to reduce tobacco can succeed unless it addresses these social factors.

The "Blue Light" project, which increases the visibility of smoke-free homes, has been shown to help modify social norms in many communities across the country (Varcoe et al., 2010). Nunavik's Blue Light campaigns have been very successful : despite the high proportion of smokers in the population, less than a third (29%) of Nunavik's children are regularly exposed to "sidestream" smoke in their homes (Statistics Canada, 2006 Aboriginal Peoples Survey).

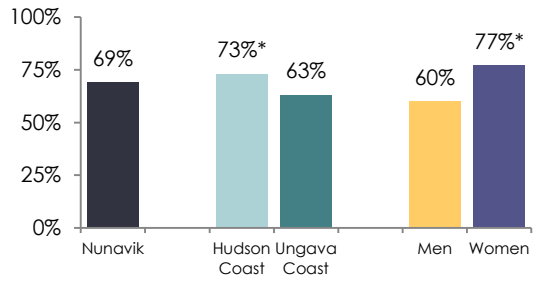
Physical activity

Physical and social environments—e.g. economic conditions, societal norms, and industrialisation—are important determinants of physical activity for all populations (Bauman et al., 2012). To this list, we must add some factors specific to Inuit communities, such as reduction of the traditional stewardship for the environment, and loss of the physical activity inherent in traditional activities such as hunting and fishing.

Indeed, walking seems to be a thing of the past for the majority of Nunavik residents. This is not surprising, as there are many barriers to walking and other exercise in these communities: lack of sidewalks and cycle paths, long distances, extreme weather, and in some cases concerns about traffic and personal safety (Joseph et al., 2012). The result is that almost 7 out of 10 Nunavimmiut admitted to being sedentary in a 2004 survey (Figure 17)—twice the Québec average, and even above the average for other

rural parts of Québec.[13] The subset of people who were active during their leisure time shared some specific characteristics: they were more likely to be well educated and living on the Ungava coast. They also tended to weigh less, have smaller waists, and describe themselves as being in good health (Nolin, Lamontagne and Tremblay, 2007)(see Text Box 11).

Figure 17
Percent of adult (18+) Nunavimmiut who were sedentary in 2004, by coast and sex



Source: *Qanuippitaa* survey as reported in Nolin (2007).
Note: (*) Difference between Hudson and Ungava Coasts is statistically significant, as is the difference in exercise habits between men and women.

Text Box 11
Encouraging people to be more active: Do we know what works?

Public health programs often need to raise their sights from individuals to the community and system factors that influence individual choices (Burke et al., 2009). As such, making communities more "walker friendly" may encourage more people to be active (Joseph et al., 2012).

The region already has some initiatives to promote walking and other outdoor sports:

In 2012, Inuukjuak's Family House organized a three-week "walk-a-thon," with support from the Nunavik Health and Social Services Commission

Aupaluk's CLSC runs a very popular walking club

Kuujjuaq's Sports Club organizes footraces, cycling, and "cross-fit" activities.

However, the research is unanimous: to be effective in the long term, the public health programs aimed at increasing the practice of physical activity should adopt a community vision and take more into account the structural factors that influence the choice of individuals to be, or not, active (Burke et al., 2009); by the development of pedestrian or cycle circuits, for example, that are recognized as encouraging residents to active transportation (Joseph et al., 2012).

Dietary habits

TRADITIONAL FOODS[14]

> "In Inuit culture, many explicitly link the curative powers of northern foods to the importance of the company of family in the healing process – a connection that points to the inseparability of sociality and physical healing in Inuit models of health maintenance (…) In Nunavik elderly Inuit reported a need for beluga whale skin (a highly valued food) with a similar rationale (…) Consuming beluga rejuvenated them through its effect on the blood and hence on both body and mind."
>
> — Kirmayer and Valaskakis, 2009

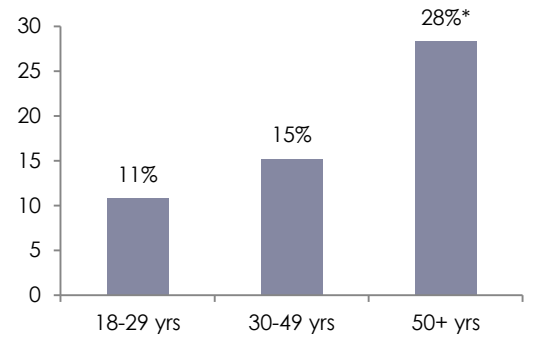
Dietary habits—and the cultural traditions and sense of identity that go along with harvesting and eating "land" food—have changed substantially over time. These traditions were first influenced by the process of sedentarisation and reduced access to the land; later, the decline of

[13] Of these, the Gaspésie-Iles de la Madeleine region had the highest proportion of inactive people, at 30% in 2003.

[14] Traditional foods are culturally acceptable foods that can be produced from local resources (Willows N. D., 2005). They are typically derived from hunting, fishing, or gathering.

certain game species also contributed to the decline of traditional foods consumption (Gracey and King, 2009; Loppie-Reading and Wien, 2009; Willows, Hanley, et al., 2012; Oliver and Wardle, 1999; Wardle, Stepto, et al., 2000).

Figure 18
Percent of total calories derived from traditional foods, by age group: Nunavimmiut, 2004



Source: *Qanuippitaa* survey as reported in Blanchet & Rochette (2008).
Notes: Data refer to food intake on the day before the survey.
(*)The differences between the older age groups and the 18-29 year group are statistically significant.

Despite all the changes, hunting, fishing, and gathering remain important activities in Nunavik. Besides providing food, these activities allow people to reconnect with the land and with their traditions of cooperation, sharing, and generosity. Family connections play a large role, since these activities, and the traditional meals that follow them, are typically done as a family. Inuit in Nunavik still eat a variety of local foods such as caribou, ptarmigan, arctic char, seal, beluga, and other seafood, prepared in the traditional way (e.g. raw or dried). Blueberries, cloudberries and other small fruits also form part of the traditional diet.

Nutritionists agree that these traditional foods are healthy and rich in nutrients. They provide all the essential elements such as iron, zinc, and vitamins A, B, C, and D (Mann, 2000). They typically have a high protein content, and are often rich in essential fatty acids. In particular, marine foods are excellent sources of the Omega-3 fatty acids known to promote heart health (Receveur, Boulay, et al., 1997; Nakano, Fediuk, et al., 2005; Kuhnlein, Receveur, et al., 2004; Kuhnlein, Soueida, et al., 1996; Earle, 2011).

In recent years, however, consumption of traditional foods has been dropping. In Nunavik, the 1992 Santé Québec survey found that 21% of people's calories came from traditional foods; by 2004, this had dropped to 16% (Blanchet and Rochette, 2008). Similarly, the number of times per week that people ate food obtaining by hunting or fishing dropped from an average of eight in 1992 to five in 2004. Finally, results of the 2004 *Qanuippitaa* survey show that younger adults eat considerably less traditional food than their elders (Figure 18).

Store-bought food

In Nunavik, the type and quality of food in the store varies, usually as a function of distance. Typically, each community has at least one food store; some also have restaurants. Kuujjuaq has several well-stocked grocery stores, while the more northerly communities such as Ivujivik and Salluit offer a much more limited choice of the fresh products that must be brought in by air.

The link between distance and food prices is well known (Commission de la santé et des services sociaux des Premières Nations du Québec et du Labrador, 2011 ; Duhaime and Caron, 2012). A 2011 comparison of food prices in Nunavik and Québec City found that a standard basket of food that cost $100 in Québec City sold for an average of $181 in Nunavik (Duhaime and Caron, 2012). Nor can stores and restaurants reduce the price gap by carrying local game and fish, since food-safety regulations forbid them to sell or serve traditional foods. Nunavimmiut object strongly to these regulations (Bobbish-Rondeau, Boston, et al., 1996: 66).

Researchers blame the rising diabetes rates on the shift from traditional foods to canned and processed products, and advocate more fresh foods. But not everyone has access to country food, and healthy products are significantly more

expensive in the local stores (Statistics Canada, 2003). Personal histories also have an effect: for instance, some people who were forced to eat certain vegetables at residential schools have refused to eat them ever since. Other people's eating habits have been shaped by the experience of hunger.

These factors may explain why a 2004 survey found that Inuit adults in Nunavik did not eat enough fruits, vegetables, milk products, and cereals. Just 11% of adults in this survey met the Canada Food Guide recommendations for fruits and vegetables (Counil, Dewailly, et al., 2008), much lower than any other region in Quebec (45% and 43% for the rest of Québec and Nord–du–Québec region respectively) (Institut national de santé publique du Québec, 2006).

According to the 2004 survey, store bought meat is what is often eaten, but the "other foods" category supplied the largest portion of people's calories (36%). This "other" category includes a series of products that people are advised to eat only in moderation—such as butter, oil, jam, cookies, chips, tea, coffee, alcohol, and soda pop. Indeed, there is concern about the amount of soda pop and fruit drink consumed in Aboriginal communities across Canada, especially by young people. One study in Nunavik found that young adults (18 to 29 years old) drank an average of four cans of soda and sugary drinks per day—a total of 1.4 litres (Counil, Dewailly, et al., 2008) (see Text Box 12 for examples of initiatives implementend in the regions).

Obesity

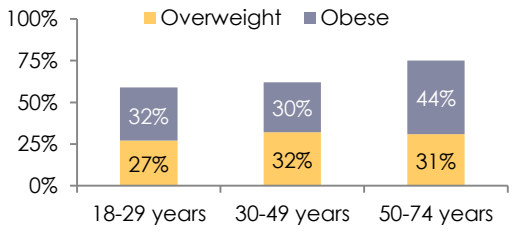
As a result of the changes in diet, exercise, and lifestyle, Nunavik has joined the rest of the industrialized world in having increasing rates of obesity. The proportions of Nunavimmiut who were overweight or obese were already appreciable in 1992, at 21% and 19% respectively. As of the 2004 *Qanuippitaa* survey, they were even higher, with 30% of adults classed as overweight, and another as 28%, as obese (Anctil, 2008), the individual aged between 50 and 74 years old are the most afflicted (Figure 19).

Text Box 12
Initiatives to improve nutrition in Nunavik

- Development of culturally relevant materials on nutrition: the *Nunavik Food Guide* and *Nunavik Food Guide Educator Toolkit*.

- Integration of traditional foods in the daycare centres
- Replacement of the community freezers that allow game and fish to be shared between residents
- Creation of "pop free" zones and implementation of healthy food policies in schools
- Input to the federal Standing Committee on Aboriginal Affairs and Northern Development. (This committee was asked in April 2011 to monitor the new Northern Nutrition Program that replaced the Northern Air Stage subsidy for food deliveries to the north.)

Figure 19
Proportion of Nunavimmiut in each age group who are overweight or obese, 2004



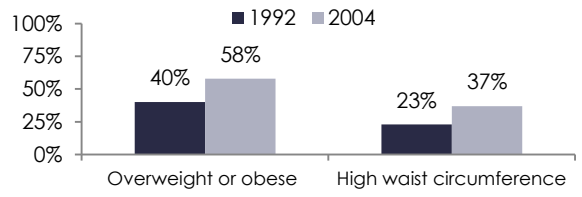
Source: *Qanuippitaa* survey, 2004

The highest rates of overweight and obesity are seen in women and older adults (50-74 years). However, the rate of increase is most rapid in men and young adults, suggesting that these groups will eventually catch up to the others.

Waist circumference is often an even better predictor of risk for disease than a person's weight, and here again there is cause for concern. In

2004, 37% of adult Nunavimmiut had waist circumferences that put them into the "at risk" range for conditions such as heart disease— up from 23% in 1992 (Figure 20).

Figure 20
Change over time in the proportion of Nunavimmiut who are overweight/obese or have high waist circumferences: 1992 compared to 2004



Sources: 2004 *Qanuippitaa* survey and 1992 Santé Québec survey of Inuit health

Alcohol and drug abuse

Many factors influence substance abuse (see Text Box 13) among Inuit, including having to struggle with overcrowded housing, unemployment, and rapid cultural, economic, social, and environmental changes. Further, loss of community members to suicide, injuries, and accidents mean that many communities experience crisis and grief on a regular basis. The long term, intergenerational effects of residential schooling and other traumas also contribute to substance misuse (Cameron, 2011).

Text Box 13
Use, abuse and addiction

"Use" refers to consumption that is legal and in culturally acceptable amounts.

"Abuse" involves either an illegal substance, or a legal one that is repeatedly consumed despite bad effects (e.g. drunk driving)

"Addiction" or "dependence" is diagnosed when a person has difficulty reducing or stopping use, in spite of their intake causing serious problems (e.g. job loss, violence).

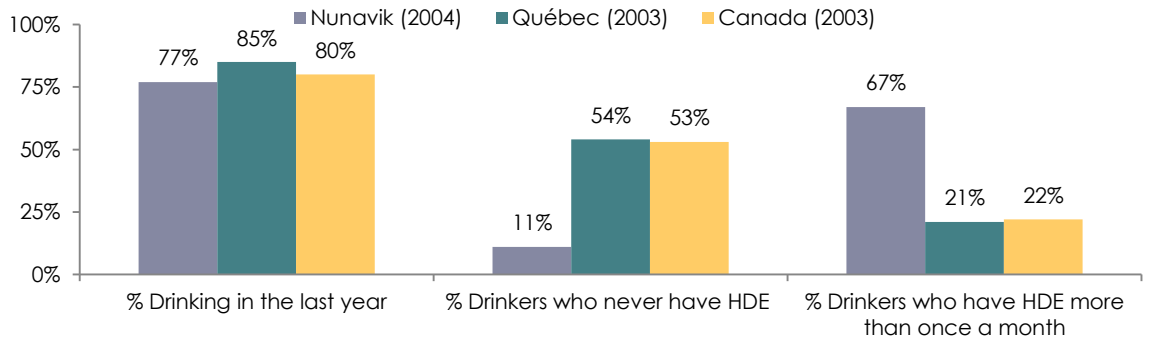
Drinking patterns in Nunavik Inuit differ considerably from those in the rest of Québec. In fact, the proportion of Nunavimmiut who drink at all is somewhat lower than in the rest of Québec; but, as can be seen in figure 21, those who do drink are far more likely than other Québecers to "binge" (have five or more drinks at one sitting). Binge drinking is a major factor in violence, injuries, unwanted sexual contacts, and employment and family problems.

Like for the rest of the Québec population, regular consumption of alcohol is more frequent among the young people, and this may in fact explain part of the discrepancy observed in these unadjusted prevalence rates. Unlike the rest of Québec, on the other hand, women in Nunavik are just as likely to present problematic drinking behaviour as men.

All told, some 77% of Nunavimmiut drank at least occasionally in 2004—an increase of 17% over the proportion in 1992. Rates of alcohol use were higher on the Ungava coast than in the Hudson area by 10 points. This could be partly a reflection of a higher number of "dry" communities[15].

[15] In the "dry" communities, the sale (but not consumption) of alcohol is prohibited.

Figure 21
Prevalence of drinking and of heavy drinking episodes in the preceding year, population aged 15 and over, Nunavik, Québec and Canada



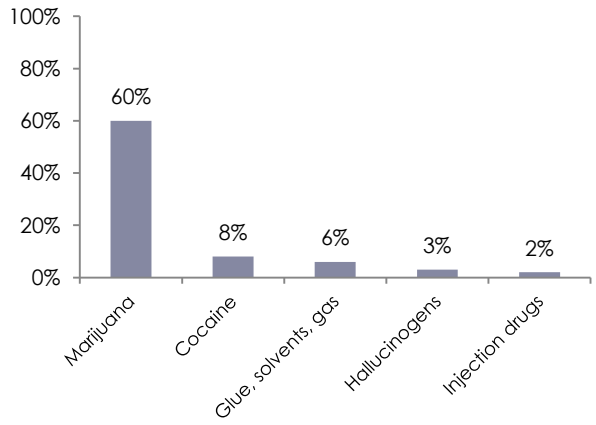
Source: Nunavik Health Survey 2004 and CCHS 2003

Although many people manage to moderate or stop drinking on their own, others require some outside help. These people face the reality that there is a serious shortage of appropriate treatment at the community level (Ajunnginiq Centre, 2003). Alcohol counselling is generally done by wellness or addiction workers, but it is difficult to attract, train, and retain these workers. There is a need to develop capacity at the local level and recruit Inuit staff. The region's new training program (a Nunavik adaptation of the provincial curriculum) promises to improve the situation, but more needs to be done to ensure that Nunavimmiut have access to the services they need.

Besides alcohol, the substance most often used in Nunavik is marijuana (Figure 22). The rate of marijuana use in Nunavik is about four times the Québec and Canadian averages[16], and has risen substantially over time, from 36% of adults in 1992 to 60% in 2004. Hard drugs like cocaine and heroin are reported in some communities, while solvent abuse tends to come and go.

Unlike alcohol, patterns of marijuana use in Nunavik vary by age and gender. Men are considerably more likely than women to use marijuana (73% vs. 47%), while youth age 15-17 have the highest rate of any age group, at 78%.

Figure 22
Percent of Nunavik Inuit (age 15+) who reported using various substances in the previous year (2004)



Source: *Qanuippitaa* survey, 2004

[16] Again, these are crude rates; the discrepancy can be partly explained by the higher proportion of youth in Nunavik

2.5. Determinants of health in Nunavik: Summary of key findings

When we look at the determinants of health in Nunavik, we note that:

- Many people in Nunavik engage in behaviours that pose a risk to health: there are high rates of smoking and substance use, eating habits that are becoming less healthy as people move away from traditional foods, and so forth.
- Recall that these behaviours must be understood in the context of Nunavik's social, cultural, and economic situation is fundamental. Conditions such as poverty, low employment, and inadequate housing tend to limit adoption of healthy habits.
- These living conditions are themselves the product of larger historical, political, and legislative factors, which have created a situation in which the region has some measure of self-determination, where community services is difficult, and regional actors have limited control over the levers of economic and social development.

3. Health Status

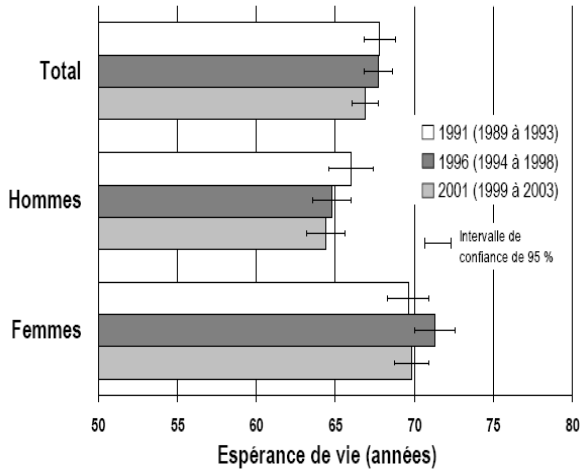
The preceding chapters reviewed the situation with respect to the major health determinants in the region. In this chapter we present some of the consequences these determinants have of the health status of Nunavimmiut. We begin with a summary measures of health status—overall indicators such as life expectancy and self-rated health. From there, we move to a consideration of the health problems that are particularly common in youth, such as injuries.

3.1. Summary measures of health

3.1.1. LIFE EXPECTANCY

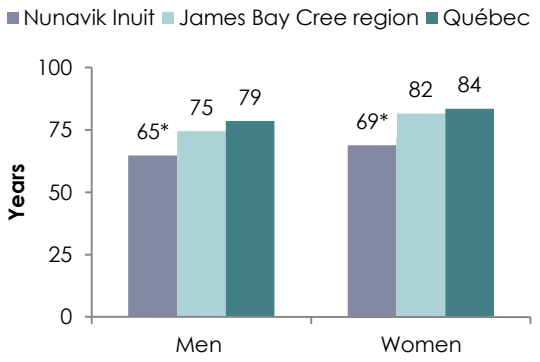
While life expectancy has risen in Québec as a whole since 1991, it has remained unchanged—or even decreased— in Nunavik (Figure 23). As a result, the gap in life expectancy between Nunavimmiut and other Québecers is now roughly 15 years. (The gap in *disability-free* life expectancy as compared to Québec is similarly large.) There is also a ten-year gap as compared to the James Bay Cree region (Figure 24). Of the four Inuit regions in Canada, Nunavik has the lowest life expectancy.

Figure 23
Life expectancy at birth in the Inuit-inhabited areas of Canada, 1991, 1996, and 2001



Source: Statistique Canada, 2008, « Espérance de vie dans les régions où vivent les Inuits au Canada, 1989 à 2003 », Rapports sur la santé, Vol. 19, no 1, numéro 82-003-XWF au catalogueNote that this reduction in life expectancy is not statistically significant at the .05 level.Source: Wilkins et al., 2008

Figure 24
Life expectancy at birth: Nunavik compared to other regions, by sex



Source: MSSS, Service de développement de l'information, Estimations et projections démographiques (version of January 2010).
Note: (*) All the differences shown between Nunavik and other regions are statistically significant.

Which health problems explain that 15-year gap in life expectancy as compared to the Québec average? As shown in Figure 25:

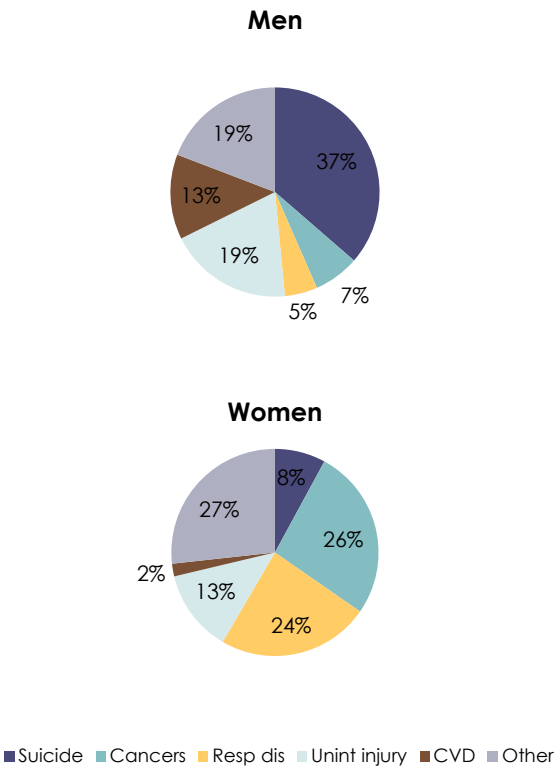
- In men, suicides alone account for over a third of the gap in life expectancy. Unintentional injuries also explain a large part of the gap.
- In women, differences in the rates of cancers, respiratory illnesses, and unintentional injuries account for much of the gap. Unlike suicides and injuries (which tend to occur in teens and young adults), cancer and respiratory illness tend to be developed at later ages.

In short, much of the gap in life expectancy between Nunavik and Québec is accounted for by injuries and suicide in young men, and by chronic conditions (cancers and respiratory illnesses) in older women. The same pattern also prevails in the other Inuit regions. Targeting these specific age groups and health conditions could pay dividends in life expectancy.

3.1.2. People's perceptions of their own health

Surveys often ask people how they rate their own health as compared to their peers —as excellent, very good, good, fair, or poor. In 2006, 39% of Nunavimmiut described their health as either "excellent" or "very good," while 40% described it as "good" (Aboriginal Peoples Survey 2006 as shown in Nasautiit). The percent describing their health as excellent/very good is actually the lowest of any region in Québec—but we need to be wary of comparing this measure between different groups, since cultural and other factors can influence how people answer the question (OECD, 2011).

Figure 25
Contribution of different causes to the gap in life expectancy between Nunavimmiut and Québec, 2005–2009



Notes: CVD=Cardiovascular disease; Resp=respiratory diseases
% refers to the proportion of the gap in life expectancy is explained by each cause. Calculated using the Arriaga method (Preston and Guillot, 2001), with data from the MSSS Birth (June 2012), Death (July 2012), and Population Projection (April 2012) files.

3.2. Health issues that are common among youth

Nunavik has a young population: over a third (34%) of residents are under 15, which is double the proportion in Québec as a whole (16%).[17] This chapter considers the health issues that are most common during youth: issues of mental health, suicide, injuries, and sexually transmitted infections.

[17] Booklet 1 of this series contains additional information on the demographics in Nunavik.

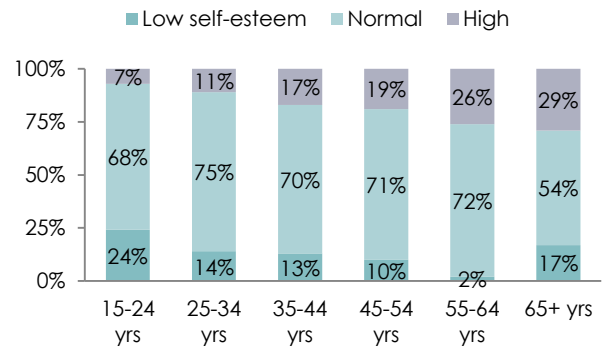
3.2.1. MENTAL HEALTH AND SUICIDE

Mental health

The 2004 *Qanuippitaa* survey asked Nunavimmiut about several different aspects of mental wellness: self-esteem, cultural identity, satisfaction with life, and experience of emotional problems. The results are mixed: although large proportions of Nunavimmiut appear to enjoy good self-esteem, are proud to be Inuk, and declare themselves satisfied with their lives, levels of psychological distress are appreciable.

- Overall, 8 out of 10 Nunavimmiut have normal or high self-esteem. As is typically the case, self-esteem is higher in older people than in youth (Figure 26).
- Cultural identity is also strong: almost 9 out of 10 Nunavimmiut report that they are proud to be Inuk. This proportion tends to be higher among elders.
- Overall, almost three quarters of Nunavimmiut say they are satisfied or very satisfied with their lives.

Figure 26
Self-esteem by age group, 2004 (7-item version of the Rosenberg Self-Esteem Scale)



Source: *Qanuippitaa* survey, 2004

Despite these positive findings, 10% of Nunavimmiut report that they often feel angry, and rates of psychological distress (as measured by the standard Kessler-6 scale) are relatively high (Kirmayer & Paul, 2007). Overall, 13% of Nunavimmiut report high levels of distress, with the highest rates in specific (but overlapping) groups:

- teens and younger adults (15-29)
- women
- people who are single or feel socially isolated
- people with lower income
- people who have experienced sexual or emotional abuse or violence

The people in distress were also more likely to report drug and alcohol use. As discussed, substance use can be both a cause and a symptom of personal and social problems, if people are using alcohol or drugs to numb their feelings.

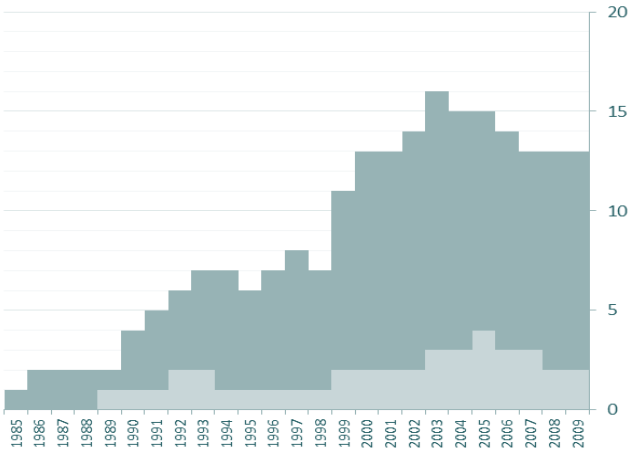
Suicide, suicide attempts, and thoughts of suicide

Suicide rates are high in all the Inuit regions (Oliver, Peters, and Kohen, 2012), and Nunavik has the tragic distinction of having one of the highest youth suicide rates in the world. The region's suicide rate has risen since the 1990s (Figure 27), and is now roughly ten times the Québec average (age-standardized rate of 11.9 per 10,000 in 2005-2009, as compared to the Quebec average of 1.1 per 10,000). Almost all Inuit in Nunavik have lost a loved one to suicide, and have experienced the stress of trying to assist suicidal people (see Text Box 14).

In most western countries, rates of completed suicide are highest among men—especially young men—while women outnumber men in suicide attempts. Nunavik is no exception to this pattern: between 2000 and 2010, 80% of the people who committed suicide were men, and 60% were under the age of 25.[18] On average, Nunavik had 13 suicides each year during this period, most of them by hanging (83%) and firearms (12%).

[18] Because suicides tend to happen at a young age, each suicide removes many potential years of life. This, along with the high rates, is why suicides are responsible for over a third of the gap in life expectancy between Nunavik and Québec.

Figure 27
Number of suicides per year in Nunavik, among males (grey) and females (light grey)



For each person who completes suicide, there are typically several who either consider or attempt it. Like completed suicides, suicidal ideation and attempts are most common in young adults 15-24; the difference is that ideation and attempts usually involve young women rather than young men (Figure 28). In the *Qanuippitaa* survey, 14% of Nunavimmiut over age 15 reported that they had considered suicide in the previous year, while 7% had actually attempted it. In the group at greatest risk—young women age 15-24—one in five reported having attempted suicide in the past year. On average, 30 people per year make attempts serious enough to require hospitalization.

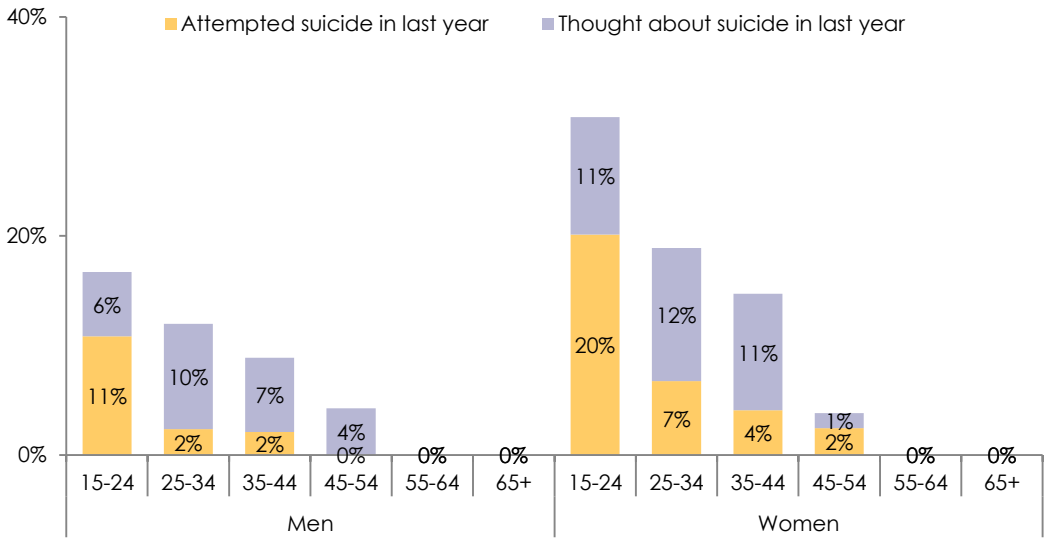
Text Box 14
What underlies the high suicide rates in Inuit populations?

Western medicine views suicide as the outcome of mental illness, and has concentrated on the individual factors that predict it. These individual predictors are broadly the same for Inuit as for other populations: a history of mental disorders; alcohol and drug abuse; experience of violence, sexual abuse, neglect, or family disruption in childhood; unemployment, poverty, and low education levels; and social isolation. As we have seen, many of these risk factors are common in today's Inuit communities.

In contrast, sociologists have long explained suicide in terms of the social context. These kinds of explanations are more congruent with Inuit views (Kirmayer, Hayton, et al., 1994). They emphasize how a loss of meaningful roles and norms affects people's sense of identity and the value they place on their own future. Chandler and Lalonde's study of suicide in B.C. First Nations illustrated this vividly, showing that the communities with the most political and cultural control had the lowest suicide rates (Chandler and Lalonde, 2008). Inuit have displayed remarkable resilience over the past decades, but it is clear that many factors can pose a threat to their mental health: cultural dislocation, housing shortages, and socio-economic conditions (Lessard et al., 2008).

The emphasis on outside causes of suicide has been criticized by some authors (Hicks, 2007) as disempowering; but without it, we run the risk of simply blaming Inuit themselves for their current predicament (Wexler, 2006; Tester and McNicoll, 2004). Moreover, recognizing outside causes does not imply that Inuit cannot change the situation — on the contrary, they are the ones who are best able to do so (Kral and Idlout, 2009). The freedom to become self-determining— including support for local initiatives instead of externally imposed strategies— is crucial to effective suicide prevention.

Figure 28
Suicide attempts and ideation in the past year, by age group and sex (2004)



Source: *Qanuippitaa* survey, 2004

Resources to cope with suicide

Most of the people who reported having considered suicide in the past year said they had sought support from friends or from family. Less frequently, they sought out formal sources of support such as Elders, social or community workers, health professionals, ministers, and teachers (Kirmayer& Paul, 2007).

More broadly, Nunavimmiut use a range of strategies to cope: 40% attend church for wellness or healing; 27% participate in healing circles; and 25% seek wellness and healing support from community healers, natural helpers, psychologists, or doctors. However, all of these strategies are used more often by older people (over 30) than by the younger people (age 15-29) who are most at risk.

The region has some formal institutions and programs in place to address mental health issues, and plans to improve mental health services are underway. Regional staff are regularly offered training by professionals from the Douglas Hospital, while ASIST[19] training sessions are provided to communities that request them. Five of the Hudson Coast's seven communities have Wellness Workers whose role is to develop community projects related to suicide prevention, substance abuse, healing, and mental health. The Hudson Coast also has two crisis centres—the Reintegration Centre in Inukjuaq and the Aaniavituqarq centre in Puvirnituq—to assist youth with mental health issues. Many of the staff members are Inuit. Unfortunately, the waiting list for these centres is long. In addition, all the mental health initiatives face constant problems with staff shortages and turnover, and too few Inuit mental health workers.

[19] ASIST stands for Applied Suicide Intervention Skills Training, a program that aims to increase community caregivers' ability to intervene in situations of suicide.

3.2.2. INJURIES CAUSED BY VIOLENCE

Different types of violence

Men and women tend to experience different forms of violence—although in both sexes, adults 25-44 are at greatest risk, followed by youth 15-24. Women most often experience violence from their partner or another family member (a topic that is discussed in Booklet 2 of this series). Men are more likely to experience violence from friends or other community members, in situations such as fights or brawls.

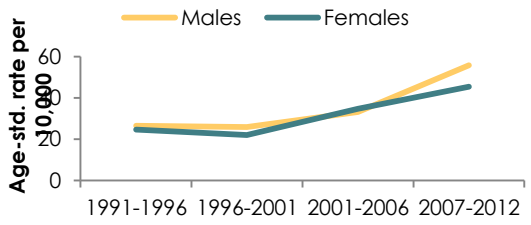
Rates of violence in Nunavik

The scope of violence in Nunavik can be assessed in several ways: by looking at incidents that cause death, incidents serious enough to require hospitalization, or all incidents reported by community members. The information from these various sources converges to paint a picture of a region in which violence is very prevalent.

Violence causes two deaths a year in Nunavik (on average), and sends almost 60 people—mainly men— to hospital. Hospitalization rates from violence have risen substantially since the 1990s among both men and women, and Nunavik's rate is currently far above the Québec average (Figure 29 and Figure 30). Within Nunavik, both domestic and community-level violence seem to be more common in the Ungava region, especially in Kuujjuaq. This may be related to the availability of alcohol in these areas.

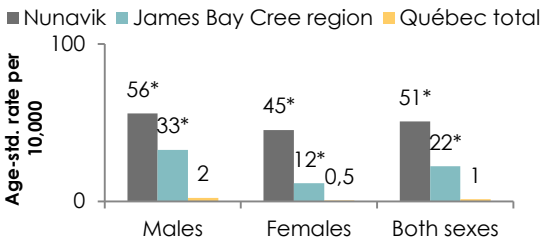
Nunavimmiuts' own reports indicate very high levels of violence in the community. In 2004, fully half the men who answered the *Qanuippitaa* survey said that they had experienced physical violence as adults. Most often, they had been pushed, kicked, or punched; some men reported more dangerous attacks (Figure 31).

Figure 29
Age-standardized hospitalization rates for assault in Nunavik, 1991-2012



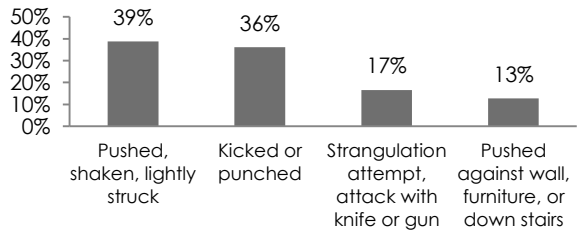
All rates have been standardized to the Nunavik population of 2006.
Source: Med-Echo data.

Figure 30
Age-standardized hospitalization rates for assault: Nunavik compared to other regions, 2007-2012



All rates have been standardized to the Nunavik population of 2006.
Source: Med-Echo data.
Note: (*) All differences between regions shown in this chart are statistically significant.

Figure 31
Types of violence suffered by Nunavimmiut men who reported being attacked as adults



Source: Lavoie et al., 2007

Respondents to the *Qanuippitaa* survey offered a range of explanations for the violence in the region. A large proportion believed that aggressors suffered from social and family problems (abuse, neglect, alcohol dependency, unemployment), or had done so as children. More broadly, respondents condemned "idleness" and spoke of an absence of work or other activities in the community. Crowded living conditions were sometimes mentioned, and people lamented the absence of facilities to separate a victim from an aggressor in the same family (Lavoie et al., 2007). A regional three-day conference was organised in 2013, which allowed intersectoral reflections on crime prevention in the region (see Text Box 15).

Text Box 15
Direct and indirect effects of violence in the community

Violence has a major effect on health. People who are exposed to violence or who witness it are at greater risk of developing mental health problems such as anxiety, depression, and post-traumatic stress disorder. They are also more likely to abuse alcohol or drugs, and to develop aggressive, self-destructive, or other inappropriate behaviours. This holds true for both adults and children, and for both domestic and other forms of violence.

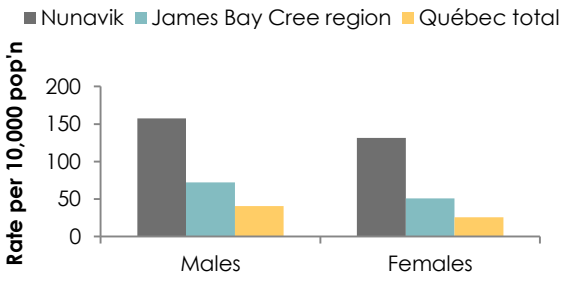
Studies also show that violence has consequences for secondary victims: family members, neighbours, co-workers, and friends. Hearing about crimes in the neighbourhood causes increased anxiety and fear of crime. In this way, violence has a tremendous impact not only on its victims, but also on others in the community (Lavoie et al., 2007).

3.2.3. UNINTENTIONAL INJURIES

Unintentional injuries (see Text Box 16) are an important issue throughout Canada, but are particularly common in rural regions. Rates are usually highest in teenagers and young adults, especially young men.

Whether we consider deaths or hospitalizations, Nunavik's unintentional injury rates are high as compared to other regions (Figure 32). On average, unintentional injuries kill 12 people in Nunavik each year, and put 167 in hospital.[20] The death rate from unintentional injuries has not changed since the 1990s; the hospitalization rate has remained unchanged for men, and risen for women.

Figure 32
Age-adjusted hospitalization rates for unintentional injuries, Nunavik compared to other regions (fiscal years 2007-08 to 2011-12)



Sources: Ministère de la Santé et des Services sociaux, Fichier des décès (July 2012 version), and Estimations et projections démographiques (January 2010 version).

Falls cause most of the day-to-day injuries and some hospitalizations, particularly in young children and in elderly people. However, at all ages, motor vehicle crashes are by far the most common cause of *serious* injury (i.e. injury severe enough to require hospitalization).

Text Box 16
What are "unintentional injuries"?

Injuries that were neither self-inflicted nor intentionally caused by another person, such as

- Falls
- Motor vehicle crashes
- Drowning
- Poisoning
- Burns

[20] These averages are based on mortality data for the years 2005-2009, and hospitalization data for the fiscal years 2007-08 to 2011-12.

Motor vehicle crashes involve cars, trucks, boats, or off-road vehicles like snowmobiles and ATVs. The risk of injury depends partly on whether people take risks like speeding or driving while impaired, and partly on whether or not they use safety equipment such as seatbelts and helmets (Légaré and Robitaille, 2008). In this regard, the statistics on impaired driving in Nunavik are troubling:

- In 2004, 40% of adults (15+) admitted to having driven a vehicle while impaired. This was especially true of men, youth, residents of the Ungava region, and people who had higher levels of education and a job (Légaré, 2007).
- In 2007, Nunavik's sentencing rate for impaired driving was 18 times the Québec average. (Note, however, that this rate varies substantially from year to year.) (Institut national de santé publique du Québec, 2006).

Education is important in prevention, but education alone is ineffective in the absence of regulations, equipment, and concrete interventions. Effective strategies for reducing injuries from motor vehicle crashes include impaired driving laws, random breathalyser tests, seatbelt laws, designated driver strategies, etc. (Task Force on Community Preventive Services, 2001). Initiatives must take into account that prevention requires a coordinated, systematic, and culturally sensitive approach (Tagalik, 2009-2010).

> Drowning is not presently among the top causes of injury in Nunavik, despite the fact that nearly all the communities are located along the coast. However, climate change has rendered travel over sea ice particularly dangerous in recent years. It is important to keep an eye on this situation by collecting relevant data.
>
> — Cameron, 2011

3.2.4. SEXUALLY TRANSMITTED AND BLOOD-BORNE INFECTIONS (STBBIS)

Rates of sexually transmitted infections are high and still rising in the Inuit regions of Canada. Chlamydia and gonoccocal infection rates have risen sharply over the past decade, and it is feared that HIV and Hepatitis C may soon also be on the rise (Cameron, 2011; Pauktuutit Inuit Women of Canada, 2006). In many ways, the trends in Nunavik resemble those of the Inuit regions in general.

Chlamydia & gonorrhea

Between them, chlamydia and gonorrhea account for over 85% of all reportable diseases in Nunavik (Morin et al., 2013). The most common STBBI in Nunavik—as in the rest of Québec—is genital infection with *Chlamydia trachomatis*. In recent years (2012 and 2013), there have been, on average, 446 new cases of chlamydia and 272 of gonorrhea each year. Rates of chlamydia tend to be similar from one community to the next. In contrast, rates of gonorrhea vary widely, with a few communities having markedly higher rates than the rest.

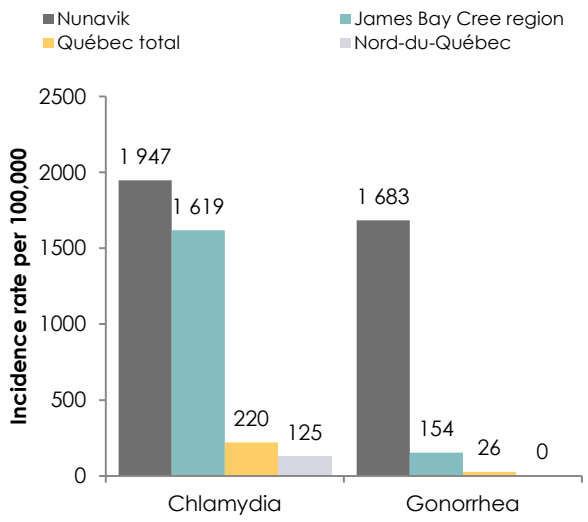
The age distribution of infection in Nunavik resembles the Québec one. This means that infection is most common in teens and younger adults: 60% of infections occur in people age 15-24, and many others in people age 25-29. The number of infections falls gradually with age, so that few cases are seen after age 40.

The gender pattern of infections in Nunavik presents some unusual features. As in the rest of the province, most chlamydia infections in Nunavik are diagnosed in women (Wiehe et al., 2011).[21] However, Nunavik women also outnumber men in the diagnosed cases of gonorrhea — a distinct contrast to the Quebec-wide pattern (Morin et al., 2013).

[21] This is mainly because more women than men are screened and diagnosed. Studies suggest that, in reality, the circulating pool of asymptomatic untreated chlamydia is similar in men and women (Low and Egger, 2002).

The largest difference as compared to the rest of Quebec, however, is that Nunavik's rates are far above the provincial average (Figure 33). It should be remembered, however, that these rates are not adjusted for age; hence part of the discrepancy is linked to the differences in population age structures between Nunavik and Québec; indeed this effect is likely quite important confounding in this case as Nunavik has higher proportion of youth and STBBI are much more frequent in the younger age groups.

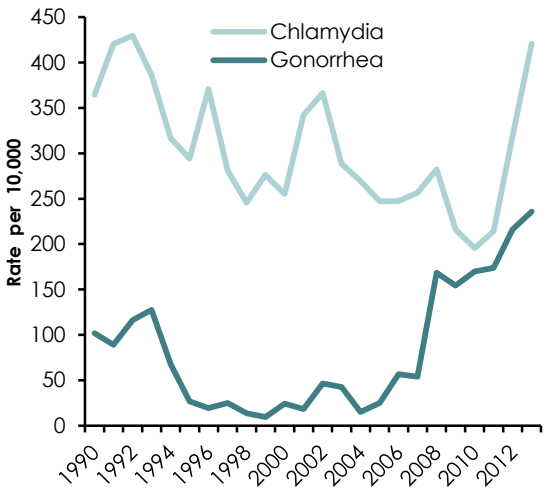
Figure 33
Crude rates of chlamydia and gonorrhoea infection: Nunavik compared to other regions, 2010



Source: Ministère de la santé et des services sociaux du Québec, 2011

Further, as shown in figure 34, incidence rates of both chlamydia and gonorrhea now seem to be rising rapidly, after years of gradual decline. The reasons for the increase in rate are unclear, but few possible explanations can be identified. The first is simply better detection and reporting; the second is the deterioration in the housing situation, since as discussed earlier, research suggests a link between crowded housing and many behaviors which increase risk of STTBIs (including distress, violence and substance abuse); a third possibility is that the region's local health staff have been compelled to spend so much time dealing with the recent TB outbreaks and that measures aimed at preventing the spread of STBBIs (such as contact tracing) may have taken a back seat, allowing a resurgence.

Figure 34
Crude incidence rates of chlamydia and gonorrhea in Nunavik, 1990-2013



Source: MADO data bank, extraction, Zoungrana, 2014

Infectious syphilis

At the end of the 1990s, it was hoped that syphilis was disappearing from Quebec (just three cases were reported in 1998). Since then, the disease has made a comeback, with almost all the new cases occurring in men who have sex with men (Ministère de la santé et des services sociaux du Québec, 2011). As of a 2011 report, none of these cases were in Nunavik: the region had a zero incidence rate over the 2006–2011 period. Since 2011, however, a few cases have been reported—a major concern for public health officials in the region.

Hepatitis B and C, and HIV/AIDS

Over the years 2006 to 2011, the Nunavik region reported five new cases of hepatitis B,[22] and seven of hepatitis C. This translates to less than one case per year of each form of hepatitis (Ministère de la Santé et des Services sociaux du Québec, 2011).

The number of new cases of HIV/AIDS, on the other hand, is so low that it cannot be published without endangering confidentiality.[23] More broadly, Aboriginal people make up less than 1% of Quebec's reported HIV cases—a much better picture than in the rest of Canada, where they are thought to make up nearly a quarter of all cases (Public Health Agency of Canada, 2013). Yet, even though a small number of HIV/AIDS cases are reported in these Aboriginal regions, the STI data are raising serious concerns because a community that is severely affected by STIs is at high risk of being affected by HIV/AIDS (Agence de la santé publique du Canada, 2007).

Notifiable diseases are often under-reported, but there is no reason to believe this is true of hepatitis B and HIV in Nunavik. Pregnant women in the region are routinely offered screening for these diseases, so the region would be likely to detect any problem (see Text Box 17).

Controlling and preventing STBBIs in Nunavik

Although the low rates of HIV in the region are reassuring, the high rates of gonorrheal infections show us that promotion of safe sexual behaviours remains a priority:

- In 2004, only a third (34%) of adults in Nunavik reported having used a condom during their most recent intercourse (Dodin and Blanchet, 2007). Fortunately, the proportion of condom-users is highest in youth, who are also the group most at risk.

Text Box 17
HBV and HCV infections

Hepatitis B is spread through unprotected sex or sharing of needles, drugs, or drug-preparation materials. Transmission happens when fluid (blood, semen, saliva) from an infected person contacts the mucous membranes or gets into a skin puncture. Incidence in Quebec has been falling since the introduction of a vaccination program in 1994. This program also exists in Nunavik: in 2009-2010, 77% of Grade 4 students in the region had been vaccinated (Commissaire à la santé et au bien-être du Québec, 2013).

Hepatitis C is usually contracted by sharing needles or other injection equipment; the risk of transmission during sexual contact is low. There is no vaccine against hepatitis C.

- Binge drinking is known to greatly raise the incidence of risky sexual behaviours and sexual assaults.
- Some organizations have identified Inuit reluctance to talk about sex as a challenge in sex-education efforts (e.g. Pauktuutit Inuit Women of Canada, 2008).

More broadly, some people believe STBBI rates cannot be reduced until the issues that underlie substance abuse and sexual violence are addressed (personal communication, Lina Noël, INSPQ).

More prevention resources (including internet materials) and training for communities are clearly needed, as is more consistent sexual health education in the schools (see Text Box 18). One promising avenue is to include Inuit and community organizations in the development, implementation, and evaluation of STBBI strategies. It may also be helpful to hire regional coordinators for sexual health initiatives.

[22] This figure includes all forms of hepatitis B--acute, chronic, and unspecified.

[23] To ensure that individual people cannot be identified in the statistics, statistical agencies typically suppress any figure that relates to fewer than five cases.

Text Box 18
Sexual health: Promising initiatives in Nunavik

The Kativik School Board supports sex education in all its schools. As of summer 2012, educational materials had been prepared, translated into three languages, and printed. Nunavik's Public Health Department has offered the services of a Nurse Educator to train the school counsellors and community wellness workers.

A review of the region's STI treatment guidelines and lab procedures has been published, in collaboration with Nunavik's two Health Centres and the INSPQ.[1] Health and social service professionals are currently being consulted and trained on this topic. A worker's guide on access to sterile injection materials has been prepared and is now available to clinics across the region. The guide outlines what information should be provided to clients, and what should be included in a sterile injection kit.

The region is also conducting a social-marketing study to pave the way for a campaign directed at youth. Like Nunavut's initiative (see the site www.irespectmyself.ca), this campaign will use the social networking media to teach youth about safe sex and STIs. Condoms are also being distributed free of cost at sites throughout the region, such as health centres, stores, airports, and schools.

The situation with respect to treatment of cases and contacts is also complex. Efforts are hampered by the scarcity of public health clinicians at the local level. Further, a recent review of gonorrhea cases in the region found that, while most contacts are treated within a reasonable timeframe, some are missed for reasons such as:

- The contact lives in a place where the clinic cannot immediately reach him or her, such as Montreal (32%)
- The patient cannot recall the names of contacts, or refuses to identify them (37%)
- The contact fails to show up at the clinic (20%), a decision that may be influenced by the lack of anonymity in small communities (Steensma, 2013).

3.2.5. SUMMARY: HEALTH PROBLEMS THAT AFFECT YOUTH.

> "The young age of the Nunavik population could be a determining positive factor if efforts are made to raise this younger generation in an environment that will offer new possibilities from childhood to adulthood. It could be the most positive asset of Nunavik."
>
> —Kativik Regional Government and Makivik Corporation, 2010

Youth make up a large part of the population in Nunavik. They are also the future of the nation. Too many Youth in Nunavik die from preventable causes such as suicide, violence, and unintentional injuries.

Although some aspects of mental health appear to be good, Nunavimmiut report high levels of psychological distress. Further, rates of violence in the community are high, and affect everyone directly or indirectly. These levels of distress and violence—along with broader social determinants— may contribute to the extremely high rates of suicide and suicide attempts in Nunavik's youth.

Besides the intentional injuries (suicide and violence), youth are also at higher risk for unintentional injuries. In Nunavik, these injuries are primarily the result of incidents with motor vehicles—cars, trucks, snowmobiles, ATVs, and boats. Strategies are needed to reduce risky behaviours such as speeding or driving while impaired, and to promote use of safety equipment such as helmets.

Initiatives are also needed to address the risky behaviours that expose youth to sexually transmitted and blood-borne infections. Overall, young people require a sense of hope, and viable social, cultural, and economic futures in their communities. This requires effort on multiple fronts (Cameron, 2011).

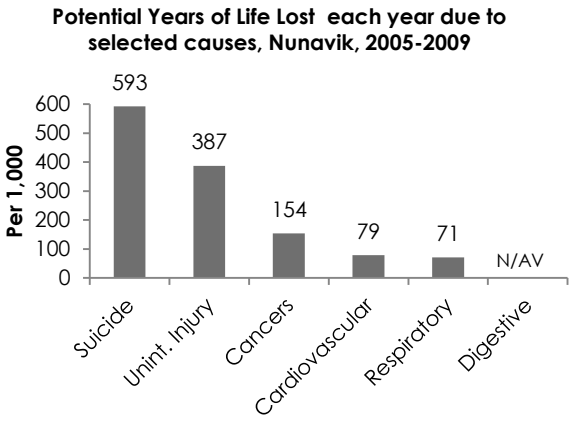
3.3. Health problems that are common in adults and elders

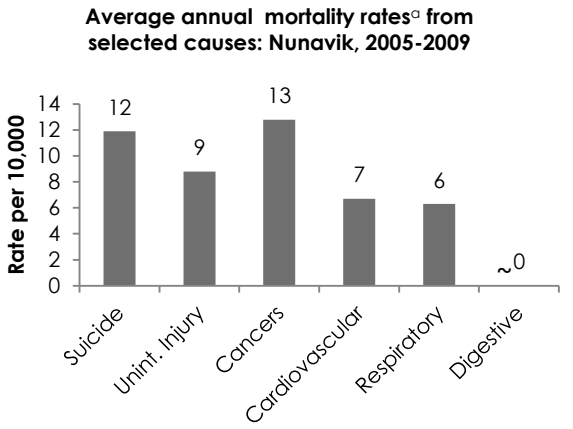
In this chapter, we discuss a series of chronic diseases that are commonly developed during the adult years: cancer, respiratory illnesses, cardiovascular diseases, diabetes, and disabilities such as hearing loss. Readers should note that some of the conditions included in the "Youth" chapter—such as mental illness, suicide, violence, unintentional injuries, and STBBIs— continue to be a problem throughout the adult years, although to a lesser extent. However, since these conditions have already been discussed, they are omitted from this chapter.

In many cases, the diseases discussed in this chapter are linked to health behaviours that, at least in theory, are modifiable. For example, smoking can cause cancer, cardiovascular disease, and some respiratory conditions, and aggravate the complications of diabetes. Similarly, diet, activity levels, and obesity are implicated in the development of cardiovascular diseases and diabetes. As discussed in the Health Determinants chapter, there are good reasons why so many Nunavimmiut have difficulty modifying these habits. Yet experts fear that if nothing is done to change the current situation, conditions like heart disease and diabetes could become major health problems in the region.

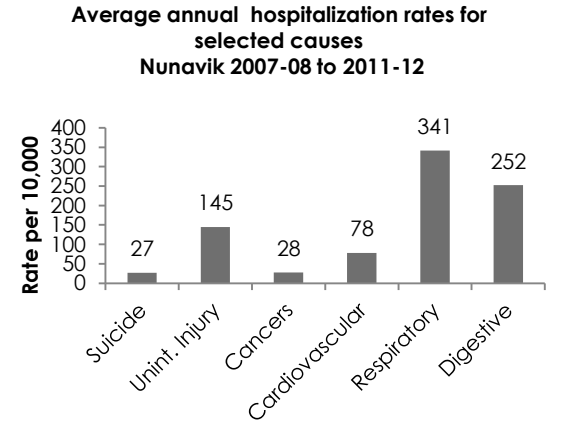
In an attempt to provide an overview, figure 35 below compares the major disease groups in terms of three different measures: deaths, hospitalizations, and Potential Years of Life Lost (a sort of composite measure of the number of deaths caused by a disease, and how early in life those deaths occur).

Figure 35
Impact of various disease groups on Potential Years of Life Lost, mortality, and hospitalization rates





Mortality rates for the population over one year old.
Rates have been age-standardized to the Nunavik population of 2006.



Rates have been age-standardized to the Nunavik population of 2006.

From these graphs, we can see that:

- Cancers, suicides, unintentional injuries, and cardiovascular diseases cause many deaths, but relatively few hospitalizations.
- Because suicide and unintentional injuries tend to kill people at young ages, they remove by far the most Potential Years of Life.
- In contrast, respiratory conditions are the leading cause of hospitalization, but rank fifth as a cause of mortality. Because they mainly kill at older ages, they remove fewer Potential Years of Life.

3.3.1. CANCERS

On average, each year in Nunavik, cancer causes:

- 33 hospitalizations
- 14 deaths (in people age 1+)

Cancers are a concern throughout Canada, and the Nunavik region is no exception. The situation in Nunavik is complicated, however, by a lack of diagnostic and treatment services in the territory. This means that:

- Most cancer patients need to be sent south for treatment, which separates them from their emotional support networks, and also contributes to fragmentation of care.
- There is a concern that some cancers may be diagnosed at a later stage than in southern populations. This could explain (in part at least) why Nunavik tends to have a higher mortality rate from cancers over all, even though incidence and hospitalization rates are comparable to the Québec average.

When we consider all types of cancer together, both death and hospitalization rates for cancer have been stable in recent years. A closer look shows that this overall pattern varies somewhat according to the type of cancer. Lung cancer is a particular concern in Nunavik (as in the other Inuit regions of Canada), with rates well above the average. As Table 1 illustrates, lung cancers are the most common form of cancer in the region. They are followed by cancers of the digestive system (largely colon cancer), and then at some distance by cancers of the mouth and throat, and breast cancer.

What causes these cancers? Tobacco is a prime suspect, since smoking rates are high among Nunavimmiut. Diet may also contribute to some cancers.

Table 1
Average number of new cases of cancer per year, Nunavik, 2004-2008 period

Site	Average number per year
Respiratory system cancers (mainly lung cancer)	10
Digestive system cancers (mainly colon cancer)	6
Mouth and throat cancers	2
Breast cancer	2
All other sites	<1 case per year for any given site
Total new cases per year	**27**

Respiratory cancers

Respiratory cancers are the most common form in Nunavik, and almost all of them are in fact lung cancer. People typically develop these cancers when they are over 40, and especially after age 60. Lung cancer has long been the most common type in Nunavik, with a rate at least double the Québec average (Figure 36).

Cancers of the digestive system

As with respiratory cancers, the incidence of digestive cancers rose appreciably in the early 2000s, then stabilized at the new, higher, level. Much of the observed increase was due to colon cancer: the number of cases of colon cancer at least doubled. Nunavik's rates have varied slightly in recent years, but as of the most recent figures

(2004-2008), they remain well above the Québec average (Figure 37).

As for respiratory cancers, most of the people who develop digestive cancers are over the age of 60, but a few are under 40. The most probable causes of these cancers include tobacco and a lack of fruits and vegetables in the diet.

Breast cancers

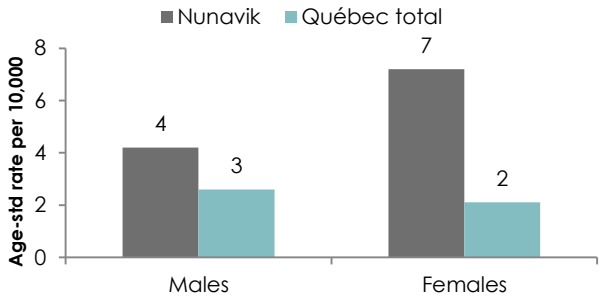
On average, there are two cases of breast cancer each year in Nunavik, mainly in women age 50 and over. In 2007-2008, the proportion of women who had a breast X-ray was quite below the one in other Regions of Quebec (Figure 38). However, screening has improved in recent years, and as of 2011 and 2012, a mobile unit had begun to offer breast X-rays to women in both the Ungava and Hudson regions.

Cervical cancers

The incidence of cervical cancer in Nunavik is similar to the Québec average (6.4 vs 5.3 per 10,000 over the years 2004-2008). Although cervical cancers are not among the top cancers in the region, they are worth discussing because of the implications for prevention and screening. Studies suggest that the main risk factor for these cancers— a set of sexually transmitted viruses called Human Papilloma Virus or HPV—may be common among Inuit. One recent study of 1,116 women in Nunavut, 90% of whom were Inuit, found that 34% had an HPV virus, and 24% had a cancer-causing form of HPV (Totten et al., 2008).

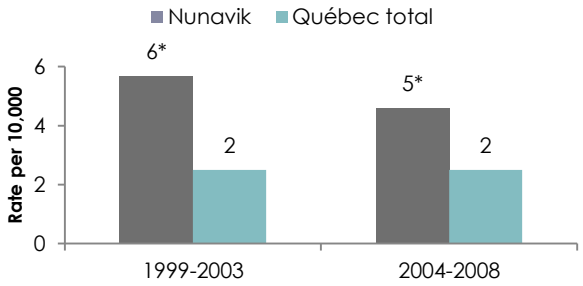
Preventive clinical practices can help prevent many of these cancers. Firstly, PAP tests can detect pre-cancerous states, allowing for early intervention. In a recent study, 78% of women in Nunavik said that they had had a PAP test in the past two years (Dodin and Blanchet, 2007). Second, a new vaccine, usually given in grade 4, can prevent many (although not all) forms of the HPV virus. In 2009-2010, the proportion of Grade 4 girls in Nunavik who had received the HPV vaccination was 68% — slightly below the provincial average (76%) (Commissaire à la santé et au bien-être du Québec, 2013).

Figure 36
Ajusted incidence rate for cancers of the respiratory system, Nunavik, 2004-2008



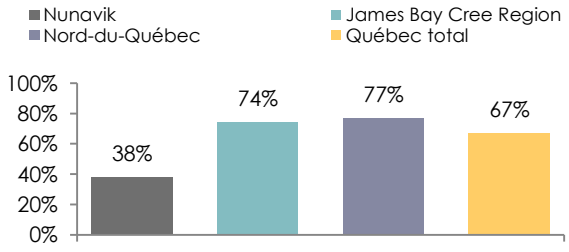
Source: Cancer registry

Figure 37
Adjusted incidence of digestive cancers over time: Nunavik and Québec total (rate 10,000)



Source: Cancer registry Note: (*) The differences between Nunavik and Québec are statistically significant.

Figure 38
Proportion of women age 50-69 who had a mammography: Nunavik compared to other regions, 2007-2008



Source: Commissaire à la santé et au bien-être du Québec, 2013

3.3.2. DISEASES OF THE RESPIRATORY SYSTEM

On average, each year in Nunavik, respiratory conditions cause:

409 hospitalizations

6 deaths (in people age 1+)

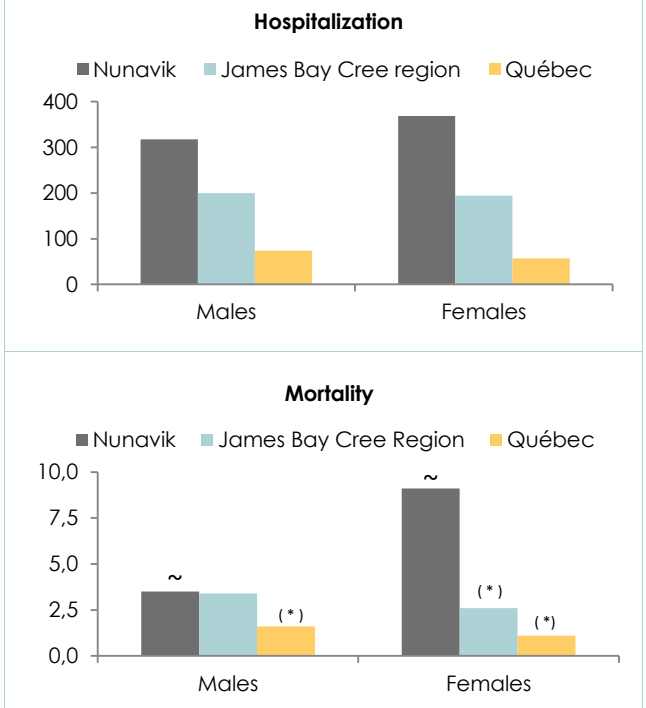
Diseases considered in this section include pneumonia, asthma, and chronic obstructive pulmonary diseases (such as chronic bronchitis and emphysema), but exclude lung cancer and tuberculosis.

Although respiratory conditions cause fewer deaths than injuries or cancer, they cause a great deal of non-lethal illness: they are the leading cause of hospitalization for both men and women in Nunavik. Whether we consider mortality or hospitalizations, Nunavik's rates are far above the Québec average, and also higher than the neighbouring James Bay Cree region (Figure 39). Nunavik's mortality rates from respiratory disease are, however, comparable to those of the other Inuit regions. Both the mortality and hospitalization rates have been quite stable over time: mortality rates have changed very little since the 1980s, while hospitalization rates have at best dropped only slightly since 1991.

The mortality figures suggest that women are somewhat more likely than men to die of respiratory illnesses. As is typically the case for respiratory ailments, Nunavik's figures also show a strong age pattern:

- Hospitalization rates are highest in children (under 14) and the elderly. In fact, in the elderly, one death in four (27%) is attributable to some type of respiratory disease.
- Acute bronchiolitis, asthma, and pneumonia cause the bulk of the hospitalizations among children, while elderly people tend to be affected by flu, pneumonia, and various forms of Chronic Obstructive Respiratory Disease (chronic bronchitis, emphysema, asthma, pulmonary fibrosis).

Figure 39
Age-adjusted mortality and hospitalization rates from respiratory conditions: Nunavik compared to the James Bay Cree region and Québec as a whole, 2005-2009



(*) indicates a statistically significant different between a region's rate and the Nunavik rate.

~ indicates a rate based on small numbers, and thus somewhat imprecise (coefficient of variation over 16.6%)

Smoking is a known risk factor for respiratory disease, and Nunavik has a high proportion of smokers. Besides the direct risk to the smoker, sidestream smoke also puts other people at risk, and is known to aggravate conditions like asthma. Crowded housing conditions also contribute to higher rates of respiratory illness. Factors such as these probably underlie Nunavik's high rates of respiratory conditions.

Tuberculosis

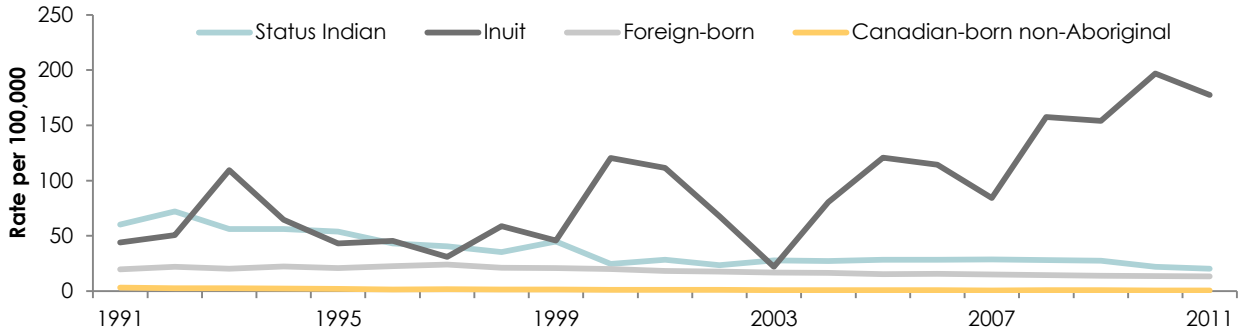
Upon contact with Europeans in the sixteenth and seventeenth centuries, Inuit were exposed to a range of communicable diseases to which they had no immunity, such as smallpox, typhoid, and influenza. In the early and mid twentieth century, epidemic rates of tuberculosis were a major

cause of death. Since then, the incidence of TB has been greatly lowered, and the mortality rate reduced almost to zero; but TB remains a serious problem for Inuit across Canada, with incidence still more than 20 times the Canadian average (Inuit Tapiriit Kanatami, 2008; Tait, 2008; Cameron, 2011).

In Nunavik, the incidence of active TB declined between 1980 and 2003, dropping from a rate of 166 cases per 100,000 population to 35. Since 2007, however, it has risen again, reaching a rate of 320 per 100,000 in 2012 (Figures 40 and 41).

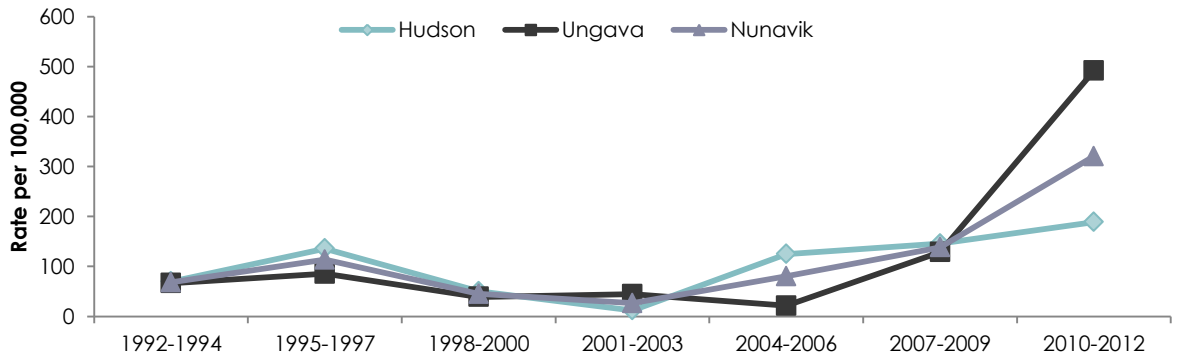
Many factors underlie the high TB rates in Nunavik. First, the large number of adults and elders with latent infections contributes to periodic reactivations of TB. More importantly, research shows that TB incidence is strongly linked to social determinants such as malnutrition, poverty, alcohol and drug abuse, high levels of stress, crowded housing, inadequate ventilation, and limited access to health care (Baker et al., 2008; Clark and Cameron, 2009; Clark, Riben, and Nowgesic, 2002).

Figure 40
Trends in the incidence of tuberculosis in Canada, by origin, 1991-2011 (rate per 100,000)



Does not include Métis or non-status Indians. Rate for 2011 is preliminary.

Figure 41
Incidence rate of tuberculosis, coasts and Nunavik total, 1992-2012



Source: MADO registry

A recent review of TB outbreaks in the region reached similar conclusions, attributing the large number of secondary cases to overcrowded housing and frequent gatherings in poorly ventilated areas (Nunavik Regional Board of Health and Social Services, 2014). Young adults seem to be the most affected, particularly the group involved in cannabis use (Kativik Regional Government & Makivik Corporation, 2010).

The evidence for the role of crowded housing in enabling transmission of TB is particularly compelling. In fact, a Canadian study in 2002 found that an increase in crowding of 0.1 persons per room raised the risk that a community would have at least two cases of TB by 40% (Clark, Riben, and Nowgesic, 2002; Baker et al., 2008; Wanyeki et al., 2006). This is why the Canadian Tuberculosis Committee issued an advisory in 2007 about the risk of TB in populations (Aboriginal or not) that live in inadequate housing.

A further difficulty may have contributed to the severity of the last two outbreaks: delayed consultation and diagnosis. Several factors may contribute to such delays. First, the level of knowledge of the disease appears low in both the general population and clinicians. TB often evolves slowly and insidiously; in a region where respiratory ailments are common—often implicating tobacco smoke or other inhaled toxins—it requires sustained effort to suspect TB and diagnose it early (Nunavik Regional Board of Health and Social Services, 2014).

Moreover, adapting clinical practices to the cultural and organizational context is a constant challenge. Turnover of clinical personnel and linguistic and cultural differences make it more difficult to upgrade staff knowledge and skills. Finally, treatment of the disease and elimination of the carrier state require prolonged medication. All of these factors contribute to the sometimes-major delays in consultation as well as to late diagnosis, thus increasing the population's risk of exposure and the occurrence of secondary cases (see Text Box 19).

Text Box 19
What the region's new *TB Action Plan* proposes (2014)

The plan is based on the WHO's reference framework, and advocates actions built around two strategies:

1. *Reinforcing the front-line health and social services system,* to permit high-quality diagnosis and treatment of both active and latent cases of TB. This would include efforts to enhance community recognition of active disease, supplemented by extra initiatives in communities at higher risk (e.g. vaccination, screening, and an enhanced plan for outbreak response).
2. *Optimizing the public health programs that address the immediate and more distant risk factors for TB.* This refers to programs directed at malnutrition, smoking, diabetes, and substance use, as well as cross-sectoral interventions that address the "upstream" factors like housing, indoor air quality, food security, and education.

Nevertheless, it should be noted that some of the region's communities have very low rates of TB, and that in many cases there have been rigorous efforts to manage the disease at both the clinical and population levels. Rates of completed treatment and even prevention are often very high (more than 80% in the latest outbreak, for instance). Less than 1% of cases are resistant to any of the antibiotics in routine use for TB, and so far—in contrast to other parts of the world—TB in Nunavik has rarely been associated with HIV and severe diabetes.

3.3.3. DIABETES

Diabetes rates are still much lower among Inuit than in other Aboriginal populations, but the potential for higher rates in the future is indicated by risk factors such as sedentarisation, obesity, and reduced access to traditional foods (Public Health Agency of Canada, 2011). As of the most recent measures (in the 2004 *Qanuippitaa* survey), 13% of Inuit adults in Nunavik were pre-diabetic, while 5% had diabetes. This places Nunavimmiut slightly above the national diabetes rate of 3.1% (Dewailly, Chateau-Degat, et al., 2007), but well below the rates seen in many First Nation communities (Table 2).

Table 2
Prevalence of self-reported diabetes in First Nations and Métis populations, Canada, 2006-period

	Source[a]	Age	Prevalence % (95% CI)	
			Crude	Adjusted[b]
Non Aboriginal	CCHS[c] 2009-2010	12+	6.0 (5.8-6.3)	5.0 (4.3-5.7)
First Nations (on reserve)	RHS[d] 2008-2010	18+	15.7 (14.2-16.4)	17.2 (16.5-19.0)
First Nations (off reserve)	CCHS 2009-2010	12+	8.7 (7.0-10.4)	10.3 (3.4-17.2)

[a] Gestational diabetes is excluded from ESCC and ERS surveys
[b] Adjusted using 1991 Canadian Population structure
[c] Canadian Community Health Survey (CCHS)
[d] First Nations Regional Longitudinal Health Survey or Regional Health Survey (RHS)
Source: Canadian Public Health Agency, 2011.

Unfortunately, health researchers have now established that Inuit are not genetically protected against diabetes, as once believed. Rather, their lower rates reflect the fact that many Inuit still rely heavily on traditional foods—either by choice, or because they cannot afford the store-bought ones. As reliance on traditional food decreases and sedentarization increases, many experts believe that rates of obesity and diabetes will rise. These predictions are based on growing rates of metabolic syndrome—a cluster of warning signs that clinicians look for, including abdominal obesity, high triglyceride levels, and low levels of "good" HDL cholesterol (Dewailly, Chateau-Degat, et al., 2007). The potential for a dramatic increase in diabetes points to the importance of collecting reliable, long-term data to track this issue.

3.3.4. DISEASES OF THE CIRCULATORY SYSTEM

"Diseases of the circulatory system" include problems such as

1. Heart disease
2. High blood pressure
3. Strokes
4. Heart attacks

These are also referred to as "cardiovascular diseases."

For years, researchers thought that Inuit were not susceptible to cardiovascular disease, but as Bjerregaard, Young and Hegele (2003) note, this view was based on weak scientific evidence and uncertain mortality statistics. At present, it is believed that the high levels of omega-3 fatty acids found in marine foods help to regulate High-density lipoprotein (HDL) cholesterol levels and thus reduce the risk of heart disease. Thus, the traditional diet of older Inuit seems to be protective. However, as younger Inuit shift their diets away from these foods, researchers are noting a corresponding increase in cardiovascular disease (Dewailly, Blanchet, et al., 2001). Increased consumption of processed foods, the high rates of obesity in the region, high smoking rates, and the shift to a sedentary lifestyle all suggest that cardiovascular disease rates will rise, perhaps dramatically, in the years to come.

At present, the statistics for cardiovascular disease in Nunavik present a very mixed picture. As we shall see below, some of the risk factors for heart disease (lipid imbalances and high blood pressure) are still relatively low in the region, and mortality from cardiovascular diseases is average as compared to the rest of Québec. Yet hospitalization rates are well above average, and appreciable numbers of people report having various types of cardiovascular disease. To further complicates the picture, the trend seems to vary by sex: both mortality and hospitalization rates are falling among women, but remaining constant in men.

Risk factors for cardiovascular disease

Risk factors for cardiovascular disease

- High blood pressure
- High Low-density lipoprotein (LDL) cholesterol
- Smoking
- Diabetes
- Overweight/obesity
- Lack of physical activity
- Excessive alcohol

Obesity, smoking, and inactivity are all risk factors for cardiovascular disease, and all are common in Nunavik. These factors affect things like lipid levels and blood pressure, which in turn have an impact on cardiovascular disease. And in fact the proportion of adults with high blood pressure has risen in Nunavik, from 6% in 1992 to 12% in 2004. Even so, the current rates are still well below the 22% figure for hypertension in Québec as a whole (Blais and Rochette, 2011). The blood lipid profile among Nunavimmiut (things like cholesterol levels and fatty acids) is satisfactory, although 5% of adults 30-49 do have high cholesterol, and this rises to 27% among people over 50.

Prevalence and trends in cardiovascular disease

On average, each year in Nunavik, cardiovascular diseases cause

- 92 hospitalizations
- 7 deaths (in people age 1+)

According to the 2006 Aboriginal Peoples Survey, cardiovascular diseases (including high blood pressure) were the most common type of chronic condition in Nunavik, affecting 15% of all adults. Each year, roughly 92 people have to be hospitalized for these diseases. Rates are higher in men than in women (see Figure 42), and while both hospitalization and mortality rates from these diseases have fallen slightly among women since the 1990s, the rates for men have not changed appreciably.

Rates of cardiovascular disease tend to increase with age: problems of high blood pressure often begin between 30 and 49 years, while actual heart attacks and myocardial infarctions are primarily seen in those over 50.

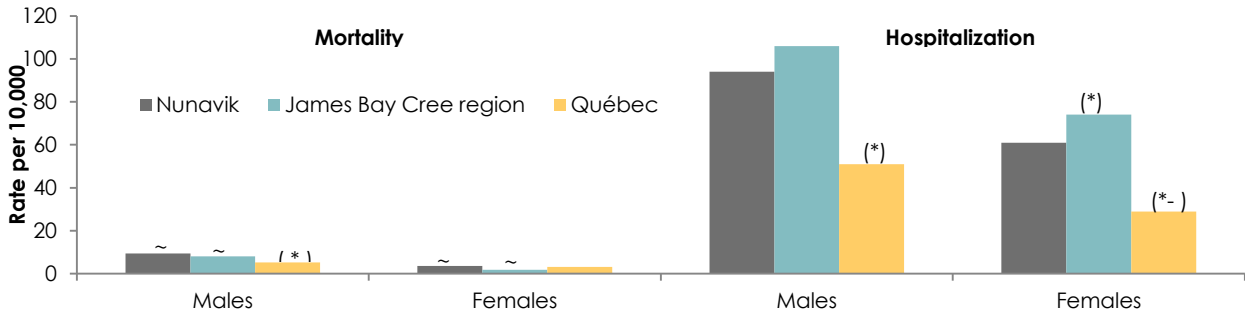
Given the prevalence of risk factors such as obesity and smoking, the fear is that Nunavik's and diabetes will rise to the levels seen in other Aboriginal groups in Canada. Rates of hospitalization for cardiovascular disease are already above the Québec average, although the difference in mortality rates is less obvious, especially in women (Figure 42).

3.3.5. DISEASES OF THE DIGESTIVE SYSTEM

Diseases of the digestive system include conditions such as gastroenteritis, acute appendicitis, various foodborne illnesses, and dental caries (which cause some hospitalizations, especially in children). Although these conditions cause few deaths (on average, just one or two a year in Nunavik since 2000), they are the second-largest cause of hospitalization, right after respiratory conditions. Hospitalization rates are similar for men and women, and have remained fairly constant since the 1990s. The current rate is far above the levels seen in the rest of Québec or in the neighbouring James Bay Cree region (Figure 43).

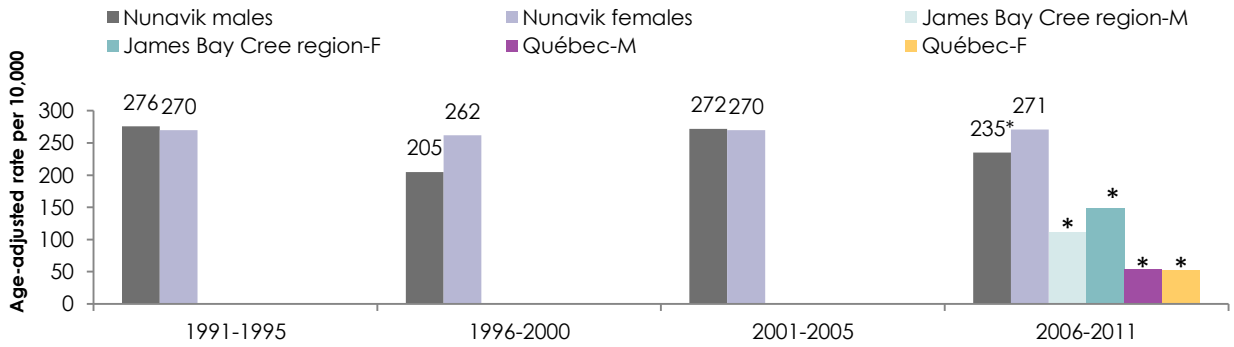
Although digestive problems are among the leading causes of hospitalization at all ages (Figure 44), the nature of the digestive complaints varies over the life course. In children, most of the hospitalizations are due to dental problems. In youth, appendicitis and gastro-duodenal problems are the most common types of digestive illness. In younger adults, disorders of the oesophagus predominate; while intestinal illnesses are common in adults over 65.

Figure 42
Age-adjusted mortality and hospitalization rates, Nunavik compared to other regions, 2005-2009



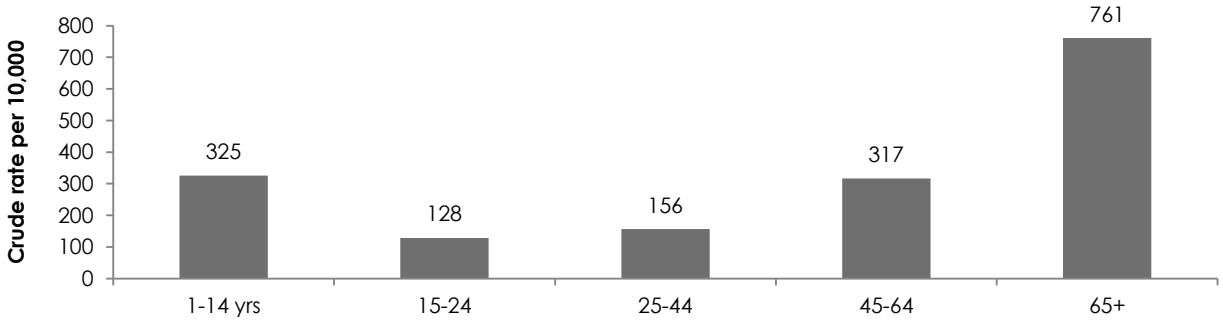
Source: Mortality registry and Med-Echo
~ Indicates a rate based on small numbers, and thus somewhat imprecise (coefficient of variation >16.6%)
(*) indicates that a difference is statistically significant when compared with Nunavik's.

Figure 43
Age-adjusted hospitalization rates for diseases of the digestive system: Nunavik males and females over time, and Nunavik compared to other regions for the most recent period



Source: Med Echo
Rates have been standardized to the total Nunavik population of 2006.
(*) Indicates that a region's rate is significantly below Nunavik's. Also, the male rate in 1991-95 is significantly different from the one in 2006-2011.

Figure 44
Crude hospitalization rates for diseases of the digestive system, by age group: Nunavik, 2007-2012



Source: Med-Echo

Gastroenteritis—an infectious disease often linked to contaminated water or food—is common among children in Nunavik, and can also be an issue for adults. Crowded housing facilitates the spread of gastroenteritis, thereby raising the rates. Problems of water sanitation can also contribute.

Besides this, several food-borne illnesses that are very uncommon in the south are often reported in Nunavik. Botulism, produced by bacteria in fermented meat, is potentially deadly if ingested. A few more than 130 cases of botulism were reported in Nunavik between 1971 and 1999 (Elliott and Macaulay, 2004). The region has since promoted safer meat-fermentation processes, and almost no cases were reported in the 2012-2013 period (Morin et al., 2013).

Trichinellosis, a parasitic infection transmitted through eating the raw meat of infected animals (usually walrus), is also reported from time to time, and there was a small outbreak (18 reported cases) in 2013 (Morin et al., 2013). The region now has a quite successful walrus-testing program to detect trichinella (see Text Box 20).

Text Box 20
The Nunavik Trichinellosis Prevention Program

During the 1980s, consumption of walrus meat caused some Nunavik residents infections to become infected with the Trichinella parasite. In response, stakeholders set up the community-based Nunavik Trichinellosis Prevention Program (NTPP). The NTPP relies on a pooled digestion assay of tongue samples taken from each harvested walrus. Infected walrus meat should be destroyed; parasite-free meat may be eaten raw or cooked (Larrat et al., 2012).

3.3.6. SUMMARY: HEALTH PROBLEMS THAT AFFECT ADULTS AND ELDERS

Nunavik's population will continue to grow in the next 25 years, and most of this increase will be in the adult and elderly population. And while psychosocial problems observed in youth persist into adulthood, other diseases also commonly appear at later ages: cancers, respiratory illnesses, tuberculosis, cardiovascular diseases, diabetes, and diseases of the digestive system.

Some of these conditions are at particularly high levels in Nunavik—particularly lung cancer and respiratory illnesses. Smoking probably plays a role in both, while crowded housing is also likely to affect rates of these conditions. Other conditions are not currently at high levels, but it is feared they could rise dramatically in future, because the risk factors are so widespread in the region. This is particularly the case for cardiovascular disease and diabetes, which are affected by diet, activity levels, and obesity. Finally, disabilities—in particular hearing loss—are an issue, particularly among elders.

Both demographic and epidemiologic transitions are certainly going to increase the pressure on the health and social services, which will need to adapt their existing structures to better meet the needs of an aging population with rising rates of chronic diseases. This is also an argument for intensive prevention and health promotion initiatives to promote healthy aging in the region.

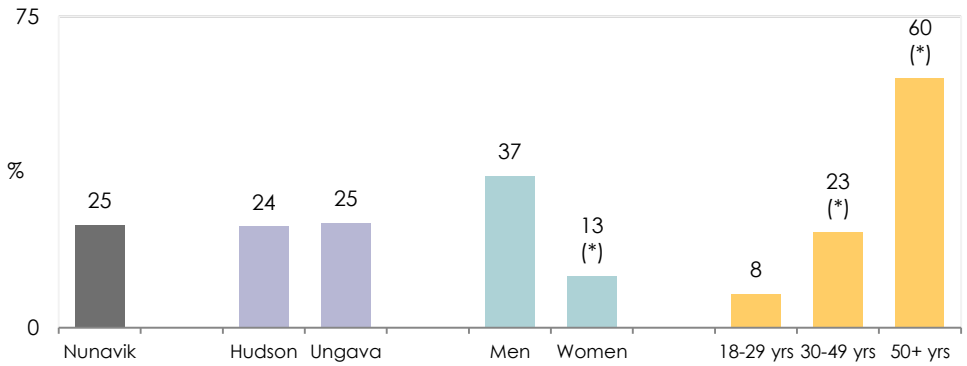
Text Box 21
Issues that are of special concern among elders

The proportion of elders (65+) in Nunavik's population is low, but rapidly increasing: it is expected to rise from its current 3% to 8% by 2031—a nearly threefold increase. In short, elders are a group that will require more services in future. What types of health services do elders in Nunavik require? There is a lack of comprehensive data on elders' issues for Inuit throughout Canada, but the Inuit Tapiriit Kanatami has identified disabilities as a concern. It is believed that the disability rate in the north could be double the rate in the rest of Canada (Cameron, 2011). There are some concerns about the disabilities that result from accidents and from Fetal Alcohol Spectrum Disorder. And we know that hearing loss is a significant concern among Inuit elders.

Nunavimmiut have a very high prevalence of hearing loss. Fully 25% of adults have a hearing impairment in one or both ears, and this rises to 60% among elders (Figure 45). The primary causes are believed to be chronic ear infections (otitis media), and noise from sources such as firearms or snowmobiles.

The sex ratios provide some evidence that firearms may be causing hearing loss: in the 2004 *Qanuippitaa* study, three times more men than women (37% vs. 13%) had hearing impairments in both ears—and the men tended to have significantly poorer hearing in their left ear. This may be because the left ear is more vulnerable (directed towards the front) in right-handed hunters.

Figure 45
Percent of adults (18+) with hearing impairment in one or both ears, Nunavik 2004



Source: Rochette and Blanchet, 2007

4. Discussion and Conclusion

"Acting on this [data] is complicated. These differences in health outcomes are health inequities, and addressing them requires more than buying fancier equipment, selling more gym passes or hiring more doctors."

—Writing Partners, 2011

This chapter focuses on the health issues that are most prominent among Young, Adults and Elders, such as chronic diseases

4.1. Summary of key findings

Nunavik's youth too often face serious difficulties

Although a good proportion of Nunavik youth present key resiliency factors (including high self esteem and cultural pride), the data presented tend to suggest that many face psychosocial problems (issues of mental health and suicide, risky sexual behaviours, drug and alcohol abuse, etc.) that could seriously affect their health and development. It is easy to see that problems of mental health and addiction can make it difficult to do well at school, which can have effects on later job prospects and access to a good standard of living.

Yet, the research studies are unanimous: the programs that do most to improve mental health and coping in adolescence are those that provide intensive support to families from the moment of pregnancy, and continue throughout the child's early years (Irwin, Siddiqi and Hertzman, 2007). As discussed in booklet 2 of the resent series[24] it is now well established that such programs are effective in reducing neglect and developmental problems in early childhood, as well delinquent behaviour in adolescence (American Academy of Pediatrics, 2009; Beauregard, Comeau, and Poissant, 2010). However, to be effective in Aboriginal communities (see Text Box 22), these initiatives must be adapted to fit the local social and cultural context (Ball, 2008). It is very encouraging that programs of this type are currently being pilot-tested in Nunavik.

In addition, programs that promote mental health and social skills in the early years of primary school also hold promise for improving mental health in adolescence: by raising self-esteem, they help prevent mental health problems, school violence, and other behaviours such as smoking (Desjardins et al., 2008; Task Force on Community Preventive Services, 2007; Roberge and Choinière, 2009). However, these programs have not yet been adapted for Aboriginal populations in Québec. Similarly, sex-education programs help to reduce risky sexual behaviours (Chin et al., 2012), and it is a good sign that an adapted program of this type is available in the region.

Text Box 22
Early childhood and education services for Indigenous children: What works

International research has shown that closing the gap in outcomes between Indigenous and non-Indigenous children requires early intervention/education of Indigenous children (from birth), their families, and communities (Irwin, Siddiqi, and Hertzman, 2007). To be effective, these services need to be culturally safe (a key feature that often rests on employing Indigenous workers), and to build on families' strengths (Sims, 2011).

In addition, there is a clear case for supplementing these initiatives with action on the underlying social determinants. This calls for broader interventions to improve the physical and social environment in the community, such as action on housing (Bowes and Grace, 2014).

Adults and elders are increasingly affected by chronic disease

The psychosocial problems seen in Nunavik's youth persist into the adult years, but other conditions also appear at this stage: cancers

[24] Health Profile Nunavik, Young Children and Their families, NRBHSS, 2014.

(especially lung cancer), and diseases of the respiratory and digestive systems. Further, while diabetes rates in the region are not currently excessively high, the epidemic of obesity and diabetes seen elsewhere in the world is unlikely to spare the Inuit. The resulting burden of chronic diseases can be expected to increase the pressure on Nunavik's primary health care services.

Many of these conditions, however, are associated with the loss of the traditional way of life. For this reason, the region should continue to devote serious attention to the design and implementation of culturally coherent prevention and health-promotion initiatives. And since we know that the most successful initiatives are those that create environments conducive to healthy habits (see Text Box 23), Nunavik should continue its efforts in this area in the many institutions that are under regional control. Indeed, healthy public policies only take root when they are relatively coherent with local norms and when resources are invested in their application (Berkman and Kawachi, 2000). This is why indiscriminate enforcement of Québec-wide policies is unlikely to succeed in either the short or long term.

Text Box 23
Creating environments conducive to healthy behavior

The ecological framework recognizes that health behaviors are not the sole result of individual "choices" but rather the consequence of multiple levels of factors, including social and physical contexts (Berkman and Kawachi, 2000). This explains why strategies that modify environments tend to be more effective at changing health behaviours than individual counselling.

Good examples include policies that curb excessive drinking by raising the legal drinking age and limiting sales of alcohol (reducing hours or increasing prices) (Task Force on Community Preventive Services, 2001; Elder et al., 2007). Similarly, a community can promote physical activity by restricting motor vehicle access, creating safe walking paths, and so forth (Heath et al., 2012).

4.2. Addressing Nunavik's health inequities from a social determinants perspective

> "To be healthy in a holistic sense, Inuit require healthy environments, education and employment opportunities, safe and adequate housing, social supports, and hope among their youth."
>
> — Inuit Tapiriit Kanatami, 2004a

Aside from the specific initiatives discussed above, it is essential to improve the living conditions that are at the root of the health issues observed. Actions on the root causes are not only more likely to be sustainable on the long-term, they are also more efficient at preventing multiple conditions at once.

Individual determinants: modifying health behaviours in a way that respects families' circumstances

As mentioned, interventions aimed at specific health behaviours are unlikely to succeed if the underlying social, cultural, and economic determinants are not addressed. In this regard, meaningful commitments to address housing, employment, and intergenerational trauma make as significant a contribution to health as improvement in health services. In particular, the housing situation in Nunavik remains in urgent need of improvement. It is pressing that the governments of Canada and Québec collaborate with Inuit authorities to develop a catch-up program, so that Nunavimmiut can reap the benefits of sufficient and adequate housing.

Community-based determinants: providing culturally safe services

It is clear that health services have helped to improve the life expectancy and quality of life of Nunavimmiut. Nonetheless, it sometimes happens that service providers or the health care system itself come to be seen as a barrier to access (Health Council of Canada, 2012; Smylie, 2000). For this reason, Nunavik's health services must continue their efforts to hire and support Inuit personnel. Health care systems will increasingly

need to move towards providing long-term care for patients with chronic conditions; this will augment the demand for services that are integrated, seamless, and culturally safe (National Clearinghouse on Aboriginal Health, 2011).

> Services will need to evolve to meet emergin challenges and the needs of the population. Recruiting and training Inuit personnel should remain a top priority: the goal is to reach a 70% Inuit workforce over the next 25 years
>
> —Kativik Regional Government and Makivik Corporatiom 2010

Structural determinants: governance, health, and more

Aside from these targeted measures, it is also essential to address the structural factors that affect the health of Inuit populations: historical issues and the allocation of governance powers to health, education, and economic institutions. Inuit identity has suffered severe blows from historical events, and it is important that future developments respect and incorporate Inuit cultural benchmarks and identity (Kativik Regional Government & Makivik Corporation, 2010).

Nunavik already has many strengths in this regard. Much of Inuit language and culture has been preserved; a certain level of land-based economy allows many Inuit to retain a certain level of access to traditional foods; the average educational attainment of Inuit has been increasing over time; and Inuit have some autonomy over planning of their health care services, education, and other important sectors of their regional infrastructures.

The challenge now is to pursue this movement towards greater autonomy and greater investments in the region infrastructures at all levels. The circumstances that underlie Nunavik's health inequities require a multifaceted response that goes beyond the Western notions of overcoming challenges and improving clinical care; it is also bound to rebuilding identity, connections to the land and communities and providing the resources needed for the people of Nunavik to define their own avenues to future population health and well-being.

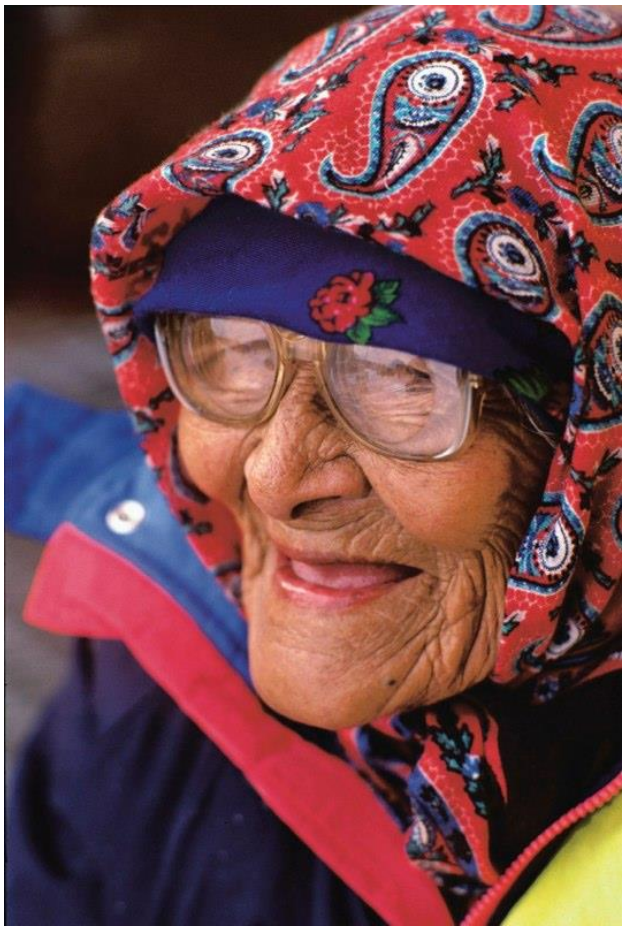


Photo credit: Hans-Ludwig Blohm, Voices of Natives

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Appendix: Statistical tables

Life expectancy at birth, by sex, 2000-2004 and 2005-2009								
	Hudson		Ungava		Nunavik		Québec	
Men	Years	95% CI	Years	95% CI	Years	95% CI	Years	95% CI
2000-2004	58,9	(56,0-61,8)	61,7	(58,1-65,3)	60,5	(58,2-62,8)	76,7	(76,7-76,8)
2005-2009	61,8	(58,85-64,8)	68,9	(65,2-72,5)	64,7	(62,4-67,0)	78,6	(78,5-78,6)
Women								
2000-2004	68,3	(65,3-71,3)	68,7	(65,5-71,9)	68,5	(66,4-70,7)	82,3	(82,3-82,4)
2005-2009	70,0	(67,1-72,9)	67,5	(64,7-70,4)	68,9	(66,9-71,0)	83,5	(83,4-83,5)
Total								
2000-2004	63,4	(61,2-65,5)	65,0	(62,5-67,4)	64,2	(62,6-65,9)	79,6	(79,6-79,7)
2005-2009	65,6	(63,5-67,8)	67,9	(65,6-70,3)	66,5	(65,0-68,1)	81,1	(81,1-81,2)

Sources: MSSS, Service de développement de l'information, demographic estimates and projections (version of January 2010). MSSS Births file. MSSS Deaths file (version of July 2012)

Major causes of mortality, 2005-2009, by sex (Age-adjusted rates per 10,000)								
	Hudson		Ungava		Nunavik		Québec	
Men	Rate	95% CI	Rate	95% CI	Rate	95% CI	Rate	95% CI
All causes combined	n/av	-	n/av	-	68,4	(59,5-78,7)	24,6	(24,4-24,8)
Cancers	n/av	-	n/av	-	10,7*	(7,5-15,2)	7,8	(7,7-7,8)
Diseases of the circulatory system	n/av	-	n/av	-	9,4*	(6,5-13,7)	5,3	(5,2-5,4)
Diseases of the respiratory system	n/av	-	n/av	-	3,5*	(1,9-6,5)	1,6	(1,5-1,6)
Unintentional injury	n/av	-	n/av	-	11,5*	(8,2-16,1)	2,2	(2,1-2,2)
Suicide	n/av	-	n/av	-	19,3	(14,9-25,1)	1,8	(1,7-1,8)
Women								
All causes combined	n/av	-	n/av	-	52,4	(44,4-67,1)	16,6	(16,5-16,7)
Cancers	n/av	-	n/av	-	14,8	(10,9-20,2)	6,2	(6,1-6,2)
Diseases of the circulatory system	n/av	-	n/av	-	3,6*	(1,9-6,7)	3,1	(3,1-3,2)
Diseases of the respiratory system	n/av	-	n/av	-	9,1*	(6,2-13,5)	1,1	(1,1-1,1)
Unintentional injury	n/av	-	n/av	-	5,9*	(3,6-9,6)	0,9	(0,8-0,9)
Suicide	n/av	-	n/av	-	4,0*	(2,2-7,3)	0,5	(0,5-0,5)
Total								
All causes combined	n/av	-	n/av	-	60,9	(54,8-67,7)	20,4	(20,3-20,5)
Cancers	n/av	-	n/av	-	12,8	(10,1-16,1)	6,9	(6,8-6,9)
Diseases of the circulatory system	n/av	-	n/av	-	6,7	(4,8-9,2)	4,2	(4,1-4,2)
Diseases of the respiratory system	n/av	-	n/av	-	6,3*	(4,5-8,8)	1,3	(1,3-1,3)
Unintentional injury	n/av	-	n/av	-	8,8	(6,6-11,6)	1,5	(1,5-1,6)
Suicide	n/av	-	n/av	-	11,9	(9,4-15,1)	1,1	(1,1-1,2)

Rates adjusted to the age structure of Nunavik's population (both sexex combined) in 2006
* Coefficient of variation between 16,66 % and 33,33 %. Interpret with caution.
n/av: not available
Sources: MSSS, Service de développement de l'information, demographic estimates and projections (version of January 2010). MSSS Births file. MSSS Deaths file (version of July 2012)

Disability-free life expectancy at birth, by sex, 2006								
	Hudson		Ungava		Nunavik		Québec	
	Years	95% CI	Years	95% CI	Years	95% CI	Years	95% CI
Men	49,7	(46,8 - 52,7)	54,4	(50,1 - 58,6)	51,2	(48,8 - 53,6)	66,5	(66,4 - 66,5)
Women	55,6	(53,0 - 58,2)	53,5	(50,6 - 56,4)	54,4	(52,4 - 56,4)	68,3	(68,2 - 68,3)
Total	52,5	(50,4 - 54,5)	52,3	(49,6 - 55,0)	52,7	(51,2 - 54,2)	67,4	(67,3 - 67,4)
Source: Infocentre de santé publique du Québec.								

Major causes of hospitalisation, age-adjusted rates per 10,000 for the fiscal years 2007-08 to 2011-12 (acute care hospitals, by principal diagnosis)								
	Hudson		Ungava		Nunavik		Québec	
	Rate	95% CI	Rate	95% CI	Rate	95% CI	Rate	95% CI
Men								
Violence	68,3	(57-82)	39,5	(30-52)	55,9	(48-65)	2,3	(2-2)
Conditions originating in the perinatal period	63,5	(53-76)	96,3	(81-114)	76,7	(68-87)	125,3	(125-126)
Infectious and parasitic diseases	52,0	(42-64)	80,8	(66-98)	63,9	(56-74)	19,9	(20-20)
Injury and poisoning	277,1	(253-303)	199,5	(176-226)	244,0	(227-262)	48,9	(49-49)
Diseases of the circulatory system	74,7	(63-89)	120,8	(103-142)	93,9	(84-105)	50,8	(51-51)
Diseases of the digestive system	257,3	(234-283)	205,6	(182-232)	235,0	(218-253)	53,6	(53-54)
Diseases of the genito-urinary system	31,3	(24-41)	47,2	(37-61)	38,1	(32-46)	17,9	(18-18)
Diseases of the respiratory system	349,5	(323-378)	271,9	(245-302)	317,7	(298-338)	73,6	(73-74)
Musculoskeletal and connective tissue	46,0	(37-57)	25,0*	(18-35)	37,2	(31-45)	18,7	(19-19)
Congenital and chromosomal abnormalities	22,1	(16-30)	21,4*	(15-31)	21,9	(17-28)	22,4	(22-23)
Suicide	25,8	(19-35)	11,9*	(7-20)	19,9	(15-26)	2,1	(2-2)
Unintentional injury	176,4	(157-198)	131,5	(113-153)	157,6	(144-173)	40,7	(40-41)
Cancers	34,1	(26-44)	10,1*	(6-17)	23,7	(19-30)	23,9	(24-24)
All diagnoses combined	1508,3	(1452-1567)	1397,1	(1334-1463)	1460,8	(1418-1504)	522,9	(522-524)
Women								
Violence	58,2	(47-71)	30,0	(22-41)	45,4	(38-54)	0,5	(0,4-0,5)
Conditions originating in the perinatal period	67,8	(57-80)	83,8	(69-101)	74,3	(65-84)	113,6	(113-114)
Infectious and parasitic diseases	56,5	(46-69)	66,2	(53-82)	60,7	(52-70)	19,8	(20-20)
Injury and poisoning	263,7	(240-290)	177,2	(155-203)	226,2	(209-245)	34,0	(34-34)
Diseases of the circulatory system	42,3	(33-54)	85,3	(70-104)	60,8	(52-71)	29,1	(29-29)
Diseases of the digestive system	304,0	(278-333)	227,4	(202-256)	271,1	(252-291)	52,4	(52-53)
Diseases of the genito-urinary system	119,1	(103-137)	113,4	(96-134)	116,6	(105-130)	34,7	(34-35)
Diseases of the respiratory system	396,8	(368-428)	335,0	(303-370)	368,6	(347-392)	57,0	(57-57)
Musculoskeletal and connective tissue	50,1	(40-62)	37,7	(28-50)	45,2	(38-54)	18,0	(18-18)

Major causes of hospitalisation, age-adjusted rates per 10,000 for the fiscal years 2007-08 to 2011-12 (acute care hospitals, by principal diagnosis) (cont'd)								
	Hudson		Ungava		Nunavik		Québec	
	Rate	95% CI	Rate	95% CI	Rate	95% CI	Rate	95% CI
Congenital and chromosomal abnormalities	15,8*	(11-23)	29,9	(22-41)	21,6	(17-28)	18,4	(18-19)
Suicide	42,6	(34-54)	23,4*	(16-34)	34,7	(28-42)	2,9	(3-3)
Unintentional injury	153,9	(136-174)	102,3	(86-122)	131,6	(119-146)	25,4	(25-26)
Cancers	39,8	(31-51)	25,2*	(17-37)	32,3	(26-40)	22,9	(23-23)
All diagnoses combined	2182,0	(2111-2255)	2140,6	(2059-2225)	2158,4	(2105-2213)	751,1	(750-752)
Total								
Violence	63,4	(55-73)	34,7	(28-43)	50,8	(45-57)	1,4	(1,4-1,5)
Conditions originating in the perinatal period	65,6	(58-74)	90,1	(79-102)	75,5	(69-82)	119,6	(119-120)
Infectious and parasitic diseases	54,2	(47-63)	73,8	(64-85)	62,4	(56-69)	19,9	(20-20)
Injury and poisoning	270,7	(253-289)	188,1	(172-206)	235,1	(223-248)	41,7	(42-42)
Diseases of the circulatory system	59,3	(52-68)	104,2	(92-118)	78,1	(71-86)	39,5	(39-40)
Diseases of the digestive system	279,8	(262-299	216,5	(199-236)	252,4	(240-266)	52,9	(53-53)
Diseases of the genito-urinary system	73,7	(65-84)	80,2	(70-92)	76,5	(70-84)	26,0	(26-26)
Diseases of the respiratory system	371,7	(352-392	300,0	(279-323)	341,2	(327-356)	65,4	(65-66)
Musculoskeletal and connective tissue	48,0	(41-46)	31,4	(25-39)	41,2	(36-47)	18,4	(18-19)
Congenital and chromosomal abnormalities	19,1	(15-24)	25,5	(20-32)	21,8	(18-26)	20,4	(20-21)
Suicide	34,0	(28-41)	17,6	(13-24)	27,1	(23-32)	2,5	(2-3)
Unintentional injury	165,5	(152-180)	116,5	(104-131)	144,7	(135-155)	33,4	(33-34)
Cancers	36,8	(31-44)	16,9	(12-23)	27,8	(24-32)	23,2	(23-23)
All diagnoses combined	1834,0	(1789-1880)	1758,5	(1707-1811)	1799,6	(1766-1834)	633,4	(633-634)

Rates adjusted to the age structure of Nunavik's population (both sexex combined) in 2006
* Coefficient of variation between 16,66 % and 33,33 %. Interpret with caution.
Sources: MSSS, MED-ÉCHO file. MSSS, Service de développement de l'information, demographic estimates and projections (version of April 2012).

Percent of the population age 18 and over diagnosed with specific chronic conditions, Nunavik Inuit, 2004 (%)								
	Hudson		Ungava		Nunavik		Québec	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Myocardial infarction	3,0 *	(1,6- 5,2)	n.p.**	-	2,3 *	(1,4- 3,7)	n/av	-
Other heart disease	7,5	(5,4-10,2)	5,5 *	(3,6- 8,0)	6,7	(5,1- 8,5)	n/av	-
Heart attack	5,3 *	(3,4- 7,8)	2,5 *	(1,4- 4,2)	4,1	(2,9- 5,6)	n/av	-
Hypertension	16,7	(13,6-20,2)	16,7	(13,3-20,5)	16,7	(14,5-19,0)	n/av	-
High cholesterol	7,5	(5,4-10,0)	8,5	(6,2-11,3)	7,9	(6,4- 9,6)	n/av	-

* Coefficient of variation between 16,66 % and 33,33 %. Interpret with caution.
** n.p. Figure not presented, as its coefficient of variation exceeds 33,33 %.
n/av: not available
Source: *Qanuippitaa* survey of the health of Nunavik Inuit, 2004.

Proportion of Nunavik Inuit 18+ with a hearing impairment, 2004						
	Normal		Unilateral impairment		Bilateral impairment	
Category	%	95% CI	%	95% CI	%	95% CI
Nunavik	56	53.1-58.8	19,3	16.9-21.7	24,8	22.4-27.1
Hudson	53,1	49.0-57.2	22,5	19.1-26.0	24,4	20.9-27.8
Ungava	59,7	55.4-64.1	15	12.1-18.3	25,3	21.4-29.1
Men	45,6	41.2-49.9	17,8	14.5-21.5	36,6	32.8-40.4
Women	66,7	62.9-70.6	20,8	17.3-24.3	12,5	9.9-15.4
18 - 29 yrs	74,7	70.3-79.1	17	13.3-21.3	8.2 *	5.7-11.5
30 - 49 yrs	53,4	48.6-58.1	23,5	19.2-27.8	23,1	19.2-27.1
50+ yrs	25,3	19.3-32.2	14.4*	9.7-20.1	60,3	54.3-66.4

Caution: most of the differences in this table do not reach statistical significance.
* Coefficient of variation between 16.66 and 33.33%: interpret with caution.
Source: 2004 *Qanuippitaa* survey of Inuit health in Nunavik

Percent of Nunavik's Inuit population age 18-74 that is overweight or obese, 2004								
	Hudson		Ungava		Nunavik		Québec	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Overweight	26,4	(22,6-30,2)	34,2	(29,6-38,7)	29,8	(26,8-32,7)	n/av	-
Obese (30 ≥ BMI <= 34)	15,8	(12,6-19,3)	21,5	(17,3-25,7)	18,2	(15,6-20,9)	n/av	-
Class II and III obesity (BMI ≥ 35)	10,2	(7,5-13,6)	9,8	(7,1-13,1)	10,0	(8,0-12,1)	n/av	-

n/av: not available
Source: *Qanuippitaa* survey of the health of Nunavik Inuit, 2004.

Cancer incidence over time (age-adjusted rates per 10,000)								
	Hudson		Ungava		Nunavik		Québec	
Men	Rate	95% CI	Rate	95% CI	Rate	95% CI	Rate	95% CI
1984-1988	n/av	-	n/av	-	24,3*	(16,6-35,7)	15,4	(15,2-15,6)
1989-1993	n/av	-	n/av	-	17,5*	(11,5-26,5)	15,5	(15,3-15,6)
1994-1998	n/av	-	n/av	-	8,2*	(4,7-14,2)	14,6	(14,5-14,8)
1999-2003	n/av	-	n/av	-	17,8	(13,1-24,2)	14,9	(14,7-15,0)
2004-2008	n/av	-	n/av	-	15,1	(11,1-20,5)	15,0	(14,9-15,2)
Women								
1984-1988	n/av	-	n/av	-	30,4*	(21,0-44,0)	14,9	(14,7-15,0)
1989-1993	n/av	-	n/av	-	20,8*	(14,2-30,5)	15,0	(14,8-15,2)
1994-1998	n/av	-	n/av	-	15,0*	(10,0-22,5)	15,3	(15,1-15,5)
1999-2003	n/av	-	n/av	-	23,2	(17,2-31,3)	16,2	(16,0-16,3)
2004-2008	n/av	-	n/av	-	23,6	(18,2-30,5)	16,8	(16,6-17,0)
Total								
1984-1988	n/av	-	n/av	-	27,1	(20,8-35,4)	15,0	(14,9-15,1)
1989-1993	n/av	-	n/av	-	19,2	(14,5-25,4)	15,1	(15,0-15,2)
1994-1998	n/av	-	n/av	-	11,5	(8,3-15,9)	14,8	(14,7-15,0)
1999-2003	n/av	-	n/av	-	20,4	(16,5-25,3)	15,4	(15,3-15,5)
2004-2008	n/av	-	n/av	-	19,3	(15,8-23,5)	15,8	(15,7-15,9)

Rates adjusted to the age structure of Nunavik's population (both sexex combined) in 2006
Source: Infocentre de santé publique du Québec.

Cancer incidence by site, Nunavik, 2004-2008: Average annual number of cases, and age-adjusted rate

	Cause	Average number per year	Adjusted rate (per 10 000)	CV	95% CI Lower bound	95% CI Upper bound
Men	Total	12	15,1		11,1	20,5
	Digestive	4	5,0	*	3,0	8,5
	Respiratory	4	4,2	*	2,5	6,9
	Oral cavity	1	n.p.			
Women	Total	15	23,6		18,2	30,5
	Digestive	3	4,0	*	2,2	7,4
	Respiratory	5	7,2	*	4,6	11,1
	Oral cavity	1	n.p.			
	Breast	2	n.p.			
	Female genital organs[1]	3	6,4		5,0	8,0
Total	Total	27	19,3		15,8	23,5
	Digestive	6	4,6	*	3,1	6,8
	Respiratory	9	5,7	*	4,1	7,9
	Breast	2	n.p.			
	Oral cavity	2	1,8	*	1,0	3,5

Excludes certain skin cancers, but includes *in situ* cancers of the bladder.
Rates have been adjusted to the total population of Nunavik in 2006.
* = Coefficient of variation between 16.66% and 33.33%: interpret with caution.
n.p. = not provided because the coefficient of variation exceeds 33.33%
Sources: Infocentre de santé publique du Québec; MSSS estimates and demographic projections (version of January 2010); MSSS cancer file.

Cancers of the respiratory system: annual average numbers and age-adjusted rates, Nunavik and Québec, 2004-2008

Region	Sex	Average number per year	Rate (per 10,000)	CV	95% CI Lower bound	95% CI Upper bound	Comparison with Nunavik
Nunavik	Males	4	4,2	*	2,5	6,9	
	Females	5	7,2	*	4,6	11,1	
Québec total	Males	4555	2,6	1,0	2,5	2,6	ns
	Females	3206	2,1	1,2	2,0	2,1	(-)

Rates adjusted to the total population of Nunavik in 2006
* indicates a Coefficient of Variation between 16.66 and 33.33%: interpret with caution.
(-) indicates a rate significantly below Nunavik's, while ns indicates that a difference is not statistically significant.
Source: Infocentre de santé publique du Québec

Cancers of the digestive system: adjusted incidence rates, Nunavik and Québec total, 1999-2003 and 2004-2008					
			95% CI		
Region	**Period**	**Adjusted rate (per 10,000)**	**Lower bound**	**Upper bound**	**Significance (vs Nunavik)**
Nunavik	1999 - 2003	5,7	3,8	8,5	
	2004 - 2008	4,6	3,1	6,8	
Québec total	1999 - 2003	2,5	2,5	2,6	(-)
	2004 - 2008	2,5	2,5	2,6	(-)
Rate adjusted to the total population of Nunavik in 2006 Source: Infocentre de santé publique du Québec					

Infectious diseases								
	Hudson		**Ungava**		**Nunavik**		**Québec**	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
% of persons 15+ who used a condom at their last sexual intercourse, Nunavik Inuit, 2004	35,3	(30,2-40,4)	33,2	(27,9-38,6)	34,4	(30,8-38,0)	n/av	-
Average number of hospitalisations per year for specific infectious diseases, fiscal years 2007-08 to 2011-12 (all Nunavik residents)	**Avg number**		**Avg number**		**Avg number**		**Avg number**	
Pertussis	1		0		1,0		n.p.	
C. difficile-associated enteritis	0,8		1,6		2,4		n.p.	
Genital chlamydia	0		0,8		0,8		n.p.	
Streptococcus pneumoniae infection	2,6		2,8		5,4		n.p.	
Influenza	9,2		3,6		12,8		n.p.	
Pneumonia	85,4		62,8		148,2		n.p.	
Tuberculosis	8,6		9,6		18,2		n.p.	

n/av: not available
** n.p. Figure not presented, as its coefficient of variation exceeds 33,33 %.
Sources: *Qanuippitaa* survey of the health of Nunavik Inuit, 2004. Infocentre de santé publique du Québec.

Average number of hospital admissions per year for various types of unintentional injury: Nunavik, 2007-08 to 2011-12			
	Average number per year		
	Males	Females	Total
Unintentional injuries (ICD-10 CA = V01-X59, Y85-Y86)	94	74	168
Motor vehicle crashes (ICD-10 CA = V02-V04 (.1-.9), V09.2, V09.3, et al.)	9	11	20
- pedestrians (ICD-10 CA = V02-V04 (.1, .9), V09.2, V09.3)	4	5	9
- motor vehicle occupants (ICD-10 CA = V30-V79 (.4-.9), V83-V85 (.0-.3))	3	3	6
Off-road vehicles (ICD-10 CA = V86)	27	23	50
Drowning (ICD-10 CA = V90, V92, W65-W74)	0	0	0
Fire and burns (ICD-10 CA = X00-X09, X10-X19)	2	2	3
Falls (ICD-10 CA = W00-W19)	23	21	43
Accidental poisoning (ICD-10 CA = X40-X49)	4	3	7
Foreign objects (ICD-10 CA = W44)	2	3	5
Struck by or against objects, compression injuries (ICD-10 CA = W20-W23, W50-W52)	6	2	7
Cutting or piercing instruments (ICD-10 CA = W25-W29, W45, W46, W60)	3	1	4
Extremes of cold (ICD-10 CA = W93, X31)	2	1	3
Unintentional firearm injuries (ICD-10 CA = W32-W34)	2	0	2
Source: Infocentre de santé publique du Québec			

Risk factors for specific transportation injuries, Nunavik Inuit, 2004 (%)								
	Hudson		Ungava		Nunavik		Québec	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
People who arrange to be accompanied by others when riding snowmobiles outside the village	71,9	(67,8-75,9)	78,8	(75,1-82,5)	74,8	(72,1-77,6)	n/av	-
People who wear PFDs when boating	19,2	(15,7-23,0)	31,9	(27,3-36,5)	24,5	(21,7-27,4)	n/av	-
People who report having driven a motor vehicle while impaired	34,1	(29,9-38,3)	48,6	(44,1-53,1)	40,4	(37,3-43,5)	n/av	-
n/av: not available Source: *Qanuippitaa* survey of the health of Nunavik Inuit, 2004.								

Average number of hospitalizations per year for unintentional and intentional injuries, by age and sex: Nunavik, fiscal years 2007-08 to 2011-12				
		Average number of hospitalizations per year		
Sex	Age group	Unintentional injuries	Suicide	Violence
Men	0-1	1,8	0	0,2
	1-14	25,4	1,4	1,6
	15-24	25,8	5,8	9,6
	25-29	24,6	4	17,8
	45-64	12,4	0,4	3,6
	65+	3,6	0,2	0,2
	All ages	93,6	11,8	33
Women	0-1	1,8	0	0,6
	1-14	20,2	1,8	0,6
	15-24	20	11	6,6
	25-29	15,4	6	14,6
	45-64	8,4	0,8	3,2
	65+	7,8	0	0,2
	All ages	73,6	19,6	25,8
Total	0-1	3,6	0	0,8
	1-14	45,6	3,2	2,2
	15-24	45,8	16,8	16,2
	25-29	40	10	32,4
	45-64	20,8	1,2	6,8
	65+	11,4	0,2	0,4
	All ages	167,2	31,4	58,8
Source: MSSS, MED-ÉCHO file				

Age-adjusted hospitalization rates (per 10,000) for violence: Nunavik over time, and Nunavik compared to other regions in 2007-2012							
		Males		Females		Total	
Year	Region	Rate	95% CI	Rate	95% CI	Rate	95% CI
1991-96	Nunavik	26,5	20.3 - 34.5	24,6	18.5 - 32.6	25,5	21.0 - 31.0
1996-2001		25,9	20.2 -33.3	22	16.6 - 29.1	24	19.9 - 29.0
2001-2006		33,2	27.0 - 41.0	34,7	28.2 - 42.9	34	29.3 - 39.4
2007-2012	Nunavik	55,9	48.0 - 65.1	45,4	38.2 - 54.0	50,8	45.3 - 56.9
	James Bay Cree region	32,7	27.4 - 39.1 (-)	11,6	8.6 - 15.7 (-)	22,3	19.2 -26.0 (-)
	Québec total	2,3	2.2 - 2.4 (-)	0,5	0.4 - 0.5 (-)	1,4	1.4 - 1.5 (-)
(-) indicates a statistically significant difference as compared to Nunavik in 2007-2012 Rate adjusted to the total population of Nunavik in 2006. Sources: MED-ÉCHO files and estimates and projections from the MSSS *Service de développement de l'information* (version of April 2012)							

Indicators of mental health, Inuit population 15 and over, 2004 (%)								
	Hudson		Ungava		Nunavik		Québec	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
High levels of psychological distress according to the Kessler K6 scale	12,9	(12,5-13,3)	13,3	(12,9-13,6)	13,0	(12,8-13,3)	n/av	-
Ever considered suicide	39,4	(35,5-43,3)	29,4	(25,4-33,4)	35	(32,2-37,8)	n/av	-
Considered suicide in past 12 months	14,8	(12,0-17,7)	13,4	(10,5-16,6)	14,2	(12,1-16,3)	n/av	-
Ever attempted suicide	23,7	(20,6-26,7)	17	(13,7-20,7)	20,8	(18,5-23,0)	n/av	-
Attempted suicide in past 12 months	7,8	(5,7-10,4)	5,4*	(3,6-7,7)	6,7	(5,3-8,4)	n/av	-

* Coefficient of variation between 16,66 % and 33,33 %. Interpret with caution.
n/av: not available
Source: *Qanuippitaa* survey of the health of Nunavik Inuit, 2004.

Average score on the Kessler K6 scale of psychological distress, by age, sex, and sub-region: Nunavik Inuit, 2004			
Category	**Average score**	**95% CI**	**Significance levels**
15-29 yrs	14,2	13.7-14.6	Reference category
30-49 yrs	13,2	127-13.6	-
50+ yrs	9,9	9.4-10.4	-
Hudson	12,9	12.5-13.3	Reference category
Ungava	13,3	12.9-13.6	ns
Men	12,3	11.9-12.6	Reference category
Women	13,9	13.5-14.2	+
Nunavik	13,0	12.8-13.3	

The K6 scale asks respondents "During the past 30 days, how often did you…"

1) feel nervous?
2) feel hopeless?
3) feel restless and fidgety?
4) feel so depressed that nothing could cheer you up?
5) feel that everything was an effort?
6) feel worthless?

The questionnaire was scored by summing the items, with scores ranging from a low of six to a high of 30. As a rough guide, scores of 6-12 indicate a low level of distress, 13-18 moderate distress, and 19-30 high levels of distress such as would be found in clinical samples of people with major depressive disorder.

Source: 2004 *Qanuippitaa* survey of Inuit health in Nunavik

Indicators of oral health, Nunavik Inuit, 2004 (%)								
	Hudson		**Ungava**		**Nunavik**		**Québec**	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
People who have difficulty chewing meat	11,5	(9,0-13,9)	6,0*	(4,2-8,4)	9,1	(7,6-10,9)	n/av	-
People who have difficulty chewing an apple	12,3	(9,7-15,3)	6,8*	(4,6-9,5)	9,9	(8,2-11,9)	n/av	-

* Coefficient of variation between 16,66 % and 33,33 %. Interpret with caution.
n/av: not available
Source: *Qanuippitaa* survey of the health of Nunavik Inuit, 2004.

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RÉGIE RÉGIONALE DE LA SANTÉ ET DES SERVICES SOCIAUX DU NUNAVIK
NUNAVIK REGIONAL BOARD OF HEALTH AND SOCIAL SERVICES