Health Profile

NUNAVIK

Young Children and Their Families

— 2014 —

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

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

Québec

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Dispensaire
UMIUJAQ

Director's Message

Québec's *Public Health Act* assigns regional directors the task of monitoring the health of the population of their region on an ongoing basis. The resulting health profile is designed to inform local decision-makers, health and social services workers, and the general public about the condition of people's health. It also serves to support decision-making and guide intervention plans and programs (MSSS, 2004).

Themes were decided on in consultation with prospective Health Profile users, and are bundled into three publications: (1) "Demographic and Socioeconomic Conditions" (NRBHSS, INSPQ, 2011); (2) "Health Profile: Young Children and Their Families"; and (3) "Health Profile: Youth, Adults, and the Elderly" (NRBHSS, INSPQ, 2015). This report is the second in this series.

This report adopts a holistic approach. Not only does it provide details about the current health status of young children and their families, it also highlights ways to promote the adoption of healthy behaviours.

I'll conclude by sharing an inspiring passage that seems to me to speak particularly to the Inuit situation. It relates to young children and the importance of their mothers in building towards a bright and promising future:

> *First, children are the future of society, and their mothers are guardians of that future. Mothers are much more than caregivers and homemakers, undervalued as these roles often are. They transmit the cultural history of families and communities along with social norms and traditions. Mothers influence early behaviour and establish lifestyle patterns that not only determine their children's future development and capacity for health, but shape societies.* (WHO, 2005a)

Preamble

This report is about the health status of young children[1] and their families in Nunavik. Our last report on the health of Nunavik children came out in 2003 and gave an account of the disproportionately heavy health burdens children in Nunavik bear relative to other children in Québec (Pageau et al., 2003). So where do things stand today? How does the unique situation of the region influence young children's lives and health? And what can be done to improve their health?

These questions are approached in the Health Profile by seeing early childhood[1] in terms of the health and development of tomorrow's adults. We describe the steps taken in developing a *framework for the determinants of young children's health in Nunavik*. Such a framework helps us understand the overall situation of young children and their families and also guides our selection of the indicators we include in this health profile. In the subsequent section, we clarify certain methodological points helpful for understanding our results. Then we present the results according to the framework of the determinants of young children's health in Nunavik. Final sections will address the main findings of the Health Profile and present some promising possibilities for intervention.

The report is aimed at readers in the field of health as well as those in education, the media, and the general public. To make the information accessible to the widest possible audience, we follow as much as possible the United Nations guidelines for readable presentation of text, tables, and graphics (UN, 2009b). We have included a number of text boxes with additional information where this seemed appropriate. This allowed us to reduce statistics in the main text to a minimum and refer interested readers to the applicable tables and graphs for further detail.

Once again, we hope that this report will underscore the vital role played by those who work, directly or indirectly, in providing support for Nunavik families. May this document inspire them to continue their efforts at every level in order to better meet the needs of the children who are, after all, Nunavik's future.

[1] In this report, the expressions *young children* and *early childhood* both refer to children under 5 years of age.

Key Messages

Understanding what determines the health of Nunavik families: Seeing things in context

A child's environment and experiences, from the womb to the end of early childhood, are vitally important to his or her development. Their effects are cumulative and continue all through life. Most of the health inequities between Inuit and other Québec families are the result of differences in their respective life situations. Inuit families are subject to the cumulative effects of such determinants of health as colonization status, poverty, unemployment, food insecurity, and overcrowded housing.

Demographic trends: The number of young children is growing rapidly

Nunavik is experiencing a major population boom caused by its high birth rate. In 2011, the proportion of children 5 and under in Nunavik was more than twice that of the rest of Québec.

Family living conditions: Many families face challenging conditions

- Many Nunavik families live in poverty: more than a quarter had after-tax incomes under $10,000 in 2006.
- The cost of living in Nunavik is very high, especially food costs, which are 57% higher than they are elsewhere in Québec. Nunavik families are also larger and so have more mouths to feed. Food insecurity is widespread in the region, with close to a third of children 5 and under having experienced hunger.
- The degree of crowding in Nunavik is alarming: in some communities close to half of all housing is overcrowded. This means that over half of all children 6 and under are growing up in overcrowded conditions, exposing them to higher risks of diseases such as the flu and tuberculosis and of problems at school, physical violence, and sexual abuse.

Community infrastructure: Proper services for pregnant women and families are developing

- More than six women in ten must still leave their families to give birth. Giving birth outside the community is inherently risky for both the mother and her children, particularly to psychological and social health. It is also very costly. Fortunately the number of women able to give birth in their home communities, attended by midwives, has been growing steadily over the past 20 years. Midwifery is well established on the Hudson Bay coast, so that fewer women have to leave their communities to give birth than is the case on the Ungava coast, where the practice is currently less developed.
- Childcare in Nunavik is generally available at low cost. Facilities promote cultural continuity by teaching Inuktitut and emphasizing Inuit culture. A large proportion of Nunavik children are in daycare, and daycare services are recognized as protective factors as well as being beneficial for at-risk children.

Women's health status: The reflection of a society and culture in rapid transition

- Nearly three quarters of Nunavik women smoke daily and unfortunately more than half continue to do so during pregnancy.
- Although the proportion of drinkers in Nunavik is comparable to that of Québec as a whole, binge-drinking episodes are twice as frequent. Also, close to half the women in Nunavik report drinking alcohol during their last pregnancy. There are a number of barriers to proper nutrition for pregnant women, including the high cost of food. As a result, more than half of all pregnant women suffer from iron deficiencies and over a third are anemic.
- For a number of years, the incidence of chlamydia has been much higher among women than men. Gonorrhea too has followed a similar trend since 2011, increasing risks for women's overall and reproductive health. Lastly, in 2004 more than half of all women reported having been the victim of physical violence as an adult, with their spouse or former spouse the primary perpetrator in the majority of cases.

Children's health status: The urgent need to address numerous inequities

- Perinatal and infant mortality rates in Nunavik continue to be significantly higher than elsewhere in Québec, including those in the Cree Territory of James Bay. However, rates show little variation between the two coastlines and thus cannot be attributed to the practice of midwifery. Incidence of low birth weight is essentially the same as elsewhere in the province.
- The rate of hospitalization for children under age 1 is very high in Nunavik, particularly for respiratory illnesses. This is very likely due to overcrowded housing. The most common causes of hospitalization for children age 1 to 4 are conditions affecting the respiratory and digestive systems (mainly dental problems in the latter case). Nunavik children are also highly susceptible to ear infections, causing a high proportion of them to experience hearing loss at an early age. Injuries and poisoning that result in hospitalization also remain far too common.
- Immunization coverage of Nunavik children seems sufficient, with only a few cases of vaccine-preventable diseases reported each year. Issues of negligent abuse are frequent and reports to the Department of Youth Protection have increased constantly in recent years. In 2004 a survey of adults found that one woman in two and one man in five reported having been sexually abused as a child.

Acting on all the social determinants of health: Adopting a comprehensive approach

- Improving the health of small children and their families calls for a multi-faceted approach addressing all the social determinants of health, particularly those relating to living conditions (e.g., housing, income, and food security). To properly address these complex problems, the actions selected must be intersectoral and allow the target population to take an active role in identifying issues and solutions.
- Along with medium- and long-term measures, short-term actions must also continue in order to meet the glaring needs of individuals dealing with such serious issues as alcohol and drug abuse and domestic violence. These services must also adhere to cultural safety principles if they are to be effective in providing support for families, reflecting traditional Inuit values and approaches while always recognizing and trusting that strength and resilience that the Inuit of Nunavik demonstrate each and every day.

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List of Abbreviations

ASIST:	Analyse de la santé et de ses inégalités sociales et territoriales
PCB:	Polychlorinated biphenyl
JBNQA:	The James Bay and Northern Quebec Agreement
CDPJQ:	Commission des droits de la personne et des droits de la jeunesse du Québec
CLSC:	Centre local de services communautaires
CSBE:	Health and Welfare Commissioner
CV:	Coefficient of variation
NHS:	National Household Survey
FASD:	Fetal Alcohol Spectrum Disorder
INSPQ :	Institut de la santé publique du Québec
STI:	Sexually transmitted infection
RD:	Reportable diseases
WHO:	World Health Organization
NRBHSS:	Nunavik Regional Board of Health and Social Services
FAS:	Fetal alcohol syndrome
CPS:	Canadian Paediatric Society
AIDS:	Acquired Immune Deficiency Syndrome
SOGC :	Society of Obstetricians and Gynaecologists of Canada
CTJB:	Cree Territory of James Bay
UNICEF:	United Nations Children's Fund
HIV:	Human Immunodeficiency Virus
HPV:	Human Papilloma Virus
RSV:	Respiratory Syncytial Virus

Introduction

Investing in early childhood for lifelong benefits

The prenatal and early childhood periods are critical to human development. Children's chances of developing to their full potential and leading a fulfilling life vary greatly depending on where they are born and grow up (WHO, 2009). Their health begins to be determined well before birth, by their social and economic context. And the early years of development will continue to exert a decisive influence on their mental and physical health throughout their lives.

Research in recent decades has consistently found that from the onset of pregnancy to the end of early childhood, children's environments have vital repercussions on their development. Healthier, more stimulating, and less stressful environments lead to better development outcomes in every sphere, from physical health to emotional and social wellbeing (Health and Welfare Commissioner [CSBE], 2011; Williams et al., 2009; Irwin et al., 2007). This does not mean that supportive measures implemented later in the life are ineffective, but the costs associated with them will be much higher.

Policies and programs designed to support early childhood are crucial, and their benefits to the health of children and their families have been widely demonstrated (Beauregard et al., 2010; Beach et al., 2009; Macintyre, 2007). There is also an emerging consensus among economists that investing in early childhood is financially sound, and delivers lifelong returns several times greater than the amounts initially invested (CEBS, 2011; Trefler, 2009; Irwin et al., 2007). It comes as no surprise, then, that early childhood measures are recommended by a large number of child protection institutions including the American Pediatrics Academy of Pediatrics, the Canadian Paediatric Society, the United Nations Children's Fund (UNICEF), and the World Health Organization (WHO; AAP, 2009; CPS, 2012; UNICEF, 2008; WHO, 2009; WHO, 2007).

> *Research now shows that many challenges in adult society—mental health problems, obesity… heart disease… —have their roots in early childhood.*
>
> World Health Organization Commission on Social Determinants of Health (2007)

The urgent need to take action on behalf of Canada's Aboriginal children

In its biennial reports on the health of Canadian children, the Canadian Paediatric Society (CPS) regularly notes that although it possesses a strong body of knowledge on the importance of acting early, Canada is among the industrialized nations that invest the least in early childhood (CPS, 2012). In fact, Canada ranks last among industrialized nations in support for family policies and early childhood development (UNICEF, 2010).

The situation is particularly alarming with regard to Aboriginal children in Canada. UNICEF also highlighted this situation, dedicating in 2009 an entire supplement of its annual *State of the World's Children Report* to the state of Aboriginal children in Canada (UNICEF, 2009). Aboriginal families in Canada are fundamentally disadvantaged in comparison to the rest of society in almost every sphere: health, education, the economy, etc. (O'Donnell et al., 2011; Smylie et al., 2009; Adelson, 2005). Unfortunately, Nunavik families are no exception (IKT 2008; Anctil et al., 2008; Peters, 2012).

> A little girl born in Nunavik in 2005 can expect to live to around 69, while a girl born elsewhere in Québec in the same year will probably live to be 83—fifteen years longer (Appendix 3, Data Table, RSS and Nunavik Coasts, Québec.)

In a major report on health equality, the WHO Commission on Social Determinants of Health has stressed that health inequities are not a matter of chance. Rather, they are due, in large part, to family living conditions and health care services, which are in turn the result of political, social, and economic forces rooted in a collective history of colonization, assimilation, and marginalization (Text Box 1) (WHO, 2009).

Context-based perspectives: A cornerstone of a healthy population

A significant proportion of the health inequalities between Inuit and other Québec families result from differences in the contexts of their lives. It is critical, then, that these contextual elements be taken into account when planning actions to improve the health status of the Inuit; otherwise, the effectiveness and even the point of the action may be undermined.

This report adopts a contextual approach. It aims not only to paint a picture of the health of young children and families in Nunavik but also to identify the underlying causes of the disparities it documents. For this reason we will present the results only after a fairly detailed description of determinants influencing the health of Aboriginal children today and the broader framework they are part of. Determinants of health are the cornerstone of this report, and will be discussed throughout. They have guided the selection of indicators and presentation of results, and they will serve to identify potential actions to reduce or eliminate the root causes of unequal health outcomes.

Text Box 1
Present-Day Impacts of Colonization on the Health and Wellness of Aboriginal Families

Canada's colonial policies seriously weakened Aboriginal social, community, and family support structures. They continued over several generations and still impact almost every aspect of the lives of Aboriginal children, adults, and elders.

Impacts on structural determinants: To this day, certain government policies negatively impact community, social, and political infrastructures, breeding poverty and marginalizing families. Effects include land expropriation, environmental degradation, and the cultural and political exclusion—even oppression—of indigenous peoples

Impacts on family life: Economic disadvantages, discrimination, unequal access to services, and social exclusion are some of the cumulative effects of historical and contemporary factors that affect almost every facet of individual and family life.

Direct impacts on family health: Canadian government policy (including residential schools and forced adoptions, notably in the 1960s) was developed with the explicit aim of assimilating the Aboriginal population. Forcible removal of Aboriginal children from their families and communities caused significant trauma to the generations that experienced it. This practice put a halt to the transmission of cultural practices between the generations. Such measures not only affected the short- and long-term health of Aboriginal people (e.g., malnutrition, tuberculosis, substance abuse, depression) but also their parenting skills and overall ability to build healthy, constructive relationships with loved ones.

In other words, too often, families are held responsible for situations rooted in policies over which they had little if any control.

Source: National Collaborating Centre for Aboriginal Health, 2009–2010
Reconciliation in Aboriginal Child Welfare and Child Health

1. Improving Health for Nunavik's Children: From Understanding to Action

1.1. A framework of health determinants for young children in Nunavik

The development and health of children in vulnerable environments is a highly complex process . To properly understand the phenomenon requires an analytical framework broad enough to integrate the social determinants of health, defined by the WHO as "the conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels" (WHO, 2009).

. Also, looking at things from a more global perspective is in keeping with Inuit concepts of health and wellness. The Inuit have always taken a holistic view of health and wellbeing based on achieving balance between the four dimensions of health: the physical, emotional, intellectual, and spiritual. The Inuit have also traditionally accorded a central role to the interrelations between the land, animals, health, and wellbeing.

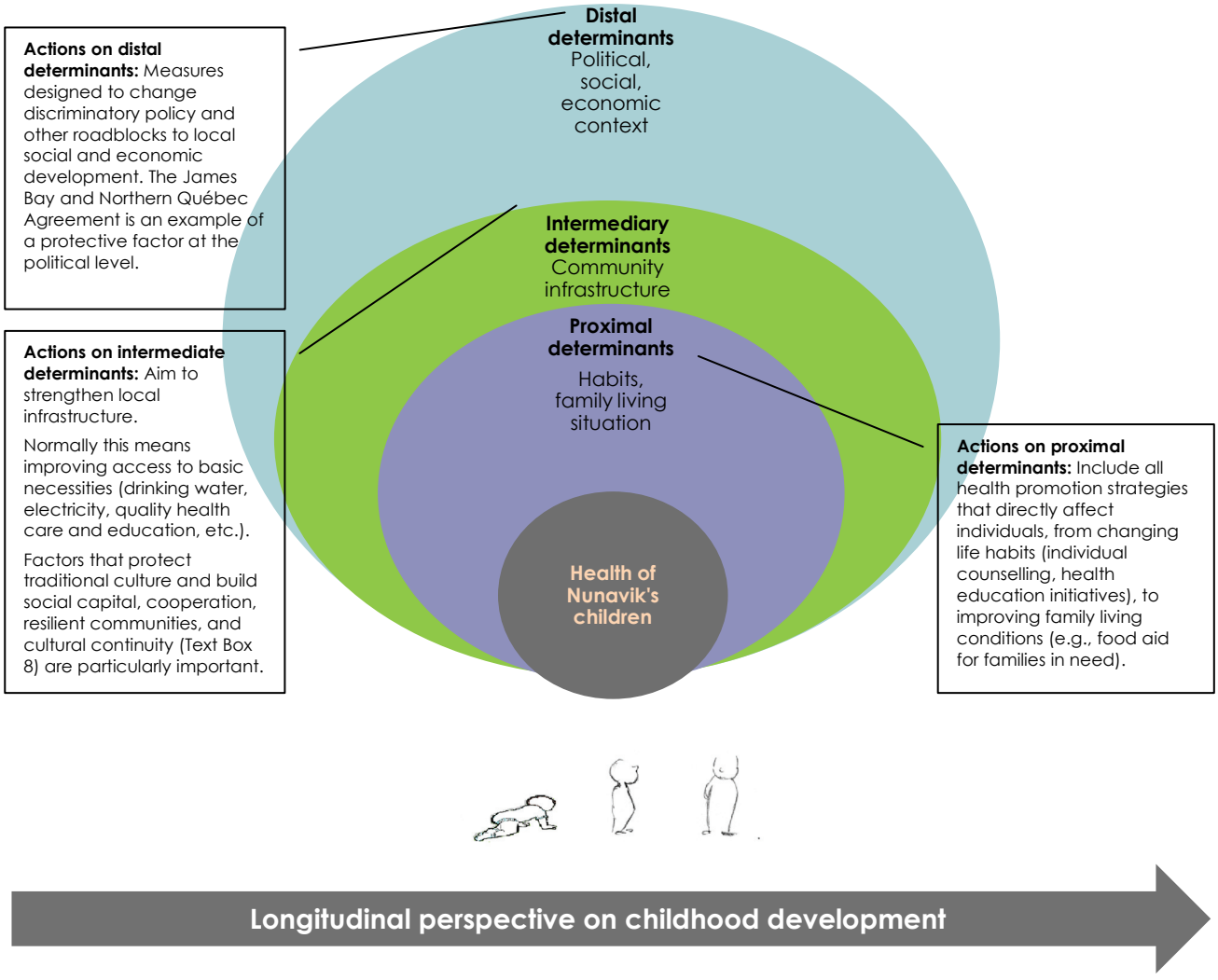
To decide on the best possible approach for the critical early childhood stage, we looked at several applicable frameworks and models. Our literature review yielded two particularly useful reports: the WHO final report on early childhood development, *Early Childhood Development: A Powerful Equalizer*, which includes the WHO framework for childhood development (Irwin et al., 2007); and *Health Inequalities and Social Determinants of Aboriginal Peoples' Health* (Reading and Wien, 2009).

An analysis of these two sources helped us develop a framework adapted to the realities of Nunavik (Figure 1), which combines ecological and longitudinal perspectives. Only a framework that considers both these perspectives can achieve a comprehensive understanding of the links between the biological processes specific to childhood and family life circumstances.

Our framework not only allows us to adopt a holistic vision of the situation of young children and their parents, but also reminds us how vital it is to consider and analyze the situation without losing sight of the ultimate goal—to do something. We therefore supplemented the framework with three action strategies based on the framework's three levels of determinants (Figure 1).

We are not claiming that the framework used here is the only way to look holistically at children's health in Nunavik. Different authors have proposed others, but the framework presented provided us with a logical structureto include all the elements necessary to properly analyze the situation at hand.

Figure 1
Determinants of health of young children in Nunavik



Sources: Irwin et al. (2007), Loppie and Wien (2009)

Ecological perspectives: Cumulative influences at every level

As stated in our introduction, a large body of research has shown that the burden of disease in a given population can be largely attributed to the conditions it lives under (Marmot, 2007). This is especially true of vulnerable communities who often live in environments that are detrimental to their health. A broad understanding of the social determinants of health is particularly appropriate to the situation of Aboriginal people as it provides an overview of the cumulative effect of the historical, social, and political roots of the unequal health outcomes observed (Czyzewski, 2011; Loppie et al., 2009; Kirmayer, 2009a; Alfred, 2009; Whitbeck, 2004). This inclusive approach helps us understand the region's historical, geopolitical, and socioeconomic background and also takes into account the different levels of determinants specific to the complex living conditions of Nunavik families.[2]

[2] Such a description would be beyond the scope of this report, but see the 3rd instalment in this series.

This is especially true in the light of the James Bay and Northern Québec Agreement (JBNQA), which has special provisions concerning governance structures generally and health and education in particular. Agreements under the JBNQA transfer responsibility for the local and regional institutions that oversee health, education, justice, public safety, hunting, fishing, and trapping to the Inuit, Cree, and Naskapi (Publications du Québec, 2012).

The *Framework for the determinants of young children's health in Nunavik* aims to highlight the importance of each level of determinant and the links that connect them. **Proximal determinants** refer to those that directly impact health. They include neurobiological factors, health behaviours and lifestyle, and living conditions (i.e., physical environment, employment, income, education and food insecurity). For example, for optimal childhood development parents and relatives must provide a loving, stable, secure environment. To maintain such an environment families need local infrastructure, which constitutes so many **intermediary determinants**, such as high-quality, culturally safe healthcare and education systems adapted to their needs. Next certain **distal determinants**, such as a political context favourable to the region's social and economic development, are necessary to the wellbeing of Nunavik families. This unfortunately means that the legacy of colonial policy still very much with us today creates an unfavourable context likely to lead to disastrous consequences (Text Box 1). Distal determinants in fact exercise a "profound influence on the health of populations because they represent political, economic, and social contexts that construct both intermediate and proximal determinants" (Reading & Wien, 2009). Acting on distal determinants tends to have a more lasting effect and may also have positive impacts on other issues influenced by the same set of determinants. Governments and civil society thus play a critical role in making sure that all Nunavik children enjoy environments that are as healthy and stimulating as those of children elsewhere in Québec so they can benefit equally.

Longitudinal perspective: Impacts throughout life

Early childhood experience is recognized as having long-term effects on health and the course of the child's life. Its effects are cumulative and life-long.

The mechanisms involved are complex, working through lifestyle habits, coping strategies, the immune system, and overall wellbeing, all of which in turn influence job prospects, income, education, and all other determinants of health (Friendly, 2004).

The horizontal arrow in Figure 1, "Framework for the determinants of children's health in Nunavik," indicates the child's gradual development on several levels (physical, emotional and social). It is highly recommended that the child acquire each stage fully before proceeding to the next.

It has been shown that the nature, intensity, time and quality of children's emotional connection with parents (or significant others) strongly influences the course of their lives. There are also certain critical periods during the perinatal period and in early childhood when infant health and development are particularly vulnerable and when proactive, intensive support is particularly important.

Quality of care and education during early childhood must be taken into account. A growing and increasingly conclusive body of literature shows that optimum infant care and education procures benefits that continue into adulthood. Several studies find that the benefits of early intervention hinge on the quality of care and education received. Low-quality care can be harmful to health and development in both the short and long term (Irwin et al., 2007).

In Inuit communities the determinants with the greatest negative impact on early childhood and the course of life are malnutrition, food insecurity, prenatal exposure to environmental contaminants, overcrowded households, poverty, and stressful environments (NDHSS, 2005; Hodgins

et al., 1998). One example of a cause-and-effect relationship would be high rates of anemia and respiratory infections in Inuit children due to malnutrition in the perinatal period combined with the prevalence of smoking and overcrowded housing (Banerji, 2001; Banerji et al. 2001; Hodgins, 1997).

These concepts have led to calls for national policies that focus on the development of the nation's most vulnerable children, including Aboriginal populations, (Smylie et al., 2009; Sims, 2011; Ball, 2008) as well as Québec and Canada generally (Anderson, 2012; SCGAB, 2011; MSSS, 2007).

From understanding to action

In this report we propose a framework for analyzing determinants of health (Figure 1) in order to properly understand Aboriginal living environments and their characteristics, since they play a vital role in ensuring all children have stimulating living conditions and equal opportunity. Our child-centred framework serves as a guide to help understand connections between different environments; it shows that these environments are not strictly hierarchical but rather parts of an interconnected whole in which each level influences the others. It is thus critical to act on all levels of determinants.

Our framework also offers insight into the roots of unequal health outcomes for Inuit children by shedding light on what is a complex phenomenon characterized by the interplay of historical and contemporary determinants. Under the proposed framework, the distal determinants are root causes of intermediate and proximal determinants and, ultimately, health inequalities (Readings and Wien, 2009). This understanding helped determine the choice of indicators used to describe health inequalities and their causes (Section 3).

Finally, the framework informed our reflection on potential courses of action for mitigating the health inequalities observed. The complexity of these causes makes it necessary to take action on many levels and in many sectors of society in order to address the underlying factors: unequal access to employment, education, and health care. Interventions limited to influencing individual behavior, while necessary, will always be insufficient, since they do not address the environmental factors at the root of health inequalities (MSSS, 2007). A range of cohesive interventions must be implemented together to truly improve health and wellbeing in the long term.

2. Methodology

The demographic and socioeconomic context of Nunavik makes it necessary to adapt certain methodological aspects to better assess the health of the Nunavummiut. Below we discuss some methodological issues of our data sources and accuracy measurements.

2.1 Choice of indicators

In addition to following the *Framework for determinants of young children's health in Nunavik*, we also took the following steps to ensure that the chosen indicators were appropriate and consistently applied. First, the most recent status reports on Québec population health were consulted (MSSS et al., 2011). *Closing the gap in a generation: Health equity through action on the social determinants of* health, a WHO report (2009), was another touchstone, particularly the sections on methods for monitoring health inequalities. These initial steps enabled us to identify a series of key indicators. We then consulted INSPQ and NRBHSS experts specialized in health monitoring and Aboriginal health. The validity, usefulness, and accessibility of selected indicators were discussed, as was the impact of the absence of certain indicators. At the end of this process, nearly thirty indicators were retained.

The list of indicators, complete with definitions and estimates produced, is presented in appendices 1 to 4. Indicators are grouped into the following five themes: (1) demographic trends, (2) family living conditions, (3) community infrastructure, (4) women's health, and (5) children's health.

2.2 Data sources

The data used in this report comes from multiple sources. Much was used in the first report (NRBHSS et al., 2011), where it is discussed in greater detail. For Nunavik we used data for the entire population, which is nearly 90% Inuit (Appendix 5); the exceptions are health surveys conducted specifically with Inuit, or the Aboriginal Peoples Survey (APS) and the Nunavik Inuit Health Survey.

The Aboriginal Peoples Survey was conducted by Statistics Canada in 2006 in the four regions of Canada with large Inuit populations: the Inuvialuit Settlement Region, Nunatsiavut, Nunavik, and Nunavut. The Nunavik Inuit Health Survey was produced in 2004 by NRBHSS. The document title, *Qanuipittaa?*, is Inuktitut for "How are we?" Much of the data we used was compiled specifically for the needs of our profile from this master file. (Where results are derived from this file, the source is cited as "Nunavik Inuit Health Survey, 2004"). Some results may differ from those in other publications, notably because different age ranges have sometimes been used.

Canadian census data has also been used. Until 2006 census data was comparable over time, but in 2011 the long-form census was replaced with a voluntary questionnaire, the National Household Survey (NHS). As the NHS targets a different population, its data cannot be directly compared to that of previous censuses. In addition, estimates derived from NHS long reflect a greater number of non-response errors than the mandatory 2006 Census. For this reason some data must now be accompanied by accuracy measurements.

Administrative data has also been used, from such sources as INSPQ files or the Québec Public Health Infocentre.

Population data is from Service de développement de l'information at Ministère de la Santé et des Services sociaux, specifically the file estimates and population projections (January 2010) from 1981 to 2031.

Data on births, deaths, and hospitalizations is also from MSSS files. The main sources are the index of births from 1981 to 2010, death records from 1981 to 2009, and the MED-ECHO file from 1991 to 2010. MED-ECHO compiles data on hospital stays in the province of Québec, and the values may differ

from those reported by other sources, including the CIC, although these differences are minimal for Nunavik and the Cree Territory of James Bay (CTJB). Hospitalization data is recorded by administrative year, April 1 to March 31. The most recent five-year period used is 2007–2008 to 2011–2012.

Data from the Ministère de la Santé et des Services sociaux's central reportable disease registry (Maladies à déclaration obligatoire; MADO), maintained in cooperation with public health authorities, was also consulted to create this profile.

2.3 Statistical analyses and accuracy measurements

Several indicators were calculated based on small population samples. Complex methods of analysis are required for such samples, and developing guidelines is time consuming. This section briefly describes the means used to ensure our results were sufficiently robust from a statistical point of view.

First, to get big enough sample sizes, we used 5- and even 10-year periods. We also aggregated when possible the results from both coasts (Hudson and Ungava) as well as certain age and sex categories.

Second, the majority of rates and proportions presented are accompanied by accuracy measurements, i.e., the coefficient of variation (CV). Our interpretation of the CV meets Statistics Canada standards. Thus, estimates with a CV less than 16.66% can be used without limitation, while those with a CV of 16.66% to 33.33% should be interpreted "with caution." Results with a CV greater than 33.33% are generally not released: in such cases, n/r will be given for the value in question. Regardless of the CV, however, the average annual number is given, where available, in the appendices to provide an idea of the extent of the phenomenon.

Only comparisons significant at the 5% level of α error are discussed here. To achieve this we used the Z-test for territorial comparisons: data from the two coasts (Hudson and Ungava) was compared with data from the rest of the region using the Bonferroni correction. Nunavik data was then compared with data from the Cree Territory of James Bay and the rest of Québec (excluding Nunavik). Wherever possible confidence intervals were used to show significant differences between men and women or between periods (always above the 5% threshold). To ensure transparency, confidence intervals for all data are appended, as well as several average annual numbers. Much of the data presented in this profile has been calculated by INSPQ from existing databases. A careful selection process was used to determine which data would be included in the presentation of results (Section 3); selected data is identified as indicators and their corresponding number appears in brackets in the text.

In order to provide a larger sample of results if desired, additional data is presented in appendices 3 and 4. Appendix 3 presents the indicators for coastal areas (Hudson and Ungava), Nunavik, and Québec as a whole, while Appendix 4 includes indicators for Nunavik communities, wherever such a breakdown was possible. To facilitate understanding, a comprehensive list of indicators has been included in Appendix 1 (List of indicators and data sources). Definitions and methods of calculating these indicators are detailed in Appendix 2 (definition of indicators).

For more information on methodological aspects, the reader is invited to consult the joint monitoring plan (Plan commun de surveillance, INSPQ et al., 2013).

2.4 Comparison between geographical regions

Nunavik is home to 14 communities spread along two different coasts (Figure 2). The number of inhabitants and the proportion of non-Aboriginal residents vary from one community to the next, a factor that can impact the analyses when the two coastlines are compared (appendixes 5 and 6). Kuujjuaq is a good example: the town has a population of 2,375, which represents 44% of the total population of the Ungava coast and 20% of Nunavik as a whole. More than 20% of the town's population is non-Aboriginal, which largely explains Kuujjuaq's always slightly atypical profile, particularly with respect to socioeconomic indicators.

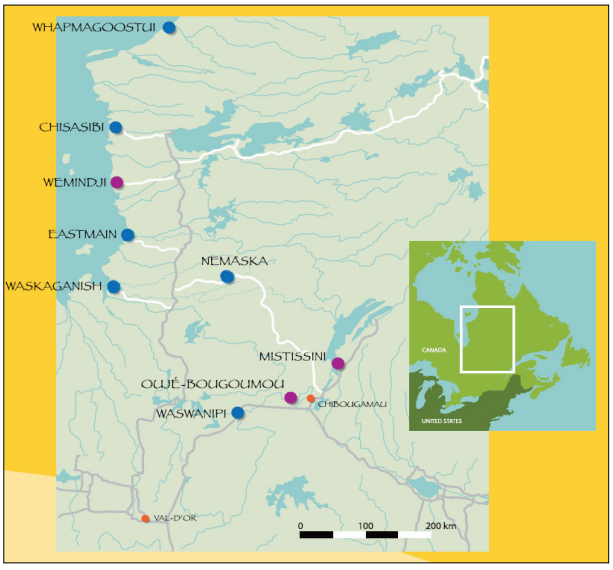
As mentioned, the results presented here are often compared with those for Québec as a whole and those of other health regions with large Aboriginal populations, mainly the Cree Territory of James Bay (CTJB, Figure 3). Comparisons with CTJB data are particularly relevant because the Cree population is also a signatory of the JBNQA. CTJB residents thus share a relatively similar legal context, in terms of access to health care, as the Nunavik Inuit. The region also exhibits many sociodemographic similarities with the Nunavik, such as a younger population than the Québec average and geographic remoteness from major centres.

Where possible, data for the Canadian Inuit population was used. Outside Nunavik, the Inuit peoples of Canada are found in Nunatsiavut (Northern Labrador), Nunavut (north of Ontario) and the Inuvialuit region (of the Northwest Territories; Figure 4). *Inuit Nunangat* is the term used to collectively refer to the Inuit territories of Canada (Canada, 2008a).

Figure 2
Communities of Nunavik

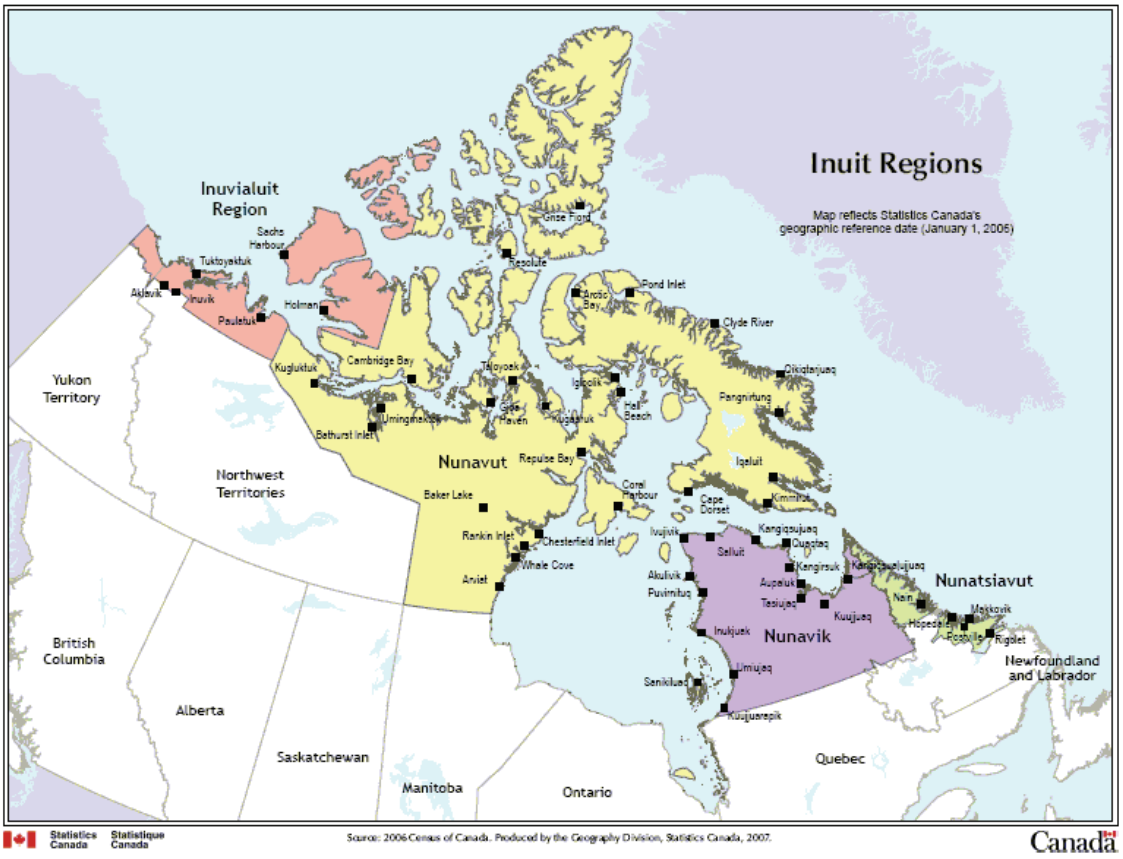
Source: Makivik Corporation

Figure 3
Cree Territory of James Bay



Source: Makivik Corporation

Figure 4
Inuit regions and settlements in Canada



3. Results

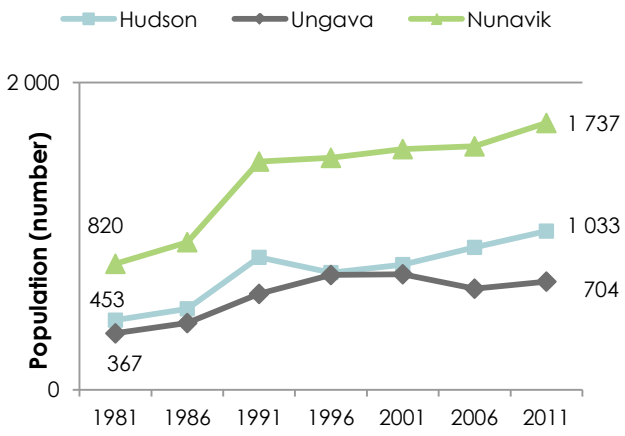
We begin by looking at recent data on demographic trends. We then consider the results of the survey according to the framework for determinants of young children's health in Nunavik—presented in the first chapter. We first examine the determinants that influence the context of family life from a socioeconomic angle. We then move on to community infrastructure, including access to health care during maternity. Last we present a detailed health profile of women and children that arises out of their life context and existing community infrastructure. To make the text easier to read, background information will generally be provided in text boxes.

3.1 Demographic trends

Young children in Nunavik: A booming population

As illustrated in Figure 5, Nunavik is experiencing a population boom, mostly as a result of its high birth rate (Appendix 3, indicators 1 and 3). Between 1981 and 2011 the number of annual births went from 127 to 327 (birth records) and the average number of children per woman is 3 (Appendix 3, indicators 4 to 6). In only two Québec regions, Nunavik and the Cree Territory of James Bay, do women have enough children on average to maintain the current population (MSSS et al., 2011), significantly exceeding the minimum replacement level of 2.1 (Milan, A. 2013). In 2011 the proportion of children age 5 and under in Nunavik was more than twice that of the rest of Québec, equalling that of the Cree Territory of James Bay (Figure 6) (Québec Public Health Infocentre).

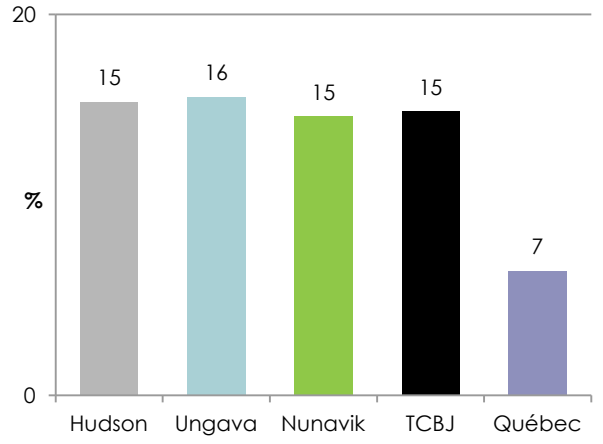
Figure 5
Population of children age 5 and under, Nunavik coastal regions and total, 1981 to 2011



For more on Indicator (1) or for additional data, see Appendices 1 to 4.

Source: MSSS, « Service de développement de l'information, "Estimations et projections démographiques" »

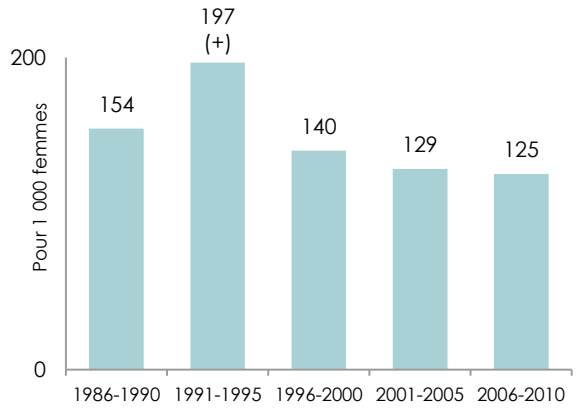
Figure 6
Percentage of population age 5 and under, Nunavik coastal areas and total, Cree Territory of James Bay, and Québec, 2011



For more on Indicator (2) or for additional data, see Appendices 1 to 4.

Source: MSSS et al. « Service de développement de l'information, "Estimations et projections démographiques" », 2011

Figure 7
Fertility rates, women age 15–19, Nunavik, 1986–1990 to 2006–2010



For more on Indicator (5) or for additional data, see Appendices 1 to 4.

(+/-): Significantly higher (+) than reference category, 2006 to 2010, at the, 05 level.

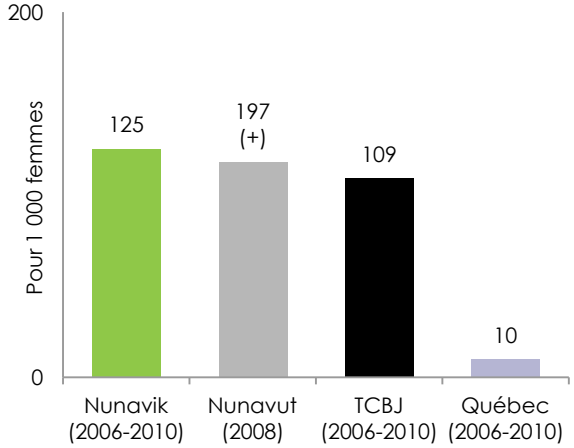
Source: Québec Public Health Infocentre

Maternity among young women

Although the fertility rate for women age 15 to 19 seems to have fallen in recent years (Figure 7), it remains much higher than that of other Québec women of the same age (Figure 8; see Appendix 3, Indicator 5). It is however not far from that of Nunavut and the Cree Territory of James Bay (Figure 8).

These similarities reflect the fact that early motherhood is consistent with many Aboriginal traditions in Canada (CCNSA 2012). The centrality of children in the culture and society of most Aboriginal nations is widely recognized, but many also acknowledge that women who have children at an early age often experience particular difficulties (Text Box 2).

Figure 8
Fertility rate women age 15–19, Nunavik, Nunavut, Cree Territory of James Bay, and Québec



For more on Indicator (5) or for additional data, see Appendices 1 to 4.

Source: Québec Public Health Infocentre; Statistics Canada., CANSIM Table 102-4505

Text Box 2
Early Motherhood

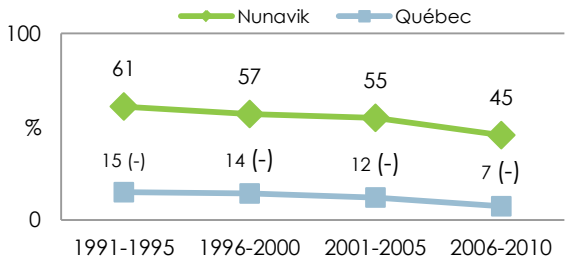
"Prior to European contact, Aboriginal women held positions of high esteem in their communities and their role as life-givers and mothers was highly valued. Women's ability to bring life into the world was sacred and women were respected for this reason."

"[Although pregnancy continues to be seen as something to be celebrated] , early motherhood increases an Aboriginal woman's vulnerability and risk for multiple social disadvantages . It is important to recognize, however, that teen pregnancy itself is not a problem as much as the surrounding circumstances, for example, poverty, single parenthood, dropping out of school, depression, and lack of social support ."

—National Collaborating Centre for Aboriginal Health (2012)
Sacred Space of Womanhood: Mothering Across the Generations

Indeed, close to a third of all births in Nunavik are to women under 20. This situation is a source of concern, and authorities are increasingly preoccupied with the impacts of early pregnancy on the ability of young mothers to continue their studies (Statistics Canada, 2008b). Many Nunavik women still become mothers without finishing school, although the trend in recent years has improved (Figure 9) (Appendix 3, Indicator 7).

Figure 9
Percentage of births to mothers with fewer than 11 years of education, Nunavik and Québec, 1991–1995 to 2006–2010



For more on Indicator (7) or for additional data, see Appendices 1 to 4.
(+/-): Significantly higher (+) or lower (-) level than Nunavik. Confidence levels were calculated to the .05 level.
Source: MSSS birth records

Census data also showed that Inuit women who had their first child in their teens were at a disadvantage compared with those who had had children later in life. Specifically, their family incomes tended to be lower and they were more likely to live in overcrowded housing that was in need of major repairs (Guèvremont, 2012).

3.2 Living conditions of families

As stated previously, the quality of nurturing, caring, and education of environment children grow up in are among the most critical contributors to their healthy development. And these qualities come not just from the immediate family, but from the community infrastructure and the broader political and socioeconomic context as well (WHO, 2005). Decent living conditions, jobs, and sufficient income, as well as safe, healthy housing, are essential to the health of Nunavik families, and particularly to that of their children.

The traditional Inuit concept of the family is not limited to birth parents and their offspring. It generally includes grandparents, uncles and aunts, cousins, and other community members. All may take an active part in childrearing, including the transmission of cultural values and traditions, thereby helping children develop a sense of belonging to their communities of origin (NCCAH, 2009–2010; PIWC, 2006, p. 22).

Traditional adoption: still widespread

Traditional or custom adoption remains commonplace in Nunavik (Text Box 3). In the Qanuippitaa? survey in 2004, more than a quarter of all mothers (26%) reported giving up their last child for adoption (Dodin et al., 2007). Custom adoption has deep roots among the Inuit and is shared with many other indigenous peoples. It involves an agreement between two families to share responsibility for the child's care and upbringing (Lavallée, 2007; NCCAH, 2009–2010; Ministère de la Justice du Québec et al., 2012;

PIWC 2006, p. 20) and was legally recognized in Québec in 2012—a breakthrough in the protection of Inuit traditions, values, and way of life (NRBHSS, 2012b).

Family income and food insecurity

A great many families in Nunavik live in poverty, and many Inuit children are thus exposed to the attendant risks (Text Box 4). On the 2006 census, 28% of the population of Nunavik reported living on an after-tax income of less than $10,000 a year, as opposed to 20% for Québec as a whole (Appendix 3, Indicator 8).

Median income for the population age 15 and over was slightly lower in Nunavik than in the rest of Québec ($20,971 vs. $22,471). But income in Nunavik varied wildly from one community to the next, as can be seen in Figure 10. Generally, median incomes in communities on the Hudson Bay coast might be slightly below those of communities along Ungava Bay[3] (Appendix 3, Indicator 9).

Text Box 3
Traditional Adoption: A Practice Anchored in Inuit Life

Traditional adoption involves an Inuit family entrusting a child to members of the extended family, such as the child's aunt and uncle or grandparents.

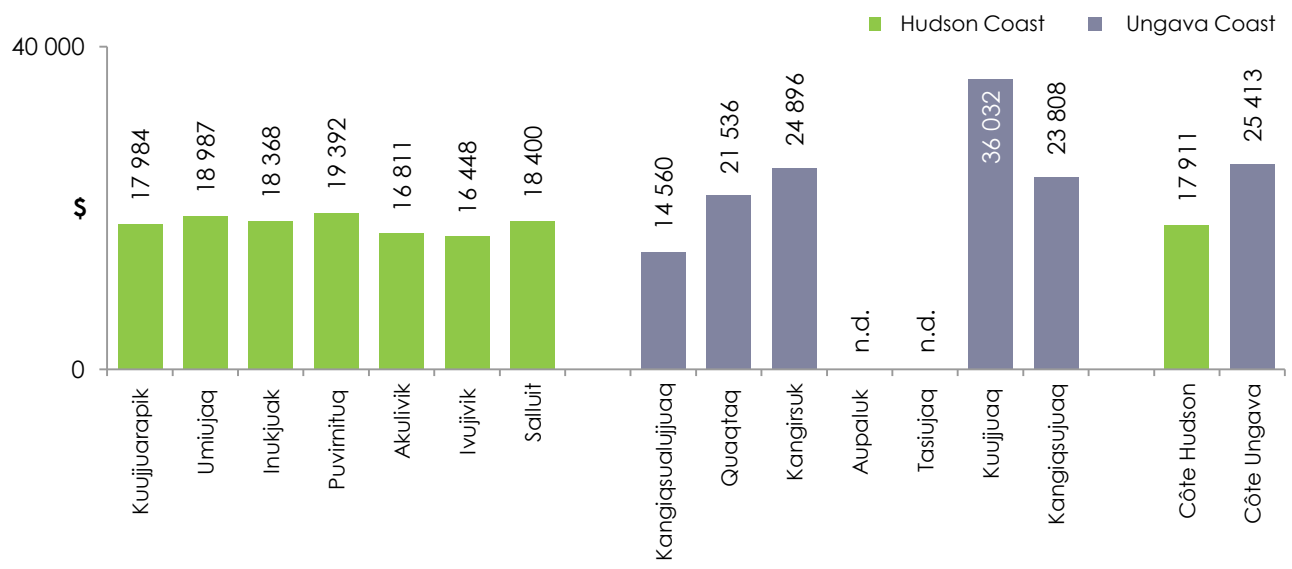
Adoption in Inuit society carries none of the guilt or stigma sometimes associated with it in mainstream Canadian and some other cultures. Birth parents often see their adopted out children daily and have close relationships with them. *Custom adoption* is an age-old tradition and there are many reasons for doing it. For example, if a family has several children over a short period of time and is concerned about not being able to feed all of them properly, they might have one of them adopted into a family who are in a better position to provide care, or a family whose children are all of the same sex might adopt a child of the opposite sex (Healey and Meadows, 2007).

Text Box 4
Child Poverty: Serious, Life-Long Consequences

Numerous studies have found that irrespective of country, gender, or age, income level is a particularly powerful determinant of health (MSSS 2007). The consequences of poverty show up even before birth, with children in poorer communities growing more slowly in utero, after which they face higher mortality and disease rates and increased risk of developing behaviour and developmental problems (Larson, 2007). Beyond early childhood, lower socioeconomic level tends to have harmful effects on educational outcomes and dropout risk, thus compounding the risk of poverty in adulthood (MSSS 2007). Child poverty is also associated with higher adult risk of cardiovascular disease, stroke, type II diabetes, and mental health problems (MSSS, 2007; WHO, 2009; WHO, 2007; CPS, 2012; CDCHU, 2007).

[3] This is mainly because of the higher number of specialized, better-paid jobs in Kuujjuaq than elsewhere in Nunavik (KRG, 2006). For more on this issue, see Jobs and Employment in *Demographic and Socioeconomic Conditions* (NRBHSS et al. 2011).

Figure 10
Median income of individuals age 15 and over, Nunavik communities, 2005



For more on Indicator (9) or for additional data, see Appendices 1 to 4.
n/a: Data not available.
Source: Statistics Canada, 2006 census, Table 94-581.

Income disparities also exist between men and women, with women earning more than men in Nunavik, unlike elsewhere in the province. The average net income in Nunavik was $22,912 for women and $18,793 for men in 2005 (see the first booklet of this series for more detail). Some studies have found that generally when women are financially independent they tend to be more involved in household decision-making and that the choices they make have a positive effect on children's health, leading to healthier nutrition and more consistent school attendance (UNICEF 2006).

As mentioned in the first document in this series, Nunavik families not only face a shortage of decent-paying jobs in a region with a very high cost of living,[4] but also often have more family members to support (NRBHSS et al., 2011). Food insecurity is thus widespread, and one out of four respondents (24%) reported experiencing it in 2003 (Rochette L. et al., 2007). Close to a third (30%) of Nunavik children age 5 and under have already had to go hungry (Inuit Qaujisarvingat, 2011). Nunavik residents pay 57% more for food than do people elsewhere in Québec (Duhaime & Caron 2012).

Housing Conditions for Families

Overcrowding in Aboriginal communities is a well-documented public health problem (Text Box 5). The situation in Nunavik, however, is the most alarming in the country[5] (Zukewich 2008). Statistics show high crowding levels that have largely held steady since 1991 (Penney et al. 2012). The percentage of overcrowded dwellings in the region, defined as those with more than one person per room, varies significantly from one community to the next, from a low of 15% to a high of 47% (Statistics Canada 2007). This is much higher than the overall Québec average of 4% (Figure 11) (Statistics Canada 2007).

[4] For more on the cost of living in Nunavik, see Text Box 7 in the report on socioeconomic and demographic conditions (NRBHSS et al. 2011).

[5] For more on overcrowding in Nunavik and its causes, see the third instalment of this series (NRBHSS et al., 2014).

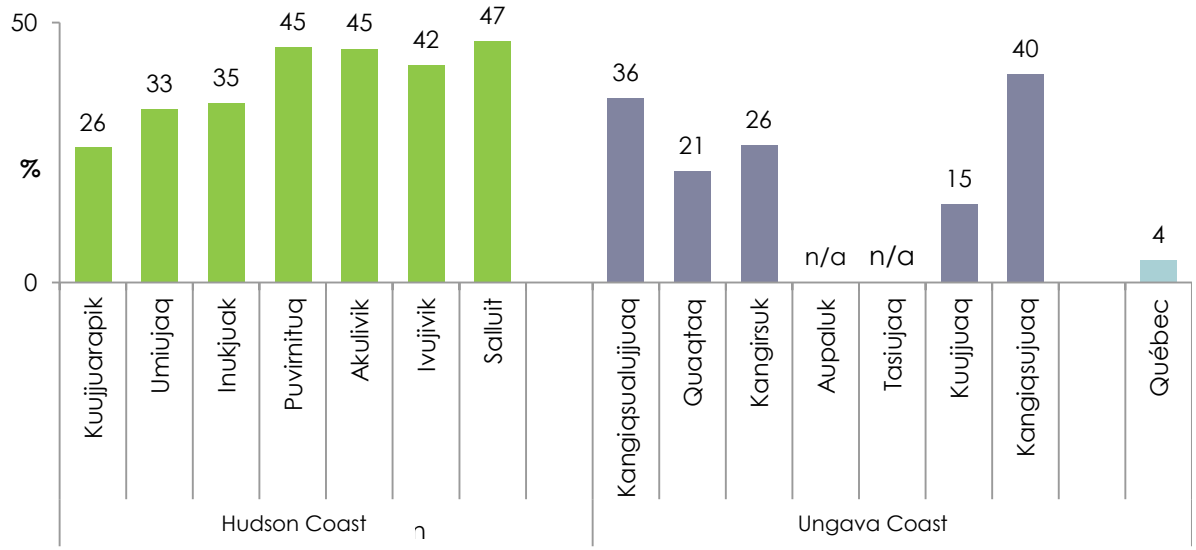
The proportion of overcrowded dwellings in Hudson Bay communities is generally higher than on Ungava Bay (Figure 11). The data shown seems to indicate that the poorest communities also tend to be the most overcrowded. Text Boxes 4 and 5 show how the cumulative effects of chronic poverty and crowding on children's health exacerbate the challenges Nunavik families face every day.

As shown in Figure 12, in Nunavik, 60% of all children under 6 grow up in a crowded house. Since a large percentage of the population of Nunavik is under 15 years of age (40%), this problem and its attendant risks affect a very large number of children. Overcrowding is also worse in Nunavik than anywhere else in Inuit Nunangat.

Text Box 5
Overcrowding and Children's Health

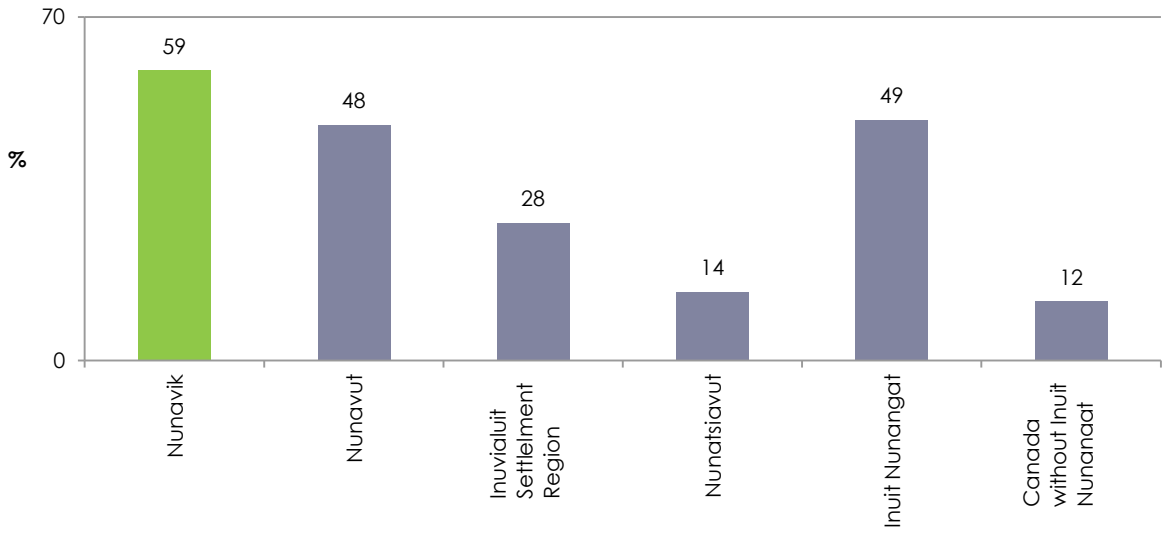
Numerous studies have confirmed the link between overcrowded housing and diseases such as influenza and tuberculosis (Alaghehbandan et al., 2007; Kovesi et al. 2007; Banerj et al., 2001 & 2009), academic difficulties and behavioural problems at school, as well as mental health problems, physical violence, and child sexual abuse (Law et al., 2007; Bailie et al., 2006; Chaudhuri, 2004; Howden-Chapman, 2004; Carter 2004). Nunavik's alarming rates of abuse and spousal violence are incontrovertible proof of a housing crisis that requires urgent action.

Figure11
Percentage of dwellings classified as overcrowded, Nunavik communities, 2006



For more on Indicator (11) or for additional data, see Appendices 1 to 4.
n/a: Not available
Source: Statistics Canada (2007), 2006 Census

Figure12
Percentage of Inuit children under age 6 living in overcrowded dwellings, 2006



Source: Statistics Canada (2008c), Aboriginal Peoples Survey of 2006

Source : Nunavik Tourism, Puvirnituq Village

3.3 Community infrastructure

Better and better maternity services

In the 2001– 2010 period, more than a third (36%) of Nunavik mothers had to leave Nunavik to give birth in a hospital and more than a quarter (26%) had to leave their home communities to give birth elsewhere in Nunavik (Appendices 3 and 4, Indicator 14). Thus a majority (62%) of Inuit women still have to leave their families behind to give birth. Although most of the time this is necessary because the obstetrics facilities are not available locally, the practice entails considerable psychosocial and health risks of its own, both to the mother and her children (Text Box 6). It is also very costly. Giving birth outside Nunavik cuts the mother off from her maternity culture and the conditions that support it. For the children left behind in often-overcrowded housing, their parents' absence puts them at greater risk of violence.

Text Box 6
Giving Birth Away from the Home Community: Effects on Mothers and their Children

Being separated from her family for a number of weeks in the late stages of pregnancy increases a woman's risk of postpartum depression and other postnatal complications (Klein M. C. et al. 2002, cited in Couchie & Sanderson 2007). The effects of this prolonged absence are also felt by the children left behind, who are deprived of their parents' care in often overcrowded living conditions where the risk of abuse can be high (Couchie & Sanderson 2007).

The number of women who go away to give birth varies widely between communities. Since 2001, the percentage of women on Ungava Bay who have given birth outside Nunavik has been three times that on Hudson Bay (64% vs. 20%) (Appendix 3, Indicator 14). This is because of differences between the two coastlines in the way maternity care is delivered.

Midwifery services came to Hudson Bay in the 1980s. Today there are three midwifery practices serving mothers in Puvirnituq, Salluit, and Inukjuaq. Inuit midwives are the main birth attendants and handle close to 80% of all births (Appendices 3 and 4, Indicator 15). Along Ungava Bay, on the other hand, births were mainly attended by family doctors until the early 2000s. In 2002 a doctor shortage forced practitioners to transfer women to hospitals in the south, where obstetrics services were more advanced. The forced exodus to the South brought serious problems, and in 2007–2008 a committee was struck to bring midwifery to Ungava Bay. Three midwives, two of whom are not Inuit, have since begun working out of the Tulattavik Health Centre in Kuujjuaq.

These midwives have made it possible for more women to stay in Nunavik to give birth. Health centre data show that midwives attended 125 births on Hudson Bay and 80 on Ungava Bay in 2011–2012 (NRBHSS 2012). In 2011, there were a total of 327 births in Nunavik (Québec Public Health Infocentre). In 2013–2014, the number of births attended by midwives had risen to 206 on Hudson Bay and 90 on Ungava Bay (NRBHSS, 2014). The Society of Obstetricians and Gynaecologists of Canada considers midwifery to be the best approach for remote Aboriginal communities (Text Box 7). Critically, it helps promote **cultural safety**, which is a fundamental principle in improving Aboriginal people's access to care and the quality of care they receive (Text Box 8).

Text Box 7

Cultural Safety: A fundamental Principle in Health Care and Service Delivery for Aboriginal Patients

It is widely acknowledged that Aboriginal access to health services is often limited not only by geographic isolation and lack of staff and infrastructure, but by linguistic and cultural barriers as well (Smylie 2001). A recent Health Council of Canada report noted that "many Aboriginal people don't trust—and therefore don't use—mainstream health care services because they don't feel safe from stereotyping and racism, and because the Western approach to health care can feel alienating and intimidating" (HCC, 2012).

Delivery of culturally appropriate health care takes a number of forms, from **cultural sensitivity** (respect for differences) to **cultural competence** (skills, knowledge, understanding, and attitudes). Although all such approaches help, they have certain limits as well, such as a tendency to reduce culture to a list of technical skills (often taking the form of lists of "do's" and "don'ts" for providing care to individuals of a supposedly homogeneous cultural group).

The concept of cultural safety goes farther. It seeks to add or expand people's understanding of the inherent power imbalance between healthcare providers and patients and how this tilts even farther when the provider is also a representative of the dominant society (Brascoupé and Waters, 2009). Culturally safe care demands that trust be established with Aboriginal patients. It also requires recognition not only of the effects of the social, political, and economic context, but also the health impacts of the history of colonization (IPAC and AFMC, 2010). Cultural safety has been shown to make Aboriginal people more likely to use health services and follow treatment advice, and to reduce staff turnover (HCC, 2012).

More concretely, the elements of an appropriate, cultural safety–based approach to Aboriginal health might for example take the form of cultural awareness training for non-Aboriginal practitioners, or training more Aboriginal health professionals. Cultural safety in health infrastructure implies facilities that are controlled by the community so that services can respond to the needs of the local population. Such systems should also apply Aboriginal concepts of health and wellbeing and incorporate certain traditional practices into care (NCCAH 2011).

Midwife at work in Salluit, Nunatsiaq. Photo by Isabelle Dubois, 2013

Text Box 8
Midwifery in Aboriginal Communities

In its 2007 position paper, the Society of Obstetricians and Gynaecologists of Canada (SOGC) officially endorsed midwifery as an essential component of maternity care for Aboriginal women in remote communities:

Midwifery care and midwifery training should be an integral part of changes in maternity care for rural and remote Aboriginal communities. Midwives working in rural and remote communities should be seen as primary caregivers for all pregnant women in the community. Protocols for emergency and non-emergency clinical care in Aboriginal communities should be developed in conjunction with midwifery programs in those communities (Couchie &Sanderson, 2007).

The SOGC pointed out that midwives in Nunavik, who offer safe pre- and postnatal services to women in their own language, are in themselves a foundational element of cultural safety (Couchie & Sanderson 2007) (Text Box 9). Traditional midwives being from the local area, they also tend to stay in their jobs longer than non-Inuit staff and thus contribute to continuity of care (Simonet et al. 2009). Nunavik midwives are trained by their peers and recognized by Ordre des sages-femmes du Québec.

A recent article on midwifery in Nunavik fuelled fears for the safety of women and babies there (Simonet et al., 2009). The authors' statement that "there remains a lack of rigorous scientific data on the safety of midwife-led maternity care in remote indigenous communities," was misinterpreted as casting doubts on the practice that neither their results nor their methodology justified in any way.*In reality, there is absolutely no indication to date that women who give birth attended by traditional midwives face additional health risks, and there can be no doubt about the benefits they and their families derive.

*Not only were observed differences in birth outcomes not clinically or statistically significant, they could also easily be accounted for by numerous confounding variables not controlled for in the calculations (including smoking and mothers' sociodemographic status).

Daycare availability

Daycare is, after the family home, the place many children spend the most time, and quality daycare of sufficient intensity is now recognized as a protective factor that benefits children living in disadvantaged environments (Paquet et al., 2003) (Text Box 9). Various types of daycare are available in Nunavik, most at a cost of $7 per day. The teaching of language and culture is stressed in order to maintain cultural continuity (Statistics Canada, 2008a). The number of daycare spaces in Nunavik has increased significantly since the early 1990s. Today there are, in addition to educational and home-based daycares, 16 early childhood centres caring for 765 children under age five. Given the constant increase in the number of children, however, availability remains a challenge, and there are currently some 450 names on waiting lists throughout Nunavik (KRG, 2012).

Text Box 9
Childcare Services: A Protection Factor

Daycare has numerous positive effects on early childhood education. It contributes to improvements in educational outcomes and young children's behaviour. These effects are most pronounced for children who live in disadvantaged settings. Daycare can also, in conjunction with other services, help lift families out of poverty by making it easier for mothers to get jobs outside the home (CDCHU, 2007).

Services must however be of sufficient quality and intensity. UNICEF has proposed a set of international minimum benchmarks for provision of services, incorporating such aspects as public funding, minimum available hours per week, staff qualifications, and staff-to-children ratios (UNICEF, 2008). The importance of emphasizing Aboriginal languages and traditions is also increasingly recognized (NCCAH 2009–2010).

3.4 Health profile of women, mothers, and families

So far we have applied our conceptual framework in considering the context and living environment influencing the health of women, families, and children in Nunavik. The following sections will present the results as manifested in the health status of women, then in that of children age five and under.

The health status of family members strongly affects young children's health and development. Any chronic problem—physical, mental, or psychosocial—can influence a child's development. The effect may be direct, as in the well-known link between smoking in pregnancy and low birth weight, or indirect, as when a parent's poor ability to interact with the child (Irwin et al., 2007) undermines their relationship and threatens the precious bond that needs to form between them.

As we noted earlier, the traditional Inuit family extends well beyond the "nuclear" family of father, mother, and offspring. Ideally we would look at the health status of all those involved in childcare, be they birth parents, adoptive parents, grandparents, or others. Unfortunately most of the data we have is on mothers' health only.

We begin this section with data on lifestyles and health behaviours. We then look at sexual and reproductive health before addressing mental health. Last we will consider violence against women.

3.4.1 Lifestyle and health behaviours

It is generally accepted that a woman's health behaviour during pregnancy has a direct effect on her baby's health. Behaviour being largely a response to the immediate environment, health behaviours must be understood in their social and cultural context. This may also reveal ways to influence such behaviours.

Smoking

In the most recent population survey, conducted in 2004, over three quarters (77%) of all Nunavik Inuit reported smoking daily or occasionally . This was close to three times the rate in the rest of Québec, where 27% reported smoking in 2003 . Moreover, 92% of smokers in Nunavik reported smoking daily, as opposed to 80% in the rest of Québec. Among Inuit women, a total of 80% reported smoking every day (73%) or occasionally (7%) (Plaziac et al., 2007), as opposed to 20% of women elsewhere in Québec for the same period (INSPQ et al., 2006). On the other hand, most Nunavik women are considered moderate smokers, with close to nine out of ten smokers (88%) smoking less than a pack a day (Plaziac et al., 2007).

That said, many Inuit women continue smoking during pregnancy. In 2004, 65% of mothers reported smoking daily during their last pregnancy (Appendix 3, Indicator 16). Although fewer women smoke during pregnancy elsewhere in Québec—28% (Guyon et al., 2008)—those living in underprivileged areas are more likely to do so (Text Box 10). Similarly, the proportion of women who reported smoking daily during pregnancy is much higher on Hudson Bay, where families are significantly poorer, than it is on Ungava Bay: 77% vs. 47% (Appendix 3, Indicator 16).

Text Box 10
Smoking During Pregnancy

A number of factors seem to influence Aboriginal mothers' smoking habits, including lack of social support, inadequate prenatal care, a family history of residential school attendance, low education levels, and low income (Reading, 2009).

Low income is also a factor associated with smoking during pregnancy in non-Aboriginal populations. Throughout the province, women are more likely to smoke while pregnant if they are poor than if they are better off, the rates being 35% and 8% (EAM, 2005). Similar results are found all across Canada (Guyon et al., 2008).

Despite the very high proportion of smokers in Nunavik, more than eight out of ten (84%) households restrict smoking to protect nonsmokers, particularly young children, from second-hand smoke (Plaziac et al., 2007). It is quite common to see people smoking outside their houses even on extremely cold days.

Drug and alcohol use

Excessive alcohol consumption is associated with multiple social and health problems. The kinds of problems caused by alcohol depend on amount consumed and frequency (INSPQ, 2010a,). Alcohol causes enormous suffering among children, families, and anyone close to those who abuse or become addicted to it (WHO, 2007). It is a teratogen known to cause birth defects and fetal deaths (Chudley, 2005). Fetal alcohol syndrome is the most visible form of the broader fetal alcohol spectrum disorder (FASD), (Text Box 11).

Qanuippitaa? survey data shows that, in 2004, fewer people drank in Nunavik than in the rest of Québec (77% vs. 85% in Muckle et al., 2007). However, close to nine out of ten respondents reported at least one episode of heavy drinking[6] in the previous year, close to twice as many as elsewhere in Québec (88% vs. 46%) for the same period (Muckle et al., 2007). The survey also found a link between alcohol consumption and age, with individuals under age 45 facing higher risks, as did those with higher levels of education, a job, higher income, or who lived in villages where alcohol sales were permitted (Muckle et al., 2007).

Another notable finding from the Qanuippitaa? survey was that women's alcohol consumption in Nunavik was nearly as high as men's. Close to seven women in ten (67%) reported heavy drinking episodes on a monthly basis. This pattern seems particularly frequent among women age 18–29, who are also the most likely to become pregnant. The percentage of women who reported having consumed alcohol during their last pregnancy in Nunavik was 44% in 2004. (Appendix 3, Indicator 17). Although this finding does not indicate the number of times or frequency alcohol was consumed, it remains alarmingly high in light of all the known harmful effects of alcohol use during pregnancy (Text Box 11). We have no reliable data on the prevalence of FASD among the Inuit in Canada.

Text Box 11
Fetal Alcohol Syndrome and FASD in Aboriginal Populations

Fetal alcohol spectrum disorder, or FASD, is an umbrella term encompassing a range of permanent health problems caused by prenatal exposure to alcohol: from alcohol-related neurodevelopmental disorder (ARND), which is less visible, to full-on fetal alcohol syndrome (FAS). FASD affects brain function and results in intellectual disability and significantly impact memory, judgement, and cognitive abilities. Prenatal exposure to alcohol is also associated with growth delays and congenital abnormalities.

Although FASD is not unique to Aboriginal communities, some of the literature seems to indicate a higher prevalence among Aboriginal children. In reality, rates vary considerably from one community to the next, and existing FAS and FASD studies have methodological limitations that make them unsuitable for use as the basis for Aboriginal-specific rates (Pacey, 2009).

The literature available on barriers faced by women seeking FASD prevention and intervention programs is also limited. However, serious shortcomings exist in the services available to women in Aboriginal communities, especially culturally appropriate services specifically designed for pregnant women and mothers (NCCAH, 2012). Many women are keenly aware of the developmental risks their alcohol consumption exposes their babies to and experience tremendous guilt and shame. They are also terribly afraid of having their children taken from them by child welfare services. The result is often a reluctance to bring up the issue with healthcare workers (INSPQ, 2004).

[6] Five or more drinks on one occasion

The problem of alcohol consumption during pregnancy is not unique to Nunavik. Some studies have also found a high prevalence of maternal alcohol consumption among women elsewhere in Québec, in some areas exceeding 40% (MSSS et al., 2011). Women from affluent areas are also more likely to consume alcohol during pregnancy (*MSSS 2007). It is important to bear in mind that* alcohol dependence is a complex phenomenon and tends to be part of a broad constellation of issues. This is discussed in Text Box 12.

Drug use takes different forms according to the drug in question. Not much population-specific information is available on illicit drug use in Nunavik, and little of what does exist is broken down for specific drugs. Qanuippitaa? survey data does show cannabis (marijuana and hashish) to be the most common drugs in Nunavik (Muckle et al., 2007). Also, 47% of women age 15 and over reported having used drugs in the 12 months preceding the survey. Women under 30—those most likely to become pregnant—use illicit drugs more than those 30 and over. There is no data on drug use among pregnant women in Nunavik.

Text Box 12
Alcohol Use Among Aboriginal Women: A Complex Phenomenon

"*. . . [W]omen drink during pregnancy for many reasons: to cope with difficult life circumstances, to self-medicate for undiagnosed mental health problems, because they did not know they were pregnant . . . High rates of community alcohol use are often related to poverty, despair, discrimination, lack of hope*" (Best Start Resource Centre, 2010).

Alcohol abuse during pregnancy cannot be framed simply as a bad habit that can be simply set aside. For many women, alcohol is not a matter of choice but a way to express pain and anger, or to cope with an often traumatic past (Tait, 2002). Addressing maternal alcohol consumption in Nunavik will involve working on multiple factors, including poverty, socioeconomic marginalization, racism, the language barrier, mistrust of non-Aboriginal social workers, and both physical and sexual violence (INSPQ, 2004).

Nutrition in pregnancy

Pregnancy is a critical time in the human growth cycle. That Is why pregnant women are advised to get enough of the right nutrients, including foods rich in folic acid, iron, and calcium, to provide what the fetus needs for its health and development (CEECD, 2008).

It can be difficult however for women in Nunavik to follow these recommendations. The recent, rapid changeover from a traditional diet to a commercial one based heavily on nutritionally poor, high-calorie foods, coupled with the high cost of groceries, makes it considerably harder to eat properly. The often low economic status of Nunavik families is a further barrier to proper nutrition.

The result is that iron deficiencies are common in Nunavik. Menstruation and pregnancy make women particularly vulnerable during their childbearing years. Close to 64% of Nunavik women suffer from iron deficiencies during pregnancy and 40% become anemic (Hodgins et al., 1998), while close to two-thirds of 9- to 14-month-old infants suffer from mild anemia (Hodgins et al., 1998, Plante et al., 2007). Women who eat traditional foods are less subject to iron deficiencies. Some foods however need to be approached with caution during pregnancy, as they may contain certain contaminants, particularly mercury and polychlorinated biphenyls (PCBs) (see Text Box 13). The 2004 survey revealed close to 72% of reproductive age with excessive concentrations of mercury in their blood (Dewailly et al., 2007).

It is also important to note that some experts have expressed concerns about possible vitamin D deficiencies and rickets in Nunavik. The population is considered to be particularly at risk because of the extended periods of darkness associated with northern latitudes. Cases of vitamin D deficiency and rickets have indeed been reported in similar northern areas (Hayek et al., 2010; Ward et al., 2007). CPS recommend-dations are in effect in Nunavik for mothers and their infants, although unfortunately there is no

data currently available on the prevalence of either vitamin D deficiency or rickets.

The only data we have on maternal exposure to environmental contaminants comes from a longitudinal study that ran from 1996 to 2002 and looked at the developmental effects of prenatal and postnatal exposure to contaminants in babies age 6 to 11 months (Text Box 14).

Text Box 13
Birth Defects and Food Chain Contamination in the Canadian Arctic

Nunavik is exposed to a host of environmental contaminants carried north by atmospheric and ocean currents to accumulate in the food chain. Concentrations peak in predatory fish species, seals, and whales such as belugas. Women are advised not to eat too much of these species' meat while pregnant.

The message for the rest of the population though is more nuanced. Numerous studies have weighed the health risks of environmental contaminants against the health risks (obesity and its consequences, malnutrition, etc.) of abandoning the traditional Inuit diet. Increasingly a consensus seems to be forming around the benefits of traditional foods (Mozaffarian and Rimm, 2006).

Apart from the data on iron discussed above, the only other data on nutritional and vitamin deficiencies currently available concerns vitamin A. A Québec study published in 2003 found that close to one in ten Nunavik newborns showed insufficient levels of vitamin A.

These nutritional deficiencies can lead to growth and developmental delays and may have negative effects on disease resistance and the immune system. Normally such deficiencies are prevented with a diet rich in fruits and vegetables or traditional Inuit foods such as seal. Traditional foods however is not always available, while the high cost and difficulty of finding fruits and vegetables limits their dietary role (Dallaire et al., 2003). Vitamin supplements during pregnancy can help compensate for this, but it seems that not that many women (47%) are taking them (Plante et al., 2007).

Text Box 14
Study on the Effects of Prenatal and Postnatal Exposure to Contaminants on Infant Development

Main conclusions of this study were the following:

Fatty acids have beneficial effects on babies' birth weight, vision, communicative and problem-solving capacity as well as their ability to sit up, stand, and walk.

Prenatal exposure to polychlorinated biphenyls (PCBs) has negative effects on birth weight, duration of pregnancy, and visual memory. However, PCB exposure was not found to lead to a greater number of low-birth-weight or premature babies. Prenatal exposure to fatty acids seems to partially counteract the effects of PCBs.

Tobacco and alcohol consumption during pregnancy have harmful effects on babies' growth and development. In the study, tobacco and alcohol use were found to have similar negative effects on birth weight to PCBs.

Intellectual stimulation by the mother has positive effects on babies' mental development.

http://www.rrsss17.gouv.qc.ca/index.php?option=com_content&view=article&id=191&Itemid=139&lang=fr

Obesity and chronic disease during pregnancy

Other than the behavioural studies discussed above, very little information is available on women's health during pregnancy. Although the prevalence of abdominal obesity appears to be increasing in Nunavik, particularly among women, this does not seem to have led to an increase in obesity-related complications during pregnancy.

3.4.2 Sexual and reproductive health

Sexually transmitted infections (STIs)

Some STIs, if left untreated, can seriously harm women's general and reproductive health as well as that of their unborn children[7] (WHO, 2007). For example, between 10 of 15% of women with untreated chlamydia will develop pelvic inflammatory disease (PID). Of these, 10 to 15% will become infertile because of fallopian tube damage, and women who have had PID face six to ten times the risk of ectopic or tubal pregnancy as those who have not (OMS, 2007a).

In pregnancy, untreated sexually transmitted infections can lead to congenital and perinatal infections in the newborn and increase the risk of preterm labour and its consequences (prematurity, low birth weight, and death) (OMS, 2007a).

Sexually transmitted infections are by far the most common reportable diseases in Nunavik. Chlamydia and gonorrhea rates are much higher than in Québec's north and the province as a whole, and also slightly higher than those of CTJB (Figure 13). And the incidence of both diseases has increased significantly in Nunavik in recent years (Figure 14). They are most often reported in women.[8] Chlamydia rates are much higher for women than men, and this upward trend has been particularly strong since 2011 (Figure 15). Although gonorrhea was more common among men from 2006 to 2010, the reverse has been true since then (Figure16). An increase in syphilis has been reported in the rest of Québec, but there have as yet been no cases reported in Nunavik (N = < 1).

Some forms of human papillomavirus can lead to reproductive system cancers, particularly cancer of the cervix. Nunavik's adjusted cervical cancer rate[9] for 2004–2008 was slightly higher than elsewhere in Québec (6 per 10,000 vs. 5) (Québec Public Health Infocentre). Interestingly, close to eight in ten Nunavik women (78%) reported having had a Pap (Papanicolaou) test in the two years previous to the Qanuippitaa? survey. However, the proportion was much lower among those age 15 to 17, with less than four in ten (38%) reporting being tested (Nunavik Inuit Survey 2004). The human papillomavirus (HPV) vaccine is now offered to girls in grades 4 and 9 in all Nunavik schools. In 2009–2010, 68% of fourth-grade and 81% of ninth-grade girls were vaccinated (MSSS et al., 2011). This is close to the results elsewhere in Québec, where 76% of fourth-grade and ninth-grade girls were vaccinated against HPV the same year (Québec Public Health Infocentre).

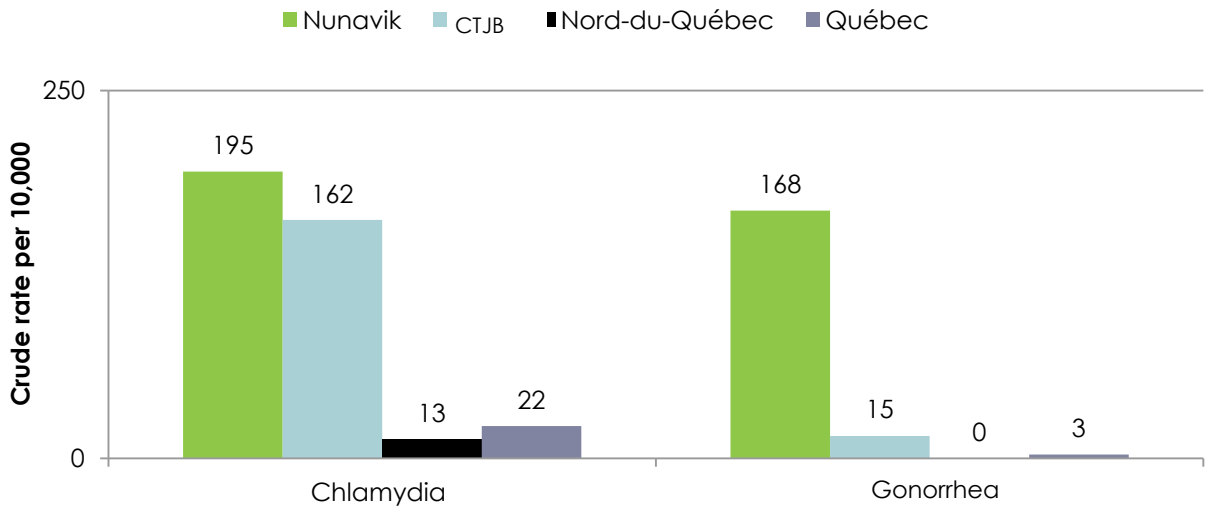
Given the high STI prevalence among Nunavik women, it is no surprise that the crude rate of ectopic pregnancy is much higher in Nunavik than the rest of Québec (23 vs. 10 per 10,000 pregnancies in 2007–2010 (Québec Public Health Infocentre). Although the rate reflects a low number of cases annually, it still underscores the importance of improving prevention and early detection of these infections among young women.

[7] For a broader picture of STIs see the health profile of Nunavik youth, adults, and the elderly, instalment 3 in this series.

[8] Part of the reason for this may be that more women get tested than men (see instalment 3 for more details).

[9] Rates are adjusted for the age structure of Nunavik as of 2006, both sexes combined. The adjustment was made for purposes of this report and is not available from the Québec Public Health Infocentre.

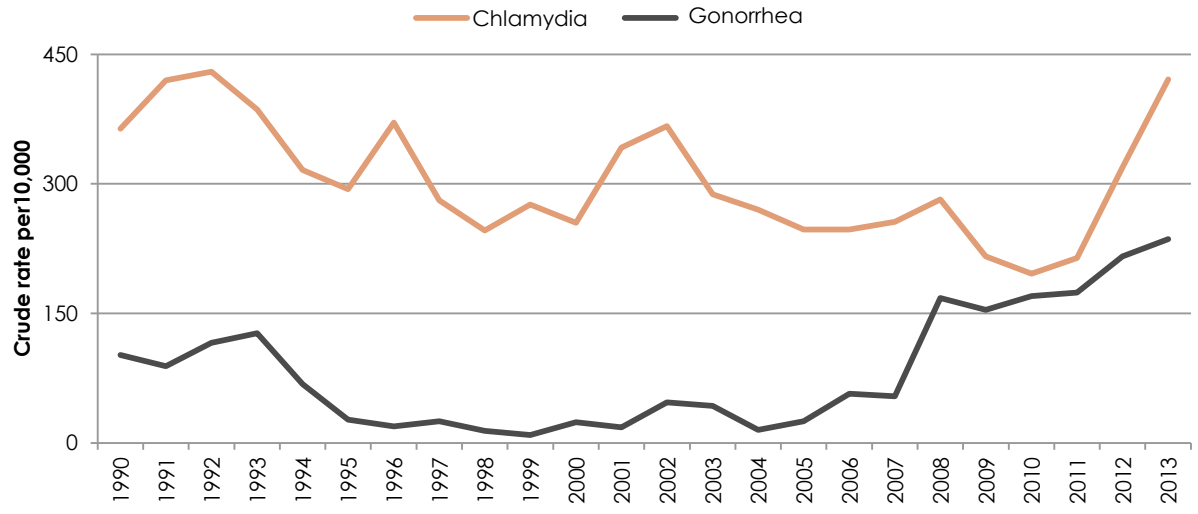
Figure13
Chlamydia and gonorrhea incidence rates,[a] Nunavik, Cree Territory of James Bay, Nord-du-Québec, and Québec, 2010



Source: Adapted from MSSS, 2011

[a]Unadjusted rates. Discrepancies could be the result of differences in age structure: infections are much more prevalent among teenagers and young adults, and these age groups make up a much higher proportion of the total population of Nunavik and CTJB than elsewhere.

Figure14
Chlamydia and gonorrhea incidence rates, Nunavik, 1990 to 2013

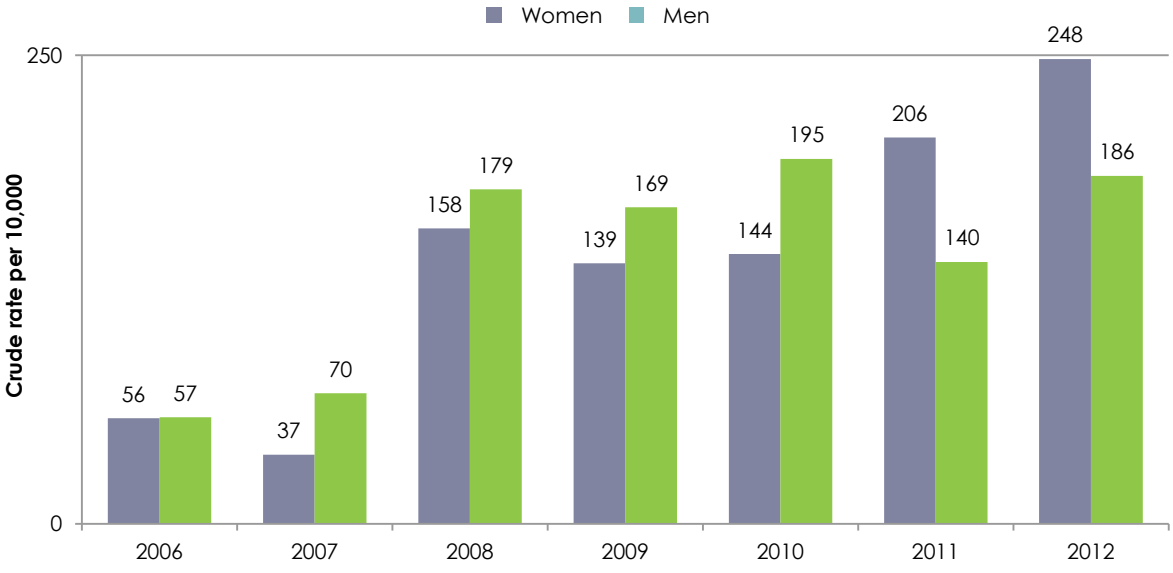


Source: NRBHSS special compilation

Figure15
Chlamydia incidence rates by gender, Nunavik, 2006 to 2012

Source: special compilation, NRBHSS

Figure16
Gonorrhea incidence rates by gender, Nunavik, 2006 to 2012



Source: NRBHSS special compilation

Very few cases of human immunodeficiency virus (HIV) have been reported in Nunavik or the Cree Territory of James Bay—less than five in the last 11 years (Lambert et al., 2009; Venne et al., 2013). The data presented above are troubling nonetheless, as any population with high rates of STIs is at high risk of HIV as well. No data has been released regarding the sex of the individuals infected to protect their privacy. But it is well established that women are more at risk of being infected during sexual activity. This is why HIV screening and prevention efforts must continue and even be stepped up. The risk of vertical transmission, specifically from mother to child, through breastfeeding, is of special concern in light of the region's high birth rate and, to a lesser extent, the prevalence of breastfeeding. There are currently no health services specifically for persons with HIV-AIDS in Nunavik.

It is also important to note that most Nunavik data on STIs are likely to underestimate the real extent of the problem (PHAC, 2004), since (1) many STIs are asymptomatic; (2) infected individuals may not be diagnosed; (3) infections may not always be reported.

Pregnancy outcomes

The healthcare infrastructure available in Nunavik means that the women who give birth in the region generally have low-risk pregnancies and natural births. Those who give birth outside Nunavik do so because their pregnancies are high-risk and are therefore more likely to deliver by caesarian section. Preterm labour is a frequent cause of hospitalization in the region. Preterm birth is also more common in Nunavik than elsewhere in Québec. It is well established that premature birth can have serious health consequences for children. This is all the more problematic in remote areas where there are few special services to help optimize their development. There are currently no data on miscarriages or abortions in Nunavik.

Breastfeeding

The benefits of breastfeeding are widely recognized and seem to carry over into adulthood. Mother's milk is perfectly suited to her baby's needs. Breastfeeding promotes bonding and protects against respiratory infections, anemia, and other conditions. Unfortunately, little data is available on breastfeeding in Nunavik. In the 2004 Qanuippitaa survey, 30% of all mothers reported having breastfed their last child and 40% opted for mixed feeding (Appendix 3, Indicator 18), but no information was collected regarding duration.

3.4.3 Mental health and psychological distress

Depression is one of the most common mental health disorders, particularly among women in their childbearing years (Cummings and Kouros, 2009). Maternal depression can negatively affect or impair important parent-child interactions and eliminate many of a child's opportunities for enriching experiences (Irwin et al., 2007). The consequences of this are described in the first section of this report.

There are no data on maternal depression for Nunavik, but the women interviewed for the Qanuippitaa? survey found high levels of psychological distress (depression and other common mental health disorders) and suicidal behaviours. Fully 14% of women age 15 and over scored as having experienced psychological distress in the 30 days preceding their interview (Kirmayer et al., 2007). Distress appeared to be more frequent among those who reported drug or alcohol use, a history of sexual abuse, or exposure to domestic violence (Kirmayer et al., 2007).[10] Also the percentage of women age 15 and over who reported having attempted suicide doubled between 1992 and 2004, from 13% to 26% (Kirmayer et al., 2007).

[10] Differences between the scales of measurement used in the 1992 survey and the Québec survey make it inappropriate to compare these populations.

3.4.4 VIOLENCE AGAINST WOMEN

Spousal violence, also known as intimate partner violence, remains widespread in many societies worldwide and clearly, violence in any form (physical, psychological, sexual) is a major determinant of women's health. Spousal violence affects not only the women subject to it (through physical trauma, injuries, emotional distress, and suicide), but their young children as well, as it is a risk factor for abuse[11] (WHO, 2005).

It is also a well-documented fact that Aboriginal women are at greater risk of experiencing violent incidents (Brennan, 2011). Numerous individual, historical, and structural factors lie behind the alarming statistics on violence in these communities, as Text Box 15 points out. Rates of Women's victimization rates for spousal violence in Nunavik were six to ten times the rates for the rest of the province in the first years of the 2000s (Duhaime, 2008). And although victimization rates vary enormously from one year to another, they are consistently much higher than those reported for Québec overall.

Moreover, in 2004, 57% of Nunavik women reported having been subject to physical violence in the course of their adult lives, with a spouse or former spouse being the main perpetrator in most cases (Lavoie et al., 2007a). Comparisons between the two coastlines seem to indicate slightly higher levels on Hudson Bay, where incomes are lower and overcrowding more severe than on Ungava Bay. Note that data sources are known for significantly undercounting incidents of spousal violence; actual prevalence is likely to be even higher (INSPQ et al., 2006).

Text Box 15
The Causes of Violence Against Women in Nunavik

Spousal violence is found in all communities and cultures and all social strata, but the WHO recognizes a number of factors, both individual and societal, that are associated with increased risk of violence against women. Among these factors are low education levels, early age of first pregnancy, spousal alcohol consumption, and a prior history of victimization in childhood (WHO, 2005). Many women in Nunavik unfortunately present more than one of these factors.

Spousal violence also tends to be more common in rural than urban areas. There are several reasons for this, including isolation, limited access to jobs and education, and a lack of services for treating mental health and substance abuse (Lavoie et al., 2007a). These factors are compounded by others more specific to Inuit and other Aboriginal communities, such as acculturation stresses, the residue of historical trauma, intergenerational aftereffects of violence experienced in residential and federal schools, and the critical shortage of adequate housing (Anderson, 2000).

Contrary to certain beliefs, domestic violence in Nunavik has nothing to do with Inuit tradition or culture. It belongs to a broad set of circumstances common to all the people of Nunavik, "who have been forced to undergo major changes within a very short period of time, and are currently experiencing severe social problems and general distress" (CDPJQ, 2010).

And numerous are the Inuit women who denounce the violence: "We, Inuit women of Nunavik, demand that violence directed against women and children must stop. Child sexual abuse is absolutely intolerable and must end. All types of violence, whether physical or psychological, against women and children, must cease to occur (the violence. In the words of the Nunavik Inuit Women's Manifesto quoted in Nunatsiaq News, 2006).

Nunavik Actions to Oppose Violence

Many prevention and awareness activities have been held in Nunavik. There are community gatherings such as marches to oppose violence against women or community meals, communications campaigns with posters and public service announcements on radio, and educational workshops both for young people in the schools and for all community members, such as "Good Touch/Bad Touch." The Nunavik Regional Committee on Sexual Abuse Prevention has published various materials on preventing sexual abuse including an information booklet on child sexual abuse, stories, and calendars for sale (NRBHSS, 2012a

[11] See also section 3.5.3(Children under 5).

3.5 Children's Health Status

This section addresses the health status of children under five years of age. For children, two periods stand out as critical to healthy development. We will begin with a look at the first as we consider the health status of infants in their first year of life, then go on to the second with a discussion of children age 1 to 4. Each section will look at mortality and morbidity and the causes of hospitalization. We will then examine vaccination for all children under 5 and conclude with a look at incidence of violence and abuse for children in this age group.

3.5.1 Infants up to age 1

Mortality and morbidity

The infant mortality rate in Nunavik,had been stable since 1996 (Table 1) (Appendix 3, Indicator 25). Although similar to the rate for Inuit Nunangat overall (15 per 1,000 for 2004–2008, Statistics Canada, 2012), it is still very high relative to the rest of Québec (Table 1) (Appendix 3, Indicator 25) and to a lesser extent to the CTJB. Such comparisons need to be treated with caution however, since the rate is derived from an annual average of only 7 fetal and infant deaths in the region.

The leading causes of death for children are perinatal conditions, sudden infant death syndrome, and congenital abnormalities, particularly heart defects. The prevalence of congenital heart defects is significantly higher than in the rest of Québec (245 vs. 129 per 10,000 births) based on an annual average of 7 cases between 2003 and 2008 (MSSS et al., 2011). Unfortunately, our sources do not indicate possible causes of these anomalies (Text Box 16).

The perinatal mortality rate is also higher in Nunavik than in the rest of Québec (Table 1) (Appendix 3, Indicator 23), although more or less in line with that of the CTJB (Table 1). Perinatal mortality is the indicator most closely associated with the quality of obstetric care, so it is worth noting that the difference between Nunavik's use of midwives and the practice in the CTJB of sending women to give birth in Val d'Or, Chibougamau, or Montréal seems to have no effect. Villages with traditional midwives also show no higher incidence of adverse pregnancy outcomes than those without.

Table 1
Mortality and morbidity indicators for infants < 1, Nunavik coasts and total, Cree Territory of James Bay, Québec

Children's health indicators	Hudson		Ungava		Nunavik	CTJB		Québec	
Annual births, 2006–2010	193		117		310	405		86,321	
Premature births, 2006–2010 (%)	12	n/s	10	n/s	11	8	(-)	7	(-)
Infant mortality rate, 2005–2009 (per 1,000 births)	*16	n/s	*20	n/s	*18	*11	n/s	3	(-)
Perinatal mortality rate, 2005–2009 (per 1,000 births)	**n/r	n/s	*20	n/s	*13	*12	n/s	6	(-)

For more on indicators (4), (21), (25) and (23) or for additional data, see Appendices 1 to 4.

n/s: not significant

*: Coefficient of variation greater than 16.66% and less than or equal to 33.33%. Value must be interpreted with caution.

**: Coefficient of variation greater than 33.33%, so the value was not released (n/r)

(+/-): Value significantly higher (+) or lower (-) than reference category at the 0.05 threshold. Results from the two coastlines were compared with the rest of the region using the Bonferroni adjustment, then the Cree Territory of James Bay (CTJB) and the rest of Québec (Québec without Nunavik) were compared to Nunavik.

Sources: MSSS birth records, MSSS death records, MSSS stillbirth records, Public Health Infocentre.

Text Box 16
Frequent Causes of Heart Defects

Heart defects are the most common congenital anomalies in Nunavik, as they are everywhere in Québec. The precise cause of the majority of these anomalies is unknown (Richards et al., 2010). In fact, in order to identify their potential causes, one would need to have more details on the specific types of anomaly observed, as well as whether malformations of other systems are also presentshould be obtained .

According to the literature, by far the most frequent cause of heart defects in general is high blood sugar secondary to type 1 or type 2 diabetes before pregnancy (Wren et al., 2003), and this may indicate a need for monitoring diabetes in pregnancy a little more closely. Among congenital syndromes known to present with heart defects are trisomy 21 and congenital rubella syndrome (CRS). However, on confirmation we found no reported cases of these conditions in Nunavik for the period under consideration.

Along with higher infant and perinatal mortality, preterm delivery also seems to be more frequent in Nunavik than in the rest of Québec (Table 1) (Appendix 3, Indicator 21). This may be due in part to the fact that preterm delivery is linked with various risk factors that are relatively widespread in the Nunavik, such as low socioeconomic status and smoking during pregnancy (PHAC, 2008).

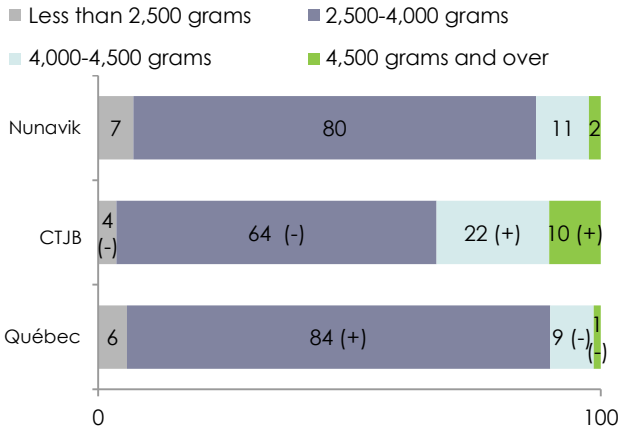
Furthermore, despite the big differences in care delivery between Ungava and Hudson Bay communities, mortality and morbidity indicators show no significant differences (Table 1). Caution is advised however, since the sample sizes are so small; nonetheless, detailed analysis of annual averages also does not seem to suggest any marked differences between the two coasts on any of the conditions measured (see Appendix 3 for details).

Figure 17 shows the distribution of births by weight in Nunavik, the CTJB, and the rest of Québec (Appendix 3, Indicator 19). The proportion of small-for-gestational-age infants, i.e., those with a birth weight of less than 2,500 grams, is relatively similar in Nunavik and the rest of Québec despite greater exposure in Nunavik to risk factors such as preterm birth and smoking. Proportions remained virtually unchanged over the 2001–2005 and 2006–2011 periods both in Nunavik and the rest of Québec (Appendix 3, Indicator 20).

At the other end of the weight distribution spectrum, we find a slightly higher incidence of macrosomia (weight ≥ 4,000 g) in Nunavik than in the rest of Québec (13% vs. 10%). Although a gap of barely 2 percentage points is relatively insignificant from a clinical perspective, it is still consistent with an increase in women's body weight and an anticipated rise in the prevalence of gestational diabetes, a phenomenon already well documented among the Cree (Auger et al., 2013; Nolin et al., 2007; Torrie et al. 2005). The CTJB's very high macrosomia rate of 32% is much higher than rates in Nunavik and the rest of Québec.

Respiratory tract infections are also very frequent in Nunavik children, both in the first year of life and up to age 4. We will discuss this matter further in the section on children age 1 to 4.

Figure17
Distribution of births by weight in Nunavik, the Cree Territory of James Bay, and Québec, 2006–2010, percent



For more on Indicator (19) or for additional data, see Appendices 1 to 4.
+/-: Value significantly higher (+) or lower (-) than Nunavik at the 0.05 threshold
Source: MSSS birth records

Hospitalization

Hospitalization rates in the first year of life have been stable in Nunavik since the 1990s (Appendix 3, Indicator 26). Nunavik's all-cause hospitalization rate is nonetheless still higher than that of the rest of Québec (Appendix 3, Indicator 26), although comparable to that of the Cree Territory of James Bay (Table 2).

Respiratory system diseases such as pneumonia and bronchitis are the leading cause of hospitalization for children in their first year of life. The rate in Nunavik is far higher than that recorded in the rest of Québec or the Cree Territory of James Bay, though less markedly so (Table 2). Hospitalization rates for respiratory problems are higher on Hudson than on Ungava Bay (4,815 vs. 3,151 per 10,000) (Appendix 3, Indicator 26). Such a result is consistent with the more severe overcrowding on Hudson Bay (see section 3.2 "Living Conditions of Families").

Perinatal conditions and congenital defects (Text Box 16), mainly of the circulatory and digestive systems, are ranked second and third among causes of hospitalization (Table 3). Hospitalization rates for congenital defects are fairly similar in the three sample populations (Nunavik, CTJB, and Québec), with the rate slightly lower in Nunavik (Table 2) (Appendix 3, Indicator 26). Hospitalization rates for perinatal conditions on the other hand are significantly lower in Nunavik than in the CTJB and the rest of Québec, at 3,362 per 10,000 compared to 5,970 and 5,323 (Table 2) (Appendix 3, Indicator 26). This may seem surprising at first, but it is probably a side effect of Nunavik's very high infant mortality rate and the fact that most high risk pregnancies get transferred prenatally.

Despite the difficult living conditions, hospitalization-rate differences are also partly caused by somewhat looser admission criteria in the North, making it possible to admit children at less critical stages of illness or to prevent their condition from worsening. These aspects need to be considered when comparing hospitalization data cross-regionally.

Table 2
Hospitalization rates for short-term physical care by broad diagnostic grouping among children < 1 year for Nunavik, the Cree Territory of James Bay and Québec, 2007–2012

Listing by rank in Nunavik	Nunavik	CTJB		Québec	
	Crude rate (per 10,000)				
1. Respiratory tract infections	4,144	2,414	(-)	625	(-)
2. Certain conditions originating in the perinatal period	3,362	5,970	(+)	5,323	(+)
3. Congenital and chromosomal anomalies	602	627		730	
4. Certain infectious and parasitic diseases	388	328		189	(-)
5. Diseases of the digestive system	374	269		142	(-)
6. Diseases of the urogenital apparatus	*187	308	(+)	135	
7. Injury and poisoning	*174	*74	(-)	52	(-)
All diagnoses	**10,662**	**11,092**		**7,670**	**(-)**

For more on Indicator (26) or for additional data, see Appendices 1 to 4.
*: Coefficient of variation greater than 16.66% and less than or equal to 33.33%. Value must be interpreted with caution.
(+/-): Value significantly higher (+) or lower (-) than for Nunavik at the 0.05 threshold
Source: MSSS MED-ÉCHO database

3.5.2 Children age 1 to 4

Mortality and morbidity

Mortality among children age 1 to 4 has fallen slightly in the last few years (Appendix 3, Indicator 28) and averaged 1 death per year between 2005 and 2009. The majority of deaths in this age group are from accidents, such as drowning and fires. Rates cannot be compared with other regions because of the small sample sizes.

The most common morbidity factors are conditions of the respiratory system, followed by those of the digestive system. Respiratory conditions such as pneumonias, acute respiratory tract infections, and asthma are very widespread among Inuit children both in Nunavik and in the other Canadian Inuit regions. The rate of respiratory infection among Inuit infants and children is in fact among the world's highest (Kovesi et al., 2007). Rates of infections caused by the respiratory syncytial virus (RSV), adenovirus, influenza A virus, and parainfluenza virus are very high. Environmental factors such as overcrowded housing, poor ventilation, and exposure to second-hand tobacco smoke contribute to respiratory infections among infants and children (Elliott and Macaulay, 2004; Kovesi et al., 2007). Other identified risk factors include not being breastfed, premature birth, and congenital heart defects. Some experts haveeven suggested universal passive RSV immunization as a way to reduce acute respiratory infections (Elliott and Macaulay 2004).

Respiratory infections often lead to middle-ear infections, or otitis media, in young children. These are classified as acute or chronic according to their duration. Studies have shown that the earlier a child's first episode of acute otitis media, the higher the risk of recurrent episodes and of developing the chronic form (Ayukawa et al., 2001). Chronic otitis media is a persistent infection of the middle ear and is associated with poor indoor air quality (mould and exposure to second-hand smoke) (Cameron, 2011). Chronic ear infections often lead to hearing loss. Impairments may begin early in life due to recurrent bouts of otitis media, and have been linked to poor academic performance, language and speech delays, and youth distress (Cameron, 2011).

The Inuit have the highest reported rates of chronic otitis media in the world, with rates ranging from 7% to 31% depending on the community studied (Elliott and Macaulay, 2004). Prevalences of over 50% have been reported in some communities over certain periods (Baxter, 1999). Similar statistics have been recorded in other northern regions as well (Elliott and Macaulay, 2004). A study in 2004 found 19% of Inuit children age 5 and 6 showed hearing loss in one or both ears (Ayukawa et al., 2004), while 23% of school-age children were found to have significant hearing loss (Ayukawa et al., 2004).

Digestive system conditions in Nunavik are overwhelmingly those affecting the teeth. A high prevalence of dental caries and tooth loss has been reported in northern regions, with levels reaching 95% to 100% in some areas (Elliott and Macaulay, 2004). The percentage of Nunavik children with no cavities shows the scale of the problem dramatically, as only 3% are cavity-free at age 6. In other words, almost all the children in Nunavik suffer from dental caries. The main causes are diet, dental hygiene, and access to services (Text Box 17).

Text Box 17
Factors Influencing Aboriginal Dental Health

Dental caries in babies and toddlers is often linked to prolonged exposure to sweet drinks (including milk), particularly when babies are put to bed with a bottle. For other children, poor tooth-brushing habits as well as candy and sugary drinks promote tooth decay. Refined sugar products became available in Nunavik less than 40 years ago. They quickly gained popularity, especially soft drinks, and now account for a significant share of people's caloric intake. Products containing refined sugar seem to be among the principal contributors to dental caries. Limited access to dental treatment and preventative services and families' low socioeconomic status further adds to the problem (NCCAH, 2013).

Services Currently Available in Nunavik

There are some professional dental services available on both Nunavik coastlines. Four permanent dentists and two dental hygienists have been based in the two biggest villages on Hudson Bay for more than five years and regularly make the rounds of the smaller villages. The hygienists also visit schools to promote good oral hygiene. The Ungava Tulattavik Health Centre provides oral and dental services to all the communities on Ungava Bay. Close to 6,000 people have access to the services of the one Kangiqsualujjuaq- and two Kuujjuaq-based dentists, who also cover the other Ungava Bay communities. For specialized services, an orthodontist and a denturist have been making the rounds of the entire Nunavik region since 2009.

Hospitalization

The all-cause hospitalization rate for children age 1 to 4 in Nunavik is markedly higher than that of the rest of Québec and, to a lesser extent, of the CTJB (Table 3) (Appendix 3, Indicator 29).

As is the case for children in their first year of life, respiratory system diseases are the leading cause of hospitalization among 1- to 4-year-olds (Table 3) (Appendix 3, Indicator 29). This is also true for CTJB and the rest of Québec, although their rates are somewhat lower.

Digestive system diseases are the second-leading cause of hospitalizations in the 1 to 4 age group (Table 3) (Appendix 3, Indicator 29). Nunavik rates here are much higher than for the CTJB and the rest of Québec. The majority of such cases involve treatment for dental problems (MED-ÉCHO database). General anaesthetic is often required for young children when treating a number of decayed teeth at the same time (Health Canada, 2011). Note that drinking water in Nunavik is not fluoridated.

The next most common causes of hospitalization are injuries and poisoning (Table 3) (Appendix 3, Indicator 29). The hospitalization rates here are three times as high in Nunavik as in the rest of Québec and slightly higher than in the CTJB (Table 3). Accidental injuries are a major cause of morbidity for all Canadians, especially Aboriginal Canadians, whose injuries are often more serious (Oliver et al., 2012a). The same is true in Québec, where underprivileged children have significantly higher hospitalization rates for all accidental injuries as well as for more serious ones (MSSS 2007). The issue of injuries and trauma among children is a troubling one, given the long-term effect they may have on individual health and the high cost associated with them (Oliver et al., 2012a, 2012b).

Table 3
Hospitalization rates for short-term physical care by broad diagnostic grouping among children age 1 to 4 for Nunavik, the Cree Territory of James Bay, and Québec, 2007–2012

Listing by rank in Nunavik	Nunavik	CTJB		Québec	
	Crude rate (per 10,000)				
1. Respiratory tract infections	634	451	(-)	233	(-)
2. Diseases of the digestive system	504	64	(-)	33	(-)
3. Injury and poisoning	110	89	n/s	37	(-)
4. Certain infectious and parasitic diseases	82	73	n/s	74	n/s
5. Congenital and chromosomal anomalies	28	*37	n/s	16	(-)
All diagnoses	**1,716**	**1031**	**(-)**	**539**	**(-)**

For more on Indicator (29) or for additional data, see Appendices 1 to 4.
n/s: not significant
*: Coefficient of variation greater than 16.66% and less than or equal to 33.33%. Value must be interpreted with caution.
(+/-) : Value significantly higher (+) or lower (-) than for Nunavik at the 0.05 threshold
Source: Québec Public Health Infocentre.

Vaccine-preventable and reportable diseases

Only a few vaccine-preventable diseases are recorded in Nunavik among children under 5 each year. Episodic outbreaks, such as the 2012 tuberculosis outbreak and the 2009 whooping cough outbreak, have occurred. Others are uncommon but always present, such as *Haemophilus influenzae* and invasive pneumococcal disease. More specifically, between 2008 and 2012, an average of two cases of mumps, three cases of whooping cough, and three cases of *H. influenzae* (meningitis, bacteremia, and others) were recorded annually in Nunavik. Although the numbers are small, the consequences of these infections can be serious. Meningitis for example has likely caused more infant and child deaths in Nunavik than any other disease (Jenkins et al., 2003). Thus although few children contract the disease, meningitis outbreaks remain relatively frequent in northern regions (Dewailly et al., 2000; Jenkins et al., 2003). Still, the relatively low prevalence of vaccine-preventable diseases attests to the effectiveness of the vaccination program in Nunavik (Text Box 18).

Text Box 18
Immunization in Nunavik

Children in Nunavik, like all Québec children, receive a series of vaccinations at age 2, 4, 6, 12, and 18 months to immunize them against diseases including diphtheria, whooping cough, tetanus, poliomyelitis, *Haemophilus influenzae* type b, measles, rubella, mumps, chickenpox, Streptococcus pneumoniae, and meningococcus.

Nunavimmiut also receive a supplementary dose of *Streptococcus pneumoniae* vaccine (MSSS, 2009). Certain high-risk children are given medication (Palivizumab, brand name Synagis) to protect against respiratory syncytial virus (RSV) known to cause bronchiolitis in children in their first year of life (Bolduc, 2012). The possibility of extending the treatment to all Nunavik children is under consideration.

Certain Nunavik communities experienced renewed outbreaks of active tuberculosis in 2012. Tuberculosis vaccination was halted in most of Québec in 1976 and in 2004 in Nunavik, but after the outbreak it was reintroduced in the hardest-hit community. The communities most affected by the return of tuberculosis in recent years were also those where overcrowding was most severe.

The main reportable (MADO) diseases among 0 to 5 year-olds not preventable by vaccination are giardiasis and bacillary dysentery (MED-ÉCHO database). Both diseases are intestinal conditions that spread rapidly in densely populated locations (MADO database). Vaccination

As previously stated, the fact that very few vaccine-preventable diseases are present in Nunavik shows that vaccination seem to be well-done in the region. But there is still no vaccination registry to indicate precisely what the level of vaccination coverage actually is.

Nunavik, like the rest of Québec, has annual seasonal flu vaccination campaigns. Everyone in Nunavik is considered to be at risk of contracting and spreading influenza because of the overcrowding and harsh climate, so vaccination has been available free to everyone since 2007 (RSSSN, 2012a)

Violence and abuse

A range of individual, familial, and community factors have been linked to violence against and abuse of young children (Text Box 19).

A recent report from Commission des droits de la personne et de la jeunesse du Québec (CDPJQ) indicated that nearly a third of Nunavik children are reported to child welfare services, a rate six times the provincial average of 5% . Half the children taken into care are under the age of 5 (CDPJQ, 2010). The number of reports has been increasing constantly in recent years (IHSSC 2012), which may indicate that the problem is getting worse or perhaps simply that people are more aware of it and thus more inclined to report. It is important to bear in mind that a report can have negative effects on a family and may affect the family's access to health care (Text Box 20).

Text Box 19
Understanding Maltreatment of Aboriginal Children

The overrepresentation of Aboriginal children reported to child welfare services is well documented in Canada, and the reasons for it are extremely complex. Recent research tend to show the importance of structural factors contributing to child maltreatment among Aboriginal children, including overcrowding, poverty, and a lack of support for parents suffering from addictions (MacLaurin et al., 2008).

It is also well documented that poverty and the parental stress it causes are risk factors for violent parental behaviour in all population groups (Aboriginal and non-Aboriginal) (CDCHU, 2007). To take Québec as an example, the apprehension rate between 2002–2003 and 2005–2006 for the CLSC serving the most disadvantaged area was 8 times that of the CLSC in the most favoured area (MSSS, 2007).

To these factors must be added the profoundly disruptive effects of assimilationist colonial policies on traditional Aboriginal parenting structures (NCCAH, 2012). Residential school victims' struggles with mental health problems, addictions, and domestic violence are amply documented. Their legacy vastly complicates the difficulties of establishing health relationships with partners and children (Health Council of Canada, 2011).

Given these circumstances, Aboriginal parents are often judged deficient. Such judgments however completely overlook the cumulative effects of colonial policies on the challenges Aboriginal parents face every day, such as poverty, overcrowded housing, and violence, and which they are powerless to overcome on their own without support (Irvine, 2009).

Text Box 20
Reports to Child Welfare: A Barrier to Healthcare Access

Aboriginal women face complex sociopolitical and economic challenges when their children are reported as abused to child welfare services. They come to live in constant fear of having their children taken away from them. This fear acts as a barrier to healthcare access, compounded by previous experiences of racism, prejudice, and discrimination within the healthcare system (Health Council of Canada, 2011).

Sexual abuse of children is also very frequent in Nunavik. One out of two women and two out of five men surveyed as adults in 2004 reported having experienced acts of sexual abuse as children (Lavoie et al., 2007b). Reportable disease data on sexually transmitted infections included cases among children age 5 and under for the 2007–2011 period (see section 3.5.3).

These victims face serious future risks in addition to the immediate damage to their physical and mental health. Children exposed to domestic violence, whether as direct victims or witnesses, are more likely to have difficulty learning and suffer the fallout from repeated academic failure. They are also at greater risk of becoming aggressive and developing self-destructive behaviours, such as alcohol or drug abuse and sexual risk behaviours (Lessard & Paradis, 2003).

Reducing domestic violence in Nunavik requires decisive action on two urgent issues—the housing shortage and a lack of addiction treatment services—in response to the structural determinants of maltreatment in Aboriginal communities (Text Box 17) and the recommendations of Commission des droits de la personne et des droits de la jeunesse (CDPJQ) in its followup report on children's aid services in Nunavik. CDPJQ also stressed the need to strengthen violence prevention services geared to the needs of mothers and families. Emotional counselling, support, and psychological services are also essential for making sure the process of healing can take place. Family support services such as the integrated perinatal and early childhood program (SIPPE) are a promising approach in this regard.

Child welfare services

Current youth protection services in Nunavik operate under regular Québec law, and parental fitness assessments may sometimes be influenced by western ideas of parenting (CCNSA 2009–2010). Although the family situations of some children may be particularly difficult, removing them may still not be the best solution, either because of a lack of local resources to take them in or the inability to conduct the necessary follow-ups with host families. Recruitment and training of Inuit staff is critical to improving child welfare services, since Inuit case workers are generally in a better position to understand the complexities of the family situation. To this end, Nunavik is increasingly making efforts to provide psychosocial intervention training for local Inuit staff (NRBHSS, 2012).

Source : Nunavik Tourism


Entrance

Discussion

4.1 Main findings

For Inuit families, significant health inequalities persist

Although the health of Inuit children did improve during the study period , several health indicators still reveal substantial disparities when compared to the population of Quebec as a whole.

Mother and infant health is key to a healthy future: Young mothers in Nunavik raise large families. The high fertility rate is a sign of the vitality of the Inuit identity, but is also frequently associated with socio-economic challenges for families. The combination of adverse determinants—poverty, low education levels, and overcrowded housing—compound the vulnerability of young parents and their children. As a result, children do not always receive the quality support required for optimal development, and which would make them more supportive parents when their turn comes.

The high prevalence of sexually transmitted infections and tobacco and alcohol use are further warning signs suggesting that women in Nunavik experience greater-than-average distress. The high incidence of psychological distress and suicide attempts, as well as domestic violence, victimization, and sexual abuse are additional signs of the difficult living conditions that women and their children face.

The perinatal period and first few months of life are times of great vulnerability. The living conditions of Inuit women inevitably have repercussions on the health of young children right from the first moments of life. Perinatal and infant mortality rates are higher in Nunavit than in Québec as a whole. Limited access to specialized services for more complex cases is certainly a factor in these discrepancies; indeed, statistical data for these indicators closely resembles data for other remote areas.

Early childhood holds a mirror to family living conditions: Diseases of the respiratory and digestive systems, as well as some infections and injuries, remain major causes of morbidity among Inuit children who, unfortunately, continue to be disproportionately affected. These inequities have a complex range of causes, but a growing body of literature has shown that the economic situation of families is the main cause of health inequalities between Inuit and non-Inuit Canadians (Luo et al., 2004; Luo et al., 2010; Oliver et al., 2012a; Oliver et al, 2012b; Peters, 2012; Pageau et al., 2003 PHAC, 2008).

Overcrowding: A public health priority

A large proportion of Nunavik families experience material deprivation, and there is little evidence that this state of affairs is improving. Inadequate access to affordable healthy foods and other basic necessities is widespread. But housing remains by far the most alarming problem for Nunavik families. Inadequate housing impacts the physical and psychological health of children and parents in myriad ways, increasing the risk of infectious and respiratory diseases, mental health disorders, domestic violence, and child maltreatment.

Adapted services, but much remains to be done

A range of services have been developed to reflect Inuit culture and the needs expressed by the people of Nunavik. Examples include the growing use of midwives, extended family support, and good access to child care. These services are important protection factors for families, but much remains to be done. Over one third of babies are currently delivered outside Nunavik, a practice that isolates mothers from their social networks and cultural context, and can expose them to health care that may be ill-adapted to their needs. The children left behind when mothers travel to give birth are also deprived of their parents' guidance and care. Finally, support for families in difficulty is still frequently lacking: all too

often children must be removed from their original environment due to inadequate resources.

Rapid, sustained population growth among Nunavik's young children is already putting significant pressure on regional infrastructure and services, including the childcare network, the school system, and housing. The healthcare system faces major challenges to be able to meet the needs for both diagnostic services and curative care, not to mention preventive services and health promotion for Nunavik's children.

4.2 Some paths forward to guide action

In keeping with our proposed framework, this section presents courses of action that reflect the levels of the determinants targeted. To improve quality of care and education in early childhood, however, the overall approach must be comprehensive: it must address all the social determinants of health, particularly education, housing, income, and food security (MSSS and INSPQ, 2007). Moreover, regardless of the type of service or intervention, it is not enough to simply "paste in" programs developed elsewhere; we must work together with local communities and families to create and develop approaches inspired by the most promising models and ensure they are adapted to local needs. Text Box 21 describes some of the features common to promising interventions.

In other words, intervention strategies should focus on women's health generally rather than pregnancy specifically, with a view to improving the living conditions that are the root cause of a host of problems. Improving social conditions in the community is the first and most important step for improving women's health (Shröter, 2010). Like approaches for dealing with other vulnerable populations, approaches targeting Aboriginal communities should be both intersectoral and participatory (Frohlich, KL & Potvin, L). By participatory, we mean they must be developed jointly with the target populations, and also foster participation in the dominant society, to avoid the risk of marginalization that may further perpetuate inequalities.

Text Box 21
Features of Promising Interventions

To succeed in Nunavik, interventions must adopt a holistic, non-threatening approach, focus on culture, and inspire community engagement and support. Services must also be coordinated to ensure continuity of care for women with alcohol and drug abuse issues. Many programs and initiatives focus solely on alcohol and substance abuse, while neglecting the root causes of these issues. Government funding programs also tend to target specific health problems to the detriment of multidimensional initiatives that address factors such as poverty and the history of oppression and cultural rupture which have, in many cases, spawned multi-generational cycles of mental health problems, family violence, and alcohol and drug abuse.

It is widely recognized that a significant part of the solution lies in a comprehensive, multi-level approach. Research has shown that adopting multiple approaches can work, provided the overall strategy is based on a sound understanding of the full range of neurobiological, behavioural, cultural, social, economic, and political determinants that impact children's health and development. The *Framework for the determinants of young children's health in Nunavik* presented in the first section of this document is designed to do just that.

Researchers have repeatedly noted that there isn't enough research data from Nunavik. At a first glance this claim seems questionable, but upon closer inspection lacunae emerge, such as the very low number of interventions that are properly evaluated. To ensure that current and future interventions are both pertinent and effective, a rigorous evaluation process is needed. There is also a growing need for research documenting public health success stories and protective factors that promote the health and wellbeing of Inuit communities (Cameron, E., 2011). A shift away from the current focus on identifying factors that cause disease to one aimed at pinpointing factors that promote health would be particularly suitable

in the Inuit context. This would enable the development of interventions that build on the many sources of resilience of the Inuit (Kirmayer et al., 2009b).

Action on proximal determinants: Initiatives to change life habits that consider the family context

There is consensus among researchers that proximal determinants like lifestyle and immediate family environment directly impact children's health. This means that taking action on the determinants themselves is critical. But interventions at this level must also consider contextual influences on individuals. Measures designed to encourage women to quit smoking or drinking during pregnancy, to give two examples, are unlikely to succeed if they fail to take into account the influence of immediate family members, or their often difficult living conditions. In Nunavik living conditions are such that women's priorities frequently differ from those of health professionals, which makes it crucial to take the time to build a relationship of trust in order to optimize the impact of interventions.

For example, many experts now affirm that smoking cessation programs for Aboriginal women must integrate cultural and identity elements (Passey, 2011; Reading, 2009; Bottorff et al., 2010; Varcoe et al., 2010). For this reason it is essential to avoid narrowly individual-focused approaches, in favour of those that include families, when developing smoking cessation services for Aboriginal women (Schwartz, 2005). Another point researchers have noted is that seniors can wield significant influence in multi-generational households. For these reasons, interventions that instill pride in behavioural changes, such as the Blue Light Project, are particularly promising (Varcoe et al., 2010). This innovative project, already well-established in the region, encourages smoke-free homes to identify themselves with a blue light outside.

Another important point to understand is that in overcrowded conditions it can be extremely difficult for some women to impose desired changes of behaviour on those who share their homes. At the same time, poverty and the harsh climate limit their ability to extract themselves from this environment (Bottorff et al., 2010).

For all the above reasons, a harm reduction approach can also be encouraged in the course of interventions aimed at reducing alcohol and tobacco use during pregnancy. We too often forget that many women have no place to go when the situation at home is difficult. An alcohol-free space where women could learn to relax and feel safe could be extremely beneficial. Creating such a space would also enable frontline workers to gradually build a relationship of trust with the most isolated women (Tait, 2002). Regional initiatives to establish family houses (*maisons de la famille*) are a promising community-centred strategy; a number of communities already operate facilities of this kind.

The respectful, non-threatening nature of the family house approach is critical because women who drink during pregnancy—both Aboriginal and non-Aboriginal—already face strong social stigma that isolate them and make it that much harder for them to seek the support services they might need (April and Bourret, 2004).

Finally, the significant impact of overcrowding, unemployment, and poverty on health-related issues demands a comprehensive approach that directly addresses intermediate and distal determinants like access to quality health care and adequate housing, and local economic development. There can be no question that these elements influence family dynamics and thus the health, safety, and well-being of Nunavit's children.

Action on intermediate determinants: Providing culturally safe health care and social services

It is clear that the development of health services has improved the quality of life and longevity of Canada's Aboriginal people. But it is equally apparent that the Western values imposed by the healthcare system have meant that care can be perceived as coming with a discriminatory, stigmatizing attitude toward Aboriginal people (HCC, 2012; Smylie et al., 2001; Brascoupé, 2009).

Offering culturally safe health care ensures that the services provided are both effective and better adapted to families' needs. Key aspects of culturally safe health care include combining traditional and western medicine, hiring and training Inuit staff, and taking local needs into account in healthcare delivery (NCCAH, 2009–2010). A good example in Nunavik is midwifery: this practice means women can give birth in their home environment, and it combines the above-mentioned desirable features by training and employing people of Inuit origin and incorporating elements of traditional medicine into care. Interestingly, although Inuit women often have significant risk factors, births in the region do not seem to present a higher number of complications.

The needs and characteristics of young families should also be considered when planning services. Of particular importance is the fact that many families live in a situation of recurrent poverty and overcrowding, which puts them at increased risk of violence and drug and alcohol abuse (WHO, 2005). For this reason local approaches and comprehensive and intensive support for families in difficulty are promising avenues.

There is now a strong body of literature showing that community early childhood development programs can effectively promote childhood health and development, including abuse and neglect prevention (Doherty, 2007; Cleveland et al., 2003; Heckman, 2006; McCain et al., 2007; AP-CCP, 2009; INSPQ, 2010b). Among the most closely studied and promising programs are those that offer intensive support tailored to the needs of parents coupled with high-quality educational services for children (CDCHU, 2007; Text Box 22).

Text Box 22
Acting Early in Life: A Sound Investment

Research has shown that preschool programs are highly cost-effective. Such programs are not only associated with optimal child development but have also been proven to reduce some of the negative impacts of deleterious child development in later adult health (Heckman, 2006).

Aboriginal health experts have recommended widespread implementation of preschool programs (Ball, 2008). Some even advocate universal preschool for Inuit children, to ensure they grow up in a stimulating learning environment (Hodgins 1997). It is widely recognized, however, that programs should be developed collaboratively with local communities to ensure that geographical, social, and cultural factors are taken properly into account (Ball, 2008). Interventions should also include a component designed to support parents (Hodgins, 1997).

A pilot program of this type is underway with the James Bay Cree. *A Mashkupimatsitis Awash* (meaning "strong, healthy children") has two main objectives: provide young families and pregnant women with culturally safe services focused on the needs of families, and promote the development of a network of community services designed to improve family living conditions.

Decades of evaluative research have also shown that to maximize the positive impacts of these approaches with children, close attention must be paid to the following challenges:

(1) Ensure support measures are designed, first and foremost, to meet the needs of families

(2) Be willing to innovate, especially with families for whom conventional interventions tend to be unsuccessful

(3) Be mindful of the quality of project implementation, especially when expanding promising pilot projects

(4) Include a monitoring framework that allows for constant adjustment and ongoing improvement of programs in place.

It is critical that non-Inuit care providers be trained in culturally safe approaches (Text Box 8), in order to minimize the impacts of colonialism and its effects on Aboriginal health (Healey and Meadows, 2007), as described in Text Box 1. Racism, prejudice, and discrimination against Aboriginal mothers must be addressed in interventions. To do so, an important distinction must be made between cultural competence and cultural safety. Experience has shown that cultural competence is not enough to successfully intervene with Aboriginal peoples. Non-Inuit stakeholders must incorporate the concept of cultural safety in order to provide care that is both more respectful and more likely to be effective.

Action on distal determinants: Healthy environments for Inuit children

Creating healthy, safe environments for children begins with the social and economic development of the communities where they are born, live, and grow up with their families (WHO, 2007, 2009). This means it is urgent that measures to reduce child poverty in the region be implemented rapidly. Examples of successful initiatives of this kind include strategies that provide income supplements to low-income families, and those that ensure universal access to education and basic health is maintained (MSSS, 2007; SCP, 2012; CDCHU, 2007l; Text Box 23).

Text Box 23
Child Poverty

In the words of the Canadian Paediatric Society, "Poverty is not a given. It can be eliminated, or at least drastically reduced. Government legislation plays a large role . . . " (CPS, 2012). UNICEF, for its part, proposes an international minimum standard for child poverty that it sets at under 10%, defined as the percentage of children who grow up in families whose income, adjusted to the size of the family, is less than 50% of median income (UNICEF, 2008).

In addition to these targeted measures, it is essential to address the distal determinants of Inuit population health, which are inseparable from the history of colonization and its impact on the distribution of power and the governance of health, educational, and economic institutions. The collective wounds of the Inuit (Text Box 1) have posed a considerable challenge to Inuit identity. It is important to pursue the development of the younger generations in a manner that preserves their culture and identity (KRG and MR, 2010).

This is why a number of experts argue that self-determination of educational and health institutions, along with jurisdiction over the management of certain natural resources, contribute to the vitality of Aboriginal and Inuit peoples and are integral to a healthy vision of their development (Chandler and Lalonde, 2008; Alfred, 2009; UN, 2009a; KRG and MR, 2010). This trend is part of a broader movement toward Aboriginal self-government. The problems underlying the difficulties that indigenous families face are widespread, and therefore require a multifaceted community response that reaches well beyond the scope of individual agencies and must take into account economic development and deep-rooted historical challenges while at the same time promoting recognition and reconciliation (NCCAH, 2010).

Unfortunately, some contemporary policies continue to foster health inequalities among Nunavik children and families. Inequitable policies on such issues as housing access, jurisdiction over youth protection institutions, and limited access to employment for workers of Inuit origin (KRG & MC, 2010) are but a few examples. Further efforts are needed to provide the children of today the optimal conditions to devleop into the adults of tomorrow and meet their full potential.

Conclusion

> **It is widely recognized that the path** to our nation's future prosperity and security begins with the wellbeing of all our children. To this end, one of the most important tasks facing policymakers is to choose wisely among strategies that address the needs of our youngest children and their families," (Center on the Developing Child, Harvard University, 2007)

Economists now say, based on a compelling body of evidence, that money spent in early childhood is the best investment national governments can make. The impacts of such investments, spread over a lifetime, pay dividends several times the original investment. Around the world we see that societies that invest in early childhood and family enjoy the highest health levels and lowest health inequality measures (Irmin et al., 2007).

Given the nature of this report, we could only touch on the crucial impact of historical and contemporary colonization on the determinants of health. That said, the contextual perspective adopted throughout this report captures the need to address the health of Inuit families not only from the standpoint of individual behaviours but also in terms of community infrastructure and the political context that influences those behaviours.

Difficulties in finding employment, pursing education, and procuring healthy and affordable food and housing in an environment of widespread overcrowding and domestic violence are part and parcel of daily life in Nunavik. This context affects families' ability to provide supportive environments that ensure their children's health and safety.

It takes a coordinated approach to health and social services to develop and implement programs and services capable of targeting the structural causes of these problems. Programs for young Aboriginal children and their families must be built on the community's own knowledge base. They must also be created and developed by parents and families in the aim of ensuring that all programs are respectful, appropriate, and culturally safe. It is essential to go beyond the development of healthcare and other services to strengthen the resilience of Nunavik communities by promoting Inuit identity and the self-determination of the Inuit people throughout its homeland.

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Appendices

Appendix 1 – List of indicators and data sources

This appendix lists the indicators used in this report and their sources, classified according to the themes discussed in the presentation of the results. Indicators have been assigned a two-digit number (00) so you can easily consult the definitions (Appendix 2) and data (appendices 3 and 4) associated with them.

Demographic trends

POPULATION

(1) Population, age 0–5[1]
(2) Percentage of total population age 0–5[1]
(3) Annual population growth rate

FERTILITY

(4) Number of births by gender[2]
(5) Fertility rate by age group[3]
(6) Total fertility rate[3]

Family living conditions

(7) Percentage of births to mothers with less than 11 years of formal education[2]
(8) Percentage of the population age 15 and over with an annual taxable income of under $10,000[3]
(9) Median income of population age 15 and over[4]
(10) Percentage of private households with 6 members or more[4]
(11) Percentage of overcrowded homes[5]
(12) Percentage of reports made to a youth centre[6]
(13) Access to subsidized child care[7]

Community infrastructures

(14) Percentage of births by delivery setting[2]
(15) Percentage of births by type of birth attendant[2]

Women's health status

LIFESTYLE HABITS AND HEALTH BEHAVIOURS

(16) Percentage of mothers who smoked tobacco during pregnancy[8]
(17) Percentage of mothers who consumed alcohol during pregnancy[8]
(18) Percentage of mothers who breastfeed[8]

Children's health status

INFANTS 0–12 MONTHS

(19) Distribution by birth weight[2]
(20) Percentage of low birth weight births[3]
(21) Percentage of premature births[3]
(22) Percentage of small-for-gestational-age infants[3]

(23) Perinatal mortality rate[2, 9, 10]

(24) Fetal mortality rate[2, 9]

(25) Infant mortality rate[2,10]

(26) Hospitalization rate according to principal diagonosis[11]

(27) Prevalence of selected birth defects[3]

CHILDREN AGE 1–4

(28) Mortality rate, children age 1–4[3]

(29) Hospitalization rate, according to principal diagnosis[11]

(30) Life expectancy at birth[3]

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9. Ministère de la Santé et des Services sociaux, Stillbirth records.
10. Ministère de la Santé et des Services sociaux, Death records.
11. Ministère de la Santé et des Services sociaux, Fichier du Système Maintenance et Exploitation des Données pour l'Étude de la Clientèle Hospitalière (MED-ÉCHO).

Appendix 2 – Indicator definitions

This appendix presents definitions of certain indicators used in the health portrait. Definitions are taken from the report *Pour guider l'action - Portrait de santé du Québec et de ses régions 2011* (MSSS et al., 2011), from the Quebec public health infocentre, or from data providers.

Demographic trends

POPULATION

(1) Population, age 0–5[1]

Definition: Total number of people age 0–5.

(2) Percentage of the population age 0–5[1]

Definition: Ratio of the population age 0–5 to the total population for a given period.

(3) Annual population growth rate[1]

Definition: Ratio of the difference between the annual average total population at the beginning and end of a given period.

Note: Data for 2006 and subsequent years is projected.

FERTILITY

(4) Number of births by gender[2]

Definition: Number of live births broken down by gender.

(5) Fertility rate by age[3]

Definition: The number of live births to females in a specific age category over a given period compared to total number of females in that age category.

(6) Total fertility rate[3]

Definition: The average number of children that a cohort of women would have over the course of their reproductive lives if they were to experience the age-specific fertility rates observed for specific periods.

Family life conditions

(7) Percentage of births to mothers with less than 11 years of formal education[2]

Definition: Number of live births to mothers with less than 11 years of formal education over a given period compared to the total number of live births for which the mothers' education levels are known .

Note: In Nunavik birth records, data on the mother's education level was missing in 22% of cases in 1999–2003, and in 12% of cases in 2004–2008.

(8) Percentage of the population age 15 and over with an annual taxable income of under $10,000.[3]

Definition: Number of private households in this income bracket compared to the total number of households, both those reporting income and those not reporting income (figure is for after-tax income).

(9) Median income of population age 15 and over[4]

Definition: The midpoint value dividing income distribution into two equal groups (includes both declared and undeclared income).

(10) Percentage of private households with 6 members or more[4]

Definition: Number of private households with 6 members or more compared to the total number of private households.

(11) Percentage of overcrowded homes[5]

Definition: Households with more than one person per bedroom, among occupied private homes.

(12) Percentage of reports made to a youth centre[6]

(13) Access to subsidized child care[7]

Community infrastructures

(14) Percentage of births by delivery setting[2]

Definition: Proportion of live births in a given delivery setting over a given period in relation to the total number of live births for the same period.

Note: In Nunavik, from 2001 to 2010, the delivery setting was unknown in 0.7% of cases.

(15) Percentage of births by type of birth attendant[2]

Definition: Proportion of live births for a given type of birth attendant over a given period in relation to the total number of births for which the delivery type is known.

Notes:

- The "clinician" category includes both doctors and nurses.
- In Nunavik, between 2001 and 2010, less than 0.1% of births were supervised by another type of birth attendant.
- In Nunavik, between 2001 and 2010, the type of birth attendant is unknown in 0.1% of cases.

Women's health status

LIFESTYLE HABITS AND HEALTH BEHAVIOURS

(16) Percentage of mothers who smoked tobacco during pregancny[8]

Definition: Number of women who smoked during their most recent pregnancy compared to the total number of women who gave birth. The question was asked to women who gave birth between 2000 and the time of the survey and applied only to the most recent pregnancy.

(17) Percentage of mothers who consumed alcohol during pregnancy[8]

Definition: Number of women who consumed alcohol during their most recent pregnancy compared to the total number of women who gave birth. The question was asked to women who gave birth to a child between 2000 and the time of the survey and applied only to the most recent pregnancy.

(18) Percentage of mothers who breastfeed[8]

Definition: Number of women who chose to breastfeed during their last pregnancy compared to the total number of women who gave birth. The question was asked to women who gave birth to a child between 2000 and the time of the survey and applied only to the most recent pregnancy.

Children's health status

INFANTS 0-12 MONTHS

(19) Distribution by birth weight[2]

Definition: Number of live births in each category over a given period compared to the total number of live births for which the birth weight is known. The categories are "under 2,500 grams,""2,500–4,000 grams," "4,000–4,500 grams," and "over 4,500 grams."

Note: For 1999–2003 and 2004–2008, birth weight was unknown in 0.1% of births in Nunavik, and less than 0.1% in Québec and the Cree Territory of James Bay.

(20) Percentage of low birth weight births[3]

Definition: Proportion of live births under 2,500 grams over a given period in relation to total live births for which the birth weight was known.

Note: In the 2008 edition of the *Canadian Perinatal Health Report*, Health Canada no longer uses low birth weight as an indicator, because it conflates two different concepts, premature birth and intrauterine growth retardation, and may thus conceal certain trends. See the report for further information (ASC, 2008).

(21) Percentage of premature births[3]

Definition: Proportion of live births at a gestational age of less than 37 completed weeks over a given period in relation to total live births for which the gestational age is known.

(22) Percentage of small-for-gestational-age infants[3]

Definition: Proportion of underweight single-infant live births over a given period in relation to total single-infant live births for which the gestational age is known. Refers to the number of live births of children with a birth weight below the 10th percentile according to infant birth weight charts for their gestational age, versus total single-infant births.

(23) Perinatal mortality rate[2, 9, 10]

Definition: Number of stillbirths and infant deaths in the first 7 days of life over a given period compared to the total number of births (stillbirths and live births of infants weighing over 500 grams).

(24) Fetal mortality rate[2, 9]

Definition: Number of stillbirths of babies weighing at least 500 grams over a given period compared to total live births of infants weighing at least 500 grams (live births and stillbirths).

Causes of infant mortality reported	CIM-9	CIM-10
Birth defects and et chromosomal abnormalities	740-759	Q00-Q99
Maternal complications due to pregnancy	761	P01
Complications of the placenta, umbilical cord, and membranes	762	P02

(25) Infant mortality rate[2, 10]

Definition: Number of infant deaths in the first year of life over a given period compared to total live births (infants weighing at least 500 grams).

Infant mortality can be subdivided into the following categories:

- Early neonatal: Less than 7 days
- Late neonatal: 7–27 days
- Post-neonatal: 28–364 days

Causes of infant mortality selected	CIM-9	CIM-10
Birth defects	740-759	Q00-Q99
Other perinatal disorders	760-764, 766, 770-779	P00-P06, P08-P19, P23-P96
Short gestation or low weight	765	P07
Respiratory distress	769	P22
Sudden infant death syndrome	798.0	R95

(26) Hospitalization rate according to principal diagonosis[11]

Definition: Number of short-term hospitalizations of infants age 0–12 months with a principal diagnosis over a given period compared to the total population age 0–12 months.

Notes:

- Data reporting period corresponds to the financial year (April–March).
- Hospitalizations are presented according to place of birth.
- Hospitalization records used do not include hospitalizations outside Québec. Estimates for Nunavik show little variation, but those for Québec as a whole were different than other sources. These differences do not impact comparison tests.
- The perinatal period begins with the completion of the 20th week of gestation (at 140 days) and continues until the 28th day of life.

Diagnosis groupings	CIM-9	CIM-10
All diagnoses	001–289, 320–999	A00-E90, G00-T98
Selected infectious and parasitic diseases	001–139	A00-B99
Disease of the respiratory system	460–519	J00-J99
Diseases of the digestive tract	520–579	K00-K93
Diseases of the genito-urinary tract	580–629	N00-N99
Birth defects	740–759	-
Birth defects and chromosomal abnormalities	-	Q00-Q99
Selected disorders originating in the perinatal period	760–779	P00-P96

(27) Prevalence of selected birth defects[3]

Definition : Number of stillbirths caused by birth defects and number of infants age 0–12 months hospitalized for a given birth defect over a given period compared to total births (live births and stillbirths).

Birth defects studied:

- Neural tube defects (anencephaly and similar defects, spina bifida, encephalocele)
- Congenital heart defects (hypoplastic left heart syndrome)
- Cleft palates
- Oral facial clefts associated with a cleft palate
- Limb reduction defects
- Down syndrome

CHILDREN AGE 1–4

(28) Mortality rate, children age 1–4[3]

Definition: Number of deaths over a given period compared to the total population. Given the low number of deaths in this age group, only the list of causes is included.

(29) Hospitalization rate, according to principal diagnosis[11]

Definition: Number of hospitalizations for short-term physical care with a principal diagnosis over a given period compared to the total population.

Notes:

- Data reporting period corresponds to the financial year (April–March).
- Hospitalizations are presented according to place of birth.
- Hospitalization records used do not include hospitalizations outside Québec. Estimates for Nunavik show little variation, but those for Québec as a whole were different than other sources. These differences do not impact comparison tests.

Diagnostic groupings for hospitalization	CIM-9	CIM-10
All types (except skin problems)	001-289, 320-999	A00-E90, G00-T98
Selected infectious and parasitic diseases	001-139	A00-B99
Diseases of the respiratory system	460-519	J00-J99
Diseases of the digestive system	520-579	K00-K93
Traumatic injuries and poisonings	800-999	S00-T98

(30) Life expectancy at birth[3]

Definition: Average length of life (in years) of a person of a given age, assuming that current age-specific mortality rates remain constant.

Sources:

1. Ministère de la Santé et des Services sociaux, Service de développement de l'information, Estimations et projections démographiques (January 2010).
2. Ministère de la Santé et des Services sociaux, Birth records.
3. Infocentre de santé publique du Québec.
4. Statistics Canada, 2006 Census, geocoded data, Figure 94-581-XCB2006002.
5. Statistics Canada (2007 "Aboriginal Population Profile, 2006 Census" (92-594-XWF in the Statistics Canada catalogue). Ottawa: Industry Canada. [Online]. http://www12.statcan.ca/census-recensement/2006/dp-pd/prof/92-594/index.cfm?Lang=E Page consulted August 21, 2011.
6. Association des centres jeunesses. Rapport statistique annuel des centres jeunesse (AS-480 Général + Autochtones) - Année 2010–2011. Database.
7. Kativik Regional Government, Child Care Section. Special request.
8. Rochette L., and C. Blanchet (2007). Methodological Report. Nunavik Inuit Health Survey 2004, Qanuippitaa? How are we? Quebec: Institut national de santé publique du Québec (INSPQ) and Nunavik Regional Board of Health and Social Services (NRBHSS).
9. Ministère de la Santé et des Services sociaux, Stillbirth records.
10. Ministère de la Santé et des Services sociaux, Death records.
11. Ministère de la Santé et des Services sociaux, Fichier du Système Maintenance et Exploitation des Données pour l'Étude de la Clientèle Hospitalière (MED-ÉCHO).

Appendix 3 – Data table: Nunavik coastal regions, Nunavik RSS (health district), Québec as a whole

Indicator number	Theme	Hudson	Ungava	Nunavik	Québec
DEMOGRAPHIC TRENDS					
	Population				
(1)	**Population, age 0–5[1] (N) GIRLS**				
	1981	205	166	371	277,312
	2011	506	346	852	253,691
	2031	466	325	791	243,734
	Population, age 0–5[1] (N) BOYS				
	1981	248	201	449	293,149
	2011	527	358	885	265,269
	2031	488	339	827	254,991
	Population, age 0–5[1] (N) TOTAL				
	1981	453	367	820	570,461
	2011	1,033	704	1,737	518,960
	2031	954	664	1,618	498,725
(2)	**Population, age 0–5[1] (%) GIRLS**				
	1981	16	16	16	8
	2011	16	16	15	6
	2031	13	13	13	5
	Population, age 0–5[1] (%) BOYS				
	1981	18	16	18	9
	2011	15	16	15	7
	2031	13	13	13	6
	Population, age 0–5[1] (%) TOTAL				
	1981	17	16	17	9
	2011	15	16	15	7
	2031	13	13	13	6

Indicator number	Theme	Hudson	Ungava	Nunavik	Québec
(3)	**Growth rate, population age 0–5[1] (%)**				
	2001–2006	12	-13	1	-4
	2006–2011	10	7	9	14
	Fertility				
(4)[l]	**Number of births by sexr[2], 2006–2010**				
	BOYS	98	57	155	n/a
	GIRLS	95	60	155	n/a
	All	193	117	310	n/a
(5)	**Fertility rate, women age 15–19[3], 2006–2010 (Rate per 10,000)**	133 (117–152)	113 (96–135)	125 (113–139)	10 (9.8–10.2)
(6)	**Total fertility rate[3], 2006–2010 (children per woman)**	4	3	3	2
	Family living conditions				
(7)[c]	**Births to mothers with less than 11 years of formal education[2] (2006–2010 (%) (IC)[12]**	49 (45.3–51.8)	40 (36.4–44.5)	45 (42.9–48.0)	7 (7.3–7.5)
(8)	**Annual taxable income of under $10,000, population 15 and over[3], 2005 (%)**				
	Women	26	19	23	24
	Men	38	26	32	17
	Total	32	22	28	20
(9)	**Median income of population age 15 and over[10], 2005 ($)**				
	Women	20,139	26,816	22,912	18,951
	Men	15,248	23,816	18,793	26,302
	Total	17,911	25,413	20,971	22,471
(10)[a,m]	**Percentage of private households with 6 members or more**				
(11)[a,d]	**Percentage of overcrowded homes**				

[l] Data for specific communities is available for this indicator in Appendix 4.

[m] Data for specific communities is available for this indicator in Appendix 4.

Indicator number	Theme	Hudson		Ungava		Nunavik		Québec
COMMUNITY INFRASTRUCTURES								
(14)[d]	**Births by delivery setting[2], 2001–2010**							
	In the mother's home community							
	Proportion (%) (IC) [14]	51	(48.3–52.8)	17	(14.3–18.8)	38	(36.0–39.5)	n/r .
	Average annual number	93		18		112		n/r
	In Nunavik							
	Proportion (%) (IC) [14]	81	(78.3–82.8)	36	(33.9–38.4)	64	(62.1–65.5)	n/r
	Average annual number	149		40		189		n/r
	Outside Nunavik							
	Proportion (%) (IC) [14]	20	(17.2–21.7)	64	(61.6–66.1)	36	(34.5–37.9)	n/r
	Average annual number	36		78		107		n/r
(15)[d]	**Type of birth attendant, 2001–2010**							
	Midwife							
	Proportion (%) (IC) [14]	79	(76.4–80.9)	9	(7.0–11.5)	52	(49.5–55.3)	n/r
	Average annual number	146		10		156		n/r
	Clinician							
	Proportion (%) (IC) [14]	21	(18.9–23.4)	91	(88.3–92.8)	47	(44.5–50.3)	n/r
	Average annual number	39		102		141		n/r
WOMEN'S HEALTH STATUS								
	Health habits and behaviours							
(16)	**Mothers who smoked tobacco during pregnancy, 2004[8] (%) (IC)[12]**							
	Daily	77	(69.2–84.1)	47	(36.7–57.4)	65	(58.7–71.2)	n/a
	Occasionally	* 9	(4.2–14.9)	30	(21.2–40.0)	17	(12.5–22.9)	n/a
	Total	86	n/a	77	n/a	82	n/a	n/a
(17)	**Mothers who consumed alcohol during pregnancy, 2004[8]**							
	Proportion (%) (IC)[12]	40	(30.4–48.7)	51	(40.6–61.1)	44	(37.2 –51.2)	n/a
(18)	**Type of feeding, 2004[8] (%) (IC)[12]**							
	Breastfeeding	34	(20.3–50,7)	26	(14.9–40.7)	30	(21.3–39.3)	n/a
	Commercial formula	24	(11.9–40,2)	35	(22.1–48.7)	29	(20.8–38.9)	n/a
	Mixed	42	(27.3–57,2)	39	(25.5–54.2)	40	(30.8–50.1)	n/a

Indicator number	Theme	Hudson	Ungava	Nunavik	Québec
CHILDREN'S HEALTH SSTATUS					
	Infants 0–12 months				
(19)	**Distribution by birth weight, 2006–2010 (%) (IC)[12]**				
	Under 2,500 grams (Low birth weight)	6 (4.4–7.9)	8 (5.8–10.9)	7 (5.5–8.4)	6 (5.6–5.8)
	2,500–4,000 grams	82 (78.8–84.4)	78 (73.9–81.6)	80 (77.9–82.4)	84 (84.1–84.3)
	4,000–4,500 grams	10 (8.1–12.5)	11 (8.0–13.8)	11 (8.8–12.3)	9 (8.6–8.8)
	4,500 grams and over	*2 (1.0–3.0)	*3 1.4–4.5)	2 (1.5–3.2)	1 (1.3–1.4)
(20)	**Low birth weight births[3] (%) (IC)[12]**				
	2001–2005	6 (4.0–7.0)	7 (4.4–8.5)	6 (4.7–7.1)	6 (5.6–5.7)
	2006–2010	6 (4.6–7.6)	8 (6.1–10.6)	7 (5.7–8.2)	6 (5.6–5.8)
(21)	**Premature births[3] (%) (IC)[12]**				
	2001–2005	11 (8.9–13.0)	13 (10.3–16,0)	12 (10.1–13.4)	8 (7.5–7.7)
	2006–2010	12 (9.9–14.0)	10 (7.2–12.0)	11 (9.5–12.6)	7 (7.3–7.5)
(22)	**Small-for-gestational-age infants[3] (%) (IC)[12]**				
	2001–2005	5 (3.5–6.4)	* 5 (2.8–6.3)	5 (3.7–5.9)	8 (8.0–8.2)
	2006–2010	5 (3.8–6.6)	8 (5.4–9.7)	6 (4.9–7.3)	8 (8.2–8.4)
(23)	**Perinatal mortality,[2] 2005–2009**				
	Rate per 1,000 live births IC[12]	**n/r	*20 (11.5–35.6)	*13 (8.0–19.6)	6 (5.8–6.2)
(24)	**Fetal mortality[2, 9], 2005–2009**				
	Rate per 1,000 total births	**n/r	**n/r	**n/r	n/r
	Average annual number	1	1	2	350
(25)	**Infant mortality[2, 10]**				
	BY SUBCATEGORY Rate (per 1,000 live births), 2005–2009 (IC)[12]				
	Early neonatal	**	**	*7 (3.6–12.3)	n/r
	Late neonatal	**	**	**	n/r
	Late neonatal	*12 (6.6–21,5)	**	*9 (5.0–14.8)	n/r
	Infant (Total)	*16 (9.8–26.9)	*20 (11.6–35.8)	*18 (12.2–26.0)	n/r
	Average annual number				
	Early neonatal	<1	2	2	155
	Late neonatal	<1	<1	1	47

Indicator number	Theme	Hudson		Ungava		Nunavik		Québec	
	Post-neonatal	2		<1		3		81	
	Infant (Total)	3		2		5		283	
	TOTAL Rate (per 1,000 live births) (IC)[12]								
	1996–1999	**n/r		**n/r		14	(8.4–23,0)	4	(3.4–3.8)
	2000–2004	16	(9.5–27.1)	**n/r		16	(10.2–23,6)	3	(3.4–3.7)
	2005–2009	16	(9.8–26.9)	20	(11.6–35.8)	18	(12.2–26,0)	3	(3.2–3.6)
(26)	**Hospitalizations during the first year of life, by principal diagnosis** ALL DIAGNOSES Rate (per 10,000) (IC)[12]								
	1991–1995	10,778	(10,070–11.537)	9,985	(9,250–10,778)	10,413	(9,897–10,955)	7,592	(7,567–7,617)
	1996–2000	14,077	(13,227–14,981)	9,239	(8,519–10,021)	11,790	(11,222–12,387)	7,866	(7,838–7,893)
	2001–2005	11,864	(11,148–12,625)	10,474	(9,636–11,386)	11,327	(10,776–11,906)	7,635	(7,607–7,663)
	2007–2011	11,064	(10,395–11,776)	10,066	(9,297–10,900)	10,662	(11,609–12,687)	7,670	(7,644–7,696)
	DIAGNOSTIC GROUPINGS Rate (per 10,000), 2007–2011 (IC)[12]								
	Selected infectious and parasitic diseases	437	(319–598)	*315	(201–494)	388	(300–501)	189	(185–193)
	Respiratory system diseases	4,815	(4,381–5,293)	3,151	(2,733–3,632)	4,144	(3,831–4,484)	625	(617–632)
	Digestive tract diseases	*403	(291–559)	*332	(214–514)	374	(288–486)	142	(139–146)
	Diseases of the genito-urinary tract	*168	(101–279)	*216	(125–371)	*187	(129–271)	135	(132–138)
	Selected disorders originating in the perinatal period	2,923	(2,589–3,300)	4,013	(3,538–4,552)	3,362	(3,081–3,669)	5,323	(5,302–5,345)
	Birth defects and chromosomal abnormalities	571	(434–751)	647	(473–885)	602	(489–740)	730	(722–738)
	Traumatic injuries and poisoning	*213	(136–334)	**n/r		*174	(118–255)	52	(50–54)
	All diagnoses	11,064	(10,395–11,776)	10,066	(9,297–10,900)	10,662	(10,151–11,198)	7,670	(7,644–7,696)
	Average annual numbers, 2007–2011								
	Selected infectious and parasitic diseases	8		4		12		1,629	
	Respiratory system diseases	86		38		124		5,375	
	Digestive tract diseases	7		4		11		1,224	
	Diseases of the genito-urinary tract	3		3		6		1,161	
	Selected disorders originating in the perinatal period	52		48		101		45,812	

Indicator number	Theme	Hudson	Ungava	Nunavik	Québec
	Birth defects and chromosomal abnormalities	10	8	18	6,280
	Traumatic injuries and poisoning	4	1	5	447
	All diagnoses	198	121	319	66,006
	Children age 1–4				
(28)	**Mortality, children age 1–4 ans**[3,]				
	Rate (per 1,000) (IC)[12]				
	2000–2004	**n/r	**n/r	* 2 (1.1–3.6)	<1 (0.2–0.2)
	2005–2009	**n/r	**n/r	**n/r	<1 (0.2–0.2)
	Average annual number				
	2000–2004	n/a	n/a	2	65
	2005– 2009	n/a	n/a	1	53
(29)	**Hospitalizations according to principal diagnosis, children age 1–4**[11]				
	TOTAL				
	Rate per 10,000 (IC)[12]				
	1991–1995	1,839 (1,691–2 000)	2,118 (1,937–2,316)	1,960 (1,844–2,084)	712 (708–715)
	1996–2001	1,883 (1,727–2 054)	1,123 (1,003–1,256)	1,504 (1,404–1,611)	631 (627–635)
	2001–2005	2,207 (2,047–2 379)	2,153 (1,975–2,347)	2,184 (2,063–2,311)	639 (635–643)
	2007–2012	1,857 (1,718–2 009)	1,511 (1,361–1,677)	1,716 (1,612–1,827)	539 (535–542)
	DIAGNOSTIC GROUPINGS				
	Rates (per 10,000), 2007-2011 (IC)[12]				
	Selected infectious and parasitic diseases	*89 (62–127)	*73 (45–117)	82 (62–110)	74 (72–75)
	Respiratory system diseases	621 (543–711)	652 (556–765)	634 (572–703)	233 (231–236)
	Digestive tract diseases	609 (532–698)	352 (283–437)	504 (449–566)	33 (32–34)
	Birth defects and chromosomal abnormalities	**n/r	**n/r	28 (17–46)	16 (15–16)
	Traumatic injuries and poisoning	118 (87–161)	*99 (66–149)	110 (86–141)	37 (36–38)
	All diagnoses	1,857 (1,718–2,009)	1,511 (1,361–1,677)	1,716 (1,612–1,827)	539 (535–542)
(30)	**Hospitalizations by cause, children age 1–4 ans**[9,]				
	Average annual number, 2007–2011				
	Selected infectious and parasitic diseases	6	3	9	2,412
	Respiratory system diseases	42	30	72	7,635
	Birth defects and chromosomal abnormalities	2	2	3	511

Indicator number	Theme	Hudson	Ungava	Nunavik	Québec
	Traumatic injuries and poisoning	8	5	13	1 199
	All diagnoses	126	70	196	17 637
(31)	**Life expectancy at birth[3], 2005–2009 (Years) (IC)[12]**				
	Women	69 (66.8–72,0)	68 (64.8–70.4)	69 (66.8–70,9)	83 (83.1–83.2)
	Men	62 (58.9–65.1)	69 (65.4–72.9)	65 (62.4–67,1)	78 (78.4–78.5)
	Total	66 (63.4–67.9)	68 (65.7–70.4)	67 (65.0–68,1)	81 (80.8–80.9)

Sources:

1. Ministère de la Santé et des Services sociaux, Service de développement de l'information, Estimations et projections démographiques (January 2010).
2. Ministère de la Santé et des Services sociaux, Birth records.
3. Infocentre de santé publique du Québec.
4. Statistics Canada, 2006 Census, geocoded data, Figure 94-581-XCB2006002.
5. Statistics Canada (2007 "Aboriginal Population Profile, 2006 Census" (92-594-XWF in the Statistics Canada catalogue). Ottawa: Industry Canada. [Online]. http://www12.statcan.ca/census-recensement/2006/dp-pd/prof/92-594/index.cfm?Lang=E Page consulted August 21, 2011.
6. Association des centres jeunesses. Rapport statistique annuel des centres jeunesse (AS-480 Général + Autochtones) - Année 2010–2011. Database.
7. Kativik Regional Government, Child Care Section. Special request.
8. Rochette L., and C. Blanchet (2007). Methodological Report. Nunavik Inuit Health Survey 2004, Qanuippitaa? How are we? Québec: Institut national de santé publique du Québec (INSPQ) and Nunavik Regional Board of Health and Social Services (NRBHSS).
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11. Ministère de la Santé et des Services sociaux, Fichier du Système Maintenance et Exploitation des Données pour l'Étude de la Clientèle Hospitalière (MED-ÉCHO).

Notes:
(00): Indicator definitions and full sources can be viewed in appendices 1 and 2, by cross-referencing the two-digit indicator number (00).
12: Confidence intervals calculated based on a 0.05 threshold.
*: Coefficient of variation over 16.66%, but less than or equal to 33.33%. Value must be interpreted with caution.
**: Coefficient of variation over 33.33 %. Value is not reported.
n/a: Not available
n/r: Not reported. Certain indicators are not reported for Québec as a whole, because they are of interest only for Nunavik and its coastal regions.

Table 4
Average annual number of deaths per infant mortality compared to total births, Nunavik RSS (health district) and Nunavik coastal regions

Area	Fetal deaths	Infant deaths				Births
		Total	Early neonatal	Late neonatal	Post-neonatal	
1996–1999						
Hudson	2	2	<1	<1	1	117
Ungava	1	2	1	0	<1	100
Nunavik	**3**	**4**	**2**	**<1**	**2**	**216**
2000–2004						
Hudson	1	3	1	<1	1	175
Ungava	1	2	1	0	1	109
Nunavik	**2**	**4**	**2**	**<1**	**2**	**284**
2005–2009[1]						
Hudson	1	3	<1	<1	2	185
Ungava	1	2	2	<1	<1	118
Nunavik	**2**	**5**	**2**	**<1**	**3**	**303**

Note: See appendices 1 and 2 for additional information on indicators (23), (24), and (25).

Appendix 4 – Additional data for specific communities in Nunavik, Québec

Indicator number	Theme	Hudson Bay Coast						
		Kuujjuarapik	Umiujaq	Inukjuak	Puvirnituq	Akulivik	Ivujivik	Salluit
DEMOGRAPHIC TRENDS								
	Fertility							
(4)	Births[2], 2006–2010 (Annual average number)	16	12	43	50	20	10	41
FAMILY LIVING CONDITIONS								
(7)	Births to mothers with less than 11 years of formal education[2], 2006–2010 (%)	36.8	41.4	52.1	46.2	48.4	54.0	53.0
	IC[12]	(26.0–47.7)	(28.7–54.1)	(45.4–58.8)	(39.9–52.6)	(38.2–58.5)	(40.2–67.8)	(45.8–60.3)
(10)	Private households with 6 members or more[4]. 2005 (%)	25.0	40.0	32.8	44.0	36.8	54.5	44.2
(11)	Overcrowded homes[4]. 2006 (%)	25.9	33.3	34.5	45.3	45.0	41.7	46.5
COMMUNITY INFRASTRUCTURES								
(14)	Births by delivery setting[2], 2001–2010							
	In the mother's home community(%)	** n/r	** n/r	75.0	83.1	** n/r	** n/r	48.8
	IC[12]	n/a	n/a	(70.8–79.2)	(79.8–86.4)	n/a	n/a	(48.8–43.9)
	In Nunavik (%)	39.2	85.1	86.5	83.3	90.6	80.4	80.7
	IC[12]	(31.3–47.1)	(78.5–91.6)	(83.2–89.8)	(80.0–86.6)	(86.2–95.0)	(73.0–87.7)	(76.8–84.6)
	Outside Nunavik (%)	60.8	14.9	13.5	16.7	9.4	19.6	19.3
	IC[12]	(52.9–68.7)	(8.4–21.5)	(10.2–16.8)	(13.4–20.0)	(5.0–13.8)	(12.3–27.0)	(15.4–23.2)
(15)	Type of birth attendant[2]. 2001–2010							
	Midwife (%)	36.0	82.5	85.8	82.5	88.8	75.9	77.9
	IC[12]	(28.3–43.7)	(75.5–89.4)	(82.4–89.2)	(79.1–85.8)	(84.1–93.6)	(68.0–83.8)	(73.8–82.0)
	Average annual number	5.4	9.4	35.1	41.4	15.1	8.5	30.7
	Clinician (%)	64.0	* 17.5	14.2	16.9	* 11.2	* 24.1	21.8
	IC[12]	(56.3–71.7)	(10.6–24.5)	(10.8–17.6)	(13.7–20.2)	(6.4–15.9)	(16.2–32.0)	(17.7–25.9)
	Average annual number	9.6	2.0	5.8	8.5	1.9	2.7	8.6

Sources:
For sources for indicators1 to 11, see Appendix1.

Notes:
(00): Indicator definitions and full sources can be viewed in appendices 1 and 2, by cross-referencing the two-digit indicator number (00).

12: Confidence intervals have been calculated to a threshold of 0.05.

*: Coefficient of variation over 16.66%, but less than or equal to 33.33%. Value must be interpreted with caution.

**: Coefficient of variation over 33.33 %. Value is not reported.

n/a: Not available.

Additional data for specific communities in Nunavik, Québec (cont'd)

Indicator number	Theme	Ungava Bay Coast						
		Kangiq-sujuaq	Quaqtaq	Kangirsuk	Aupaluk	Tasiujaq	Kuujjuaq	Kangiq-sualujjuaq
DEMOGRAPHIC TRENDS								
	Fertility							
(4)	Births[2], 2006–2010 (Annual average number)	14	10	11	4	7	50	21
FAMILY LIVING CONDITIONS								
(7)	Births to mothers with less than 11 years of formal education[2], 2006–2010 (%)	41.8	65.2	44.4	* 45.0	* 28.1	33.5	45.5
	IC[12]	(30.0–53.6)	(51.5–79.0)	(31.2–57.7)	(23.2–66.8)	(12.5–43.7)	(27.5–39.5)	(35.8–55.3)
(10)	Private households with 6 members or more[4]. 2005 (%)	37.5	36.4	19.0	40.0	30.0	16.0	30.0
(11)	Overcrowded homes[4]. 2006 (%)	35.5	21.4	26.3	0.0	0.0	15.1	40.0
COMMUNITY INFRASTRUCTURES								
(14)	Births by delivery setting[2], 2001–2010							
	In the mother's home community(%)	** n/r	0.0	** n/r	** n/r	** n/r	33.8	4.9
	IC[12]	n/a	n/a	n/a	n/a	n/a	(29.6–38.0)	(1.8–8.0)
	In Nunavik (%)	35.7	27.0	28.6	51.1	46.3	35.2	40.2
	IC[12]	(27.4–43.9)	(16.9–37.1)	(20.7–36.5)	(36.8–65.4)	(34.3–58.2)	(31.0–39.5)	(33.1–47.3)
	Outside Nunavik (%)	64.3	73.0	71.4	48.9	53.7	64.8	59.8
	IC[12]	(56.1–72.6)	(62.9–83.1)	(63.5–79.3)	(34.6–63.2)	(41.8–65.7)	(60.5–69.0)	(52.7–66.9)
(15)	Type of birth attendant[2]. 2001–2010							
	Midwife (%)	*12.3	**n/a	7.1	**n/a	**n/a	8.3	* 9.0
	IC[12]	(6.7–18.0)	n/a	(2.6–11.5)	n/a	n/a	(5.9–10.7)	(4.9–13.1)
	Average annual number	1.6	<1	<1	<1	<1	4.1	1.7
	Clinician (%)	87.7	90.5	92.1	85.1	89.6	91.7	89.9
	IC[12]	(82.0–93.3)	(83.9–97.2)	(87.4–96.8)	(74.9–95.3)	(82.2–96.9)	(89.3–94.1)	(85.6–94.2)
	Average annual number	11.4	6.7	11.7	4.0	6.0	45.3	16.9

Sources:

For sources for indicators1 to 11, see Appendix1.

Notes:

(00): Indicator definitions and full sources can be viewed in appendices 1 and 2, by cross-referencing the two-digit indicator number (00).

12: Confidence intervals have been calculated to a threshold of 0.05.

*: Coefficient of variation over 16.66%, but less than or equal to 33.33%. Value must be interpreted with caution.

**: Coefficient of variation over 33.33 %. Value is not reported.
n/a: Not available.

Appendix 5 – Percentage of the population reporting an Aboriginal mother tongue in 2011, and reporting an Aboriginal identity in 2006: Specific Nunavik communities; Nunavik coastal regions, Nunavik RSS (health district)

At the time of publication of this report, data on Aboriginal identity was not available for the 2011 Canadian census. We thus used the mother tongue data instead. While these figures may be missing certain mixed-heritage children with Aboriginal fathers, the same trend emerges when comparing this data with 2006 census data.

Communities	Population in 2011	Aboriginal mother tongue	Proportion of the population reporting an Aboriginal mother tongue in 2011	Proportion of the population reporting an Aboriginal identity in 2006
	Number	Number	%	%
Hudson Bay	6,722	6,215	92.5	95.0
Kuujjuarapik	657	540	82.2	90.4
Umiujaq	444	420	94.6	96.2
Inukjuak	1,597	1530	95.8	94.0
Puvirnituq	1,692	1540	91.0	96.5
Akulivik	615	585	95.1	100.0
Ivujivik	370	350	94.6	98.6
Salluit	1,347	1,250	92.8	93.1
Ungava Bay	5,368	4,430	82.5	86.2
Kangiqsualujjuaq	874	815	93.2	96.6
Quaqtaq	376	345	91.8	95.2
Kangirsuk	549	520	94.7	91.4
Aupaluk	195	180	92.3	n/a
Tasiujaq	303	280	92.4	n/a
Kuujjuaq	2,375	1,635	68.8	78.3
Kangiqsujuaq	696	655	94.1	92.6
Nunavik	12,090	10,645	88.0	91.3

Source: Statistics Canada (2012b) and Statistics Canada (2007)

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