

8. Human Health and Well-Being

Lead Authors

Arja Rautio, University of Oulu, Finland, *Birger Poppel*, Ilisimatusarfik, Greenland and *Kue Young*, University of Alberta, Canada

Contributing authors

Anastasia Emelyanova (University of Oulu, Finland; Northern (Arctic) Federal University, Russia), *Sandra Juutilainen* (University of Oulu, Finland), *Vappu Sunnari* (University of Oulu, Finland)

8.1 Introduction

Several international organizations promote health and well-being across Arctic countries and regions. A variety of monitoring programs and research networks collect and share a variety of health data. In recent years, Arctic health research is increasingly focusing on the health and well-being of Indigenous peoples of the North. This priority recognizes the major changes experienced by Indigenous peoples in terms of their living conditions. Indigenous people in some regions continue to suffer poorer health status compared to the majority populations of the Arctic nations and redressing such disparities requires the attention of policy makers and health service agencies. The increasing interest in the development of the Arctic has resulted in several initiatives, such as the Arctic Social Indicators project (ASI, 2010; ASI, 2014) and the first *Arctic Human Development Report* (AHDR, 2004).

Among emerging threats for human health and well-being are the effects of a warming climate resulting in worsening food and water security; changes in the pattern of infectious diseases, and impact on health care infrastructure; and mental health problems including suicide, accidents and domestic violence. Since the publication of the first *AHDR* in 2004, much has changed in the health and well-being of the diverse populations in the Arctic. Improvements continue to be made, while certain problems remain intractable. The major trends and patterns will be presented in this chapter.

8.2 Health and well-being in the Circumpolar North

The development of international collaborative efforts in data collection, management and dissemination facilitates monitoring the health of Circumpolar peoples. Notable examples include Arctic Council projects such as the Survey of Living Conditions in the Arctic (SLiCA), a circumpolar review involving interviews of more than 7,000 Indigenous people in the Arctic; the Arctic Monitoring and Assessment Programme (AMAP) which reported on human health assessments that have collected and analyzed data on the effects of environmental contaminants since 1991; the International Circumpolar Surveillance of Emerging Infectious Diseases (ICS), a collaboration of public health departments and laboratories from several circumpolar countries that collects information on invasive bacterial diseases and tuberculosis; the Inuit Health in Transition Study; and the Circumpolar Health Observatory (CircHOB), a web-based, interactive resource which presents freely downloadable tables and maps of a series of health indicators for all northern regions, the majority of which are derived from publicly available sources (Young *et al.*, 2010). Major surveys like the Aboriginal Peoples Survey and Inuit Health Survey in Canada and SAMINOR in Norway have focused on the conditions of Indigenous peoples. There is also some information about health and well-being of the non-Indigenous peoples in northern regions as part of national health surveys.

Several international organizations promote health and well-being across Arctic countries and regions. The International Union of Circumpolar Health was formed in 1981, a federation of national scientific and professional organizations in Canada, the Nordic countries, United States, and the Soviet Union (later the Russian Federation). It organizes a triennial international circumpolar health congress, an important forum for the exchange of information and interactions among health care professionals, researchers and policy-makers. The Circumpolar Health Research Network (CircHNet, 2013) is an organization that focuses specifically on health research and supports academic exchanges, organizes summer institutes in health research, and publishes the *International Journal of Circumpolar Health*. In 2008, the Arctic Council's Sustainable Development Working Group created a subsidiary, the Arctic Human Health Expert Group (AHHEG), to provide expert advice on health matters.

The training of health care providers and researchers with a focus on the North occurs in several centers, linked together through the University of the Arctic (UArctic) (see Chapter 9, *Education and Human Capital*). The thematic networks of the UArctic form a natural framework for the devel-

opment of education and research to increase and share knowledge across the North. The Health and Wellbeing in the Arctic network was established in 2005, and now member universities and institutes within the network offer international Masters (since 2009) and PhD programs (since 2012). Future activities of this thematic network include increasing the exchange of researchers and teachers and developing courses for health staff about the special features of Arctic health.

Health is also a major concern of Indigenous peoples' organizations. For example, the Inuit Circumpolar Council proposed the Inuit health strategy in 2009 to improve Inuit health and wellness. It aims to influence international, national, and regional health and social policies and programs, improve awareness of the Inuit's situation in the Arctic among health professionals, and promote research on health and wellness that reflects the communities' priorities.

It is clear that many institutions, projects, and groups are now actively engaged in monitoring, understanding, and improving the health and well-being of Circumpolar peoples. This chapter reviews the current state of health and well-being around the Arctic to assist organizations in determining priorities and identifying promising practices.

Alaska Native Medical Centre, Anchorage, Alaska, USA



Credit: Diane Hirshberg.

8.3 Continuing health disparities

The people in the Circumpolar North do not all enjoy the same health. There are substantial disparities among countries and regions, and within regions among population subgroups, particularly between Indigenous and non-Indigenous people.

At the level of the eight Arctic States, there are clear inter-country disparities in the overall index of well-being such as the United Nations Human Development Index, a composite index of health, education and living standards. In 2012, Russia ranked behind the others, at 55th, whereas the other Arctic States were all within the top 20 countries in the world (UN HDI, n.d.).

In general terms, circumpolar regions basically fall into four groups in terms of their health status:

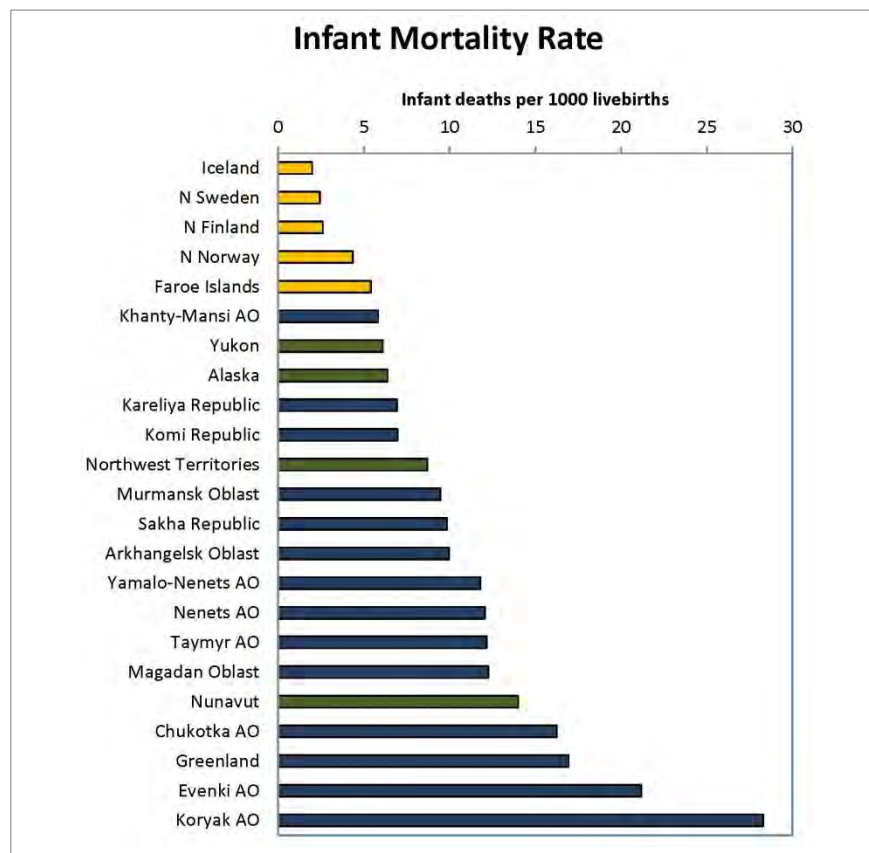
- The Nordic countries – these rank the highest in every health indicator, and there is generally little difference between north and south, or between Indigenous and non-Indigenous people.
- Alaska, Yukon, and Northwest Territories – health status in these jurisdictions is comparable to, or even better than, the national average of the United States and Canada; however, within these regions, there are significant disparities between Indigenous and non-Indigenous people.
- Greenland and Nunavut – with over 85% of the population Indigenous, there is a wide gap in health status between these regions and Denmark and Canada.
- The Russian Arctic – while the regions in the European North tend to fare better than those in Siberia, for almost any health indicator, the Arctic regions of Russia tend toward the lower end of the spectrum.

During the period between 2005–2009, the regions with the greatest health disparities experienced lower life expectancy (see Chapter 2, *Arctic Population and Migration*), higher infant mortality, and higher rates of tuberculosis, sexually transmitted diseases, and some cancers. Injury, homicide and suicide rates also tend to be higher in the Circumpolar North. Each is discussed in brief below.

8.3.1 Infant mortality rate (IMR)

IMR varies from less than 5 per 1,000 live births in the Nordic countries (as low as 2 in Iceland) to over 10 in Nunavut and Greenland, and over 20 in some Russian regions, and is as high as 28 in the Koryak okrug.ⁱ There is little regional difference (between the northern and southern regions) in Nordic countries (Figure 8.1). Greenland is about thirty years behind Denmark in IMR rates, i.e., the rate for Greenland today is similar to that observed in Denmark 30 years ago (Young and Bjerregaard, 2008:32).

Figur 8.1: Infant mortality rates among circumpolar regions



Note: Mean of 2005–09, rates expressed as infant deaths per 1,000 live births.

AO – autonomous okrug; the Evenkia, Koryak, and Taymyr AO were dissolved in 2007 although some data were continued to be collected and reported for these regions:

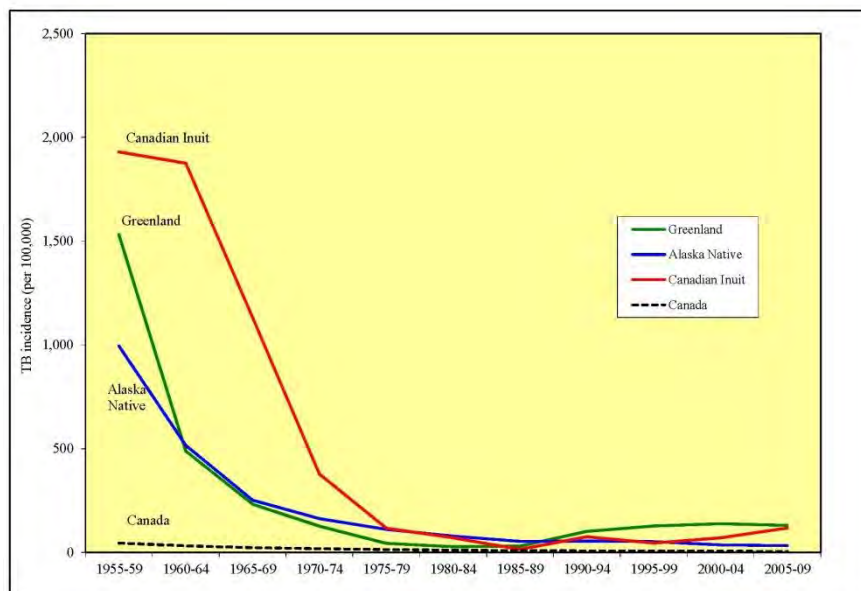
- Nordic countries
- USA and Canada
- Russia

Source: Circumpolar Health Observatory [<http://circhob.circumpolarhealth.org>], based on data as reported by national statistical agencies.

8.3.2 Tuberculosis

The mean national incidence rates for tuberculosis in the Nordic countries, Canada and the United States are less than 10/100,000. The rates for Greenland (130/100,000) and Nunavut (150/100,000) are more than 10 times higher. Meanwhile, the mean rate of the northern Russian regions is about 80/100,000, among them is Koryak okrug, with a rate as high as 450/100,000, almost 100 times the rate of Iceland and Faroe Islands. TB affects the Inuit in Canada, Alaska and Greenland disproportionately, where its incidence reached its peak in the 1950s. The decline in incidence of the disease has been impressive (Figure 8.2), although a substantial gap still exists between the Indigenous and non-Indigenous populations.

Fig. 8.2: Trend in incidence of tuberculosis in selected circumpolar populations



Source: Reproduced by permission from Circumpolar Health Atlas, p.96.

8.3.3 Sexually transmitted diseases (STDs)

Other infectious diseases also vary substantially across circumpolar regions, a notable example being gonorrhoea (Figure 8.3). Greenland has a high number of cases of gonorrhoea. Its incidence increased steadily during the 1950s and 1960s. A systematic intervention strategy that included partner tracing and treatment had resulted in an impressive decline, but the current level is still over 200 times higher than in Denmark. The pattern of chlamydia infection tends to parallel that of gonor-

Given the high rates of STDs, there was much fear of the human immunodeficiency virus (HIV) spreading to the Arctic when the epidemic began in the 1980s. This has not happened, but HIV/AIDS nonetheless represents a major public health threat. The distribution of risk groups – men having sex with men, heterosexual contacts and injection drug users – vary across regions. There is a long incubation period between HIV infection and the onset of the clinical symptoms of AIDS. Most jurisdictions report these HIV and AIDS separately, but given that the extent of HIV testing in the population varies, cross-national comparisons should only be done with caution.

Annual incidence rate (per 100,000)

Color	Incidence Rate (per 100,000)
Light Yellow	0-9
Yellow	10-99
Light Green	100-299
Green	300-499
Dark Green	≥500

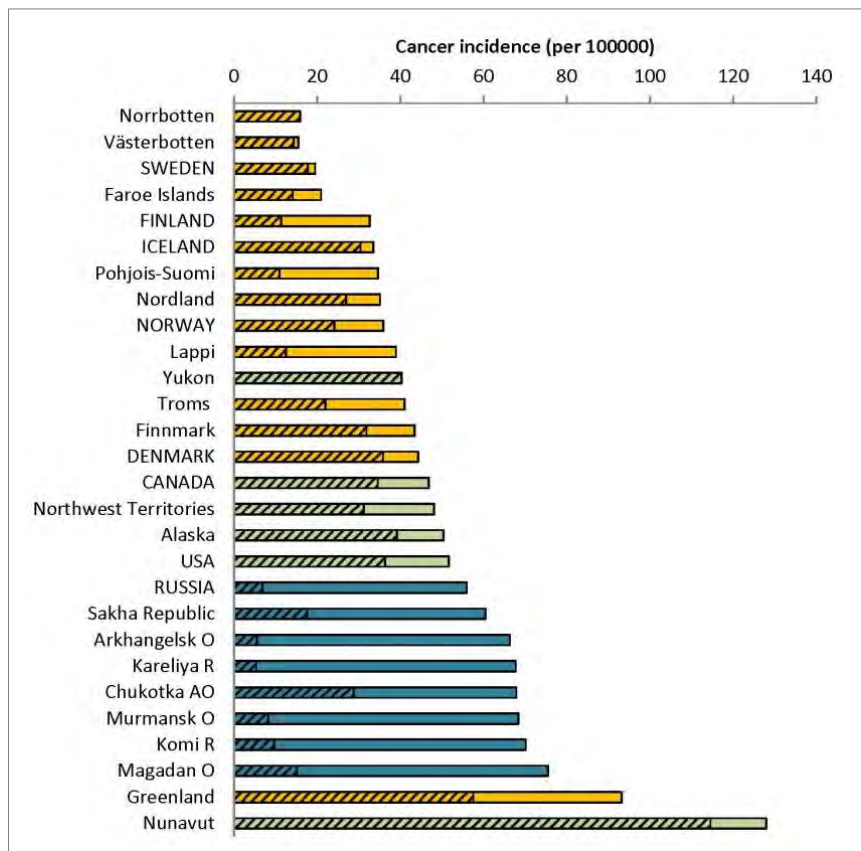
Map showing the Arctic region with various countries and territories labeled (e.g., Ak, Yk, Nt, Nu, Gl, Ky, Ma, Sk, Ta, Ev, Yn, Km, Ko, Ai, Mu, La, Nb, Vb, Ou, Ka, Nd, Tr, Fm, Is, Fo). The map is color-coded according to the annual incidence rate of hepatitis B per 100,000 people.

Drawn by Winfried K. Collmann

Arctic Human Development Report 303

Cancers: Cancer incidence also varies across regions. Among the most common cancers is lung cancer: the highest incidence can be found in Nunavut, Greenland, and some Russian regions (Figure 8.4). While rates tend to be higher among males than females, the sex difference is particularly pronounced in Russian North, where the male rate may be as high as 10 times the female one, reflecting the very low smoking prevalence among Russian women.

Fig. 8.4: Incidence of lung cancer in Arctic States and their northern regions



Note: Mean of 2005–09; AO – autonomous okrug, O – Oblast, R – Republic; cross-hatched area in bars represents the female rate, total length of bar represents the male rate:

- Nordic countries
- USA and Canada
- Russia

Source: Circumpolar Health Observatory [<http://circhob.circumpolarhealth.org>], based on data as reported by national statistical agencies.

An international review of cancer among the Inuit reveals that cancer (all combined) has increased in all Inuit regions over a 35-year period from 1969–2003. The increase is particularly marked for lung and colorectal cancers, while cervical cancer has declined. For the 1989–2003 period, the overall risk of cancer among Inuit men and women was not in excess of that among non-Inuit. Inuit continue to be at extreme high risk for certain so-called “traditional” cancers such as nasopharyngeal and salivary gland cancer. However, Inuit today also have the world’s highest incidence rate of lung cancer. The likeliest cause is the exceedingly high smoking rate, approaching 60% among adults (Circumpolar Inuit Cancer Review Working Group, 2008).

8.3.4 Cardiovascular disease

Across Russia, cardiovascular disease mortality rates are much higher than in the other regions. Within Scandinavia, northern regions have higher rates than the national averages. Among Alaska Natives, mortality from ischemic heart diseases increased during the 1980s, and began to decline during the mid-1990s. At the same time, rates have declined dramatically among Americans nationally. The Alaska Native rate is still lower than that of the state or national all-race rates.

“Alaska Natives are the Healthiest People in the World”

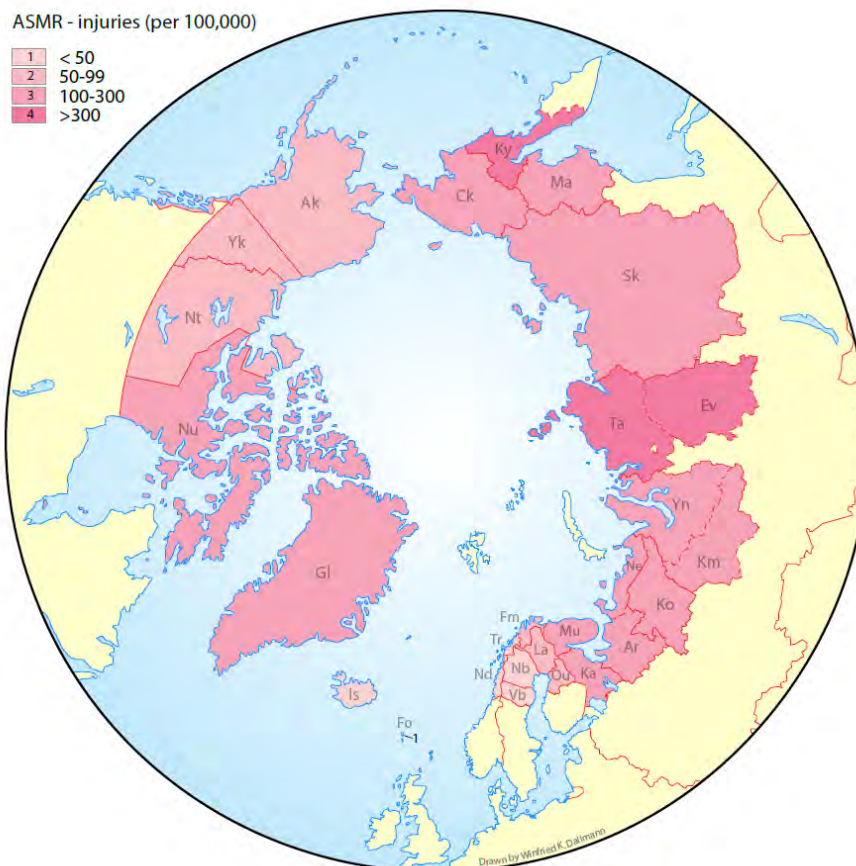


Credit: Diane Hirshberg.

8.3.5 Injury, homicide and suicide

Injury is an important indicator of health, but also of social well-being, as it comprises both the unintentional (“accidents”) and intentional (including suicide and violence). Russia and its regions have the highest mortality rates from injuries (Figure 8.5). In Alaska and Northern Canada, the age-standardized mortality rate for injury is two to three times higher than the respective national rates. Greenland’s rate is more than four times that of Denmark. In northern Fennoscandia, the rates are little different from the respective national rates. In all jurisdictions, injury mortality is higher among men than women. Within the North, there is also substantial difference between Indigenous and non-Indigenous people. In Alaska, the rate for all injuries among Alaska Natives is three times that of the USA all-races rate.

Fig. 8.5: Map showing injury mortality rate in circumpolar regions

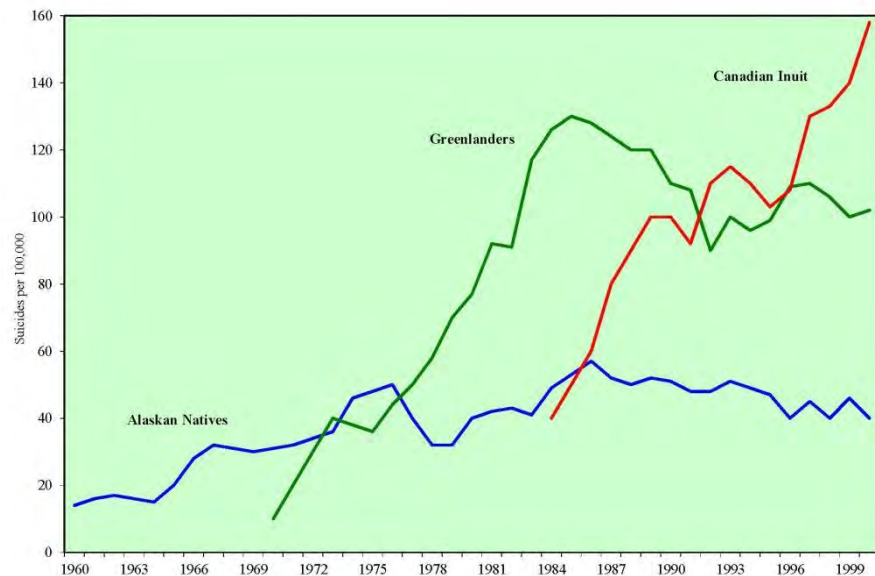


Note: Mortality rate (per 100,000) age-standardized to the European standard population.

Source: Reproduced with permission from Circumpolar Health Atlas, p.111.

The northern regions of Fennoscandia generally do not show an excess of homicides, compared to rates in their respective countries as a whole. The highest rates of homicide are found among Alaska Natives and Greenlanders. Greenland's rate exceeds 10 times that of Denmark. While the rate for Alaska Natives is only twice that of the USA-all races rate, this is due to high homicide rate in the United States nationally, which exceeds all other circumpolar countries, and is comparable to those of the northern territories of Canada.

Fig. 8.6: Evolution of the suicide epidemic in three circumpolar indigenous populations



Source: Data from Jack Hicks, as presented to the Hope and Resilience: Suicide Prevention in the Arctic Conference in Nuuk, November 2009.

Suicide among youth is particularly high in Greenland and Nunavut, a phenomenon observed also among Alaska Natives. Suicide is not as common in the non-Indigenous populations in most northern regions. Among the Inuit, the increase in suicide rates occurred first in Alaska, later in Greenland, and still later in Canada, with each later epidemic more severe than the preceding one (Figure 8.6). One characteristic of youth suicides is their tendency to occur in clusters, with devastating impacts on small communities. Suicide statistics are only the tip of the iceberg – for every suicide there are many more suicide attempts and individuals harboring suicidal thoughts. In an effort to help curb the high rates of suicide, the Government of Nunavut has created a Suicide Prevention Strategy (Nunavut Suicide Prevention Strategy Action Plan, 2011). Surveys among

Indigenous people in several regions such as SLiCA provide some measure of the extent of suicidal ideation, as well as people's perception of suicide as a community problem (Larsen *et al.*, 2010).

8.4 Emerging issues

Human health and well-being are the result of complex interactions among genetic, economic, social, cultural, political and environmental factors. Due to globalization and climate change, there are many potential new challenges and threats for individuals and communities in the Arctic (see Megatrends, 2011 and Chapter 10, *Globalization*). The Arctic is already and will continue to be less isolated than in the past. The pace of natural resources development such as oil and gas and mining, and the scale of human activities such as shipping and tourism have accelerated. Traditional livelihoods have come into conflict with new ones in many areas. Socioeconomic and environmental changes have created new groups at risk of marginalization.

As with the rest of the world, the Arctic is facing increasing urbanization, which brings with it challenges for human health and well-being. Large cities with populations close to or exceeding 300,000 can be found in Russia (such as Murmansk, Arkhangelsk and Yakutsk), and Alaska (Anchorage); cities with population around 100,000 can be found in the Nordic countries (e.g., Umeå, Oulu), whereas in Canada's North and Greenland, no cities have populations exceeding 30,000 people.

8.4.1 Food and water security

A major factor in the deteriorating food and water security situation in the Arctic is the changing climate, characterized by degradation of permafrost, reduced ice cover, and extreme weather conditions (such as floods and storms). These changes impact the harvest from fishing and hunting, affect the health of animals and the safe storage of food, and the nutritional status of Indigenous people who depend on traditional foods for subsistence (Nilsson and Evengård, 2013).

Health care can also be affected by the changing climate. It has been documented that in Arctic Russia, the reindeer herding Nenets people are "stuck" in the tundra for longer periods of time waiting for snow and have to leave their villages earlier before the snow melts in order to reach medical care (Fedotov *et al.*, 2011). The frequency of fishing and hunting accidents and drownings in Northwest Alaska (Brubaker *et al.*,

2011) and among the Nenets (Davydov and Mikhailova, 2011) has increased due to thin ice or changes in snow cover.

Surveys in northern Canada have found food insecurity affecting over 60% of Inuit households (Huet *et al.*, 2012). The situation in the Russian Arctic has also deteriorated (Dudarev *et al.*, 2013). Decreased access to safe food and water is associated with an increase in infections such as gastroenteritis, respiratory infections and vector-borne diseases. The warming climate may introduce new host species and pathogens into new habitats that may lead to infections in humans. Increases in the morbidity rates of zoonotic infectious diseases (such as tick-borne encephalitis, tularaemia, brucellosis, rabies and anthrax) among humans, domestic animals and wildlife in the Russian Arctic (Revich *et al.*, 2012) and Alaska (Hueffer *et al.*, 2013) have been reported. Climate change in the Russian Arctic and Alaska has been more pronounced than in the other parts of these countries. However, there are also some positive effects of warming in terms of food security in the Circumpolar North, for example, an increasing potential for agriculture during the longer growing seasons (AMAP, 2011).

Textbox 8.1

Indicators of food and water security in an Arctic health context

- Healthy weight (BMI, ratio >30, also for children).
- Self-estimated proportion of traditional food in diet.
- Non-monetary food accessibility.
- Monetary food accessibility.
- Food-related contaminants.
- Food-borne diseases.
- Per capita renewable water.
- Accessibility of running water.
- Waterborne diseases.
- Drinking water contaminants.
- Authorized water quality assurance.
- Water safety plans.

These 12 indicators suggested are based on existing WHO and FAO indicators, and they will be a starting point for monitoring both Indigenous and non-Indigenous populations in rural and urban areas in the Arctic.

Sources: Nilsson *et al.*, 2013a, Nilsson *et al.*, 2013b.

During the Swedish chairmanship of the Arctic Council (2011–2013), food and water security was declared one of its priority issues, and a joint project was initiated, aimed at providing a basis for indicator selection that is relevant for food and water security in the circumpolar areas and which could be used in international collaborations of surveillance in the Arctic (Nilsson and Evengård, 2013). An attempt was made to identify key indicators to follow changes in food and water security in Arctic populations. Such indicators are recommended to be gender-based, since food and water insecurity affect men and women differently. The results of an extensive literature search and critical review were presented to a joint workshop of the Sustainable Development Working Group's (SDWG) Arctic Human Health Expert Group and the Arctic Monitoring and Assessment Program's (AMAP) Human Health Assessment Group, which selected 12 candidate indicators for future monitoring (Nilsson *et al.*, 2013a; Nilsson *et al.*, 2013b).

8.4.2 Environmental contaminants

For more than 20 years, AMAP has monitored the levels of persistent organic pollutants and heavy metals in circumpolar countries. AMAP has regularly published reports on human health and the trends of environmental contaminants such as mercury and lead in traditional/local foods and their body burden in humans (AMAP, 1998; AMAP, 2003; AMAP, 2009; AMAP, 2011; see Textbox 8.2). Future research is needed that would combine bio-monitoring of contaminants with dietary surveys in order to provide more accurate estimates of exposure and better dietary advice. Several joint research and educational projects have been launched, such as the multidisciplinary EU-funded ArcRisk project led by AMAP (ArcRisk, 2013), which aims to determine how climate-mediated changes in the environmental fate of contaminants affect the exposure of human populations via the food-web, both now and in the future. The levels of the old persistent organic contaminants will decrease in the environment and in humans in the future but there will be differences among regions and among contaminants (Nost *et al.*, 2013). There are now “hot spots” in industrial areas in the Russian North. Increased amounts of persistent environmental contaminants and heavy metals, especially mercury, are being released from the frozen soil and contaminate drinking water (Dudarev, 2012; Dudarev *et al.*, 2013). Increased traffic and tourism, together with oil and gas and mining activities, will bring contaminants closer to people in new ways. Previously, most contaminants entered the Arctic through long-distance transport. Such

changes will present new challenges to the health and well-being of all Arctic residents.

Textbox 8.2

Relevant key findings of Arctic Monitoring and Assessment Programme

- Levels of legacy POPs in human tissues are declining in many regions of the Circumpolar Arctic. New sources and patterns are being seen in Arctic Russia.
- Levels of mercury in human tissues are declining in several Arctic regions. Inuit continue to have the highest exposure levels of mercury in the Arctic and most often exceed blood guidelines.
- Traditional foods are an important source of nutrients for many Arctic residents. These foods are also the main source of exposure to contaminants.
- New evidence indicates that POPs, mercury, and lead can affect the health of people and especially children at lower levels of exposure than previously thought.
- Climate change may increase the mobilization of POPs and mercury, and lead to higher releases of contaminants within the Arctic.

The 2011 AMAP Assessment “Mercury in the Arctic” concludes: “It has been shown that exposure to mercury at the current levels in the Arctic can have adverse impacts on human health, particularly for the developing fetus and children, although further research is required to determine if the subtle effects of Hg on human health are persistent.” (AMAP 2011: 168).

Sources: AMAP, 2009; AMAP, 2011.

8.4.3 Dietary transition

The change from “traditional” foods based on hunting and fishing to a “western” type of diet has steadily progressed in many Indigenous communities around the Arctic. These changes have led to increased rates of modern diseases such as obesity, diabetes and cardiovascular diseases. Various circumpolar countries and regions have promoted dietary recommendations to ensure a balanced and nutritious diet (Jeppesen *et al.*, 2011). However, achieving this balance is difficult. Many remote Arctic communities are only accessible by air or marine transport, although some have road access. Transportation costs are high, which result in high food prices that may be beyond the reach of many people. Even those who engage in harvesting fish and game animals require expensive hunting equipment, fuel and vehicles. Long delays in shipments due to weather

conditions often result in spoiling of perishable items. Those who rely mainly on market foods become increasingly dependent on cheaper, unhealthy choices, further affecting food security, nutritional status, and overall health (Jeppesen *et al.*, 2011; Bjerregaard and Mulvad, 2012).

8.4.4 The aging population

Societal values in many countries consider the younger generation as particularly vulnerable and requiring special attention as the pace of Arctic development increases. The working force or middle-aged generation is considered a key factor in shaping the social and economic agenda of the region. However, the “grey” population – elderly people, many of whom are retired – is often neglected in many kinds of analyses of Arctic populations. This “grey” population is a viable resource for regional capacity building. The phenomenon of the aging population manifests itself differently across the Arctic, due to the varied contributions of declining fertility, mortality and immigration (Emelyanova and Rautio, 2013; Lewis, 2013; Nordic Population Aging, 2013).

Despite common concerns associated with the growing size of older population, such as strains on the pension and health care systems (especially the cost of long-term care), senior residents of the Arctic make important contributions to the local community: late age labor participation, experience in decision-making, unpaid “volunteering” and the intergenerational transmission of cultural values and practices.

There are urgent questions for policy makers in the Arctic related to this sector of the population. How will Arctic societies adapt to the aging population and what impact will it have on not only the health of seniors, but on the entire population? What kind of political will is needed to make policy adjustments, for example, in working life, pension reforms, living arrangements, and health services? It is often not recognized that the elderly person is a powerful but underutilized resource for Arctic development.

The process of population aging can be expected to continue in the coming decades. For policy responses to be effective in optimizing societal well-being, they must be based on scientific understanding of the critical dynamics associated with population aging (Emelyanova and Rautio, 2013). Both conventional and prospective methodologies provide such evidence. “Conventional” tools such as the United Nations indicators on aging (World Population Aging 1950–2050, 2007) are based on the concept of “chronological” age. More recently, “prospective” indices have emerged based on the concept of prospective age and remain-

ing life expectancy (Sanderson and Scherbov, 2008). Generally, a slower speed of aging is observed when changes in longevity over time (prospective approach) are taken into consideration. Clearly, a group of very aged Scandinavian countries is a forerunner in population aging within the Arctic (Emelyanova and Rautio, 2012).

More evidence is required to understand the complexity of aging in Arctic populations and to support the development of a comprehensive Arctic strategy to address the health and well-being of older people. Qualitative research methods are needed to investigate both the needs of older people and available capacities of regional policy-makers to respond to those needs. Large gaps in our understanding of Arctic demography remain, for example, variations in movement (in- and out-migration), gender (male and female aging), patterns of settlement (urban vs. rural), and nomadic patterns (Indigenous vs. non-Indigenous) in the cross-territorial context. Access to vital statistical data at the regional and municipal levels likewise remains limited.

8.5 Changing quality of life

The term “development” appears in the title of both this report and the first *AHDR* (AHDR, 2004). There has been a paradigm shift in how this concept is operationalized and measured. Whether Gross Domestic Product (GDP) can adequately assess development in a broader sense has been discussed for quite some time. Globally, considerable attention has been given to developing alternative measures for development to supplement or even substitute GDP because of concerns that GDP is often misleading when used to quantify subjective well-being, quality of life or happiness. Within the last decades, a large number of initiatives have been launched to better grasp the complexity embedded in the terms “individual well-being”, “quality of life” and “happiness”. These initiatives include: the United Nations Human Development Index (UN HDI, n.d.), the European Quality of Life Index (Eurofound, 2012); the European System of Social Indicators (GESIS, ZUMA) (ZSI, nd), the Happy Planet Index (HPI, 2014), the Bhutanese “Gross National Happiness Index” (GNHI, 2014), the OECD Better Life Index (OECD, n.d.), the so-called Sarkozy initiative that resulted in a number of recommendations from a group of prominent scholars on measuring human development (CMEPSP, n.d.), and most recently, “Well-being and Policy” (O’Donnel *et al.*, 2014).

The terms “subjective well-being”, “quality of life” and “happiness” increasingly appear in a variety of assessments, surveys and analyses in

the Arctic. Recent examples include the *Arctic Human Development Report* (AHDR, 2004), the Arctic Social Indicators project (ASI, 2010; ASI, 2014), the *Survey of Living Conditions in the Arctic* (SLiCA) (Andersen and Poppel, 2002; Kruse *et al.*, 2008; Poppel, 2014), chapters focusing on well-being in the *Arctic Climate Impact Assessment* (Nuttall *et al.*, 2005), and in the *Snow, Water, Ice and Permafrost in the Arctic Report* (SWIPA) (Hovelsrud *et al.*, 2011). This trend reflects discourses about human development, not only in the Arctic, but also on a global scale in both political and academic fora. In discussions related to Arctic human development, this might be seen as an indication of an increasing demand from Indigenous and other Arctic residents to be acknowledged as active participants in developing the Arctic, and not passive recipients of the consequences of rapid social and economic changes.

“Be Smoke Free” – Anti-smoking logo from Nunavut, Canada



Credit: Public campaign.

8.5.1 *The Arctic Human Development Report (AHDR)*

The first *Arctic Human Development Report* (AHDR, 2004) focused on well-being in the “Human Health and Well-being”-chapter. Well-being was considered in close relation to and determined by a number of different health aspects as well as some more overall living conditions dimensions like “local control” and “spiritual values” (AHDR, 2004:157). Furthermore, the first *AHDR* stated:

“‘[c]ommunity cohesion’ and individual and community ‘resilience’ are important for well-being, but these factors are seldom reflected in health statistics. We need to find ways to quantify these factors and their role in quality of life in a way that makes it possible to compare the situation across the Arctic nations.”

(AHDR, 2004: 166)

The *AHDR* then concluded, “[r]esidents of the Arctic – settlers as well as Indigenous peoples – regularly emphasize the importance of at least three dimensions of human development over and above those included in the HDI:

- Fate Control (controlling one’s own destiny).
- Maintaining cultural identity.
- Living close to nature (AHDR, 2004: 240).

The *AHDR* argued that “it would be a mistake to ignore perspectives on human development, especially in areas of the world like the Arctic where distinctive cultures remain influential” (AHDR, 2004: 241) and recommended that “[t]he Sustainable Development Working Group should organize a workshop to begin the process of devising a small number of tractable indicators to be used in tracking changes in key elements of human development in the Arctic over time” (AHDR, 2004: 242).

This section assesses research and statistics on well-being and Arctic human development measured by different social indicators, and assesses the trends that might potentially be apparent since the first *AHDR*.

8.6 Application of the United Nations' Human Development Index (HDI) to the Circumpolar Arctic

Following the original intention of the first *AHDR*, the following paragraphs attempt to apply the UN HDI to the Arctic regions.

The United Nations' Human Development Index, HDI, is a composite index combining indicators on health (infant mortality and life expectancy), education (measured by educational attainment) and income (GDP per capita). Whereas the UN HDI is computed at a state level, a regional approach is needed to compare human development in the Circumpolar region. The increased focus on human development in the Arctic has initiated a number of efforts to gather and organize data to facilitate inter- and intraregional comparisons of human development and socioeconomic conditions in the Arctic. The sources of the data in this section are primarily ArcticStat (n.d.) and the Circumpolar Health Observatory (CircHOB, 2012) and websites of national and regional statistical institutes as well as UN, OECD and IMF, to add to and substantiate these data archives. Furthermore, a number of initiatives like Sustainable Arctic Observing Network (SAON), Arctic Observing Network (AON) and Arctic Observing Network – Social Indicator Project (AON-SIP) (see Kruse *et al.*, 2011) have been developed in the Arctic to ensure standardization and thus comparability of Arctic socio-economic data (the initiatives are often collaborative efforts with the natural sciences). These efforts combined with data from national and regional statistical institutes make it possible to compare indicators.

As noted above, the Arctic falls into four groups (ranked according to a number of health indicators):

1. The Nordic countries.
2. Alaska, Yukon and Northwest Territories.
3. Greenland and Nunavut.
4. The Russian Arctic.

Two of the health indicators applied in the HDI, infant mortality and life expectancy, both substantiate this conclusion. Comparing the 2004–2009 average to the 2000–2004 average, it is important to note that the regions ranking lowest (primarily regions of the Russian Arctic with a few exceptions: the Koryak okrug, the (former) Evenki okrug and Magadan oblast not only experienced a decrease in infant mortality and an increase in life

expectancy, but also made significant progress in these important health issues compared to most other Arctic regions (see Figure 8.1; also, Chapter 2, *Arctic Populations and Migration*, Figures 2.6 and 2.8).

Regional educational attainment levels reflect not only the self-initiative of young people and residents desirous of an education, but also the demand for an educated work force in both the public and private sector. Often, this demand is met by immigrant laborers who move to the region on either a short or long term basis. The five-year average for 2000–2004 shows major differences for educational attainment: under 20% for Greenland and some of the Russian regions, to a high of about one-third in Alaska, Yukon and Northwest Territories. Data were not available for the Russian Arctic for the period 2005–2009. Comparing the five-year average attainment level for the period 2005–2009 for the other Arctic regions shows that averages have increased in all regions (except Alaska), and education levels for women have increased everywhere more than that of the male population. This development is not distinct to the Arctic region but seems to follow a trend that we see in most of the Arctic states.

The third dimension of the Human Development Index, income, is measured by “Gross Domestic Product (GDP) per capita” (UN HDI). GDP is measured in domestic currencies of each country and each country experiences different consumer patterns, price levels and inflation rates. Comparing GDP per capita thus presupposes a procedure that converts GDP (in basic prices) in domestic currencies to a common currency (USD) and creates a common “consumer basket” via the so-called purchasing power parities, or “PPP”. The geographical delimitation used to categorize and rank the Arctic regions according to the health indicators does not directly reflect the ranking according to income. There are parallels, though. In 2000, the per capita GDP in most of the Russian regions (except Yamalo-Nenets Autonomous okrug (AO), Khanti-Mansy AO and Nenets AO) were the lowest in the Circumpolar region, and below USD PPP 15,000. The regions with the highest GDP per capita (USD 25,000 and above) included Alaska and the three Canadian Arctic regions as well as the Arctic regions of Finland and Norrbotten (northern Sweden). GDP data for the last year of the first decade of the 21st century have not been available for all regions and GDP developments for these regions have thus been measured for the period including the last year where data are available. The GDP time series for the three Finnish Arctic regions are only available for the period 2000–2005, and for three of the Russian Arctic regions (former Evenki AO, former Taymyr AO and former Koryak AO) GDP data are only available for the period 2000–2007.

The more significant changes in the GDP indicator (GDP USD PPP in fixed prices) include:

- The decrease of more than 20% in the Icelandic GDP from 2000 to 2009 (due to the huge impacts of the financial crisis – see, e.g. Matthiasson, 2010).
- The substantial decrease from 2000 to 2005 in the GDP of former Koryak AO and former Taymyr AO.
- The decrease (Oulu/Pohjois-Pohjanmaa) and relatively low percentage increase in the Finnish Arctic region respectively from 2000 to 2007.
- The generally high percentage increases in most Russian Arctic regions – especially Nenets AO (more than doubling of GDP from 2000 to 2009) and Chukotka (more than trebling of GDP from 2000 to 2009).

In Figure 8.7, two of the UN human development indicators are illustrated: “green” indicates a better situation during the first decade of the 21st millennium, “yellow” indicates status quo, and red indicates a retrograde step.

As 2009 was the first whole calendar year after the beginning of the financial crises, it is not possible to predict the outcome for the regions where data are lacking. Subject to these deficiencies, though, it appears that the overall distribution of the 28 Arctic regions by GDP is much the same at the end of the decade as in the beginning. Eight out of ten of the regions with highest GDP per capita in the period 2005–2009 were also among the top-ten in 2000, and nine out of ten were among the regions with lowest GDP in both 2000 and in the period 2005–2009. It seems to be justified to compare the average GDP of the lowest ranking regions and the highest-ranking 10 regions in 2000 and in the period 2005–2009. The overall conclusion based on these averages is that the difference between the countries with the lowest and the highest GDP per capita has narrowed. In 2000, the GDP per capita average of the ten lowest ranking regions was roughly one fifth of the ten highest ranking.

Figure 8.7 Development of two indicators of the UN HDI: Life Expectancy and Gross Domestic Product, GDP in the first decade of the 21st century. Percent changes

Country/Region	Life expectancy 2000-4 to 2005- 09. Percent change.	GDP-change 2000-2009*. Fixed prices (2000 = 100).Percent change.
United States		
Alaska		
Canada		
Yukon		
Northwest Territories		
Nunavut		
Northern Canada		
Denmark		d.n.a.
Greenland		
Faroe Islands		
Iceland		
Norway		
Nordland		
Troms		
Finnmark		
Northern Norway		d.n.a.
Sweden		d.n.a.
Västerbotten		
Norrbottn		
Northern Sweden		d.n.a.
Finland		
Kainuu		* 2000-2007
Oulu/Pohjois-Pohjanmaa		* 2000-2007
Lappi		* 2000-2007
Northern Finland		* 2000-2007
Russian Federation		
Murmansk Oblast		
Kareliya Republic		
Arkhangelsk Oblast		
- Nenets AO		
Komi Republic		
Yamalo-Nenets AO		
Khanty-Mansi AO		
Taymyr AO		** 2000-2005
Evenki AO		** 2000-2005
Sakha Republic		
Magadan Oblast		
Koryak AO		** 2000-2005
Chukotka AO		
Northern Russia	d.n.a.	
Total Northern Regions	d.n.a.	d.n.a.
	indicates positive development	
	indicates no change	
	indicates negative development	
d.n.a.: data not available		

Sources: ArcticStat (<http://www.arcticstat.org/>) and The Circumpolar Health Observatory (CircHOB) (<http://circhob.circumpolarhealth.org/>), validated, substantiated and with additions from websites of national and regional statistical institutes as well as UN, OECD and IMF.

The data from 2009 – and for some regions the 2005 and 2007 figures respectively – indicates a narrowing to one fourth, and thus a somewhat decreased disparity between the Arctic regions measured by the gross production value of the regions. The background for the decreased disparity between Arctic regions is an economic growth – primarily in the Russian Arctic – based on oil, gas and mineral resource exploitation.

It should be noted, however, that GDP only tells us about the total added value of production (e.g., Goldsmith, 2009: 34–35) and gives no indications about potential negative externalities (environmental problems, for example) or about the distribution of income. Resource development might have regional economic spin-offs and generate income locally, but major extractive activities often are decoupled from both local and regional economic activities and therefore contribute more to economic activities and to large corporations and economic centers outside the Arctic (e.g., Duhaime, 2004). Furthermore, it is important to understand that the non-renewable resources that have been extracted for the region represent a loss of wealth for future generations (Mäenpää, 2009).

In sum, almost all Arctic regions have experienced positive developments in the indicators constituting the overall UN Human Development Index. The inequalities and disparities between the Arctic regions of Arctic states and the Arctic states, between the Arctic regions and also within the Arctic regions still exist. But when it comes to child mortality, life expectancy and GDP per capita, the data substantiates the perception that these inequalities narrow. Koryak okrug seems to be the most significant exception to this overall statement.

8.7 Including additional dimensions in the assessment of human development

The first *Arctic Human Development Report* (AHDR, 2004) recommended developing measurable indicators within six domains; the three domains of the UN HDI as well as “fate control”; “maintaining cultural identity”; “living close to nature”. The *Arctic Social Indicators* report (ASI, 2010: 157; see Chapter 1, *Introduction*), further elaborated on the six dimensions in an Arctic context and developed a number of indicators to assess well-being in the North:

- Infant Mortality (Domain: Health/Population).
- Net-migration (Domains: Health/Population and Material Well-being).

- Consumption/harvest of local foods (Domains: Closeness to Nature and Material Well-being).
- Per capita household income (Domain: Material Well-being).
- Ratio of students successfully completing post-secondary education (Domain: Education).
- Language retention (Domain: Cultural Well-being).
- Fate Control Index (Domain: Fate Control).

Data are not available – either from statistical institutes/associations or collaborative research projects – to make circumpolar wide comparisons including all regions and applying the indicators for the three additional *AHDR*-/*ASI*-dimensions: “closeness to nature” (consumption/harvest of local foods); “cultural well-being” (language retention); “fate control” (an index composed by indicators for: political control, control over land/resources, economic control, control over knowledge construction). There are regional and national examples, though, that might be considered “prototypes” for developing comparable data. Examples include the annual updates “Subsistence in Alaska” that the State of Alaska has produced since 1990 (Alaska Department of Fish and Game, 2014), and the assessments that Statistics Canada has conducted on language abilities (Statistic Canada, n.d.)

8.8 What can we learn about human development from different community, regional, national, circumpolar studies?

A number of assessments and research projects focusing on Arctic human development have been conducted in recent years. The assessments and research projects fall into three main categories:

- Studies assessing Arctic human development by a number of key social indicators. Examples are: the Arctic Social Indicators project (ASI, 2010; ASI, 2014); Aboriginal Peoples Survey (APS) (Wallace, 2014) SAMINOR (Brustad *et al.*, 2014); and the Inuvialuit Baseline Indicators (IBI).
- Studies assessing Arctic human development by measuring subjective or community well-being/quality of life either by constructing composite indices or by people’s self-evaluation. Examples are Survey of Living Conditions in the Arctic (Poppel *et al.*,

2007); (Rethinking the Top of the World (Canada Centre for Global Security Studies, 2014); Aboriginal Quality of Life (NAEDB, 2012); The Community Well-Being Index (CWB) (Aboriginal Affairs and Northern Development Canada, 2012); The North Slope Social Indicator Survey (NSSIS).

- Both types of studies can be carried out at the community, regional, national or international level and can be based on the total population or focussing on groups of the residents – most often the Indigenous peoples.
- A third category of data collection of importance, primarily for future research and assessments, are data archives (like Arctic Stat) and databases that are being constructed to contain a variety of socio-economic and other key indicators. Examples are: Arctic Observing Network (AON), Arctic Observing Network – Social Indicator Project (AON-SIP) and the Sustaining Arctic Observing Network (SAON).

Only few of the abovementioned studies make it possible to do time series studies, but they may nevertheless provide useful insight. Some of the studies will be presented in brief. The findings presented will primarily be from North American studies as few surveys and social indicator studies are conducted in Fennoscandia (the focus has primarily been on health studies) and the Russian Arctic (an increased focus on human development has resulted in a number of studies).

8.9 Findings from studies assessing Arctic Human Development by a number of key social indicators

8.9.1 *Arctic Social Indicators Project (ASI) II*

The recommendation to develop indicators reflecting different dimensions and thus measuring human development more holistically became the point of departure for the Arctic Social Indicators (ASI) Project, a direct follow-up to the first *AHDR*. In the first phase of the ASI project the working group focused on elaborating and developing indicators within the three United Nations Human Development Index domains and for three additional domains recommended in the first *AHDR* (ASI, 2010).

Relaxing near a corral during calf-marking, Sweden



Credit: Hugh Beach.

The second report of the Arctic Social Indicators project selected four regions as pilot study regions for further analyses, applying the selected social indicators:

1. Sakha – Yakutia, Russian Federation.
2. Northwest Territories, Canada.
3. West-Nordic region.
4. Alaska Inuit, USA.

Generally, the second ASI report's conclusion about human development in the four regions is that the results suggest a general improvement, but that considerable differences exist among regions, and between rural and urban areas in the Arctic (ASI, 2014).

The study of Northwest Territories is an example of this overall conclusion. It examines the 15-year period from 1991 to 2006 and states that whereas a general improvement in human development has taken place there are major regional discrepancies especially when it comes to material well-being (Chapter 3 of ASI, 2014). This leads Petrov and King to distinguish between a small group of communities/cities that are “haves” and a larger and more remote group that are “have-nots” (Ibid.). When measured by “language retention” (cultural well-being) and harvest and consumption of local food (contact with nature), the smaller

and more remote Indigenous communities are better off, whereas language retention for Northwest Territories as a whole has declined.

The Sakha Republic (Yakutia) in the Russian Federation is another example of a regional application of the ASI indicators, with a different context and development than Northwest Territories but with overall results that are much the same: a general improvement in human development with major rural-urban differences, but for areas inhabited by numerically small peoples most of the indicators show lower-than-average attainment (Chapter 2 of ASI, 2014). The results also suggest different developments in the different indicators: a substantial increase in material well-being and positive developments in the education level and increased time spent on the land (“contact with nature” indicator) whereas the ASI-indicators for “cultural vitality” and “contact with nature” are ambiguous (Ibid.).

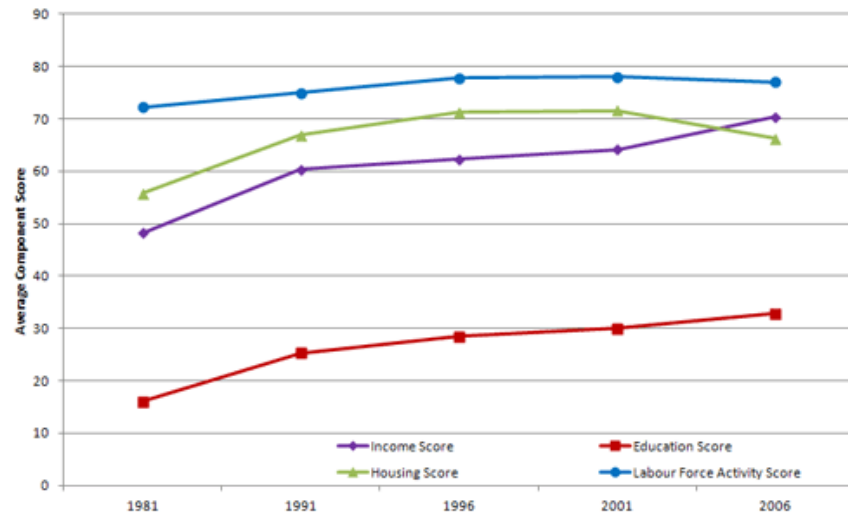
8.10 Studies assessing Arctic human development by measuring subjective or community well-being/quality of life

8.10.1 *Canadian Community Well-Being (CWB) Index*

Aboriginal Affairs and Northern Development Canada has developed and published *The Community Well-Being (CWB) Index* for 1981, 1991, 1996, 2001, and 2006 (Penney *et al.*, 2012). The index is based on Statistics Canada’s population census data and composed by indicators on income (income per capita), education (high school and university completion rates), housing (housing quantity and quality), and labor force activity (employment and labor force participation rates). A special study has been conducted comparing the communities in the four Inuit settlement regions (including both Inuit and non-Inuit residents), Inuit Nunangat: Nunatsiavut (Northern Labrador); Nunavik (Northern Quebec); the territory of Nunavut; the Inuvialuit Settlement Region (Northwest Territories) with First Nations communities and with non-Indigenous communities.

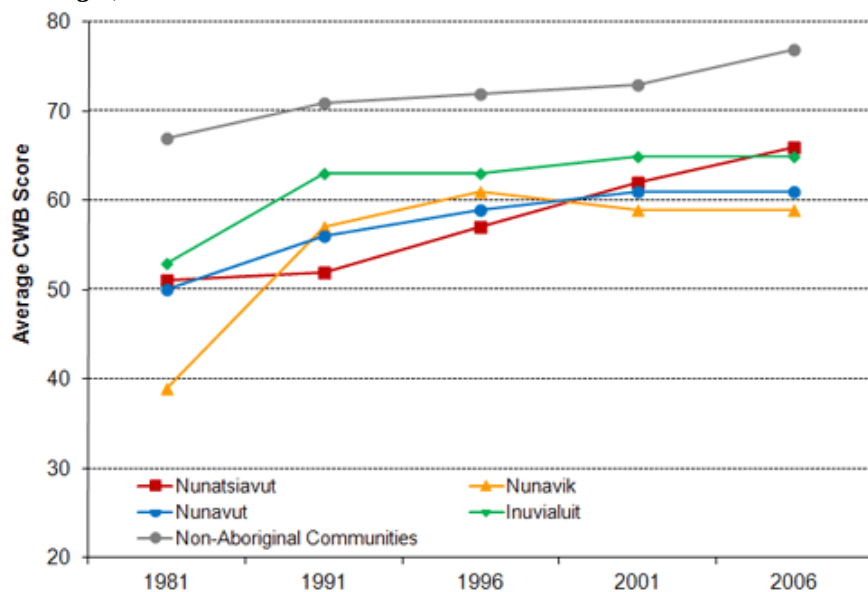
Figure 8.8 shows that, whereas all indicators have increased in the quarter of a century since 1981, for all four Inuit regions, the scores for “Education” and the “Labor Force Activity” declined from 2001 to 2006.ⁱⁱ

Figure 8.8. Canadian Community Well-Being Index: Component scores over time, Inuit Nunangat, 1981–2006



Source: Penney *et al.*, p. 10, 2012.

Figure 8.9. Canadian Community Well-Being Index. Average scores over time, Nunangat, 1981–2006



Source: Penney *et al.*, p. 11, 2012.

All four Inuit regions are better off in 2006 than in 1981, measured by the CWB Index, but only Nunatsiavut has better scores in 2006 than in 2001 (Figure 8.9). As the increase in the CWB Index for non-Aboriginal

communities continued a positive development ever since 1981, it means that the gap between most Inuit regions and non-Aboriginal communities has widened since 2001.ⁱⁱⁱ

8.10.2 The Aboriginal Economic Benchmark Report

In 2012, the National Aboriginal Economic Development Board, (NAEDB) published The Aboriginal Economic Benchmark Report (AEBR). The National Aboriginal Economic Development Board was established in 1990 and is “appointed by Order-in-Council to provide policy and program advice to the federal government on Aboriginal economic development” (NAEDB, 2012: 2). The 2012 report focuses on the economic progress of First Nations, Inuit, and Métis in Canada and builds on three core indicators: “employment”, “income” and “wealth and well-being” as well as five underlying indicators: “education”, “entrepreneurship and business development”, “governance”, “lands and resources” and “infrastructure” and builds on official statistics from Statistics Canada as well as a number of other sources to establish baseline indicators. In total, more than 100 indicators are used to assess the economic development of Indigenous peoples in Canada and to compare the findings with the development for non-Indigenous Canadians (NAEDB, 2012).

The NAEDB Report compares socio-economic conditions among the different aboriginal and non-aboriginal groups and the community well-being index is calculated according to this typology. As all Inuit communities are located in the Canadian North, some results concerning Inuit and Inuit communities are briefly introduced. It should be noted that “Inuit communities” also include non-Inuit residents of these communities. The report’s conclusions, in brief, about Inuit and Inuit communities state:

“Inuit have generally seen little improvement in key indicators over the period 1996 to 2006. For example, Inuit have the lowest education completion rates of any Aboriginal heritage group. As a result, there are sizeable gaps between the economic outcomes of Inuit and non-Aboriginal Canadians living in the same regions.”

(NAEDB, 2012: 9)

Based on the CWB developed by Aboriginal Affairs and Northern Development Canada, the AEBR further concludes, “Inuit communities have a CWB score 15.1 points (on a 100 point scale – author) below other Canadian communities” (NAEDB, 2012: 37) and that “70% of Inuit communities had stable or increasing CWB scores between 2001 to 2006, as compared to 90% of other Canadian communities” (NAEDB, 2012: 17).

8.11 Findings from studies assessing Arctic human development by measuring subjective or community well-being/quality of life

A number of measures have been developed to better express the individuals' subjective perception of their life situation. "Happiness" is one such measure. The question often asked in international surveys, in order to identify "the happiest countries in the world", is: "How satisfied are you with your life as whole?" This question was also part of the questionnaire applied in the Survey of Living Conditions in the Arctic, SLiCA and in "Rethinking the Top of the World: Arctic Security Public Opinion Survey" and some key findings will be presented below.

8.11.1 Quality of life among Inuit and Sámi and Indigenous peoples of Chukotka and the Kola Peninsula – SLiCA

The Survey of Living Conditions in the Arctic, SLiCA, is an attempt to measure quality of life among Inuit, Sámi and the Indigenous peoples of Chukotka and the Kola Peninsula (see Textbox 8.3) both by addressing a variety of living conditions and by asking about people's self-evaluation. The "quality of life as a whole" question was asked in three SLiCA survey regions (Alaska, Greenland and Sweden) whereas a question asking about "quality of life in this community" was asked in all SLiCA survey regions.

Textbox 8.3

The Survey of Living Conditions in the Arctic (SLiCA)

The SLiCA project was launched at a workshop in 1998 and the SLiCA core questionnaire was developed in partnership with representatives of the respondents (the Inuit, Sami and Indigenous peoples of Chukotka and the Kola Peninsula) until 2000. Eight thousand face-to-face interviews were conducted in different periods in the different survey regions until 2008 (see e.g. Andersen and Poppel, 2002; Kruse et al., 2008; Eliassen et al., 2012; Poppel, 2014). Only in Greenland were non-Indigenous residents included in the survey.

The reason to develop a new research design to investigate living conditions, subjective well-being and quality of life of Indigenous peoples of the Arctic was the assumption that conventional social indicators do not fully reflect the welfare priorities of the Indigenous peoples (Andersen and Poppel, 2002).

Individual well-being was defined as covering all aspects of living including the individuals' perception of their resources and overall satisfaction with the quality of their lives. The SLiCA questionnaire (ca. 200 questions) made it possible to analyze a number of dimensions: Communication and Technology, Community viability, Discrimination, Education, Employment/Harvest, Environment/Resource management, Family relations and social networks, Health, Household economy, Housing, Identity management, Justice/Safety, Language, Mobility, Political resources, Religion/Spirituality, and Work/Leisure (Andersen and Poppel, 2002). Furthermore it is possible to analyze the correlation between a number of living conditions indicators, for example, "satisfaction with quality of life" and "self-rated health".

The first SLiCA results from the Inuit settlement regions were published in 2007 and almost 600 tables were organized in six domains according to the AHDR recommendations (Poppel et al., 2007). In 2011, the first article based on data from all SLiCA survey regions was published, including the results of the Inuit settlement regions, Chukotka and the Sámi in Northern Norway, Northern Sweden and the Kola Peninsula (Poppel, 2011).

Figure 8.10



* Data Not Available for Canada, Chukotka, Norway and the Kola Peninsula.

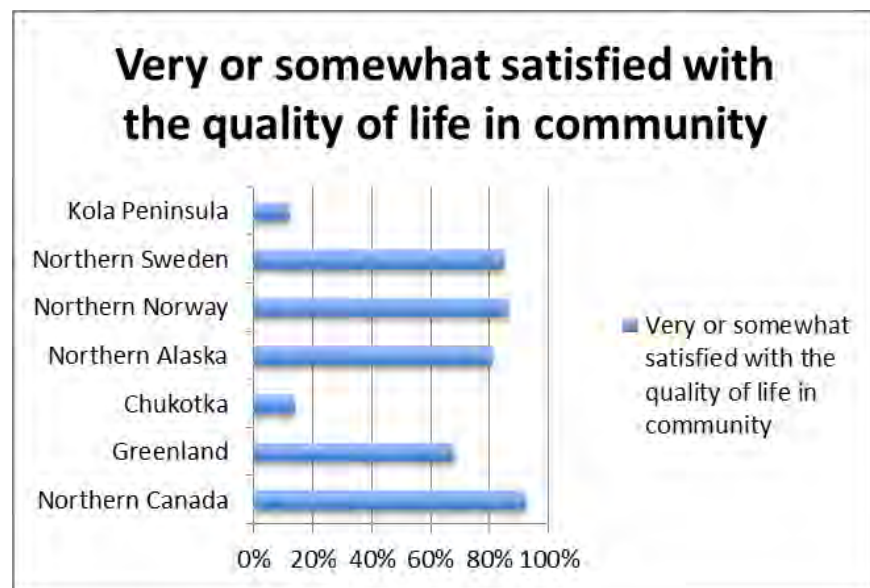
** Source: Poppel *et al.*, 2007 and Poppel, forthcoming.

Among Indigenous people in Greenland, Northern Alaska and Northern Sweden, nine-in-ten are "somewhat" or "very satisfied" with their life as a whole (see Figure 8.10). Taking into account that living standards are

typically lower among the Indigenous peoples of the Arctic than among non-Indigenous peoples, these findings support the assumptions that other than material factors influence subjective well-being.

Analysis of the data for Greenland and Alaska combined concluded that satisfaction with an individual's actual job or outcome of actual fishing and hunting activities were less important to overall satisfaction with life compared to job opportunities and the amount of fish and game locally available. This means that "availability" and "accessibility" seem to mean more to the quality of life of Inuit than satisfaction with the actual job and actual catch. Also important in explaining overall well-being is the combination of market and non-market activities (hunting and fishing, for example) and the influence people have over natural resources and the environment (Kruse *et al.*, 2008; Poppel and Kruse, 2009; Poppel, forthcoming).

Figure 8.11



* Data Not Available for Canada, Chukotka, Norway and the Kola Peninsula.

** Source: Poppel *et al.*, 2007 and Poppel, forthcoming.

Figure 8.11 refers to "satisfaction with quality of life in this community", i.e., the perceived quality of "community life" where the respondent lives, including the quality of life of the respondent. Interviews were conducted in different periods in the different regions/countries due to lack of coordination between funding agencies: Northern Canada (2001); Alaska (2002–03); Greenland (2004–06); Chukotka (2004–06);

Northern Norway (2006–08); Northern Sweden (2006–08) and Kola Peninsula (2006–08). Of those interviewed, more than three out of four Sámi living in northern Sweden and northern Norway and Inuit in northern Alaska were somewhat or very satisfied with the quality of life in their community. The corresponding figure in Greenland was seven out of ten. A significantly smaller proportion – only one out of seven – of the Indigenous people of Chukotka and the Kola Peninsula were somewhat or very satisfied with the quality of life in their community. Other SLiCA findings suggest a correlation between a low rating of satisfaction with quality of life in respondent's community, different kinds of social problems such as unemployment, domestic violence and suicide, lower self rated health, and poor health care among Indigenous people in the two Arctic Russian survey regions (Poppel, forthcoming).

8.11.2 *Quality of Life in Northern Canada –“Rethinking the Top of the World: Arctic Security Public Opinion Survey”*

In a report, *Rethinking the Top of the World: Arctic Security Public Opinion Survey*, a number of living conditions, perceptions and attitudes were analysed. The analyses were based on an international comparative study (9,000 interviews). Almost 3,000 people were interviewed in Canada (of which 744 were in Northwest Territories, Yukon and Nunavut). The analysis compared responses in northern and southern Canada and reached the following conclusions:

- Northerners are dissatisfied with the human and environmental infrastructure in their region. It is therefore surprising to find that, in terms of how they rate their lives and their health, residents of the North are modestly more likely to see themselves as healthy. Northern residents are significantly more likely to rate their quality of life as excellent than those in the South. Northerners appear to be very optimistic about future well-being. This resilience and optimism was one of the more surprising study findings (EKOS Research Associates, 2011: vi).
- Sociocultural identity and preservation of traditional ways of life (language and culture) are deeply entrenched and are a very important priority for the North (EKOS Research Associates, 2011: vii).
- Respondents from Northern Canada are more likely to rate their quality of life as good (75%), compared to respondents from Southern Canada (67%) (EKOS Research Associates, 2011: xiii).

- In Northern Canada, Yukon residents provide the most positive assessment of their quality of life (84% say good), while residents of Nunavut are less upbeat (65%). Perceived quality of life increases progressively with income (91% of those with a household income of over USD 120,000, compared to just 54% of those earning less than USD 40,000), education (87% of university graduates, compared to 56% of those limited to a high school education), and age (82% of those over 60, compared to 56% of youth) (EKOS Research Associates, 2011: 3).

Textbox 8.4: Examples on studies of well-being in the Arctic

Arctic

The Arctic Observing Network, AON, Social Indicators project was initiated to develop datasets relevant to the scientific community and identify gaps in existing observation systems. It also makes recommendations on appropriate actions to fill those gaps (Kruse *et al.*, 2011), for example, in the fields of climate–human interactions, subsistence hunting, tourism, marine transportation and commercial fishing (Ibid.).

Alaska

North Slope Social Indicator Survey: This project looks at the well-being of North Slope residents. It is important because their well-being may be affected by offshore oil and gas exploration and development. Monitoring well-being will help identify and mitigate impacts. The North Slope Social Indicators Project is designed to build on the work of previous studies by including the best indicators from them and comparing the well-being of residents today with those in 2003, 1988, and even as far back as 1977. It will also be possible to monitor changes in well-being in the future.

Canada

In the report *Rethinking the Top of the World: Arctic Security Public Opinion Survey* different views on living conditions, perceptions and attitudes were analyzed in Northwest Territories, Yukon and Nunavut. The analysis compared responses in northern and southern Canada and showed that residents of the North feel themselves more likely to be healthy in the spite of the dissatisfaction of Northerners with the human and environmental infrastructure in their region. Northerners are significantly more likely to rate their quality of life as excellent than those in the South. Northerners appear to be very optimistic about their future well-being. This resilience and optimism was one of the more surprising study findings (see EKOS Research Associates, 2011).

The Community Well-being (CWB) Index was developed to help measure the quality of life of First Nations and Inuit communities in Canada relative to other communities and over time. CWB Index scores are derived from Canada's Censuses of Population, which are conducted every five years. Scores have been

calculated for 1981, 1991, 1996, 2001 and 2006. A community's CWB index score is a single number that is composed of data on income, education, housing conditions and labor force activity (INAC, 2010).

The Inuvialuit Baseline Indicators (IBI) project is a collaborative effort among researchers associated with the Resources and Sustainable Development in the Arctic (ReSDA) and the Arctic Social Indicators (ASI) projects with the Inuvialuit Regional Corporation (IRC). The goal is to develop a set of measurable, reliable and accessible indicators to monitor socio-economic conditions in the Inuvialuit Settlement Region (ISR) with an emphasis on tracking impacts of resource development. This effort is focused on creating a framework to be used by local actors to collect, manage and analyse community-based data.

The Institute for Research on Public Policy (IRPP), founded in 1972) is an independent, national, nonprofit organization, which has launched a new research program on the quality of life of Aboriginal people in Canada, like the broad issues related to the quality of life and well-being of Aboriginal people, some of the innovations that are ameliorating their living conditions and the linkages between quality of life and governance in Aboriginal communities. The paper also identifies the areas in which further exploration might be needed, and proposes new directions for policy-relevant research (IRPP, 2014).

Russia

The strategy of development of the Russian Federation Arctic zone until 2020 states, “there is a low quality of life among Indigenous peoples of the North” (Strategy, 2013).

The emphasis on “quality of life” in the Russian Arctic strategy follows an emerging interest in recent years among Russian researchers studying quality of life in the Russian Arctic. The following references are a few prominent examples:

Shats, Shevchenko, Zhideleva and Kaptsein have studied quality of life of populations in the Russian North, focusing on migrant workers’ health problems, acclimatization as well as identification of the ways to raise the general quality of life (Zhideleva and Kapstein, 2006; Shevchenko, 2009; Shats, 2010).

Naberejnaya assessed and modelled quality of life with an economic focus based on studies from Sakha-Yakutia republic (Naberezhnaya, 2007).

Whereas the abovementioned authors focused on quality of life of all population groups, other Russian researchers have investigated Indigenous peoples’ health and well-being related to a number of impacting factors and indicators of quality of life, particularly among Nenets, Yamalo-Nenets and Sakhalin minorities (Dregalo and Ulyanovskiy, 2007; Belyaeva, 2009; Kholodilova, 2010; Novikova and Stepanov, 2010), but also within the European, Siberian and Far Eastern North (Kozlov et. al, 2012). Others have focused on specific population groups such as for example the elderly people in the Yamalo-Nenets autonomous area and the Arkhangelsk region (Kabanov, 2009; Golubeva, 2012) or children and students in the European North (e.g., Chesnakova and Gribanov, 2012).

8.12 Gaps in knowledge

8.12.1 *Violence in families*

Violence in families is a specific and largely silent health, security and human rights problem. It ranges in a continuum from harassment and psychological abuse to murder, and it happens all over the world (WHO, 2005; UN Women, 2011). In addition to silence, it has been – and still is – deeply associated with shame and normalization (WHO, 2005; EC, 2010). Historically, many of the forms of violence in families were not recognized at all, and those that were, were seldom treated as a serious crime (EC, 2010). Prevalence studies are limited. Some data are available from Arctic Canada and Greenland (see Megatrends, 2011), and useful data comes out of the Alaska Victimization Survey (2014). In many communities, the topic is highly sensitive. There are historical, cultural, social and psychological factors that influence how people conceptualize violence, and its occurrence is often considered an inevitable burden of life, or purely a private secret. Violence is a known risk factor for suicide, mental disorders and substance abuse in Arctic communities (Allen *et al.*, 2011; Gone and Trimble, 2012).

One of the first global reports on violence in interpersonal relationships, specifically violence in families, is the *World Report on Violence and Health* (WHO, 2002). It argues that the home is one of the most common settings for violence worldwide. While women and children are particularly at risk, the elderly also experiences violence. Typically, victims know the perpetrators and abuse takes place in a familiar location. People who experience family violence are often emotionally involved with and dependent on the person(s) who victimize them. This strengthens the possibility that being unsafe becomes a life context for the victim (WHO, 2002; Johnson *et al.*, 2008; EC, 2010).

The Arctic is no exception. Rates of violence women experience at home are high in Iceland, Greenland (Curtis *et al.*, 2002; Poppel, 2006), Finland (Piispa *et al.*, 2006) and Russia (UN Women, 2011). Further, the data also reveal very high rates of violence against Indigenous women (Megatrends, 2011; Alaska Victimization Survey, 2014). For example, in the United States, the rate of violence in families against Alaska Native and American Indian women are nearly three times higher than those of white women (Bohn, 2003). Some researchers attribute this to historical trauma induced by colonization, cultural assimilation, and forced attendance at boarding schools, which have been internalized and passed on from generation to generation. The power imbalance between women and men that exists in many cultures is a further contributing factor (Smith, 2005).

Textbox 8.5

Sexual harassment

The culturally maintained status difference between men and women is often gendered, and sexualized, and learned indeed starting from childhood. This was discussed in Vappu Sunnari's research that focused on physical sexual harassment experienced by 11–12 year old children at school (Sunnari, 2010). There were 1,738 children from northern Finnish and northwest Russian school classes who answered a group of questions concerning their experiences on physical sexual harassment at school or on the way to school. The results of the research inform that every fifth of the northern Finnish and every fourth of the northwestern Russian girls experienced physical sexual harassment at school or on the way to school. Every tenth of the Russian boys and every twentieth of the Finnish boys had partly corresponding experiences. A girl was groped in nine cases out of ten by a male classmate in both the Russian and Finnish data. If the harassed child mentioned more than one perpetrator, which was quite common for the Russian children, at least one of the harassers had been a boy. But, the boys' harassers were not commonly girls. Typically Russian victims of physical sexual harassment did not want to tell the details of what had happened. The most common reason they mentioned was shame.

Source: Sunnari, 2010.

The UN Secretary-General's *World Report on Violence Against Children* demonstrates that violence against children is widespread (Pinheiro, 2006) and it constitutes serious violations of children's rights. The violence against children in families can be even more complex than that experienced by women (EC, 2010). The exact extent and severity of such a complex health and security problem is difficult to estimate. In addition to experiencing violence directly, children often witness violence at home, which is a serious mental health issue in its own right (Curtis *et al.*, 2002).

8.12.2 Discrimination and racism

Scientific knowledge regarding Sámi health and living conditions in Norway, Sweden, Finland and Russia is limited compared to the detailed data on the health and socio-economic situations of Indigenous peoples in North America and Greenland. The SAMINOR study in Norway is a rare example of a large-scale population-based survey of health and living conditions in areas with both Sámi and Norwegian populations. Data was collected during 2003–2004 in 24 municipalities, in which at least 5% of the residents were of Sámi ethnicity. All together 16, 865

people (Sámi and non-Sámi) participated in the survey, which included questionnaires, a clinical examination and analyses of blood samples (Lund *et al.*, 2007). An important finding from this study was that the prevalence of self-perceived ethnic discrimination and bullying among Sámi was twice as high as that for the majority population. Those who experienced ethnic discrimination were more likely to also report inferior self-perceived health (Hansen, 2010). A second phase of the SAMINOR, initiated in 2013, focuses on gender based violence, ethnicity and health, SAMINOR II will be the first study to investigate these issues in the Sámi population (Eriksen *et al.*, 2012).

While the severity of health disparities between the Indigenous peoples and the rest of the population varies from country to country, it is clear that such health inequalities exist, even in highly developed countries such as the Arctic States. But why? Health disparities, measured for decades, have been attributed to social determinants of health. More recently, it has been proposed that structural racism and its intergenerational impacts may provide new understanding into the causes of health disparities experienced by Indigenous peoples worldwide. Structural racism is defined as the macro-level systems, social forces, institutions, ideologies, and processes that interact with one another to generate and reinforce inequities among racial and ethnic groups (Powell, 2008). By looking at the residential school and boarding school experiences of Indigenous peoples through the lens of racism at the structural level, these experiences from different countries can provide a deeper understanding of their present day impact on Indigenous people's health and well-being.

Within the confines of residential schools and boarding schools, Indigenous children from a very young age were taught that their own culture and heritage was "less than" that of the dominant society. How does this affect Indigenous identity, which is at the very core of health and well-being? And what are the intergenerational impacts of such treatment? Recent studies have documented that individuals who report experiencing racism have greater rates of illnesses (Williams and Mohammed, 2009; Chae *et al.*, 2011). While this type of research is important to give a greater understanding of root causes of health inequities, it still places the experiences of racism at the individual level (Williams and Mohammed, 2009; Gee and Ford, 2011; Paradies and Cunningham, 2012). Gee and Ford suggest that studies of disparities should more seriously consider the multiple dimensions of racism as fundamental causes of health disparities, particularly structural racism. In the Canadian context, residential schools resulted in stigmatization, marginalization, loss of cultural identity, and a health status that falls

below that of mainstream Canadians (Health Canada, 2002). A review of the literature of colonization in Canada's Far North establishes the position that colonization is a determinant of health (Moffit, 2004). Residential school experiences in Canada paralleled with emerging discussions of boarding school experiences in the Nordic countries can add to the discourse about racism at the structural level and its link to the present health inequalities experienced by Indigenous peoples (see Textbox 8.6).

Textbox 8.6

Residential school and boarding school systems

Residential school and boarding school experiences were studied in Canada (Six Nations of the Grand River) and Finland (Inari municipality). Results from Canada and Finland found that negative impacts to Indigenous identity included language and cultural loss, fractured identity, and negative self-worth, all of which have far reaching impacts to health and well-being. Despite the negative impacts that require on-going healing, it was also emphasized that there was power at the personal level to stop generational abuses and the resilience of Indigenous peoples to keep their languages and culture alive and retain a strong Indigenous identity (Juutilainen *et al.*, 2014). There are very few studies in the Nordic countries about boarding school attendance and its impact on health and well-being of Sámi. Further studies about Indigenous identity, resilience and impact of racism at the structural level may provide valuable insight into health disparities experienced by Indigenous peoples worldwide.

Source: Juutilainen *et al.*, 2014.

8.12.3 Well-being indicators

Major knowledge gaps remain, especially concerning the “non-conventional” (AHDR/ASI) indicators measuring closeness to nature, cultural well-being and fate control. The challenge is not merely gathering data on these dimensions, but also developing concepts, agreeing on definitions and standardized measures, and ensuring that data are stored in ways that both ensures confidentiality and accessibility. To minimize the response burden, available administrative registers (i.e., regional and national wildlife harvest and health registers) will have to be used wherever possible. Circumpolar collaborative initiatives on data gathering and data management like Arctic Observing Network (AON), Arctic Observing Network – Social Indicator Project (AON-SIP) and the Sustaining Arctic Observing Network (SAON) will help to facilitate future assessments on Arctic human development. If the ultimate goal of examining

different aspects of living conditions and developing social indicators is to assess and compare subjective well-being and quality of life over time and between regions and population groups, it will be necessary to conduct representative surveys regularly (e.g., every five or ten years) to capture different aspects of human development.

The main gap in knowledge includes the health and well-being of both Indigenous and non-Indigenous peoples in the Russian Arctic (especially those living in cities); the health and well-being of Sámi in the Nordic countries, and accidents and domestic violence across the Circumpolar North. These gaps in knowledge can only be filled through a joint and orchestrated effort in creating and maintaining national and regional health statistical databases, which require collaboration between health authorities, the research community, and Indigenous peoples' organizations. It is important that vital statistics and disease registry data be supplemented by regular health and social surveys that capture the diverse aspects of human development, subjective well-being and quality of life.

8.13 Key conclusions

The people in the Circumpolar North do not all enjoy the same health. There are substantial disparities among countries and regions, and within regions among population subgroups, particularly between Indigenous and non-Indigenous peoples. Efforts are needed to integrate older people in Arctic societal life, and to appreciate their productive participation. As climate and environmental change affect living conditions, these changes also impact health, subjective well-being, and quality of life.

There is a need for health promotion programs, disease prevention strategies and redressing social inequalities. Indicators of food and water security should be used together with surveillance and monitoring programs in all circumpolar countries. Health care reform, education and research are also major challenges in the future.

Generally, the change in human development measured by indicators included in the UN Human Development Index (health, income and education) has been positive since the beginning of the 21st century. At the same time, there is a lot of variation between rural-urban regions. The indicators originating from the specific AHDR/ASI dimensions "closeness to nature", "cultural well-being" and "fate control" create a more complete picture. "Language retention" (as a measure of cultural well-being), for instance, is increasing (or at a stable high level) in some

regions like Greenland and some of the Canadian Arctic regions, whereas a decline has been experienced in the Inuit region of Alaska. Furthermore, comparisons are often complicated because of lack of data or because data can be difficult to interpret.

People's self-evaluation of well-being and quality of life has been the focus of two surveys and the findings in both studies – one comparing Canadian Arctic residents with Canadians living in the south and the other one focusing on Inuit, Sámi and Indigenous peoples of Chukotka and the Kola Peninsula – are intriguing and puzzling, as “satisfaction with life” (and thus subjective well-being) is rated high among the residents of the Arctic despite high rates of unemployment and low household income. The Indigenous peoples of Chukotka and the Kola Peninsula is an exception to this overall finding.

8.14 References

- ACIA (2005). *Arctic Climate Impact Assessment*. Cambridge University Press, Cambridge.
- AHDR (2004). *Arctic Human Development Report*. Einarsson, N., J. N. Larsen, A. Nilsson and O. R. Young (eds.). Stefansson Arctic Institute, Akureyri.
- Alaska Department of Fish and Game (2014). *Subsistence in Alaska*. <http://www.adfg.alaska.gov/index.cfm?adfg=subsistence.main> (30th August 2014).
- Alaska Victimization Survey (2014). *Research on Violence Against Women in Alaska* <http://justice.uaa.alaska.edu/avs/>. (30th August 2014).
- Allen, J., M. Levintova and G. Mohatt (2011). Suicide and alcohol-related disorders in the U.S. Arctic: boosting research to address a primary determinant of health disparities. *International Journal of Circumpolar Health*, 70(5): 473–487. <http://dx.doi.org/10.3402/ijch.v70i5.17847>
- AMAP (2011). *Snow, Water, Ice and Permafrost in the Arctic (SWIPA): Climate Change and the Cryosphere*. Arctic Monitoring and Assessment Program, Oslo.
- AMAP (2009). *Assessment 2009: Human Health in the Arctic*. Arctic Monitoring and Assessment Program, Oslo.
- AMAP (2003). *Assessment 2002: Human Health in the Arctic*. Arctic Monitoring and Assessment Program, Oslo.
- AMAP (1998). *Assessment Report: Arctic Pollution Issues*. Arctic Monitoring and Assessment Program, Oslo.
- Andersen, T. and B. Poppel (2002). Living conditions in the Arctic. In: Hagerty, M.R., J. Vogel, and V. Møller (eds), 2002. *Assessing Quality of Life and Living Conditions to Guide National Policy. The State of the Art*, pp. 193–216. Social Indicators Research Series, Vol. 11. Kluwer Academic Publishers, Dordrecht.
- ArcRisk (2013). *Arctic Health Risks: Impacts on Health in the Arctic and Europe Owing to Climate-Induced Changes in Contaminant Cycling*. <http://www.arcrisk.eu/> (30 August 2014).
- ASI (2014). *Arctic Social Indicators II: Implementation*. Larsen, J.N., P. Schweitzer, and A. Petrov (eds.). TemaNord. Nordic Council of Ministers, Copenhagen. <http://dx.doi.org/10.6027/TN2014-568>

- ASI (2010). *Arctic Social Indicators – a follow-up to the Arctic Human Development Report*. Larsen, J.N., P. Schweitzer, and G. Fondahl (eds.). TemaNord. Nordic Council of Ministers, Copenhagen.
- ArcticStat. nd. ArcticState Socioeconomic Circumpolar Data Base. Université Laval . <http://www.arcticstat.org> (30 August 2014).
- Belyaeva, L.A. (2009). Uroven' i kachestvo zhizni: problem ismereniya i interpretatsii [Standards and quality of life: measurement problems and interpretations]. *Sotsiologicheskie issledovaniya*, 1:33–42.
- Bjerregaard, P., G. Mulvad (2012). The best of two worlds: how the Greenland Board of Nutrition has handled conflicting evidence about diet and health. *International Journal of Circumpolar Health*. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3417583/> (30 August 2014). <http://dx.doi.org/10.3402/ijch.v71i0.18588>
- Bohn, D. (2003). Lifetime physical and sexual abuse, substance abuse, and suicide attempts among Native American women. *Issues in Mental Health Nursing*, 24(3): pp. 333–352. <http://dx.doi.org/10.1080/01612840305277>
- Brubaker, M., J. Berner and J. Warren (2011). Climate change and health effects in Northwest Alaska. *Global Health Action*, 4. <http://www.globalhealthaction.net/index.php/gha/article/view/8445> (24th June 2014). <http://dx.doi.org/10.3402/gha.v4i0.8445>
- Brustad, M., K. L. Hansen, A. R. Broderstad, S. Hansen and M. Melhus (2014). A population-based study on health and living conditions in areas with mixed Sami and Norwegian settlements the SAMINOR 2 questionnaire study. *International Journal of Circumpolar Health*, 2014, 73: 23147. <http://dx.doi.org/10.3402/ijch.v73.23147>
- Centre for Bhutan Studies and Gross National Happiness Research (CBS) (2014). *Gross National Happiness. Development With Values*. <http://www.grossnationalhappiness.com/> (13th November 2014).
- Chae, D.H., A.M. Nuru-Jeter, K.D. Lincoln and D.D. Francis (2011). Conceptualizing racial inequalities in health. *Du Bois Review*, 8(1): pp. 63–77. <http://dx.doi.org/10.1017/S1742058X11000166>
- Chesnokova, V.N. and Gribanov, A.V. (2012). Izmenenie genodinamiki u studentov v usloviyakh severnogo regiona v techenie uchebnogo goda [Changes in hemodynamics of adolescents under the conditions of life in a northern region during the academic year]. *Sovremennye problem nauk i obrazovanie* 1. <http://www.science-education.ru/pdf/2012/1/6.pdf> (6th September 2014).
- Circumpolar Health Observatory (CircHOB) (2012). <http://circhob.circumpolarhealth.org/> (30th August 2014).
- Circumpolar Health Research Network (2013). <http://circhnet.org/> (30th August 2014).
- Circumpolar Inuit Cancer Review Working Group (2008). Cancer among the circumpolar Inuit, 1989–2003. II. Patterns and trends. *International Journal of Circumpolar Health*, 67: pp. 408–420.
- Commission on the Measurement of Economic Performance and Social Progress (CMEPSP), nd. Commission on the Measurement of Economic Performance and Social Progress website. <http://www.stiglitz-sen-fitoussi.fr/en/index.htm> (30th August 2014).
- Curtis, T., F.B. Larsen, K. Helweg-Larsen and P. Bjerregaard (2002). Violence, sexual abuse and health in Greenland. *International Journal of Circumpolar Health*, 6: pp. 110–122.

- Davydov, A.N. and G.V. Mikhailova (2011). Climate change and consequences in the Arctic: perception of climate change by the Nenets people of Vaigach Island. *Global Health Action*, 4: 8436. <http://dx.doi.org/10.3402/gha.v4i0.8436>
- Dregalo, A. A and V.I. Ulyanovskiy, V. (2007). Usloviya i kachestvo zhizni evropeyskikh nentsev v monoetnicheskom poselke [Conditions and quality of life of the European Nenets in a mono-ethnic village]. *Vestnik Severnogo (Arkticheskogo) federal'nogo universiteta. Seriya: Gumanitarnye i sotsial'nye nauki*, 2(12): pp. 54–58.
- Dudarev, A.A. (2012). Dietary exposure to persistent organic pollutants and metals among Inuit and Chukchi in Russian Arctic Chukotka. *International Journal of Circumpolar Health*, 71: 18592. <http://dx.doi.org/10.3402/ijch.v71i0.18592>
- Dudarev, A.A., P.R. Alloyarov, V.S. Shupakhin, E.V. Dushkina, Y.N. Sladkova, V.M. Dorofeyev, T.A. Kolesnikova, K.B. Fridman, L.M. Nilsson, and B. Evengård (2013). Food and water security issues in Russia I: food security in the general population of the Russian Arctic, Siberia and the Far East, 2000–11. *International Journal of Circumpolar Health*, 72.:21848. <http://dx.doi.org/10.3402/ijch.v72i0.21848>. eCollection 2013.
- Duhaime, G. (2004). Economic systems. In: AHDR, 2004. *Arctic Human Development Report*. Einarsson, N., J. N. Larsen, A. Nilsson and O. R. Young (eds.), pp. 69–84. Stefansson Arctic Institute, Akureyri.
- Eliassen, B.M., M. Melhus, J. Kruse, B. Poppel and A.R. Broderstad (2012). Design and methods in a survey of living conditions in the Arctic – the SLiCA study. *International Journal of Circumpolar Health*, 71: 17229. <http://dx.doi.org/10.3402/IJCH.v71i0.17229>
- Emelyanova, A. and A. Rautio (2013). Perspectives for population aging in the Russian North. *Journal of Population Aging*, 6(3): 161–187. <http://dx.doi.org/10.1007/s12062-013-9086-z>
- Emelyanova, A. and A. Rautio (2012). Aging population in the Barents Euro-Arctic Region. *Journal of European Geriatric Medicine*, 3(3): 167–173. <http://dx.doi.org/10.1016/j.eurger.2012.03.005>
- EKOS Research Associates (2011). *Rethinking the Top of the World: Arctic Security Public Opinion Survey. Final Report*. Submitted to: The Walter and Duncan Gordon Foundation and The Canada Centre for Global Security Studies at the Munk School of Global Affairs. Ottawa and Toronto. <http://www.ekospolitics.com/articles/2011-01-25ArcticSecurityReport.pdf>
- Eriksen, A, K.L. Hansen, C. Jåve, and B. Schei (2012). Poster presentation at ICCH 15: SAMINOR 2, Gender Based Violence, Ethnicity and Health. A Subproject of SAMINOR II, Fairbanks, Alaska.
- Eurofound (2012) European Quality of Life Surveys, <http://www.eurofound.europa.eu/surveys/eqls/> (30th August 2014).
- EC (2010). European Commission, *Feasibility study to assess the possibilities, opportunities and needs to standardize national legislation on violence against women, violence against children and sexual orientation violence*. Publications Office of the European Union, Luxemburg.
- EKOS Research Associates (2011). *Rethinking the Top of the World: Arctic Security Public Opinion Survey. Final Report*. Submitted to: The Walter and Duncan Gordon Foundation And The Canada Centre for Global Security Studies at the Munk School of Global Affairs. Ottawa and Toronto. <http://www.ekospolitics.com/articles/2011-01-25ArcticSecurityReport.pdf> (13th November 2014).
- Fedotov, D.M., L.A. Zubov, and A.A. Nazarov (2011). Vozdeystvie izmeneniy klimata na tradicionnyy uklad zhizni koren'nogo naseleniya i usloviya okazaniya meditsinskoy pomoshchi v Nenetskom Avtonomnom okruge [The impact of climate change on the

- traditional way of life of the Indigenous population and the conditions of the provision of medical care in Nenets autonomous okrug]. *Proceeding of All-Russian Science-and-Practice Conference with international participation "Circumpolar Medicine: Impact of Environmental Factors on Human Health Formation"*, 27th–29th June 2011, pp. 294–297. Arkhangelsk, Russian Federation.
- INAC (Indian and Northern Affairs Canada) (2010). First Nation and Inuit community well-being: describing historical trends (1981–2006) Ottawa: INAC Strategic Research and Analysis Directorate. http://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/cwbdck_1100100016601_eng.pdf (13th November 2013).
- Gee, G. and C. Ford (2011). Structural racism and health inequalities. *Du Bois Review*, 8(1): pp. 115–132. <http://dx.doi.org/10.1017/S1742058X11000130>
- Goldsmith, S. (2009). Notes on gross domestic product and value added comparisons across Arctic regions. In: Glomsrød, S. and I. Aslaksen (eds.) *The Economy of the North 2008*, pp. 34–35. Statistisk Sentralbyrå/Statistics Norway, Oslo-Kongsvinger.
- Golubeva, E.Y. (2012). Kachestvo zhizni naseleniya pozhilogo i starcheskogo vozrasta v Rossiyskoy chasti Barents-Evroarkticheskogo rayona (na primere Arkhagel'skoy oblasti): puti sovershenstvovaniya organizatsii medico-sotsial'nogo obsluzhivniya [Quality of life among elderly and very aged people in the Russian part of the Barents Euro-Arctic region (a case of the Arkhangelsk oblast: ways of improvements in health- and social care organization)]. Dissertation abstract for the degree of Doctor of biological sciences, St. Petersburg Institute of Bioregulation and Gerontology, Russian Federation.
- Gone, J.P. and J.E. Trimble (2012). American Indian and Alaska Native mental health: diverse perspectives on enduring disparities. *Annual Review of Clinical Psychology*, 8: pp. 131–60. <http://dx.doi.org/10.1146/annurev-clinpsy-032511-143127>
- Government of Greenland (2010). *Hope and Resilience: Suicide in the Arctic, November 7–8, 2009*. Conference Report. Nuuk. http://www.peqqik.gl/~media/Files/Publikationer/Rapporter_og_redegoerelser/2010/ConferenceReport_HopeResilience_2010.ashx (11th November 2104).
- Gross National Happiness Index (GNHI) (2014). <http://www.grossnationalhappiness.com/> (30th August 2014).
- Hansen, K.L. (2010). *Ethnic Discrimination and Bullying in Relation to Self-Reported Physical and Mental Health in Sami Settlement Areas in Norway. The Saminor study*. Unpublished PhD Thesis, University of Tromsø, Tromsø.
- Happy Planet Index (HPI) (2014). <http://www.happyplanetindex.org> (30th August 2014).
- Health Canada (2002). Healthy Canadians: A federal report on comparable health indicators. www.hc-sc.gc.ca/iacbd-giac/arad-draa/English/accountability/printindicators.html (21st August 2013).
- Hovelsrud, G. K., B. Poppel, B. van Oort, and J. D. Reist (2011). Arctic societies, cultures, and peoples in a changing cryosphere. *AMBIO*, 40(1): pp. 100–110. <http://dx.doi.org/10.1007/s13280-011-0219-4>
- Hueffer, K., A.J. Parkinson, R. Gerlach and J. Berner (2013). Zoonotic infections in Alaska: disease prevalence, potential impact of climate change and recommended actions for earlier disease detection, research, prevention and control. *International Journal of Circumpolar Health*, 72. <http://dx.doi.org/10.3402/ijch.v72i0.19562>
- Huet, C., R. Rosol and G.M. Egeland (2012). The prevalence of food insecurity is high and the diet quality poor in Inuit communities. *Journal of Nutrition*, 142(3): pp. 541–547. <http://dx.doi.org/10.3945/jn.111.149278>

- International Journal of Circumpolar Health*.
<http://www.circumpolarhealthjournal.net/> (30th August 2014).
- INAC (Indian and Northern Affairs Canada) (2010). First Nation and Inuit community well-being: describing historical trends (1981–2006). INAC Strategic Research and Analysis Directorate, Ottawa. http://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/cwbdck_1100100016601_eng.pdf (13th November 2013).
- IRPP (2014). The Institute for Research on Public Policy research publications. <http://www.irpp.org/en/research/> (30th August 2014).
- Jeppesen, C., P. Bjerregaard and K. Young (2011). Food-based dietary guidelines in circumpolar regions. *International Journal of Circumpolar Health*, Supplement 8.
- Johnson, H., N. Ollus and S. Nevala (2008). *Violence against Women. An International Perspective*. Springer, New York.
- Juutilainen, S., R. Miller, L. Heikkilä and A. Rautio (2014). Structural racism and Indigenous health: what Indigenous perspectives of boarding school and residential school tell us. A case study of Finland and Canada. *The International Indigenous Policy Journal* 5(3). <http://ir.lib.uwo.ca/iipj/vol5/iss3/3>
- Kabanov, A.O. (2009). *Upravlenie kachestvom zhizni naseleniya pensionnogo vozrasta v severnom regione* [Managing the quality of life of the retired population in the northern region]. Dissertation for the degree of candidate of sociological sciences. Tyumen, Russian Federation.
- Kholodilova, K.A. (2010). *Kachestva zhizni naselenie neftegazopromyslovogo regiona na Kraynem Severe* [The Quality of Life of the Population in an Oil- and Gas-Production Region of the Far North]. Unpublished PhD Thesis. Tyumen, Russian Federation.
- Kozlov, A.I., M.A. Kozlova, G.G. Vershybskaya, and A.B. Shilov (2012). *Zdorov'e korenogo naseleniya Severa RF: na grani vekov i kul'tur* [The health of the Indigenous population of the North of the Russian Federation: at the edge of centuries and cultures]. Perm, Russian Federation.
- Kruse, J., B. Poppel, L. Abryutina, G. Duhaime, S. Martin, M. Poppel, M. Kruse, E. Ward, P. Cochran and V. Hanna, 2008. Survey of Living Conditions in the Arctic, SLiCA. In: Møller, V., D. Huschka and A.C. Michalos (eds.), *Barometers of Quality of Life Around the Globe*, pp. 107–134. Springer Social Indicators Research Series. Springer Verlag, Berlin.
- Kruse, J., M. Lowe, S. Haley, G. Fay, L. Hamilton and M. Berman (2011). Arctic observing network social indicators project: overview. *Polar Geography*, 34(1–2): pp. 1–8. <http://dx.doi.org/10.1080/1088937X.2011.584446>
- Larsen, C.V.L., C.P. Pedersen, S.W. Berthelsen and C. Chew (2010). *Hope and Resilience: Suicide Prevention in the Arctic, Conference Report*. Arctic Council, Sustainable Development Working Group (SDWG). [http://library.arcticportal.org/1480/1/](http://library.arcticportal.org/1480/1/Hope_and_resilience.pdf) Hope_and_resilience.pdf (24th June 2013).
- Lewis, J. (2013). The future of successful aging in Alaska. *International Journal of Circumpolar Health*, 72: 21186. <http://dx.doi.org/10.3402/ijch.v72i0.21186>
- Lund, E., M. Melhus, K.L. Hansen, T. Nystad, A.R. Broderstad, R. Selmer and P.G. Lund-Larsen (2007). Population based study of health and living conditions in areas with both Sámi and Norwegian populations. The Saminor Study. *International Journal of Circumpolar Health*, 66(2): pp. 113–128. <http://dx.doi.org/10.3402/ijch.v66i2.18241>
- Mäenpää, I. (2009). Comparative analysis of Arctic economies at macro level In: Glomsrød, S. and I. Aslaksen (eds.) *The Economy of the North 2008*, pp. 27–36. Statistisk Sentralbyrå/Statistics Norway, Oslo-Kongsvinger.
- Megatrends* (2011). Rasmussen, R.O. (ed). Nordic Council of Ministers, Copenhagen.

- Moffit, P. (2004). Colonialization: A health determinant for pregnant Dogrib women. *Journal of Transcultural Nursing*, 15: 323–330. <http://dx.doi.org/10.1177/1043659604268959>
- Naberezhnaya, A.T. (2007). *Modelirovanie i otsenka urovnya zhizhni naseleniya regiona*. [Modelling and Appraisal of Standards of Living among the Population of the Region]. YaNTs So RAN, Yakutsk.
- National Aboriginal Economic Development Board (NAEDB) (2012). Aboriginal Economic Benchmark Report. National Aboriginal Economic Development Board, NAEDB. <http://www.naedb-cndea.com/wp-content/uploads/TheAboriginalEconomicBenchmarkingReport2.pdf>
- Nilsson L.M., G. Destonuni, J. Berner, A. Dudarev, G. Mulvad, J.O. Odland, A. Rautio, C. Tikhonov and B. Evengård (2013a). A call for urgent monitoring of food and water security based on relevant indicators for the Arctic. *AMBIO*, 42: pp. 816–22. <http://dx.doi.org/10.1007/s13280-013-0427-1>
- Nilsson L.M., J. Berner, A. Dudarev, G. Mulvad, J.O. Odland, A. Rautio, C. Tikhonov and B. Evengård, (2013b). Selecting indicators of food and water security in the Arctic health context – results from an international workshop discussion. *International Journal of Circumpolar Health*, 72: 21530. <http://dx.doi.org/10.3402/ijch.v72i0.21530>
- Nilsson, L.M. and B. Evengård (2013). Food and water security indicators in an Arctic health context. A report by the AHHEG/SDWG, and the AMAP/HHAG during the Swedish chairmanship of the Arctic Council 2011–2013. Arctic Research Centre (Arcum), Umeå. <http://umu.diva-portal.org/> (15th August 2013).
- Nordic population ageing – challenge and opportunity (2013). *Nordregio News* Issue 3, Oslo, Norway. <http://www.nordregio.se/en/Metameny/Nordregio-News/2013/Nordic-Population-Ageing--Challenge-and-Opportunity/> (21st October 2013).
- Nost, T.H., K. Breivik, O.M. Fuskevåg, E. Nieboer, J.O. Odland and T.M. Sandanger (2013). Persistent organic pollutants in Norwegian men from 1979 to 2007: Intra-individual changes, age-period-cohort effects, and model predictions. *Environmental Health Perspective*, 121(11–12): 1292–8.
- Novikova, N.I. and V.V. Stepanov (2010). Indikatory kachestva zhizni korennykh malochislennykh narodov Severa Sakhalinskoy oblasti [Indicators of the quality of life of Indigenous peoples of the north of the Sakhalinsk oblast]. *Issledovaniia po prikladnoi i neotlozhnoi etnologi*, 217:1–46.
- Nunavut Suicide Prevention Strategy Action Plan, 2011. <http://www.tunngavik.com/files/2011/09/nsps-action-plan-eng4.pdf/>
- Nuttall, M., F. Berkes, B. Forbes, G. Kofinas, T. Vlassova, and G. Wenzel (2005). Hunting, Herding, Fishing and Gathering: Indigenous peoples and renewable resource use in the Arctic. In: ACIA, 2005. *Arctic Climate Impact Assessment*. Cambridge University Press, Cambridge.
- OECD, n.d. “Better Life Index”. <http://www.oecdbetterlifeindex.org/> (30th August 2014).
- O'Donnell, G., A. Deaton, M. Durand, D. Halpern and R. Layard (2014). *Wellbeing and Policy*. Legatum Institute. <http://www.li.com/docs/default-source/commission-on-wellbeing-and-policy/commission-on-wellbeing-and-policy-report---march-2014-pdf.pdf?sfvrsn=2> (13th November 2014).
- Paradies, Y. and J. Cunningham (2012). The Druid study: racism and self-assessed health status in and Indigenous population. *BMC Public Health*, 12: 131. <http://dx.doi.org/10.1186/1471-2458-12-131>

- Penney, C., E. O'Sullivan, and S. Senécal (2012). *The Community Well-Being Index (CWB): Examining Well-Being in Inuit Communities, 1981–2006*. Unpublished report. Aboriginal Affairs and Northern Development Canada.
- Piispa, M., M. Heiskanen, J. Kääriäinen and R. Sirén (2006). Violence against women in Finland. (Summary). United Nations European Institute for Crime Prevention and Control Publication Series 51 and National Research Institute of Legal Policy Publication 225, Helsinki, Finland.
- Pinheiro, P. (2006). *The World Report on Violence Against Children*. United Nations, Geneva, Switzerland.
- Poppel, B., forthcoming. Living Conditions, Subjective Well-being, Quality of Life among Indigenous Peoples in the Arctic. In: Glatzer, W. (ed.): *Global Handbook of Subjective Well-being and Quality of Life*. Springer, Dordrecht.
- Poppel, B. (2014). SLiCA, Survey of Living Conditions in the Arctic. In: Michalos, A. C. (Ed.). *Encyclopedia of Quality of Life and Well-Being Research*, pp. 5993–6003. Springer, Dordrecht.
- Poppel, B. (ed.) (2011). Arctic living conditions. Survey of Living Conditions in the Arctic. Major SLiCA findings presented to the Arctic Council Ministerial meeting. 6 pages. Nuuk.
- Poppel, B. (2010). Some data sources on people, peoples, communities, regions and human activities in Greenland. In: Winther, G. (ed.). *The Political Economy of Northern Regional Development – Yearbook 2008*, pp. 254–282. TemaNord, Nordic Council of Ministers.
- Poppel, B. and J. Kruse (2009). The importance of a mixed cash- and harvest herding based economy to living in the Arctic – an analysis based on Survey of Living Conditions in the Arctic (SLiCA) In: Møller, V. and D. Huscka (eds.): *Quality of Life and the Millennium Challenge: Advances in Quality-of-Life Studies, Theory and Research*, pp. 27–43. Social Indicators Research Series. Springer Science+Business Media B.V., Dordrecht.
- Poppel, B., J. Kruse, G. Duhaime and L. Abryutina (2007). *Survey of Living Conditions in the Arctic: Results*. Institute of Social and Economic Research, University of Alaska Anchorage Anchorage. <http://www.arcticlivingconditions.org> (11th September 2013).
- Poppel, M. (2006). Mænds vold mod kvinder i Grønland i nordisk og arktisk perspektiv. [Men's violence against women in Greenland and in the Nordic and Arctic perspective] In: H. Petersen (ed.). *Grønland i Verdenssamfundet. Forlaget Atuagkat*, pp. 83–93. Nuuk.
- Powell, J. (2008). Structural racism: Building upon the insights of John Calmore. *North Carolina Law Review*, 86: 791–816.
- Revich, B., B. Tokarevich, and A.J. Parkinson (2012). Climate change and zoonotic infections in the Russian Arctic. *International Journal of Circumpolar Health*, 71: 18792. <http://dx.doi.org/10.3402/ijch.v71i0.18792>
- Sanderson, W. and S. Scherbov (2008). Rethinking age and aging. *Population Bulletin*, 63(4): pp. 1–16.
- Shats, M.M. (2010). Esli zhit' na Severe neobkhodimo... [If it is necessary to live in the North...]. *Ekologiya i zhizn'* 9: 82–85.
- Shevchenko, S.I. (2009). *Kachestvo zhizni naseleniya regionov Severa Rossii: sostoyanie i puti povysheniya* [The quality of life of the population in the Russian North: current situation and the ways for improving it]. Dissertation for the degree of a candidate of economical sciences. Moscow, All-Russian Centre of Standard of Living, Russian Federation.
- Smith, A. (2005). *Conquest: Sexual violence and American Indian genocide*. South End Press, Boston, United States.

- Statistics Canada, n.d. Aboriginal Languages. <http://www.statcan.gc.ca/pub/89-645-x/2010001/languages-langues-eng.htm>. (30th August 2013).
- Strategy (2013). *Stratgiya razvitiya Arkticheskoy zony Rossiyskoy Federatsii i obespecheniya natsional'noy bezopastnosti na period do 2020 goda* [Strategy for the development of the Arctic zone of the Russian Federation and ensuring its national security zone to 2020]. Approved by the President V.V. Putin 08.02.2013, Order No. 232.
- Sunnari, V. (2010). *"I cannot speak about it". Physical Sexual Harassment as Experienced by Children at School in Northern Finland and Northwest Russia*. VDM Verlag Dr. Müller, Saarbrücken.
- UN HDI. *Human Development Index*. United Nations Development Program. <http://hdr.undp.org/en/data/> (30th August 2014).
- UN Women (2011). *Violence Against Women. Prevalence Data: Surveys by Country*. Compiled by UN Women. http://www.unifem.org/attachments/gender_issues/violence_against_women/vaw-prevalence-matrix-2011.pdf (5th May 2013).
- Wallace, S. (2014). Inuit health: Selected findings from the 2012 Aboriginal Peoples Survey. Cat. No. 89-653-X, Statistics Canada, Ottawa.
- WHO (2002). *World Report on Violence and Health*. World Health Organization (WHO). http://www.who.int/violence_injury_prevention/violence/world_report/en/ (25th May 2013).
- WHO (2005). *Multi-Country Study on Women's Health and Domestic Violence against Women*. World Health Organization (WHO). <http://who.int/gender/violence/who-multicountry-study/summary-report/en/index.htm/> (15th June 2013).
- Williams, D. and S. Mohammed (2009). Discrimination and racial disparities in health: evidence and needed research. *Journal of Behavioral Medicine*, 32(1): pp 20–41. <http://dx.doi.org/10.1007/s10865-008-9185-0>
- World Population Aging 1950–2050 (2007). Population Division, Department of Economic and Social Affairs, United Nations, <http://www.un.org/esa/population/publications/worldaging19502050/pdf/95annexi.pdf> (06 April 2013).
- Young, K. (ed.) (2012). *Circumpolar Health Atlas*. University of Toronto Press, Toronto.
- Young, T.K. and P. Bjerregaard (2008). *Health Transitions in Arctic Populations*. University of Toronto Press, Toronto.
- Young, T.K., S. Chatwood and R. Rawat (2010). Data brief from the Circumpolar Health Observatory: introduction and population. *International Journal of Circumpolar Health*, 69: 404–408.
- Zhideleva, V.V. and Y.N. Kapstein (2006). Ob issledovanii problem kachestva zhizni cheloveka na Severe) [On a study of human quality of life challenges in the Russian North]. *Modern Science Intensive Technologies*, 3: pp. 90–92.
- ZSI (Social Indicators Research Center). European System of Social Indicators, <http://www.gesis.org/en/social-indicators/home/> (13th November 2014).

Endnotes for chapter 8

i) During the decade under consideration by this report, the Koryak Autonomous okrug was merged with the Kamchatka oblast to form the Kamchatka Territory (*kray*): the Koryak okrug now forms an administrative division of the Kamchatka territory. The Evenki Autonomous okrug and Taymyr Autonomous okrug were merged into the Krasnoyarsk Territory, as administrative districts (*rayony*).

ii) In an e-mail of 17th November 2014 from Aboriginal Affairs and Northern Development Canada, AANDC it is stated that following a verification of their historic CWB data, the federal government department decided that two communities included in the 1981 calculations should have been excluded due to missing data. One of these was an Inuit community, in the region of Nunavik. The corrections have not been completed, but based on existing information, the CWB averages for 1981, particularly the housing component, and the Nunavik regional scores, will probably be a little lower than the published averages. Furthermore AANDC informs that a planned release of updated 2011 data is meant to include corrections.

iii) See endnote 2.