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Arctic Social Indicators
ASI-II

Implementation

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Front cover photo: Sarfannguaq, West Greenland. Photo: Rasmus Ole Rasmussen

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Preface

When the Arctic Social Indicators (ASI) process got underway in 2006, we were moving into uncharted territory for the arctic social sciences. While its predecessor, the Arctic Human Development Report (AHDR), also constituted a first – no comprehensive social science/humanities report had been endorsed by the Arctic council before that - it nevertheless stayed within the familiar confines of a state-of-the-art/synthesis report. Suddenly, we were in the business of devising indicators that can serve as proxies for social, economic and cultural trajectories of change – a task quite new for most team members.

Ever since the publication of ASI in 2010, we have received feedback that exceeded our initial expectations by far. It was not just pleasant to receive overwhelmingly positive reactions but, more importantly, it was exciting to see ASI being used, applied and modified. To mention just one example, the U.S. Bureau of Ocean Energy Management EM used ASI-1 as the major reference in its Statement of Work for a competitive procurement process. While ASI-I personnel was involved in conducting the actual research, the project went beyond what we were able to do in our first report. It serves as a good illustration of the fact that ASI intends to encourage "spin-offs," while at the same time learning from their experiences.

This book is an important milestone within the ASI process. Where our 2010 report marked a theoretical intervention, this book applies the principles established back in 2010. This is a critical test for the appropriateness of our indicators. Given the data challenges which continue to plague the tracking of human development in the Arctic, this cannot be more than an intermediate step either. As we detail in our Conclusion, the time is ripe for an ASI Monitoring System, which provides better and diachronic data for our purpose.

For now, we invite you to engage with ASI-II and hope for your critical feedback.

Joan Nymand Larsen and Peter Schweitzer

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PART I:

Introduction

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CHAPTER 1

INTRODUCTION TO ARCTIC SOCIAL INDICATORS: TRACKING CHANGE IN HUMAN DEVELOPMENT IN THE ARCTIC

Joan Nymand Larsen, Peter Schweitzer, Andrey Petrov, Gail Fondahl

1.0 Introduction

Communities in the Arctic, the peoples, cultures, and societies of the region, are today facing multiple stressors of change, the sources of which are by now fairly well understood. Many sources of change reach far beyond Arctic local and regional contexts – with change experienced in terms of both increasing rates and magnitude. Rapid change - now broadly accepted as a fact with its multi-faceted impacts and the many complex interactions of changing social, natural and physical systems - manifests itself in the socio-economic transformations of daily living and at different geographical scales. Beyond doubt, change puts human wellbeing and community adaptability to the test in today´s Arctic.

The wellbeing of Arctic residents and the ability to adapt in a time of rapid global change has long been a focus of attention of the Sustainable Development Working Group (SDWG) of the Arctic Council, but the sense of urgency in terms of addressing change and its complexity, the impacts on different human systems, and the ability of our regions and communities to adapt is increasing. Rapid socio-economic change demands our attention, and calls for an in-depth understanding of the many facets of change, including the development of a system to help facilitate the tracking, monitoring and assessment of change. It is this need for understanding wellbeing in a more holistic way in the context of rapid change, and the desire to assess change in terms of the different components of wellbeing that is the point of departure in our desire to construct, measure, and apply Arctic Social Indicators (ASI).

The motivation to construct, measure, and apply Arctic social indicators dates back to the early years of the Arctic Human Development Report process. In the first years of the twenty-first century, the Arctic Council commissioned the first *Arctic Human Development Report* (AHDR), which was developed under the auspices of the Icelandic Chairmanship of the Arctic Council (2002-2004). Its main objective was to provide "a comprehensive knowledge base for the Arctic Council's Sustainable Development Program", which could serve as a point of departure for assessing progress in the future (AHDR 2004:15). The first AHDR presented a point of departure in the discussions of human development in the Arctic. During the process of completing the AHDR the steering group - which included broad representation from the permanent participants

of the Arctic Council - identified three thematic or so-called domain areas that help move our discussion of human wellbeing in the Arctic beyond the usual domains included in the UN Human Development Index (UNHDI) – describing aspects of wellbeing that are considered prominent features of wellbeing in the Arctic. These are

- *Fate control* – guiding one's destiny
- *Cultural vitality* – belonging to a viable local culture; and
- *Contact with nature* – interacting closely with the natural world (AHDR 2004:11)

These three aspects of Arctic human development are relevant to all arctic residents - both indigenous and non-indigenous populations –and indeed ASI is concerned with the wellbeing of all residents of the region – although the level of relevance may differ; for some regions of the Arctic the identified domains may be more relevant to indigenous livelihoods, just as geographical and other factors - e.g. self-government arrangements and the importance of large scale resource projects - may affect their relevance.

In its policy-relevant conclusions, the AHDR noted the need to develop a system for tracking trends in human development in the Arctic over time, through the identification of a set of indicators (AHDR 2004:11), and it proposed that the development of some system of monitoring change in wellbeing, and for tracking the long-term trends, would be extremely helpful from the perspective of those involved in the policy process. The ability to track change enabled by systems such as that introduced by ASI presents an important tool for measuring change and facilitating priority setting not only for policy makers but for a diverse set of Arctic stakeholders. Thus, ASI-I was formulated to fill a critical gap identified by the AHDR to devise a set of Arctic social indicators to help facilitate monitoring of trends in human development. In many ways it represents a pioneering attempt at creating a system for tracking change in Arctic human wellbeing, and – in terms of the small suite of ASI indicators (ASI 2010) - for taking a quick pulse on the direction of change.

ASI-I chose six domains in which to develop indicators for monitoring human development – the three domains identified by the AHDR (2004), and three domains constituting elements of the UNHDI. ASI indicators were developed during a process – spanning the period 2006-2009 - for the following domains:

1. Health and Population
2. Material Wellbeing
3. Education
4. Cultural Wellbeing
5. Contact with Nature
6. Fate Control

ASI-I devised indicators based on a strict set of selection criteria. A small set of indicators – the ASI suite of 7 indicators – was identified as a set which could assist those with an interest in taking the "quick pulse" on the state of human development in the Arctic and at a reasonable cost in terms of time and other resources. Naturally, a small suite of indicators carries important trade-offs when we try to strike a balance between using a single indicator representing each of the identified domains, versus the alternative option of attempting to obtain a more nuanced picture by choosing a broader range of indicators for each domain. The discussion of this trade-off has been the focus of much debate. While the ASI-I mandate was to present a small suite of indicators, the nagging doubts about the real cost of this trade-off, and a genuine desire to ensure as accurate a measure as possible of each individual indicator and of wellbeing overall, left us with a compromise in terms of the number and type of indicators put forward: ASI-I thus presents a small suite of indicators, but in addition it offers a broader set of indicators for those interested in measuring wellbeing using different, or a broader range, of indicators. While using a large sleight of indicators may have certain appeal, it does come at a significant cost in terms of time and other resources, and it runs the risk that high costs prevents the use of the system, or at best only infrequently when resources allow. But change is occurring fast in the Arctic, which calls for a system that in contrast to large-scale surveys can be applied with higher frequency or updated on an on-going basis. The ASI mandate was to come up with a suite of indicators that could be measured at a reasonable cost, thereby making the system more accessible and enabling the application at more frequent and regular intervals.

ASI-II (2009-2012) is a follow-up activity to Arctic Social Indicators (ASI 2010) and the Arctic Human Development Report (AHDR 2004). Following in the footsteps of AHDR and ASI-I, ASI-II is endorsed by the Arctic Council and produced under the auspices of the SDWG. The objectives of the current volume of ASI (i.e. ASI-II) are to measure the final set of recommended ASI indicators; to systematically identify and describe data challenges; to conduct a series of regional case studies to illustrate and further test the strength and applicability of the selected ASI indicators; to draw conclusions about the ability of ASI to track changes in human development and to show its strength of making inter-regional comparisons; and to formulate policy relevant conclusions for the long-term monitoring of human development. ASI-II also helps facilitate continuity between AHDR processes, and provides input into the Arctic Council endorsed assessment of Arctic human development.

The core content of ASI-II is a set of carefully selected case studies. Five case studies form the basis for drawing conclusions about the applicability of the ASI set of indicators, and for formulating policy relevant conclusions. Case studies are performed on the following regions: *Sakha-Yakutia; the West-Nordic Region; Northwest Territories in Canada; Inuit Regions of*

Alaska, and the *Inuit World*, *using Survey of Living Conditions in the Arctic (SLiCA) to augment ASI*.

Drying of fish, Kuumiut, East Greenland. Photo: Rasmus Ole Rasmussen

Let us take a look at the concept of human development and its measurement. Though relatively easy to grasp conceptually, the idea of human development poses problems when it comes to empirical applications. To meet the challenge of devising usable measures of human development, the work of the UNHDI was considered. The UNHDI is based on the premise that human development is a multi-dimensional phenomenon, and it has achieved considerable influence as a measure of trends in human welfare over time at the level of individual countries. The UNHDI is a composite index with three components: life expectancy at birth, education (represented by a combination of adult literacy and school enrolments), and gross domestic product (GDP) per capita. Although controversial in some quarters, the UNHDI has made an important contribution to thinking about human development and social welfare more generally. As emphasized earlier, in an effort to understand human development in the Arctic, the UNHDI was used as a point of departure in the AHDR/ASI process. This effort soon revealed an anomaly that was to become one of the central issues in the preparation of the first volume of the AHDR. Many areas of the Arctic and especially the more remote areas with substantial indigenous populations would not achieve high scores on the UNHDI. Does this mean that human

development and wellbeing is less in the Arctic? Not necessarily so. A different set of domains will give a different insight into wellbeing. The critical challenge is to identify the relevant domains; i.e. domains that reflect what the Arctic population considers important aspects of human development. Many Arctic communities do not rank high in terms of life expectancy, particularly among indigenous peoples where suicide rates and accidental-death rates are high; Most Arctic residents today are literate, but school enrolments, especially at the secondary and tertiary levels, are comparatively low in the Far North; and GDP per capita is often deceptive as a measure of wellbeing in the Arctic. Much of the income associated with extractive industries flows out of the Arctic and into the income streams of large multinational corporations. GDP per capita at the community level is comparatively low in many parts of the Arctic, and it does not take into account transfer payments and the informal or subsistence economy. Nonetheless, despite the relatively low score on measures such as the UNHDI, many individuals in this region exhibit a strong sense of wellbeing (Young, 2010). Thus, there are aspects of human development and wellbeing that are prominent in the arctic, but not captured in measures such as the UNHDI. Subsequently, the AHDR process identified the additional three domains listed earlier, which all constitute critical domains in the ASI work: Fate Control; Cultural Wellbeing and Cultural Vitality; and Contact with Nature (AHDR 2004; ASI 2010).

Fate control is a matter of being in charge of one's own destiny. Arctic residents have argued that fate control is a matter of profound importance to them. This is true not only of the region's indigenous peoples but also of many settlers who have made a conscious choice to reside in the Arctic perceived as a frontier area in which the individual can escape many of the restrictions or constraints associated with life in the mainstream of modern societies.

Bridge in Krasnoyarsk over the Yenisei River, one of the major connections to the Arctic in Russia. Photo: Rasmus Ole Rasmussen

Cultural vitality is another value of great importance to many of the Arctic's residents and particularly to indigenous peoples, even under conditions of rapid social change that have eroded aboriginal languages and brought technologies (e.g. television and various other forms of IT) to the region that make it easy for residents of remote areas to compare their lifestyles with those prevalent in other parts of the world. Cultural vitality is a matter of being surrounded by and able to interact regularly with others who share belief systems, norms, and a common history.

Contact with nature or the opportunity to interact on a regular basis with the natural world constitutes the third supplementary dimension of human development. The residents of the Arctic are clear in their thinking about contact with nature as a significant element in their quality of life. Many Arctic residents come into contact with nature on a day-to-day basis as they go about their routine activities. They value this aspect of life in the Arctic (AHDR 2004; ASI 2010).

Housing and means of transportation in Central Siberia. Museum of Krasnoyarsk. Photo: Rasmus Ole Rasmussen

The Arctic includes about four million inhabitants, of whom about 10% are indigenous. Arctic demography is diverse, with different areas characterized by varying shares of indigenous, settler and transient populations, varying levels of urbanization, and different rates of population growth or contraction. The Arctic population tends to be younger than that of the national average. Some areas are characterized by high levels of out-migration, which tends to involve a larger number of females than males (Maps 1- 4).

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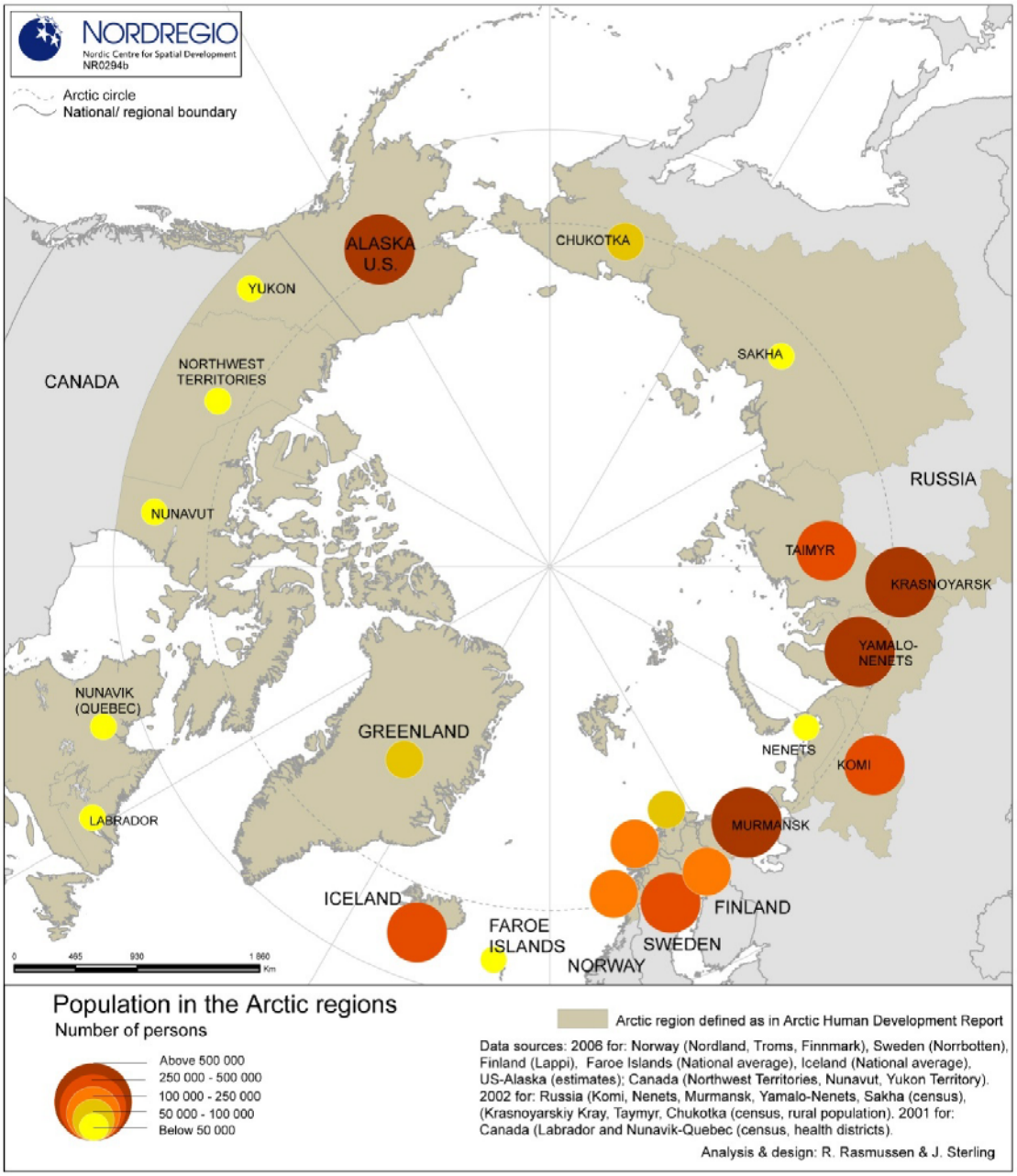

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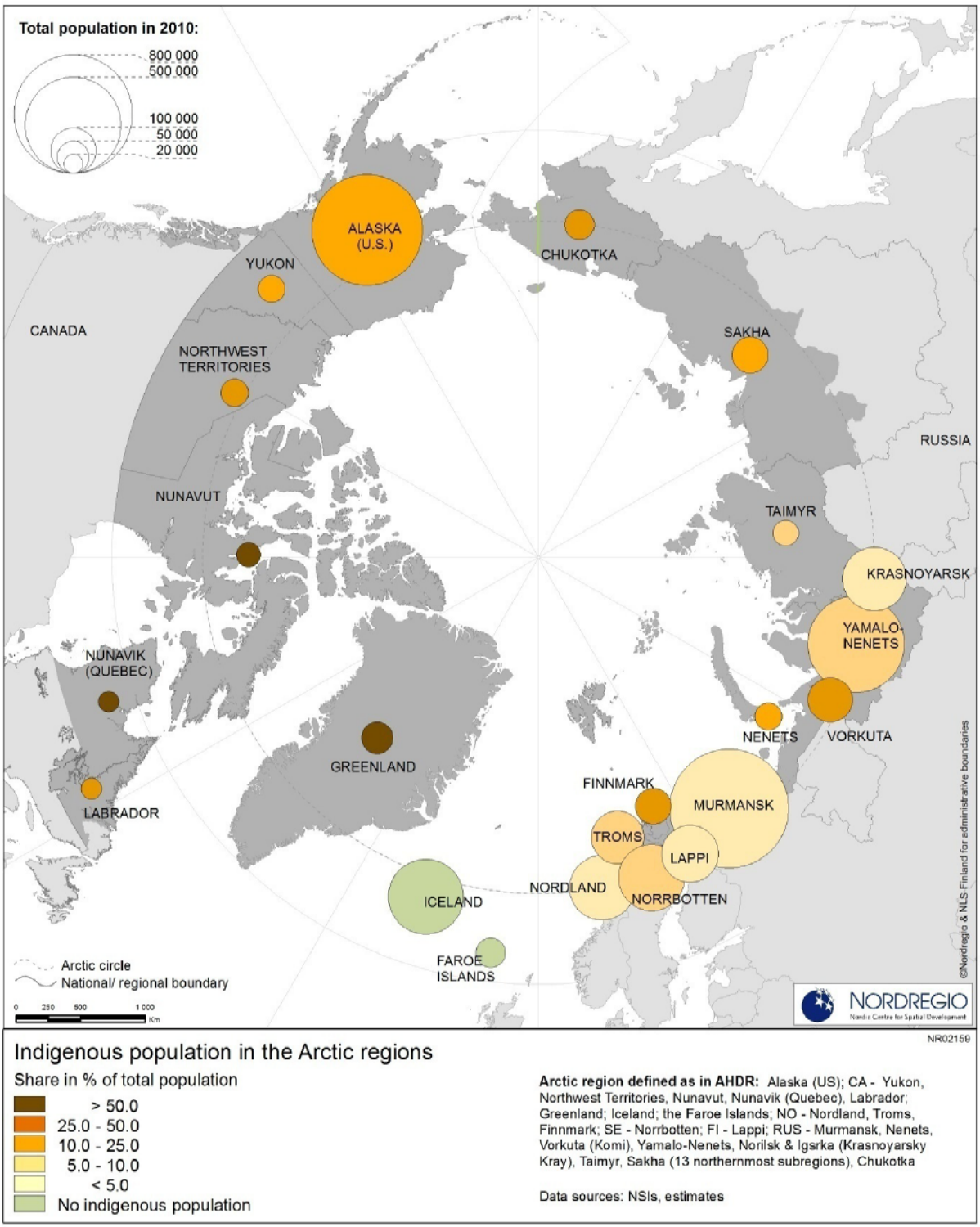

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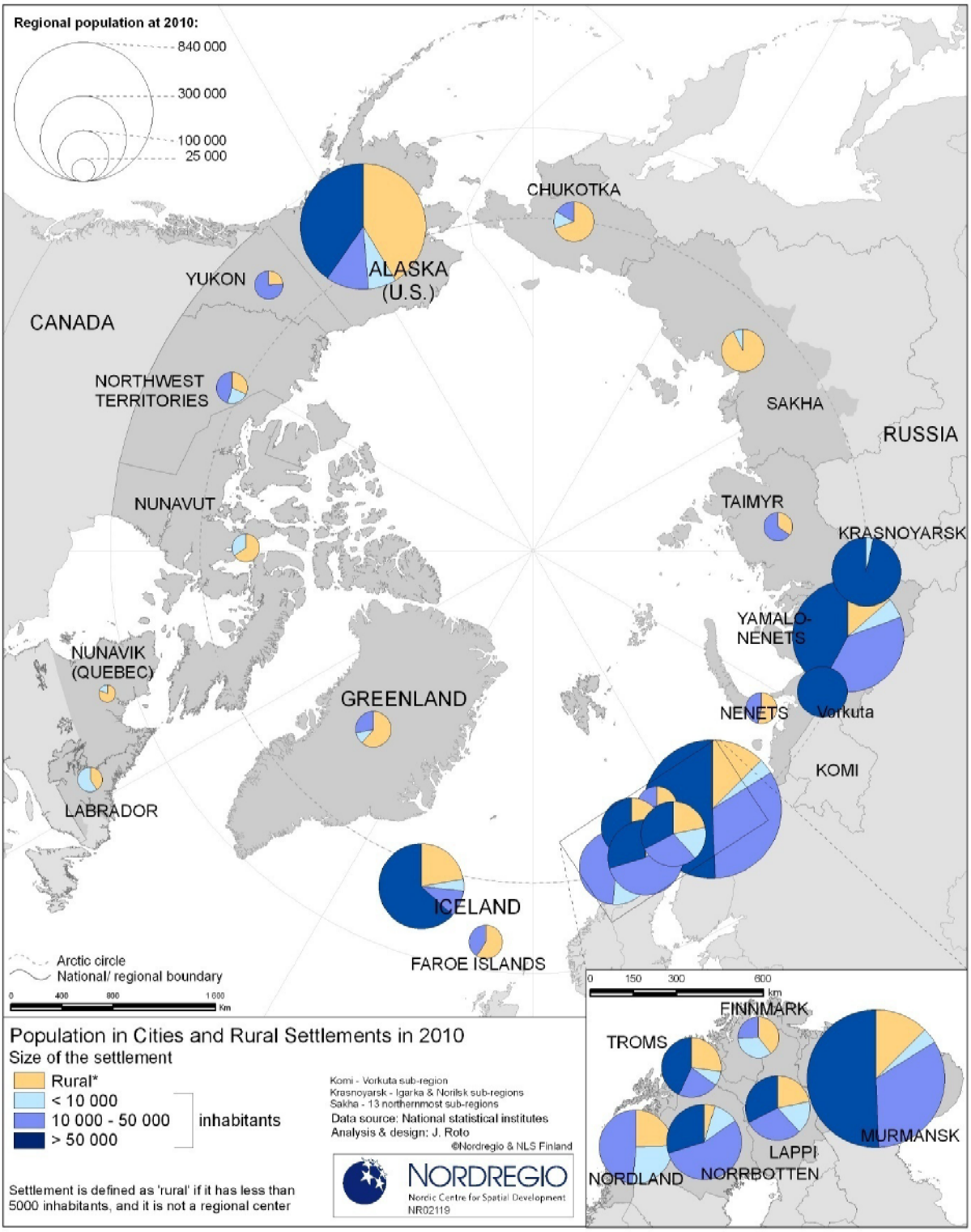

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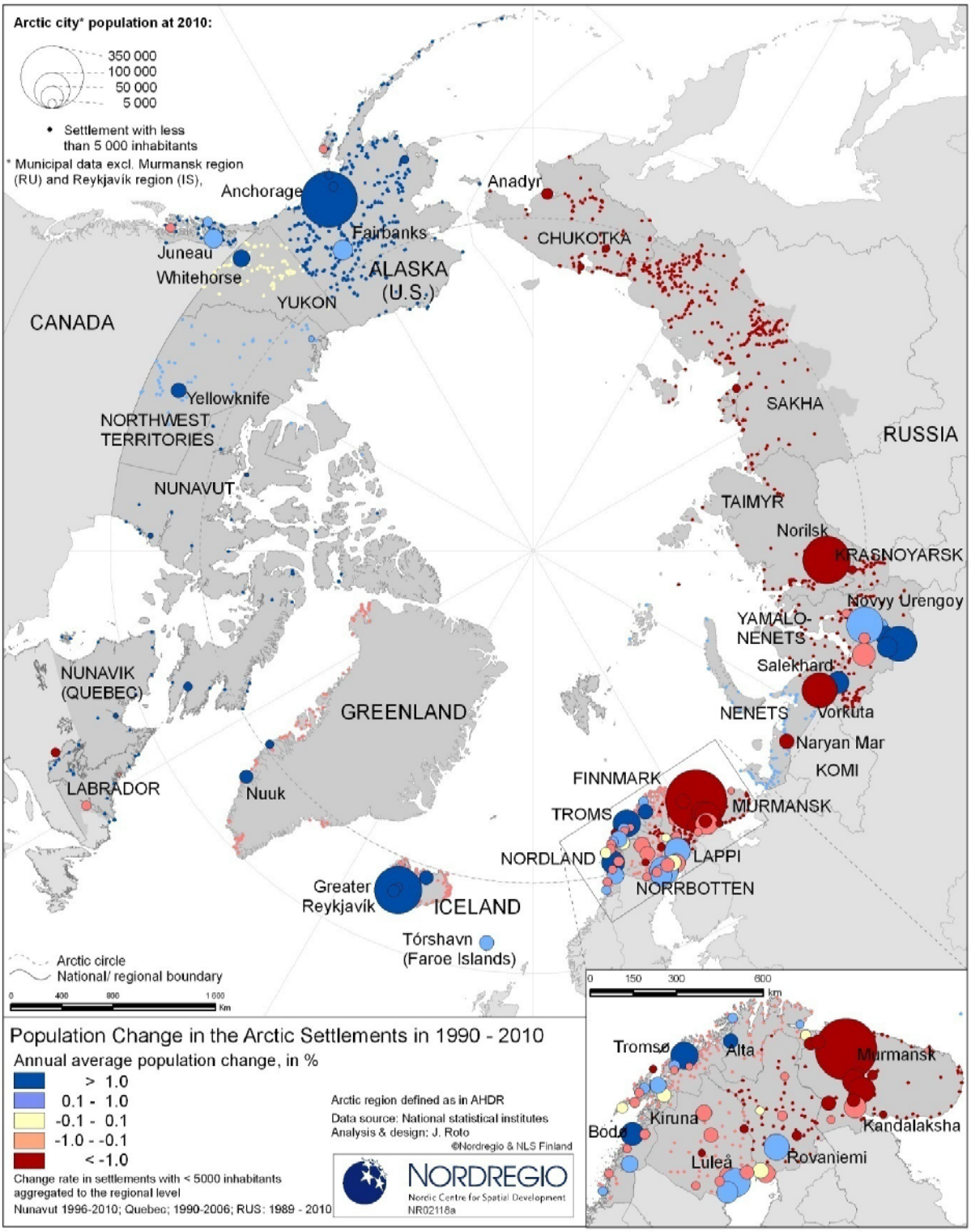

Disparities in health are observed both across regions and ethnic groups, with the health status of northerners in each Arctic state being considerably worse, on average, than the state's national average. While infant mortality has been declining in the Arctic, mental health remains a critical challenge as measured e.g. in terms of the persistently high rates of suicide, in particular among the male population.

The formal economy of the Arctic is largely based on natural resource extraction. Many of these resources are of critical geopolitical importance both nationally and globally. However, a large share of resource rents flow out of the Arctic, and Arctic communities are often highly dependent on state subsidies. Primary (extraction) and tertiary (service) sectors predominate in Arctic economies, with little development of secondary activities (manufacturing) due to the high cost of processing. At the same time informal economic activities are of great importance in many areas of the Arctic: a combination of subsistence activities with wages or transfer payments is a common strategy for pursuing wellbeing among Arctic residents (AHDR 2004; ASI 2010). Labour market participation varies throughout the Arctic region, with the lower rates of participation found e.g. in Arkhangelsk, compared with higher rates in Greenland and the Northwest Territories The proportion of the Arctic population working the in primary, secondary and tertiary sectors also vary considerably across the Arctic, and so does the rate of labour market participation, as illustrated in the following series of maps (Maps 5-8).

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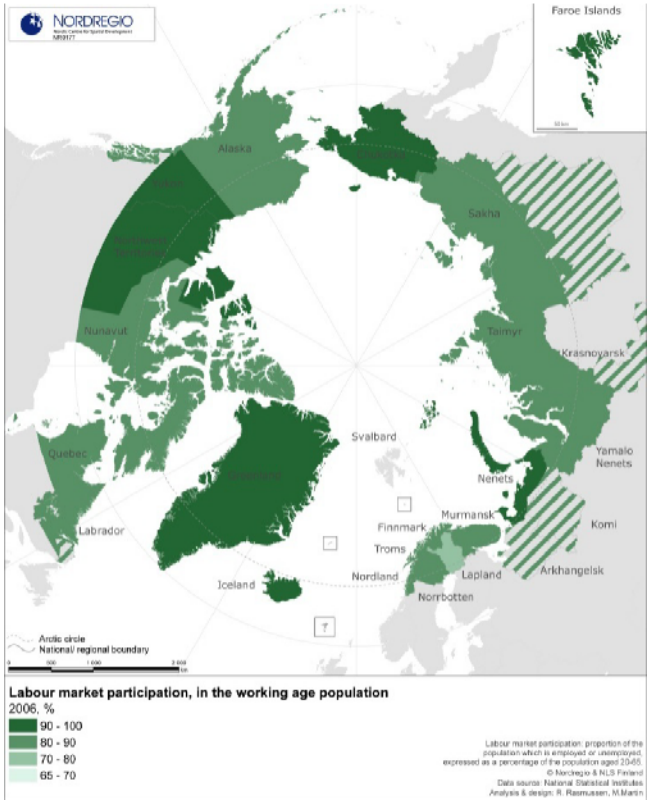

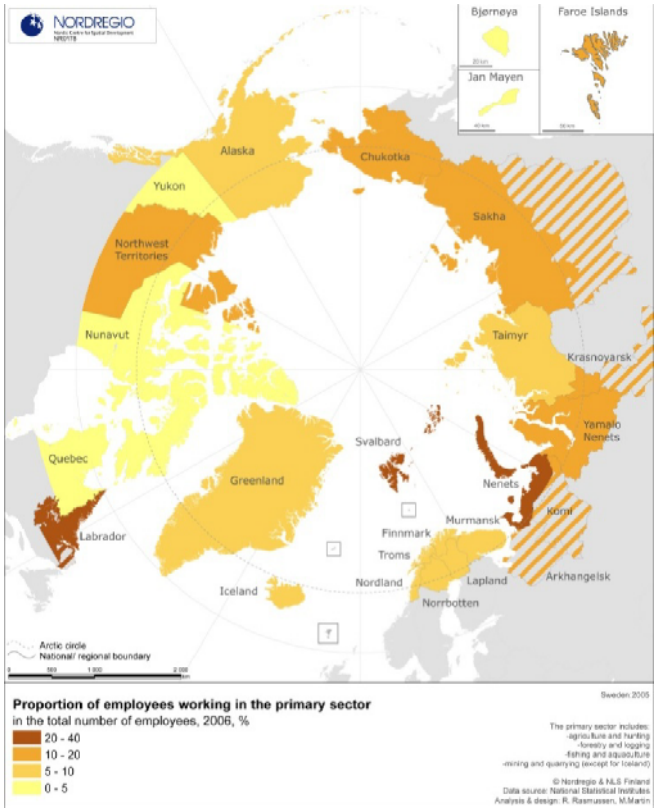

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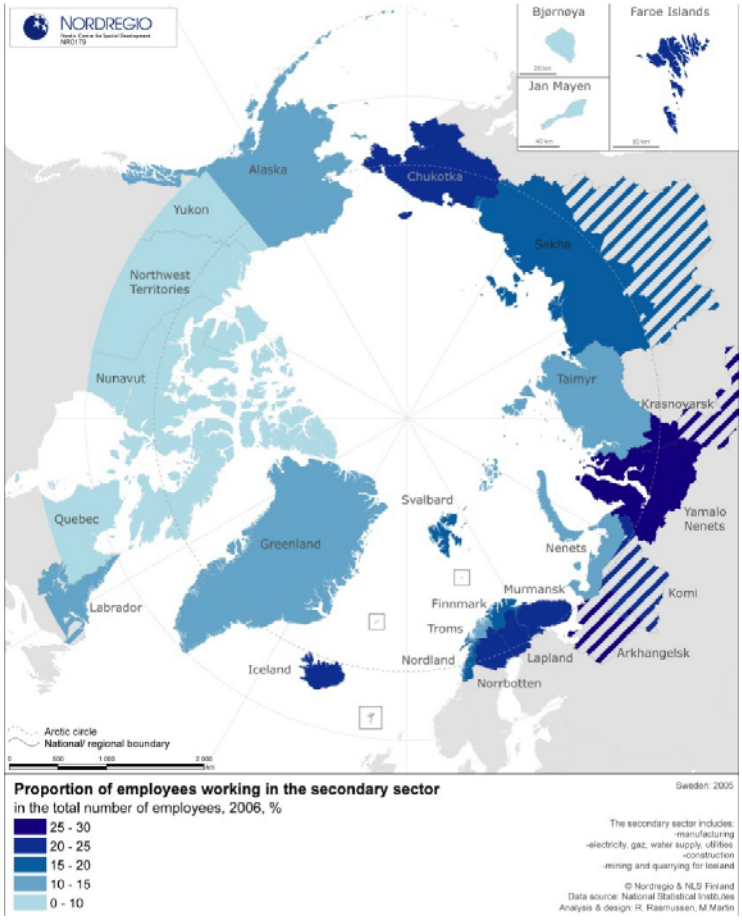

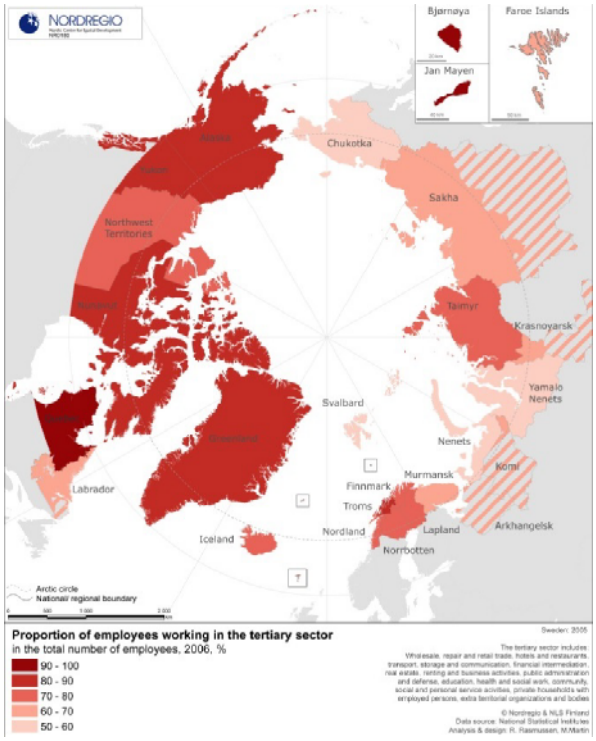

Drying of fish, Sarfannguaq, West Greenland. Photo: Rasmus Ole Rasmussen

Education in the Arctic is characterized by lower rates of attainment, in particular among indigenous residents and more remote local communities. One challenge deals with access, and this fact is also reflected in the increasing number of females leaving northern communities in pursuit of higher education. Education in the Arctic has evolved from a more experiential-based knowledge transfer and training system, stewarded by one's elders, to more formalized, state-directed systems, which have prioritized 'Western' values. The introduction of compulsory formal education has been challenged by the vast, thinly populated spaces of the Arctic, which have been managed by residential schooling. Very uneven distribution of higher educational opportunities has resulted in low utilization by Arctic residents, especially by males. More recently, a move to see education as a distributed resource is addressing issues of access, as is the greater inclusion of content that speaks to local needs and conditions (ASI 2010).

The Arctic has been affected by both global environmental change and globalization. Human-environment connections are especially close in the Arctic, and for many local communities changes to sea ice, permafrost, storm surges and increased coastal erosion will have direct consequences at many levels, including for subsistence livelihoods, travel on ice, the ability to engage in cultural pursuits, and for community infrastructure and housing. But change in the Arctic is about more than a changing climate. As we have seen above, it´s as much about rapid

socio-economic change, and with the many facets of globalization interacting with the different sources of wellbeing that makes up ASI.

Drying salmon, Tuktoyaktuk, NWT, Canada: Photo: Rasmus Ole Rasmussen

The AHDR (2004) observes that "[h]uman societies in the circumpolar North are highly resilient; they have faced severe challenges before and adapted successfully to changing conditions" (AHDR, 2004, 230). Many observers have documented the historical role of adaptiveness among Arctic residents as a source of resilience in local communities. Although circumstances have changed in many of these communities in ways that increase their vulnerability, it would be a mistake to overlook the capacity of Arctic peoples to adapt to a range of emerging stresses arising from the effects of globalization and biophysical developments like climate change. Still, Arctic communities today are subject to social, cultural, economic, and environmental forces that have given rise to a suite of interactive stresses affecting the cultural vitality dimension of human development (AHDR 2004; ASI 2010).

The old fish processing plant in the village Kangeq in the Sermersooq municipality in West Greenland. The village was abandoned in the 1960es but most of the buildings are still there, and some are occasionally used for overnight visits by locals from the nearby capital of Greenland, Nuuk. Photo: Rasmus Ole Rasmussen

1.1 Social Indicators

Indicators are useful aids for planning, for informing policy, for guiding decisions and actions. They are valuable simply in building awareness of current conditions and trends over time. Indicators are used by some groups to predict change, while other groups use them to promote change.

Groups such as governments and non-governmental organizations are increasingly using indicators to monitor trends in human development. Indicators, as simple measurements of key phenomena in complex human systems, enable us to track the direction and rate of change, and thus performance in various domains, and progress toward specified goals.

Human development is extraordinarily complex. To document all its facets would be impossibly complicated, time-consuming, and costly. Even a single domain (or category for the construction of indicators), such as education or health, has countless aspects that could be measured. A pragmatic approach is to choose a small, representative set of indicators for key domains, to track over time and across space. Such indicators condense real-life complexity into a manageable amount of meaningful information. They are proxy measures, used to infer the condition and, over time, the trends in a system.

Such indicators may be quantitative or qualitative measurements. Often a statistic is used as a simple measurement of what is happening in a system. Indicators should be clearly defined, reproducible, unambiguous, understandable and practical. They should be relatively easy to measure in an accepted manner, stable, and suitable for use in longitudinal analyses. Harmut Bossell paraphrases a famous Einstein quote in observing that indicators should be "as simple as

possible but not too simple" (Bossell 1999:11). They must also reflect the interests and views of different stakeholders.

Efforts to develop a set of indicators to measure human development require striking a balance between the analytic attractions of relying on a single indicator and the temptation to introduce a large number of indicators in the interests of developing a more accurate picture of complex and multi-dimensional phenomena.

Village in the Faroe Islands. Photo: Sigrid Rasmussen

1.2 Developing a Set of Arctic Social Indicators: The process

The ASI work to devise a small number of tractable indicators to be used in tracking changes in key elements of human development in the Arctic over time started in 2005. An international working group was constituted, with representation from a broad range of disciplines, including Anthropology, Demography, Economics, Education, Geography, Linguistics, Political Science, and Sociology. Indigenous participants were actively solicited from the start-up phase. The first ASI report was tabled in 2010. The process involved in ASI-I included the identification of the relevant domains for indicator selection; the establishment of the key criteria for indicator selection; and group discussion and selection of potential indicators within the identified domain areas; and finally the preliminary testing of the viability of the candidate indicators, using mainly anecdotal evidence.

The ASI working group confirmed the three domains suggested by the AHDR: fate control, cultural vitality, and contact with nature, in addition to the domains represented in the UN HDI material wellbeing, education, and health/population. Indicators specific to the Arctic context

were to be developed for these six domains. Criteria for selection of indicators were developed. Selection criteria chosen were data availability, data affordability, ease of measurement, robustness, scalability and inclusiveness.

The ASI working group adopted the selection criteria as a set of principles to guide indicator selection, recognizing that the criteria themselves were not precisely defined, and that trade-offs in their application had to be considered. For instance measures that might be easily available may be relatively less robust than others that are less accessible. Thus, criteria were applied not to rule out candidate indicators, but to consider the challenges each indicator might pose across several conditions, were it to be selected.

In creating a tractable set of social indicators for the Arctic, several criteria were initially considered against which to evaluate candidate indicators, six criteria were ultimately chosen for this purpose: data availability, data affordability, ease of measurement, robustness, scalability and inclusiveness. ASI (2010) provides a brief explanation for each of the selection criteria:

Data availability concerns whether the data that an indicator will use as a measure exist, and whether it is retrievable. A number of the indicators considered could draw on data collected by national agencies. Other considerations in terms of availability included whether nationally collected data are comparable across countries, and whether the data are accessible in hard copy or electronic format from the collecting agency, or whether data could be compiled by researchers from other existing information. A further element of availability is the periodicity with which regularly collected data are gathered: to monitor human development in the rapidly changing socio-economic and environmental context of the Arctic, data collected on at least a five-year frequency was preferred.

The criterion of *data affordability* considers the on-going costs of data collection and monitoring. Can the indicator (continue to) be measured at a reasonable cost? Indicators that can be garnered from data sets that are regularly collected, for example during government censuses, are more affordable than those requiring special tabulation or primary data collection. If new data collection is necessary, could the data be collected using no more than ten minutes of interview time?

Ease of measurement takes into account how simple and straightforward the data is to measure in a broadly accepted manner. Here issues of whether the indicator measure is quantitative or qualitative, nominal, ordinal, interval or ratio, etc. are considered.

Robustness considers aspects of the temporal stability of the indicator over time. Will the indicator track changes over time? Will it remain stable and relevant over time (for instance, not lose its significance?). This criterion also considers the sensitivity of the indicator – how responsive is it to change? Will it measure change over time?

Scalability is concerned with the extent to which the data used to measure the chosen indicator can be collected at different geographical scales. For instance, can the data be collected at the individual, household and community level? Can it be collected at the regional and national level?

The criterion of *inclusiveness* when selecting indicators: in the case of Arctic social indicators, is the indicator inclusive of all sectors of the Arctic population — male and female, indigenous and non-indigenous, rural and urban, etc. While a few of the indicators chosen focused on the indigenous Arctic population, the project ensured that the indicators as a group addressed human development for the whole Arctic population.

Several of the indicators presented in ASI-I (2010) have weaknesses related to availability of data, affordability, and scalability and applicability to both indigenous and non-indigenous inhabitants of the Arctic. An indicator should be the most accurate statistic for measuring both the level and extent of change in the social outcome of interest. It should adequately reflect what it is intended to measure, and ideally there should be wide support for the indicators chosen so they will not be changed regularly. It is critical that the chosen indicators are consistent over time and across places, as the usefulness of indicators is related directly to the ability to track trends over time and compare the wellbeing of regions. There are a number of possible trade-offs that need to be considered in selecting the best indicator among a set of possible indicators. The best measures may not be collected frequently to allow yearly comparisons. The desire for longer time series rather than single measurements may be compromised if the measure changes substantially from one year to the next. Also, if the measure is collected by survey, the sample size may be too small, making a chosen indicator less reliable and some data is not available for smaller regions (ASI 2010).

Technical Definitions

In the following we provide the technical definition of the chosen ASI indicators for each of the six ASI domains. The technical definitions provide a brief description or basic formula for measuring the indicators. This represents our proposed suggestion for measurement, and under ideal circumstances all of the Arctic regions, including at different scales, would have a common standard for data protocol, which would enable us to measure the indicators using the same method across the region, and therefore also enable us to do scientifically valid comparisons across time and space. However, the challenges with data in the Arctic region prevent us from applying standard measures, and it restricts our ability to make broad scale regional comparisons for most indicators, and across time. The five case studies highlight the challenges in measuring

ASI indicators, and show the adjustments needed for specific indicators due to e.g. lack of access to data, and/or variations in regional context.

(1) Health and Wellbeing Domain:

Infant mortality is the number of deaths of children under one year of age per 1000 live births.

$$\text{INFANT MORTALITY} = \frac{\text{NUMBER OF DEATH UNDER 1 YEARS OF AGE}}{LIVE\ BIRTHS} * 1000$$

Net migration is the difference between in-migration and out-migration.

NET MIGRATION = INMIGRATION – OUT MIGRATION

$$\text{NET MIGRATION RATE} = \frac{INMIGRATION - OUTMIGRATION}{TOTAL\ POPULATION} * 1000$$

(2) Material Wellbeing Domain:

Per capita household income is the combined income of all households per capita

$$\text{PER CAPITAL HOUSEHOLD INCOME} = \frac{TOTAL\ HOUSEHOLD\ INCOME}{TOTAL\ POPULATION}$$

(3) Cultural Wellbeing Domain:

Language retention rate is a percentage of a population that speaks its ancestral language

$$\text{LANGUAGE RETENTION RATE} = \frac{POPULATION\ THAT\ SPEAKS\ ANCESTRAL\ LANGUAGE}{TOTAL\ POPULATION\ OF\ THAT\ ANCESTRY} * 100$$

(4) Contact with Nature Domain:

Consumption of traditional food is a per capita intake of traditional food (in kg).

Harvest of traditional food is a total weight of traditional food harvested in a given period (in kg)

(5) Education Domain:

Post-secondary completion rate is the proportion of students successfully completing post-secondary education within a given number of years from entry

POST-SECONDARY COMPLETION RATE =
$$\frac{NUMBER\ OF\ STUDENTS\ COMPETING\ POST-SECONDARY\ EDUCATION\ AFTER\ X\ YEARS}{NUMBER\ OF\ STUDENTS\ ENTERING\ POST-SECONDARY\ EDUCATION} * 100$$

(6) Fate Control Domain:

Political control: percentage of indigenous/local members in governing bodies

$$POLITICAL\ CONTROL = \frac{NUMBER\ OF\ INDIGENOUS\ AND\ LOCAL\ \ MEMBERS\ IN\ GOVERNING\ BODIES}{TOTAL\ NUMBER\ OF\ GOVERNING\ BODIES\ MEMBERS} * 100$$

Control over land/resources: percentage of surface lands legally controlled by indigenous/local inhabitants

$$CONTROL\ OVER\ LAND = \frac{AFREA\ UNDER\ LEGAL\ CONTROL\ OF\ INDIGENOUS\ AND\ LOCAL\ POPULATIONS}{TOTAL\ AREA\ OF\ THE\ REGION} * 100$$

Economic control: percentage of public expenses generated within the region raised locally

$$ECONOMIC\ CONTROL = \frac{NUMBER\ OF\ INDIGENOUS\ AND\ LOCAL\ \ MEMBERS\ IN\ GOVERNING\ BODIES}{TOTAL\ NUMBER\ OF\ GOVERNING\ BODIES\ MEMBERS} * 100$$

Control over knowledge construction (= language retention rate) is a percentage of a population that speaks its ancestral language

CONTROL OVER KNOWLEDGE CONSTRUCTION =
$$\frac{POPULATION\ THAT\ SPEAKS\ ANCESTRAL\ LANGUAGE}{TOTAL\ POPULATION\ OF\ THAT\ ANCESTRY} * 100$$

1.3 Summary of ASI indicators

This section briefly summarizes the ASI indicators identified and selected during the first phase of ASI (ASI-I), and the rationale for the choice of indicator. The indicators are explored in-depth in the five case studies presented in PART II of this report. For further details on the choice of indicators, including the comprehensive list of indicators being considered and the discussion of final selection of 'small suite of ASI indicators´, please see ASI (2010).

(1) Health and Population Domain:

In ASI-I infant mortality was chosen as the best indicator for *health* based on ASI selection criteria. A key rationale put forward by the ASI Health and Population team was that *infant mortality* relates directly to quality of life and people's sense of wellbeing, and it integrates a wide range of health-relevant conditions including health infrastructure, sanitation, nutrition, behavior, social problems and disease. *Net-migration* was chosen as the best indicator for *population* – again based on weighing the various selection criteria – and the main rationale put forward was that *net-migration* reflects the current local sum of various push and pull factors, and it integrates different forces, and tells something basic about where one place is heading, or how it compares with others (ASI 2010).

(2) Material Wellbeing Domain:

ASI-I defined *Material Wellbeing* of a place as a measure of local residents' command over goods and services. A number of possible indicators were selected based on selection criteria. The table summarizing these indicators and their strength in terms of various criteria is reproduced here:

Indicator	Data Availability	Data Cost	Ease of measurement	Internal Validity	Robustness	Scalability	Inclusive-ness
Per Capita Gross Domestic Product	Tier 2	Medium	High	Low	High	Region	No
Per Capita Household Income	Tier 1	Low	High	High	High	Household through Region	No
Unemployment rate	Tier 1	Low	High	Low	Medium	Household through Region	No
Poverty rate	Tier 1	Low	High	Low	Medium	Household through Region	No

Subsistence harvest (weight)	Tier 3	High	High	High	High	Household through Region	No
Net-migration rate	Tier 1 or 2	Low	High	Medium	Medium	Community and Region	Yes

Reproduced from ASI (2010)

The ASI team on material wellbeing concluded that devising and measuring the perfect indicator of material wellbeing that captures the uniqueness of the Arctic economy and the importance of both market and non-market activity and transfers is both challenging and costly, and in selecting an appropriate indicator it is necessary to balance or trade-off the information it provides with the cost of constructing the indicator.

Based on a range of selection criteria, four indicators were highlighted as holding promise: per capita household income, net-migration, subsistence harvest, and a composite index that takes into account each of the three sectors of the arctic economy. Based on selection criteria ASI-I (2010) identify *per capita household income* as the best available indicator. One of the particularly important strengths of this indicator is that it provides a more accurate estimate of income in the North than does the standard measure of GDP. A major limitation with the income indicator however is that it ignores both direct services purchased with public transfers and also production in the traditional economy. Thus, until we obtain better access to data on the non-market economy and the size of the transfer sector contribution, our measure of the contribution that material wellbeing makes to overall wellbeing is incomplete.

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Nickel smelter in Monchegorsk, Kola Peninsula, – Russia. Photo: Rasmus Ole Rasmussen

(3) Education Domain:

In constructing an indicator of education appropriate to the Arctic context ASI-I decided to focus on the post-secondary level, as this allows us to encompass and recognize all forms of educational attainment at an advanced level, including the development of vocational, technical and subsistence skills and expertise as well as the completion of certificate and degree programs that are of benefit to the individual and the community.

The following table (reproduced from ASI (2010)) provides the list of three preferred indicators identified by the ASI Education team:

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Indicator	Data Availability	Data Affordability	Ease of Measure-ment	Robust-ness	Scal-ability* •	Inclusi veness
Rationale for Indicator 1: *The proportion of students pursuing post-secondary education opportunities*	Tier 1	√	High	√	(1, 2) 3-5	√
Rationale for Indicator 2: *The ratio of students successfully completing post-secondary education*	Tier 2	√	High	(√)	(1, 2) 3-5	√
Rationale for Indicator 3: *The proportion of graduates who are still in the community 10 years later*	Tier 2/3	√?	Medium	(√)	(1, 2) 3-5	√

Reproduced from ASI (2010)

Of these possible indicators the team recommended as the best indicator *the ratio of students successfully completing post-secondary education opportunities*. The rationale behind this choice is that many factors can come into play in determining whether a student completes a program or not. Completion rates provide an indication of the level of pre-qualifications a student has acquired prior to entering a program. Participation in and completion of post-secondary education opportunities is one sign of a healthy community, and as such can serve as a reliable indicator of the role of education generally in contributing to the wellbeing of Arctic communities. This is especially the case in small, remote, indigenous communities where education can serve as a vehicle not only for achieving individual aspirations, but for community aspirations as well.

(4) Cultural Wellbeing Domain:

The ASI team on Cultural Wellbeing and Cultural Vitality concluded that three components of cultural wellbeing are important to consider in the Arctic context: Language retention, cultural autonomy, and sense of belonging. The team suggested that one way to monitor "cultural

vitality" in the many distinct Arctic societies (ethnic minorities, etc.) that do not enjoy a high degree of self-governance, is to construct a composite indicator taking into account diverse dimensions of culture. The following table (reproduced from ASI (2010)) summarizes these findings:

Indicator Elements	**Indicator**
• Do laws and policies exist in a given state or region that recognize institutions that advocate for the cultural autonomy of national minority populations? • Do institutions representing national minority cultures exist? • What is the proportion of such institutions to minority peoples, e.g. are all peoples represented through such organizations? • Are resources available to such institutions? • Are funding policies in place and how well-resourced are they?	Cultural autonomy
• What percentage of a population speaks its ancestral language compared with the population as a whole?	Language retention
• What percentage of people are engaged in recreational or subsistence activities on the land? • What is the relative size of the informal (subsistence-based) sector of the economy?	Belonging

Reproduced from ASI (2010)

The team proposed as best indicator the *cultural vitality index*, a multidimensional composite indicator (incorporating cultural autonomy, language retention, and belonging), which reflects the complexities and dynamics of culture in the circumpolar North. An alternative indicator was also suggested - *language retention, or language vitality* - and the rationale was that it is accepted as valid, readily understood by both policy makers and Arctic populations, and universal both in the circumpolar world and within the various populations constituted by it. And importantly, it is relatively easy to measure as long as data is collected on number or percentage of speakers of ancestral language.

(5) Contact with Nature Domain:

The ASI Contact with Nature team arrived at three robust indicators based on selection criteria:

harvest (kilograms per annum per capita); consumption of country foods (kilograms per annum per capita); and number of people or households engaged in the traditional economy. Of these the ASI team recommended *consumption or harvest of country food*, with the rationale being the centrality of country food consumption to Arctic cultures and peoples, the availability of data and ability of communities across the Arctic to collect those data, as well as the generalizability of the concept across Arctic regions, for indigenous and non indigenous people, for rural and urban residents and for women and men. The indicators are summarized the following table (reproduced from ASI (2010).

Indicator	Data Availability	Data Affordability	Ease of Measurement	Robustness	Scalability	Inclusiveness
Consumption of Traditional Food	Tier 3	Low	Medium	High	1-4	High
Harvest of Traditional Food	Tier 3	Medium	High	High	1-4	Medium

Reproduced from ASI (2010)

• 1 = scalable to individual; 2 – scalable to household; 3 - to community; 4- to region; 5 – to country
Tier 3 data: measurement of indicator requires primary data collection.

Contact with nature is a somewhat intangible attribute of human development and indicators are extremely challenging to develop and difficult to measure. One major constraint to measuring contact with nature is the lack of current data. The challenge of measuring subsistence harvest also has implications for measuring material wellbeing more broadly by including the contribution made by harvest. The *traditional food* indicator is one example of an ASI indicator that "pushed the limits" as far as being chosen by the ASI team despite its measurement requiring primary data collection. After lengthy discussions the team decided that the indicator was simply too important to be excluded for reasons of data affordability, availability, and ease of measurement.

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Fish and meat drying in Tuktoyaktuk, NWT, Canada. Photo: Rasmus Ole Rasmussen

(6) Fate Control Domain:

Fate control refers to the ability to guide one's own destiny, and it can be experienced at the personal, household, community, and regional levels. It is the *collective* control of fate which seems of critical concern to Arctic residents (ASI 2010). In devising an indicator for *fate control* the ASI *Fate Control* team arrived at a composite index that incorporates the sub-domains of fate control (see table reproduced from ASI (2010)).

Index of Fate Control (Collective)

Component Indicators	Sub-Domains
The percentage of indigenous members in governing bodies (municipal, community, regional) relative to the percentage of the indigenous people in the total population	**Political power/ human rights**
The percentage of surface lands legally controlled by the inhabitants through public governments, Native corporations, and communes	**Decision-making power/ human rights**
The percentage of public expenses within the region (regional government, municipal taxes, community sales taxes) raised locally	**Economic control**

The percentage of individuals who speak a mother tongue (whether Native or not) in relation to the percentage of individuals reporting corresponding ethnicity	**Knowledge construction/ human rights**

Reproduced from ASI (2010)

1.4 A Small Set of Arctic Social Indicators

The main objective of the ASI project has been to arrive at a small set of Arctic specific social indicators that as a collective can be used for tracking and monitoring change in human development in the Arctic. The ASI suite of indicators is listed here:

(1) Infant Mortality (Health/Population)
(2) Net-migration (Health/Population and Material wellbeing)
(3) Consumption/harvest of local foods (Closeness to Nature and Material wellbeing)
(4) Per capita household income (Material wellbeing)
(5) Ratio of students successfully completing post-secondary education (Education)
(6) Language retention (Cultural wellbeing)
(7) Fate control index (Fate Control)

Air dried and fermented sheep –Skerpikjøt – is among the most attractive traditional foods in the Faroe Islands. Here available in one of the supermarkets in the capital Thorshavn. Photo: Rasmus Ole Rasmussen.

1.5 Data Availability and Limitations

ASI (2010) identified data availability as one of the main challenges in developing and implementing social indicators in the Arctic. The data constraints put limits on the ability to analyze and compare human development, as well as it places practical constraints on how small the unit of comparison can be. Data collection methods, accuracy and level of aggregation vary widely among jurisdictions, data collecting agencies and indicators. A serious problem with using data for a sparsely settled area like most northern regions is related to issues of missing (suppressed) and erratic data. In very small communities it is extremely difficult to have a complete dataset or ensure its accuracy. In addition, the 'small numbers problem' creates datasets with high variances and generally erratic behavior, conditions that gravely diminish confidence and may invalidate statistical analysis. For this reason a substantial number of variables are suppressed and all available ones must be used with caution. Given the persistent challenge with social data in the Arctic, including quality, accessibility, and consistency, the ASI (2010) Report concluded that an ideal set of indicators is largely unattainable because the best measures may not be collected frequently enough, or not at all, to allow yearly comparisons.

ASI-I lay out primary definitions and criteria for selecting data that could be used in regional case studies:

National	data are collected by a national agency
Comparable	data collected are comparable to that collected elsewhere
Publication	data are available from the collecting agency
Spatial	data are available at the county level (e.g. census area, district)
Period	data are available over time on at least a 5 year frequency
Special tabulation	data could be available if the collecting agency made special tabulations
Compilation	data could be compiled by researchers from existing information
New data collection	data could be collected using no more than 10 minutes of interview time

According to the ASI recommendations, an ideally chosen indicator fits one of the following combinations of criteria:

1. Data are collected by a national agency, are comparable, are published, are available at a county level, are collected at least every five years, and are available for indigenous populations.
2. Data can be made available with special tabulations and otherwise meet all criteria listed in #1.
3. Data can be compiled from existing information and otherwise meet all criteria listed in #1.
4. New data could be collected that otherwise meet all criteria listed in #1.

In addition, the ASI-I recommendations indicate that data used in the proposed ASI monitoring system should:

1. be available at a regional level;
2. be available separately for indigenous and non-indigenous populations; and
3. be available on at least a five-year reporting period.

In terms of data collection requirements, ASI-I also distinguished three tiers of indicators:

Tier 1: based on existing published data
Tier 2: data that would be produced by special tabulations from existing unpublished data
Tier 3: would require primary data collection

Following its charge to establish a practically attainable system of human development monitoring in the Arctic, ASI-I emphasizes that most of the data necessary for implementing the ASI framework must come from existing published sources in order to reduce costs and ensure data accessibility for a variety of stakeholders. Most of the suggested indicators follow this recommendation, although some are thought to require special tabulations and data collection in certain regions. ASI-II case studies closely follow these guidelines wherever possible.

Spatial Scales and Data Disaggregation. Availability of data varies depending on the scale of analysis. In most instances, ASI indicators are well represented at national and regional levels (province, district, borough, census division, county, etc.). However, at further levels of spatial disaggregation, such as individual communities, the data challenge is very serious. Due to small populations and/or lack of published data the analysis of human wellbeing at the local scale is often limited or impossible. Typical problems include suppressed or missing data, erratic nature of datasets, privacy issues and other difficulties associated with studying small samples. It is important to mention that the scale of analysis has critical importance for the validity and reliability of a study of human development. Moving between scales we encounter so-called modifiable areal unit problem (MAUP), a situation when the results of analysis may change depending on the scale at which data were collected. Therefore, it is necessary to tale MAUP into account by analyzing different indicators and making comparisons at appropriate scales.

Comparisons: Although each case study has a unique framework of reference associated with the nature of data collected in a given jurisdiction, the overall ASI data principles are closely upheld. At the same time, the authors largely refrain themselves from making direct comparisons between regions (case studies) mostly due to the uncertainty in data comparability. Instead, most chapters are focused on regional analysis and comparison within case study areas, where data

availability and comparability are consistent. Plans are being made to develop a methodology in the future to attain valid and reliable ways to make inter-jurisdictional comparisons in the Arctic.

Health and Population Domain: The main indicator recommended by ASI-I is infant mortality. This indicator is generally available at national and regional scales, but presents a considerable challenge at further levels of spatial disaggregation. In sparsely populated areas and small communities it severely suffers from missing data and small numbers problem. If local data is collected, we generally recommend using five-year averaging to alleviate the data volatility problem. The net migration rate selected by the ASI-I as another measure of both economic vitality and population/health is usually available or can be estimated from census or other demographic data. This is true at the national and regional scales, but may be a challenge for individual communities. In addition, migration data are not uniformly available for Indigenous and non-Indigenous populations.

Material Wellbeing Domain: ASI-I recommends using per capita household income as a core indicator of economic wellbeing alongside five supporting indicators. Not all jurisdictions directly provide such an indicator, but typically it can be approximated by dividing the total household income by population. These datasets are readily available and regularly collected.

Education Domain. The ASI Report emphasizes the post-secondary education completion rate. This and two ancillary indicators are all based on educational attendance (the proportion of students pursuing and completing education) or retention of educated people in a community. This information is easily obtainable in Nordic countries, but is limited in other Arctic jurisdictions. In Russia attendance statistics is not well spatially disaggregated, and completion rates can be obtained only at local offices. A similar situation is in Canada, where educational attendance data can only be obtained through custom tabulations.

Cultural Vitality Domain: The composite indicator of cultural vitality suggested in the ASI-I incorporates cultural autonomy (an indicator of the institutional arrangements for cultural self-determination), language retention and belonging (measure though the engagement in traditional subsistence activities). However, the ASI-I Report emphasizes language retention as the key indicator in this domain. In most regions the language retention data are available through census. Other components may be available through surveys, but many jurisdictions lack data on subsistence engagement and cultural autonomy. The main limitation associated with these indicators is their reliance on data pertaining to Indigenous people. Although ASI-I insists that the ASI framework must apply to both Indigenous and non-Indigenous Arctic residents, the nature of the data and indicators themselves in the Cultural Vitality, Contact with Nature and Fate Control domains allows measuring wellbeing of Indigenous people, and often precludes us from considering other groups. This is a major limitation in many case studies presented in the current report.

Contact with Nature Domain: ASI recommends using consumption or harvest of traditional foods as the main indicator of closeness to nature. As indicated in ASI-I these data are difficult to obtain and may require custom tabulation or availability of special-purpose surveys. For example, in Canada occasional Survey of Country Food Consumption is conducted in the Northwest Territories. The data therefore are limited to certain years. In contrast, Greenland has elaborate information on harvest. Some official harvest data are published in Russia, but their reliability is not always certain.

Fate Control Domain: a four-component indicator (fate Control Index) of community fate control is proposed in ASI-I. The index includes political power, economic self-reliance, control over land and cultural empowerment. All of these indicators are complex and present a challenge for direct measurement. Exact measures suggested in the report in most cases could be estimated only by proxies constructed from census and survey data, as well an analysis of legal documents and records. Not all components of the FCI are attainable in all Arctic regions as they may require additional data collection and analysis.

The following case studies are based on the best possible set of data available for regions in question. Some applications develop their own proxies and surrogate measures to substitute unavailable ASI indicators and account for regional context. Generally, the ASI framework allows conducting comparisons between regions, although they require particular caution due to issues discussed earlier. However, ASI-I provides primarily regional characterization of human development and therefore relies heavily on national, regional and local data sources. Most applications work with spatially-disaggregated datasets and therefore focus on spatial patterns within application regions.

Dynamics of Human Development: The analysis of the temporal dynamics of human wellbeing brings its own data challenges, both in terms of availability and comparability. The researchers are faced with major issues as data collection agencies change definitions and survey content, conduct data collection unsystematically (e.g. occasional surveys) or abruptly modify or shorten census questionnaires, so that a reliable multiyear analysis is impossible. As indicated in ASI-I, consistent and systematic data collection is a key prerequisite for a successful Arctic social indicators monitoring system. While it is our hope that this goal will be met in the future, faults in past data collection complicate retroactive analysis and make it difficult to identify and trace trends.

1.6 Introduction to Focus Studies

The Arctic Social Indicators Report II intends to implement the principles, domains, and

indicators developed during the ASI-I process. In a way, the current report adds data to the ASI framework, thus providing a proof of concept. Significant data challenges and incompatible units of measurement across national and administrative borders prohibit the application of ASI indicators to all regions of the Arctic.

Instead, we initiated five "focus studies" or "applications" that are supposed to fulfill the same functions of implementation and proof of concept. The selection of these focus studies was based on data availability, while at the same time ensuring that most of the areas of the circumpolar North are being covered. The next five chapters will introduce these ASI "applications". Their order of presentation is roughly geographic, starting with the easternmost (as seen from the International Dateline) focus study and moving westward. The final application deals with the entire Inuit World from Greenland to Russia, thereby escaping straightforward geographic localization.

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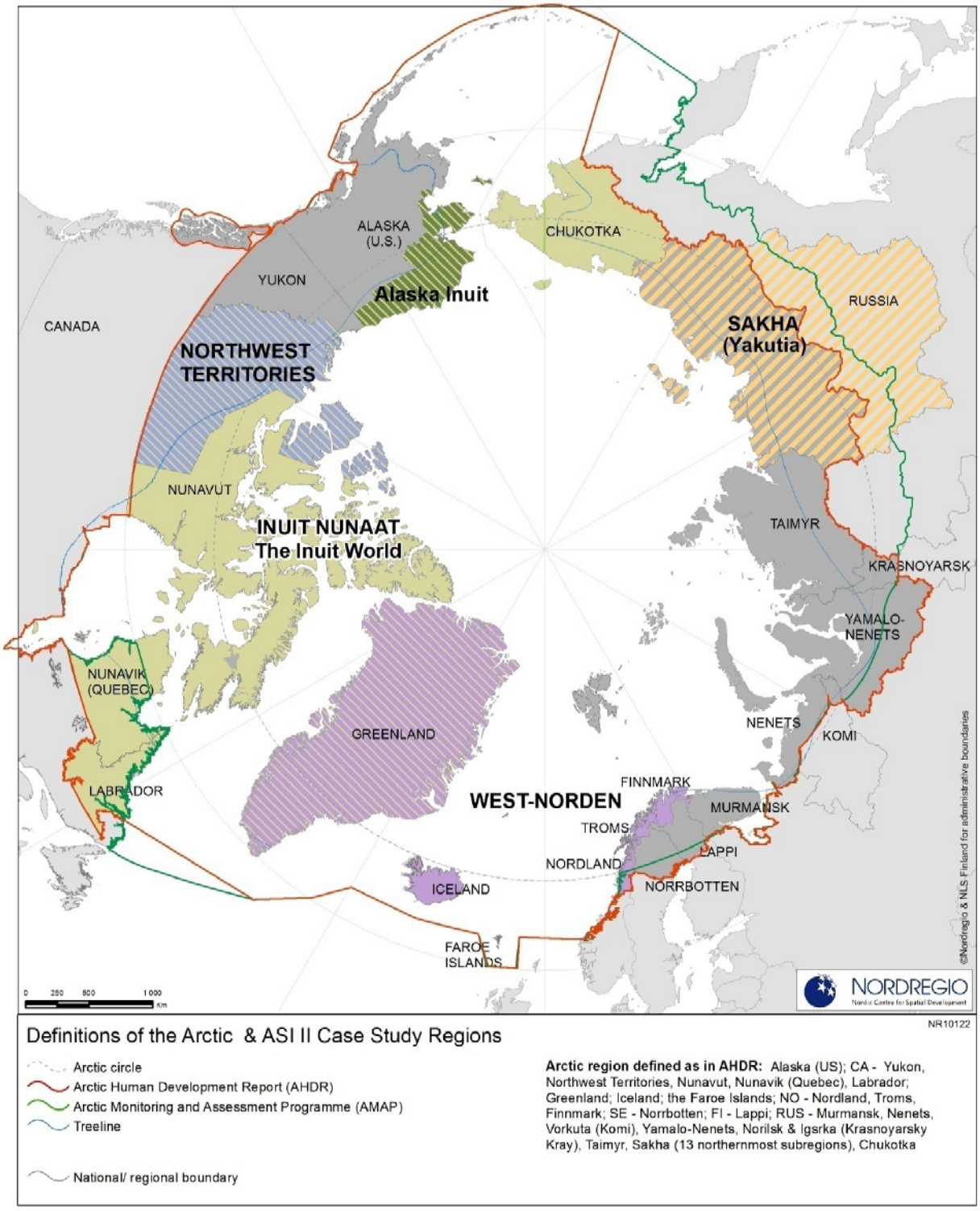

Chapter 2 is situated in the eastern parts of the Russian Federation, addressing the *Sakha Republic (Yakutia)*. The republic occupies one-fifth of the entire Russian Federation and is more than twice the size of Alaska. It has a total population of about one million people, and roughly half of them are Sakha, while Russians constitute a bit more than one-third, and numerically small peoples of the North make up less than 5%. The industrial economy of the Sakha Republic is oriented toward resource extraction (diamonds, tin, gold, etc.), while the traditional economy was focused on animal husbandry, hunting, fishing, and gathering.

The authors of chapter 2 managed to locate data for all ASI domains and indicators, which is probably partially due to the fact that all three of them have conducted research there for extended periods of time, and one of them is a resident and citizen of the republic. The scale of the data available, however, varies a lot. Yakutia is divided into 35 administrative districts, and in some cases data are available on the district level. Because of the "problem of small numbers," the authors decided to aggregate them into larger economic regions in most cases. The data originate primarily from the Federal State Statistics Service of the Sakha Republic, while federal census data have also been used. A particular problem of data availability in the Russian North is the fact that the distinction between indigenous and non-indigenous populations, which characterized Soviet approaches, seems to have been abandoned in several post-Soviet contexts.

The results for individual domains and indicators vary a lot across the republic, often with marked rural/urban differences, and typically lower scores in the northern parts of Yakutia. Regarding health, there seems to be a positive trend regarding infant mortality; likewise, suicide rates are decreasing while still being above national averages. Net migration continues to be high from all areas other than the capital city, indicating quality-of-life challenges for many residents of the republic. In terms of material wellbeing, per-capita income has increased notably over the past two decades. Large income differences persist, however, across the republic.

The rate of post-secondary degree completion has not changed much since 2005. Regarding language retention, available data are often treated with suspicion, since some of the recorded increases go beyond what cultural revitalization can realistically achieve. Still some of these self-reported numbers may be significant by expressing a growing pride of one's native tongue among indigenous peoples. The harvest and consumption of country food seems to have increased in recent years. It is unclear, however, whether this trend is a sign of increased wellbeing or just an effect of economic hardship. In terms of "fate control," only the amount of lands allocated to *obshchinas*, as a proxy for control over land, is available. Since *obshchinas* have not been pursued everywhere in the Russian North, the applicability of this indicator is limited. Overall, the indicators paint a mixed picture of human development in the Sakha Republic, suggesting that some aspects of life in the republic are improving, while others continue to be troublesome.

Chapter 3 has the *West-Nordic Region* as its subject matter, which encompasses the countries of Faroe Islands, Greenland, Iceland and coastal Western and Northern Norway. The four countries share strong historical and cultural bonds, but also common elements in basic natural and economic conditions. Understanding the development characteristics of the West-Nordic region is difficult without seeing the development in a general Nordic perspective. The trends and patterns of regional development do in many ways reflect the general Nordic setting, shaped by the specific geographical situation in each of the regions. Moreover, the historical background — especially the cooperation through Nordic Council and Nordic Council of Ministers — both creates and maintains marked similarities.

The Nordic countries show many similarities as well as differences in respect to demographic and socio-economic development, compared with other Arctic regions. Ageing has become an issue of common concern, and as life-expectancy at birth is high compared to the Arctic and most European countries. The combination of reliance on renewable resources, the island characteristics of the settlements, and a history of economic dependency has resulted in internal and external relations that influence the population structure today. The small size and the level of isolation of local communities means that a number of demographic challenges are more clearly exposed, and sometimes to a degree that may challenge the future of settlements. Access to education and to qualified jobs has impact on the age structure characteristics of the region, with young adults migrating temporarily — or, with increasing frequency, permanently — for education and jobs. There exist marked differences in gender approaches to issues such as education, job requirements and access to cultural opportunities, giving rise to migration-related gender imbalances that have become an issue for many West-Nordic communities.

The authors of chapter 3 go through all six ASI domains, and in contrast to some of the other applications, the data are relatively accessible and therefore the analysis for the West-Nordic Region makes it possible to compare and contrast wellbeing in terms of a broad set of indicators.

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The puffin – a much appreciated food item in the North Atlantic region – is at the same time appreciated by children as a toy, and here shown as a main attraction in a tourist shop in Reykjavik, Iceland. Photo: Rasmus Ole Rasmussen

Chapter 4 deals with the *Northwest Territories, Canada*. It is the only application or focus study that deals exclusively with Canada. As one of three northern territories, the Northwest Territories (NWT) have significant Inuit, First Nation, and settler populations. Interestingly, the NWT have the highest per capita GDP of all Canadian provinces and territories. Given the fact that Nunavut was part of the NWT until 1999, a side box is devoted to an abbreviated analysis of four of the six ASI domains in Nunavut.

Despite the fact that the NWT present a data challenge to implementing the ASI indicators, the data situation is relatively good if compared to other regions. The Canadian Census, held every five years, provides the majority of datasets, and allows chapter 4 to cover the 15-year-span from 1991 to 2006. Time-series data are critical in enabling a dynamic perspective of human development in the Arctic. Additional data come from the Aboriginal People's Survey, conducted in 2001 and 2006, and from the NWT Bureau of Statistics. A particular challenge in the NWT is the fact that 50% of the territory's communities have fewer than 500 inhabitants. Rounding practices by Statistics Canada and the "small numbers problem" make data for these small communities difficult to interpret.

The authors of chapter 4 go through all six ASI domains and apply as many indicators developed by ASI-I as the data situation permits. While one domain ("Contact with Nature") is covered by only one indicator, another domain ("Fate Control") is addressed by four indicators. The other

four domains are covered by two or three indicators each. Data for these individual indicators are presented and mapped on a community basis, enabling comparisons within the study region. Of particular interest is table 2, which presents correlations among social indicators. It demonstrates that some of the ASI indicators are interconnected. The overall result of chapter 4 is confirmation that the ASI indicators are suitable for monitoring human development in the NWT.

Chapter 5 moves even further west and addresses the *Inuit Regions of Alaska*. These are the three administrative units in the state of Alaska that are home to most of the Inuit (or Inupiaq) population of the 49th state of the U.S. In all three cases, administrative (census) units more or less coincide with the boundaries of regional, Native corporations set up by the Alaska Native Claims Settlement Act (ANCSA) in 1971. The northernmost of the three is the North Slope Borough with the regional center of Barrow. Southwest from there are the Northwest Arctic Borough (with Kotzbue as its hub) and the Nome Census Area. All three regions are characterized by varying degrees of Inuit demographic dominance. Thus, while data used in the chapter typically do not distinguish between Inuit and non-Inuit, chapter 5 is a good proxy for the quality of Inuit lives in Alaska outside the cities of Anchorage and Fairbanks.

The data for chapter 5 come from a variety of sources: the U.S- Census, which is being conducted every ten years, as well as the American Community Survey, which was implemented in 2005 and is being conducted annually. In addition, data from state agencies, private corporations, and SLiCA (see below) augment the data mosaic for chapter 5. Given that many of the communities in the study regions are extremely small (200 or fewer inhabitants), the data are presented in aggregated form on a regional level, which means that the comparisons are primarily among the three regions. In addition, for individual indicators, the regional centers – which often house half of the region's population – are presented separately to see how similar or different regional trends are from trends in regional centers (and thus from aggregated rural locations). Each domain is covered by at least one indicator.

The overall results of chapter 5 show an application with relatively good data availability. Despite some residual questions about the reliability of some of the datasets, there are some unexpected results. For example, the North Slope Borough data show relatively little difference between Barrow and small communities, while the differences are markedly higher in the Nome Census Area. Some of the indicators in the material wellbeing and education domains (e.g., per-capita income, employment, and post-secondary education levels) seem to be interrelated and can be dubbed "modernity indicators". Despite the fact that the North Slope Borough was the primary staging area for Alaska oil boom of the last few decades, the Nome Census Area seems to be overtaking the North Slope on these measures.

Chapter 6 – *Inuit Nunaat - The Inuit World* – differs from most of the other chapters in two respects. First, by taking the transnational community of the Inuit as its focus, the chapter evades easy geographic localization, as the Inuit world ranges from the eastern tip of Russia through

Alaska and Canada to Greenland. In doing so, it is the only chapter that is mono-ethnic in orientation. Second, chapter 6 uses a unique instrument, the Survey of Living Conditions in the Arctic (SLiCA), as its primary data source. SLiCA was an in-depth survey conducted in several arctic countries between 2001 and 2006. While the richness of its data is enviable, SLiCA suffers from the fact that it is (fiscally) rather unlikely that a survey of similar scope and extent will be repeated in regular intervals.

Since SLiCA precedes ASI, the preliminary results of the Survey of Living Conditions informed the initial steps of the Arctic Social Indicators project. At the same time, the analysis of SLiCA made use of the Arctic Human Development Report (AHDR) that introduced some of the domains later to be used by ASI. These connections between SLiCA indicators and ASI domains are systematically explored in chapter 6.

It is generally feasible to apply SLiCA indicators into the ASI framework and to most of the selected indicators. Furthermore SLiCA is able to contribute with further valuable indicators. SLiCA indicators apply directly to three out of six domains (material wellbeing; education; cultural continuity and vitality). The selected ASI indicator for contact with nature demands quantitative estimates of 'consumption and harvest of traditional food', whereas SLiCA have results expressed in relative terms. The last two ASI domains rely heavily on vital statistics and publicly gathered information.

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Summer camp for sled dogs in Ilulissat, West Greenland. Photo: Rasmus Ole Rasmussen

Finally, **Chapter 7** – *Conclusions: Measuring Change in Human Development in the Arctic* - brings the results of the focus studies back to the overarching questions of the ASI endeavor. The chapter starts out with a summary of major findings, that is it provides a synthesis of Part II or chapters 2 through 6.

A major component of chapter 7 is the introduction of the ASI Monitoring System. It describes the core principles and elements of such a system, and proposes an organizational structure. In addition, there is a set of specific ideas regarding the establishment of a monitoring system, and information about the Inuvialuit Baseline Indicators (IBI) project, a collaborative monitoring project that also fulfills the role of a pilot study.

Chapter 7 puts the focus studies of ASI-II into dialog with the 25+ community-based monitoring projects that were part of IPY 2007-2008. The final sections of the chapter and the report include reflections on what the ASI process has achieved to date and what the major future tasks are.

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PART II:

CASE STUDIES

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ARCTIC SOCIAL INDICATORS APPLICATION

Chapter 2:

SAKHA REPUBLIC (YAKUTIA), RUSSIAN FEDERATION

Gail Fondahl, Susie Crate, Victoria Filippova

2.0 Introduction

Sakha Republic (Yakutia), occupying one-fifth of the Russian Federation, encompasses over 3.1 million square kilometers, an area over twice the size of Alaska and only slightly smaller than India. Stretching from below 56˚N in the south to above 77˚N in the Arctic Ocean (the Novosibirsk Island Archipelago), it embraces vast tundra and taiga landscapes, some of Russia's largest rivers, and numerous mountain ranges. Its climate is continental, with the coldest temperatures outside of Antarctica regularly registered within its bounds; yet summer temperatures in many areas exceed 30˚C. Despite its vastness, it is home to only about one million people. Like many other areas of the North, Sakha Republic (Yakutia) is sparsely populated, with an average of 0.3 persons/sq. km, compared to 8.3 persons/sq. km for the Russian Federation (2007). The majority of the Republic's population is concentrated in its several major urban centers.

According to the 2010 census data, the Republic's population includes the indigenous and eponymous 49.9% Sakha (a non-Russian, Turkic-speaking indigenous people, formerly called the Yakut), 37.8% Russian, and a small percentage of other indigenous peoples, the so-called numerically small peoples of the North (Evenk, Even, Dolgan, Chuckhi, Yukagir), comprising together about 4.2% of the population. Many other peoples, most notably Ukrainians (2.2%), also inhabit the republic.

Many Sakha historically and to this day engage in livestock (cattle and horse) husbandry, while the other indigenous groups more frequently practice reindeer husbandry and subsistence activities of hunting, fishing, and gathering. The majority of Slavic inhabitants (Russians, Ukrainians and Belorussians) are concentrated in the republic's larger settlements, working as administrators, in commerce, and in industry, although some have taken up the herding and hunting practices of the area's indigenous peoples.

The economy of Sakha Republic (Yakutia) is strongly resource-oriented, with about 40% of the gross regional product based on the extraction and industrial processing of diamonds, gold and coal (Yegorov 2011). The republic provides all of the Russian Federation's antimony, 98% of its diamonds, 86% of its tin, and 15% of its gold (Shtyrov 2008). The majority of industrial enterprises were established in the post WWII period, with the Soviet government's push to progress and 'catch up with the West' (gold was mined earlier). To speed industrialization, the Soviet government brought Slavic workers from the western Soviet Union, which created substantial population centers of in-migrants around the natural resource exploitation areas.

The subsistence activities in which the indigenous populations are involved were consolidated into state farms during the Soviet period. With the post-Soviet dissolution of those farms, such activities are often a main source of household-level economy and, in some cases, income (Crate 2006). Village households depend on a mixed cash economy with much of their cash originating from state transfer payments in the form of state subsidies and pensions.

After the fall of the Soviet Union in 1991, the population of the Republic fell annually except from 2004-2005. The Republic lost 161 thousand people between 1990-2005, due to the economic crisis, which specifically hit areas of gold, coal and tin ore production, formally subsidized by the government (Ivanov 2007: 624). This period also saw out-migration of urban populations, mainly Russians and other Slavs, while the rural population grew slightly across the Republic.

Since 1991, inhabitants have had increasing access to global media sources, a wide array of consumer goods, and most of the technological advances found in the west, though these are often unaffordable, and largely absent from the lives of villagers in the far-flung settlements of the Republic. The period following 1991 was also characterized by the dissolution of a centralized system of supports for infrastructure of many types.

2.1 DATA AND METHODOLOGY

In this chapter, we attempt to apply the indicators selected and identified by the Arctic Social Indicators project (ASI Phase I; Larsen et al. 2010) to Sakha Republic (Yakutia). We discuss difficulties of data collection for some of the indicators, and suggest revisions to these. In some cases we have had to adjust the indicator due to data availability. For some domains we have looked at secondary and even tertiary indicators, in order to illustrate how one indicator may suggest quite a different picture than another – or might corroborate the trends suggested by the primary indicator. Of course, in order to provide for comparison across time and space, it is preferable to use the primary indicator; presenting further indicators is mainly for illustrative purposes of the limitations of the primary indicators. Any future use of such indicators will need

to take such limitiations into account, while fully recognizing that secondary indicators have their own weaknesses, and primary indicator was chosen as the best proxy for each domain.

Table 2.1 summarizes the indicators proposed by ASI-1, and specifies the indicators that we have used in this chapter.

Table 2.1: Social Indicators for Sakha Republic (Yakutia)

DOMAIN	PREFERRED INDICATOR (ASI 2010; Chapter 1 of this report)	SAKHA REPUBLIC: INDCATOR 1	SAKHA REPUBLIC: INDICATOR 2	SAKHA REPUBLIC: INDICATOR 3
Health & Population	Infant Mortality/ Net Migration	Infant Mortality/ Net Migration	Suicide Rate	
Material wellbeing	Per capita Household Income	Per capita Household Income	Net Migration	Unemployment
Education	Ratio of Students Completing Post-Secondary Education Opportunities	Ratio of Students Completing Post-Secondary Education Opportunities		
Cultural Vitality	Language Retention	Language Retention		
Contact with Nature	Consumption/Harvest of Traditional Foods	Harvest of Traditional Foods	Consumption of Traditional Foods	
Fate Control	**Fate Control Index***	Control of Surface Lands		

* See discussion in Fate Control Section below, for components of Index

As noted in the first ASI report (Larsen et al. 2010, p. 146), it is preferable to use data that "are collected by a national agency, are comparable, are available at the county level, are collected every five years, and are available for indigenous populations." We have depended for the most part on data published by the Federal State Statistics Service of Sakha Republic (Yakutia). Statistical yearbooks are published annually. Compilations on various topics (e.g. labor, standard of living) are also published. We have also used federal (Russian Federation/Russian Soviet

Federated Socialist Republic) data. The last Soviet census was conducted in 1989, with the previous census conducted in 1979. Post-Soviet censuses were conducted in 2002 and 2010, with the results of the 2010 census still being released; some data from it are included.

Sakha Republic (Yakutia) is divided into 35 administrative units, called *ulusy* (singular *ulus*), akin to *rayony* in other parts of the Russian Federation, and very roughly equivalent to districts or counties. Only some statistics are available at the *ulus* level. Even where data are available at the ulus level, the 'small population problem' confounds the usage of these to assess trends over time. For many demographic statistics, such as infant mortality, numbers are so tiny as to make year-to-year 'trends' highly erratic and essentially meaningless. Thus, in order to look at trends, where data are available by ulus, we have grouped the ulusy into six economic regions for the purposes of a more robust statistical analysis. The six economic regions were adopted from the Geographical Atlas "Sakha Republic (Yakutia)" (Lazebnik, 2000:46; see also *Atlas YaASSR* 1989, p.12).

Traditional timber building in the Sakha (Yakutia) Republic capital of Yakutsk. Photo: Rasmus Ole Rasmussen

The following table provides information on the composition and characteristics of the six regions:

Table 2.2: Economic Regions of Sakha Republic (Yakutia) (used for data presentation)

Region	Included *Ulusy*	Economic Characteristics
Central	Amginskiy, Churapchinskiy, Gornyy, Khangalaskiy, Kobyyskiy, Megino-khangalaskiy, Namskiy, Tattinskiy, Ust-Aldanskiy, Vilyuyskiy, City of Yakustk and subordinate settlements	Manufacturing, financial & other services, construction, forestry, cattle husbandry, grain & vegetable raising
Southern	Aldanskiy, Olekminskiy, Neyugriskiy	Gold, coal mining, forestry, fur trapping
Western	Anabarskiy, Mirinskiy, Nyurbinskiy, Olenekskiy Evenk National, Lenskiy, Suntarskiy, Verkhne-Vilyuyskiy	Diamond mining, oil and gas, coal mining, forestry, fur raising
Eastern	Omyakonskiy, Tomponskiy, Ust'-Mayskiy	Gold mining, forestry
Northern	Bulunskiy, Zhiganskiy Evenk National, Ust'-Yanksiy, Verkhoyanskiy, Eveno-Bytantayskiy National	Gold, tin mining, fishing, fur trapping
Northeastern	Abyyskiy, Allaykhovskiy, Momskiy, Nizhnekolymskiy, Srednekolymskiy, Verknekolymskiy	Forestry, fur trapping & raising, reindeer husbandry, fishing

Sources: Lazebnik, 2000; *Atlas YaASSR* 1989; Official Information Portal of the Republic of Sakha (Yakutia) (http://www.sakha.gov.ru/node/7849)

Two other groupings of ulusy are used in the presentation of some statistics in the Sakha Republic (Yakutia) and will be drawn on occasionally in this chapter: the 'regions inhabited by the indigenous numerically small peoples of the North' and the 'Arctic Regions'. These are both recognized in various legal and administrative documents of the republic.

Table 2.3: Other Regional Groupings of the Sakha Republic (Yakutia)

Grouping	Included Ulusy
"Regions Inhabited by the Indigenous Numerically Small Peoples of the North" (21 ulusy)	Abyyskiy, Aldanskiy, Allaikhovskiy, Anabarskiy, Bulunskiy, Eveno-Bytantayskiy National, Kobyayskiy, Mirinskiy, Momskiy, Neyugnrisnkiy, Niznekolymskiy, Olekminskiy, Olenekskiy Evenk National, Omyakonskiy, Srednekolymskiy, Tomponskiy, Ust'-Mayskiy, Ust-Yanskiy, Verkhnekolymskiy, Verkhoyanskiy, Zhiganskiy Evenki National
Arctic Region (13 Ulusy)	Abyyskiy, Allaikhovskiy, Anabarskiy, Bulunskiy, Eveno-Bytantayskiy National, Momskiy, Niznekolymskiy, Olenekskiy Evenk National, Srednekolymskiy, Ust-Yanskiy, Verkhnekolymskiy, Verkhoyanskiy, Zhiganskiy

Note: The 'Arctic Region' includes all of the ulusy of the Northern and Northeastern region, plus the northern two ulusy of the Western Region.

The ''regions inhabited by the indigenous numerically small peoples of the North' account for 36.4% of the population of Sakha Republic (Yakutia). The Arctic Region accounts for 7.7% of the republic's population.

In numerous cases statistics are not easily available at the ulus level, and are only reported for Sakha Republic (Yakutia) as a whole.

2.2 HEALTH AND POPULATION DOMAIN

The chosen indicator for health is *infant mortality rate*. Other indicators suggested for measuring population health are child mortality rates, access to health care, suicide rate, self-assessed health, obesity rate and smoking rate (Larsen et al. 2010, p.37). Of these, government statistics are available for infant and child mortality rate and suicide rate. Below we provide data on infant mortality rates; we also offer the suicide rates, for reasons explored below. Infant mortality rates are available at the regional as well as republican level; suicide rates until recently were only available at the republic level.

For population dynamics the chosen indicator is *net migration*. While for infant mortality, a decrease in rate is a clearly desired trend, trends in net migration are harder to appraise as 'good' or 'bad', as pointed out in the first *Arctic Social Indicators Report*. For a community as a whole, negative net migration may portend the demise of a community, or at least contribute to a declining standard of living for those who remain. In that it is frequently the younger, working-age population that is out-migrating, the sustainability of communities can often be challenged by out-migration. However, in some cases in the North, and perhaps most notably in the Russian North, many population centres were highly subsidized; some feel that a decline in artificially high levels of population was needed (see Heleniak 2009), especially as the withdrawal of subsidies encouraged greater dependence on subsistence activities such as hunting, and thus increased pressures on ecosystems. At the same time, while a community may suffer from out-migration, individuals relocating elsewhere may experience an improvement in their quality of life.

Infant Mortality Rate

Infant mortaility is measured in terms of the number of children dying prior to their first birthday per 1000 live births. Infant mortality is a problematic indicator in areas of low population. Even in aggregating ulus-level data into regional data, one has to exercise caution in assessing trends over time. Table 2.3 provides data for the past 30 years. Infant mortality has declined significantly over this period in the republic: in 2005 it was about one-third of what it was in 1980. The decline has characterized all regions. There is still marked difference between the regions (Table 2.4)

Table 2.4: Infant Mortality in the Sakha Republic (Yakutia)*

(Number of infant deaths per 1000 births)

Region	**1980**	**1990**	**2000**	**2005**	**2010**
Central	35.3	20.3	15.8	9.3	6.9
Central w/o Yakutsk	33.3	21.1	14.8	9.6	9.4
Yakutsk	37.7	19.0	16.9	9.0	5.0
Southern	21.8	16.1	16.4	11.6	7.1
Western	25.2	22.4	20.1	14.6	6.1
Eastern	32.1	21.8	21.7	5.1	4.8
Northern	28.8	23.5	22.8	9.7	8.1
Northeastern	33.2	15.7	19.3	14.3	11.8
Sakha Republic (Yakutia)	**30.0**	**20.1**	**17.5**	**10.7**	7.2
Russian Federation*	22.1	17.4	15.3	11.0	7.5

* Statistics for Russian Federation offered for comparison.

Source: *Statistical Yearbook RS(Ya)*, various years; for Russian statistics, http://www.gks.ru/wps/wcm/connect/rosstat/rosstatsite/main/population/demography/b273bf80446245b682bcb26964b99b0f#

Infant mortality in Sakha Republic (Yakutia) has in the past decade slipped below the Russian Federation average. The most common reasons for death include 'various situations arriving in the perinatal period', 'natural anomalies of development (deformities, chromosome anomalies)' and 'trauma, poisoning and other external factors' (On the status 2009:13), all of which have decreased significantly since 1990. Even more noteworthy is the decrease in infant mortality from 'breathing system illness', which in 1990 comprised 14% of deaths, but by 2008 accounted for only 4% of deaths.

While infant mortality rated by different ethnic groups are not available, Table 2.5 shows the rate of infant mortality for the republic as a whole, compared with the rates for "regions inhabited by the numerically-small indigenous peoples".

Table 2.5: Infant Mortality for Sakha Republic (Yakutia) and for Regions of the Republic inhabited by the Indigenous Numerically-Small Peoples of the North (Number of infant deaths per 1000 births)

	2002	2003	2004	2005	2006
Sakha Republic (Yakutia) as a whole	15.2	13.2	13.5	10.6	10.6
Regions inhabited by the Indigenous Numerically-Small Peoples of the North	14.8	15.1	14.9	11.3	13.3

Source: Burtseva et al. 2009:58

In order to analyze the demographic and medical trends among the indigenous peoples of Sakha Republic (Yakutia), the republican Ministry of Health is discussing the collection of data by ethnicity once again. This would provide objective information about the health of such groups, as a basis to develop medical interventions for improvement of health (Burtserva et al. 2009:59).

Suicide Rate

While declining infant mortality suggests improved wellbeing, and a positive trend in human development in Sakha Republic (Yakutia), looking at other indicators provides a different picture. Suicide rate is considered a 'supplementary proxy indicator' for measuring the health of the population (Hamilton et al. 2010). Suicide rate is measured by the number of suicides per 100,000 population. Republican level statistics until recently have painted a grim picture (Table 2.6), one that is at odds with the positive outlook provided by falling infant mortality rates. After falling dramatically between 1980 and 1990, rates rose dramatically again, and were more-or-less stagnant from 2000 to 2008. However, the past two years show a promising downward trend.

Table 2.6: Suicide Rate, Sakha Republic (Yakutia) and Russian Federation
(per 100,000 population)

	1980	1990	1995	2000	2005	2010
Sakha Republic (Yakutia)	39.6	24.2	35.1	48.4	48.3	40.8
Russian Federation	---	26.5	41.4	39.1	23.2	26.5

Source: *Statistical Yearbook RS(Ya)*, various years.

It is likely that at least part of the marked increase in suicide rates in the post-Soviet period (post-1990) are the result of more accurate reporting. Nevertheless, the rates remain substantially higher in the Sakha Republic (Yakutia) than for the Russian Federation as a whole. Indeed, Russian Federation rates have been declining since 1995, after a steep rise. Rates in Sakha Republic (Yakutia) increased in the 1990s, and continued to do so in to the 2000s, with a decline in the last couple of years. In 2005, they were double the Russian Federation average, and in 2010 they are still 1.5 times higher.

Suicide rates are not easily accessible at the ulus level until 2008, but are published after that (Mortality 2010). Thus it is likely that in the future we will be able to use ulus-level suicide data to track this indicator of human development. Table 2.7 shows suicide data by region for 2008 and 2009.

Table 2.7: Estimated Regional Suicide Rates, 2008 - 2011

Region	2008	2009	2010	2011
Central	43.4	45.4	42.3	50.5
Yakutsk	26.1	29.0	23.8	23.3
Central without Yakutsk	66.0	67.7	44.1	53.2
Southern	49.2	38.3	47.5	52.5
Western	52.8	47.3	53.5	66.4
Eastern	40.7	67.0	59.2	53.2
Northern	82.1	66.1	123.7	91.1
Northeastern	71.4	72.4	51.3	33.7

Source: *Mortality* 2010.

These statistics should be approached with great care, and are only provided to indicate what appear to be regional trends that are mirrored in other areas of the Arctic. Reported suicide rates vary in 2008 from rates of 0 (Nizhnekolymsk Ulus, in the Northestern Region) to 180.0 (Anabarskiy Ulus in the Western Region). At the same time, Omyakonskiy Ulus (Eastern Region) shows an increase in suicide rate to 71.4 in 2011 from 8 in 2008, while in the Allaikhovskiy Ulus (also Northeastern Region) the statistics indicated a drop to 68.4 in 2009 from 100.7 in 2008, and then to 0 in 2010 (rising to 33.6 in 2011). Again we witness the 'small population problem' of dealing with statistics where total populations are very small — one suicide can make a huge difference in the reported rate. This is true, even when data is aggregated by region.

The statistics do suggest a trend of higher rates of suicide in the most northerly areas of Sakha Republic (Yakutia). Of course, it is these same northern regions that have very small populations: all of the northern ulusy with reported suicide rates over 100 have populations of well under 5000 people.

The other interesting geographical trend is the comparatively low suicide rate in the capital city of Yakutsk compared to the rest of the republic (Table 2.7). The regional capital would be both the centre of much more advanced social services, including mental-health services. It is also the single area of substantial population growth in the whole republic. It may also be that those in desperate situations who can migrate to the centre find some relief from their challenges, compared to those who cannot leave an adverse situation. It is interesting to note that Mirnyy

ulus, a major industrial center, is one other area where the suicide level remains notably below the republican average (24.6 and 23.9 in 2008 and 2009 respectively).

Suicide among adolescents, as elsewhere in the Circumpolar North, is a particularly distressing feature. In the Sakha Republic (Yakutia), suicides and accidents have become the leading cause of death of adolescents (10-19 years old), while in Russia as a whole, and countries of Europe the leading cause of death from external causes for this group are road traffic injuries. For those from 15-19 years old, suicide and murder predominate as the leading cause of death. Death rates from these causes are highest in those areas where indigenous populations predominate. Contributing factors of social deprivation and youth disadvantage are exacerbated by inadequate and poor-quality prevention strategies in terms of education, social support, and health care, and family support (Savvina et al. 2012: 46-69).

Net Migration

As noted in the Arctic Social Indicators report, in-migration and out-migration "reflect the current local sum of various push and pull factors…" (Hamilton et al. 2010: 43). Substantial out-migration from the Russian Federation's northern regions has characterized the last two decades, since the end of the Soviet Union, with 17% of the population leaving between 1989 and 2006. The figure for outmigration from Sakha Republic (Yakutia) for the same time frame was even greater, at 26% (Heleniak 2009). Motivations included people moving to the lands of their ancestors after the breakup of the Soviet Union (e.g. Ukrainians moving to Ukraine; so-called 'diasporic' migration), mostly in the first years of the 1990s. This factor was felt more strongly in Siberia than in many areas of the Russian Federation, as the Slavic population included a relatively higher percentage of Ukrainians and Belarusians. More continuously since the early 1990s, economics have driven migration. As prices were liberalized, state subsidies withdrawn, and many northern economic organizations collapsed, the Far North experienced a significant deterioration in quality of services, and of life generally, in remote northern settlements (Heleniak 2009).

Migration patterns in Sakha Republic (Yakutia) for the most part mirrored these general trends (Table 2.8). Net migration rate is calculated by subtracting outmigrants from the region from in-migrants to the region, dividing by number of residents, and then dividing by 1000.

Table 2.8: Net Migration Rates, Sakha Republic (Yakutia), 1990-2010

(per 1000 residents)

Region	1990	2000	2005	2010
Central	-0.1	-0.3	0.0	-0.2
Central w/o Yakutsk City	-0.5	-0.6	-0.5	-0.8
Yakutsk City	0.3	0.1	0.4	1.5
Southern	-0.3	-1.1	-1.0	-1.1
Western	-0.1	0.1	-0.8	-1.6
Eastern	-0.8	-2.0	-2.2	-2.0
Northern	-1.2	-4.1	-1.8	0.2
Northeastern	-0.9	-2.3	-1.3	-1.0
Sakha Republic (Yakutia)	-0.3	-0.7	-0.5	-0.7

Source: Calculated from *Statistical Yearbook RS(Ya)*, various years.

While in 1990, Sakha Republic (Yakutia) saw a net migration of -3306 persons, by 1995 it had reached a net migration of -16,907 persons (Fedorova et al 2003: 156). Mining regions and those focused with an economic specialization in transportation were hardest hit; agricultural centres (including cattle and reindeer husbandry) were less affected. If in the earliest post-Soviet years, political factors played an important role, with Ukrainians, Belorussians, Moldovans and Kazakhs returning to their titular homelands, by 1994 social and economic factors (e.g. decrease in availability of consumer goods, non-payment of wages) became the main drivers. (Indeed, by 1995-6, some reverse migration from Ukraine and Kazakhstan began to occur, though in small numbers (Fedorova et al. 2003:157)). Arctic worker's villages were especially hard hit: for instance Ust'-Yanksiy (Northern Region), a mining region, lost over 47% of its population in the 1990s (Sukneva et al. 2001: 28). This outmigration of the working-age population in turn negatively affected the birth rates of the regions: 70% of the out-migrants were of working age (Sunëva et al. 2001:68).

The only area to experience continuous positive net migration has been the capital city, Yakutsk. By 1988, 114 settlements in the republic were considered to be 'without a future' (*besperspektivnye*) (Fedorova et al. 2003:158). Outmigration has been especially strong from the Northern, Northeastern and Eastern regions in the 2000s. Yet one anomaly is noted. The 2010 show a positive growth in the Northern Region. This is wholly due to reported strong in-migration to Bulunsky ulus; all other ulusy of this region experienced net out-migration in 2010, with the exception of the Eveno-Bytantaisky ulus (which gained 2 individuals). Whether the gain in Bulunskiy ulus is due to real trends or inaccurate statistics is unclear. Meanwhile 2010 saw a significant increase in the outmigration from the Western region, mostly attributable to a heavy loss of population from the Mirnyy ulus, a centre of diamond mining (net migration rate of -3.1).

Currently, among the migrants women predominate (54.7%). Especially noticeable is the preponderance of women at the age of retirement (73% of migrants in this category are female). A large proportion of thosed aged 16-19 years who migrate area also women (67%), who in large numbers are relocationing for education. Among those of in the age bracket of 30-39 years men predominate (Suknëva 2008).

For people aged 16-29 years, migration to cities is common, for education, skills development, and employment. The rate of return migration among this group is low, which leads to an aging population and the deterioration of the demographic situation in the rural areas of the country. A main reason for migration of the rural population is dissatisfaction with working and living conditions in rural areas. A public opinion poll conducted in 1995 revealed that the relocation of rural residents to urban settlements was driven by poor housing conditions in rural areas, lack of work, and the desire to give their children a good education (O migratsionnykh… 1996). The reasons identified during the survey remain relevant. The attractiveness of the North that prevailed during the Soviet period, due to higher wages and well-supplied communities, has largely been lost. Future implementation of new megaprojects in the republic will likely rely on migrant workers working in shift-work, including from outside the republic, as well as some redistribution of local population, which will help to reduce unemployment, especially in rural districts (Suknëva 2008).

Migration data suggest that community viability, and thus human development, is under significant threat in many of the republic's regions, as net migration for most regions is negative, and in a number of regions actually increased between 2005 and 2010. Along with suicide data, this proxy for demographic 'wellbeing' paints a gloomy picture of the situation in Sakha Republic (Yakutia) that is not evident in looking at infant mortality rates alone.

Thus our indicators and measures for the Population and Health Domain suggest a mixed situation. While the decrease in infant mortality indicates an improvement in wellbeing, the high suicide rates until recently, and continuing high rates of out-migration imply a decline in wellbeing. The capital city of Yakutsk, where infant mortality, suicide and outmigration have all

decreased, is an anomaly. Socio-economic conditions outside of the capital, and especially in rural areas, are still depressed. It appears this situation of declining wellbeing is experienced especially in the northernmost areas of Sakha Republic (Yakutia). The stat istics corroborate our own observations in the field.

2.3 MATERIAL WELLBEING DOMAIN

The chosen indicator for the material wellbeing domain is per capita *household* income. For the Sakha Republic (Yakutia), we have figures for per capita household (monetary) income per year at the republican level, but not by ulus. Urban and rural averages are available. The annual figures were divided by 12 to calculate the average monthly household income.

Table 2.9: Average Monthly Household Income, Sakha Republic(Yakutia), 2000-2009 (in Rubles)

Year	Average Monthly Income			Average Monthly Income, Adjusted for Inflation		
	Sakha Republic (Yakutia)	Urban Places	Rural Places	Sakha Republic (Yakutia)	Urban Places	Rural Places
2000	7515	8043	6288	7515	8043	6288
2001	9814	10981	7108	7515	9141	5917
2002	12983	14124	10339	8169	9896	7244
2003	17117	19040	12615	9096	11594	7682
2004	20867	23314	15156	10423	12677	8241
2005	24420	26416	19857	11346	12855	9663
2006	29679	32406	23504	11883	14218	10312
2007	35032	37976	28195	13021	15286	11349
2008	41501	44932	33312	14101	16167	11986
2009	52458	57579	40211	12605	18288	12772

Source: Statistical Yearbook of the RS(Ya) 2008: 131; 2010: 149-50. Website http://inflationinrussia.com/inflation_calculators.aspx used to calculate inflation adjustment.

The data suggest that material wellbeing, measured by household income, has been improving over the past decade, even when adjusted for inflation. The trend is not surprising, as during the 2000's, Russia emerged from the economic crisis that characterized the mid- and especially late-1990s.

Secondary literature provides some indication of the geographical variation of per capita (not household) income by ulus: Gavrileva and Tarasova (2011) provide a chart of per capital income by ulus. The differences are significant, with the highest average monthly per capita income, in the Mirinskiy Ulus (Western Region) exceeding the lowest, in Namskiy Ulus (Central Region) by 3.9 times. The graph shows that seven out of the eight ulusy with the lowest per capital incomes are located in the Central Region, while the Arctic ulusy are mostly in the mid-range of per capita income. It is noteworthy however that only in Mirinskiy (Western Region) and Anabarskiy (Northern Region) ulusy, and Yakutsk and Neyungri (cities) are incomes above the republican average, which points to concentration of income earning capacity in a few places (Gavrileva and Tarasova 2001:53).

The largest part of monetary income derives from wages. However, compared with 2002, the share of wages in 2010 decreased, from 53.6% to 49.6%. Income from business activities and social benefits increased, while income from property and other income fell (Prokohorova et al. 2012).

Berekozvka village, Srednekolysmkiy Ulus. Photo Credit: Gail Fondahl

It must be noted that the aggregate data mask significant variations between as well as within *ulusy* of Sakha Republic (Yakutia). Limited employment opportunities in many small villages,

and an increased dependence on subsistence farming, hunting, gathering and reindeer herding, characterize many remote communities (Crate 2006). The figures in Table 2.9 do provide some idea of the discrepancies: average rural income is 77% of the republican average income. In many rural areas an appreciable move toward a non-monetized economy marked the 1990s, a trend which continued on to the 2000s. Subsistence activities grew in importance, especially with the failure of many economic enterprises, the withdrawal of state supports, and the delay in receipt of wages, or total loss of such.

Table 2.10, while not providing for trends over time, indicate the differences in income across the Sakha Republic (Yakutia) in 2010. (It is noted that the measure here is per capita income, not per-household income.)

Table 2.10: Distribution of Ulusy by Average Income (per capita), January-December 2010

Under 12000 rubles (9 ulusy)		12000-15000 rubles (10 ulusy)		15000-20100 rubles (11 ulusy)		Over 20000 rubles (5 ulusy)	
Namskiy	8293	Eveno-Bytantayskiy National	12088	Allaikhov-skiy	15010	Lenskiy	20882
Ust-Aldansky	9689	Sredne-kolymskiy	12466	Verkhoyan-skiy	15282	Neryungri & area	24433
Verkhne-vilyuskiy	10383	Mengino-Kangalasskiy	12486	Kobyayskiy	15289	Anabarskiy	28126
Gornyy	10545	Vilyuyskiy	12505	Ust-Mayskiy	15925	Yakutsk (City) & area	30221
Churap-chinsnskiy	11038	Nyurbinskiy	12676	Ust-Yanskiy	15987	Mirinskiy	33273
Tatinksiy	11317	Olenekskiy	13719	Zhiganskiy	16118		
Amginskiy	11430	Nizhne-kolymskiy	13869	Abyyskiy	16208		
Khangalas-skiy	11636	Momskiy	14698	Tomponskiy	16449		

Suntarskiy	12046	Olekminskiy	14732	Verkne-kolymskiy	17116		
		Bulunskiy	14805	Aldanskiy	17848		
				Oymyakon-skiy	19982		

Shading: Light blue = Central ulusy; Green = Southern ulusy; Yellow = Western ulusy; Orange = Eastern ulusy; Purple = Northern ulusy; Pink = Northeastern ulusy; diagonal shading – Arctic ulusy

The shading in Table 2.10 helps identify regional trends. Most of the Central Region's ulusy are characterized by low income, where as higher income characterize the Eastern Region's ulusy. The North and Northeastern Regions' ulusy fall in the middle range, income wise (as does the "Arctic Region", which largely overlaps with these two regions). Mirnyy (the main diamond-mining region), the city of Yakutsk and its subordinate settlements, and the city of Neryungri are among the highest per capita income areas.

Strong differences characterize the levels of material wellbeing between the urban and rural populations. Rural areas are characterized by low income, unemployment, poor state of infrastructure, and an increasing proportion of elderly inhabitants. The bulk of the rural population is engaged in agriculture, which is traditionally characterized by a low levels of pay compared to other industries. A sample survey of household budgets in Yakutia was conducted in November 2010 by the Center for Social Problems Labour Sciences of Sakha (Yakutia) in three rural areas of the Republic of Sakha (Yakutia): Olenek (Western region), Verkhnevilyuisk (Western Region) and Namsky (Central Region). According to the survey the average monthly income per person was 15,100 rubles, or 163% above of the official poverty income line. Analysis of the decile distribution of the average monthly income of rural residents showed that 10% of the poor villagers had income of 6568 rubles per month. Half of the respondents had incomes of up to 13,000 rubles, while 20% had incomes of over 18000 rubles.

More than 40% of rural residents surveyed in these three ulusy felt that they were "poor", with a major feature of poverty being constantly not having enough money even for food. Only 1.6% considered themselves "rich" , not having to deny themselves anything. The presence of children in a family dramatically lowers the level of material wellbeing, with the largest group of rural poor being the families with small children, and families with more than three children. The birth of a child removes the mother from active professional life.

Comparisions with an earlier sociological survey, conducted in 2008, found deteriorating estimates of personal material wellbeing among villagers, as well as increased pessimism regarding future improvements. The proportion of rural residents reporting themselves as "poor"

in 2008 was 22.9%, compared to over 40% by 2010. In terms of perceived change, 55% of rural residents reported that their financial situation had neither changed for the better or worse in the past five years. About 25% felt that their situation had improved, while 20% felt that their situation had worsened. In terms of assessing the future, 36.6% of respondents were optimistic, 47.6% simply hoped for stability in the coming years, and 15.8% of households expected deterioration (Neustroeva 2011). It should be noted that populations in small villages, and especially small, indigenous villages, are often highly dependent on transfer payments, such as pensions.

Supplementary indicators suggested for material wellbeing include net-migration and unemployment (Larsen and Huskey 2010). Net-migration has been described above. The outflow from almost all ulusy suggests that the potential for achieving material wellbeing in the republic's ulusy continues to be perceived as unpromising relative to the republic's capital and to other areas of the Russian Federation to which out-migrants are heading, assuming that material wellbeing is a major contributing factor to decisions to migrate.

Unemployment data are available for the republic as a whole, but not by ulus (Table 2.11).

Table 2.11: Unemployment Rates, Sakha Republic (Yakutia), 2000-2008

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
% Unemploy-ment	11.2	8.2	7.1	9.3	8.8	8.9	9.5	7.6	9.0

Source: Labour 2009, p.228.

The indicators for the Material Wellbeing domain indicate that there has been a substantial increase in per household average income in the republic, but that the improvement is much less marked in rural areas. The fact of high out-migration and stagnant unemployment rates suggest that wellbeing is not improving throughout much of Sakha Republic (Yakutia). Examining the secondary indicators, net-migration and unemployment, offer a less sanguine picture of human development than do the income statistics, and once again underscore the constraints and dangers of depending on a single indicator.

2.4 EDUCATION DOMAIN

The chosen indicator for the education domain is the ratio of students successfully completing post-secondary education (persons per 1000 population). This statistic is available by *ulus* for

Sakha Republic (Yakutia). Counted in the published numbers are graduates from universities, technical schools and institutions offering professional training. Table 2.12 shows trends in such educational attainment. However, the data need to be treated with great caution. In the Eastern, Northern and Northeastern regions especially, the total population numbers are so low that notable fluctuations in rates (e.g. from 1.0 to 4.4) are relatively meaningless.

Table 2.12: Students Completing Post-Secondary Degree in Sakha Republic (Yakutia) (per 1000 population)

Region	**1990**	**2000**	**2005**	**2006**	**2007**	**2008**	**2009**
Central	14.9	15.3	24.0	23.5	23.5	23.2	23.3
Central w/o Yakutsk	8.1	4.9	6.5	6.3	8.0	6.8	6.6
Yakutsk	21.6	24.7	38.6	37.7	35.9	35.8	35.9
Southern	4.7	5.5	11.1	11.0	12.8	10.5	9.9
Western	6.7	6.7	6.7	6.5	6.7	6.6	6.8
Eastern	0	0	3.6	3.9	4.3	2.4	3.8
Northern	1.7	3.5	1.8	3.3	2.4	4.0	2.9
Northeastern	2.4	1.0	4.4	2.3	4.5	2.6	2.0
Sakha Republic (Yakutia)	**8.3**	**9.8**	**15.5**	**15.3**	**15.8**	**15.1**	**15.4**

Source: Statistical Yearbook of the RS (Ya) 2010:242

Yukagir pupil in front of bust of Tekki Odulok, the first Yukagir writer, Verkhneykolymskiy Ulus. Photo: Gail Fondahl

The data indicate that, on average, post-secondary education is increasing among the population of Sakha Republic (Yakutia). This is especially true for the capital city, Yakutsk and in the southernmost region. Changes in post-secondary education attainment in the north are likely in part due to the addition of post-secondary institutions. Many of the republic's ulusy do not have any post-secondary institutions: in the Northern region, four of the five ulusy had no such institutions in 1990, and three of the five ulusy still had none in 2009. In the Northeastern Region, only one of the six ulusy offers post-secondary education at a local institution. Such institutions are also missing from the northern ulusy of the Western Region (Anabarskiy ulus, Olenekskiy Ulus). However, these Arctic ulusy have enjoyed some recent additions. Bulunsky and Verkhoyanskiy ulusy (Northern Region) had no post-secondary institutions in 1990, but each had added beginning post-secondary professional training capacity by 2000. Nizhnekolmysk ulus added mid-level post-secondary professional training capacity in 2007 (Statistical Yearboof of the RS (Ya) 2010). Such institutions were created to address the problems of inaccessibility for many high-school graduates to higher education (due to lack or high cost of transport); they focus mainly on preparation for participation in traditional branches of the economy.

Where we see decline in post-secondary graduates, we may be witnessing a combination of decline in number of persons in 'traditional' post-secondary age cohorts with out-migration. Again, the very small populations in the northern regions make it difficult to use the statistics for

more than very general trend analysis. Overall this indicator used suggests that the Sakha Republic (Yakutia) is experiencing positive human development in the Education domain, though the experience is still very geographically disparate between the capital city and the rest of the Republic.

2.5 CULTURAL WELLBEING AND CULTURAL VITALITY

Measureing cultural wellbeing and vitality in Arctic communities is based in three inter-related components: language retention, cultural autonomy, and belonging. The ASI-recommended indicator for this domain is a composite of all three. However, there is some overlap with other of the five domains' components, for example, the notion of cultural autonomy tied to fate control and engagement with subsistence used in the contact with nature domain. Therefore, to distinguish from those overlapping areas, the indicator used to gauge cultural wellbeing and vitality here is language retention.

Language retention figures in Sakha Republic (Yakutia) have been collected in the past. However, such figures are not available on an ulus level beyond 1989. Additionally, the data that were collected were limited to indigenous Sakha and the Numerically Small Peoples of the North. Thirdly, the wording of the question used to collect such data has changed over time, making longitudinal comparisons impossible. Finally, the data collected appear to be problematic in terms of accuracy, as the following tables indicate: they likely say more about changing identity politics than about language use or retention.

Table 2.13 indicates reported changes in native language or 'mother tongue' (*rodnoy yazyk*) among Russians, Sakha (Yakut) and four of the five numerically small peoples of the North in the republic (Dolgan are not included), based on the 1979 and 1989 census results, and the 1994 micro-census.

Table 2.13: 'Mother tongue' of the main nationalities of the Sakha Republic (Yakutia) According to Data from the Censuses (1979, 1989) and Micro-census (1994)

Nationality	'Mother Tongue' (% claiming given language as 'mother tongue')								
	Language of one's nationality			Sakha Language			Russian Language		
	1979	1989	1994	1979	1989	1994	1979	1989	1994
Russians		99.7	99.8		0.2	0.2			
Sakha		95.1	97.1					4.9	2.9
Evenki	11.2	8.5	5.0	82.2	82.5	90.8	6.4	8.9	4.2
Evens	44.1	34.7	57.0	48.5	54.3	34.9	7.0	10.7	8.0
Yukagirs	39.7	35.2	18.6	23.0	28.1	32.6	30.2	33.4	39.5
Chukchi	71.1	63.2	28.6	4.5	7.4	14.3	23.1	28.5	57.1

Source: Mestnikova 2010: 227

In most cases we see the reported loss of ability to speak one's language over the 15-year period among the numerically small peoples, with the Evens being the exception (reporting a 22% gain). Sakha people also report a slight gain (2%). The use of Sakha language increased and the use of Russian language reportedly dropped among the Evenki and Yukagir between 1989 and 1994.

Collection of data regarding language in the 2002 Census involved two questions:

1) Do you speak Russian? and 2) What other languages do you know?. The question of the 'mother tongue' was removed, making it impossible to unconditionally compare the results with previous censuses' data. However, the statistics can be used to suggest trends. Unfortunately the 2002 Census only reports on knowledge/ use of Russian, not Sakha, among the indigenous Numerically Small Peoples of the North living in the Sakha Republic (Yakutia). Moreover, data on Chukchi residing in the republic are not presented.

Table 2.14: Indigenous Numerically Small Peoples Able to Speak Own Language and Russian, Sakha Republic (Yakutia), 2002

People	Total Population (Individuals)		Indicating Language Spoken			
			Of one's people		Russian	
			#	%	#	%
Evenki	Russian Federation	34610	6780	19.6	32511	93.9
	Sakha Republic	18232	1384	7.6	16241	89.1
	Urban	4221	363	8.6	4103	97.2
	Rural	14011	1021	7.3	12138	86.6
Even	Russian Federation	18642	6080	32.6	17358	93.1
	Sakha Republic	11657	3272	28.1	10430	89.5
	Urban	3569	777	21.8	3434	96.2
	Rural	8088	2495	30.8	6996	86.5
Yukagir	Russian Federation	1176	323	27.5	1125	95.7
	Sakha Republic	1097	310	28.3	1046	95.3
	Urban	426	99	23.2	412	96.7
	Rural	671	211	31.4	634	94.5
Dolgan	Russian Federation	7077	4538	64.1	6574	92.9
	Sakha Republic	1272	41	3.2	1024	80.5
	Urban	156	19	12.2	149	95.5
	Rural	1116	22	2.0	875	78.4
Chukchi	Russian Federation	14034	6418	45.7	13619	97.0

Source: http://www.perepis2002.ru/ct/html/TOM_13_02.htm

It is interesting to note that in a couple of cases the urban indigenous population reports more use of its own language than the rural indigenous population (Evenki, Dolgans). This may be in part due to political positioning.

The 2010 Census provided data on what different nationalities report as their 'mother language' (Table 2.15):

Table 2.15: Language Reported as 'Mother Language (*rodnoy yazyk*) in the Sakha Republic, by % of Nationality, 2010, selected nationalities

Nationality	Reported 'Mother Language'						
	Sakha	Russian	Evenki	Ukrainian	Even	Tatar	Buryat
Sakha	94.2	5.8	0	0	0	0	0
Russian	0.4	99.5	0	0.1	0	0	0
Evenki	81.2	12.1	6.4	0	0.3	0	0
Ukrainian	0.2	74.7	0	25.0	0	0	0
Even	65.4	13.3	0.7	20.5	0	0	0
Tatar	1.6	61.6	0	0	0	36.3	0
Buryat	2.1	44.5	0	0	0	0	53.4

Source: http://www.gks.ru/free_doc/new_site/perepis2010/croc/perepis_itogi1612.htm. Note: This table shows nationalities with more than 5000 individuals in the republic; the original data includes a few more nationalities (but no more of the indigenous numerically small peoples of the North)

The information above is not completely comparable with the previous table as in the previous (2.14) individuals could indicate use of more than one language (and thus totals exceed 100% in a number of cases), whereas in the 2010 table an individual could only indicate one language. More comparable are the following statistics, which indicated what languages different nationalities report as having mastered. The statistics do provide some interesting conundrums that illustrate the problems of using language retention as an indicator. For instance, whereas

6.4% of Evenki indicate the Evenki language as their 'mother language' (Table 2.15), only 5.7% of Evenki indicate that they can speak Evenki (Table 2.16). The data also speak to the degree to which the two largest indigenous numerically small peoples of the republic (Evenki, Even) are linguistically assimilating toward Sakha language versus Russian language.

Table 2.16: Languages Spoken by Various Nationalities, Sakha Republic (Yakutia), 2010
(% of Nationality Responding, Reporting to Speak Language)

Nationality	Speaks Language (%)						
	Sakha	Russian	Evenki	Ukrainian	Even	Tatar	Buryat
Sakha	87.0	90.4	0	0	0	0	0
Russian	2.0	99.9	0	1.1	0	0	0
Evenki	81.0	91.1	5.7	0	0.4	0	0
Ukrainian	0.8	99.8	0	43.6	0	0	0
Even	76.9	91.4	0.6	0	22.4	0	0
Tatar	4.0	99.7	0	0.3	0	35.1	0.1
Buryat	4.9	99.5	0	0	0	0	42.4

Source: Calculated from
http://www.gks.ru/free_doc/new_site/perepis2010/croc/perepis_itogi1612.htm

Language retention — or the lack thereof — suggests a challenging and adverse situation in terms of cultural vitality for the indigenous numerically small peoples of Sakha Republic (Yakutia), though the situation differs among the various indigenous peoples and even within these peoples depending on where they live (Robbek 2011). Indeed, the UNESCO *Interactive Atlas of World's Languages In Danger* includes all the languages of the numerically small peoples of the North, as well as Sakha (Metsnikova 2010: 228). Dependence on this indicator may mask other measures of cultural vitality that have more positive trends, such as ethno-political engagement. However language loss has been identified as a major challenge to indigenous peoples across the globe.

2.6 CONTACT WITH NATURE

Contact with Nature is an important of human wellbeing in the Arctic due to how a relationship with nature serves an irreplaceable role in mental, physical and spiritual health for Arctic residents (Crate et al. 2010: 109). The choice of harvest and consumption of traditional foods as the indicator is based on the assumption that the extent to which inhabitants continue their historically-based subsistence practices reflects a human-nature relationship and increased wellbeing. In the other circumpolar areas covered in this report, for example Northwest Territories, Canada, consumption data are readily available down to the household level. For the Russian Federation such a fine scale of data is not available. Instead, data are only available at republic level (Table 2.17).

Annual slaugther, Suntarskiy ulus. Photo: Susan Crate

Table 2.17: Harvest and Consumption of Traditional Foods in Sakha Republic (Yakutia), 2000-2008

Year	Harvest of Traditional Foods (per capita, kg/year)	Consumption of Traditional Foods (Avg per household member, kg/year)
2000	22.7	296
2001	27.5	258
2002	29.4	320
2003	37.1	340
2004	42.3	325
2005	44.3	365
2006	47.8	351
2007	48.8	354
2008	49.9	358

Source: Social Situation 2009 (Harvest statistics, p.153; Consumption statistics, p.144)

These data suggest improved wellbeing since they indicate that both harvest and consumption of traditional foods has increased during the period 2000-2008. However, there are many problems with the data. First, the trends at the republic level obscure the substantial rural-urban differences, and difference across regions, villages and households. Second, the harvest data show a steady increase, but does not clarify what part of the harvest was sold and what part was kept for consumption. Consumption data also shows a general increase, but provides only an average per household member, and tells us nothing on individual bases or across households.

Beyond readily available data for the Sakha Republic (Yakutia) as a whole, data can be combined from various sources to show regional trends. For example the following table (Table 2.18) shows trends over the past two decades for three ulusy.

Table 2.18: Harvest of Traditional Foods (Meat, Fish, Milk) in Three Ulusy, Sakha Republic (Yakutia) (per capita, kg)

Region	1990	2000	2004	2005	2006	2007	2008
Nizhnekolymskiy (Northeastern Region)	2855	731	750	519	709	935	985
Nurbinskiy (Western Region)	21925	12828	16365	18291	18046	17412	17259
Suntarskiy (Western Region)	24505	15466	17012	177776	18318	17648	15255

Source: Economy 2009:185

These data show a substantial drop in the harvest of traditional foods across all three ulusy shortly after the fall of the Soviet Union, a gradual increase in harvest in the early 2000s, and then, in the Nurbinskiy and Suntarskiy ulusy, a drop again. This trend reflects the historical reality of state production in Sakha Republic (Yakutia) and, for that matter, in most parts of the Russian North. State production was relatively high at the end of the Soviet period. After the break-up of the state farm system production fell, then gradually increased due largely to rising production of cooperatives, which routinely reported their production levels to the authorities. To some extent, those numbers again began to wane with the forces of economic globalization that are increasingly bringing meat products from lands as distant as Argentina for lower costs than they can be produced locally. Although these data reflect important trends, they do so for state production and not household-level production, which are the data we would need to use this indicator accurately.

SIDE BAR: The End of Cows and Kin?

Another possible inroad to understand the Contact with Nature Domain within Russia, albeit outside the purview of this exercise since it is not founded on state-level statistics, is via long-term ethnographic research. Following the fall of the Soviet Union in 1991, most of the state farms (*sovkhozy*) in the Sakha Republic (Yakutia) disbanded, dividing farm resources among the administrators and workers. This change left many individuals unemployed and transformed the food production that supplied households. Ethnographic research conducted in 1999-2000 revealed that to adapt to this sudden change, many rural Sakha residents had developed a system of 'cows & kin'.

Herding cows to water, Suntarskiy ulus. Photo Credit: Susan Crate

This system, in its most basic form involved one, usually elderly, household that held cows, performed the daily cow-care activities and supplied meat and milk to one or more other, usually younger, households, which reciprocated by harvesting and preparing sufficient hay to see the herd through the long winter months (Crate 2006). A brief decade later, it appears there is yet another transformation in food production occurring. In the summer of 2011, the Suntarsky ulus statistics department revealed that 50% or households that were keeping cows shortly after the end of the Soviet Union had stopped. Follow-up research in the summer of 2012 showed that there had been a 49% and a 54% drop in cow-keeping since the 199 levels among participating households. Reasons for this change are diverse. For one, environmental conditions, largely as a result of climate change, had made the procurement of hay difficult, with hayfields inundated with water, and the timing of cow-care activities disrupted due to changing seasonality. Secondly, the 'work force' of cow care is all elderly and the next generation is disinterested. In fact, regional statistics show a steady out-migration of youth from the area. Lastly, as mentioned above, many households are finding it preferable and often times cheaper to buy products at the local stores, which are now well-stocked as compared to the decade following the fall of the Soviet Union.

Water on the land, Suntarskiy ulus. Photo credit: Susan Crate

2.7 FATE CONTROL DOMAIN

Implementing the Fate Control index in Sakha Republic (Yakutia) proved very difficult. As reported in the *Arctic Social Indicators Report* (Dahl et al. 2010), the Fate Control Index is composed of four measures: a measure of political control (percentage of local people in the governing body of the jurisdiction), a measure of economic control (percent of public expenses from locally generated funds), cultural control (percent of people speaking their 'mother tongue'), and control over land.

In terms of the measure of political control, there is no public record of the percentage of local or indigenous members in governmental bodies at the ulus or even republican level. Moreover, as the Russian census no longer collects information on ethnicity, trying to identify this using governmental sources, or other sources easily and regularly available, is not possible. Nor were we able to identify useful data for addressing the measure of economic control.

In terms of language retention, the data available was presented earlier in this chapter. As noted, the data is not available by ulus, but rather by ethnic group. In the past it has only been easily available for the Sakha people and the Numerically Small Northern Peoples of the republic (Chukchi, Dolgan, Even, Evenk, Yukagir). While Russians will likely mostly retain Russian as their native language, historically a small part of the Russian population experienced 'Yakutization' linguistically, and bilingualism is a common situation in many areas of the republic for many peoples (see, e.g. Mestnikova 2010; Robbek 2011). We have partial information on language retention among other ethnic groups living in the Sakha Republic (Yakutia) (see Tables 2.15, 2.16; information is also available for Krygyz, Armenians, Uzbek but not included in these tables). Given that the type of language statistics collected has changed recently (i.e. the way the questions have been posed in the census has been altered), our current ability to compare data over time is limited. This may be addressed in the future, making language retention as a measure of the cultural component of fate control more useful.

The other component of the suggested 'Fate Control' indicator is the percentage of surface lands controlled by local/ indigenous inhabitants. In Sakha Republic (Yakutia), the land allocated to indigenous obshchinas can be used as an admittedly very imperfect proxy for this measure (Table 2.19). Obshchinas (roughly translating to 'communities' or 'communes') are collectives formed by indigenous numerically small peoples in order to pursue a 'traditional' activity (reindeer husbandry, hunting, fishing) (Sirina 1999; Fondahl et al. 2000). Obshchinas may apply for an allocation of land on which to pursue such 'traditional' activities, and receive such, which is then allegedly at least partially protected from competing activities that might undermine the 'traditional' ones, such as various forms of industrial development. The collectives may include non-indigenous persons, but the leader usually must be from a Numerically Small Northern people, and in some cases local officials have interpreted the law to require majority membership

of such indigenous persons. The activities pursued by the obshchina may include non-'traditional' ones (such as cattle herding), but 'traditional' ones must predominate. Whether obshchinas can pursue such activities as mineral extraction, in the form of auxiliary activities to the main traditional one(s) remains not only debated, but the subject of a number of on-going legal cases.

Table 2.19 provides data for the percentage of land allocated to obshchinas by region for Sakha Republic (Yakutia).

Table 2.19: Land Allocated to Obshchinas in Sakha Republic (Yakutia), 1999 and 2008

	1999		2008		Change, 1999-2008, %
Region	Territory of obshchinas, hectares	% of Region's territory allocated to obshchinas	Territory of obshchinas, hectares	% of Region's territory allocated to obshchinas	
Central	201,291	0.6	1,192,233	3.5	466.9
Southern	11,761,297	28.2	19,084,441	45.8	62.3
Western	3,380.858	4.4	6,457,514	8.4	91.0
Eastern	9,855,000	30.5	2,639,942	8.2	-73.2
Northern	13,421,079	19.9	9, 963,174	14.8	-25.8
Northeastern	8,659,119	15.4	17,288,254	30.8	99.6
Sakha Republic (Yakutia)	**47,287,644**	**15.3**	**56,635,558**	**18.4**	**19.7**

The territory allocated to such obshchinas is not at all a measure of Fate Control for the entire population: indeed, it only captures the 'control' of land by the Numerically Small Northern Peoples and their collectives, which account for a very small percentage of the republic's population. In the Sakha Republic (Yakutia) Sakha persons and persons of other ethnic groups can only apply for such land allocations if they are pursuing a 'traditional' activity of the Numerically Small Northern peoples (e.g. reindeer husbandry). Cattle- and horse-raising,

'traditional' activities of the indigenous Sakha, cannot be the primary basis for forming an obshchina and receiving an allocation of land.

Another criticism of the measure entails the concern that in many places once such 'land-claim'-type settlements are reached, little changes in land control, and thus the measure does not help track human development and more specifically improvements or deterioration in control over one's destiny. However, two arguments counter this criticism. First, reaching a stage of substantial control over land may be a step that is important enough in wellbeing to merit measurement. When the Fate Control indicator was presented to the Arctic Council's Sustainable Development Working Group in 2010, several of the Permanent Participants applauded and endorsed this measure as an important one. Moreover, in the past two decades the implementation of indigenous rights, including land rights, has tracked closely with the general observation of rights to greater self-determination and to greater local self-government. Second, changing laws, and changing interpretations of those laws may result in the increase or decrease of lands controlled. In the Russian Federation as a whole, a law on obshchinas was passed in 2000, which provided for the allocation of lands to obshchinas in perpetuity and without charge. By 2004, changes to other laws modified these provisions. Land was no longer granted free of charge and in perpetuity: legal revisions imposed a rent on the land and a term of lease. Re-registration under the new laws and under these new terms meant that some indigenous peoples ceded their recently gained obshchina lands. Thus, despite the significant limitations noted above, the territory allocated to obshchinas in Sakha Republic (Yakutia) may be a useful *proxy* for control over one's destiny.

Father and son on reindeer herding obhshina lands, Olekminskiys Ulus. Photo: Gail Fondahl

Overall, the area of land allocated to obshchinas grew in Sakha Republic (Yakutia) by almost 20% from 1999 to 2008 (Table 2.19). The data shows a very varied situation across the landscape of the Republic. In some regions (Southern, Western, Northeastern) we see a substantial increase in land allocated, while in others (Eastern, Northern) we see a significant drop.

The numbers of obshchinas provides some further context (Table 2.20). Using the amount of land allocated to obshchinas as a proxy measure of Fate Control, we would assess an improvement in Fate Control over the past decade (Table 2.19). Table 2.20 suggests that obshchina lands are increasingly concentrated in fewer obshchinas. Whether this concentration suggests any decline in Fate Control since 2003 cannot be judged from the data available, but would require more detailed study of the reasons for consolidation and outcomes of such.

Table 2.20: Number of Registered Obshchinas, Sakha Republic (Yakutia), 1997-2008

	1997	**1999**	**2000**	**2003**	**2008**
Central	3	4	4	12	2
Southern	76	80	80	83	89
Western	14	14	18	43	48
Eastern	25	26	28	25	15
Northern	52	75	83	87	49
Northeastern	17	16	16	16	16
Sakha Republic (Yakutia)	**185*** (190)	**213*** (215)	**226*** (229)	**264*** (266)	**215** *(219)

Source: Table compiled from data from the Departments of Traditional Activities of the North and of Fisheries, Ministry of Agriculture, Republic of Sakha (Yakutia). Note: the total number of obshchinas reported for each year (boldfaced) differed from the sum of the number of obshchina for each region, which is provided in parentheses. This is due to the fact that some obshchinas register, but then fail to work, and thus are not included in the data.

Given the difficulties experienced in gaining access to much of the information needed for calculating the Fate Control Index that was proposed in the initial *Arctic Social Indicators Report* (Dahl et al. 2010), but also the great interest in this measure, especially among the Arctic Council Permanent Participants, it will be critical to further examine the Fate Control measure. Its 'land control' component especially deserves attention (a point also stressed by several Permanent Participants) as we move forward with tracking human development in the Arctic. More work is required in this area.

2.8 SUMMARY AND CONCLUSIONS

This chapter has examined the application of social indicators for the six domains identified in the *Arctic Social Indicators Report* (Larsen et al. 2010) to Sakha Republic (Yakutia). The process of testing and trying to verify each indicator with available data has revealed difficulties on a number of fronts, but also trends in improved data availability. In carrying out the verification, it has also been possible to evaluate whether the indicators seem to 'ring true', against the observations of the authors, two of whom have worked in the republic (Crate has done so extensively over the past two decades) and one of whom is a resident and citizen of the Sakha Republic (Yakutia) (Filippova).

Measuring Human Development in the Sakha Republic (Yakutia): Data Availability

The ASI report identified as important criteria that data should be:

- collected by a national agency, preferably published in hard-copy or electronic form;
- available at the regional level;
- available for the indigenous and non-indigenous populations;
- available on at least a five-year reporting period

Data for the Sakha Republic (Yakutia) is in part collected by a national agency, in part by republican organs. It is published in hard-copy, and increasingly also in electronic form. Much of the data is available at the regional (ulus) level, and it appears that more is becoming available at this level. As discussed above, significant challenges remain in using the data at the ulus level to identify trends, given the very small population sizes, but aggregation can be used to partially address this problem.

To what extent information will be available in the future for the 'indigenous' and 'non-indigenous' populations remains to be seen. Two distinct challenges face future researchers of such trends. Firstly, the fact that the Russian Federation moved away from documenting ethnic

identity in the collection of some information in the early 21st century eroded the ability to track trends by indigenous and non-indigenous groups. This decision is being reconsidered. We can also gain some insights in looking at statistics collectively for the 'regions inhabited by indigenous numerically small peoples of the North" though in these same regions, taken as a whole, indigenous peoples comprise a minority of the population.

Secondly, in Sakha Republic (Yakutia) we have an interesting case of different comprehensions of indigeneity. The Sakha are indigenous to the region, but do not enjoy the same legal recognition or protection as the 'Indigenous Numerically Small Peoples of the North' (Chukhi, Dolgan, Evenki, Even, and Yukagir in Sakha Republic (Yakutia)). Data is sometimes collected specifically on these 'numercially small' peoples; sometimes it is collected on the largest ethnic groups of Sakha Republic (Yakutia), including the Sakha, and which may include the Evenki and Even, but not the other 'numerically small peoples (see, e.g., information from the 2010 census at http://www.gks.ru/free_doc/new_site/perepis2010/croc/perepis_itogi1612.htm).

In terms of periodicity of data collection, Russian Federation's census (and, prior to it, the Soviet Union's census) has traditionally been carried out every decade, with occasional delays. Thus, the 1999 census was delayed until 2002. It is impossible to predict future delays. Sakha Republic (Yakutia) collects some of the key data needed to track human development via the proposed Arctic Social Indicator on a more regular basis (e.g. yearly).

Human Development in the Sakha Republic (Yakutia): What the Indicators Say?

For each domain above, the trends suggested by the indicator data have been summarized: we reiterate them here briefly.

Health and Population Domain: Using infant mortality as our primary indicator, we assess health in Sakha Republic (Yakutia) to be improving. However, infant mortality rates within the republic vary significantly, with the worst situation in the Arctic regions. In terms of secondary indicators, we see the suicide rate decreasing recently, but the rate still substantially exceeds the national average, and again, significant regional differences underlay the republican average, with some northern areas suffering especially high rates. Net migration, especially of the working-age population continues to be high from all areas other than the capital city, also indicating difficult conditions for many residents of the republic.

Material Wellbeing: Per capital income has improved notably over the past two decades. Large differences in income are experienced across the republic, and especially along the urban-rural axis. Secondary literature also shed light on the feelings of pessimism by the rural population. Meanwhile, unemployment data remain stagnant. Together, these data suggest rural areas that are still struggling.

Education: The rate of post-secondary degree completion has not changed much since 2005. Once again, large differences in completion rates are experienced across the republic, with much lower rates experienced in the North.

Cultural Vitality: Language retention rates are problematic to track over time given the changes in information being collected. In some cases, reported increases seem somewhat suspect. However, even if these do not reflect increased use of indigenous language (especially among the indigenous numerically small peoples of the North), they still might reflect cultural vitality, indicating a growing pride among indigenous peoples to declare their use/knowledge of their 'mother language'. More research needs to be carried out on the nuances of this measure.

Contact with Nature: Harvest and consumption both grew in the first decade of 21st century at the republican level; unfortunately data at the ulus/regional level is not readily available. Like the Cultural Vitality measure, this measure may have unanticipated attributes. While it is unclear from simple statistics whether an increase in consumption of country food is due to increased need (and thus a lower wellbeing) or increased capacity to enjoy such harvest (and thus an increased wellbeing), the measure still indicates an increase in time spent on the land, in contact with nature.

Fate Control: While data for three of the four component measures of the Fate Control Index were not available for the Sakha Republic (Yakutia), the proxy for control over land – the amount of lands allocated to obshchinas, may provide a useful read of the one dimension of human development for the indigenous population. In doing so, given that it loosely represents a human rights concern, it may be a stronger proxy than initially imagined. However, as obshchinas have been pursued only in some areas of the Russian North, this proxy is not likely to work across the Russian Arctic: it appears to be most likely useful in taiga rather than tundra regions. Its comparability with other areas of the North will be limited, at most, to general trends.

Do We Have Confidence in the Indicators?

Overall, indicators paint a mixed picture of human development in the Sakha Republic suggesting that certain facets of life in this part of the Arctic are improving, but others are still challenging. Strong regional and rural-urban differences persist. Like many other regions of the North, the areas inhabited by indigenous peoples experience lower-than-average attainments for most of the indicators. These data correspond to our field observations in various parts of the Sakha Republic (Yakutia).

Importantly, the examination of more than one indicator for several of the domains, and the divergence of trends in terms of human development (e.g. improved infant mortality but

worsening suicide rates) accentuates the perils of depending on one indicator. Until we have more fully developed our competence in measuring human development in the Arctic, it would be prudent to continue to collect data on several measures for each domain.

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ARCTIC SOCIAL INDICATORS APPLICATION:

Chapter 3

NORTHWEST TERRITORIES, CANADA

Andrey Petrov, Leslie King, Philip Cavin

3.0 Introduction

Arctic Social Indicators Phase II is intended to test and validate the indicators generated in ASI Phase I in specific regions of the circumpolar Arctic. While Phase I focused on developing and recommending a single or composite indicator for each of the six domains, Phase II applies the entire suite of indicators to different regions of the Arctic, therefore enhancing the comparative power of the indicators and enabling comparisons over both time and space. For each region, the time comparisons will be most useful, empowering communities and governments to track progress in improving the quality of life of Arctic residents and communities.

This chapter focuses on the application and measurement of indicators for all six domains in the Northwest Territories, (NWT) Canada.

Northwest Territories, Canada:

The NWT has a land area of approximately 1, 140, 835 square kilometers, of primarily Boreal Forest, and as of 2011 a population of 43, 554 (Statistics Canada, 2011) an increase of 0.1% over the previous year. “Although the NWT continued to experience net out-migration on an annual basis, the magnitude was lower than in the previous two years.” (Statistics Canada, 2011) Nearly half of that population lives in the capital city, Yellowknife, located on Great Slave Lake. (Figure 1)

NWT has one post-secondary institution, Aurora College. The NWT has 11 official languages.. The consensus government consists of a Legislative Assembly with 19 elected Members of the Legislature and 7 Aboriginal territorial governments. (NWT Government) The present-day territory was created in June 1870, when the Hudson's Bay Company transferred Rupert's Land and North-Western Territory to the government of Canada. On April 1, 1999, the eastern three-

fifths of the Northwest Territories (including all of the District of Keewatin and much of that of Mackenzie and Franklin) became a separate Canadian territory named Nunavut.

As of 2010 there were 33 official communities in the NWT. These range in size from Yellowknife with a population of 18,700 to Kakisa with 52 people (Statistics Canada, 2012). Governance of each community differs: some are run under various types of First Nations control, while others are designated as a city, town, village or hamlet, but most communities are municipal corporations. Yellowknife is the largest community and has the largest number of Aboriginal people, 4,105 (22.2%). Behchoko, with a population of 1,894, is the largest First Nations community, 1,730 (91.5%) and Inuvik with 3,484 people is the largest Inuvialuit community, 1,335 (38.9%). There is one Indian reserve in the NWT, Hay River Reserve, located on the south shore of the Hay River. The Northwest Territories boasts the highest per capita GDP of all provinces or territories in Canada, CAN$85,401.70 in 2006 (Statistics Canada, 2006, 2011, NWT Bureau of Statistics, 2011). The unemployment rate for NWT as of March 2012 is 8.6% (Statistics Canada, 2012).

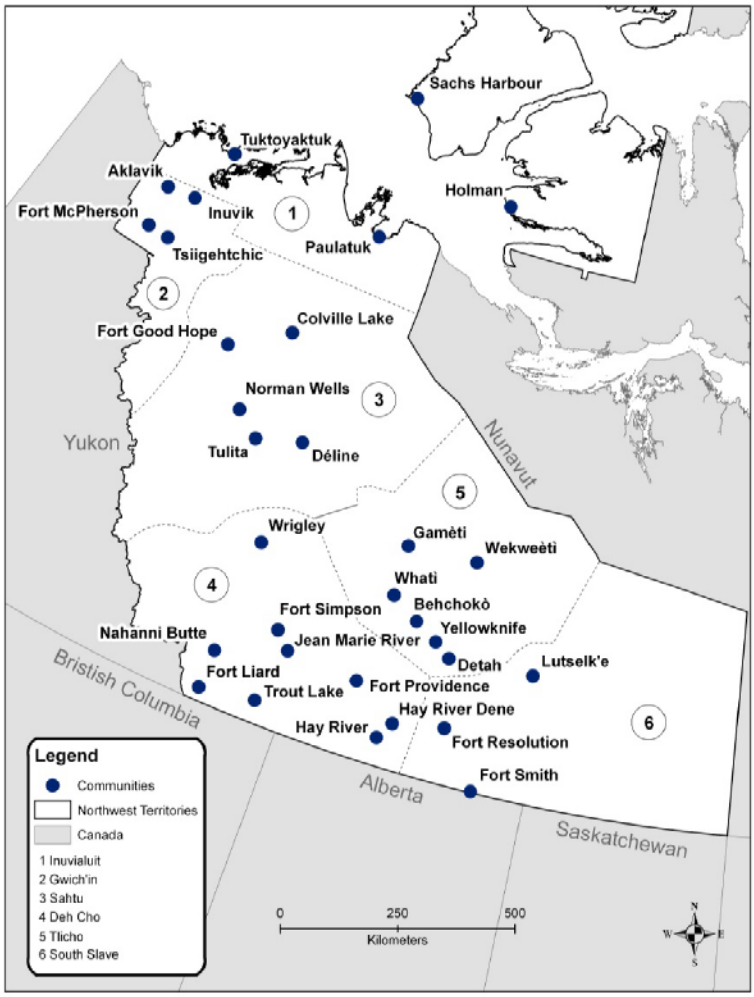

Figure 3.1. Northwest Territories, Canada

Figure 1 shows all of the major settlements of NWT and borders with Yukon, Nunavut and the Provinces of British Columbia, Alberta and Saskatchewan.

Girl with puppy, Yellowknife Airport. Photo: P. Harrison

3.1 Data and Methodology

This chapter follows the general methodology proposed in the first ASI Report (ASI, 2010). However, as for other regions, the data on Canadian Territories present challenges to exact implementation of the ASI indicators. Whereas most ASI measures are followed very closely in our case study, we had to redefine or adjust several indicators to ensure compatibility with available data. Table 1, below, outlines definitions and data specifications that we utilized in measuring human development in the NWT. Wherever appropriate, we used a single indicator (as recommended by the first ASI Report). In some cases, we followed the report's recommendations to use a number of corroborating measures. On several occasions (especially when data for recommended indicators were unavailable) we also included and tested alternative variables or proxies. Most datasets were acquired from the Canadian Census. This approach

allowed us to extract the most replicable, detailed and comparable data that have been collected in multiple years with five-year regularity. The Censuses analyzed here cover 1991, 1996, 2001 and 2006. Additional information required for constructing certain indicators was obtained from the Aboriginal People's Survey (2001 and 2006) and from data provided by the NWT Bureau of Statistics (Community Survey and other periodic and occasional surveys). Unfortunately, a number of territorial datasets are based on occasional surveys and cannot be used for identifying dynamics of human development indicators over time.

The main problem with using data for a sparsely settled area like NWT is related to issues of missing data. In very small communities (50% of NWTs communities have fewer than 500 residents) it is extremely difficult to obtain a complete dataset or to ensure its accuracy. Statistics Canada rounds its census data to the nearest 0 or 5 generating a rounding error that may be very significant in small populations. For this reason a substantial number of variables are suppressed and all available ones must be used with caution. In addition, the 'small numbers problem' creates datasets with high variances and generally erratic behavior, conditions that can invalidate statistical analysis. At the same time, the ASI II team received many requests from NWT community stakeholders to provide and analyze data for as many communities as possible so that very small communities are not omitted from our observations and conclusions of this volume. As a result, in this chapter we analyze two datasets: all 33 NWT communities (whenever possible, but with due caution) and the largest communities with populations over 500 (2006) when using the whole dataset is not possible or advisable.

Below we report what specific social indicators we selected for each domain given the data constraints in the case of the NWT. Table 1 presents a summary of indicator names, definitions, and sources of data.

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Table 3.1. Social Indicators for NWT

DOMAIN	ASI RECOMMENDED INDICATORS	NWT INDICATOR 1	NWT INDICATOR 2	NWT INDICATOR 3	NWT INDICATOR 4
Health & Population	INFANT MORTALITY NET MIGRATION	TEENAGE BIRTH RATE: number of births to mothers under the age of 14 per 1,000 residents.	NET MIGRATION Difference between number of in and out-migrants during the year (estimates)	SUICIDE RATE Number of suicides per 10,000 people per year	
Material wellbeing	PER CAPITA HOUSEHOLD INCOME	PER CAPITA HOUSEHOLD INCOME Total household income per capita	NET MIGRATION Difference between number of in and out-migrants during the year (estimates)	UNEMPLOYMENT unemployed expressed as a percentage of the labor force	
Education	RATIO OF STUDENTS COMPLETING POST-SECONDARY EDUCATION	PERCENT WITH HIGH SCHOOL AND HIGHER LEVEL OF EDUCATION of population aged 15 and over	PERCENT WITH UNIVERSITY DEGREE (BACHELOR OR HIGHER) of population aged 15 and over		
Cultural wellbeing and cultural vitality	LANGUAGE RETENTION	LANGUAGE RETENTION Ratio between percent of respondents who repot an ability to conduct a conversation in a Native language and percent of Aboriginal population in total population.	SUBSISTENCE/TRADITIONAL ACTIVITIES ENGAGEMENT Percent of people 15 years of age or older that hunted, fished, and trapped during the year		
Contact with nature	CONSUMPTION /HARVEST OF TRADITIONAL FOODS	CONSUMPTION OF TRADITIONAL FOODS Percent of Households with Half or More of Meat & Fish Consumed in 2008 Obtained Through Hunting or Fishing			
Fate control	FATE CONTROL INDEX	P/C OF LOCAL/ABORIG IN GOVERNING INST/POSITIONS Percent of Aboriginal people in government and managerial occupations (defined by the National Occupational Classification (NOC))	PERCENT OF SELF-GENERATED INCOME (est.) Percent of personal income other than transfer payments	P/ERCENT SPEAKING MOTHER LANGUAGE Ratio between percent of respondents who repot an ability to conduct a conversation in a Native language and percent of Aboriginal population in total population.	PERCENT LAND CONTROL BY ABORIGINAL/LOCAL RESIDENTS
	CENSUS (5 years)		**Comprehensive Land Claim Agreements**		**NWT Bureau of Statistics**

Health and population: Infant mortality is the main indicator recommended by ASI (2010). However, it may not be a reliable indicator in sparsely populated areas since it suffers severely from the small numbers problem. Other possible surrogates (which can also suffer from this problem) include suicide rate, self-assessed health, and obesity and smoking rates. In addition, the ASI II team recommended utilizing the teenage birth rate (TBR) as a possible surrogate. In this case study we use the TBR, suicide rate and self assessed health (see Table 1). The first two indicators are taken as five-year averages to alleviate the data volatility problem stemming from small populations. Net migration is the indicator recommended by the first ASI report (2010) to characterize population dynamics. It is possible to estimate net migration using NWT community data (NWT Bureau, 2011). We use net migration rate per 1,000 residents (Table 1).

Material wellbeing*:* The first ASI Report recommends using per capita household income as a core indicator of economic wellbeing alongside five other supporting indicators. Unfortunately, per capita household income is not directly available from the Census or other surveys. However it can be approximated by dividing total household income by population. Both datasets are readily available and regularly collected (see definitions in Table 1). Net migration rate, selected by the ASI as another core measure of economic vitality, can also be estimated from Census and/or community surveys. In this case study we use per capita household income, net migration and unemployment rate as indicators of economic wellbeing. However, we caution that unemployment rate, at least in the context of the NWT, may not be a useful indicator, given the nature of the NWT labor market and the manner in which this rate is estimated. We believe that participation rate will be a more useful to demonstrate the degree of the population's engagement in wage employment. We also suggest considering a transfer income measure (the relative share of the government transfer in residents' income) as another alternative economic wellbeing measure.

Transportation old and new, Yelloknife, NWT. Photo: L. King

***Education**:* The first ASI Report recommended three indicators, all of which are based on educational attendance (the proportion of students pursuing or completing post-secondary education) or retention of educated people in a community (within 10 years after graduation). Whereas these indicators are important and appropriate, in the case of the NWT the required data are difficult to obtain or not collected. At the same time, Canadian Census and NWT Community Survey contain extensive data on educational attainment, the characteristics of the level of education attained by residents. These data have been routinely collected (although with some definitional changes) and provide a variety of educational characteristics to choose from. In this application we used two indicators: the percent of population over 15 years old who have a bachelor degree or higher, i.e. completed post-secondary education, and the percent of the same population who completed high school. This is a baseline indicator widely used for inter-regional and international comparisons of a population's education and human capital.

Cultural wellbeing and cultural vitality: The composite indicator of cultural vitality suggested by the ASI (2010) incorporates cultural autonomy (an indicator of institutional arrangements for cultural self-determination), language retention and belonging (measured in terms of engagement in traditional subsistence activities). The language retention data are available through the Canadian Census. However, the Census provides only information for all persons who claim Aboriginal identity with no differentiation by ethnicity. This is a considerable limitation given that the ASI recommends using ethnic group-specific language retention rates. The Aboriginal People's Survey (2001) includes a question on engagement in subsistence activities (hunting, fishing, trapping, and gathering of wild plants), and therefore can be used to measure "belonging". The cultural autonomy indicator is very complex and difficult to develop, especially at the community scale. We omitted this component at this stage of analysis, thus retaining only two indicators of cultural wellbeing/vitality.

Contact with nature: The recommended indicator for contact with nature is the consumption and/or harvest of traditional foods. The measure has been computed using data from the NWT Survey of Country Food Consumption (2008). Unfortunately, the data for other years are not available.

Underground food storage locker, Tuktoyaktuk, NWT. Photo: L. King

Fate control: The ASI I Report recommended using a four-component composite indicator of community fate control. This includes political power, economic self-reliance, cultural empowerment and control over land. Two exact measures suggested in the report, the percent of public expenses paid from locally generated funds (economic control) and the percent of people speaking their mother tongue (knowledge construction/human rights), can be estimated using proxies or direct measures from the Census. We suggest using the percent of self-generated income in total household income to measure economic self-reliance. The language retention component is directly available from Census data. For the indicator of political power (percent of local/Aboriginal peoples in governing institutions/positions), we were able to develop a proxy using the percent of Aboriginal people in managerial and administrative occupations in NWT.The indicator of land control, however, was difficult to determine at the community level. We therefore used provisions of the Comprehensive Land Claim Agreements (CLCAs), where applicable, to estimate the percent of land over which Aboriginal communities exercise direct control. Albeit not a perfect measure, it gives an indication of the ability of local residents to have access and control over land. A composite index of fate control is calculated as the average of these four components.

Specific definitions and sources of each indicator are provided in Table 3.1 above. Note that Table 3.1 demonstrates a high degree of overall agreement among the original recommended ASI indicators and the measures used in this case study of NWT. This demonstrates that Canadian statistical datasets generally have high utility for monitoring human development and wellbeing in the Arctic. On the other hand, it also demonstrates that ASI indicators are well designed to be applied in the context of the Canadian North.

3.2 Results

In this section we apply ASI indicators adapted to the NWT data and context to provide an overview of human development in the NWT at the present time. We consider the range and spatial differentiation of social indicators at the community level for six indicator domains using the latest available data (mostly pertaining to 2005-2010). As mentioned earlier, the data have

been acquired from the Census and Aboriginal People's Survey (both national datasets), as well as NWT Community Surveys and other NWT-specific surveys conducted by the NWT Bureau of Statistics. Secondly, we attempt to undertake a temporal analysis of human development change over time by comparing current indicators with historical data.

3.2.1 Health and Population Domain

The NWT has a relatively young, male-dominated population that makes it very distinct from southern Canada. The Crude Birth Rate in the NWT is substantially higher compared to Canada as a whole (16.8 and 11.3 per 1,000 population respectively in 2009), while the Crude Death Rate is lower. The infant mortality in the territory is substantially higher than in the nation (6.2 versus 5.1per 1,000 births (2007)). The life expectancy of NWT residents is about four years less than nationwide. The percent of single parent families is 150% of the Canadian benchmark.

The demographic and health components of human wellbeing in the Arctic are assessed using the teenage birth rate (TBR). TBR is a suggested surrogate for the infant mortality rate. In this capacity the TBR is the integral indicator of health conditions, as well as the indicator of demographic and social processes. High TBR rates indicate possible negative processes in a given community associated with health, health education, the healthcare system and social cohesion. They may also indicate a lagging demographic and epidemiological transition.

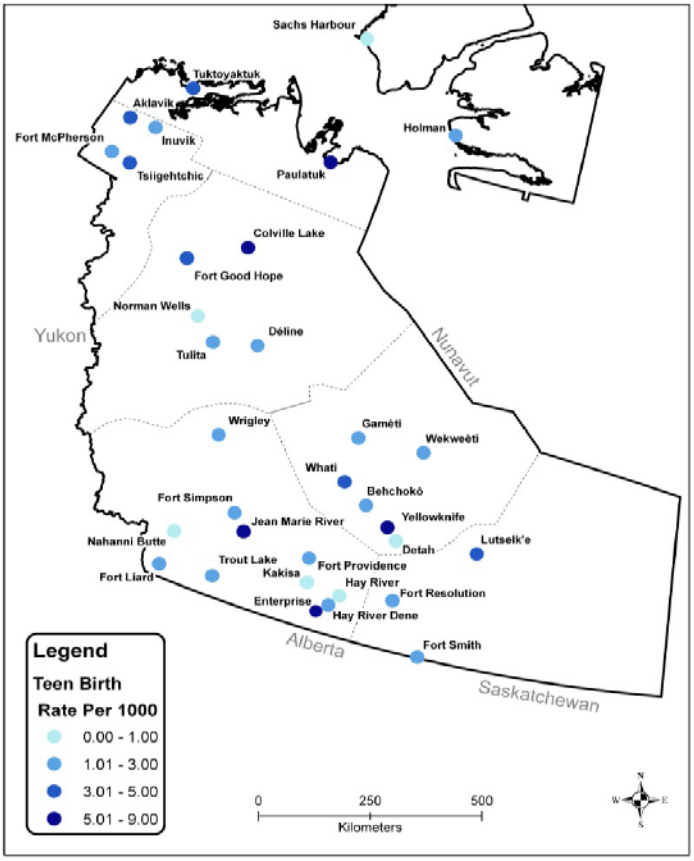


Figure 3.2. Teen birth rate in NWT
(NWT Bureau of Statistics, 2012)

The NWT has a high TBR (Figure 3.2): the five year average for 2002-2006 was 1.7 per 1,000 residents. Measured differently, the TBR was as high as 35.7 per 1,000 females aged 15-19 in 2007 or more than a double of the Canadian national figure. In NWT's larger communities (population over 500) the TBR varied from 0.7 to 4.9 per 1000 residents. The lowest TBR was registered in Norman Wells, the highest in Fort Good Hope. Yellowknife and Detah both had TBR below 1.0. Consideration of the TBR among smaller communities is complicated by the small numbers problem. Rates are unstable from year to year and it is uncertain whether 5-year averaging alleviates the problem. In these communities TBR varies between zero and 8.4 (in Paulaktuk). Overall, 65% of all communities for which data were available had TBR above the territorial average. Most of them are remote, isolated settlements facing social and healthcare challenges.

Other indicators that characterize particular aspects of health conditions mentioned in the ASI Report include suicide rate (a mental health measure), obesity and smoking rates (possible indicators of chronic disease and addictions). The five-year average suicide rate is available from the NWT Bureau of Statistics and is used in this case study as an additional indicator of health.

As demonstrated in Figure 3.3, higher suicide rates generally follow the pattern of other health indicators demonstrating a lower state of mental wellbeing in smaller Aboriginal communities. In Tuktoyaktuk 16% of all deaths between 2001 and 2005 were attributable to suicide. This, however, was not a pattern in other Aboriginal communities, such as Inuvik and Behchoko. In Yellowknife the proportion of suicides in the overall number of deaths was 5.5%.

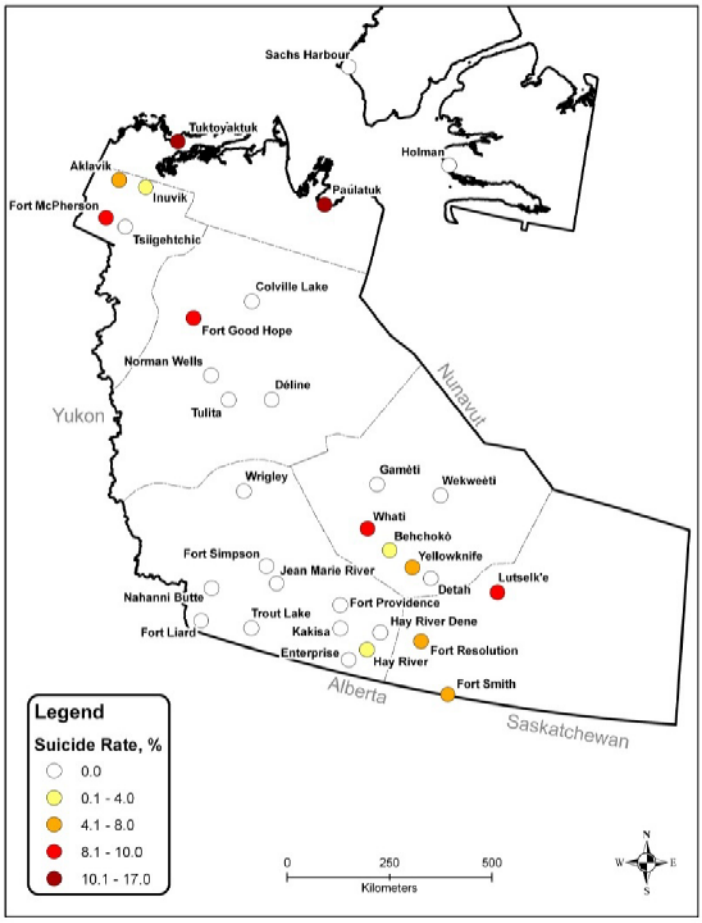


Figure 3.3. Suicide rate (%)
(NWT Bureau of Statistics, 2012)

Population dynamic is an important indicator of community wellbeing. ASI (2010) proposed to utilize the net migration data to characterize community wellbeing. Net migration has considerable importance in the Arctic since in and out-migration flows can bring noticeable changes to community life, especially in places with smaller populations. Population decline due

to departure of young adults can devastate a community, and eventually turn it into a ghost town. Alternatively, a mass arrival of newcomers can substantially alter the social, economic and demographic fabric of an Arctic community.

The 2006-2007 net migration map for the NWT is presented in Figure 3.4. Figure 3.4 reveals that migration outcomes vary significantly depending on type, size and location of communities. Substantial losses are observed in Wrigley, Tsiigehthic, Jean Marie River and other small and remote communities. Norman Wells, Aklavik and Tulita, in contrast, demonstrate considerable population gains. Yellowknife also showed a modest loss of population in this period.

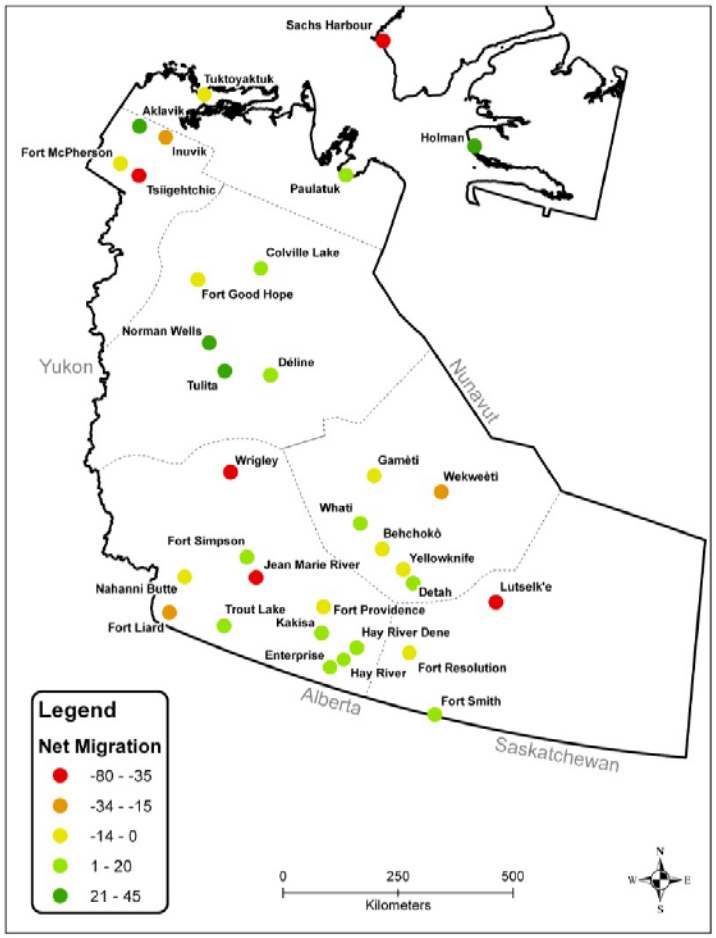
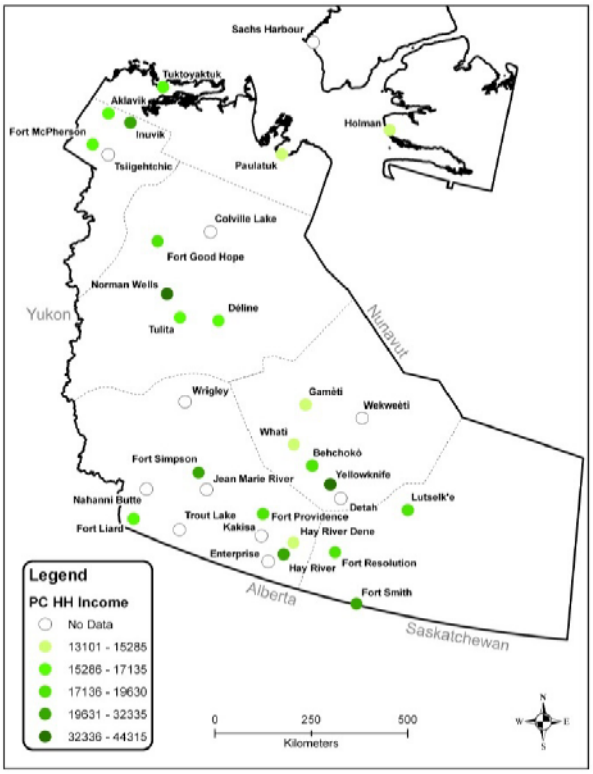


Figure 3.4. Net migration rates per 1,000 residents
(NWT Bureau of Statistics, 2012)

3.2.2 Material Wellbeing Domain

Per capita household income in NWT (based on our estimates from the Census corroborated with the Community Survey data) ranged between C$13,009 in Gamètì to C$43,642 in Norman Wells

(see Figure 3.5). The highest ranking communities also included Yellowknife, Inuvik, Hay River, Fort Smith and Fort Simpson, settlements with the most developed wage sector and considerably sized labor markets. Incomes are also apparently affected by inflated wages in resource and public sectors. According to this measure, the economic wellbeing in smaller, predominantly aboriginal communities is lower, even though the indicator incorporates transfer payments. This is not surprising given the population structure, limited size and seasonal nature of the wage labor market, and the engagement of many residents in subsistence activities. Table 3.2 reporting correlation among all indices considered in this case study, demonstrates that per capita household income negatively and strongly correlates with the level of consumption of traditional foods. Inter-community income disparities are significant and illustrate the inequities in economic wellbeing among NWT communities.



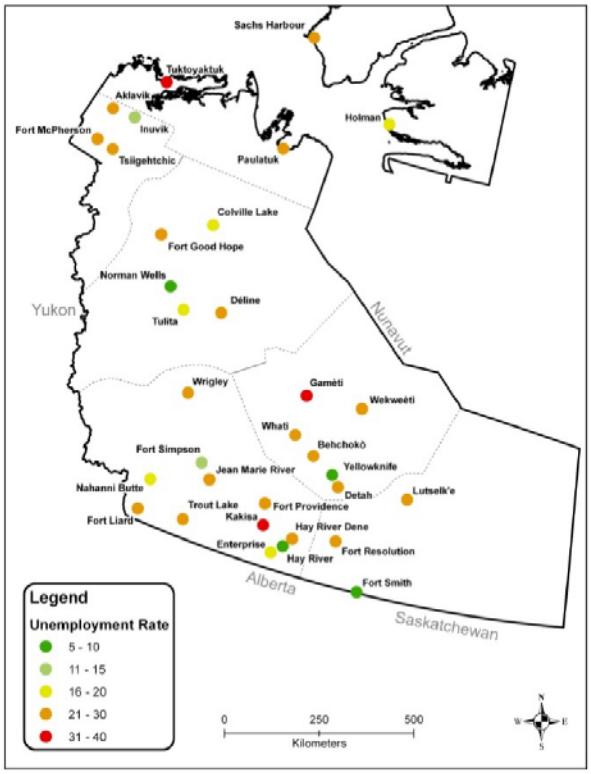


Figure 3.5. Per capita household income **Figure 3.6 Unemployment rate**
(Statistics Canada, 2008b)

A similar pattern of 'haves' and have-nots' emerges based on the analysis of other economic parameters. The unemployment rate (Figure 3.6) in most of the smaller communities which lack a stable economic base is extremely high (almost 30%) as opposed to Yellowknife (5.8%) and other central settlements. Considering that the rate is reported only for people who have been actively pursuing jobs, this figure does not include unemployed residents who are not active job

seekers, thus underrepresenting the real unemployment level. This said, it is important to remember that out of the scarce supply of jobs in small communities many are seasonal, exacerbating the problem and many working-age individuals are engaged in the subsistence sector, partially obviating the need for wage employment. Job scarcity results in limited earned income received by residents of remote, small, largely aboriginal communities. As a result, population in these communities tends to depend on government transfer payments, and therefore exhibits higher vulnerability to outside political and economic forces in maintaining their living standards. A public transfer economy is a reality in many places, in some of which government payments constitute over 20% of residents' gross income (Statistics Canada, 2008b)

Overall, NWT material wellbeing indicators show that the territory is firmly divided into a small group of 'haves' (Yellowknife, Inuvik, Hay River) and a large group of 'have-nots.' Out of the latter group several communities, some of which are very isolated from the wage economy, essentially live on income from transfer payments, seasonal earnings and subsistence activities. Whereas the traditional economy presents the way to maintain material wellbeing, a disengagement of the local labor force with the wage sector may prove to be a serious problem. A solution, perhaps, can be found in reconciling traditional lifestyles and activities with the 'capitalist' economy by intertwining these two sectors with economic, institutional and social ties while giving respect and recognition to the role of subsistence activities in the economy.

Oil Storage Tanks near Tuktouaktuk, NWT. Photo: P. Cavin

INSERT 1: Table 3.2. Correlations among social indicators in the NWT

	Suicide Rate	Teen Birth Rate	Net Migration	Unemployment rate	Per Capita Household Income	Bachelor's or higher	High School Degree of Higher	Subsistence Engagement	Consumption of Traditional Food	Lang Retention	Locals and Aboriginals In Government	Land Claim Agreement	Self-generated Income	Fate Control	Total Population
Suicide Rate	1	.619(**)	-.249	.385	-.203	-.184	-.168	.411	.235	-.331	.048	.337	-.181	-.069	.004
Teen Birth Rate		1	-.151	.071	.012	.109	-.057	.323	.019	-.151	-.112	.160	.058	-.094	.537(**)
Net Migration			1	-.273	.116	-.066	.024	-.140	-.140	-.098	-.028	.221	.082	.015	-.130
Unemployment rate				1	-.881(**)	-.868(**)	-.861(**)	.453(*)	.853(**)	.454(*)	.810(**)	.198	-.887(**)	.742(**)	-.520(*)
Per Capita Household Income					1	.834(**)	.939(**)	-.421	-.843(**)	-.512(*)	-.914(**)	-.159	.935(**)	-.821(**)	.579(**)
Bachelor's or Higher						1	.879(**)	-.442(*)	-.774(**)	-.348	-.821(**)	-.312	.802(**)	-.736(**)	.745(**)
High School Degree or Higher							1	-.492(*)	-.871(**)	-.550(**)	-.880(**)	-.235	.870(**)	-.859(**)	.587(**)
Subsistence Engagement								1	.485(*)	.131	.349	.299	-.379	.360	-.352
Consumption of traditional food									1	.624(**)	.881(**)	.102	-.842(**)	.860(**)	-.594(**)
Lang retention										1	.618(**)	-.411	-.516(*)	.775(**)	-.291
Locals and Aboriginals In Government											1	.080	-.877(**)	.917(**)	-.659(**)
Land Claim Agreement												1	-.137	.154	-.180
Self-generated Income													1	-.784(**)	.530(*)
Fate Control														1	-.586(**)
Total Population															1

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed). ^22 communities with population 250 of higher for which data is available.

Table 3.2 presents correlations among selected social indicators. It is interesting to observe some clear patterns. (1) intercorrelation among indicators within each domain and (2) evidence of correlations among several groups. In the Population and health domain we see a correlation between the suicide rate and TBR. Both indicate deep social and public health problems in many northern communities. Indicators from this domain are not correlated to other groups of measures (however the erratic nature of the TBR and suicide data may affect the significance of these relationships). Notably, it appears that TBR per capita increases with larger community size. In the material wellbeing domain unemployment and income are negatively correlated. Not surprising is the positive correlation between income (positively correlated with unemployment), levels of education and population size and the negative correlation of subsistence engagement, consumption of traditional food, language retention and fate control with income and positive correlation with unemployment. Contact with nature (consumption of traditional food) is closely associated with language retention and subsistence engagement. This again suggests that the vitality of traditional activities is essential for maintaining cultural continuality in the North. Fate control is higher in communities that have strong attachment to land or sea and demonstrate cultural vitality. However, it is also associated with lower levels of education and wage income and higher dependency on transfer payments. These relationships illuminate the interconnectedness of social indicators and the complexity of social issues in NWT. A deeper understanding of these links, and especially causal factors behind them, will be necessary in order to address some of the most acute problems facing NWT.

3.2.3 Cultural Wellbeing and Cultural Vitality Domain

Cultural wellbeing is a complex phenomenon and is difficult to measure. As mentioned above, we are able to measure two indicators of cultural wellbeing/vitality out of three recommended by the ASI Report. It is worth noting that by design these indicators describe cultural wellbeing of Aboriginal peoples that account for approximately 50% of the NWT population. Cultural wellbeing considers the ability of (a minority) population both to maintain cultural identity and to further develop its unique culture. Subdomains of cultural wellbeing include language vitality (language retention) and a sense of 'belonging' (to community, region, surrounding nature).

Language vitality is highest in communities where Aboriginal people are in the majority (Figure 7). For example, Behchoko, Wekweètì, and Wrigley are all communities with the language retention exceeding 70% and the percent of residents who are Aboriginal exceeds 90%. Strongest assimilation pressures are observed in Yellowknife, Hay River and Inuvik, where less than 25% of Aboriginal residents are able to speak their mother tongue. However, in defiance of this trend, language retention levels are surprisingly low in such predominantly Aboriginal communities as Aklavik and Tuktoyaktuk, where they also below 25%.

A sense of belonging (Figure 3.7) is measured here by the degree of engagement in subsistence and traditional activities. We used the percent of Aboriginal people over the age of 15 who report that they hunted or fished in 2008 (Figure 3.7). Engagement in these activities varied between 34.4% in Yellowknife and 58.7% in Fort McPherson. The apparent correlation between the likelihood of Aboriginal residents to hunt and fish and language retention patterns confirms the validity of both measures suggesting that culturally secure communities exhibit both higher language retention rates and higher participation in traditional activities.

Kugluktuk Heritage Centre, Baker Lake, Nunavut. Photo: L. King

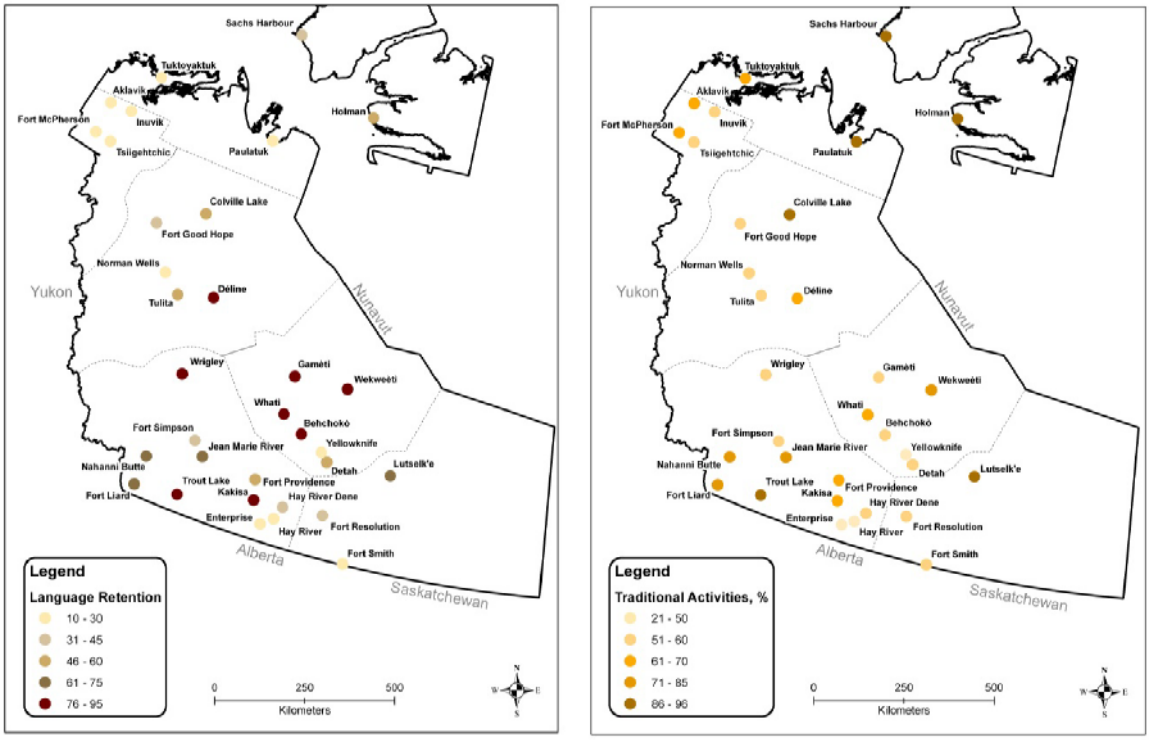


Figure 3.7. Aboriginal language retention (left) and participation in traditional activities (right) (Statistics Canada, 2009)

3.2.4 Contact with Nature Domain

Contact with nature is an indicator of connection to a traditional lifestyle that is related to livelihood activities on the land and water. This is an important component of human wellbeing as a strong connection to local environments may be a source of a community's vitality (cultural, economic, health) and resilience. Loss of connection with the natural world can result in a loss of roots and feelings of alienation. (AHDR, 2004; Louv, 2008). One of the most important on-land and on-water activities is harvesting, hunting, trapping, fishing, gathering and consumption of country (traditional) foods. These measures were recommended as indicators of contact with nature by the ASI Report (2010). In this case study we use the consumption indicator, as no harvest data are available.

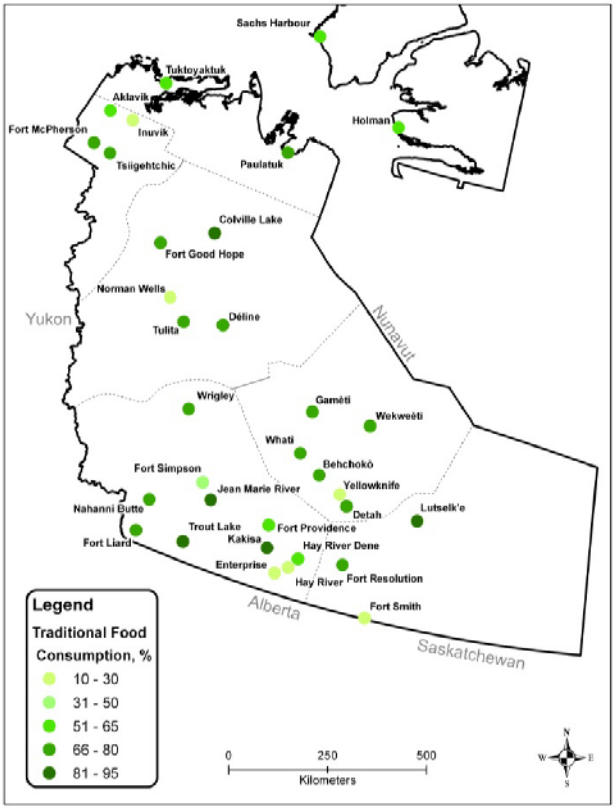


Figure 3.8. Consumption of traditional food: percent of households with more than half of consumed meat and fish obtained through hunting or fishing
(NWT Bureau of Statistics, 2009)

The percent of households that obtained more than half of the meat and fish they consumed through hunting or fishing follows the general pattern of Aboriginal population distribution and community size and location. Larger towns with few Aboriginal households exhibited very low levels of contact with nature as measured by consumption of traditional foods. Only in 10.7% of Yellowknife households did most of the meat and fish consumed come from residents' hunting and fishing activities (Figure 3.8). In contrast, in more remote, Aboriginal-dominated communities the majority of households were consuming meat and fish obtained through fishing and hunting (e.g., 76.9% in Fort Liard, 73.2% in Fort Good Hope, 69.4% in Fort Simpson). These data indeed suggest that contact with nature is higher in areas that are 'on the land or sea,' while in the larger towns people become detached from traditional activities and natural environments. The availability of other sources of food, including big-box stores in cities like Yellowknife, exacerbates the disconnection among arctic residents and the natural world. Communities with stronger Aboriginal cultural ties demonstrate remarkable levels of exchange and sharing in respect to country food (Klokov & U, 2004), a pattern not prevalent in westernized towns.

3.2.5 Education Domain

To assess educational attainment level in NWT communities we used two main indicators: the percent of population 15 years and older who completed high school and who have attained a bachelor degree or higher. Only 64.1% of NWT residents completed high school compared to 79.1% of all Canadians (2009). Most notably only 38.7% of the Aboriginal population holds a high school diploma or higher education certificate. This is a sharp contrast not only with the national benchmark, but also with educational attainment of the territory's non-Aboriginal population (86.2% completed high school or higher). High-school attainment in NWT communities varies between 11.8 and 80.9%. The highest attainment rates are observed in Yellowknife, Norman Wells, Fort Smith and other predominantly non-Aboriginal communities. Small and remote settlements with few educational opportunities form the groups of communities with less than 25% high school completion rate.

High School and university degree attainment by community is depicted in Figure 3.9. 18.5% of all NWT residents and only 3.4% of Aboriginal residents hold bachelors degree or higher level of schooling. Among the communities with available data this indicator varies between 2.2 and 21.1%. Eleven communities have university degree attainment at zero, but in some instances the data may be suppressed. The highest level of schooling is found in the regional centers and economic hubs (Yellowknife, Inuvik, Fort Smith, Hay River and Norman Wells). Interesting outliers include Wekweètì (21.1%) and Colville Lake (13.3%).

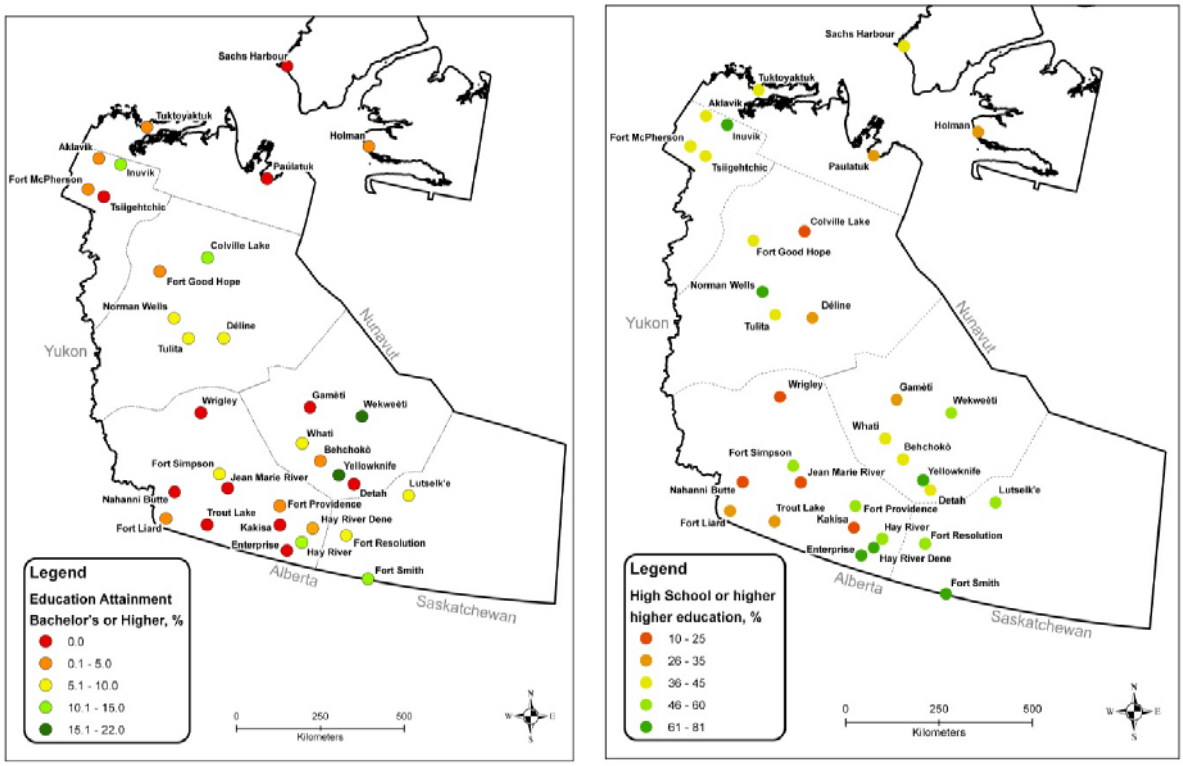


Figure 3.9. Educational attainment: bachelor's degree and higher (left) and high school and higher (right) (Statistics Canada, 2008b)

Both high school and university degree attainment rates indicate a considerable education gap between the NWT communities and the rest of Canada as well as disparities within the NWT. Access to education and consequently to wage-sector jobs and higher incomes is impeded in many settlements. Improvement of the education system, advancement of distance learning, professional training and adult education are important avenues to bridge both of these gaps.

Sir Alexander Mackenzie School, Inuvik, NWT, (closed in 2012). Photo: L. King

3.2.6 Fate Control Domain

Fate control is a very complex category to measure. Fate control is measured using a four-component Fate Control Index (FCI). FCI values vary between 0 and 4. The first component of fate control is measured using the percent of Aboriginal people in managerial and administrative occupations. This component characterizes the ability of northerners, and specifically Aboriginal residents, to exercise political and administrative power over their affairs. Local control is noticeably higher outside Yellowknife, in which the majority of managers and administrators are not native and Aboriginal residents, but migrants. Given that Aboriginal people constitute about a half of NWT population, from the positions of fate control it is a concern that the vast majority (83%) of the leadership in the territorial capital does not report Aboriginal identity. Aboriginal people are underrepresented in managerial and administrative occupations even in predominantly Aboriginal communities. This pattern reflects education and leadership gaps between Aboriginal and non-Aboriginal residents that result in considerable power inequities.

Economic control is another important measure of the ability of communities to determine their own destiny. Presumably, a community with less dependency on transfers from the Federal Government has a higher degree of freedom in designing social and economic policies. Whereas the ideal measure of economic self-sufficiency would be the percent of public expenses generated within a community (i.e. expenses drawn from locally raised taxes), the unavailability of data prevents us from using this indicator. A reasonable proxy could be the share of self-generated income of community residents' total incomes, i.e. personal or household income minus government transfer payments.

Only three communities demonstrate high levels of economic control: Yellowknife, Inuvik and Hay River (Figure 3.10). The residents of these communities are less dependent on transfer payments, and thus, the economic base is less vulnerable to economic and political decisions made outside the community. On the other hand, Aboriginal communities in the Mackenzie River Delta have comparatively low levels of economic self-reliance with about 25% of residents' incomes coming from government transfers. Clearly, economic fate control is directly related to the material wellbeing of communities, with more prosperous communities taking advantage of a stronger labor market with a developed wage sector.

New Municipal Buildings, Conference Centre, Yellowknife, NWT. Photo: A. Petrov

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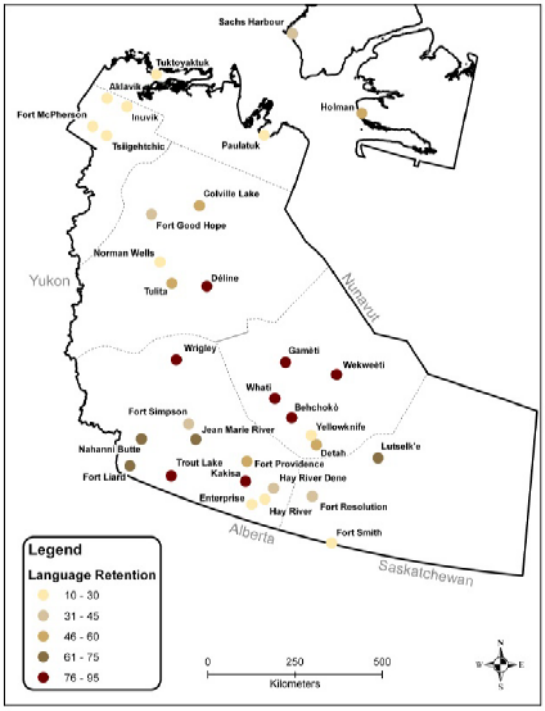

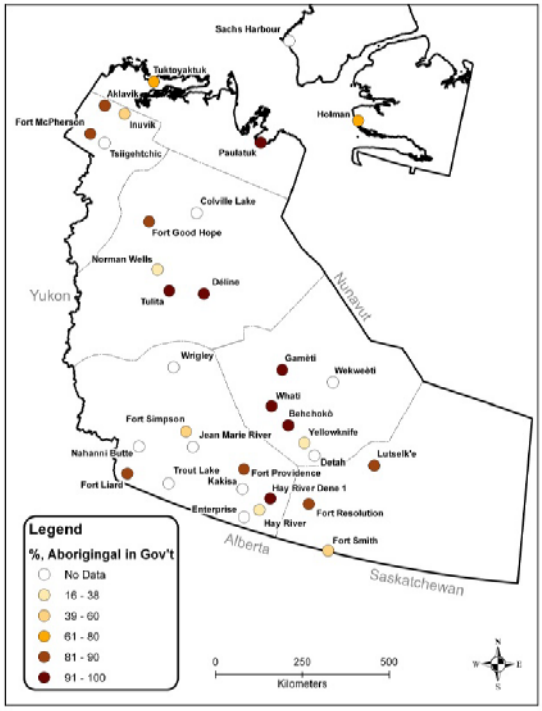

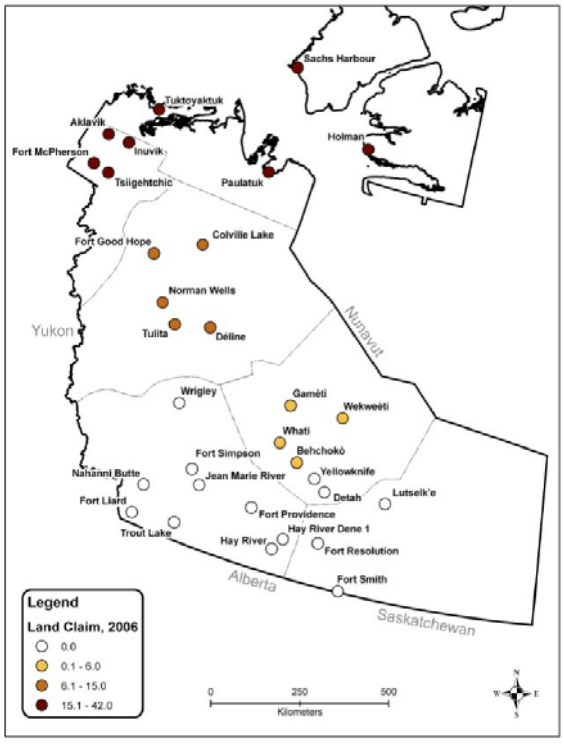

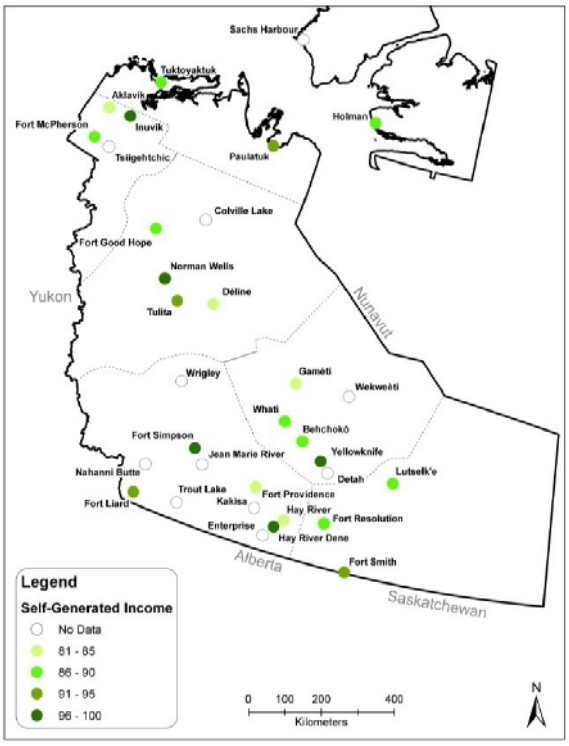

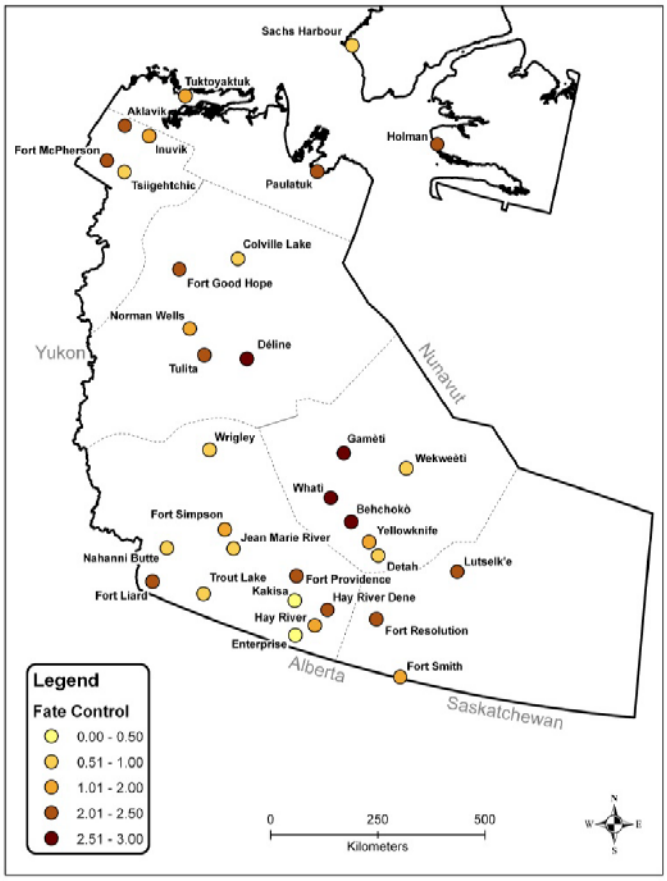

Figure 3.10. Fate Control Components and Fate Control Index
(Data from: Statistics Canada, 2008a, 2008b, 2009)

Language retention is an indicator of control over knowledge construction. In essence it characterizes the fulfillment of the human right to maintain a unique culture. The same indicator has already been used to measure cultural vitality, and therefore it is an integrative measure that pertains to wellbeing in both cultural and fate control domains of Arctic social indicators. As mentioned above, language vitality is highest in communities where Aboriginal people dominate, such as Aklavik, Behchoko, Fort Good Hope, and Fort McPherson with the percent of Aboriginal residents who speak their mother tongue exceeding 70%. Many residents in these communities report using an Aboriginal language both at home and work. In contrast, less than 30% of the Aboriginal population in Yellowknife, Hay River and Inuvik report such ability to speak a Native language, as they must use the official languages of Canada at their workplace as well as outside of the work environment.

Control over land is measured by analyzing texts of the comprehensive land claim agreements (CLCA). The NWT has four settled CLCAs that stipulate control and use of land. The percent of the land area covered by the CLCA that is under direct control of an Aboriginal authority can be used as a proxy to assess the degree of the control over land exercised by Aboriginal people. Based on this measure Gwich'in and Inuvialuit regions have higher control over land.

The *composite fate control index* (FCI), based on four components, demonstrates the differences among the capital and territorial towns and Aboriginal communities (Figure 10). The latter have higher levels of cultural wellbeing and stronger local control over their affairs, but lack economic self-sufficiency. Aklavik, Fort Providence and Behchoko show the highest fate control when measured in the context of the composite fate control index. However, it is important to remember that we were unable to account for the control over land in the composite measure. Incorporating the fourth component into the final index might have altered the fate control rating of Inuvialuit communities.

INSERT 2: Comparison of Social indicators in six NWT regions

Through comparison of the six NWT cultural regions (excluding the Yellowknife area) the analysis reveals a complex regional pattern of wellbeing. South Slave, Inuvialuit and Sahtu territories tend to have higher per capita incomes and lower unemployment, which are both associated with the large resource sector in these areas (diamonds, oil, etc.). With Tlicho and Gwich'in these are also the regions with the highest levels of education. Territories with settled land claims have higher fate control indicators with Tlicho and Sahtu leading the FCI ranking. Gwich'in and Inuvialuit show the strongest control over land. Settled CLCA regions also demonstrate the highest rates of participation in traditional activities and closest contact with nature. For example, 73.7% of Tlicho and 60.9% of Sahtu households consume mostly country food. Almost half of Inuvialuit (48.4%), Deh Cho (46.7%) and Sahtu (44.7%) residents hunt and fish for the table. Except for the Inuvialuit, these regions also have high Aboriginal language retention rates (90.4% in Tlicho, 58.2% in Deh Cho and 53.3% in Sahtu). The Inuvialuit and Gwich'in regions are exceptions with only 23% and 17% of adult Aboriginal people speaking their mother tongue.

Dynamics of social wellbeing and human development in NWT: 1991-2006

This section presents a first attempt to analyze the change in social wellbeing in the NWT using the indicators framework established by the ASI (2010). One of the ASI's goals is to develop a set of measures that can be used to monitor the dynamics of wellbeing over time. Undoubtedly, longitudinal analysis is very important from the policy standpoint as it may illuminate the consequences of policy interventions (or lack of such). It can also assist in testing the appropriateness and sensitivity of social wellbeing benchmarks.

The analysis of ASI indicators in NWT, while pioneering in nature, has some limitations. Most of these limitations stem from the lack or incompatibility of data between 1991 and 2006. Most data were acquired from the Canadian censuses of 1991 and 2006 and the Aboriginal Peoples Survey of 1991. In data collection and use we closely followed the principles described in the previous section. We followed the recommendations for domains and individual indicators, unless there was a problem with data availability, in which case we either omitted the indicator or used a comparable surrogate. Data availability allowed us to complete the analysis of four domains of social indicators: *population and health, material*

wellbeing, cultural vitality, and fate control. It is also worth mentioning that until 1999 NWT included Nuanvut. To ensure consistency and comparability, the pre-1999 data used in this analysis excluded Nunavut communities.

Population and Health. In the fifteen years between 1991 and 2006 the population of the NWT grew from about 36,000 to over 41,000 or by 14%. This trend in itself does not provide a clear picture of population status since it lumps together natural and migration change as well as hides considerable regional differences. It should be noted that a large drop in population was observed between 1996 and 2001 when it dropped from 40,000 to 37,000 (although 2001 figures suffer from the high net undercoverage rate). Population instability is indicative of long-standing problems in respect to social wellbeing, cohesion and stability in the resource-dependent economy of the NWT and other regions of northern Canada.

Different regions and communities in the NWT had diverging trends of population change and migration (Figure 3.11). While most communities gained population, a number of settlements suffered considerable population decline during the reporting time. Excluding very small communities that can be considered outliers, Behchoko, Yellowknife and Norman Wells posted the highest population increases in excess of 20%. On the other hand, Aklavik, Fort Resolution, Fort Smith, Tuktoyaktuk, and others were losing population during the same time period.

Inuit children in Tuktouaktuk, NWT. Photo: P. Cavin

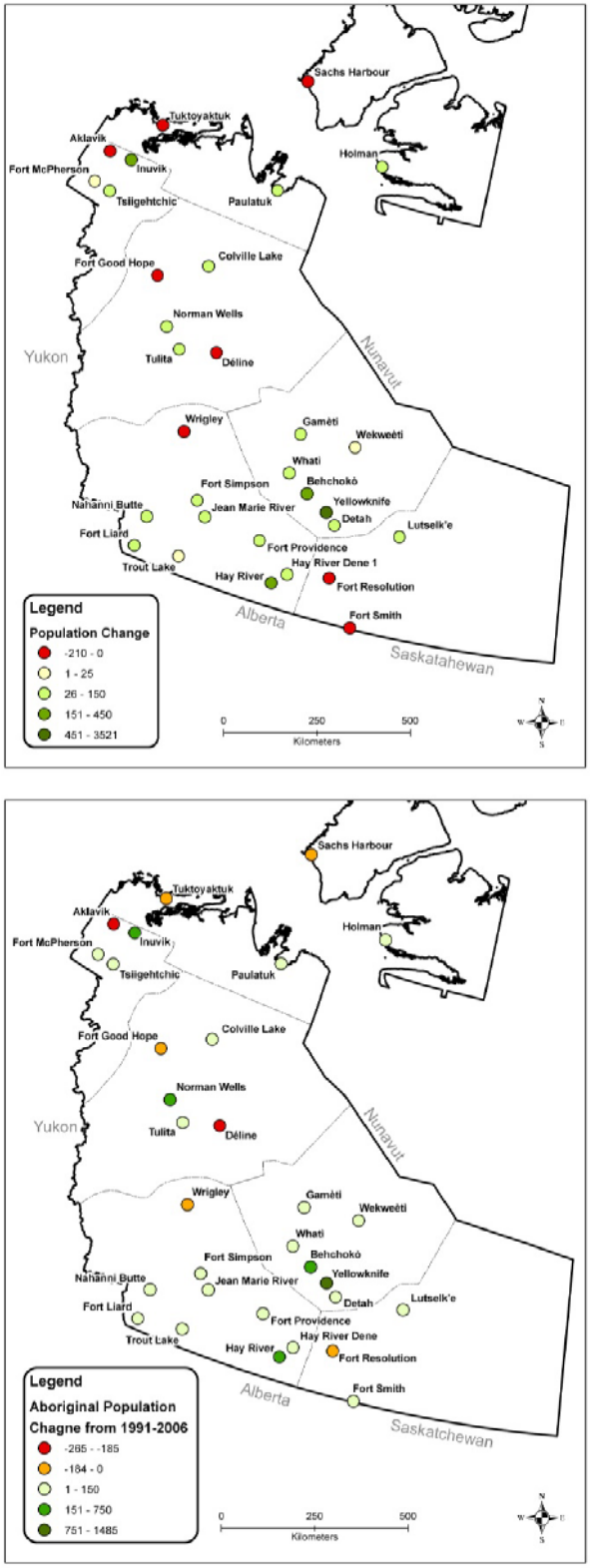

Figure 3.11. Population Change (left), Aboriginal population change (right), 1991-2006
(Statistics Canada, 1991, 2008a, 2008b)

Finally, in recent decades the Teenage Birth Rate in NWT exhibited a dramatic decline: from 81 per 1,000 women under 20 in 1991 to 37.5 in 2010. Although the TBR is still higher than

the Canadian national figure, this measure indicates positive changes in socio-economic wellbeing, public health and social environment. The rate of TBR decline was also much faster than in Canada as a whole.

Material wellbeing. The dynamics of material wellbeing measured by the per capita average household income are presented in Figure 3.12. Note that these figures are not adjusted for inflation and therefore should not be directly compared. Overall, the geography of material wellbeing remains fairly constant in the period between 1991 and 2006, although the disparity between poorest and richest communities increased slightly highlighting the trend of income divergence and increasing disparity in material wellbeing. Highest incomes in both 1991 and 2006 were observed in the capital, as well as in resource towns (e.g., Norman Wells) and administrative centers. Notably, the five communities with the highest incomes remained unchanged (Figure 12).

It is also interesting to explore the geography of income gains. The most substantial increases in per capita average household incomes are found in the richest communities, which are also administrative and economic centers. These include the communities of Norman Wells, Yellowknife, Fort Simpson, Hay River, Forst Smith, and Inuvik (which show an income gain of between C$12,000 and $21,000 over the 15 years). However, the rate of increase varied across the NWT. Many mid-tier communities saw large income gains: Behchoko, for example, had a 127% increase in per capita household incomes that rose from C$7,861 in 1991 to $17,916 in 2006. However, it still was far behind the highest income places such as Norman Wells (C$44,310) and Yellowknife (C$39,414). The poorest communities had noticeably smaller gains. This indicates persistent income gaps among communities and reinforces the division of NWT settlements into ‘haves’ and ‘have-nots.’

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Frankiln Avenue, Yellowknife, NWT. Photo: A. Petrov

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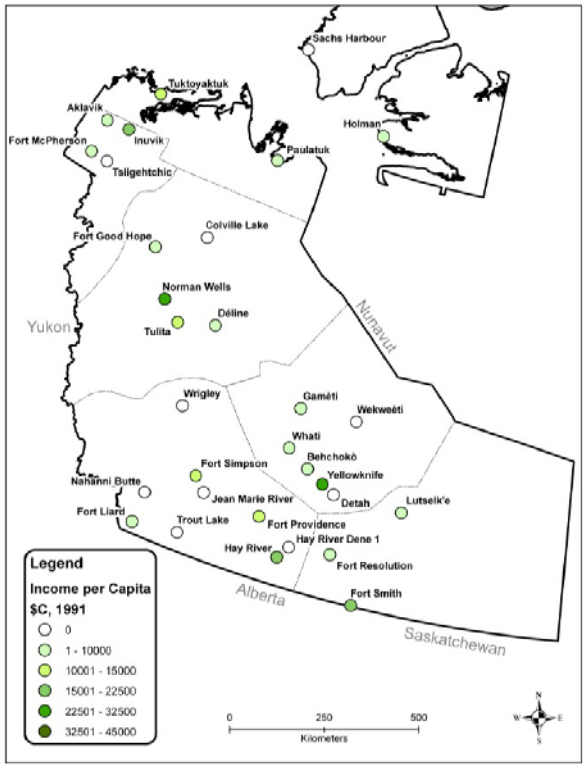
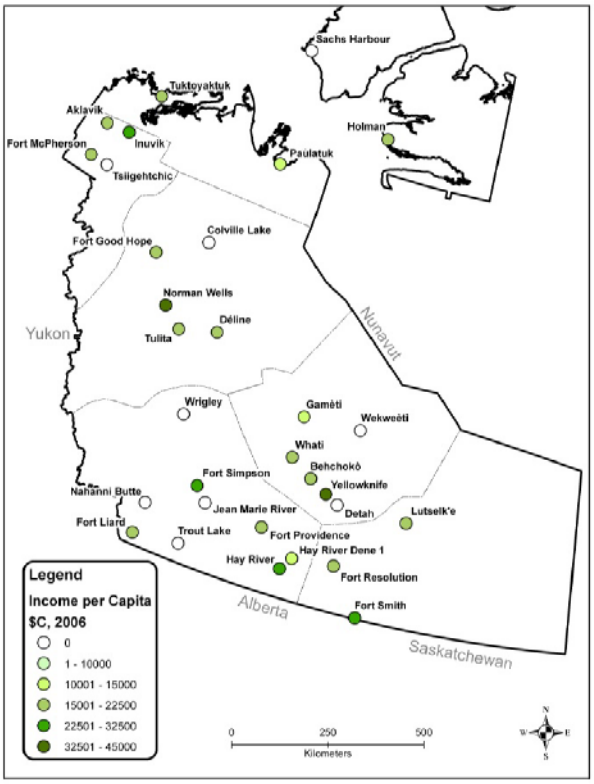




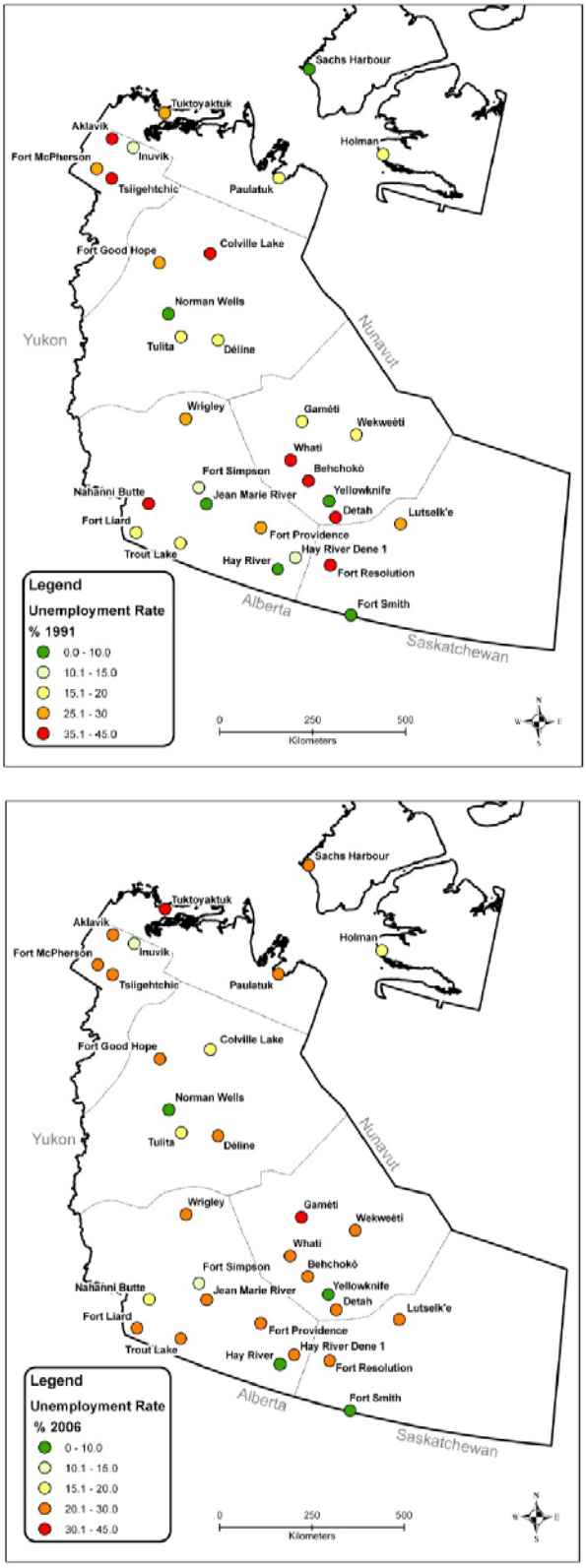
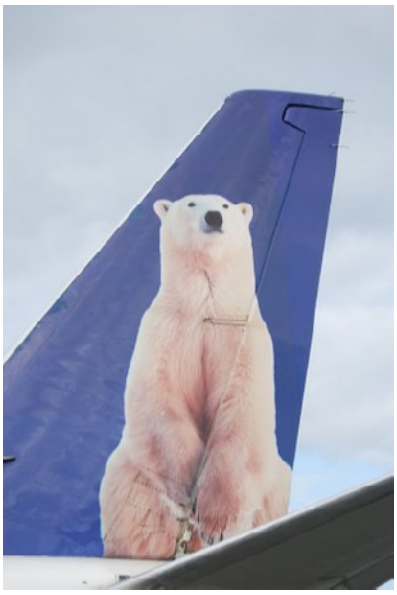


Figure 3.12. Dynamics of Material Wellbeing Indicators, 1991-2006
(Statistics Canada, 1991, 2008b)

Unemployment rates in the Territory between 1991 and 2006 remained virtually unchanged. However, there have been some improvenments in communities such as Fort Simpson, Fort Resolution, Fort Providence, Aklavik and several others (Figure 3.12). Yellowknife and Normal Wells had the lowest unemployment rates (6% and under). In contrast, many remote and Aboriginal communities experienced very high unemployment with little or no improvenment. For example, Tuktoyaktuk had an unemployment rate of 34.2 in 1991 and 33.3 in 2006. Aklavik's unemployment rate dropped from 36.9 to 24.5, still extremely high. These obervations confirm that in terms of material wellbeing, the NWT is divided into a small group of 'have' and a large group of 'have-not' communities.

Cultural wellbeing and cultural vitality. Of the indicators recommended by ASI as measures of cultural wellbeing the only indicator available for temporal analysis is the language retention rate. Figure 3.13 presents the percent of people with Aboriginal identity who spoke their mother tongue in 1991 and 2006. Generally, there is an evident decline in language retention rates. The mean rate for the 16 largest NWT communities in 1991 was 55%, while by 2006 it had dropped below 38%. The average language retention rate for all NWT communities in 2006 was 48.6% ranging from 12.9% in Inuvik to 93.6% in Wekweètì. In Yellowknife the percent of Aboriginal people speaking their mother tongue decreased from 32.2% to 21.3%. However, the level of retention is higher and the speed of language loss is slower in the NWT than in some other Arctic regions, for example in northern Russia (AHDR, 2004; Petrov, 2008).



First Air Boeing 737 on the tarmac at Yellowknife, NWT. Photo: L. King

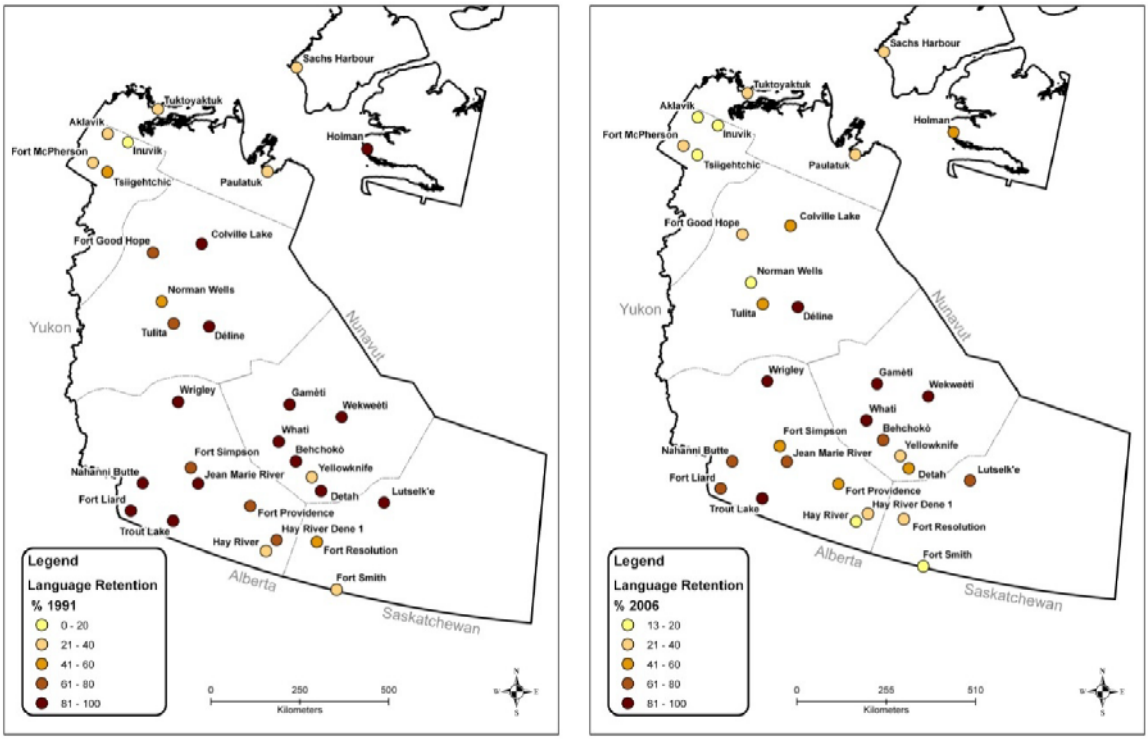


Figure 3.13. Dynamics of the Cultural Wellbeing Indicator: Language Retention Rate 1991-2006 (Statistics Canada, 1991, 2008b)

Fate Control. Only three components of the fate control measure are available for comparison between 1991 and 2006. These include control over land, language retention and self-generated income. As a result, we recalculated the Fate Control Index (FCI) with only three variables. The index will have a range from zero to three (Figure 14-15).

The change in the Fate Control Index between 1991 and 2006 is difficult to characterize because of the complexity of the measure and considerable regional differences, but the FCI generally declined throughout the NWT (Figures 3.14, 3.15). Many communities were not as strong in Fate Control in 2006 as they were in 1991. In fact, only eight communities showed growth. The increase in fate control was largely related to the completion of the Comprehensive Land Claim Agreement processes that resulted in increasing control over land. At the same time, many communities experienced decline in fate control due to the decreasing language retention (see Figure 13 and earlier discussion of cultural wellbeing). However, many communities with small populations of roughly 250 people and fewer did not have data for self-generated income, and could not be included in the analysis.

The last two decades saw gains made by northern communities in attaining more control over land and resources. In 1991 there was only one settled CLCA (Inuvialuit). By 2006 this number increased to four (added Gwich'in, Sahtu, and Tlicho), plus the Nunavut Land Claims Agreement that led to establishing a separate territory. In regions where CLCAs were concluded, we observe a corresponding increase in control over land (Figure 15). The situation with other components of fate control is more complex. Control over knowledge

construction manifested in the ability to communicate using a mother tongue generally declined. At the same time there were marginal improvements in political power (increasing percent of Aboriginal people in government and management) and economic self-reliance.

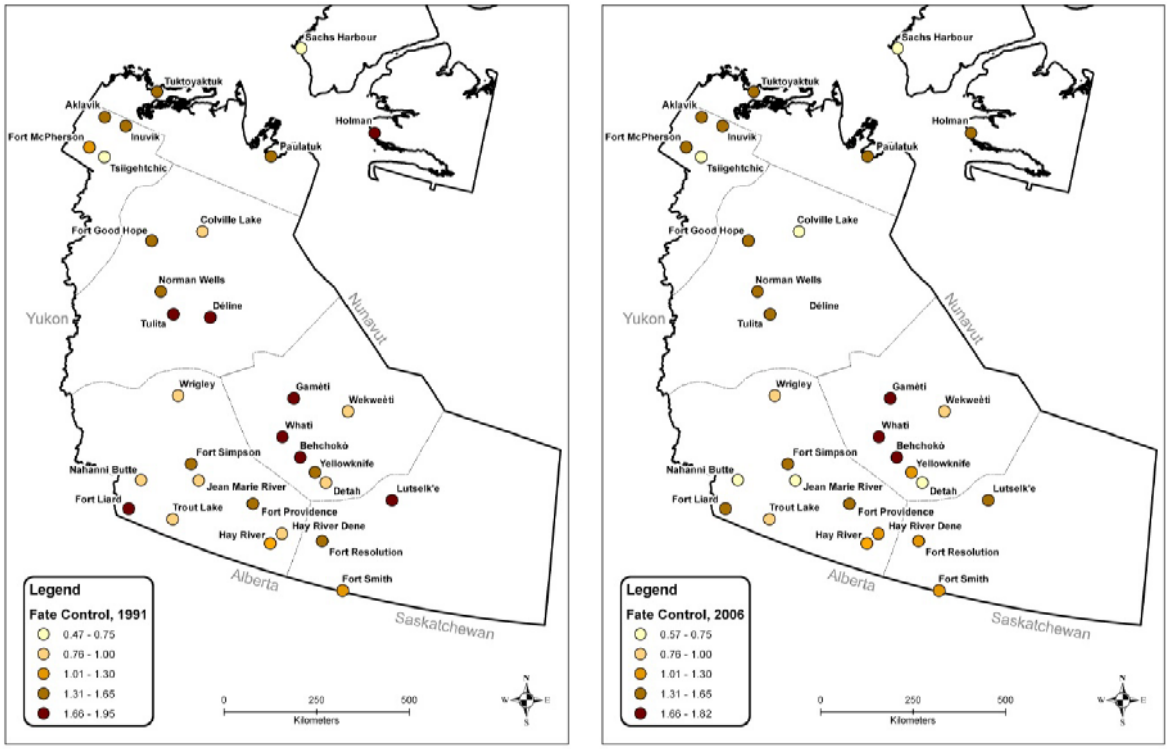


Figure 3.14. Dynamics of Fate Control Index, 1991-2006

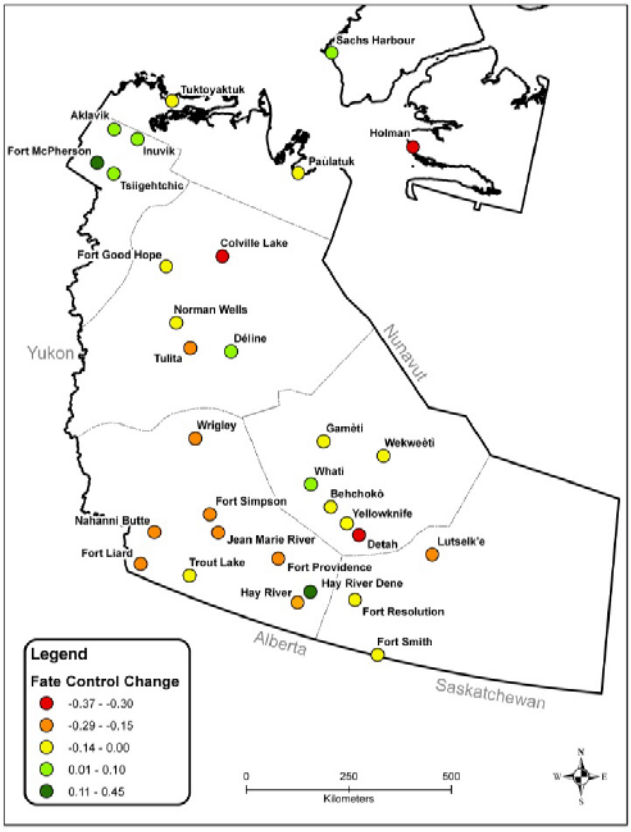


Figure 3.15. Change in Fate Control Index, 1991-2006

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Nunavut

Nunavut: Until 1999 Nunavut was a part of the NWT. The new territory was created based on provisions of the Nunavut Land Claims Agreement (1993) and became the first and only Canadian province or territory with a predominantly Aboriginal population. The largest city and capital of NU is Iqaluit (population 6,699). Other large communities include Arviat, Rankin Inlet, Baker Lake, and Cambridge Bay.

Welcome sign in Iqaluit, Nunavut. Photo: L.King

In this abbreviated analysis we considered four domains of human development: fate control, material wellbeing, education and cultural vitality. The indicators were developed based on the Canadian census of 2006 following the same definitions as were used in the case of the NWT (see Table 1). As seen on the maps (Figure 1A) there is a considerable differentiation in social wellbeing among places included in this analysis. Most Nunavut communities demonstrate high level of fate control (FCI is 3.77 out of 4.0 possible for Clyde River) reflecting high levels of language retention and decision-making control of the Aboriginal peoples in Nunavut. (In Iqaluit, however, fewer than 41% of leadership (government and management) occupations are held by Aboriginal people). On the other hand, many Nunavut settlements have rather low levels of material wellbeing (Figure 1B) with high dependency on income subsidies. This situation is typical in remote communities all across the Arctic. In contrast, privileged places, such as the capital and regional centers, exhibit a much different picture. The per capita household income in the capital city of Iqaluit is more than double the average for Nunavut as a whole. A similar pattern emerges in respect to higher education: the percent of residents with bachelor degree ranges from 12.7% in Iqaluit to 2.2% in Coral Harbour. Finally, cultural vitality is noticeably higher in Nunavut than in the NWT with most Nunavut communities posting Aboriginal language retention rates in the 80-90% range (Figure 1C).

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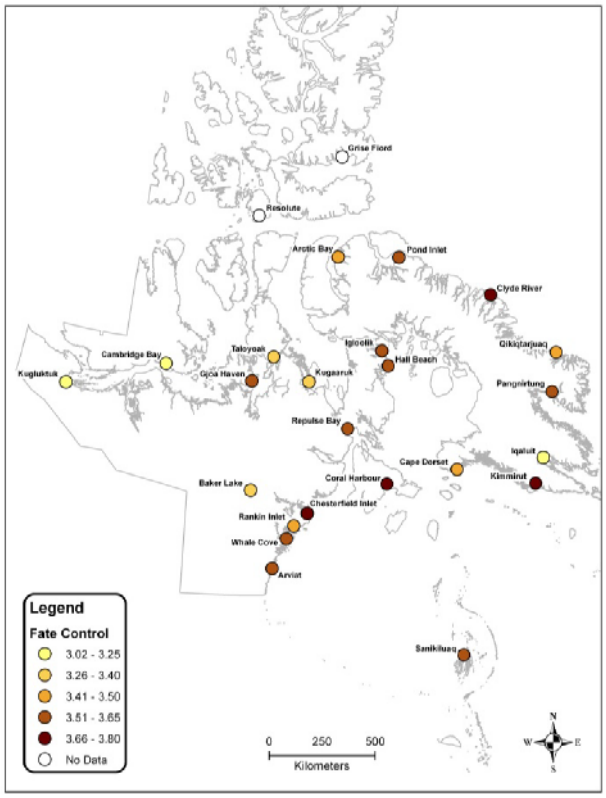
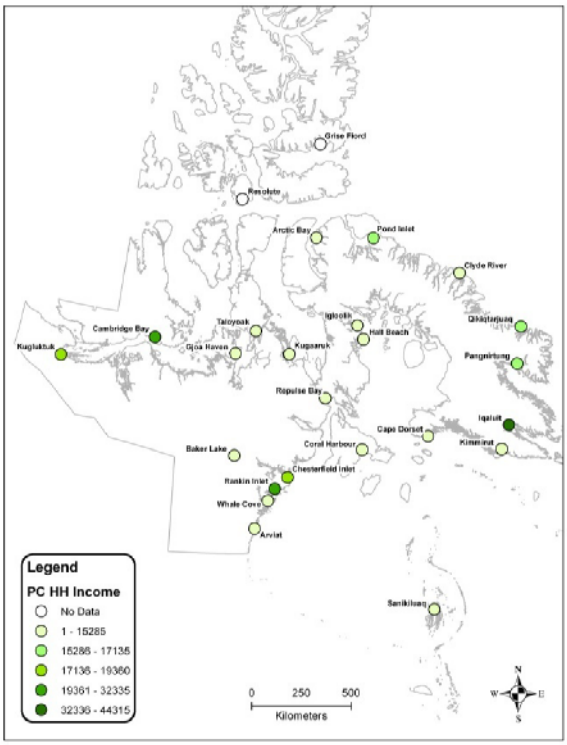
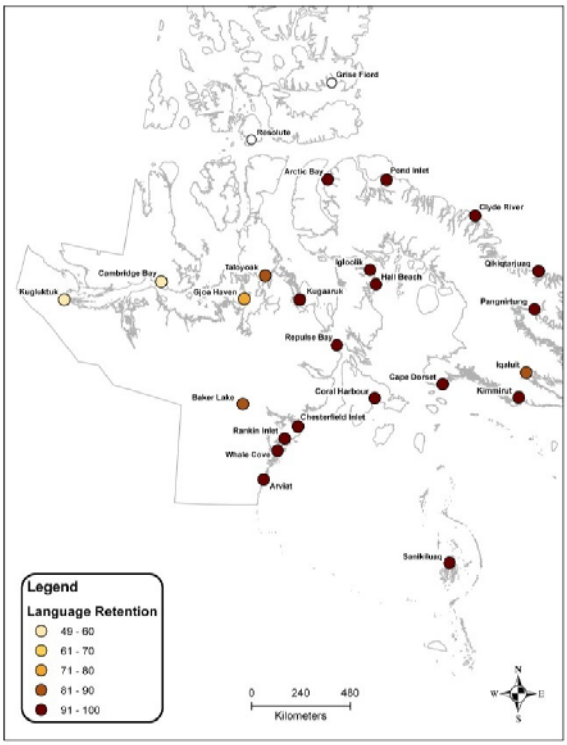


1a. Fate Control



1b. Per Capita Household Income



1c. Language Retention

3.2.7 Limitations

The limitations of this case study of NWT, Canada share the limitations of the indicator method in general. Indicators are meant to be the best proxy indicator of a trend or situation over time. The effectiveness of indicators in portraying a general, accurate and detailed characterization of a region over time, depends on the quality of the data available. In the ASI for some domains we were able to use data for the entire population of a region while for others only data for aboriginal populations were available. Some indicators are more relevant to Aboriginal populations than to non-Aboriginal populations (for example language retention rates). Therefore some of our findings relate to the NWT population as a whole while others provide a better understanding of only Aboriginal wellbeing trends.

3.2.8 Summary and Conclusions

The NWT presents a case of a relatively data-rich region and thus serves as a good demonstration case study for applying Arctic social indicators. It is important that in most instances we were able to develop region-specific indicators (or proxies) that follow the recommendations of the ASI Report. This fact confirms the success of the ASI project in providing a social indicators framework that is compatible with available data from existing sources in both geographical and temporal dimensions. The primary data challenge facing the application of Arctic social indicators is the variability and evolving nature of definitions and data collection methods utilized by different sources, which complicate interregional and longitudinal analyses. However, with these limitations in mind, the case of the NWT gives an opportunity to implement ASI indicators to a relatively high degree and assess their utility for monitoring the socio-economic wellbeing of Arctic residents. We conclude that ASI indicators are suitable for monitoring human development, that data exist to apply indicators from all six domains, but that population size and composition as well as regional differences are significant variables and should be given particular attention.

The overall assessment of human development in the NWT using the ASI framework suggests that NWT residents face considerable challenges in wellbeing and prosperity. Most measures put NWT behind Canadian national indicators and reveal an unsettling picture of socio-economic conditions. At the same time, recent trends appear to have a positive vector in most of the measured domains. Over the last two decades substantial gains were made in fate control. These gains, however, coincided with rather stagnant material wellbeing and diminishing vitality of Aboriginal cultures (as measured by language retention rates).

This chapter analyzed six domains of social indicators for the Northwest Territories, Canada. High quality and availability of Canadian statistics permit a relatively complete study of social wellbeing that deploys most of indicators recommended by ASI. We also were able to trace the changes in several key indicators through a 15 year period. Overall, this analysis confirms the utility and usability of ASI indicators. The goal of ASI was to develop a set of indicators that could be used across Arctic regions and through time relying on existing and

continuously updated datasets. In the Canadian context, where data are rich, one could implement a more comprehensive set of social wellbeing measures than those recommended by the ASI, but that would greatly complicate comparability with other regions including those presented in this volume.

The main patterns of social wellbeing in the NWT could be described as follows. First, we observe that many of the domains demonstrate a rather problematic picture with below-expected levels of social wellbeing, such as low incomes, high unemployment and out-migration, and dwindling language retention. Second, there are stark regional differences and disparities among the most prosperous communities, especially the capital, regional centers and resource towns and the rest of the communities, many of which are remote Aboriginal settlements.

NWT communities do not perform well in respect to *health and demographics*. The NWT has a high Teenager Birth Rate (TBR), which reaches 8.4 per 1,000. Sixty five percent of communities have exceptionally high TBR, above the NWT average. The NWT also demonstrates very high suicide rates, which generally follow the pattern of other health indicators demonstrating a poorer state of mental wellbeing in smaller Aboriginal communities. In addition, significant out-migration is a reality for most small remote communities.

Economic wellbeing measured by per capita household income in smaller, predominantly Aboriginal communities is lower, even when incorporating transfer payments. The highest ranking communities for economic wellbeing include Yellowknife, Inuvik, Hay River, Fort Smith and Fort Simpson, settlements with the most developed wage sector and considerably sized labor markets. Job scarcity results in limited earned income received by residents of remote, largely Aboriginal communities. As a result, population in these communities experience high unemployment rates and tend to depend on government transfer payments, and therefore exhibit higher vulnerability to outside political and economic forces in maintaining their living standards.

We found that the geography of material wellbeing in NWT remained fairly constant over the last 15 years, although the discrepancy between poorest and richest communities slightly increased highlighting the trend of increasing disparity in material wellbeing. Most substantial income gains are found in the richest communities, which are also administrative and economic centers. Unemployment rates in the Territory between 1991 and 2006 remained virtually unchanged, although some communities saw improvement.

In terms of *cultural wellbeing* we found that language vitality is the highest in communities, where Aboriginal people dominate. Stronger erosion of Aboriginal languages is observed in Yellowknife and other larger towns. Language retention levels are also surprisingly low in some Aboriginal communities, such as Aklavik and Tuktoyaktuk. Between 1991 and 2006 we observe an evident decline in language retention rates. In other words, based on the language retention indicator the cultural wellbeing of Aboriginal people in the NWT declined over that time.

The *contact with nature* indicator follows the general geography of Aboriginal population distribution and community size and location. Larger towns with few Aboriginal households exhibited very low levels of contact with nature. In contrast, in more remote, Aboriginal-dominated communities the majority of households were consuming meat and fish obtained through traditional fishing and hunting activities.

In respect to *education*, both high school and university degree attainment rates indicate a persistent education gap between the NWT communities and the rest of Canada as well as disparities within the NWT. The education gap leads to continual earning and employment gaps in communities and population groups without access to education and training.

Finally, the *Fate Control Index* demonstrates differences between the capital and the few territorial towns and Aboriginal communities. The latter have higher levels of cultural wellbeing and stronger local control over their affairs, but lack economic self-sufficiency. Aboriginal communities such as Deline, Whati, Gameti, and Behchoko, show the highest composite fate control. We also observed a very modest increase in fate control associated with settling CLCAs. This, however, was offset by declining language retention. The NWT has developed a unique consensus governance system consisting of 7 regional Aboriginal governments, each in various stages of negotiating self-governance. We recognize and speculate that this may have an impact on perceptions and measures of fate control in the NWT. However, our fate control index did not detect that impact and changing the indicator in an attempt to capture that impact would jeopardize comparisons across the Arctic region.

The analysis unveils strong and persistent regional differences within the NWT. Material wellbeing indicators show that NWT is firmly divided into a small group of 'haves' (Yellowknife, Inuvik, Hay River) and a large group of 'have-nots.' Whereas the traditional economy provides a way to maintain material wellbeing, disengagement of the local labor force with the wage sector is a serious problem. The wage, education and employment gaps persist. The 'have-not' communities, particularly remote Aboriginal settlements have limited resources and exhibit dependency on government transfers, which both negatively affect material wellbeing and fate control. Still, they lead NWT in terms of contact with nature and cultural vitality. A solution for these communities, perhaps, can be found in reconciling traditional lifestyles and activities with the 'capitalist' economy by intertwining these two sectors with economic, institutional and social ties.

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Mackenzie Valley, NWT. Photo: A. Petrov

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ARCTIC SOCIAL INDICATORS APPLICATION

Chapter 4

WEST-NORDIC REGION

Rasmus Ole Rasmussen, Johanna Roto, Lawrence C. Hamilton

4.0 Introduction: The West-Nordic Region

The concept:

The ***West-Nordic Region*** encompasses in this context the countries of Faroe Islands, Greenland, Iceland and coastal Western Norway. Collectively, these nations of the North Atlantic cover a very large geographical area including large sea territories, and the sea is one component that connects them — in their fisheries and marine resources, first of all, but also through historical and modern mobility.

The four countries share strong historical and cultural bonds, as well as basic natural and economic conditions. The special cultural and geographic realities of the Faroe Islands, Greenland and Iceland were subject to political discussions of the early 1980s. Subsequently, the three countries agreed to establish a joint parliamentary organisation. The chief aim was cooperation on common issues including West Nordic, or North Atlantic, issues with the Nordic Council as well as other organisations. The West Nordic Parliamentarian Council of Cooperation was formed in 1985. In 1997 the name was changed to the West Nordic Council as the member parliaments approved the Council's present Charter.

The main objectives of the West Nordic Council are: to promote West Nordic (North Atlantic) interests; to be guardians of North Atlantic resources and North Atlantic culture and to help promoting West Nordic interests through the West Nordic governments – not least with regards to the serious issues of resource management, pollution etc.; to follow up on the government's West Nordic cooperation; to work with the Nordic Council and to be the West Nordic link in Nordic cooperation; and to act as the parliamentary link for inter-West Nordic organisations, including Arctic parliamentary cooperation.

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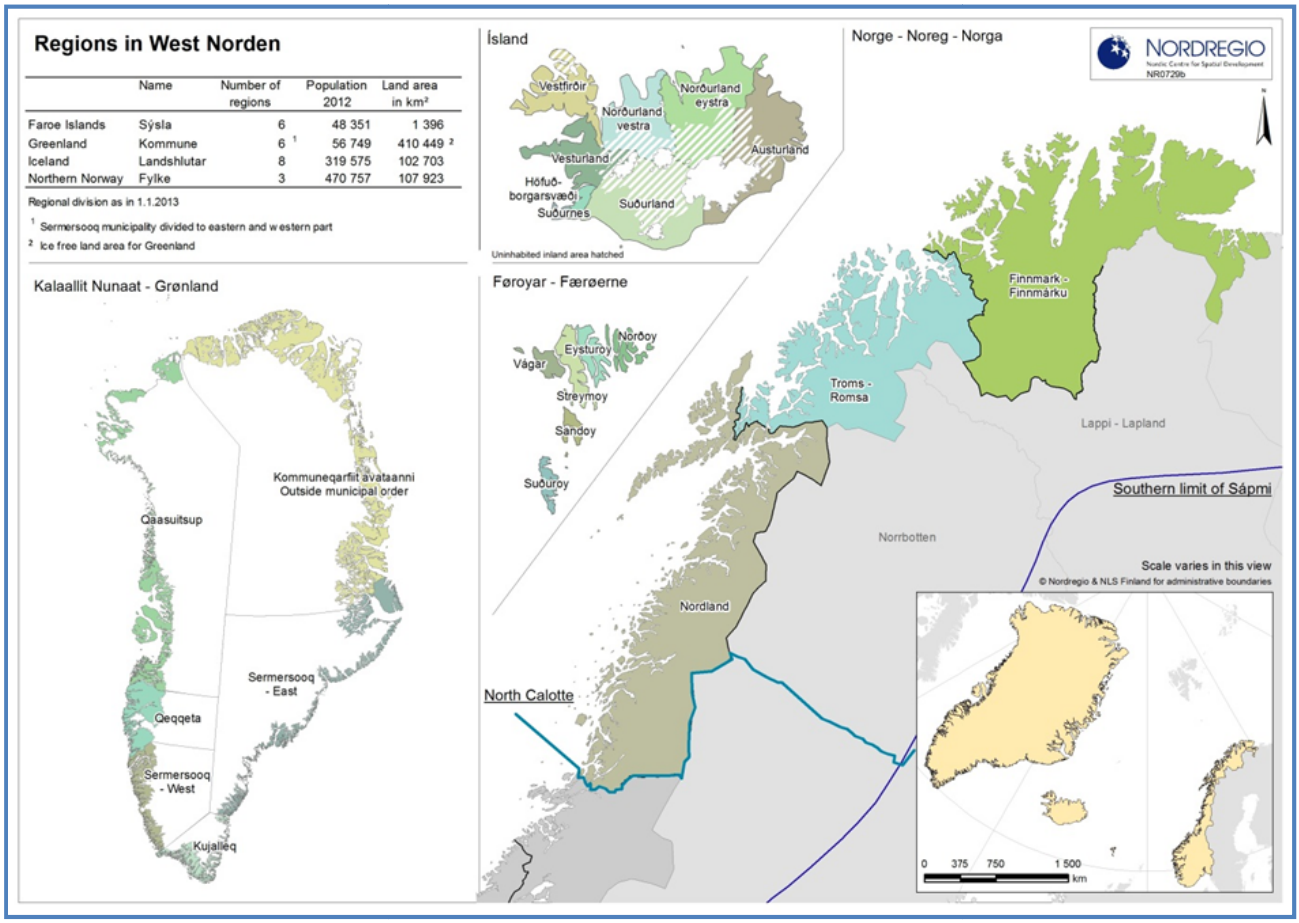
The West-Nordic Region in the Arctic

The West-Nordic Region is comprised of Greenland, Iceland, Faroe Islands and Norway, all of which are represented in the Arctic Council — Iceland and Norway as individual countries. Greenland and Faroe Islands are represented as part of the delegation of the Kingdom of Denmark. The map below shows what is generally recognized as Arctic regions — Iceland, Faroe Islands and Greenland plus the northernmost regions of Norway, Sweden and Finland i.e. north of the black line crossing the three countries on map 1 below – the section of the three countries often referred to as "North Calotte". This division, however, crosses what is generally recognised as being the southern limit of the Sápmi shown by the blue line on the map.



Map 1: The Nordic-Arctic Region.

The region encompasses Greenland, Faroe Islands, Iceland and the northern counties of Finnmark, Troms and Nordland in Norway, as shown on Map 1. Note that the Northeast part of Greenland is an uninhabited National Park outside the municipal structure. On the maps showing thematic characteristics the colour coding and signatures shown on this part of the map refer to populations living outside the municipalities, such as at bases or weather stations.

The map shows the overall administrative division in the West Nordic region. If not otherwise mentioned, the analysis in this chapter will follow the regional division presented above. Faroe Islands, Iceland and Coastal Norway are included at the regional level. In the case of

Norway we have included only the most northern three counties which are officially situated in the Arctic region. Greenland is included at the municipal level according to the present municipal structure established in 2009 with four municipalities, but we have subdivided the largest municipality of Sermersooq into its Eastern and Western part in order to show the remarkable differences between east and west within this new and geographically large municipality.

Focusing on the West-Nordic region has advantages for presenting important variations in the Arctic setting. It is, however, also a challenge as it means having to deal with several options that complicate the analyses. Different political bodies such as nation states, Nordic Council, three self-governing areas; indigenous as well as non-indigenous peoples; and greatly differing environmental and social conditions must all be taken into account. The present study needs to reflect this complexity in testing the applicability and especially the comparability of the proposed ASI indicators.

A village in the Faroe Islands situated between the lowland for farming, the mountains for grazing, and the sea for fishing. Photo: Rasmus Ole Rasmussen

The framework

Understanding the development characteristics of the West-Nordic region is difficult without seeing the development in a general Nordic perspective. The trends and patterns of regional development do in many ways reflect the general Nordic setting, shaped by the specific geographical situation in each of the regions. Moreover, the historical background — especially the cooperation through the Nordic Council and Nordic Council of Ministers — both creates and maintains marked similarities. The background and characteristics of this cooperation is discussed further in the final sections of this volume.

Demographic and socio-economic development in Nordic countries show both similarities and differences compared with other Arctic regions. Ageing has become an issue of common concern, as it has in other parts of Northern Europe. Life expectancy at birth in the Nordic region remains high compared to both the Arctic and most European countries.

The combination of reliance on renewable resources, the island characteristics of the settlements, and a history of economic dependency has resulted in internal and external relations that influence the population structure today. Due to the size and level of isolation of communities a number of demographic challenges are more clearly exposed in the region, sometimes to a degree that presents challenges for the settlements' future existence.

Access to education and to skilled employment has impact on the age structure of the region. Young adults are mobile, and can migrate temporarily — or, with increasing frequency, permanently — to find better education and jobs. There are marked differences in gender approaches to issues such as education, job requirements and access to cultural opportunities, giving rise to migration-related gender imbalances that have become an issue for many communities.

Harpa – Reykjavik concert hall and conference centre. Photo: Joan Nymand Larsen

Settlement structures

Before analysing the applicability of the ASI indicators, some remarks regarding the overall structure of the region would be useful. Map 2 shows the settlement distribution as of 2005. The circles in the map show the location of all built-up areas in the northernmost part of the Nordic Countries with more than 200 inhabitants. The area of the circle is proportional to the total number of inhabitants in a given settlement. In addition, rate of population change is

shown by colours to illustrate that trends also vary significantly, contributing to demographic polarisation.

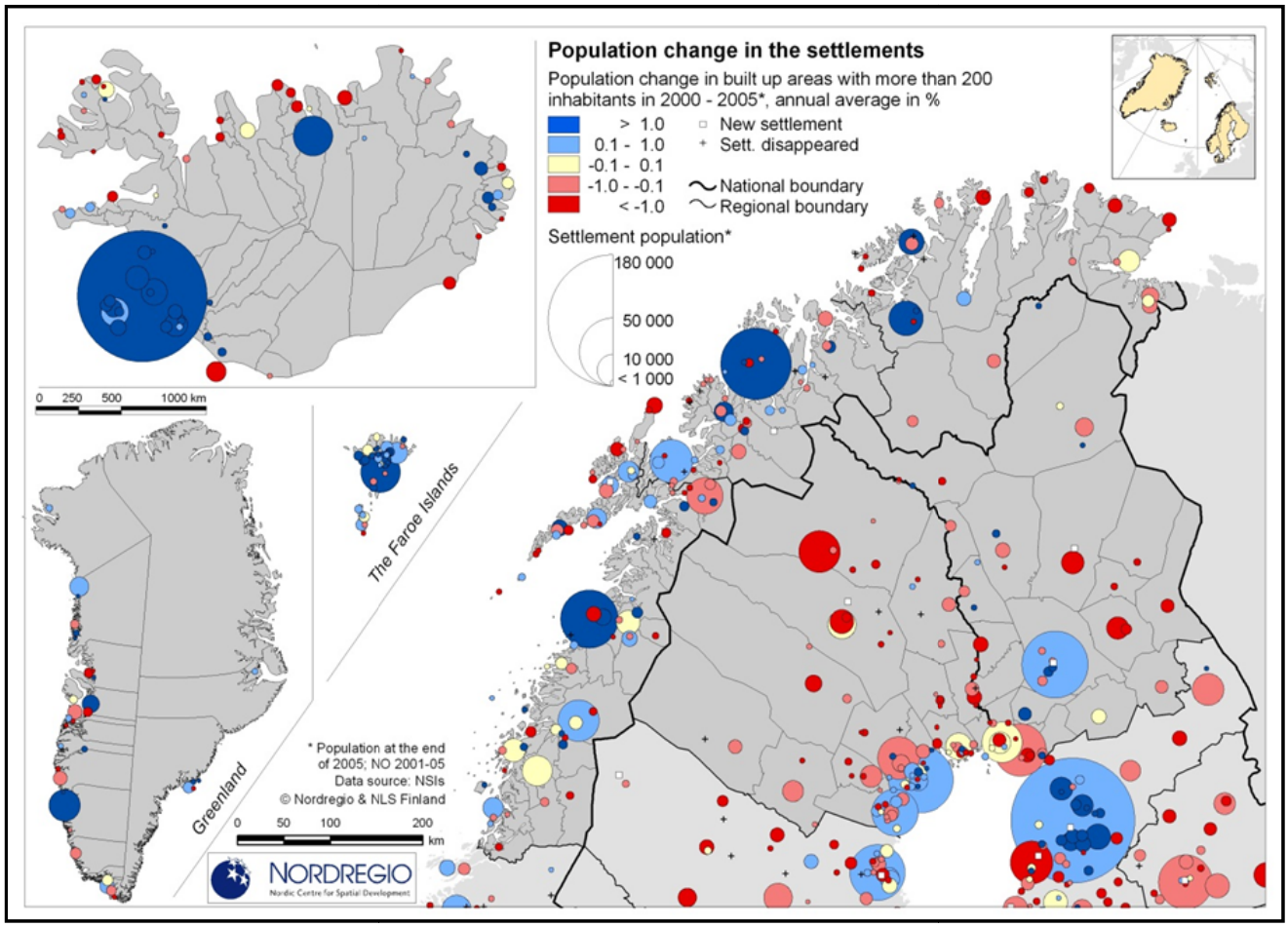
The settlement structure with small, often isolated villages, larger regional towns, and a capital city, has been a pattern that has characterized the West-Nordic region for centuries. Presently it shows a process of change, with growing population in larger centres, and reduction in the size of villages. The villages are typically small settlements below 1,000 inhabitants. Many of the villages were established along the development of fisheries or agriculture, which remain important activities, although newer activities such as tourism have become dominant in some places. Depending on local resources, processing industries are also a source of some job creation. Some of the villages may be able to provide different kinds of services such as a convenience store, a nursery home and sometimes a kindergarten. If there is a school it would typically provide teaching up to 6th or 7th grade. A nurse and/or midwife may be available, but this usually depends on the accessibility to a nearby centre. Sometimes there may be homes for elders. In many Greenland villages there also are service houses that provide facilities for laundry, bath, and so forth.

Dinghys and leisure time boats in the harbor of Ilulissat, West Greenland. Photo: Rasmus Ole Rasmussen

The towns are settlements with one to ten thousand inhabitants, often serving as transportation and administrative hub for a number of villages. Towns provide a variety of services, nurseries, kindergartens, and schools. In Greenland they often have a dormitory where children from the villages can stay during the week while attending school. Towns may have vocational training schools and, in the larger places, also high schools. Health and social services include a branch of a regional hospital, nurses, doctors etc., and homes for the elderly. In many cases towns are also the regional centres with administrative functions providing a number of jobs as well. In the West-Nordic region a number of municipal reforms

in the past 20 years have resulted in circumstances where the precise identification of an administrative hierarchy connected to specific places cannot be made in the same way as it was 25 years ago, although the functions have remained more or less the same.

The cities are usually identified as capital areas, with a range of administrative functions. They differ markedly in size, however, and also in the scope of services available. Norwegian West-Nordic cities differ much from Reykjavik, Torshavn and Nuuk because the latter places are government cities and at the same time regional hubs. While there are several places in West-Nordic Norway that are considered cities, they have administrative duties at a lower level compared with the national center in Oslo.



Map 2: Settlement structure and population change.

It is important to emphasize that aside from this general description of a settlement structure, there are marked differences both between the countries and between regions within countries. Transportation access is decisive for the services and the role the settlement plays in a hierarchy. Greenland presents the most extreme case by far, as none of the settlements are connected by roads.

Demographic parameters of change

Demography is a major parameter of West-Nordic change. The region is entering the final stage of the Demographic Transition model: decreasing mortality, as well as decreasing births, eventually leading to a low natural rate of growth. Norway has the lowest birth rate. Greenland and the Faroe Islands are higher, while Icelandic birth rates fall between these extremes. Death rates are exceptionally low in the Nordic countries, and comparable to that of Japan. The situation in the Faroe Islands resembles Iceland when it comes to birth rate (relatively low), while it resembles Greenland in relation to death rate (relatively higher). As a consequence it has a lower natural growth rate than either Greenland or Iceland. At the same time there are close relations between the general population development of Faroe Islands and crises in the fisheries that can account for some of the most marked variations, especially during the late 1980's and the beginning of the 1990's. Finally Greenland has maintained the highest birth rate, combined with a death rate similar to the situation in the Faroe Islands, leading to the highest natural growth rate among the four West-Nordic countries. For both Greenland and Faroe Islands, lifestyle diseases in combination with an ageing population increase the death rate, and in recent years it has become at level with the Norwegian. Similarly the birth rates are converging in the four countries.

A general characteristic of the West-Nordic Region is the relatively high proportion of children and young persons, compared with other Nordic or northern European areas. This reflects relatively higher birth rates, in particular. Although this pattern has changed markedly during the last decade, the average age in West-Nordic regions remain well below that of other Nordic regions. Important sub-regional differences exist too, however — especially related to rurality/urbanity. In the case of Greenland, the central region in West Greenland, and especially the capital region, is by far the largest urban area with a family structure similar to that of the Nordic countries overall. Greater differences occur in the eastern and northern parts of Greenland, where the young account for a higher proportion of the population.

By January 2012 the average age in the West-Nordic Region was 38.1 years as shown on Map 3, which is young compared to other Nordic or European Countries. The population is rapidly aging, however, as shown on Map 4. During the 10 year period from 2002 to 2012 the average age increased by 1.2 years. In the sparsely populated regions like Vestfirðir (Iceland) and Sandoy (Faroe Islands), however, the average rose by more than three years. In the Faroe Islands a pattern of ageing in the remote and rural regions is quite clear whereas the capital region has maintained a relatively younger population (by West-Nordic standards) due to high in-migration of younger persons, primarily from more remote Faroese places.

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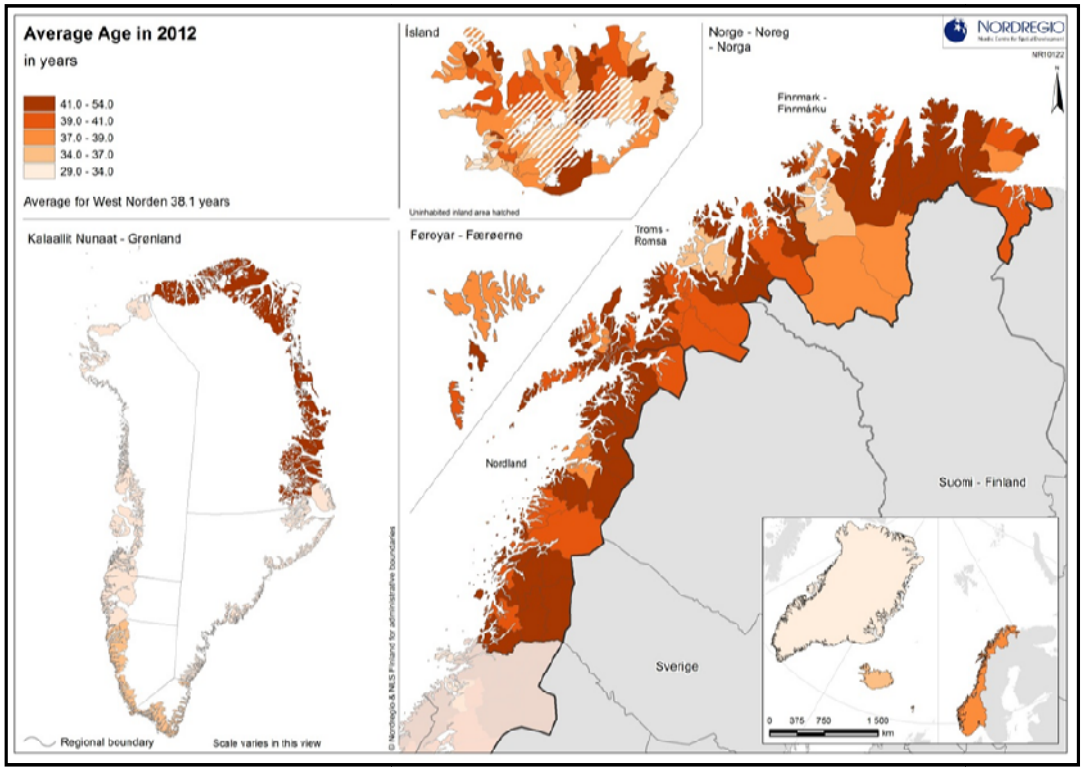
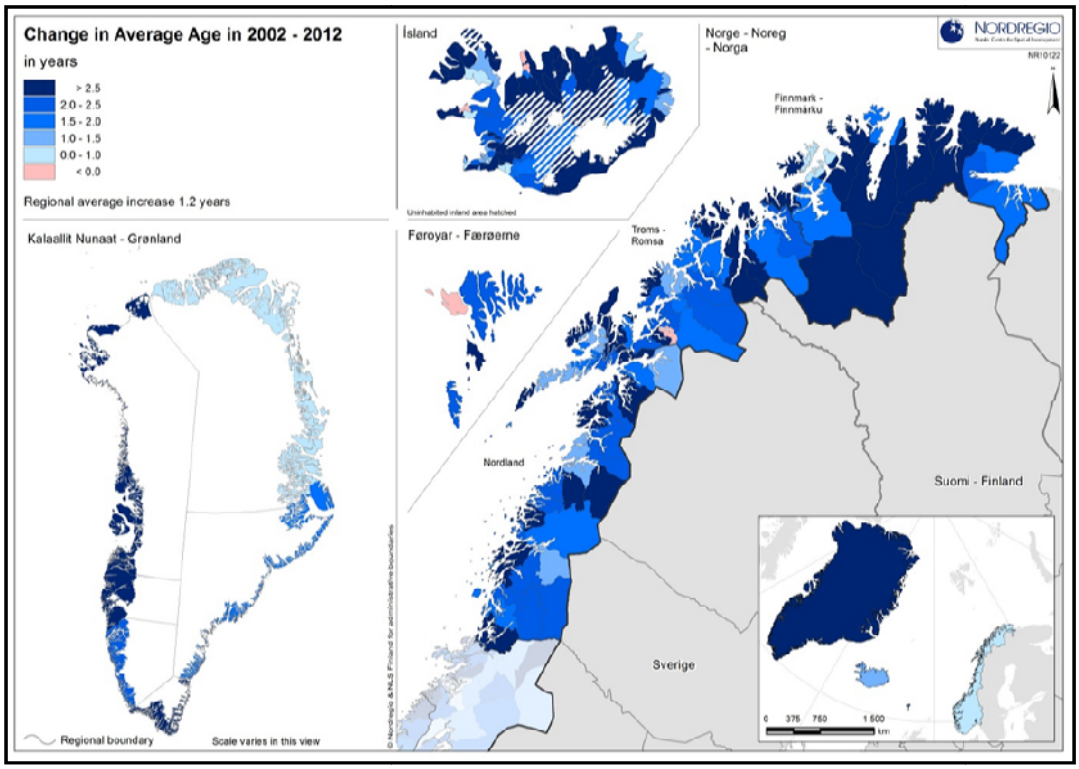


Map 3: Average age of the population in the West-Nordic Region.



Map 4: Change in average age from 2002 to 2012 in the West-Nordic Region.

A major factor for ageing and migration patterns has been the attraction of urban centres, especially the capital areas. A clear pattern of rural or "peripheral" versus urban or "central"

municipalities emerges, with the former characterized by net out-migration, and the latter by in-migration. Gender differences appear in the migration patterns as well. Males tend to move shorter distances, and more frequently return to place of origin. Females, on the other hand, often follow the "step-stone" pattern of migration, from smaller places to local centres, to regional centres, to the capital region, and eventually out of the country.

Mobility is substantially higher than the average level in the Nordic countries. This partly reflects the limited services available in the smaller communities, including jobs, educational opportunities or special medical services. It more generally reflects accessibility. Distances and infrastructure limit opportunities for commuting.

Mobility between countries is shaped by history and traditions established during centuries of colonial and semi-colonial relations. As a consequence it is difficult to look at migration within the West-Nordic Region without also considering Denmark, which brings forward two issues. On one hand we have the great importance of migration or demographic mobility between Denmark, Faroe Islands and Greenland. The connection to Denmark is crucial in many respects: education, family relations, retirement, etc. As a consequence there are connections between the labour markets of Greenland, Faroe Islands and Denmark. Another issue has been the the recent economic crisis, which first of all hit Iceland, but also impacted other parts of the West-Nordic Region, leading to increased out-migration.

Global migration has growing importance in this region, and several groups play growing roles in the development process. Among these groups two should be emphasized: immigrants from Thailand, who are predominantly female; and immigrants from Poland, who are predominantly male. From 1998 to 2009 the total number of Thai citizens settled in the far north, i.e. Greenland, Iceland, Faroe Island and Svalbard has increased from 356 to 824 persons.

A consequence of the demographic changes is, as mentioned, the marked increase in the old age population, and thereby also an increase in the dependency ratio. There are some differences within the West-Nordic Region, from a relatively low proportion of elders in Greenland through a higher proportion in Iceland, even higher in the Faroe Islands, and highest in Norway. Although the older population tends to be more dependent in national terms, they may contribute to local economies in several ways. For example, pensions provide cash income to them and their families. They may also contribute through subsistence activities.

Ethnicity

Two Indigenous Peoples are recognized within the West-Nordic region – the Kalaalit or Greenlanders in Greenland, and the Sami in Norway, Sweden, Finland and Russia.

In Greenland, ethnic classifications as "European", "Greenlander" and "Mixed" had been concepts used throughout the whole period of colonialism. But as the colonial system did not

have to comply with any legal framework in Denmark, it was up to the representatives of the Colonial Government to interpret who was a Greenlander, who was Mixed, and who was European. For statistical purposes and local administration the registration of persons in Greenland has traditionally been using the classifications of Greenlander, European or Mixed. But the classification has never been based on genealogy, i.e. identification of family relations or fraction of "blood" relations to Greenlandic ancestors.

The question of knowing who is a Greenlander and who is not was introduced in Greenland in connection with the modernization process where persons for the building industry were hired from Denmark and paid according to the wage levels in Denmark. Greenlanders working in the same building industry, however, were paid salaries complying with the level in Greenland, and the official reason for this difference were that the two groups of persons (Greenlanders and Non-Greenlanders) represented two different labour markets. To establish a "legal" background for this, the place of birth was established as the means of deciding which salary should be paid. The "Birthplace criteria" was obviously discriminatory, and clearly seen as such by the Greenlanders themselves.

The main problem of actually registering who was considered a Greenlander or born in Greenland first became an issue when the formal colonial system was abolished in 1953, and Greenland became a county in Denmark, because from then on the legal setting from Denmark became the law in Greenland. There were many situations where laws in Denmark were "not applicable in Greenland", but the non-discriminatory laws based on a person's ethnic origin in the Danish system could not have been surpassed by special laws for Greenland. People were registered by "Public Registration", a central system fed by information from the municipalities, where person's name, address, etc. were kept on files. When Greenland became a county of Denmark the system necessarily started including Greenlanders. But the system had not been constructed to include any ethnic information or details about personal relations.

The present system of unique Personal ID numbers was introduced in Denmark in 1968, and established in Greenland in 1972. The system has unique information for all persons, including their place of birth, spouses, education, children and so forth. In the first version for Greenland the ID number itself indicated whether a person was born in Greenland, but due to protests from Greenland this was changed in the final system. As a result, no ethnic references exist in the system. If distinctions are needed, only the information of place of birth enables some kind of registration. The Faroese rejected the system, and therefore it is not possible to make similar analyses in Faroe Islands.

As a consequence it is not possible to identify ethnicity through the system. Any child – born by Greenlanders or Danes — will be registered as "born in Greenland" if that is the case, while similarly a person of any parentage could be registered as "born outside Greenland." Many ethnic Greenlanders studying in Denmark will have children born in Denmark, and consequently these children will maintain a registration of being "born in Denmark" whether living in Denmark or returning to Greenland, and therefore effectively counted as a Dane in some statistics. And similarly many of the Danes working some years in Greenland may

choose to have a child while there. This child will be registered as being "born in Greenland", and therefore counted as a Greenlander in some statistics.

Just as with the case of Greenland a general question exists of who are identified as being Sami, and how many Sami there really are. As emphasized by the Nordic Sami Institute, there are several reasons why such questions are difficult to answer. People hold different perceptions of what it requires to be Sami, not only at the individual level, but especially in relation to the institutionalization of the concept.

At the individual level the history of "Norwegisation", i.e. the idea of turning the Norwegian population into a common concept of "being a Norwegian" has been crucial. Seen from a Sami perspective this policy created pressure to abandon Sami culture and identity, and at times even to hide their identity.

In conjunction with this official policy there have been only vague attempts to institutionalize the concept, and to try to register people officially as Sami. Until the 1930's a number of attempts were made, and some materials were gathered, but these were never very systematic and coherent. According to recent calculations the Sami Parliament in Norway suggests that there are about 100,000 Sami, while the Sami Parliament in Sweden calculates that the group of Sami include a total of around 80,000 persons, of which 2,000 are in Russia (Kola Peninsula), 8,000 in Finland, 20,000 in Sweden and somewhere around 50,000-65,000 in Norway.

Due to such complications regarding definitions and registration, available statistics can be limited or difficult to interpret. Statistics Norway is able to provide some simple numbers in situations where registration has been possible. This, for instance includes the following (2007):

- Registered for voting to the Sameting: 12,650
- Children in Sami kindergartens: 1,150
- People involved in reindeer related activities: 2,820
- Children in school with Sami as first language: 990
- Children in school with Sami as second language: 1,650

4.1 Data and Methodology

This chapter attempts to apply the indicators selected and identified in the Arctic Social Indicators project (ASI Phase 1; Larsen et al. 2010) to the West-Nordic Region. Difficulties in data collection for some of the indicators are discussed, and suggested revisions to these are brought forward. To the extent possible we have applied the preferred ASI indicator as shown in the first column in Figure 1 below. In some cases we have had to adjust the indicator due to lack of data availability, and in a few cases we have elaborated on some alternative indicators.

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Preferred and Selected Indicators				
DOMAIN	PREFERRED INDICATOR (ASI 2010)	West-Nordic Region INDCATOR 1	West-Nordic Region INDICATOR 2	West-Nordic Region INDICATOR 3
Health & Population	Infant Mortality	Infant Mortality	Suicide Rate	Net Migration
Material well-being	Per capita Household Income	Average taxable income per capita	Unemployment rate	
Education	Ratio of Students Completing Post-Secondary Education	Ratio of tertiary level educated population aged 25+	Share of female students in %	Access to higher education institutions within country/region
Cultural Vitality	Language Retention	Language Retention	Accessibility to traditional foods	
Contact with Nature	Consumption of Traditional Food / Harvest of Traditional Foods	Harvest of traditional foods	% of population accessing traditional food	
Fate Control	Fate Control Index*	Fate Control Index		
*Fate control index defined as: a) The percentage of indigenous members in governing bodies (municipal,community, regional) relative to the percentage of the indigenous people in the total population; b)The percentage of surface lands legally controlled by the inhabitants through public governments, Native corporations, and obshchiny; c)The percentage of public expenses within the region (regional government, municipal taxes, community sales taxes) raised locally; d) The percentage of individuals who speak a mother tongue (whether Native or not) in relation to the percentage of individuals reporting corresponding ethnicity				
Data sources				
National Statistical Authorities in Norway, Iceland, Greenland and Faroe Islands. Register data with yearly updates				
For specific references, see caption below	Food Retai-shop branch statistics (1)	Mobility in Greenland. Survey (2)	Hunter- and fishermen survey in combination with official hunting and fishing statistics (3)	SLICA (4)

Figure 1: The preferred and selected indicators

As indicated in Figure 1 all the preferred indicators have been applied to the West-Nordic Region, but for some of them minor adjustments have been necessary. In most cases it has been possible to find the indicators at the suggested regional level, but in a few cases only national data exist.

4.2 Health and Population Domain

The chosen indicator for the health and population domain is the infant mortality rate, and with suicide rate as a second indicator. For population dynamics the chosen indicator is net migration. Several other indicators are available such as age structure and changes in age structure, population change, and – among the most important ones – the ageing of the population. But the net migration rate is currently the biggest challenge with outmigration of the young and especially the young women.

Infant Mortality Rate Infant deaths per 1 000 births					
	2000	2005	2010	2011	2012
Norway	4,0	3,7	3,6	3,5	3,5
Iceland	3,6	3,3	3,2	3,2	3,2
Faroe Islands	6,9	6,2	6,2	6,1	5,9
Greenland	18,3	15,8	10,3	10,1	9,8
Source: Norwegian, Icelandic, Greenlandic and Faroese national statistics					

Figure 2: Infant mortality rates and changes in infant mortality rate from 2000 to 2012 in the West-Nordic Region. Source: National Statistics

First Priority Indicator: Infant Mortality Rate. The West-Nordic Region is characterised overall by low infant mortality (Figure 2), but with some variations related partly to medical support. The island geography of Greenland and Faroe Islands mean that hospitals may be hours to a full day away for many people. An increasing number of young people move to the larger settlements, with health care related to childbirth and young children among the attractions. The earlier situation where childbirths were dominated by high birth rates in the villages is in the process of change as still more young people choose to settle and give births in towns with quick and easy access to medical services.

Data from Greenland serve to illustrate the differences in mortality rates between small and less accessible places versus middle-sized and larger towns (Figure 3). Two-year averages (2010–2011) help to smooth out the wider variations with small populations.

As can be seen there are marked differences between the municipalities. The average for Greenland as a whole is 8.9 deaths per 1,000 live births. The only municipalities with lower mortality is Sermersooq west – the part of the municipality located in West Greenland and with Nuuk as the main town showing an infant mortality of 2.1, which is even lower than the low infant mortalities in Iceland and Norway. The other municipality is Avataanni with mortality comparable to those of Iceland and Norway. This municipality is the northern part of Greenland and among the explanations for this low level is the Thule Air Base which is located there. Even though the base does not interfere much with the towns and villages on a daily basis it does provide top facilities and transport when needed.

Infant Mortality Rate, average 2010 and 2011 Infant deaths per 1 000 births					
	Kujjaleq	Sermersooq West	Sermersooq East	Qeqqata	Avataanni
All settlements	11,0	2,1	16,4	13,2	3,3
Towns	5,2	2,0	8,1	-	3,2
Villages	17,6	2,2	23,8	25,0	3,4
Source: Statistics Greenland					

Figure 3: Average of infant mortality rate in 2010 and 2011 for Greenland municipalities subdivided on municipal total, , towns and villages. Source: Statistics Greenland

The municipality with the highest infant mortality is Sermersooq east – the East Greenland part of the Sermersooq municipality – with a level of 16.4, followed by Qeqqata and Kujjaleq in Greenland West located north and south of Sermersooq respectively. At the same time the subdivision in towns and villages reveals the much higher level in villages. But for Sermersooq west and Avataanni the differences are only minor, and at level with the Nordic countries in general.

Second Priority Indicator: Suicide Rate. In terms of suicide ratios there are marked differences within the West-Nordic Region. Besides regional differences there is also a clear gender difference. Across all regions, suicide rates are markedly higher for men.

When interpreting the data from 1995 to 2009 shown in Figure 4 it is important to note that the numbers are relatively small, so they vary somewhat erratically from year to year (more so than demographic variables such as age or net migration). Comparisons across several years must be interpreted with caution, as we cannot be sure without further analysis whether they represent real change or unpredictable variations.

Suicide Rate Suicides per 100 000 inhabitants						
Gender	Males			Females		
Year	1995	2005	2009	1995	2005	2009
Norway	20	16	17	12	16	7
Iceland	18	16	18	2	6	4
Faroe Islands	3	12	8	2	1	1
Greenland	171	89	100	54	86	27
Source: Norwegian, Icelandic, Greenlandic and Faroese national statistics						

Figure 4: Gender based changes in suicide rates 1995-2009. Source: Nordic Statistical Yearbook. Note: Faroe Islands: 1995 refers to 1996. Men 2009 refers to 2008. Women 2009 refers to 2006. Greenland: 1995 refers to 1996. Faroe Islands: Data for suicide: 2005 refers to 2006. 2009 data for men refer to 2008. 2009 data for women refer to 2006.

Three things are clear, however. There are marked differences between the four countries with Greenland having the highest suicide rate, and Faroe Islands the lowest. Over time there seems to be a general decline in suicide rates. And male suicide rates are much higher than female.

Further regional differences within the countries may provide information that can support more detailed analysis. Regional data, however, are available only the relatively larger populations of Norway and Iceland. These additional data lend support to some of the conclusions above. In Map 5 the regional variations in suicide in 2009 confirm two patterns noted earlier. The suicide rate is 3-4 times higher among men than women, and overall the rate of suicides has declined over the past 15 years.

Third Priority Indicator: Net-Migration Rate. The third indicator in relation to the Health and Population domain is the net-migration rates for the period 2006-2010. Map 6 combines the two main components of migration – domestic and international migration – and shows the resulting net-migration. The blue colours indicate positive net-migration and indicate by the shades which component – internal or external – has contributed the most to the result.

Dark blue colour indicates positive net-migration both due to domestic in-migration and immigration, whereas a light blue colour indicates that net-migration is positive due to intensive immigration. The turquoise colour indicates positive domestic in-migration that compensates emigration.

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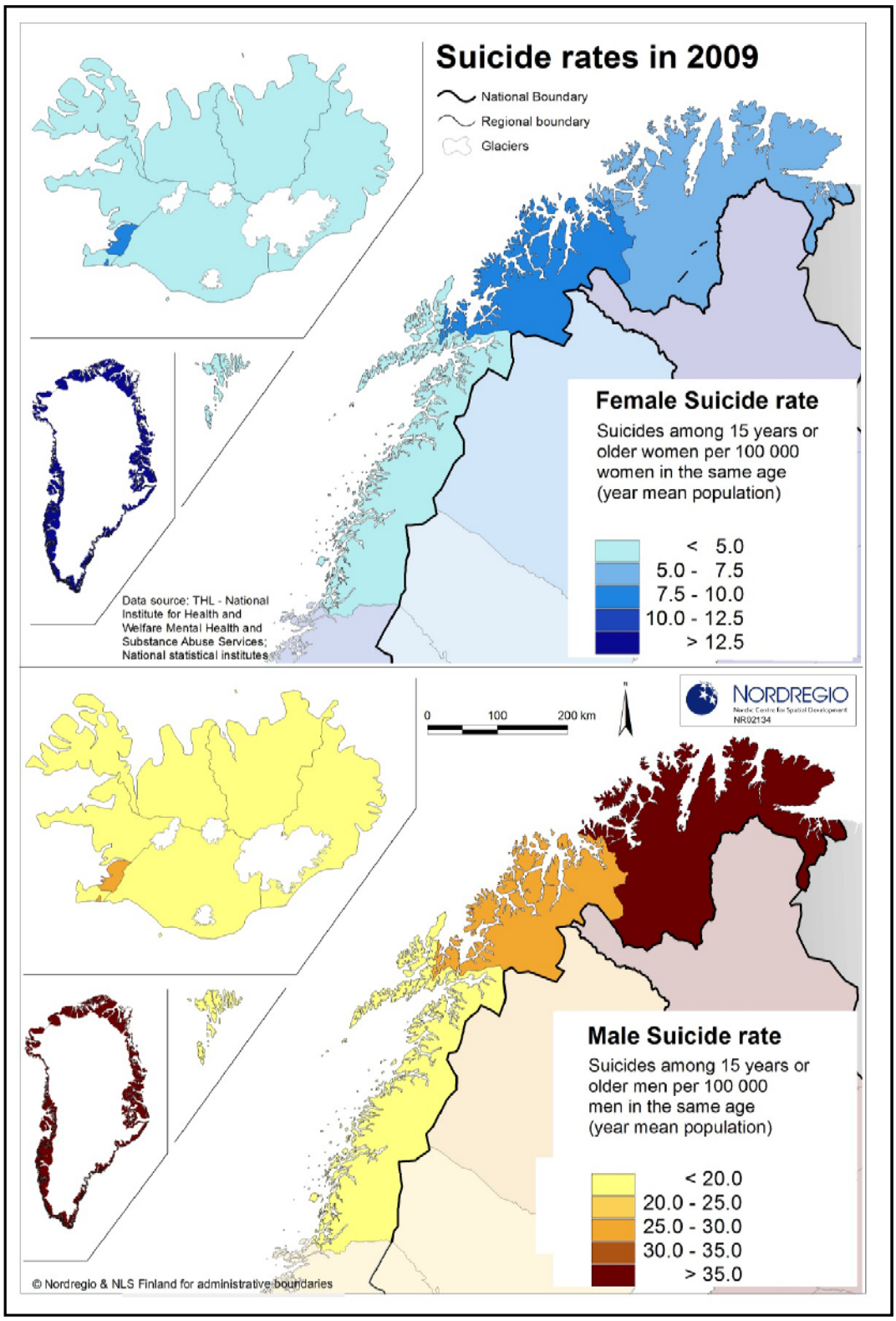
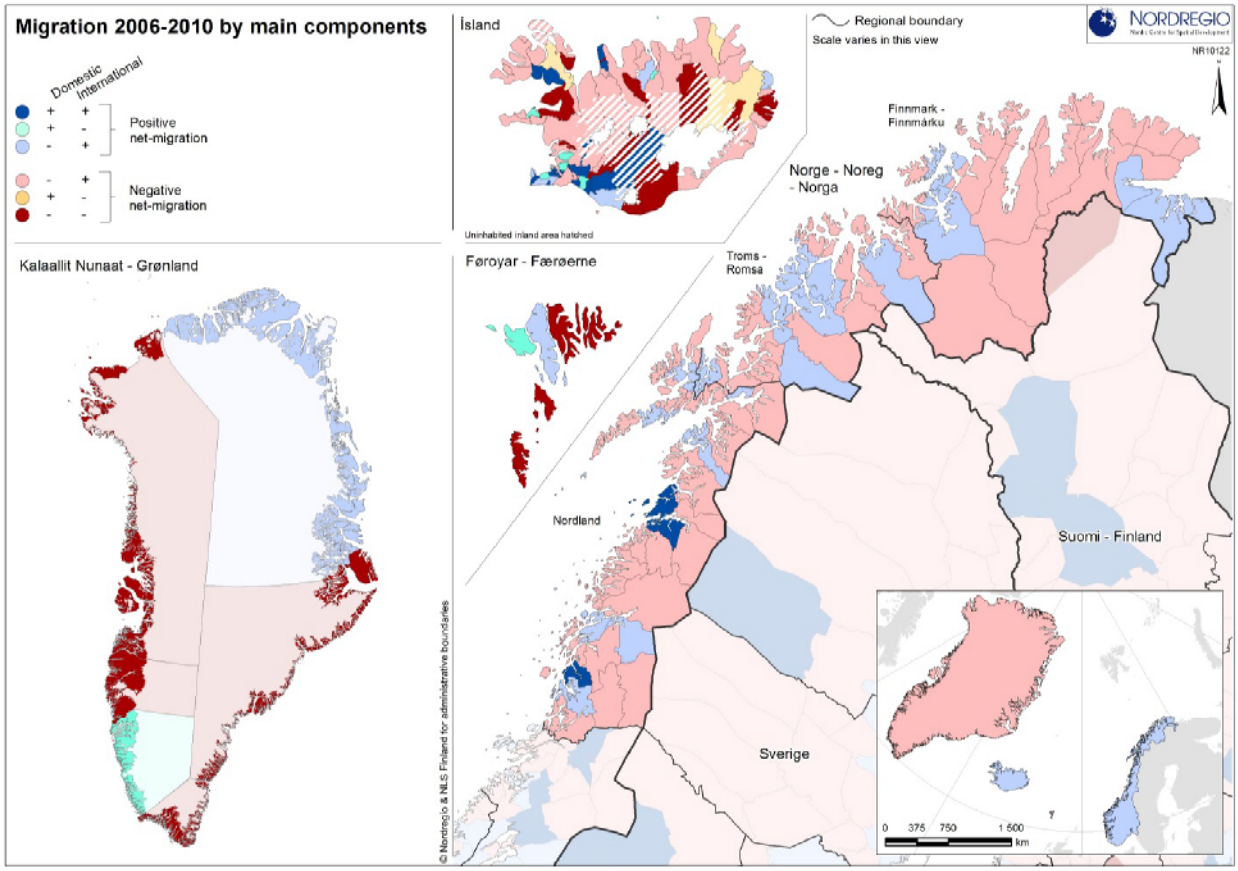


Map 5: Suicide rates in the West Nordic Region in 2009.



Map 6: Migration 2006-2010 by main components.

The red colours show negative net-migration, and with similar use of shades. Dark red colour shows negative net-migration both due to domestic out-migration and emigration, pink colour indicates that the net-migration is negative only due to intensive domestic out-migration, whereas light orange indicates positive domestic in-migration that does not compensate emigration.

The whole West-Nordic Region is noticably influenced by net out-migrations. This is most obvious in the case of Iceland, Faroe Islands and Greenland where most municipalities are showing negative net-migrations, and generally including both domestic and international migration as determinants. In these countries it is mostly the capital regions where positive net-migration appears. In coastal Norway a more diverse pattern appears, with a more dispersed pattern of growth centres primarily based on domestic migration meaning that the coastal region as such may not experience net outmigration but rather concentration of people in larger cities.

Conclusions: Three different dimensions of health. Using the three indicators three different and important dimensions of the concept of health are identified in the West-Nordic Region:

- Infant mortality tells us something important about the physical living conditions and accessibility – are there access to the facilities that are needed in order to cope with critical situations in connection with birth?

- The suicide rate shows something about the capability of coping with mental conditions and especially with mental stress situations. It is an indicator of the ability of a place and environment to respond to such situations.

- The net migration rate is an indicator of community health and options for maintaining viable communities where people can and will want to live and work.

All indicators are accessible through registered data and available through yearly updates.

4.3 The Material Wellbeing Domain

While the suggested indicator for the material wellbeing domain is the per capita household income, our West Nordic case study instead uses per capita taxable income. The reason for choosing per capita income instead of per capita household income has first and foremost been to provide a comparative base for future data collections. The per capita household income is influenced by changes in household structures, and on-going changes in household size limit the comparability. Taxable income is available through registered data, and includes in all countries income from both wage work and salaries and other types of income such as from hunting, fishing, agriculture etc. Also, transfers are included. Informal economic activities which only encompasses about 1.5% of the total income generation may not be included.

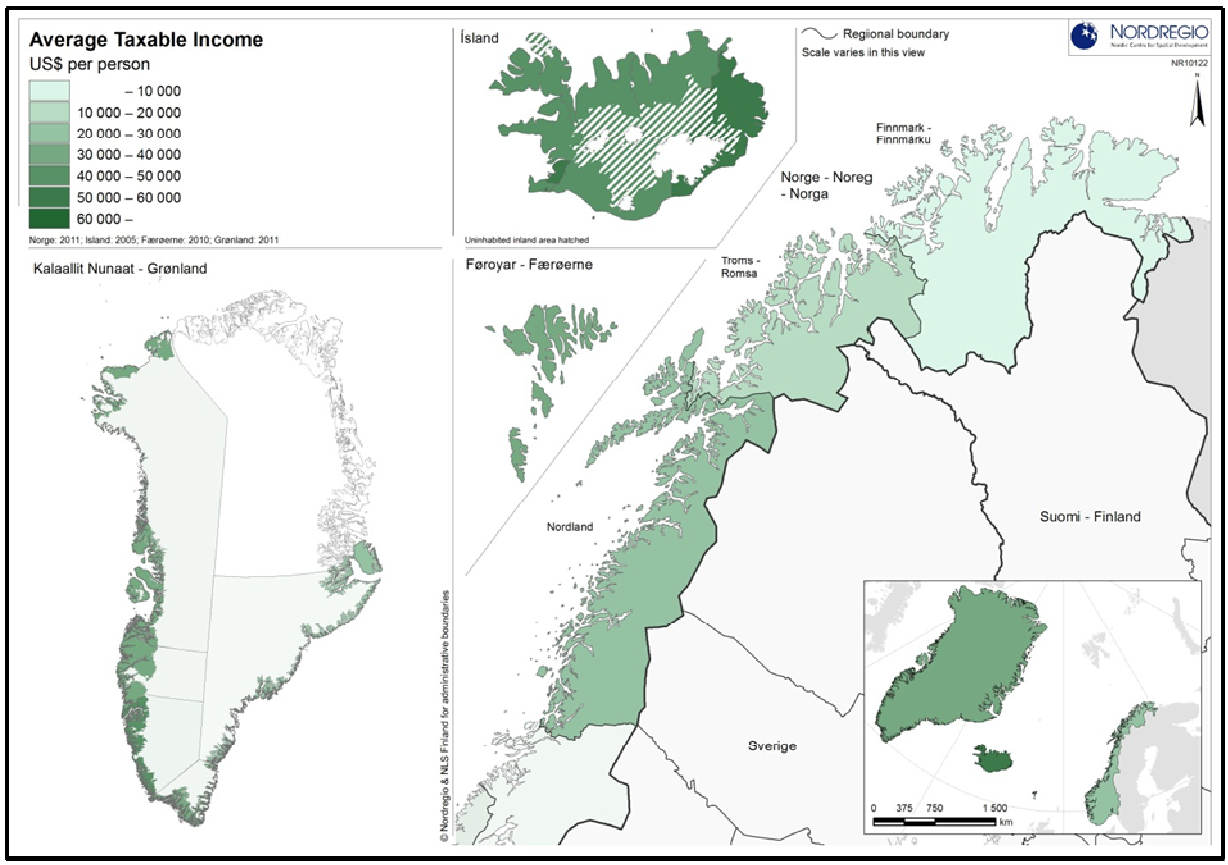
A second indicator is the unemployment rate, calculated as the annual average unemployment rate for the work force (age 15-64 years). Income through salaries from formal sources are the most important economic activity, which also means that lack of income due to unemployment has large impacts on the material wellbeing.

First Priority Indicator: Average taxable income per capita. Map 7 shows the national level for Iceland, Faroe Island and Greenland, and show data in Coastal Norway according to the structure emphasized by the regional approach. The calculated values in national currency have been converted to US dollars to make them comparable.

The lowest value is found in Finnmark, the most northern county in Norway, while the highest value is found in the Reykjavik region in Iceland. In between these values is rural Iceland, and at the next level followed by Greenland, Faroe Islands and Nordland County in Norway. Troms County is situated next to the lowest level in Finnmark.

In general, Norway has high income levels relative to other Nordic countries. A special situation exist for the most northern counties due to what is called the District Policy, where transfer payment in different support mechanisms ensure living conditions in these areas

being comparable with the situations in more wealthy counties in the South. There may be situations where support mechanisms in some regions provide services that in other regions would be taken out of income, so simple comparisons are misleading. Where that is the case the different mix of services – salary and non-salary based – may limit comparability, including the important question of poverty.



Map 7: Average Taxable Income in US$ per capita. Data from Norway 2011, Iceland 2005, Faroe Islands 2010 and Greenland 2011.

The concept of poverty is much debated in relation to the Arctic. It is sometimes associated with discrimination or social exclusion, but is a common mistake to link these concepts too closely (Atkinson and Davoudi 2000, p.428). Poverty data focuses on individuals and households, which is often easier to capture as statistical data, while social exclusion often revolves around group vulnerabilities and spatial clusters of deprivation with multiple data forms, which makes it more difficult to measure.

It is important to point out that risk of poverty is not the same as being in poverty. In the Arctic community and family relations as well as subsistence activities provide ways of coping with income limitations. Peripheral regions, which in the North tend to have sparse population, also may have greater risk of poverty related to the low availability of wage work.

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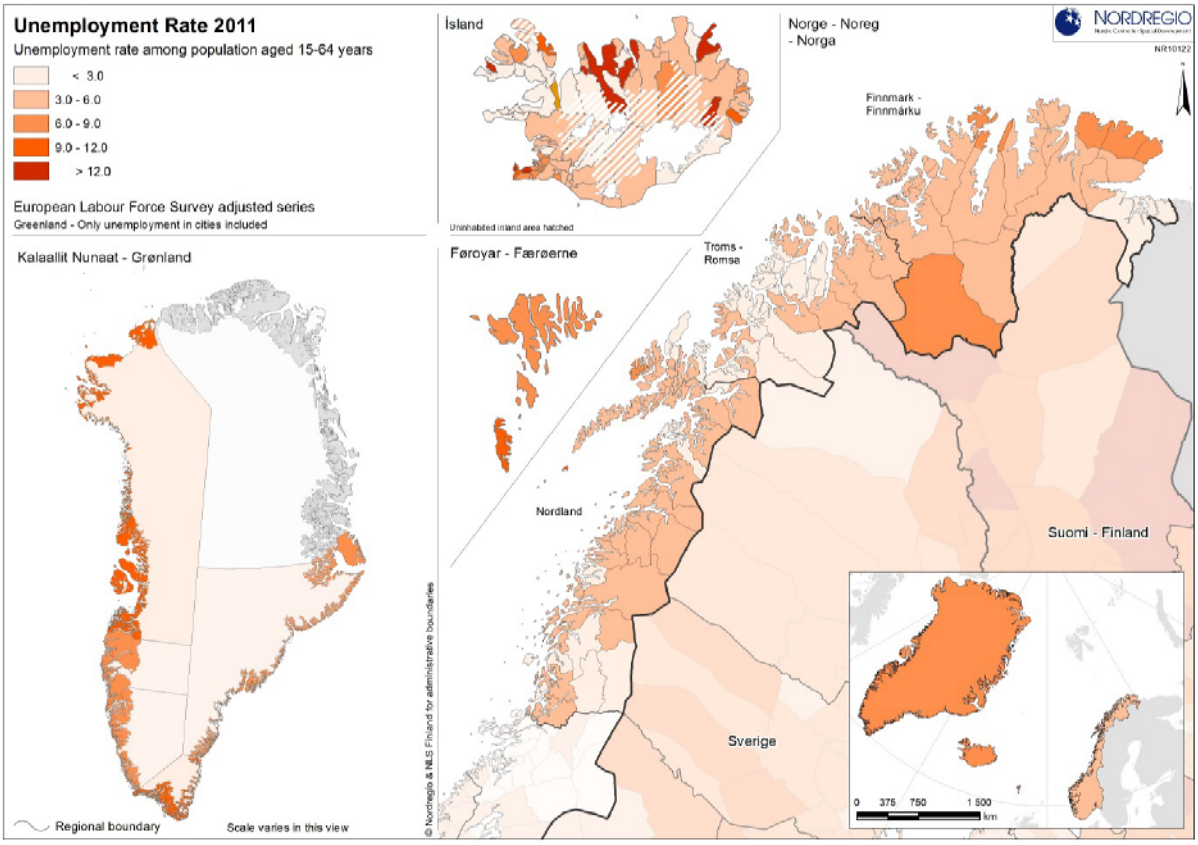
Second Priority Indicator: Unemployment rate. The Tabel below show the unemployment rate for the population aged 15-64 years.



Map 8: Unimployment rate for population aged 15-65 years in 2011. Data from the National Statistical Agencies.

In general, all the Nordic countries have unemployment rates below the EU average, and Norway has the lowest national unemployment rate in Europe. In the case of Greenland, unemployment data exist only for towns and cities exists. The population in villages have limited access to unemployment benefits and are therefore not registered by the authorities.

There are clear relations between high level of unemployment and the pattern of outmigration. People with the highest level of risk of poverty are those with low incomes and high unemployment.

Conclusions: Interrelated dimensions of Material wellbeing.

- Average taxable income per capita provides information on potential material wellbeing when wage jobs are available. It does however exclude the material wellbeing potentially accessible through opportunities in the informal and subsistence economy.

- The unemployment rate provides information on the potential risk of not being able to realise ones income potential. However, this indicator does not include the contribution made to material wellbeing from engaging in informal and subsistence activities.

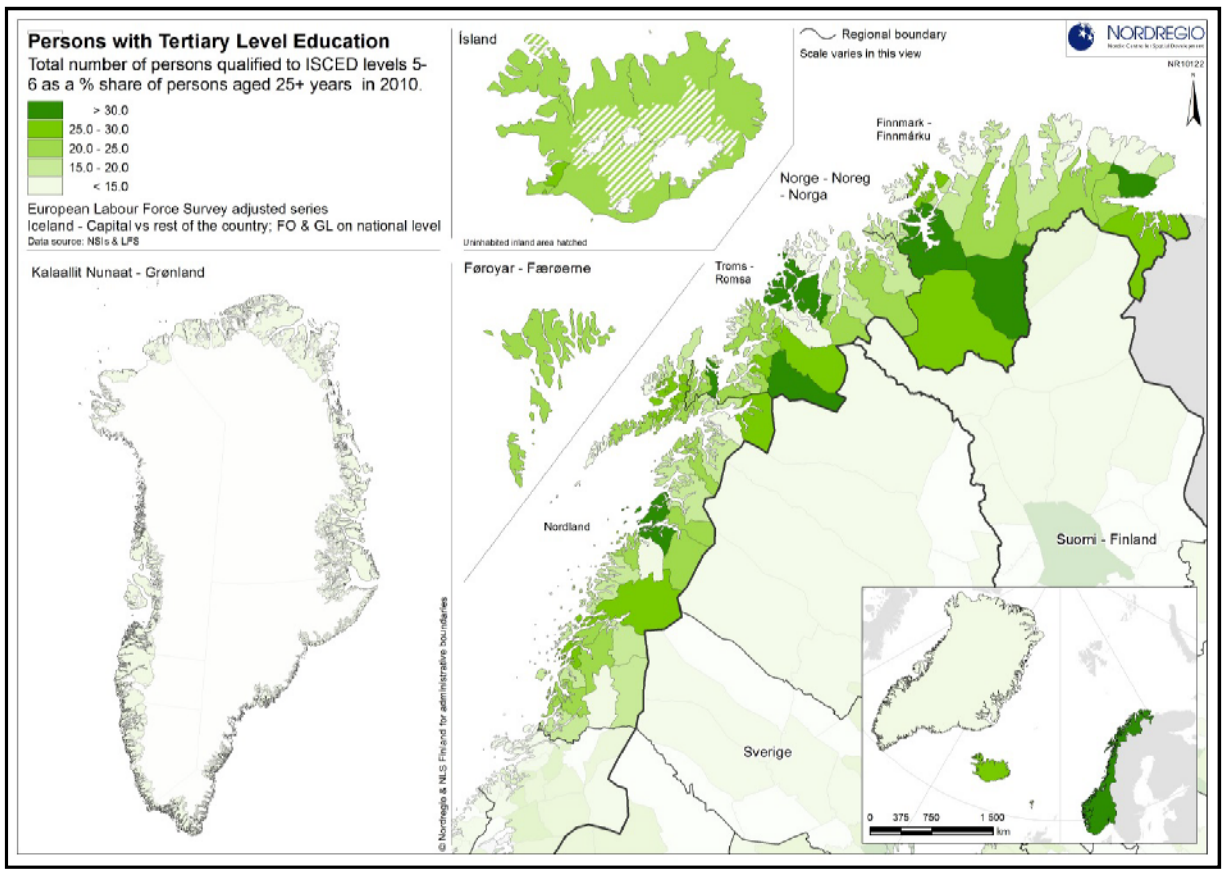
Both indicators are accessible through registered data and are available through yearly updates.

Blok P – the largest concrete housing construction was established in Nuuk 1965–1966 as part of the Modernization of Greenland. The building was torn down in 2012. Photo: Joan Nymand Larsen.

New buildings appear in Nuuk replacing some of the dominant concrete housing from the 1960s. Photo: Joan Nymand Larsen

4.4 The Education Domain

The ratio of students successfully completing post-secondary education (persons per 1000 population) was chosen as preferred indicator for the Education Domain. In the West-Nordic Region the category includes levels 5 and 6 after ISCED -1997 standard. ISCED (The International Standard Classification of Education) is classification structure for organizing information on education and training maintained by UNESCO. Level 5 refers to first state of tertiary education that may be academically based or practically oriented / occupationally specific and level 6 refers to second stage of tertiary education. Commonly the levels correspond to bachelor, master, doctoral or equivalent. In Greenland the previous classification system of education is in the process of being converted into ISCED categories, but at this point of time reliable data has been inaccessible.



Map 9: Persons with tertiary level of education as share of persons aged 25+ years in 2010

The application of the indicator to the West-Nordic Region has implied a modified version of the preferred indicator. While the preferred indicator was the completion rate, the indicator used here is the total number of persons qualified to ISCED level 5 and 6 as percentage of persons aged 25+ in 2010. While the preferred ASI indicator shows the completion rate, it does not take into account the consequences of mobility – either out- or in-migration of

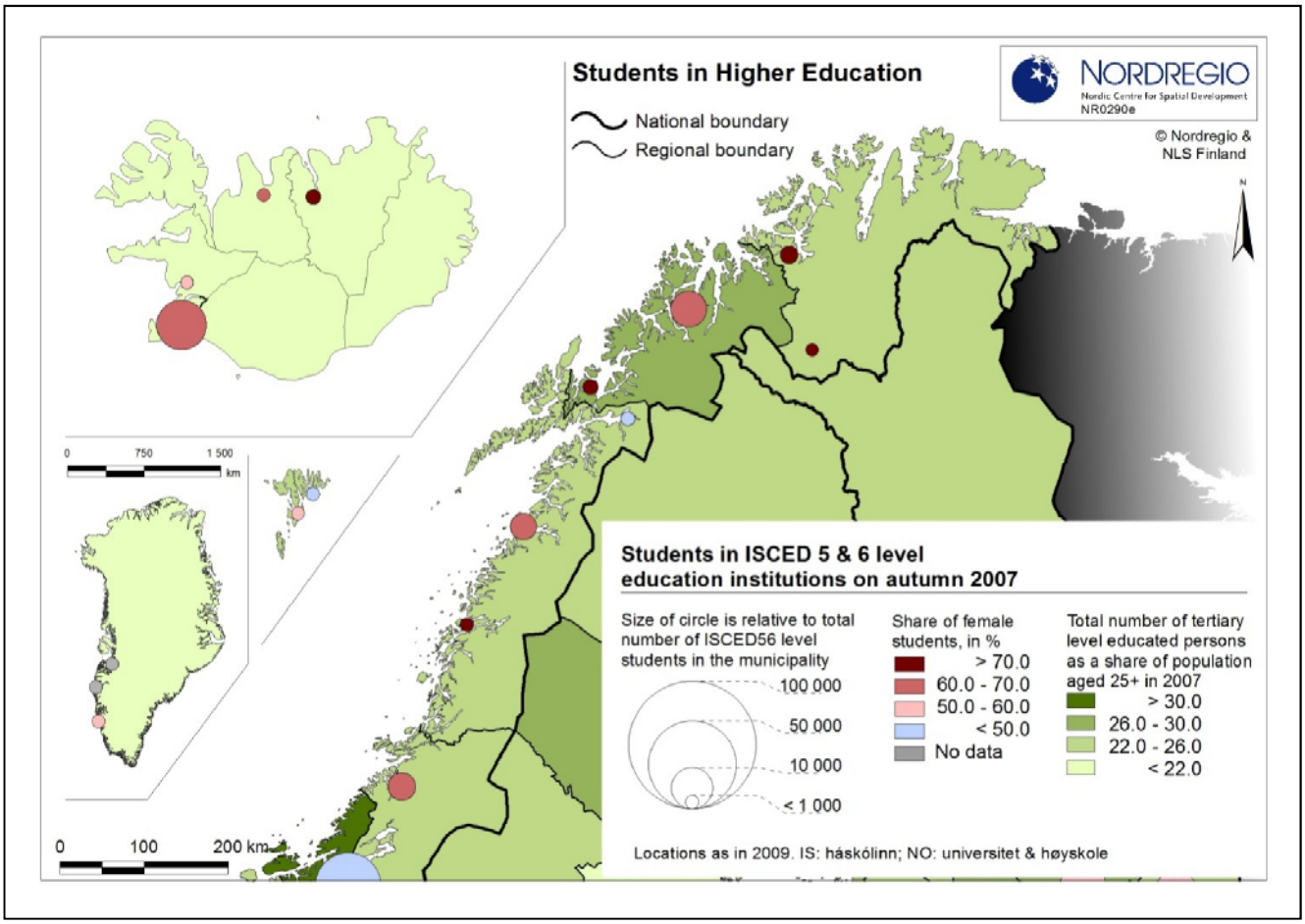
persons who has acquired these skills. The number of persons with these skills is a better indicator of whether or not the situation improves or becomes worse in relation to educational skills. So keeping track of the number has several advantages. It tells us about the status; it allows for a calculation of changes from one year to the next; and it enables us to evaluate the direction of change in relation to migration patterns.

In addition, we have looked at the share of female students as a second indicator since the development during the last decades has shown both a substantial increase in female involvement with education, and also an increase in female outmigration from the Arctic. Both parameters are therefore important for keeping track of the region's ability to respond to the challenges of the "knowledge economy".

And finally we have – on a test basis – included a third indicator that focuses on access to higher education institutions within country/region. Leaving a region in pursuit of higher education increases the chance of a student starting a family close to the place of education, which can decrease the likelihood of eventually returning to region of origin.

First Priority Indicator: Ratio of tertiary level educated population aged 25+. This indicator is presented on Map 9 where it – by means of the green colour ramp – shows that supporting the availability of educational institutes means a marked increase in the number of persons with tertiary level education. The ISCED categories 5 and 6 include at level 5 the first state of tertiary education that may be academically based or practically oriented / occupationally specific and level 6 referring to the second stage of tertiary education. So in addition to serving as centres for youth during their education it also attracts businesses in need of persons with tertiary level education.

Second Priority Indicator: Percentage of female students. Map 10 shows, using the size of circles, the total number of students in higher education at each of the educational units, while the colour shows the proportion of female students. It is clear from the colour of the circles that educational study is dominated by females. Many colleges and technical universities attract male students as shown by the light blue colour, while the red colour ramp show the level of dominance of female students, with females accounting for more than 70% of the students in several universities. As background for the regions the green colour ramp shows the region's level of tertiary educated inhabitants.



Map 10: Number of Students in Higher Education (ISCED level 5 and 6) indicated by the size of the circle. The colour of the circles shows the share of female students in %. And the background colour show the total number of tertiary level educated persons as share of population aged 25+.

Third Priority Indicator: Access to higher education institutions within country/region.
This is an indicator we have included as a test because our research shows that the outmigration from a region in search of higher education may have negative consequence for communities in the region. Having to leave a region in pursuit of higher education increases the risk of the students establishing themselves with families close to the place of education and not returning to their region of origin. Map 11 shows the distribution of higher education institutions according to institution types: colleges, university colleges, and universities in the Nordic countries. This is what is basically available for all students in the West-Nordic Region, and the map shows the distribution of different types as an indicator of distances and accessibility.

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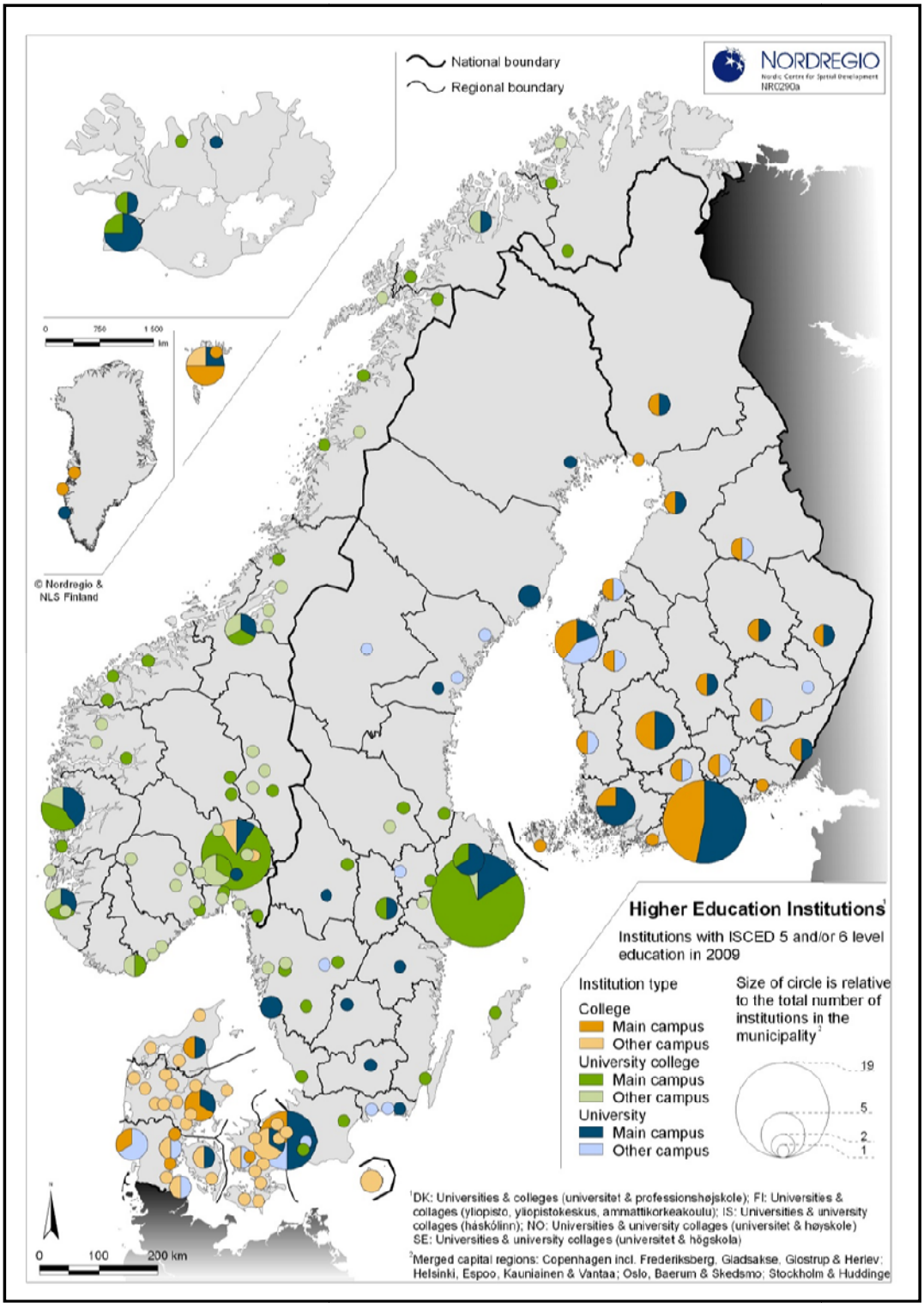


Map 11: Available higher education institutions available for the West-Nordic students.

Conclusions: Conditions and outcome of educational opportunities. The three chosen indicators show the outcome of educational activities in the region. The results highlight one of the most challenging situations in this regard, namely that of involving more males in pursuing educational opportunities, and the challenge of retaining and/or attracting the young people to the region after their education has been completed. And lastly it pinpoints another critical issue – to ensure easy access to educational opportunities in the communities.

- The ratio of tertiary level educated population aged 25+ clearly shows the affinity between level of education and educational opportunities.
- The share of female students at the tertiary level highlights the increasing challenge of reaching an equal balance between the sexes in terms of their pursuing educational opportunities.
- Access to higher education institutions within country/region also illustrates the challenge of providing educational opportunities within the region to be able to attract and keep students in the region after studies have been accomplished.

All three indicators are accessible through registered data and are available through yearly updates.

4.5 Cultural Wellbeing and Cultural Vitality Domain

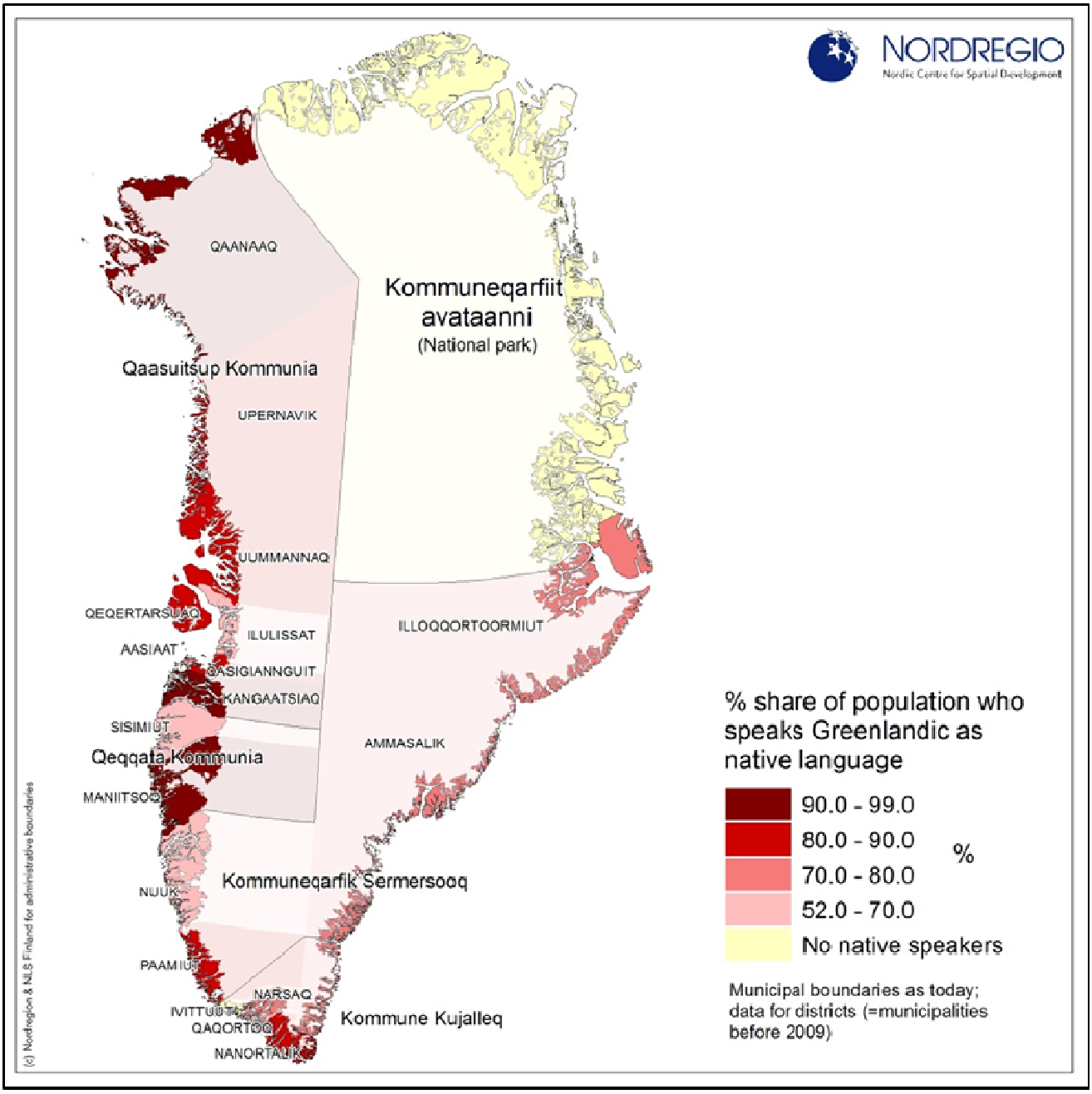
Cultural wellbeing in Arctic communities is based on three inter-related components: language retention, cultural autonomy, and belonging. The ASI-recommended indicator for this domain is a composite of these three.

Applying these concepts to the West-Nordic Region is a challenge in the sense that the three selected concepts in the composite indicator are defined with a perception of the Arctic that only to some extent applies to the West-Nordic Region — an issue which will be discussed below.

First Priority Indicator: Language retention. The reason behind the selected components in the composite indicator is based on a set of assumptions that do not apply to all regions included in the West-Nordic Region.

In the **Faroe Islands and Iceland** the population is non-indigenous. Faroese and Icelandic are the national languages and there are no group of peoples who can be considered minorities language-wise. Both countries have had an early history of being dominated by Danish colonialism, where the Danish language dominated the administration, even though only a smaller part of the population actually spoke Danish. Both countries have been successful in keeping their languages and making them not only the everyday language but also the administrative language at all levels.

In **Greenland** the majority of the population is indigenous, and Greenlandic is spoken by the majority. It is a challenge, however, that Danish is the dominant language in the Capital region as well as in most of the administration. There are frequent discussions on the language situation, and in connection with the last election to the parliament (March 12th 2013) a new party which is now represented in the parliament reject the use of Danish. At the same time there are three official languages in Greenland according to parlimentary legislation from 2010: East- and West Greenlandic and Inughuit. East Greenlandic and Inughuit are seldom mentioned in discussions, and the question of recognising East Greenlandic or Inughuit was not raised by the new party during its election campaign.



Map 12: % share of population who indicate that they speak Greenlandic as native language. The map shows the municipal boundaries as today, but the data – and colour coding is based on districts which were the municipalities before the municipal reform by 2009. Data are based on a survey which was included in an Analysis of Mobility in Greenland in 2009-2010. In the survey the respondents were asked to indicate their ability to communicate (speaking, reading, and writing) in Greenlandic, Danish, and English, and which language they considered to be their mother tongue.

Map 11 above shows the percentage speaking Greenlandic as their native language. Data are based on a survey which was part of an Analysis of Mobility in Greenland conducted in 2009–2010. In the survey the respondents were asked to indicate their ability to communicate (speaking, reading, and writing) in Greenlandic, Danish, and English, and which language they considered to be their mother tongue. The question of East- versus West Greenlandic was not included in the Survey. Greenlandic is the primary language of the Parliament of

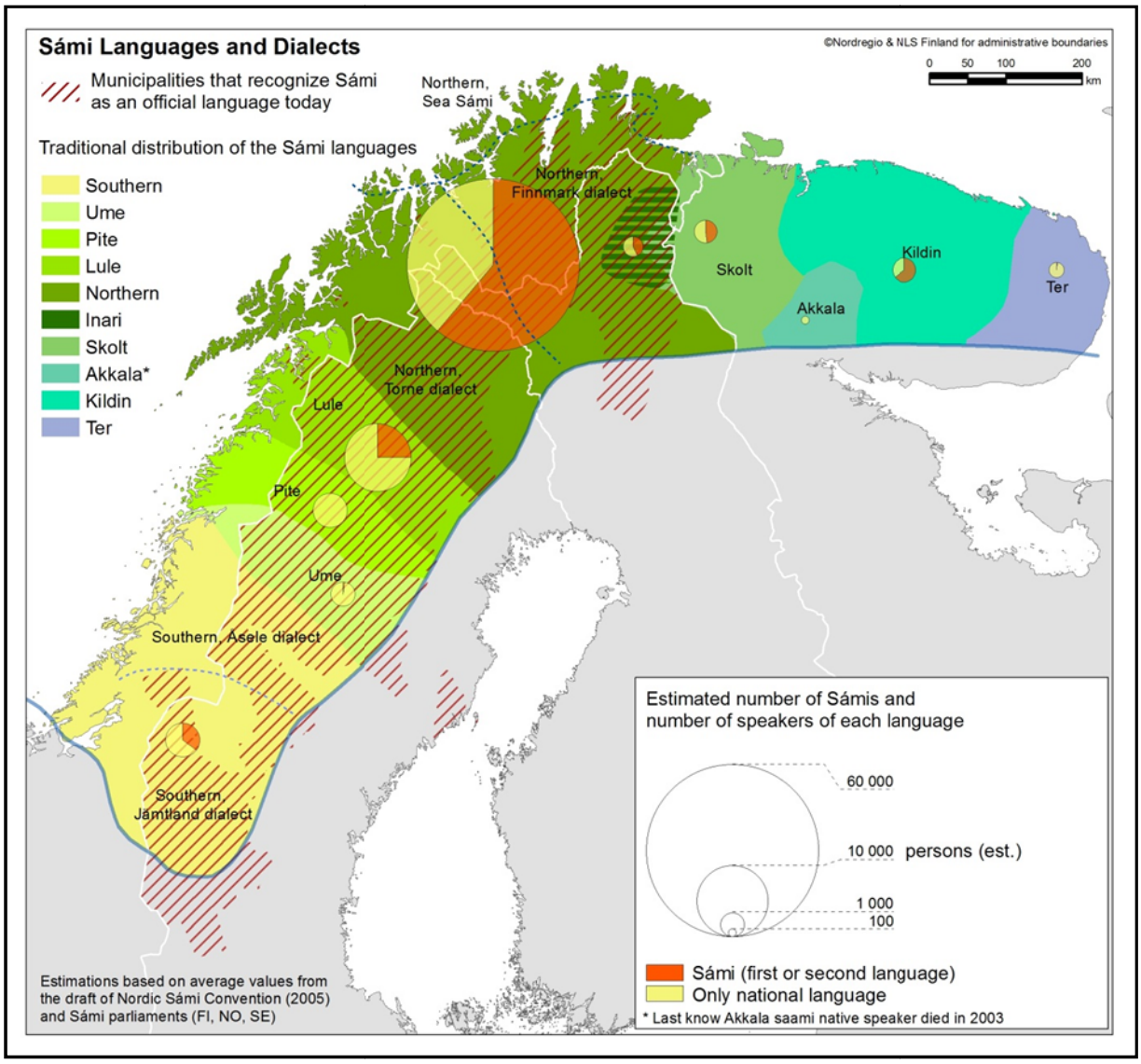
Greenland with simultaneous translation to Danish. All written materials of the central administration are in both languages.

West-Greenlandic is the dominant language in most of Greenland except in the Capital region where the parliament is situated together with the central administration, and Danish is the most often used administrative language. The consequence is that both Inughuit and East Greenlandic are in a "double minority" situation, with West Greenlandic being the dominant Greenlandic language, and Danish being the dominant administrative language in the central administration.

Map 13 shows the **Sámi languages and dialects** combining both the traditional distribution and the situation as of today. The Sámi languages form a branch of the Uralic language family and are most closely related to the Finnic languages. There are ten Sámi languages of which the Northern Sámi is most commonly spoken. The Akkala Sámi language became extinct in 2003 when the last known native speaker died. The traditional speaking areas are shown in the map with shades of green.

The estimates of the number of Sámi people vary between 60,000 and 100,000. Based on the combined average estimates from the Sámi Parliaments and from the draft of Nordic Sámi convention, the total number of Sámi people is settled to 80,000, as shown in the map. Based on the same sources it is estimated that some 35,000 people speak one or more Sámi languages as first or second language today. The numbers of speakers in each language are shown in the map with a circle. The circles are located in the traditional living area although today a significant share of Sami lives outside the traditional area. The area of a circle represents the estimated number of people in each Sámi group and the orange colour indicates the proportion able to speak the Sámi language.

There are 31 municipalities in the Nordic Countries that recognize Sámi as an official language. There are some legal differences between the countries and rights, but in general this means that in these municipalities Sámi languages have an official status and those can be used as administrative language together with national languages. The municipalities are also obligated to organize some services of general interests (such as school, day care and elderly care) in Sámi languages. (In national laws: Saamen kielilaki 1086:2003 (FI); Målvedtak i kommunar og fylkeskommunar FOR-2007-04-01-378 (Ministry of culture and church affairs) (NO); SFS 2009:724 (SE)).



Map 13: Sámi Languages and Dialects

Second Priority Indicator: Accessibility to traditional food. The question of harvest, distribution, and consumption of traditional food in the West-Nordic Region is – similar to most of the Arctic – related to traditional availability of food items, and therefore quite complex. Since dependency on both land and sea resources is common, the region provides access to fish, sea mammals, lamb, reindeer, seabirds and waterfowl (including their eggs), and a large variety of lichens, wild mushrooms, and dried seaweed which have been included in preparing the food.

Dairy products are another common characteristic for most of the region, and the region is characterised by a wealth of products which have been a stable element in diets. In order to preserve foods a variety of processing methods such as smoking, salting and drying have been important. Furthermore dairy products have been a key element in a majority of the traditional recipes.

What often attracts attention to the region's diet is the fact that sea mammals have often been important. To varying degrees consumption of seal, walrus, and whales have been keys to survival. These products are still available and considered to be important in the region.

In terms of accessibility to traditional food the West-Nordic Region has extensive distribution because most traditional food items are available through commercial systems. They can be bought through larger stores, and are also distributed at local marketplaces.

Obtaining data on traditional food is a challenge. One reason for lack of access to information and data has been the proprietary interests of businesses who feel that disseminating such information could potentially help their competitors. Also, it is expensive to access the relevant information.

Apart from formal distribution, all countries provide examples of informal distribution systems – market places, informal relations, and subsistence – which increase access to traditional food.

The following photos provide some insight into how a number of food items are made available both within and across the countries represented in the West-Nordic Region.

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Photo 1: Air dried lamb leg, a delicatessen in Faroe Islands where it can be bought from the producers but also available in larger food markets. Photo: Rasmus Ole Rasmussen

Photo 2: Just like lamb and sheep meat is a traditional food on Faroe Islands. Also the head is considered to be very good in different types of dishes. Again it may be available from the producers but also sold in supermarkets. Photo: Rasmus Ole Rasmussen

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Photo 3: Different fish products available in a small shop in Norway. The variety of products is considerable and contributes to both continuing and inventing new traditions. Photo: Rasmus Ole Rasmussen

Photo 4: Whale meat is a common product for the West-Nordic Region, and here sold from a booth at the harbour in Oslo. But it can be found both as booth-sale as well as in restaurants. The same goes for Seal and Reindeer. Photo: Rasmus Ole Rasmussen

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Photo 5: Open restaurant sale of different fish products in Norway. Photo: Rasmus Ole Rasmussen

Photo 6: Whale meat – fresh and dried – for sale in an open marketplace in Norway. Photo: Rasmus Ole Rasmussen

Photo 7: A Faroese shop where the traditional stable food – fish – is available from different species, fresh and in different forms of preparation. Photo: Rasmus Ole Rasmussen

Photo 8: Norwegian market sale of whale in different types of preparation – here as smoked and fresh meat. Photo: Rasmus ole Rasmussen

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Photo 9: Traditional products in Iceland are also moving into distribution through the Thai restaurant following the in-migration coming from Southeast Asia. Similar situations takes place in the other parts of the North Atlantic where local products are key ingrediences in consumption habits from other parts of the world. Photo: Rasmus Ole Rasmussen

Photo 10: Faroese eats Pilot whales when slaughtering takes place on the Faroe Island coastline, but it does not cover the needs of the population. So supermarkets in the larger towns in Faroe Islands are able to deliver whale meat – in this case imported from Norway. Photo: Rasmus Ole Rasmussen

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Photo 11: Besides sale of seafood, sea mammals, reindeer etc. from the supermarket's freezers fresh products are available from local markets in most towns and several villages in Greenland. During the last ten years open markets and shelters have been replaced with market buildings like this in Maniitsoq in West Greenland. Photo: Rasmus Ole Rasmussen

Photo 12: The small open market shelters still exist, especially in the larger villages such as this from Alluitsup Paa in South Greenland. Photo: Rasmus Ole Rasmussen

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Photo 13: The commercialization of the traditional products in the West-Nordic Region makes it available basically in most supermarkets in towns and village, and parallel to this through market places and from hunters, herders, and fishermen throughout the countries. Photo: Rasmus Ole Rasmussen

Photo 14. A large variety in a supermarket freezer in Ilulissat. Photo: Rasmus Ole Rasmussen

Photo 15. Local marketplace in Ilulissat with fresh supply of meat. Photo: Rasmus Ole Rasmussen

Box 1: Commercial or non-commercial availaility: Case Greenland

As describe in the text several options for access to traditional food exists. The two photos to the left illustrates how basically the same products are available in two ways.

Above: from the hunters and fishers delivering their hunt and fish to be sold in the local market place. The products are fresh, but you have to by larger pieces and then make it into sensible sizes

Below: accessible in the freezer in the supermarket. Here the products are cut in pieces suitable for immediate processing. Preferences differ with age and gender.

Source: Rasmussen, 2xxx

Conclusions: Cultural Vitality. The assumptions behind the concept of Cultural Vitality and its application through the indicators show some limitations in relation to the West-Nordic region. The recommended and preferred indicators may be applicable in some situations while alternatives might have been more useful in others.

- Language Retention as an indicator is very relevant in the case of Greenland and the Sámi in Northern Norway, but perhaps less so in the case of Faroe Islands and Iceland. That is probably the situation in other regions as well.

- Accessibility to traditional foods has been used as an indicator of Cultural Vitality. However, one limitation is that it ignores animals like pigs, cattle, horses, sheep, and poultry, which have long histories as traditional products for both Indigenous and Non-indigenous peoples in the Arctic. Also, the option of including the commercialisation of the traditional products is not well incorporated.

At this point in time both indicators are not immediately accessible through registered data, and as a consequence two surveys have been needed in order to establish a proper baseline study.

4.6 Contact with Nature Domain

Three aspects of traditional food are discussed here, and with Consumption of Traditional Food / Harvest of Traditional Foods as the preferred indicator.

Three ways of accessing traditional food which characterize the region (see also the Cultural Domain):

1. On one hand through ***subsistence hunting, farming, and fishing*** for personal consumption. The number of persons involved in these activities differs, but it is generally considered an important part of life in the region, either through personal involvement or through family and good neighbour relations. Precise information on the exact role of subsistence is not generally accessible for the whole West-Nordic Region, but occasional surveys on living conditions covering parts of the regions provide incomparable data on the issue.

2. On the other hand ***informal access to traditional products*** occurs through sharing as well as exchange through monetary means. Again comparable data on the issue for the whole West-Nordic Region do not exist, but for two regions – Greenland and Faroe Islands – some elements are available.

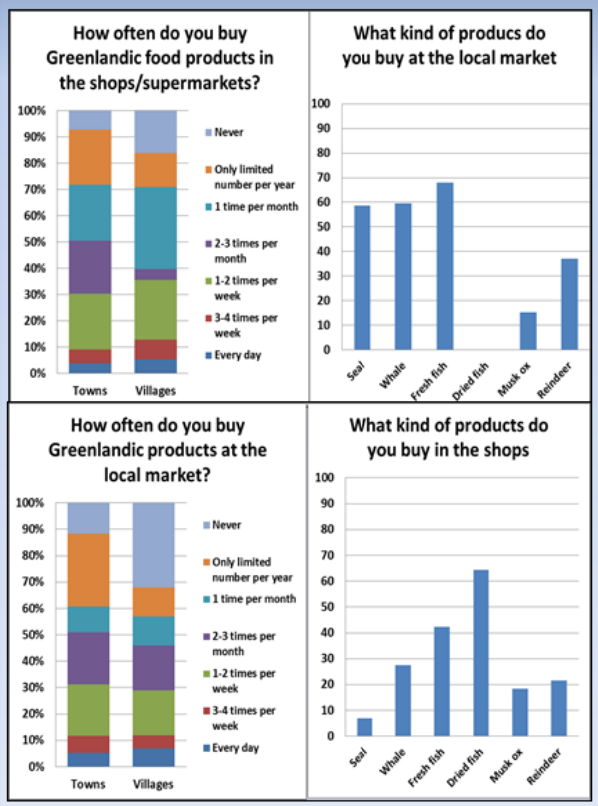
    a. In the case of Greenland the "local markets" (Kalaaliminerniarfiit) are found in most communities in the form of outdoor kiosks, where hunters and fishermen can sell the proceeds of their hunting and fishing directly to consumers. These infrastructures are maintained by local governments, with which the association of hunters and fishermen negotiate and set the price of transactions (Marquardt and Caulfield 1996: 113; Caulfield 1993: 148). Rasmussen (1998: 17) estimates that roughly 10% of the harvest made by individuals is sold in these markets. Informal sales also take place between hunters/fishers and local institutions (e.g. schools, hospitals).

    b. In the case of Faroe Islands pilot whaling has been an institutionalised activity for centuries, and availability and sharing of the blubber and meat is an important social and cultural activity.

3. Furthermore, the ***commercialization of traditional food*** is for most of the West-Nordic Region the main way of ensuring accessibility. The internal marketing of local and regional food production benefits from efficient formal and informal sales systems

through retail stores and makes the products available not only within the countries but also across the region. Compared to elsewhere in the Arctic, the commercial distribution of products provides broad access to traditional food products for those who enjoy them.

Box 2: Commercial or non-commercial shopping: Case Greenland



As describe in the text several options for access to traditional food exists. And the consumers use different approaches.

Both graphs are using the same structure. To the left is shown what characterises the shopping regarding frequency – from every day to never indicated by different colours, and shown for tows and villages respectively. And to the right is shown which products are dominating the sector.

Supermarket shopping dominates most products except dried fish which is predominantly bought at the local market.

Shopping in towns is represented by most frequencies while a larger part of the inhabitants in villages show a pattern of more rare shopping due to a higher level of subsistence activities.

Source: Statistics Greenland 2000

First Priority Indicator: Consumption of Traditional Food / Harvest of Traditional Foods.

As already described in the Cultural Vitality section there are multiple paths for access to traditional food. Cases from Greenland show something about attitudes towards consumption.

To the extent traditional food is distributed through shops, the harvest will be registered through the formal statistical systems. But it is impossible to see what will be distributed as traditional food for the local markets, and to what extend the products are exported or distributed as semi-processed products to other producers. In Rasmussen (2005) there is a discussion of how the harvested products are distributed. Table 1 depicts the situation as it was in Greenland in 2005.

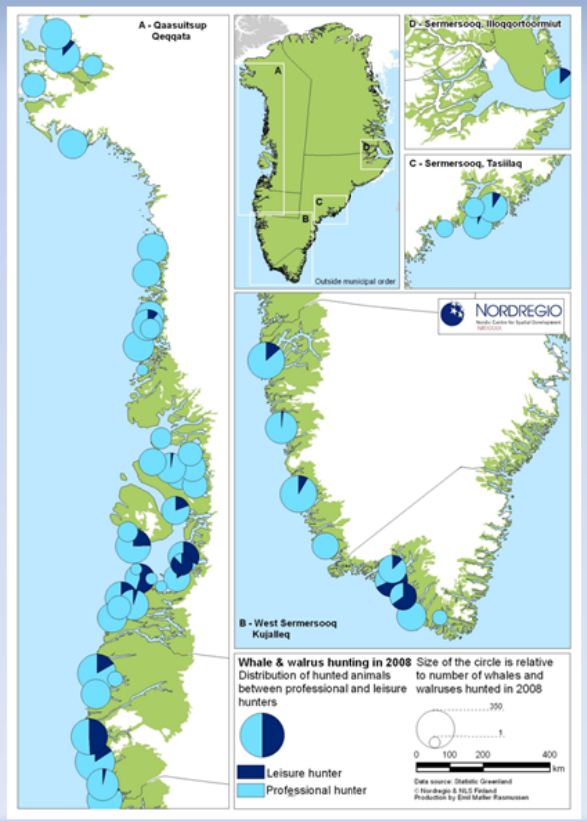
Table 1: Distribution of the total value of inshore hunting and fishing produces in 2005. Source: Rasmussen 2005

Distribution of the total value of inshore hunting and fishing produces in 2005				
Type of economy	Type of activity	Total value (DKK)	% of total value	% of informal value
Formal	Sale to shops and for processing	206.413.347	61	
Informal	Hunter's own consumption	46.208.304	14	36
	Gifts to family, relatives and friends	23.595.513	7	18
	Sale to relatives, friends and nsighbours	10.144.267	3	8
	Sale to restaurants	5.990.400	2	5
	Sale to institutions	6.258.672	2	5
	Sale at the local marketplace	37.694.459	11	29
	Total value of the informal sector	**129.891.615**	**39**	**100**
Total	**Total value of inshore hunting and fishing produces**	**336.304.962**	100	

The formal economy – sales to processers and export and local consumption - is about 61%. The remaining 39% in the informal economy includes own consumption and gifts to family and friends (about 21%). In addition, there are salesto restaurants, institutions etc. A substantial part is sale to relatives and friends, restaurants, institutions and not least to the local marketplace.

Second Priority Indicator: Harvest of traditional foods.

Box 3: Professional or leisure time activities: Case Greenland



In the Arctic the division between formal and informal econom as well as between professional and leisure time activities are continua.

For a professional hunter or fisher most of the time is used for hunting and fishing for the formal or the informal market. But in addition there are activities connected with subsistence, just as gift giving is an integrated part. To be a professional a licence is required and to get a licence more than half of the income should be generating from hunting and fishing.

For non-professionals hunting and fishing can be a form of leisure time activity, but it may also be an activity aiming at providing friends and family with hunting and fishing products. In Greenland the hunting and fishing as a non-professional activity requires a leisure hunter license.

The map show the division between professional and leisure hunting licenses in connection with whale and walrus hunting in 2008. ´While licenses in vilages are dominated by professionals, the larger towns show a large share of leisure time licenses.

Source: Rasmussen, 2010

An important issue in relation to the harvesting of traditional food is the fact that professional hunters and fishers are not the only contributors. Ordinary people who do not depend on fisheries or hunting also contribute. In Greenland all fishing and hunting activities require licenses, providing records of how the professionals and the leisure contributors are involved. The records can yiled measurements for *maintaining contact with nature*, considered the preferred indicator for this domain.

Third Priority Indicator: Percent of population accessing traditional food.

Data related to this indicator is rather difficult to get information on. The SLiCA project attempted to deal with this issue through their questionnaire, but information on how often traditional food is included in the diet does not provide very precise information on what it actually means. Similar questions have been asked of more than 1500 persons in relation to the Mobility Survey (Rasmussen, 2010) just as it has been part of the survey as presented in Box 2.

The main point here, however, is that traditional food is widely available, because both formal and the informal systems support the supply.

Conclusions: Contact with Nature. As emphasized in the introduction to this domain the assumptions behind the concept of Cultural Wellbeing and its application through the indicators show some limitations in relation to the West-Nordic Region. The recommended and preferred indicators may be applicable in some situations while alternatives might have been more useful in others.

- Harvest of traditional foods is difficult to obtain data on because there is no clear division between commercial and non-commercial harvest. Therefore, to identify which foods are counted as traditional would require a finer analysis.

- Consumption of traditional Food: Questions concerning the accessibility to traditional foods seem neglect that animals like pigs, cows, horses, sheep, and poultry have long traditions of use both by indigenous and non-indigenous peoples. Moreover, commercialisation of products is not well incorporated in this framework.. However, in the West-Nordic region there are several sources that provide opportunities to access products which are considered traditional by any definition.

- To the extend traditional food is distributed commercially it will be widely available.

Providing empirical documentation for the different food types is difficult. It is obtainable, although not through official registers, but requires better access to data from food supply systems, which may be proprietary.

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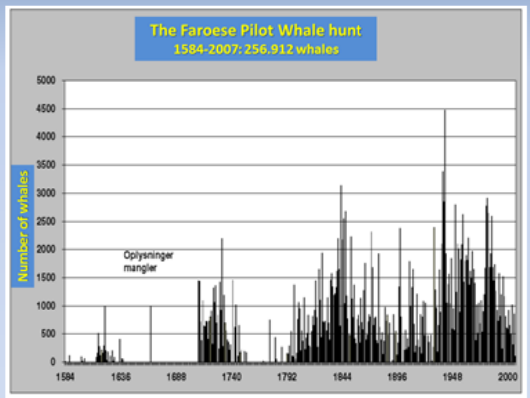
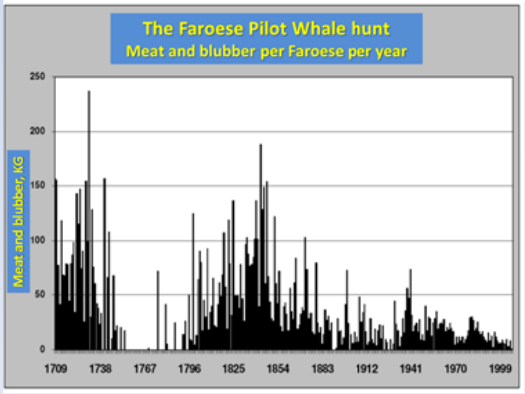
ASI will be available in print and downloadable from web.

Box 4: Whaling as culture and food supply: Case Faroe Islands





Faroese pilot whale catch is a non-commercial hunting, which everyone can participate, regardless paying job. The proceeds of the catch since the beginning of the 19'de century is unique by being shared equally by household size in the various pilot districts. There is thus no commercial plant processing or use of the catch, but everything is prepared in homes for private use, either in the house or barrel of salt as supplies in the long-reaching fishing boats.

The Faroe Islands are divided into six pursuits, each with a district magistrate, who is also the local police. The local sheriff is supreme authority, while all the practicalities are run by 4 elected grind presidents. Should there be any violation of the regulations, there will be legal action in the form of fines.

The catch has always been a matter of daily food on the table. There is no annual whale quota or any kind of catch limit, but you close a district where a magistrate with pilot Presidents estimates that there are enough whale and blubber for a while. And if a district got many whales they can offer the catch of the districts in the country that rarely grind catch and therefore lacks meat and blubber. Closing the districts are commonly used in good year, where up to half of the districts can be closed to fishing from 14 days up to six months.

Source: Dorete Bloch, 2007

4.7 Fate Control Domain

With the West-Nordic region consisting of four countries/regions, each being a sovereign entity, it is necessary to reflect on all four measures for *Fate Control* for each sub-region:

- The percentage of indigenous members in governing bodies (municipal, community, regional) relative to the percentage of the indigenous people in the total population;
- The percentage of surface lands legally controlled by the inhabitants through public governments, Native corporations, and obshchiny;
- The percentage of public expenses within the region (regional government, municipal taxes, community sales taxes) raised locally;
- The percentage of individuals who speak a mother tongue (whether Native or not) in relation to the percentage of individuals reporting corresponding ethnicity.

First Priority Indicator: Fate control index.

a) The percentage of indigenous persons being members of governing bodies (municipal, community, regional) relative to the percentage of indigenous people in the total population;

a. **Faroe Islands:** Members of the government at both national, regional, and municipal level being Faroese. But foreign policy depending on Denmark (Indicator is 80%)

b. **Greenland:** Members of the government at both national, regional, and municipal level being Greenlanders. But foreign policy depending on Denmark (Indicator is 80%)

c. **Iceland:** Members of the government at both national, regional, and municipal level being Icelanders (Indicator is 100%)

d. **NW Norway:** As citizens in Norway the Sámi are participants in elections parallel to other Norwegians. But their situation as a recognized Indigenous People differs from other Norwegians, and further explanation is therefore needed. As summarised below the indicator is 80%.

    i. Four elections on various geographical levels are organized in Norway, namely Storting (Parliament) and Sameting (Sámi Parliaments), and

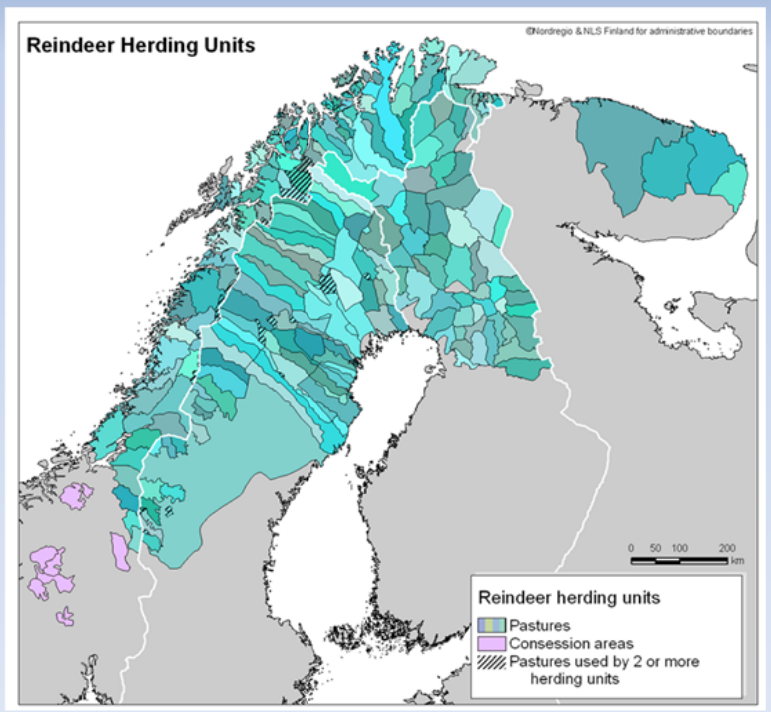
furthermore the county and municipal elections. Each of them is held every four years.

ii. In ***Storting elections***, the vast majority of those running for election represent registered large parties, as opposed to in county and municipal elections, where local lists are very common. Sámi parties in Norway do not have any candidates in Stortinget.

iii. In ***County elections*** from 2011, only in the northernmost county of Finnmark, one representative from a Sámi party (Samefolkets Parti; the largest Sámi party) was elected.

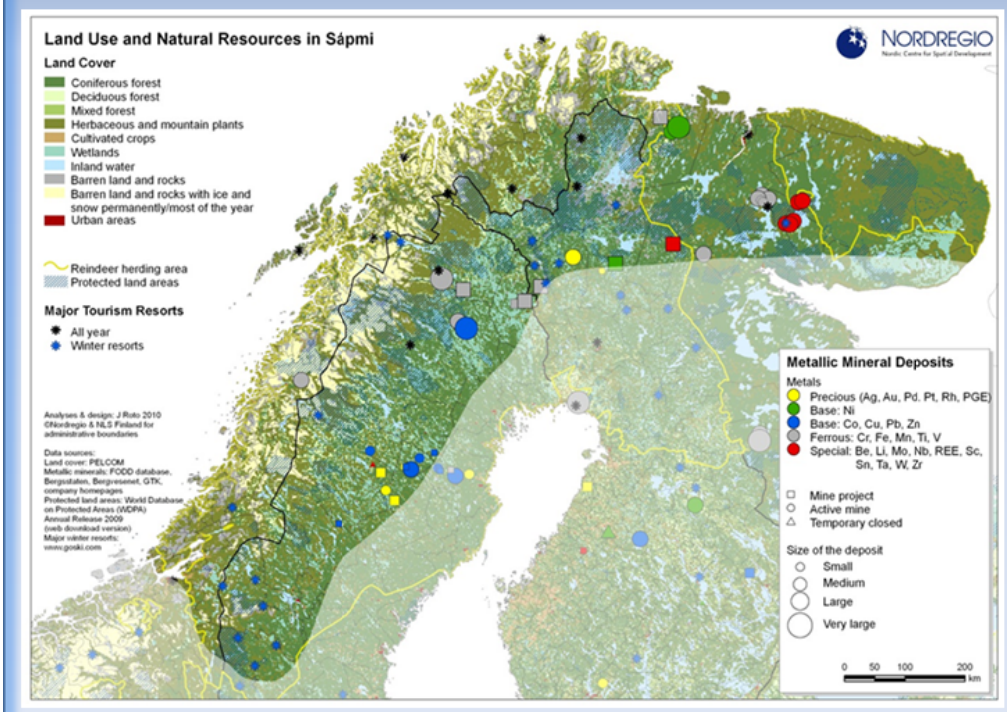
iv. In ***Municipal elections*** most municipalities with a high number of Sámi population had representatives from Sámi parties after 2011 elections. For example in Kautokeino Municipality 13 of 19 elected representatives came directly from three different Sámi parties and in the Karasjok municipality 6 of 19 were Sámi. Please note that the figures above refer only to membership in the party.

Box 5: Potential land-rights conflicts: Case Sapmi



Access to land is very important for the Sami, and the potential conflicts in relation to land use with other land consuming activities are important. The practice of reindeer herding is central to the Sami way of life, often regarded as the defining feature of Sami culture. The Sami therefore exhibit a very different form of territorial organization being flexible and overlapping compared to than many other approaches being fixed and exclusive.
The maps show the Sami interest represented through the distribution of the Reindeer Herding Units. According to the ILO Convention No. 169 Governments shall take steps as necessary to identify the lands which the peoples concerned traditionally occupy, and to guarantee effective protection of their rights of ownership and possession. Adequate procedures shall be established within the national legal system to resolve land claims by the peoples concerned.

Box 6: Potential land-rights conflicts: Case Sápmi



Article 110a of the Norwegian Constitution states:
"It is the responsibility of the authorities of the state to create conditions enabling the Sámi people to preserve and develop its language, culture and way of life."

The map show on-going and upcoming land consuming activities that take place in the Sápmi region and thereby become potential threats to the Sámi lifestyle and ancestral rights to land.

v. The ***Sameting elections*** are targeted for all Norwegian Sámi over age 18. To be registered to vote at Sameting elections, the person must regard himself/herself to be Sami and the person must have Sami as their home language, or at least one of their parents, grandparents or great-grandparents must have or have had Sami as their home language. The number of persons entitled to vote in Sameting election in 2009 amounted to 13 890 persons.

vi. Summary: The Sámi representation differs between the different levels of administration – basically from 0% in the Storting and 100% in the Sameting. It is a challenge to convert the above mentioned number into one number, but a suggested 80% could be argued.

vii. Source:

1. Sametingsvalet (2009) http://www.ssb.no/emner/00/01/10/sametingsvalg/

2. Valgportalen (2011). Ministry of local government and regional development. http://www.regjeringen.no/krd/html/valg2011/bk4_.html

3. Sametingsvalet (2009) http://www.ssb.no/emner/00/01/10/sametingsvalg/

4. Valgportalen (2011). Ministry of local government and regional development. http://www.regjeringen.no/krd/html/valg2011/bk4_.html

b) The percentage of surface lands legally controlled by the inhabitants through public governments, Native corporations, and obshchiny;

a. **Faroe Islands:** Faroe Islands surface of land legally controlled by the Faroese government = 100%

b. **Greenland:** The Greenland surface of land legally controlled by the Government of Greenland = 100%

c. **Iceland:** The Iceland surface of land legally controlled by Iceland's Government = 100%

d. **NW Norway**: As shown in the boxes 5 and 6 there are conflicts regarding the right to land based on the fact that the reindeer grazing and the nature of reindeer is different from private ownership rights in connection with for instance mining, agriculture, forestry etc. So the present legal setting does not imply fully legal control as this would only be applied in case of private ownership. The system, however, is still enabling the interests of NW Norway reflected through the legal system. As a consequence it is suggested to be 50/50 = 50%.

c) The percentage of public expenses within the region (regional government, municipal taxes, community sales taxes) raised locally;

a. **Faroe Islands**:

i. In the Faroe Islands Home Rule was introduced in 1948. This divides the responsibility for the islands into common and special Faroese affairs. The common affairs are handled by the Folketing and the Danish government, while the special Faroese affairs are handled by the Faroese Home Rule authorities, consisting of the Løgting, the legislature, and the Landsstýri, the executive, which is appointed by and politically responsible to the Løgting. This include domestic issues

such as fishing, residential, school, commercial, municipal conditions, etc. The Faroe Islands had become less financially dependent on Denmark, by receiving 624 million DKK per year in block grants equal to 6% of GDP. In addition the Danish State holds expenditures for justice and defence. It is not known what this means in DKK, but based on the Block grant transfer the percentage of public expenses raised within the region would be around 94%.

b. **Greenland**:

   i. In Greenland Home Rule was introduced on 1 May 1979 and Self Government 21 June 2009. The legislation is formally approved by the Danish parliament, Folketinget, where two members are elected in Greenland. The Folketing and the Danish administration issue acts and directives for the few areas not transferred to the Self Government, but almost all legislation originates in the Greenlandic parliament, This include legislature on domestic issues such as fishing, residential, school, commercial, municipal conditions, etc.., while issues of foreign, security and legal policy is common affairs under Danish law. Landstinget. The members of the Landsting are elected at least every four years by a general election among all Danish citizens resident in Greenland and aged over 18. The Landsting nominates the president of the executive, Landsstyret, and approves the nomination of its members, who act as the country's government. Each Landsstyre member serves as minister for particular areas of responsibility. Greenland has initiated a municipal reform and from 1 January 2009, the country was divided into four large municipalities, each led by a municipal council headed by a mayor. The municipalities are responsible for the welfare of the local communities, including childcare, elementary school, culture and leisure as well as various social services. Greenland has become less financially dependent on Denmark, but receives substantial funding from the Danish government. In 2011 Greenland received 3,533 million DKK equal to 29% of GDP. On top of that the Danish State holds expenditures for justice and defence. It is not known what this means in DKK, but based on the Block grant transfer the percentage of public expenses raised within the region would be around 70%.

c. **Iceland**:

   i. Iceland's public expenses are raised locally = 100%

d. **NW Norway**:

i. Norway's public expenses are raised nationally, but Northern Norway generally depends on transfers from other regions in Norway. An estimate of public expenses raised within the region would be around 80%.

d) The percentage of individuals who speak a mother tongue (whether indigenous or not) in relation to the percentage of individuals reporting corresponding ethnicity

a. **Faroe Islands**: Ethnicity not registered.

b. **Greenland**: Ethnicity not registered.

c. **Iceland**: Ethnicity not registered.

d. **NW Norway**: Ethnicity not registered.

Conclusions: Fate control.

In the following table the four components of the fate control are listed for each of the four regions of the West-Nordic region, and a total index value has been calculated.

Region	Governance	Land rights	Outside money	Language	Total
Faroe Islands	0,8	1	0,94	?	0,75
Greenland	0,8	1	0,7	?	0,56
Iceland	1	1	1	?	1
Norway	0,8	0,5	0,8	?	0,26

As mentioned above the concept or definition of ethnicity has been difficult to apply in the Nordic setting.

4.8 Conclusions

In general, the ASI domains have been relatively easy to apply to the case of the West-Nordic region, with precise definitions and data retrievable in the national statistical systems. Where there are variations between the four entities included in the West-Nordic region it has been

possible to arrive at roughly comparable results. This applies to the domains: Health and Population; Material wellbeing; and Education.

The domains of *Cultural Wellbeing* and *Contact with Nature* make reference to choices and activities which are related to involvement and activities based on individual preferences, and therefore depend on new types of registrations or surveys. Inherent in concepts such as "traditional foods" the inclusion of traditions which are outside the traditional analyses of indigenous peoples in the Arctic, makes it is difficult to apply the analysis to populations in the Arctic not registered as indigenous. There is an inherited assumption that "traditional foods" would not be available through commercial systems, although this may not reflect the reality in substantial parts of the Arctic.

And last, the Fate Control index raises some methodological questions on how to determine the level of control.

Overall, the ASI indicators are useful for tracking changing conditions in the West-Nordic region. At the same time, it would be necessary to further develop the domains on Contact with Nature and Cultural Wellbeing in order to make them useful and applicable in a West-Nordic context.

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Statistics Island: Statistical database.

Statistics Norway: Statistical database.

This ASI Volume will be available in final format and layout by approx. June 10, 2013.
ASI will be available in print and downloadable from web.

ARCTIC SOCIAL INDICATORS APPLICATION:

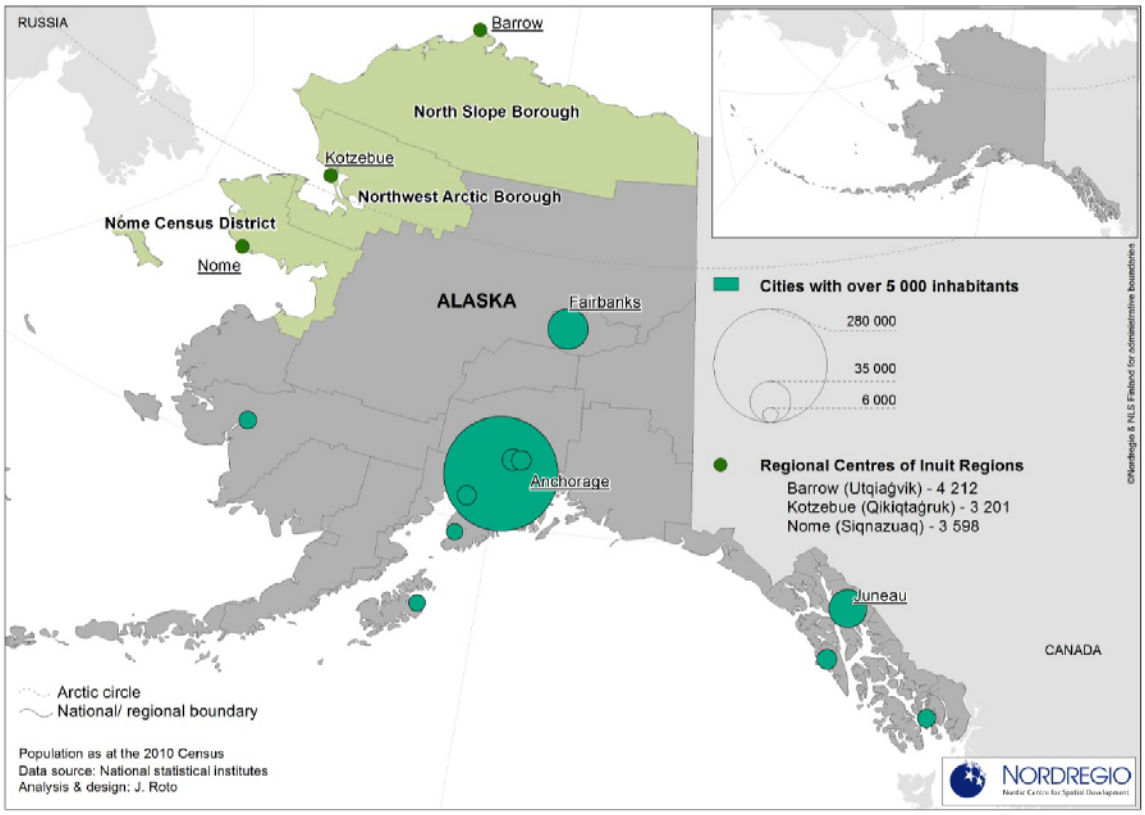
Chapter 5

INUIT REGIONS OF ALASKA

Peter P. Schweitzer, Ray Barnhardt, Matt Berman, Lawrence Kaplan

5.0. Introduction

The Inuit regions of Alaska are administratively defined as the North Slope Borough, the Northwest Arctic Borough, and the Nome Census Area. Together, these three regions constitute the homelands of the Inupiat, are situated in subarctic and arctic environments and inhabited by ca. 25,000 people in an area of over 420,000 km^2 (which is about the size of Germany, Belgium and The Netherlands taken together). One or more of the indicators for each of the domains developed in the Arctic Social Indicators report will be applied to the Inuit regions of Alaska. The chapter will present some of the differences and similarities among the three regions and, wherever the data allow it, within the regions.



It should be clear from the beginning that this chapter does not intend to reflect the views of local residents on social indicators and human development. Instead, this chapter is based entirely on publicly available data about the region(s) and thus an exercise in trying to make sense of census data and other numbers through the lens of the ASI framework. The chapter will start with a regional overview before proceeding to individual domains, followed by conclusions.

The Inuit across the circumpolar region are a group of culturally similar indigenous peoples inhabiting the Arctic regions of Canada (Northwest Territories, Nunatsiavut, Nunavik, Nunavut, Nunatukavut), Denmark (Greenland), Russia (Siberia) and the United States (Alaska). The Inuit dialects are grouped under Eskimo-Aleut languages, with the Inupiat and Yup'ik branches residing in Alaska. The label Eskimo is still used in Alaska and is not considered to be offensive as it is in other parts of the Arctic (ANLC 2011).

While this chapter will only address these groups living in Alaska, the next chapter of this volume (chapter 6) will provide a pan-Inuit perspective.

Caption: An Inupiaq woman overlooking the Beaufort Sea near Barrow. Behind her, the first whale of 2011 spring whaling season is being butchered and whale blood is slowly reddening the sea ice. Photo taken by Ilona Kemp in spring 2011.

The North Slope Region (North Slope Borough)

The northernmost of the three Inuit regions of Alaska is the North Slope region, which is administratively defined as the North Slope Borough. The North Slope region lies entirely north of the Arctic Circle (68 degrees north), with the northern most point being Point Barrow at approximately 71 degrees north. The region encompasses 94,763 square miles of terrain; of which 88,817 square miles is land and 5,946 square miles (6.27%) is water. Its western coastline is along the Chukchi Sea, while its eastern shores (beyond Point Barrow) are on the Beaufort Sea. The North Slope region comprises 15% of the total land area in Alaska. There are no major roads except the Dalton Highway, which extends from Fairbanks to Prudhoe Bay, as well as seasonal ice roads. Travel is primarily dependent on air, though there is some travel by snow machine in winter, and marine travel during the summer. The North Slope region is currently comprised of eight villages: Barrow, Point Hope, Wainwright, Nuiqsut, Point Lay, Kaktovik, Atqasuk and Anaktuvuk Pass.

The North Slope was first permanently settled about 4,000 years ago. The Inupiat people were traditionally nomadic hunters, and gatherers traditionally following animal migrations and subsisting on whale, caribou, walrus, seal and birds. It was strictly a subsistence economy

with a culture being entirely dependent on the harvest of the bowhead whale. Active trading between Alaskan and Canadian bands also took place. Oil exploration in the 1960s led to the development of the petroleum reserves in Prudhoe Bay and subsequently, the building of the Trans-Alaska Pipeline in the 1970s. North Slope Eskimos cast the lone vote in opposition to passage of the Alaska Native Claims Settlement Act (ANCSA), which passed in December 1971. After the passage of ANCSA, families from Barrow re-settled the formerly abandoned villages of Atqasuk and Nuiqsut to gain control over the lands allocated to each settlement in the region. The North Slope Borough was established in 1972 with the right to tax oil companies for land use operations at Prudhoe Bay. Eben Hopson was the first borough mayor. Under his leadership, the borough invested millions of dollars in tax revenues for sanitation services, water and electrical services, health services and other amenities, which, until that time, were not available to most residents. In 1972 the borough also established the North Slope Borough School District to operate the local schools, which gave residents, rather than the Bureau of Indian Affairs, control over the education of their children.

As of the census of 2010, there were 9.430 people residing in the North Slope region. The racial makeup of the region was 33.4% White, 54.1% American Indian and Alaska Native, mostly Inuit, 1% Black or African American, 4.5% Asian, with the remaining 7% from other races. 42.84% reported speaking Iñupiaq or "Eskimo" at home. There were 2,029 households out of which 39.6% had children under the age of 18 living with them, 37.8% were married couples living together, 19.9% had a female householder with no husband present, and 28.9% were non-families. 23.6% of all households were made up of individuals and 3.5% had someone living alone who was 65 years of age or older. The average household size was 3.34 people and the average family size was 3.93 (Census 2010).

In the North Slope Borough the population age was spread out with 27.1% under the age of 19, 8% from 20 to 24, 35.9% from 25 to 44, 32.9% from 45 to 64, and 4.3% who were 65 years of age or older. The median age was 35.1 years, for women 28.5 years and men 38.8 years.

Caption: Members of a whaling crew in Barrow travelling out onto the sea ice with snow machines and sleds to assist their crew in pulling and cutting up the whale that has just been caught. Photo taken by Ilona Kemp in spring 2011.

The Inupiat people of the North Slope region have been actively engaged in promoting their language and cultural traditions through the establishment of regional and local institutions such as the Iñupiat History, Language, and Culture (IHLC) Commission, the Iñupiat Heritage Center, the Simon Paneak Memorial Museum (Anaktuvuk Pass), and Ilisagvik College.

While the North Slope Borough has relied heavily on the development of the Prudhoe Bay and Beaufort Sea oil fields as the foundation of its economy, the Arctic Slope Regional Corporation (ASRC) has been one of the most successful of the 13 regional corporations formed under the Alaska Native Claims Settlement Act in 1971. This natural resource-based corporation employs nearly 10,000 people, has a growing shareholder population of 11,000, and has title to nearly five million acres of land. A founding principle of ASRC is respect for the Inupiat heritage. The family of companies of ASRC extends into the professional fields of engineering, financial management, oil and gas support services, petroleum refining and distribution, civil construction and communications (Arctic Slope Regional Corporation 2013)

Each of the communities in the North Slope Borough has its own village corporation as well. The largest of these, the Ukpeaġvik Iñupiat Corporation (UIC) headquartered in Barrow, provides social and economic resources to its 2,100 shareholders and their descendants, who

primarily reside in Barrow. UIC is ranked 8th among Alaska Business Monthly's annual survey of Alaskan-owned companies. UIC owns approximately 212,000 acres of land on Alaska's North Slope and employs over 1,400 people worldwide, with over 750 in Alaska (Ukpeagvik Inupiat Corporation 2013). The remainders of employment opportunities on the North Slope are centered on government services, tourism and construction. In addition to the corporate economy, there continues to be a heavy reliance on subsistence foods, including fishing, whale and seal hunting, gathering of plants, and harvesting of land mammals.

The Kotzebue Region (Northwest Arctic Borough)

The Kotzebue Region, with the official name Northwest Artic Borough, includes approximately 36,000 square miles (57,937 km) of land as well as 3,560 miles (5,729 km) of shoreline and is the second largest borough in Alaska (Northwest Arctic Borough 2013). There are 11 villages in the region: Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Noatak, Noorvik, Selawik, Shungnak and the hub town Kotzebue. Travel to the region is by flight, with locals using boats in the summer and snow machines in the winter to get around.

The region has been the home of Inupiat Eskimos for the past 10,000-15,000 years (Maniilaq Association 2003). Subsistence is still of great importance to the inhabitants of the Kotzebue Region.The economies in many of the villages are based on hunting, fishing and gathering as well as supplemental wage employment (Hayley & Magdanz 2008:25). Subsistence is intrinsically connected to values, identity, and social relationships as well as being an economic resource. Sharing of subsistence foods help reinforce and maintain social relationships, while participating in subsistence activities teach new generations about values and identity.

Mineral exploration and development have been the economic focus of the region since the Red Dog Mine opened in 1989. The Northwest Alaska Native Association (NANA) was founded as a result of ANCSA and owns the land that the Red Dog Mine is located on. In 1982 NANA made an operation agreement with the mining company Teck Resources Unlimited to open the mine. NANA receives yearly revenues from the mine and shares these with its shareholders (NANA). The ownership of the land gives NANA political influence as they have a voice in what happens to the land and the development of the mine. Today the Red Dog Mine is the world's largest open pit, zinc mine and is the second largest employer in Northwest Alaska (Hayley et Magdanz 2008: 25).

At the 2010 census, there were 7,523 people, 1,919 households and 1,428 families residing in the borough. There were 2,707 housing units. The racial makeup of the borough was 16.3% White, 87.1% Native American, 1.1% Black or African American, 1% Asian, while 0.3% identified as other ethnicities. 40% reported speaking Inupiaq at home.

There were 1,919 households of which 45.1% had children under the age of 18 living with them, 40.4% were married couples living together, 21% had a female householder with no husband present, and 25.% were non-families. 21% of all households were made up of

individuals and 5.1% had someone living alone who was 65 years of age or older. The average household size was 3.72 and the average family size was 4.32.

Age distribution was 39.5% under the age of 18, 9.4% from 19 to 24, 24.2% from 25 to 44, 20.7% from 45 to 64, and 6% who were 65 years of age or older. The median age was 25.7 years, for women 24.5 year, for men 27.1 years (Census 2010).

The borough was formed in 1986. It has three main departments: Planning, Public Services and Economic Development. A mayor and 11 assembly members are in charge of managing the region (Northwest Arctic Borough 2013). Most of the activity of the borough goes on in Kotzebue. Kotzebue lies on the coast by the terminus of Selawik, Kobuk and Noatak rivers. The town was named after the Russian explorer Otto Von Kotzebue who "discovered" the sound in 1818. Its location made the town an important trading post long before European contact (City of Kotzebue 2011). In 1897 reindeer herding was introduced to the region to try to expand economic activity (NANA 2013).

One of the major issues of the Kotzebue region is its disappearing shoreline, which threatens to take the village of Kivalina with it. The village of 400 people is facing a relocation of the entire village due to the fast erosion of the coast (Relocate-ak 2012). It is estimated that the current village site will stay above water for 10-15 years. The residents have had to be evacuated three times within the last 5 years due to storms threatening to top the town´s sea walls (Alaska Dispatch 2013).

The Bering Strait Region (Nome Census Area)

The Bering Strait region of Western Alaska includes the Seward Peninsula and surrounding islands as well as the shore of Norton Sound. Taken as a political entity, the areas served by the Bering Straits Regional Corporation extend all the way to the southern shore of Norton Sound and lie somewhat south of the Arctic Circle. The westernmost point on the North American continent is found at Cape Prince of Wales on the eastern shore of the Bering Strait itself. Transportation to the region and within the region is largely by air. Jets fly from Anchorage to Nome, and small airplanes travel from Nome to the villages. There were scheduled flights to Providenya in Russia during the 1990s, but traffic has decreased, and the trip is now made by infrequent charter flights. Three highways extend from Nome to the north, northwest, and northeast, but these roads are not connected to the road system outside of the region. There are periodic discussions in Alaska on the possibility of building a road to Nome to connect it with Alaska's cities and open up opportunities for mining and other extractive industries, but nothing has happened yet. A link to Siberia in the form of a bridge or a tunnel across Bering Strait has also been given consideration, although no serious proposal is in the works.

Nome, with a population of 3,600 is the regional hub, with a jet airport, a port, and government offices and small businesses. The region also comprises sixteen currently inhabited villages, with populations between 100 and 800. These are: Shishmaref, Diomede,

Wales, King Island, Brevig Mission, Teller, Mary´s Igloo, Solomon, Council, White Mountain, Golovin, Koyuk, Shaktoolik, Unalakleet, Stebbins, St. Michael (Bering Straits Native Corporation).

The Nome census area includes 9,492 residents at the 2010 census. 16.4% White, 75.8% Alaska Native, 0.3% Black or African American, 1% Asian. 6.2% identified as more than one race, primarily White and Alaska Native. There are 1,981 family households in the area. 38.9% are husband-wife families, 17.5% are female householders without a husband present, while 14% are male householders without a wife present. 29.6% are non-family households.

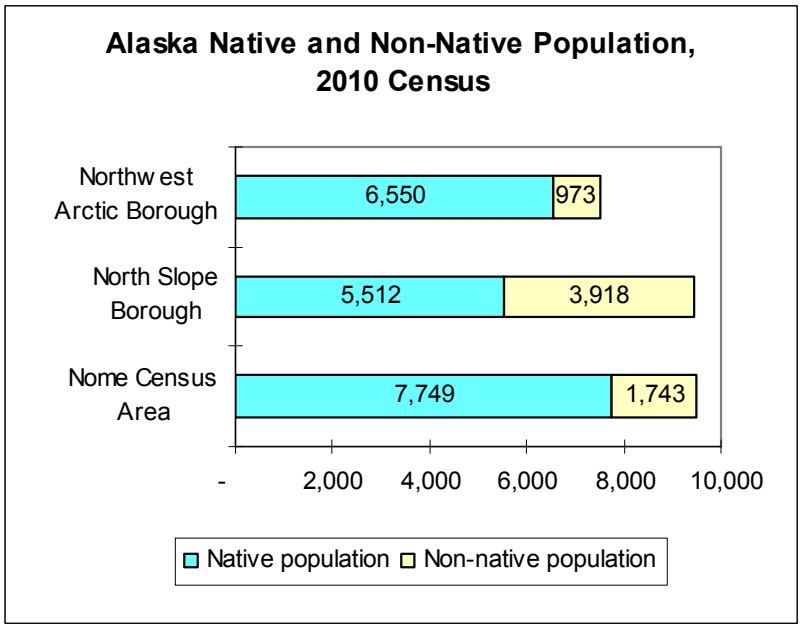
38.3% are under 19, 7.7% are 19-24, 25.2% are 25-44, 22.4% are 45-64, and 6.4% are over the age of 65. The median age is 27.6, for women 26.7 years, for men 28.3 years (Census 2010).

About 51% of Nome's population is Alaska Natives who have moved in from surrounding villages since the modern town of Nome came into existence with the gold rush of 1900. Early explorations brought the first Europeans to the region, with the Dezhnev expedition of 1648, financed by the Russian crown. Vitus Bering, whose name was given to the strait, sailed through the strait in 1728, although he apparently missed the American coast, which was not visible through the fog. The gold rush brought a great influx of outsiders, which meant enormous cultural change. Missionaries from a number of Protestant denominations soon followed, along with Roman Catholics, and Christianized the local population as they also helped address social and health problems precipitated by the rapid culture change. The region was hit hard by the influenza epidemic of 1918, which left behind many orphans, some of whom were raised in mission schools (Ray 1991).

The indigenous population is Eskimo, with Inupiaq groups on the mainland of the Seward Peninsula as well as on King Island – now depopulated – and Little Diomede. Seward Peninsula Inupiaq is one of two major dialect groups in Alaska, the other being North Alaskan Inupiaq and includes the Qawiaraq and Bering Strait dialects. These dialects include a number of sub-dialects, and language variation in the region is great. Siberian Yupik is spoken on St. Lawrence Island, and Central Alaskan Yup'ik is found south of Nome, in the villages along Norton Sound, where it co-exists with Inupiaq, ostensibly because of the southern movement of Inupiaq populations into Yup'ik territory. Native language use is declining in the region, and Inupiaq speakers tend to be the most advanced in age, although the Yup'ik areas are also experiencing an interruption of intergenerational language transmission. Most schools in the Alaska portion of the Bering Strait region have Native language programs, which teach Inupiaq or Yupik as a second language, although St. Lawrence Island has some school-aged children who have learned that language to some degree at home (Kaplan 1990).

Caption: The regional center of Nome from the air. Photo taken by Elizabeth Marino in 2010.

The traditional economy of the region involved subsistence hunting and gathering. Fishing in the ocean and rivers yields a variety of fish, from salmon and herring to trout and whitefish. Sea mammal hunting has always been important, and islanders have long hunted walrus and seals. St. Lawrence Islanders conduct annual bowhead whale hunts, and whales were formerly hunted at Wales and Diomede. Over the past fifty years or so, moose have increasingly moved into the Seward Peninsula, and they too have become part of the subsistence economy. Reindeer herding began in the late nineteenth century throughout large parts of northern and western Alaska, and the Seward Peninsula has the only remaining herds, which continue to supply meat for commercial sale. Gathering of greens, roots, and berries remains an important summer activity for women and children, supplementing a diet rich in meat. Annual runs of herring and pink salmon are fished commercially in Norton Sound. Employment in salaried jobs is often rare in villages and consists largely of work for the schools and Native corporations, along with jobs at the local store. Many more jobs are found in Nome, which is home to government agencies, retail outlets, hotels, a hospital, and infrastructure support, such as road crews. Summer tourism also provides local employment. The Bering Straits Native Corporation was formed under the Alaska Native Claims Settlement Act in 1971 and has 6,700 shareholders. Kawerak, Inc. provides social services, job training and other services as the non-profit corporation for the region. Additionally, each village has its local corporation under Bering Straits (Kawerak 2013).



5. 1. Data and Methodology

The first Arctic Social Indicators report (ASI 2010) discussed the issues involved in measuring indicators for the six domains, emphasizing availability of data. The study recognized that many of these indicators make the most sense when referring to arctic indigenous people, and recommended that data for indicators be available separately for indigenous and non-indigenous populations. ASI indicators for several of the domains such as cultural well-being and fate control either make no sense or would be difficult to construct and interpret for non-indigenous residents. For other domains such as material well-being, health, and education, there are large disparities in well-being.

The focus on indigenous people is appropriate for the Inuit regions of Alaska, where a majority of the population outside is of Inupiaq heritage. Most non-indigenous people in these regions are short-term residents drawn for economic opportunity, and highly mobile. Constructing indicators for indigenous residents presents two significant challenges, however. The first challenge is that typically the only source of indicator data for many of the ASI domains that separately reports data by race or ethnicity is the U.S. Census and its successor since 2000: the American Community Survey. The second challenge relates to the fact that race, or ethnicity, is a self-reported characteristic, whose social construction has evolved over time.

Before 2000, the U.S. Census Bureau required census respondents to report a single racial identity. Beginning with the 2000 census, respondents had the option to report multiple identities. While the proportion of the population reporting two or more races is still small in Alaska, it has been growing rapidly. The 2000 Census reported data at the census area and

community level for individuals listing their race as American Indian and Alaska Native alone, and also separately for individuals reporting an identity of American Indian and Alaska Native and one or more other races. While the definition of race has not changed since 2000, the Census Bureau reporting conventions changed with the American Community Survey (ACS). The ACS reports data only for individuals reporting a single race of American Indian or Alaska Native and for individuals reporting any two or more races. Consequently, it is not possible to distinguish people with a mixed Alaska Native identity from other mixed-race individuals in more recent data. Table 1 summarizes the indicators available for Inuit regions of Alaska by domain, along with the data source.

Table 1 Summary of ASI indicators used for Inuit regions of Alaska

Indicator	Data source
Health/demography	
Infant mortality rate	Alaska Division of Vital Statistics
Net in-migration rate, Alaska Natives	U.S. Census and American Community Survey
Suicide rate, age-adjusted	Alaska Division of Vital Statistics
Total population, Alaska Native and Non-native	U.S. Census
Material well-being	
Real per-capita personal income, Alaska Natives	U.S. Census and American Community Survey
Total employment by place of residence	U.S. Census and American Community Survey
Local per-capita subsistence meat and fish harvests	Alaska Division of Subsistence and North Slope Borough
Net in-migration rate, Alaska Natives	U.S. Census and American Community Survey
Education	
Percentage of Alaska Native adults with post-secondary education	U.S. Census and American Community Survey
The proportion of students pursuing post-secondary education opportunities	Alaska Native Policy Center

The ratio of students successfully completing post-secondary education	Alaska Native Policy Center
The proportion of graduates who are still in the community 10 years later.	Alaska Native Policy Center

Cultural vitality

Percentage of Alaska Native households speaking a language other than English at home	U.S. Census and American Community Survey

Contact with nature

Local per-capita subsistence meat and fish harvests	Alaska Division of Subsistence and North Slope Borough

Fate Control

Percentage of government spending raised from local sources	Alaska Taxable[a] and Teck Cominco Corporation
Percentage of lands owned by Inupiaq Regional and Village Corporations	Alaska Native Regional Corporation websites
Percentage of Alaska Native households speaking a language other than English at home	U.S. Census and American Community Survey

[a]Office of the State Assessor (annual publication).

Health and Population: Infant mortality is the main indicator recommended by ASI (2010). To this we add the suicide rate as in indicator of behavioral health. To address the random fluctuations in the data for such small populations, we represent the indicators as multiple-year moving average rates. The Alaska Division of Vital Statistics, the source of mortality data, publishes a single combined infant mortality rate for the North Slope Borough and the Northwest Arctic Borough. Net migration is the recommended indicator of population dynamics in the first ASI report (2010). Again, due to small population sizes, we report rates as a percentage of the population, estimated from population change, births and deaths over a period of years.

Material well-being*:* The first ASI report recommends using per-capita household income as a core indicator of economic well-being alongside five other supporting indicators. It is not possible to generate meaningful per-capita household income figures for indigenous residents because households can be mixed and there is no information on ethnic composition of households other than the self-described "head of household." Consequently, we used the published Census and ACS figures on per-capita income of individuals rather than

households. The difference between individual per-capita income and per-capita household income is that the former includes income of people living in group quarters such as remote work camps and prisons, while the latter excludes the group quarters population. The group quarters population is very small except for the petroleum facilities at Prudhoe Bay in the North Slope Borough. The census indigenous population at Prudhoe Bay is very small, however, so the effect is insignificant for the Alaska Native population.

Net migration rate, measured as discussed above, represents another measure of material well-being recommended by the first ASI report. Reliable estimates of the unemployment rate, a recommended supporting indicator, are not meaningful for the Inuit regions of Alaska, due to seasonal work and a low labor force participation rate. We substitute total employment by residents (as distinguished from employment by place of work, which includes non-resident workers) as a measure of the strength of the local labor market. Subsistence harvests of local foods and other resources obtained via household production also contributes to material well-being. We described data on subsistence harvests below. Another alternative economic well-being measure that could be considered in the future is a measure of government transfer income as a share total income.

Education*:* The first ASI report recommended three main indicators, all of which are based on educational attendance (the proportion of students pursuing post-secondary and completing education) or retention of educated people in a community (within 10 years after graduation). Due to data limitations, the only reliable indicator of education is the educational attainment level of the population, obtained from U.S. Census and ACS. We focus on the percentage of the indigenous population with any post-secondary education. This measure of educational attainment is a composite indicator that measures how school completion levels of the population interact with mobility.

Cultural Well-being: The composite indicator of cultural vitality suggested by the ASI report incorporates cultural autonomy (indicated by presence of institutions for cultural self-determination), language retention, and belonging (measured by participation in traditional subsistence activities). Information on language retention is available in the U.S Census and ACS, and in the Survey of Living Conditions in the Arctic (SLiCA) (Kruse et al., 2008).

Census data that refer to languages other than English, as in "Population not Speaking English at Home," should not be interpreted as indicating Inupiaq exclusively, since languages other than Inupiaq and English are spoken in regional hubs, including Spanish, Korean, and other Asian languages.

Caption: Drying salmon in White Mountain. Photo taken by Elizabeth Marino in summer 2004.

Contact with Nature: The recommended indicator for contact with nature is the consumption and/or harvest of traditional foods. Data on subsistence harvests are not systematically collected in Alaska. The Alaska Division of Subsistence conducts harvest surveys in individual communities when funding is available. These surveys often take place in conjunction with environmental reviews for prospective industrial activities. Communities located at a distance from potential resource development may not have ever been surveyed. The North Slope Borough has also conducted subsistence harvest surveys in the past, but not recently. Consequently, it is difficult to draw inferences about differences among regions or changes over time in harvest levels. The lack of consistent measures of subsistence harvests has been cited as a critical deficiency in the social observing system in the Arctic (Kruse 2011). We report the data from communities in the three Inuit regions as available, with the caveat that changes observed over time in the data do not necessarily reliably indicate actual changes.

Fate Control: The first ASI report recommended using a composite indicator of fate control with four components representing political power, economic self-reliance, cultural empowerment and control over land. Some data are available for three measures suggested in the report: the percentage of surface lands legally controlled by the inhabitants (control over lands), the percent of public expenses paid from locally generated funds (economic control) and the percent of people speaking their ancestral language (cultural control). We interpret the

latter measure as referring to the indigenous population, using the indicator described above for cultural vitality.

Information about the percentage of public expenses paid from locally generated funds can be pieced together from multiple sources. The Alaska Department of Commerce, Community, and Economic Development publishes data on local tax revenues by community and local government expenditures. These tax revenues do not include a separate payment in lieu of taxes to the Northwest Arctic Borough from Teck Cominco Corporation related to the Red Dog mine. We constructed estimates of state and federal government expenditures in the Inuit regions of Alaska from data analyzed in Goldsmith (2007).

A simple indicator of local political control of indigenous people is the percentage of the population that is indigenous, available from census data. An indicator of land control is difficult to determine at the community or even regional level. Village and regional corporations established under the Alaska Native Claims Settlement Act of 1971 (ANCSA) received land around communities. However, shareholders are individual beneficiaries who could move anywhere and exercise control over ancestral lands from afar. Data on residence of shareholders is not systematically available. Assuming that control of ANCSA Inupiaq corporations remains local to the Inuit regions, we measure percent of land in each regions owned by ANCSA corporations as a measure of control over land.

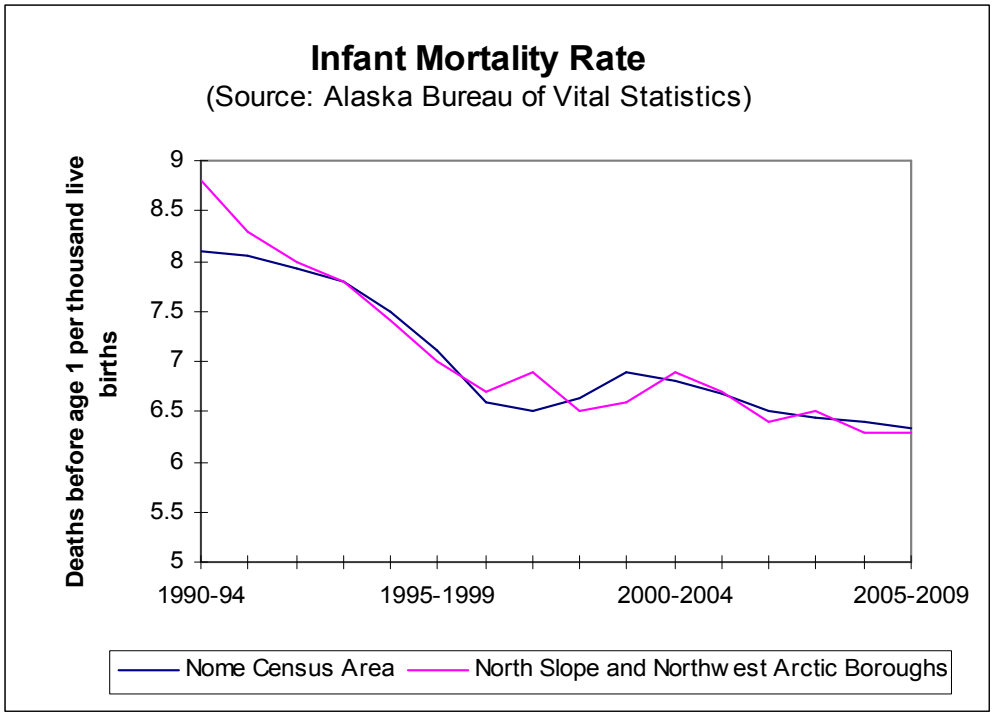
5.2 Results

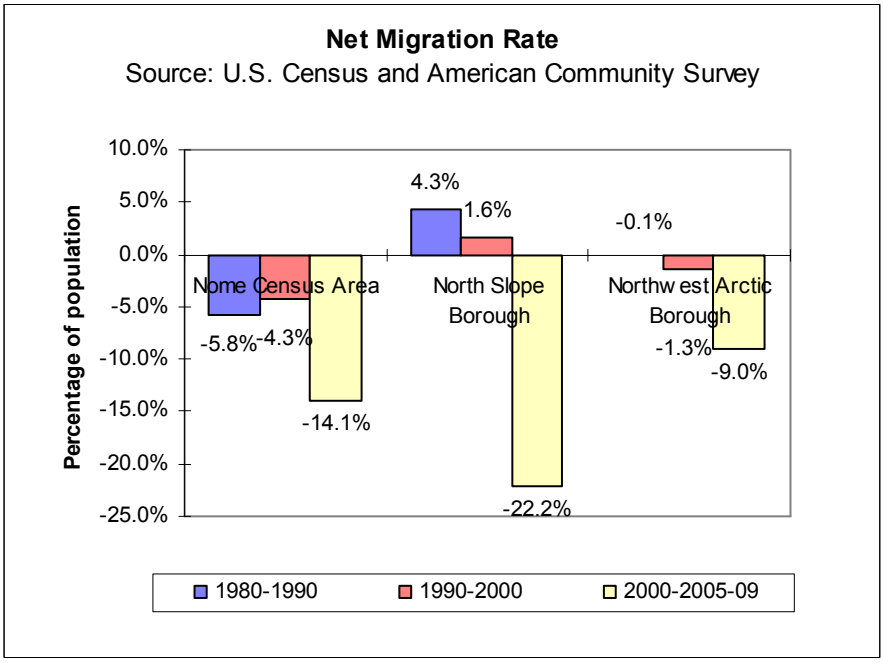
5.2.1. Domain: Health and Population

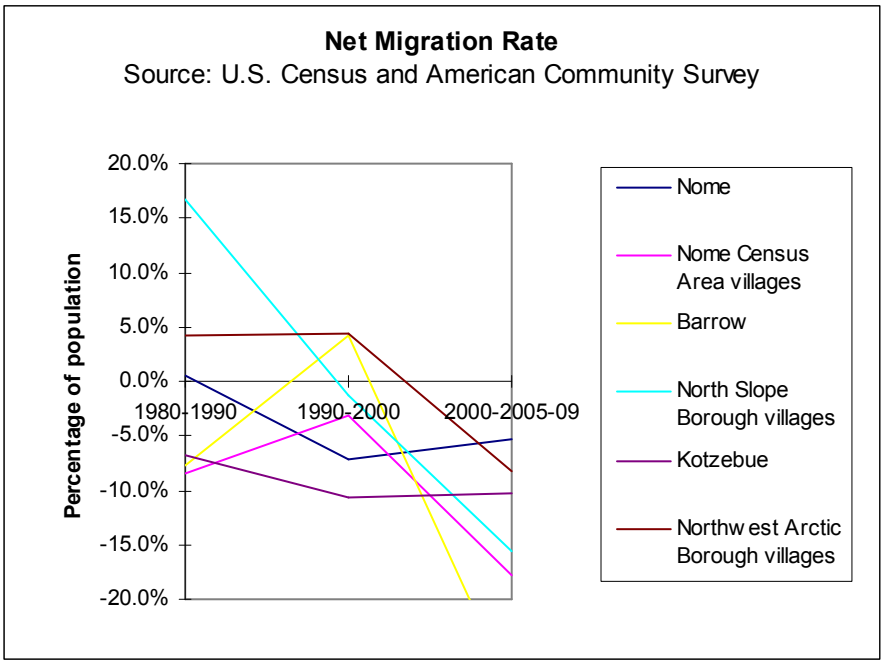
Traditional Inupiaq health care often involved herbal medicines and healers who practiced palpation and "hands on" treatments. Infectious diseases were all but unknown to pre-contact Alaskan Inupiat, and their arrival with whalers, miners, and others in the latter half of the nineteenth and early twentieth centuries brought disastrous results. The influenza epidemic of 1918 struck particularly hard in Northwest Alaska and decimated much of the local population. With little medical care available in remote areas, the Indian Health Service was established to provide federal health services to American Indians and Alaska Natives. Providing health services to members of federally-recognized groups was a result of the special relationship between the federal government and Native Americans. This relationship is based on Article I, Section 8 of the Constitution, and is substantiated by numerous treaties, laws, Supreme Court decisions, and Executive Orders. The Indian Health Service is the principal federal health care provider and health advocate for Native people, and its goal is to raise their health status to the highest possible level." (www.ihs.gov)

This ASI Volume will be available in final format and layout by approx. June 10, 2013.
ASI will be available in print and downloadable from web.

ASI (2010) suggested two primary indicators for the Health and Population domain: infant mortality and net-migration. We are in the lucky position to have data for both indicators for the Inuit regions of Alaska. Both of them are presented in chart form below.







Alaska Natives, along with the Native American population in general, have important health issues that give them a life-expectancy lower than that of the general population. “On almost every indicator of morbidity, mortality, and quality of life Native Americans are substantially worse off than the dominant culture and as bad or worse off than other minorities” (Heckler 1985).

In addition to these two primary indicators, we have decided to include an additional indicator, the suicide rate. The chart below contains information regarding this additional factor. After all, suicide or its absence is an important indicator of well-being among the Inuit of Alaska and elsewhere. The table below contains average annual age-adjusted suicide deaths per 100,000 for the years 2005-2007.

Table 2: Average Annual Age-adjusted Suicide Rates (2005-07)

Region	North Slope	NANA	Bering Strait	Alaska
Groups				
Inupiat	73.5	76.5	77.5	
All Alaska Natives				43.1
All Alaska Whites				17.3

The primary health indicator – infant mortality – shows a straightforward positive trajectory for all three Inuit regions of Alaska. While the data for the secondary health indicator – suicide rates – are not dynamic and show only point in time, they paint a troubling picture of the situation. The Inuit from northern Alaska have suicide rates almost double of other Alaska Natives, and more than four times as high as Caucasian living in Alaska. No matter whether time-series data would indicate a betterment or not, the data are troublesome by themselves.

The population data – as seen through indicator of net-migration – are a bit troublesome as well. While there might a number of external factors at play – such as high population turn-over due to extractive industry jobs – the significant net-outmigration in the recent past might indicate a potential for future years.

5.2.2. Domain: Material Well-being

ASI (2010) defines *Material Well-being* as a measure of local residents' command over goods and services. It is derived from market and non-market activity as well as transfers from higher levels of government. Personal income per-capita, household income per-capita, and disposable income per-capita are all measures of the ability of a region's residents to acquire goods and services through the market, and as such they provide an indicator of the market component of material quality of life. The contribution made by the non-market sector is

difficult and costly to measure, and would require extensive primary data collection, and therefore the ASI suite of indicators emphasizes per-capital household income. The ASI material well-being indicator – per-capita household income – does not provide us with a perfect measure since it excludes the contributions made by subsistence, as well as government transfers.

In this chapter on the Alaska Inuit we have provided data on some of the indicators selected as potential ASI indicators of material well-being. They are highlighted here:

Potential Indicators

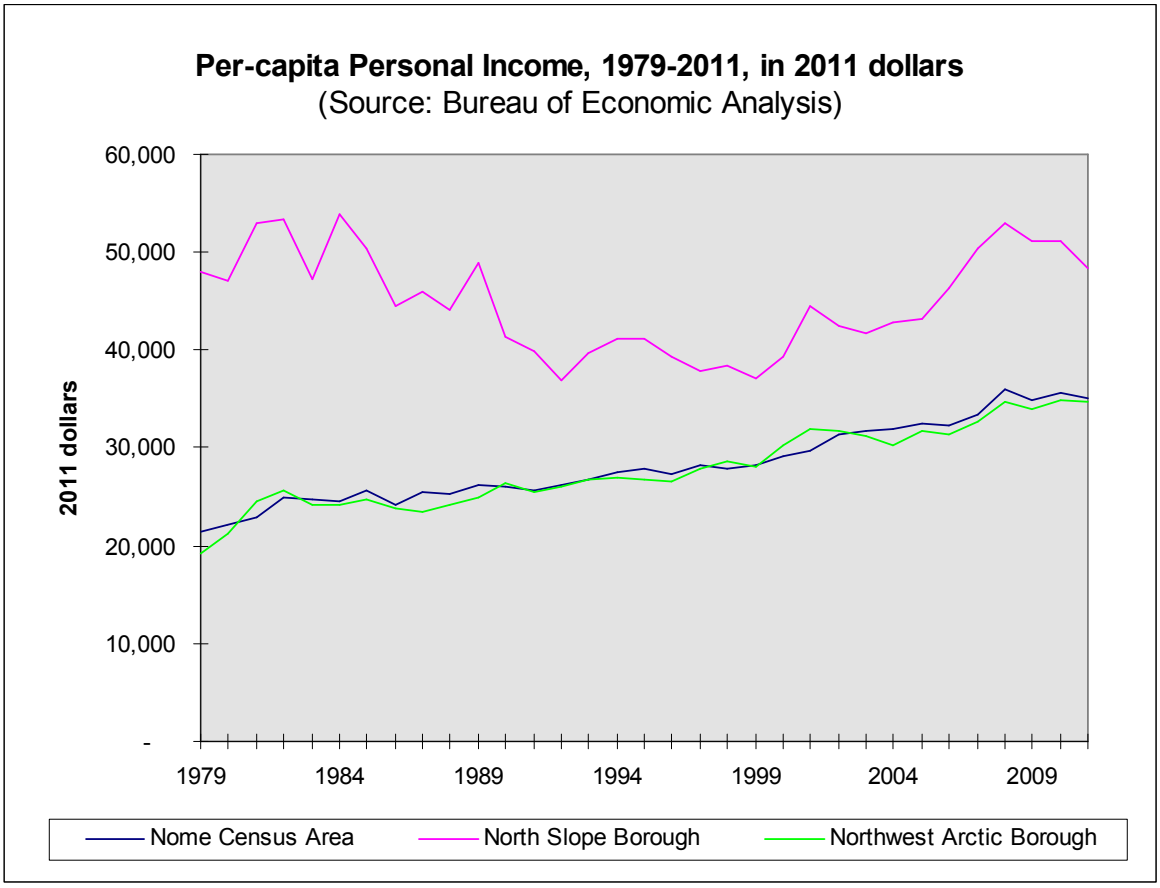
- Per-Capita Gross Domestic Product
- **Per-Capita** Household **Income**
- Unemployment Rate/**Local employment**
- Poverty Rate
- **(Subsistence Harvest) (weight)**
- **Net-migration Rate**

While the per-capita household income is the preferred measure of income, we report Alaska data instead for per-capita individual income, in order to be able to distinguish incomes of indigenous and non-indigenous people. Since household members may be from different races, per-capita household income is not available by race. The difference between household income and individual income is that household income does not include in the average individuals living in group quarters such as remote work camps, military barracks, and prisons. Data on unemployment, another ASI indicator of material well-being are unreliable for the arctic regions of Alaska. Many potential workers desire only part-time or seasonal work so that they may pursue subsistence hunting and fishing livelihoods. They may or may not appear in the data as unemployed but are not necessarily looking for work. A more reliable, although imperfect indicator of potential employment opportunities is simply to examine trends in the number of jobs available locally.

ASI indicators on *Net-Migration* and *Subsistence Harvest* are not discussed in this section as they were not selected as the main ASI indicator for *Material-Well-being*. These indicators however are discussed in the sections on *Contact with Nature* and *Health and Population*.

The best information on per-capita income comes from the U.S. Bureau of Economic Analysis (BEA). The BEA produces the official statistics on Gross Domestic Product (GDP) and Personal Income for the nation. Because the BEA derives much of the data for the estimates from income tax returns, the agency is able to estimate personal income for all counties and census areas based on the addresses listed on the returns. Converted to constant 2011 dollars using the Anchorage Consumer Price Index, the chart shows that per-capita personal income is very similar in the Nome Census Area and Northwest Arctic Borough, and rose from about $20,000 in 1979 to $33,000 in 2011. The local tax revenues that the North Slope oil fields provide allow the North Slope Borough to provide services to residents above

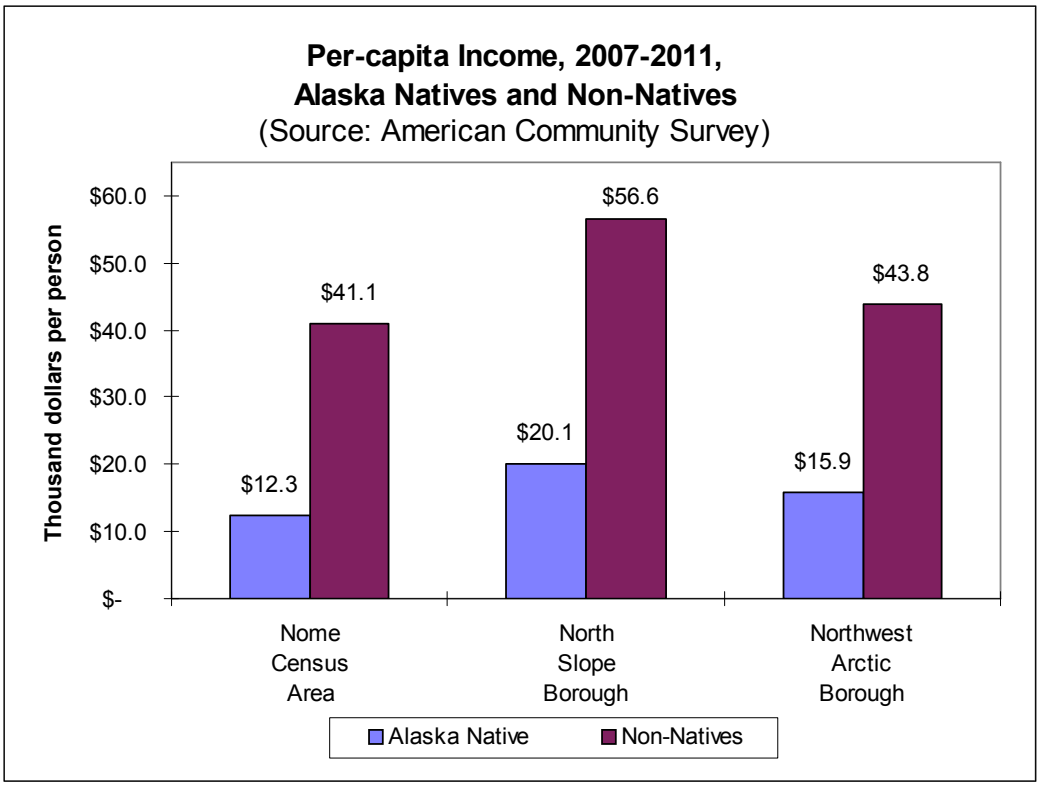
the level available elsewhere in rural Alaska. Jobs created to provide those services, along with industry jobs, increased per-capita incomes in the North Slope Borough substantially throughout the period relative to the other two areas.



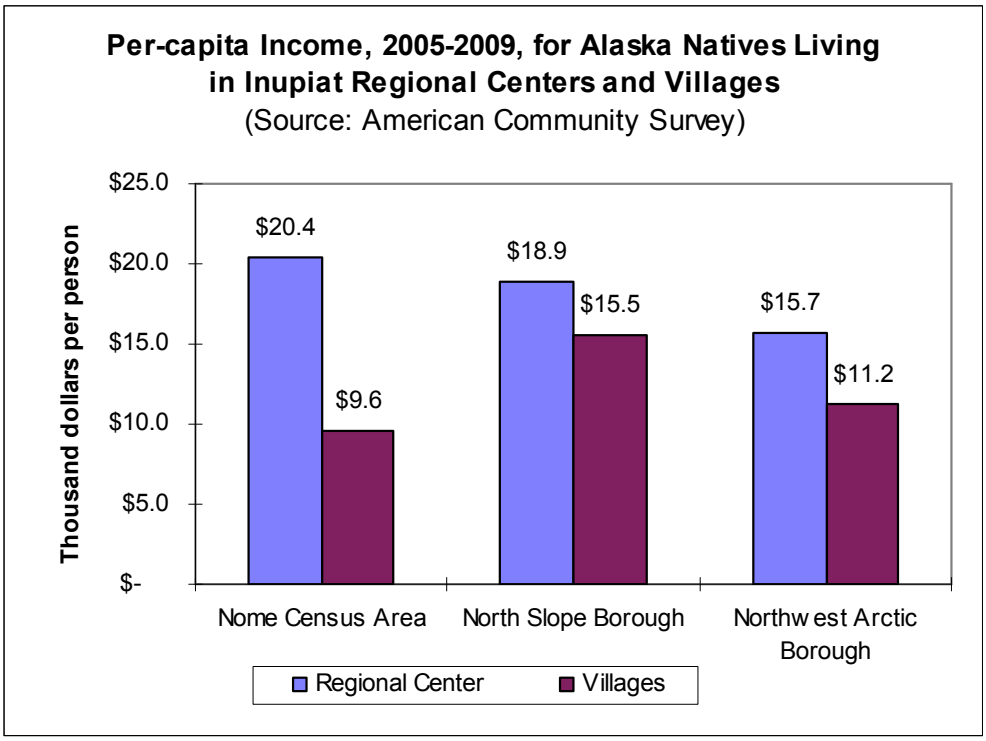
While the BEA data provide the most accurate and comprehensive estimates of personal income, they suffer from two important limitations. First, they have no information on potential differences in income for indigenous and non-indigenous residents, since tax returns do not include information on race. Second, the BEA does not try to disaggregate the estimates to communities within census areas. The American Community Survey (ACS) provides the only recent information on income by race. The ACS has a more accurate definition of residence than the BEA, since it asks respondents specifically to state where they usually live. However, the ACS is taken from a sample of households, and only reports data for rural Alaska communities and census areas in the form of moving averages over a five-year period.

Data from the American Community Survey shows that per-capita income of Alaska Native residents -- those who describe their race as Alaska Native or American Indian alone – is only about one-third that of non-Native residents. Since the ACS does not separately report data for individuals listing multiple non-Native races separately from those reporting mixed Native and non-Native race, income from the relatively small numbers of mixed-race individuals is included in the non-Native category in the figure. Alaska Native incomes are substantially lower than non-Native incomes in all three areas of arctic Alaska. Per-capita income of Alaska Natives in the wealthiest area – the North Slope Borough – are still less than half of

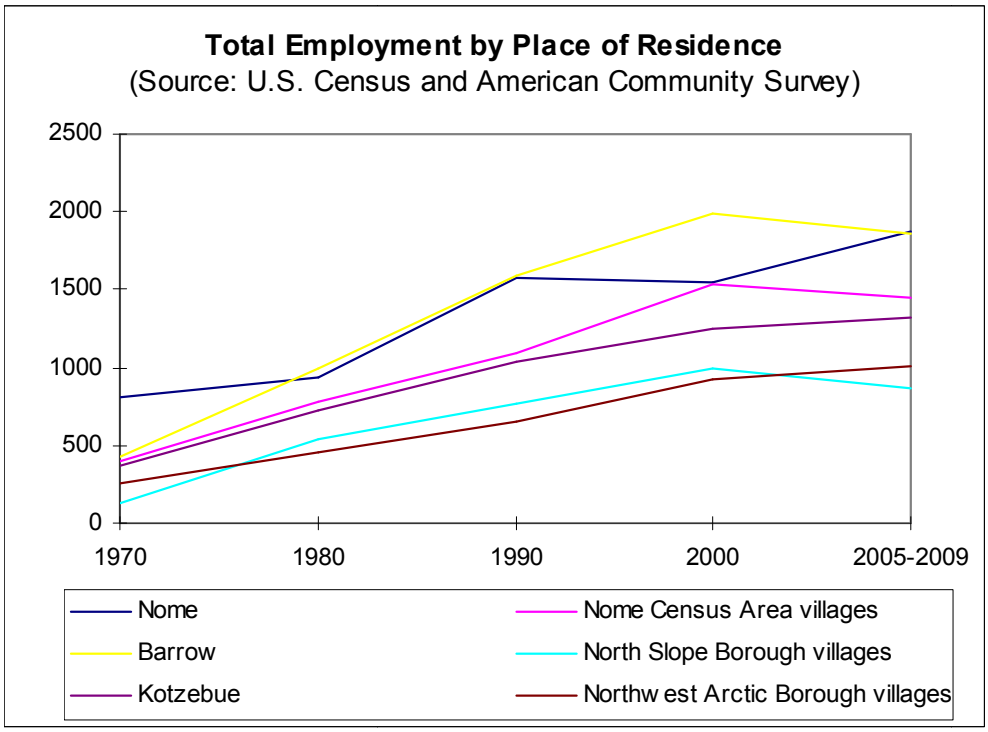
non-Native incomes in the poorest area – the Nome Census Area. Among Alaska Natives, Nome Census Area per-capita income of about $12,300 is nearly 40 percent lower than North Slope Borough income of about $20,000. Northwest Arctic Borough income is roughly halfway between the other two areas.



The ASI indicator of per-capita income suggests that substantial disparities in material well-being occur between Alaska Natives living in regional centers and those living in smaller communities (villages). As shown in the graphical illustration below, per-capita income over the period 2005-2009 differed significantly for Alaska Natives between those living in the Inupiat regional centers compared to those living in villages (Source: American Community Survey). The difference in per-capita income was greatest for those living in the Nome Census Area, where the per-capita income was $20,400 in regional centers compared to only $9,600 in villages. The difference in per-capita income was smallest in the North Slope Borough, with per-capita income in villages being a high of $15,500 (the highest per-capita village income for the three areas of Nome Census Area, North Slope Borough, and Northwest Arctic Borough). The greatest per-capita income in regional centers for this period was in the Nome Census Area ($20,400), which at the same time had the smallest per-capita income for Inupiat villages ($9,600).



Data on total employment provide further insight into regional differences in job opportunities. As shown in the graphical illustration below, data from the U.S. Census and American Community Survey on total employment by place of residence suggest a general upward trend in total employment over the period 1970 to 2005-2009, except for Barrow Alaska, and the villages in the Nome Census Area and villages in the North Slope Borough where employment has been declining since 2000. Also, while employment in Kotzebue and the villages of the Northwest Arctic Borough has been increasing over the period since 1970, the rate of increase has been less since year 2000. Overall, the data suggest that total employment – and in some cases rate of increase of employment - has been declining over the past decade. As mentioned above, unemployment numbers are also unreliable for these regions. Total employment, like unemployment, provides only an incomplete picture of material well-being, as it does not tell us anything about the characteristics of this employment, e.g. whether it is part-time, full-time, permanent or seasonal, or the rate of underemployment.



Caption: The open pit at Teck Alaska Inc.'s Red Dog Mine. Photo taken by David Atkinson.

In summary, the ASI indicator (per-capita income) for material well-being suggests that large disparities exist between Alaska Natives and non-Native residents. Among Alaska Natives,

additional significant differences appear between regional centers and villages, and between the Nome Census Area (the poorest region) and North Slope Borough (the richest), with the Northwest Arctic Borough between the other two areas. Long-term trends suggest that per-capita incomes have been rising in the Nome Census Area and Northwest Arctic Borough, but still lag behind those in the North Slope Borough. Data on total employment further suggest – although not part of the ASI small suite of indicators – that job opportunities may have been declining over the past decade in the Nome Census area and North Slope Borough. Still, as suggested above, we need to consider the employment indicator with some caution.

5.2.3. Domain: Education

The evolution of higher education institutions and services in the Inupiaq regions of Alaska has varied from sub-region to sub-region, though it has been a prominent part of regional development efforts in all three sub-regions since the early 1970's.

Following the signing of the Alaska Native Claims Settlement Act in 1971 and the concurrent opening of Prudhoe Bay to oil development, the Arctic Slope Region took the lead by forming the North Slope Borough and assuming responsibility for education in the region through the North Slope Borough School District. Along with taking over responsibility for the K-12 system, the North Slope Borough, under the leadership of Mayor Eben Hopson, initiated a series of efforts early on to establish a higher education presence in the region.

The first such initiative took place in 1975 with the formation of the Inupiat University of the Arctic, which operated in the region until it was closed in 1980 due to conflicting expectations of its role in the region vis-à-vis the University of Alaska. Six years later the North Slope Higher Education Center was established by the Borough and operated in collaboration with the University of Alaska Fairbanks for purposes of accreditation of its programs. In 1990 the NSHEC was re-named the Arctic Sivunmun Ilisagvik College, at which point it began to pursue independent accreditation with support from UAF. In 1997, under the leadership of Edna MacLean, ASIC was re-named Ilisagvik College and took the lead in securing funding from the Kellogg Foundation to form a statewide Consortium for Alaska Native Higher Education with membership from regions throughout Alaska. Six years later Ilisagvik College was formally accredited by the Northwest Commission on Colleges and Universities, and in 2007 was recognized by the federal Bureau of Indian Affairs as a Tribal College and then became a member of the American Indian Higher Education Consortium. Throughout the trials and tribulations of establishing a higher education presence in the region, Ilisagvik College has positioned itself as a lead institution in addressing the workforce and higher education needs on the Arctic Slope.

The Northwest Arctic Region took a slightly different path in its pursuit of localized higher education, though not without its own period of tumult. Given the critical need for an educated workforce as Native corporations were being formed in response to ANCSA, Native leaders made a push to extend the services of the University of Alaska out to the regional centers through the establishment of rural community colleges. The first such community college was formed in the Kuskokwim region in 1972, followed three years later by the establishment of the Northwest Community College in the Bering Strait region in 1975 and the Kotzebue Community College (now Chukchi Campus) in the NANA region in 1976. While the legislative leadership had explicit expectations for the role of the community colleges in addressing the emerging workforce needs in rural Alaska, the leadership of the university was hesitant to expand its services beyond the central campuses and entered into a contentious debate on the level of local control to be accorded the community colleges. As a result, a prominent legislator from the Northwest Arctic region withheld funding for the Chukchi Community College and it was closed from 1980 to 1982, while regional higher education services were relegated to a local vocational-technical center administered by the regional school district. Following a series of structural realignments in the university over the next five years to address rural education needs, in 1988 UAF formed the College of Rural Alaska and re-defined the rural community colleges as branch campuses to be administered under each of the three major administrative units (UAF, UAA and UAS), which is where higher education programs for rural Alaska are situated today (though the College of Rural Alaska is now the College of Rural and Community Development.

Caption: 2006 graduation ceremony at Kotzebue High School. Photo taken by Amber Lincoln.

In summary, higher education has played a prominent role in the evolution of the political, economic and educational arenas that constitute the Inupiaq region of Alaska today. Following will be an extrapolation of data describing the emergence of post-secondary education programs and services across the region over the past 40 years.

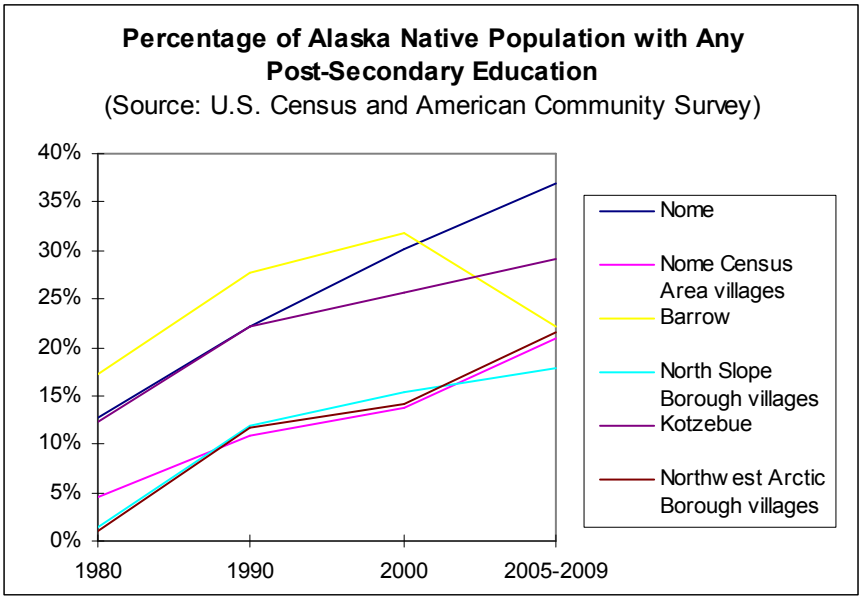
ASI has established three indicators to address the education domain in the Arctic:

Indicator 1: *The proportion of students pursuing post-secondary education opportunities*

Indicator 2: *The ratio of students successfully completing post-secondary education*

Indicator 3: *The proportion of graduates who are still in the community 10 years later*

As in the other applications, the first and primary indicator is post-secondary education attainment. Table x shows the relevant percentages for the Alaskan Inupiaq regions, further broken down along the line of regional center versus all villages of that region. Not surprisingly, the three regional centers are ahead regarding the ratio of post-secondary education of Alaska Native residents. While Barrow was the leader from 1980 to 2000, Nome is in that position now, showing a steady increase since 1980. Kotzebue, which was in lock-step with Nome for the first decade under consideration, has had lower growth rates recently and scores between Nome and Barrow now. Importantly, the villages from all three regions have seen significant increases between 1980 and 2005/09. North Slope Borough villages, which had the biggest increases between 1980 and 2000, are now slightly behind post-secondary education percentages in the villages of the Northwest Arctic Borough and the Nome Census area.



In addition to this dynamic data for the primary indicator, we have been able to acquire additional data that highlight the situation in the mid-2000s.

% Inupiaq High School Grads	Arctic Slope	NANA	Bering Strait	Total
Male	67	65	67	
Female	65	66	67	
% Inupiaq College Grads				
Male	2	2	3	
Female	5	5	5	

Most of the data presented here is derived from the Alaska Natives Statistical Data Base census data compiled by Andrew Curley and Michael Levin for the First Alaskans Institute Policy Center in 2007. The data is presented in percentages rather than proportions or ratios because that is the way it was compiled in the data base, though the original data could be reconstructed as proportions and ratios. Curley and Levin disaggregated the data by ANCSA

region and by gender, so it is presented here broken down by gender and by the three Inupiaq-serving cultural regions (Arctic Slope Region, Bering Strait Region and the NANA Region).

Higher education in its varied forms has been and continues to be an on-going aspiration among the Inupiaq people of Arctic Alaska, motivated in large part by the need for local expertise to meet the development goals and opportunities in the regions. The most visible response to addressing the higher education needs of the regions has been the establishment of localized higher education initiatives and institutions addressing needs at the local, sub-regional and regional levels. While the demand for higher education services has grown steadily since the early 1970's, the majority of those services have been provided at the local level through regional institutions, rather than at the state level or mainstream institutions.

5.2.4. Domain: Cultural Well-being

ASI (2010) had suggested a composite indicator for cultural well-being, dealing with cultural autonomy, language retention, and belonging. Given that the suggested indicators for belonging and cultural autonomy would have to be collected separately, we decide to focus on language retention. At the same time, ASI (2010) had suggested language retention as the primary indicator for cultural well-being, which further justifies our position. From here on, we focus on language issues.

Alaska is home to twenty indigenous languages and two of the great language families of North America, Eskimo-Aleut and Athabascan-Eyak-Tlingit. The distribution of languages across the Arctic and sub-Arctic make it clear that these two language families must have originated in Alaska. Alaska has four Eskimo languages in addition to Aleut, and this language family must have spread eastward from Alaska, across the Canadian Arctic to Greenland. Similarly, Athabascan (Dene) languages would have originated in Alaska and spread east into Canada and south along the Pacific Coast all the way to the American Southwest.

When the first Europeans arrived in the Aleutian Islands in 1740, they encountered speakers of Aleut; the Russian America Company soon moved into areas occupied by Sugpiaq, Tlingit, and Central Yup'ik speakers. Bilingualism and even multilingualism with Native languages were usual in regions where different groups bordered each other, and with the arrival of colonists, bilingualism with European languages began to increase.

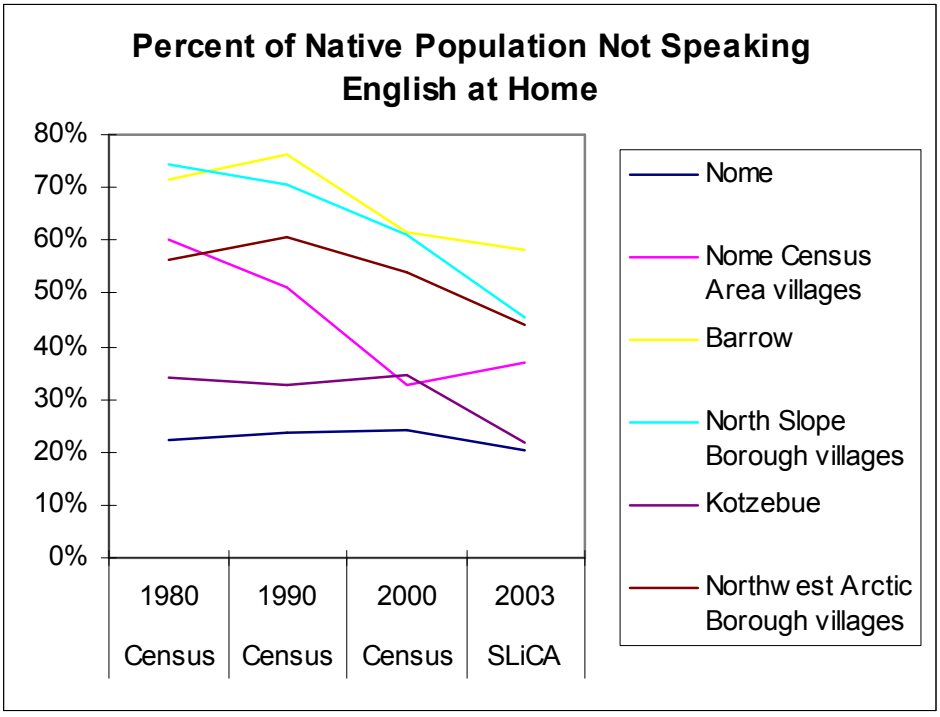
All of Alaska's indigenous languages are now considered "endangered" by linguists, meaning that they are in danger of disappearing, since most are no longer being learned as first languages by children (Krauss 2007; Lewis et al. 2013; Moseley 2010). Very small languages, such as Deg Hit'an and Han, both Athabascan, have just a handful of elderly speakers remaining. The exception is Central Alaskan Yup'ik, Alaska's largest Native

language with some 25,000 people and about 10,000 speakers, including young children, who speak Yup'ik as their first language.

The Inupiat number about 16,000 and cover a large area of northern Alaska, including the Arctic Slope north of the Brooks Range, the drainages of the Kobuk and Noatak Rivers and Kotzebue Sound, as well as the Seward Peninsula and adjacent islands. The language, however, is severely endangered with an estimated 2,000 speakers, including few or no children whose first language is Inupiaq. Over the course of their history, the Inupiat have experienced social impact from encounters with Europeans and Euro-Americans, beginning with whalers who visited the North Slope in the second half of the 19th century, bringing alcohol and disease. The Seward Peninsula was the site of a gold rush in 1901, which brought large numbers of outsiders. Both whalers and miners were notoriously rough. Missionaries soon followed. Outsiders introduced new languages, especially English. Bilingualism developed and loan words were introduced into Inupiaq, primarily from English but also from Russian (through trade), and even Hawaiian and Portuguese (by whalers). In spite of the massive cultural change that resulted from large commercial ventures, there is no evidence that the language decline began until the 1930's and 1940's. Schools opened, children were punished for speaking their native language, and parents were persuaded that Western education, along with linguistic and cultural assimilation, offered the best route for their children to achieve success in American society. This ethnocentric assault on Inupiaq culture and language must be one of the primary factors, if not the primary factor, that has brought about an interruption in the intergenerational transmission of Inupiaq from parents and grandparents to children.

Language retention is taken as an indicator of cultural well-being, and conversely, language shift would indicate of a measure of cultural assimilation, since it occurs in cases where minority groups are present within societies where major world languages are prevalent, along with cultural practices that are not traditional to the minority groups.

The language retention indicator was defined in ASI (2010) as, "what percentage of a population speaks its ancestral language compared with the population as a whole?" In Alaska, however, we do not have data readily available to answer this question. Instead we redefined our indicator to "percent of Native population not speaking English at home," which is available through census data until 2000. While we are aware that this doesn't measure the exact same thing as the original definition, we are confident that this redefined indicator (see chart below) gives us the information we are looking for, although "non-English speakers" includes languages other than Inupiaq.



Not surprisingly, the language retention data show a downward trend for all three regions (villages and towns alike) from 1980 to 2003. Within that 23-year timespan, however, there have been positive developments as well. Barrow showed an increase from 1980 to 1990 and the Nome area villages have seen one after 2000. It deserves to be mentioned that Barrow and the villages of the North Slope Borough have remained consistently on top regarding the indicator "percent of Native population not speaking English at home". Given that the North Slope Borough experienced a massive influx of oil money during the 1970s and 1980s, one could have expected otherwise. One potential conclusion is that increased Material Well-being doesn't have to have a negative impact on traditional cultural practices, such as speaking the Native language at home. On the contrary, it could be argued that language (and cultural) revitalization efforts require material well-being (which does not mean that material well-being guarantees cultural vitality).

5.2.5. Domain: Contact with Nature

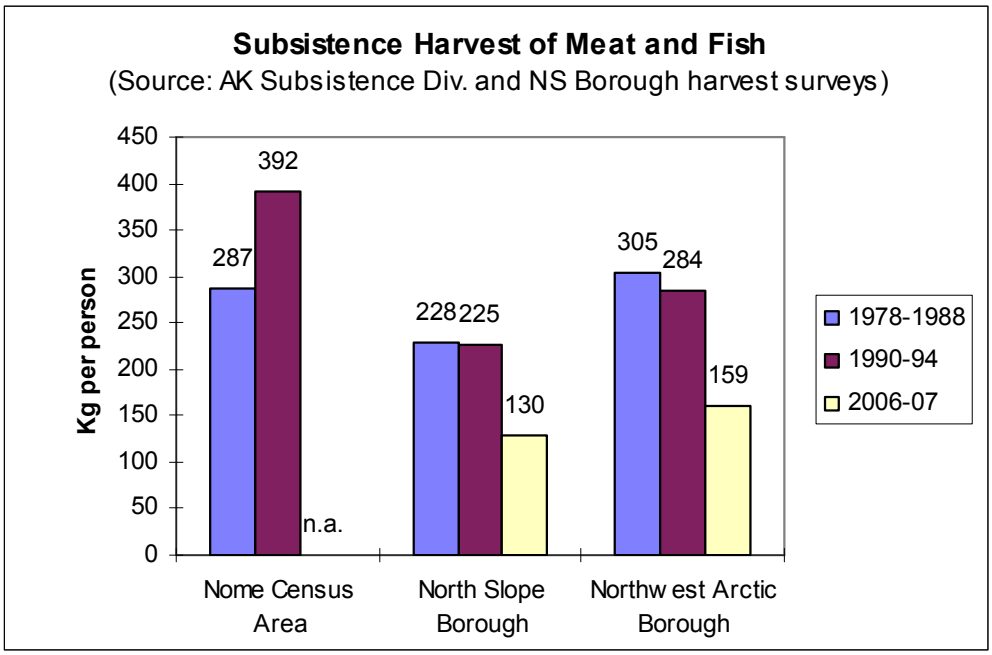
The concluding chapter of the Arctic Human Development Report included the following statement: "Arctic societies are place-based systems; they feature human adaptations that are closely tied to local environments. It is no accident that Arctic residents – including settlers as well as indigenous peoples – regularly say that "our land is our life" and that "we belong to the land" rather than claiming the land as belonging to them" (AHDR 2004: 241). This rings

true for the Inuit regions of Alaska as much as for any other region of the Arctic. As was briefly mentioned in the introduction to this chapter, each Inuit region (and often each community within a region) is characterized by a well-established cycle of subsistence activities, which follow the seasonal availability and accessibility of animals and plants. These activities range from sea-mammal hunting and fishing to gathering and birding and the resources include animals such as caribou, bowhead whales, ducks, and whitefish, as well as a variety of berries and roots. While the place-based activities and resources are intricately linked to systems of local knowledge that have been developed over many generations, recent environmental shifts – such as those triggered by climate change – threaten the future viability of some of these activities, while at the same time introducing new species and opportunities to the system.

Caption: Inupiaq women packing up whale meat to share with the community the day after the catch. Photo taken by Ilona Kemp in Barrow in spring 2011.

The first Arctic Social Indicators report (ASI 2010), which defined "contact with nature" as one of the domains of Arctic human development to be tracked, established "consumption" and "harvest" of country food as the two potential indicators of the domain. The authors of the domain chapter provided two options so that "one could measure both harvest and consumption or could choose one or the other depending on relevance to the particular region as well as ease and feasibility of data collection" (ASI 2010: 125). In the Alaskan case, the choice is rather straightforward: while the subsistence harvest of "fish and game" has been monitored since the 1970s, the consumption of subsistence foods is not is not regularly tracked (it seems that recent survey forms of the Alaska Department of Fish and Game, Division of Subsistence, contain questions about the consumption of subsistence foods – see Holen et al. 2012: 645 – but the data are not reported by the agency). As indicated in section 2

of this chapter, the irregular one-community-at-a-time conduct of these subsistence surveys constitutes a data problem. Thus, the data presented below in chart x – based on various community-based surveys of the Alaska Department of Fish and Game and of the North Slope Borough – need to be treated with some caution.



The data presented above indicate stable subsistence harvests from late 1970s through the mid-1990s, with some significant increases in the Nome Census Area during that period. While there are no data at our disposal for the Nome Census area after that, the numbers available for the North Slope and the Northwest Arctic boroughs indicate significant declines in subsistence harvests. There might be other factors at play, however. For example, the North Slope Borough population has roughly tripled since the 1970s, with the most growth occurring in Barrow. Also, Barrow has relatively high proportion of non-Natives in its population, who are typically not very active subsistence harvesters.

At the same time, there seems to be a trend across the sate that over the past 10 years there is a slight decrease in the harvest of wild resources by rural residents (Davin Holen, personal communication, March 2013). The latest agency overview over subsistence in Alaska in 2010 (Fall 2012) reports 198 kg (or 436 pounds) per person of annual wild food harvest for the agency's Arctic region (Fall 2012: 3), which more or less coincides with our Inuit regions of Alaska. While this is more than what our data report for the 2000s, it is significantly than what was reported in the 1980s and 1990s.

Still, the above mentioned overview report over subsistence in Alaska in 2010 makes it clear that the Arctic region has the second highest numbers in the state regarding annual harvest weight per person, only to be trumped by the Western region (Fall 2012: 3). Likewise, as you see can in Table 16 of Chapter 6, the SLiCA data indicate that the harvest of meat and fish in Alaska is higher than in other Arctic areas surveyed by SLiCA.

The conclusions for the domain "Contact with nature" in the Inuit regions of Alaska is twofold and somewhat ambivalent. While there seems to be a negative trend regarding the indicator "harvest of meat and fish," the data situation is far from ideal and might bias the results. Thus, we strongly encourage the conduct of future subsistence harvest surveys in a way that the results can be tracked over time with more confidence than they can now.

5.2.6. Domain: Fate Control

Prior to 1971, the fate of Alaska Native people was largely in the hands of the Bureau of Indian Affairs under the U.S. Department of the Interior. Except for a scattering of 160 acre Native allotments, most land occupied and used by Native people was held in trust by the federal government. It wasn't until the Alaska Native Claims Settlement Act (ANCSA) was enacted by the U.S. Congress in 1971 - to resolve questions of aboriginal land rights in the Prudhoe Bay oil fields - that Alaska Natives were able to begin exercising control over the lands on which their livelihood depended. The mechanisms that were established for Native people to administer the land and resources they were allocated under ANCSA was that of profit and non-profit Native-controlled corporations. Coupled with the economic interests of the Native regional and village corporations was the formation of local municipal and tribal government structures with the authority to levy taxes, implement land use plans, take control of schools, and administer a full array of community and regional services.

The impact of these new mechanisms for Native people to assume control over their future was felt most immediately in the Arctic Slope Region where the local Native leadership took the initiative in 1972 to form the North Slope Borough, encompassing nine predominantly Native communities and with access to the property tax revenue associated with the industrial developments taking place on the Prudhoe Bay oil fields. Of the 57.0 million acres of land that makes up the Arctic Slope Region, 5.5 million acres (nearly 10%) are under the control of the Inupiaq people.

While the Arctic Slope Region had access to the tax revenue associated with the oil fields, the NANA and Bering Strait regions were less well endowed, but were able to use the economic and political opportunities associated with ANCSA to develop their own mechanisms for exercising control over the land and resources in their respective regions. In the case of the NANA region, the village corporations merged with the NANA Regional Corporation and

entered into a regional development strategy aimed at maximizing the social and economic benefits to communities and people in the region. Of the 21.8 million acres that make up the NANA region, 1.3 million acres (6%) are directly under the control of the people in the region. A central focus of the NANA regional strategy has been the development of a massive lead and zinc deposit located on corporation land, and to do it in such a way that sustains the subsistence lifestyle in the region. To back up these developments and extend the benefits of development to people throughout the region, NANA has formed the Northwest Arctic Borough though which it now administers a full slate of municipal services to Kotzebue and the surrounding villages. While the development and operation of the Red Dog mine hasn't been without its difficulties, the decisions along the way have been in the hands of the Inupiaq people for whom the region is their homeland.

Unlike the Arctic Slope and NANA regions, the Bering Strait region has had to rely largely on surface resources and investments to establish a sustainable economic base in the region. While exercising control over 2.2 million acres (6.5 %) of the 34 million acres of land in the region, the people of the Bering Strait have maintained a strong emphasis on their control over local subsistence resources, particular marine mammals in the Bering Sea coastal region. Though the mining of gold and related minerals has a long history in the region, it has been relatively small scale and is not the source of much in the way of region-wide benefits.

Along with the efforts of the Bering Strait Native Corporation, the Kawerak regional non-profit and other regional entities striving to support a sustainable economy and lifestyle in the region, nestled on an island in the central Bering Sea is an interesting anomalous example of two St. Lawrence Island Yupik communities exercising their own version of fate control. When the Alaska Native Claims Settlement Act was enacted in 1971, the St Lawrence Island communities of Gambell and Savoonga opted to retain ownership and control of their island in lieu of compensation and the formation of corporate structures, as was the case elsewhere in the state. As tribal lands, the island is not subject to external taxation and the people living there exercise a greater degree of control over the governance and service structures they have established to address their needs.

In summary, the three sub-regions that make up the Inupiaq cultural region of northern and western Alaska provide a variety of useful examples of ways in which Arctic communities are exercising a modicum of control over the forces that impact their well-being. By conducting a comparative analysis of the percentage of surface lands controlled by the inhabitants through municipal governments, Native organizations, and community structures, we can gain a better understanding of how the exercise of fate control impacts the well-being of northern communities. Following is the beginning of the data collection process to cross-examine the relative importance and variance of diverse modes of control.

The chart below contains information related to the three primary data sources aimed at assessing the role of fate control as a measure of community well-being in the Inupiaq region of Alaska. The four potential indicators considered for the Arctic Social Indicators project were as follows:

Indicator 1: The percentage of indigenous members in governing bodies (municipal, community, regional) relative to the percentage of the indigenous people in the total population

Indicator 2: The percentage of surface lands legally controlled by the inhabitants through public governments, Native organizations, and communities

Indicator 3: The percentage of public expenses within the region (regional government, municipal taxes, community sales taxes) raised locally

Indicator 4: The percentage of individuals who speak a mother tongue (whether Native or not) in relation to the percentage of individuals reporting corresponding ethnicity

Single Composite Indicator: Since we have no data for indicator 1, our discussion of fate control in the Inuit regions of Alaska is based on indicators, 2, 3 and 4.

For Alaska, indicator 2 can be easily tracked through the land rights conveyed to Regional Native Corporations in ANCSA. The following chart lists the land holdings controlled by the three Inuit-serving Regional Native Corporations, the total acreage for each of the Inuit regions, and the percentage of lands under local control in each region.

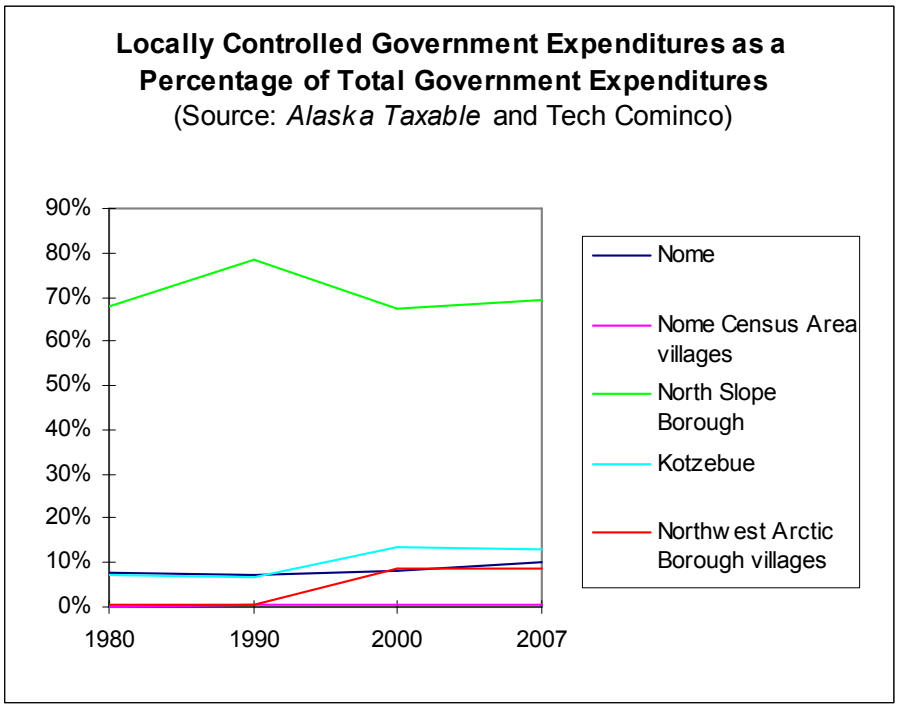
Table 3: Percentage of surface lands legally controlled by local inhabitants

Regional Corporation	ASRC	NANA	BSNC	Total
Acres of Native surface land holdings	5.5 million	1.3 million	2.2 million	9.0 million
Total acres of land in region	57.0 million	21.8 million	34.0 million	112.8 million
% Inupiaq Land	9.65%	5.96%	6.47%	8.0%

Data provided by Ray Barnhardt

The data presented above are not a complete representation of overall Inuit land ownership in that it does not take into consideration private lands held by individuals or by local governments. However, it is still useful as an indicator to track change over time as well as to make comparisons across the Arctic region.

The dynamics for indicator 3, the "percentage of public expenses within the region," are presented below in chart x. As section 2 ("data and methodology") of this chapter explains, the data for this indicator are pieced together from multiple sources.



The domain of fate control shows significant differences among the three Inuit regions. Especially, the indicator "locally controlled government expenditures" put the North Slope Borough way ahead of the towns and villages of the two other regions. As was explained in the introduction to this chapter, the high value for the North Slope Borough is the result of the borough's right to tax oil companies for land use operations at the oil fields within its jurisdiction. The indicator "percentage of surface lands legally controlled by local inhabitants" also shows the North Slope ahead (9.65%), followed by the Bering Strait region (6.47%). While the language retention indicator shows some decline for all Inuit regions of Alaska since 1980, Barrow and the North Slope Borough regions are still strongest among the regions under consideration.

It deserves to be highlighted that the complex domain of fate control has seen significant increases for all Inuit regions of Alaska over the last half century. Before the passage of ANCSA in the early 1970s, none of the region's surface lands were locally controlled, nor were there any significant locally controlled government expenditures. While language

retention has generally declined, the indicator "percentage of indigenous members in governing bodies" for which we do not have data would certainly have shown an upward trend over the last decades. Thus, we can assume that a fully assembled fate control index would show a positive trend for all three regions over the last 50 years, with the North Slope Borough showing larger increases than the other two regions. Still, the major positive changes happened in the 1970s following ANCSA. Since then, the trajectories have been flat for most areas under consideration. It seems timely to consider how future positive developments could be achieved.

Caption: Coastal erosion in Kivalina. Photo taken by Patrick Durrer in summer 2009.

5. 3. Conclusions and Discussion

The preceding sections should have made it clear that the Inuit regions of Alaska provide an interesting application and testing ground for the ASI framework. Below are some remarks summarizing the results of this chapter, as well as discussion points for further consideration.

First of all, it deserves to be noted that the Inuit regions of Alaska – and Alaska in general – are characterized by a relatively good data situation. With the possible exception of the

"Contact with nature" indicator discussed above, some reliable and trackable data are available for all ASI domains. This makes the establishment of an Arctic Social Indicators Monitoring System (see chapter 7) relatively easy in this part of the Arctic.

A particular challenge of the ASI endeavor is to cover all Arctic residents, while at the same time addressing the particular challenges of the indigenous residents of the Arctic. This chapter is somewhat different since it addresses certain regions of Alaska based on ethnic criteria, that is the Inuit regions of Alaska. While all three regions under consideration have Alaska Native majorities, all of them are also home to sizable non-indigenous populations. Wherever possible we tried to calculate our indicators separately for the Alaska Native population of each region, since collapsing the data would have resulted in less meaningful results. In some cases – such as for the subsistence harvest data – this has not been possible, which created problems at times. Even where separate Alaska Native data are available, a contrasting fine-grained analysis of non-indigenous groups remains a desideratum.

One obvious result across most domains is that there is a lot of variation between and within regions. One such example is the net migration data, which vary widely. On the other hand, indicators with small absolute numbers – e.g., infant mortality or college graduates – show little variation. Differences between regional centers and smaller communities are sometimes significant and in other cases little pronounced. The latter is true for the North Slope region, while the Nome Census Area exhibits the largest differences between regional center and rural communities. There, village residents on the whole seem to have less formal education, have lower incomes, but are more likely to be speaking an indigenous language at home than regional center residents.

Our domains and indicators can be broadly divided into two categories, modernity and tradition indicators. While the Cultural Well-being and Contact with Nature belong to the latter category, most of the indicators for the Health and Population, Material Well-being and Education domains are in the modernity camp. Fate Control seems to take an interesting intermediate position regarding these two categories, given that some of its categories seem to measure successful adaptation to modernity, while others address the continued vitality of tradition.

Accepting this typology for now, we can state that all three Inuit regions of Alaska have been successful regarding the modernity indicators. Interestingly, it has been Nome and not Barrow – the recipient of much oil wealth and an early leader in that respect – that has seen that biggest advances regarding Material Well-being and Education in recent years. While it is the nature of tradition indicators that they measure decrease most of the time, the Inuit regions of Alaska have been doing reasonably well in these domains. In some cases there have been increases to report. For example, Barrow and the rest of the North Slope Borough showed on increase in Native language use in the 1990 census, while the Nome Census Area had an increase in subsistence harvests in the early 1990s. Thus, the overall assessment of human development in Inuit Alaska is positive.

Given the special nature of the Fate Control domain in-between tradition and modernity, the results for the fate controls indicators as summarized in section 5.3.6 might be of significance beyond that domain: while there were significant advances in the 1970s and 1980s, recent decades showed less growth. Notwithstanding continuous advances in Material Well-being, the next level regarding the Fate Control domain of Arctic Human Development is yet to be achieved in Arctic Alaska.

Acknowledgments

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ARCTIC SOCIAL INDICATORS APPLICATION

Chapter 6:

Inuit Nunaat – The Inuit World:

Measuring living conditions & individual well being – monitoring human development

Using Survey of Living Conditions in the Arctic (SLiCA) to augment ASI for the Inuit World

Birger Poppel

6.0 Introduction

The history of how the Arctic was populated is not least the story about migrations. One of the migration routes departed in the Eastern part of Siberia, crossing the North American continent before arriving in and continuing either to the East or West of Greenland. The travels/migrations endured for generations and the origins of the ancient people can be tracked via myths[1], archaeological findings[2] and recently, through the insights from a human genome of an extinct palaeo-eskimo[3]. Links can thus be created across the Arctic from the Bering Strait to Greenland.

What we can further learn from both myths and archaeological findings is that the ancient peoples of the Arctic were hunters living off the land and the sea and following the marine and terrestrial mammals in their struggle for life.

The indigenous peoples that have inhabited a large part of the circumpolar Arctic for thousands of years call themselves Inuit (plural of 'Inuk' meaning 'human being'). The Inuit (totalling approximately 150.000 people) live in the easternmost part of Siberia, Chukotka (Siberian Yupik); in the North Slope of Alaska (Inupiat) and the Seward Peninsula (Central Alaskan Yupik); throughout the Canadian Arctic and subarctic in the four land claims

[1] See e.g. Rasmussen 1925, Myter og Sagn III: p. 68-69 and Gulløv 2004.
[2] Gulløv 2004.
[3] Rasmussen, M., et al. 2010; Nature 463, p. 757-762

settlement regions (Inuit and Inuvialuit): in the Northwest Territories (Inuvialuit), in Nunavut, in Nunavik, Quebec, in Nunatsiavut, Labrador; and in Greenland (Kalaallit)[4].

The different dialects of the Inuit language are grouped under the Eskimo-Aleut language family (Eskaleut languages). It is estimated that roughly 90.000 people (mainly in Arctic Canada and Greenland) speak the Inuit language.

The Inuit homelands or settlement regions are jointly called **Inuit Nunaat**.

In 1977 representatives from all Inuit Homelands – except Chukotka – met in Barrow, Alaska and founded the Inuit Circumpolar Conference (since 2010: the Inuit Circumpolar Council).

In the *Charter of the Inuit Circumpolar Council* (ICC, 2010) 'Inuit' and 'Inuit homeland' are defined as follows:

"Inuit" *means indigenous members of the Inuit homeland recognized by Inuit as being members of their people and shall include the Inupiat, Yupik (Alaska), Inuit, Inuvialuit (Canada), Kalaallit (Greenland) and Yupik (Russia).*

"Inuit homeland" *means those arctic and sub-arctic areas where, presently or traditionally, Inuit have Aboriginal rights and interests* (ICC, 2010).

The close connectedness to the circumpolar Arctic and the importance of the unity among Inuit and their homeland is also stressed in the *Circumpolar Inuit Declaration on Sovereignty in the Arctic* (ICC, 2009):

'*From time immemorial, Inuit have been living in the Arctic. Our home in the circumpolar world, Inuit Nunaat, stretches from Greenland to Canada, Alaska and the coastal regions of Chukotka, Russia. Our use and occupation of Arctic lands and waters pre-dates recorded history. Our unique knowledge, experience of the Arctic, and language are the foundation of our way of life and culture.*'

Survey of Living Conditions in the Arctic (SLiCA) – a methodological overview

Inuit Nunaat and the living conditions of the indigenous peoples, the Inuit, of this vast circumpolar region is the focus of this chapter. In the following, SLiCA will be used as an application to the Arctic Social Indicators**.** The results are thus based on the Survey of Living

[4] The designation of the Inuit in the respective homelands is bracketed (AHDR, 2004).

Conditions in the Arctic, SLiCA (Poppel et al., 2007; Kruse et al., 2008)[5] and applied to the domains identified in the Arctic Human Development Report (AHDR, 2004) and in the Arctic Social Indicators Report (ASI, 2010).

SLiCA is an interdisciplinary and international research project (founded in 1997/1998). The SLiCA analysis regions within what we have defined as 'the Inuit Settlement region' includes: Chukotka (Western Chukotka, Anadyr, Central Chukotka, Eastern Chukotka)[6]; Alaska: (Bering Straits, NANA, North Slope)[7]; Arctic Canada (Inuvialuit, Nunavik, Nunavut, Nunatsiavut) and Greenland (Northern Greenland, Mid Greenland, South Greenland, Disco Bay, East Greenland). The sample size as well as the number of respondents and the response rates is listed in the table below.

Figure/Table 1: SLiCA: population, sample and respondents in the Inuit Settlement Regions

Inuit settlement region	Indigenous peoples in the survey	Period of interviewing	Total number of adults in population	Sample size (N)	Response rate	Respondents (n)
Northern Alaska	Iñupiat; Yupiit	2002-2003	11.000	700	84%	650
Chukotka	Inuit; Chuckchi; Evan; Chuvan; Yukagir	2005-2006	14.000	600	85%	500
Canada	Inuit	2001	22.000	5.650	83%	4.700
Greenland	Inuit	2004-2006	36.000	1.450**	83%	1.050
Inuit homelands/ regions			83.000	8.400	83%	6.900

[5] The SLiCA database and table section on www.arcticlivingconditions.org have been developed by Jack Kruse and Marg Kruse.
[6] For a number of reasons also non-Inuit: Chuckchi; Evan; Chuvan; Yukagir were included in the sample.
[7] In Alaska the Yupik were not part of the sample due to limited research funding.

Note:						
* Rounded (to nearest '50'/'100')						
** In Greenland also the non-indigenous population was part the survey						

The analysis of the Survey of Living Conditions in the Arctic, SLiCA is based on more than 8,000 personal interviews with Inuit and Sami adults in Greenland, Canada, Alaska, Norway and Sweden and indigenous adults in Chukotka and Kola Peninsula (Figure/Table 1).

The International SLiCA-research team in collaboration with indigenous partners at the local, regional and the international level (Inuit Circumpolar Council, ICC; Sámi Council and Russian Association of the Indigenous Peoples of the North, RAIPON) developed an international core questionnaire. This questionnaire, consisting of roughly 200 questions[8], offers opportunities to examine a number of living conditions 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.

The sampling procedures applied yield a SLiCA sample is representative, and the subsequent weighting procedures (taking into account differences in regional and community sampling probabilities and differences in response rates by gender) make it possible to generalize responses to entire populations by: '**country**' (the national level), '**region'**, '**region**/**place size'**, '**gender'** and '**age groups'.** Interviews were conducted face-to-face in the principal language of the respondent[9]. (Kruse et al., 2008; Poppel, 2010; www.arcticlivingconditions.org). All tables include data weighted to fully reflect the composition of the populations with respect to age, gender and regional distributions.

[8] The international SLiCA team agreed on a common core questionnaire that could be expanded in agreement with local needs. The Canadian part of SLiCA process developed differently as the SLiCA team and Statistics Canada agreed to merge SLiCA with the 2001 Aboriginal Peoples Survey (Kruse et al., 2008). The interviews produced 950 variables per respondent and hundreds of analytical variables (ibid.). The international core data dictionary with information also about analytic variables is accessible at http://classic.ipy.org/development/eoi/ □ Science Plans: SLICA data description.

[9] All SLiCA data are based on personnel interviews and the data are attached to either the respondent or the respondent's household and all respondents are guaranteed anonymity and confidentiality.

The international SLiCA core questionnaire contained both questions about material and non-material living conditions and the questions aimed at measuring both quantitative and qualitative indicators and having the respondents to describe as well as evaluate their living conditions. (Andersen & Poppel, 2002). And, as Allardt argues, the purpose of measuring living conditions is ultimately to measure the wellbeing of the individual (Allardt, 1975) and thus calls for the individual's subjective evaluation of his/her objective resources.

6.1 THE CONCEPT OF *INDIVIDUAL WELLBEING*

Individual wellbeing is an inclusive concept, which covers all aspects of living as experienced by individuals, and includes the person's subjective evaluation of his/her objective resources and other living conditions. It therefore covers both the material satisfaction of vital needs and aspects of life such as personal development, being in control of one's own life and destiny, and a balanced ecosystem. The individual experiences are however closely related to the collective wellbeing of social groups, communities and nations (Andersen & Poppel, 2002).

The concept of wellbeing is a complex one with physical, mental, emotional and spiritual aspects of living conditions. The complex interrelation between physical, mental/intellectual, spiritual, and emotional facets of wellbeing is a theme explored by many Indigenous cultures. For example, many Aboriginal societies use the "Medicine Wheel"; a symbol of holistic healing that embodies the elements of "whole health". The natural world is also a key part of wellbeing because of the intrinsic connections and interrelationships between people and the environment in which they live (Statistics Canada, 2006).

One of the hypotheses constituting the point of departure for the Survey of Living Conditions in the Arctic, SLiCA, was that there is a discrepancy between the indigenous perception of wellbeing and that defined by conventional Western social science researchers and implemented in the social indicator systems used in main stream comparative studies of living conditions in industrialised societies (Andersen & Poppel, 2002). Hence, the concept of wellbeing must reflect the ways of life and the priorities of the indigenous peoples in question.

6.2 ASI DOMAINS AND SLICA INDICATORS

The Arctic Human Development Report (AHDR, 2004) recommended the development of indicators for six domains: the three domains of the United Nations' Human development Index (HDI) and adding three domains arguing 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).

In 2007 the first SLiCA results were published (Poppel et al., 2007). In order to comply with the AHDR recommendations the SLiCA team applied the six domains to the tables resulting from the analysis of data from the Inuit settlement regions.

The Arctic Social Indicators Report (ASI, 2010) was a direct follow-up to the AHDR in the sense that the main focus of the ASI working group was to further elaborate and develop indicators within the six domains recommended in the AHDR.

The list below contains the designations of each of the six – and corresponding – domains applied in the ASI, AHDR (AHDR/HDI) and SLiCA respectively:

- Health and Population (AHDR/HDI: Longevity; SLiCA: Health – including wellbeing)
- Material wellbeing (AHDR/HDI: Material success; SLiCA: Material success)
- Education (AHDR/HDI: Education; SLiCA: Education)
- Cultural wellbeing and cultural vitality (AHDR: 'Maintaining cultural identity'; SLiCA: Cultural continuity)
- Contact with nature (Living close to nature; SLiCA: Ties to nature)
- Fate control (AHDR: 'Controlling one's own destiny'; SLiCA: Control of destiny)

(AHDR 2004:240; Poppel et al., 2007; ASI, 2010)

The indicators applied in the ASI report were selected based on the following criteria:

- availability
- affordability
- ease of measurement

- robustness
- scalability
- inclusiveness

(ASI, 2010)

As the SLiCA data were gathered through personal face-to-face interviews they most often do not live up to the criteria of: *availability* (as the measure does not always exist in an updated version); *affordability* (as the data are only accessible if surveys in the different Arctic regions are carried out on a regular basis which is more costly as for instance register based data collection); and *ease of measurement* (as data stem from personal interviews). *Robustness* refers primarily to 'temporal stability over time', 'relevance', significance' and 'sensitivity'. The SLiCA indicators were developed through in-depth discussions between the indigenous partners and the SLiCA research team from broad social goals via living conditions dimensions which indicates certain robustness when it comes to description and evaluation of living conditions among the indigenous peoples in question. A substantial part of the SLiCA questionnaire was applied for the immigrant population in Greenland and in all seeming the indicators are fairly robust to this group. The robustness criterion will – as pointed out in the ASI report – need validation itself (ASI, 2010). The SLiCA indicators meet the *scalability* criterion, as data from the SLiCA project are scalable to the individual, the household, the community, the regional, and to the country level. In all SLiCA survey regions but Greenland the survey is representative (solely) to the adult indigenous population (Inuit, Sami and – in Chukotka and the Kola Peninsula – also including other indigenous groups)[10]. The survey is thus inclusive when it comes to age groups (adults), gender, town/settlement and regions but not inclusive to other Arctic residents than the indigenous peoples[11].

[10] The adult population is defined 15 years and above in Canada and Greenland and 16 years and above in all other survey regions.
[11] As mentioned, the survey is representative to both the indigenous and non-indigenous population of Greenland.

6.3 A CASE STUDY: SLICA AS A PROVIDER OF INDICATORS TO THE ASI FRAMEWORK

The first SLiCA results were published on the project website www.arcticlivingconditions.org in March 2007. Among others almost 600 tables were made available (Poppel et al., 2007)[12]. As mentioned above the tables were organized in categories corresponding to those recommended in the Arctic Human Development Report (AHDR, 2004). The categorization of SLiCA variables (and results) corresponding to the AHDR recommendations means that the Survey of Living Conditions is able to contribute to a social indicator system like the one specified in AHDR/ASI. This article, thus, illustrates – with ***Inuit Nunaat*** (the 'Inuit Homeland' /'Inuit Settlement region'/the 'Inuit World') as an example – how and under which conditions a survey – like SLiCA – designed to measure living conditions and individual wellbeing is able to contribute to long-term monitoring and assessment of human development in the Arctic, and be applied to the ASI framework for tracking change. Thus, following this overall goal, the intention of this chapter is not to present an in-depth analysis of the different variables and indicators and their reflection of the respective 'human development'/'living conditions' domains.

A number of indicators based on the above-mentioned deliberations have been selected among the SLiCA indicators to reflect living conditions within the different ASI domains including individual perceptions, priorities and wellbeing. For reasons of comparability all the ASI indicators will be listed in the different subsections below but not further explored unless indicators originating from the SLiCA analysis match them. The ASI indicators that are directly matched by a SLiCA indicator will be written in red.

6.4 HEALTH AND WELLBEING

6.4.1 ASI domain, ASI and SLiCA indicators: Health/population and wellbeing

In the ASI-report from 2010 the domain dealing with Health and wellbeing was named 'Health and population' including health and vital statistics as well as demographics. This domain is probably the one with most accessible data and – despite some differences in definitions of variables and indicators – most likely the domain where comparability among

[12] December 2012/January 2013 tables comparing living conditions in Greenland compared with other Inuit homelands (regions) and tables comparing living conditions in different regions in Greenland (based on the formerly published tables) have been made accessible in Greenlandic and Danish http://www.uni.gl/Forskning/Projekter/SliCA/tabid/447/Default.aspx

key indicators can be obtained. The authors recommended '*infant mortality*' and '*net migration'* as they both fully live up to the ASI criteria (Hamilton et al., 2010).

The health section in the SLiCA questionnaire contains 50 questions including questions concerning the physical and the mental health of the respondent (some particularly sensitive questions were answered in a self-administered questionnaire that was handed over to and answered by the respondent). Respondents were asked to describe as well as evaluate their health as well as health care in their community. Among the questions asked were some on self rated health and a number of questions about the respondent's use/abuse of alcohol and drugs and perception of social problems in the community. Finally, this section included questions about the individual's satisfaction with different aspects of life and her/his 'satisfaction with life as a whole'. The last mentioned question (using a five-point scale) applied the same wording as is generally used in quality of life and happiness studies[13] which makes it possible to make international comparative studies with countries outside the Arctic (Poppel et al., 2007). This question was asked only in Greenland and Alaska and the results are depicted in Figure/Table 1.

150 tables based on SLiCA data concerning health and wellbeing are published on the SLiCA project web site (www.arcticlivingconditions.org → SLiCA Results → Tables). It goes without saying that just one or a small number of health indicators can neither tell the whole story of an individual's health or – on an aggregate level – the health status of a community, a region or a country. Whereas the ASI indicators on health, wellbeing and population, due to the ASI selection criteria have to be selected among accessible vital statistics, SLiCA indicators originating from face-to-face interviews approach health and wellbeing from the individuals' perspectives. The following SLiCA indicators were selected due to their significance in reflecting individual health and wellbeing:

- Self-rated health
- Satisfaction with life as a whole in this community
- Satisfaction with quality of life in this community
- Satisfaction with life as a whole

[13] See also Veenhoven: http://worlddatabaseofhappiness.eur.nl (http://www1.eur.nl/fsw/happiness/) and Michalos, A., *forthcoming*. *Encyclopedia of Quality of Life research.* Springer.

Self-rated health

Self-rated health not only gives each respondent the possibility to evaluate her/his health condition in general. It also seems to be a fairly good predictor of life expectancy (DeSalvo et al., 2006). Figure 1 below shows the differences of self-rated health. Comparing the proportion in each region reporting 'fair' or 'poor' personal health, differences between the regions are significant. In Chukotka more than five out of ten report fair or poor health. This is five times the proportion in Canada and roughly twice the proportion in Greenland[14] and Alaska.

Satisfaction with life as a whole in this community, satisfaction with quality of life in this community and satisfaction with life as whole

Satisfaction with different aspects of life and life itself were part of the SLiCA core questionnaire as a main rationale of the survey was to learn about the individual's perceptions and evaluations of their own living conditions and the quality of their lives.

For different reasons the three questions about the subjective evaluation of the individual's quality of life/satisfaction with life as a whole were not used in all regions and an overall comparison is not possible.

The two figures/tables 3 and 4 both refer to 'this community' meaning the community the respondent lives in. Table 3 shows the responses to the question about 'satisfaction with life as a whole in this community'. The focus in this question is the individual's perception of her/his life as a whole in the community she/he lives in. More than 90 percent of the Inuit in both the Canadian Inuit settlement regions, in Greenland and Northern Alaska are somewhat or very satisfied with their lives as a whole.

Table 4 concerns the 'satisfaction with quality of life in this community'. This is a different approach than that of the former question as the focus here is 'community life'. Two out of ten Alaskan Inuit and more than three out of ten Greenlanders are not satisfied or neither satisfied nor dissatisfied with the quality of community life in of their communities. This corresponds with other SLiCA findings that large parts of the inhabitants identify different

[14] Since the publication of the ASI Report in 2010 it has been noted that response categories in the Greenlandic SLiCA questionnaire have been translated in a way that means that the 'excellent' category is omitted. Consequently the figure (figure 1) and the underlying table have had to be corrected.

kinds of social problems (like unemployment, domestic violence and suicide) in their communities (Poppel et al., 2011). The figures from Chukotka are significantly different from the figures in Greenland and Alaska as only one out of seven finds quality of life in their community somewhat or very satisfactory.

When it comes to 'satisfaction with life as a whole' (which in other surveys are considered as 'happiness') there are differences between Greenland and Alaska as a larger part of Inuit in Alaska than in Greenland are 'very satisfied with life as a whole. Considering the two positive categories together more than nine out of ten Inuit in both Greenland and Alaska are satisfied.

Both the overall satisfaction with life as a whole and satisfaction with a number of specific dimensions of peoples' lives were investigated. Based on the answers on these questions it is possible to analyze the relative importance of satisfaction with different aspects of life for satisfaction with life as a whole. In other words, it is possible to examine the degree to which satisfaction with certain aspects of life can explain satisfaction with life in general.

The analysis has been made for Greenland and Alaska combined using a stepwise regression analysis. The somewhat surprising result (illustrated in figure below) was that satisfaction with an individual's actual job or outcome of actual fishing and hunting activities were less important as explanators to overall satisfaction with life compared to job opportunities and the amount of fish and game locally available. This means that 'availability' and 'accessibility' means more to the quality of life of Inuit than satisfaction with the actual job and actual catch. Also important in explaining overall wellbeing 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, 2006; Poppel et al., 2011)

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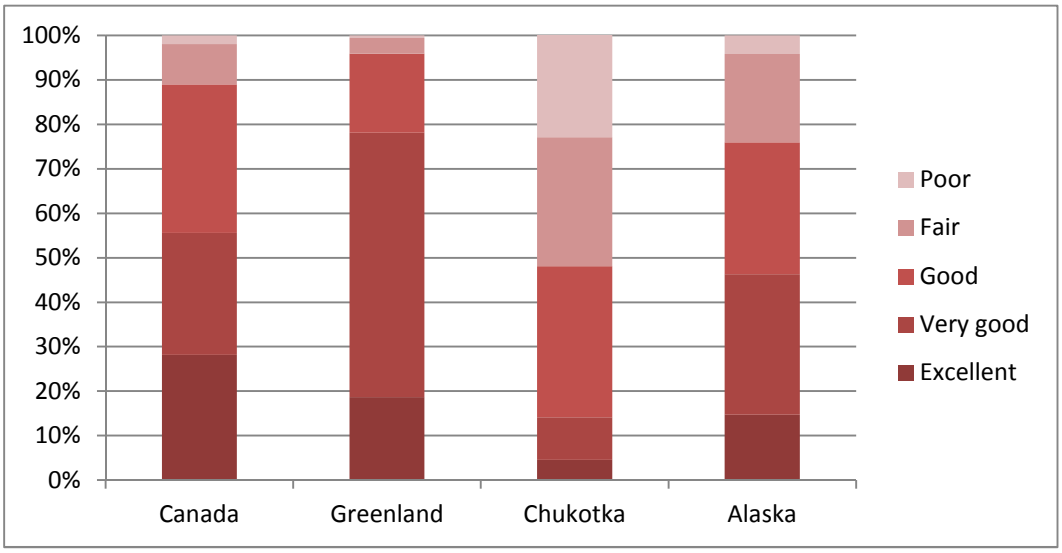
Children playing in the snow, January 2013 in Nuuk, Greenland.

Photo: Birger Poppel

Figure/Table 2: Inuit Nunaat. Self rated personal health. By regions/countries.

Health Table 243: Self Perception of Personal Health by Country

	Canada	Greenland	Chukotka	Alaska	Total
Excellent	28%	19%	5%	15%	18%
Very good	27%	59%	10%	32%	38%
Good	33%	18%	34%	30%	26%
Fair	9%	4%	29%	20%	13%
Poor	2%	1%	23%	4%	6%
	100%	100%	100%	100%	100%
Estimated Total	22.240	39.338	17.666	11.047	90.291

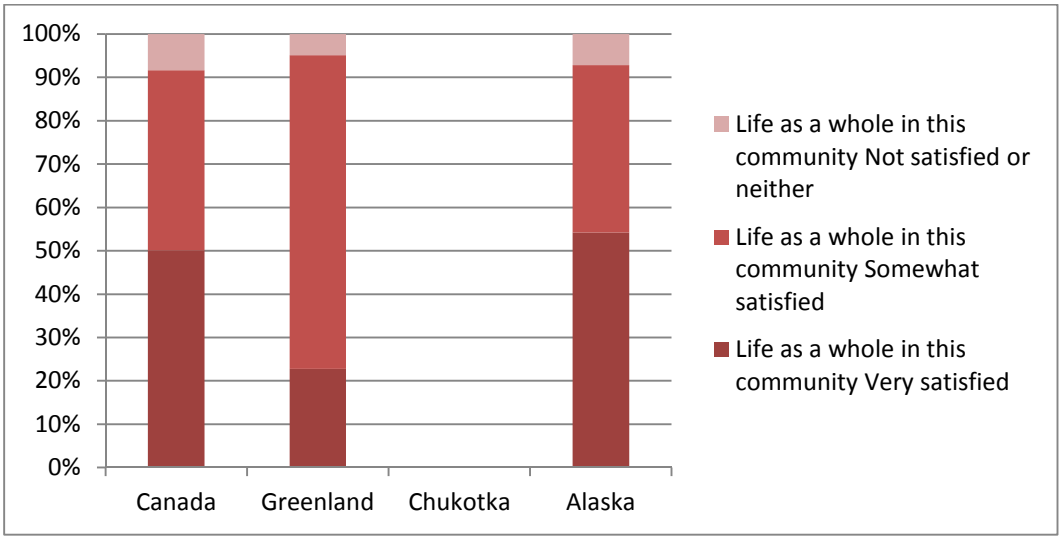


Source: Poppel et al. 2007

Note: Greenland response categories are harmonized and adjusted to other survey regions.

Figure/Table 3: Inuit Nunaat. Satisfaction with life as a whole in this community. By regions/countries.

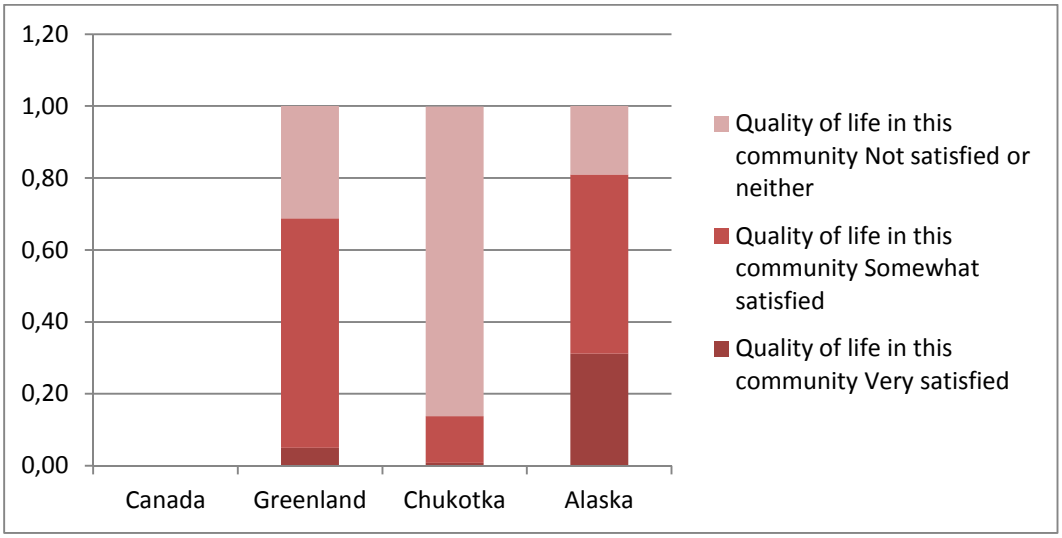
		Canada	Greenland	Chukotka	Alaska	Total
Life as a whole in this community	Very satisfied	50%	23%	*	54%	35%
	Somewhat satisfied	42%	72%	*	39%	58%
	Not satisfied or neither	8%	5%	*	7%	6%
		100%	100%	*	100%	100%



Source: Poppel et al. 2007. Note: Chukotkan data not available

Figure/Table 4: Inuit Nunaat. Satisfaction with Quality of Life in this community by Country

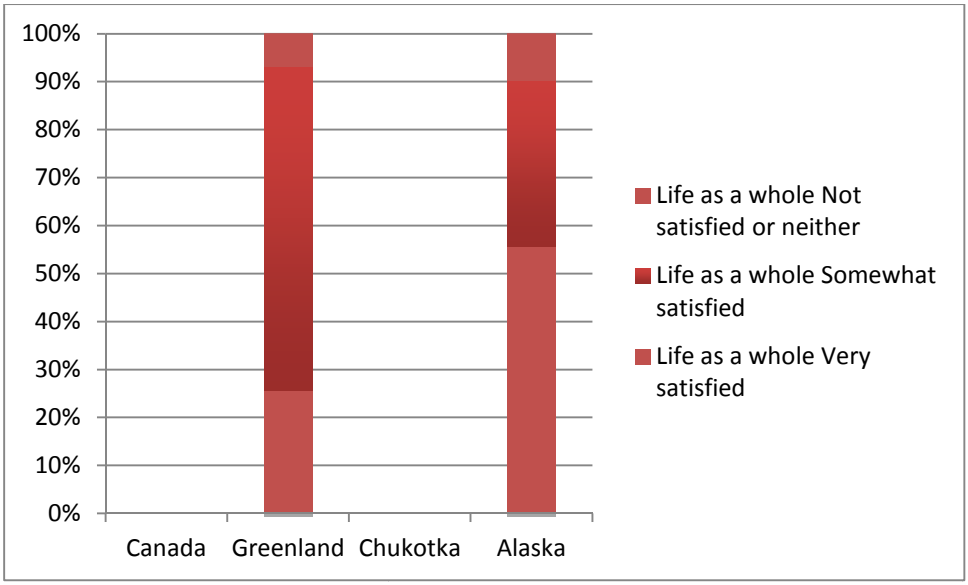
		Canada	Greenland	Chukotka	Alaska	Total
Quality of life in this community	Very satisfied	*	5%	1%	31%	8%
	Somewhat satisfied	*	64%	13%	50%	50%
	Not satisfied or neither	*	31%	86%	19%	42%
		*	100%	100%	100%	100%



Source: Poppel et al. 2007. Note: Canadian data not available

Figure/Table 5: Inuit Nunaat. Satisfaction with life as a whole. By regions/countries.

		Canada	Greenland	Chukotka	Alaska	Total
Life as a whole	Very satisfied	*	25%	*	56%	32%
	Somewhat satisfied	*	68%	*	35%	60%
	Not satisfied or neither	*	7%	*	10%	8%
		*	100%	*	100%	100%



Source: Poppel et al. 2007. Note Canadian and Chukotkan data not available

How well does SLiCA apply to the ASI domain HEALTH/POPULATION & WELLBEING and selected indicators?

The short and easy answer to the question raised in the headline above is that SLiCA does not apply since the selected indicators are vital statistics. More important though, when it comes to individual wellbeing and health, SLiCA provides information of self-evaluated wellbeing and self-rated health. Both measures are generally accepted as key indicators and direct measures on wellbeing and health, where the ASI indicators under this domain first and foremost are indirect measures. Furthermore, personal interviews including questions on individual wellbeing, different background variables and living conditions as well as perceptions and attitudes are the precondition and basis for more thorough analyses of cause and effect relationships.

6.5 MATERIAL WELLBEING

6.5.1 ASI domain, ASI and SLiCA indicators

6.5.1.1 ASI on 'material wellbeing'

In the ASI chapter 'Material Wellbeing in the Arctic' material wellbeing is defined as: 'a measure of local residents' command over goods and resources' and the indicators recommended are

- Per capita household income, and a
- Composite index (containing both per capita household income, public sector and government transfers and production in the traditional sector including the subsistence economy)

(Larsen & Huskey, 2010:47)

Whereas the authors of the ASI-chapter on material wellbeing considers the first indicator to be fairly easy to measure, quite a few obstacles is seen to calculate the composite index, especially as both the amount of subsistence products included in the individual households' consumption are rarely available and the valuation of the fish and meat consumed is a complicated task even when the amount consumed is known.

6.5.1.2 SLiCA on 'material wellbeing'

One of the major achievements of the SLiCA project efforts was the development of the 'Household production model' (see figure below). The household in a mixed subsistence-based economy was regarded as an enterprise possessing different factors of production and being not only a production unit but also a collective consumer and investor. (Usher et al., 2003)

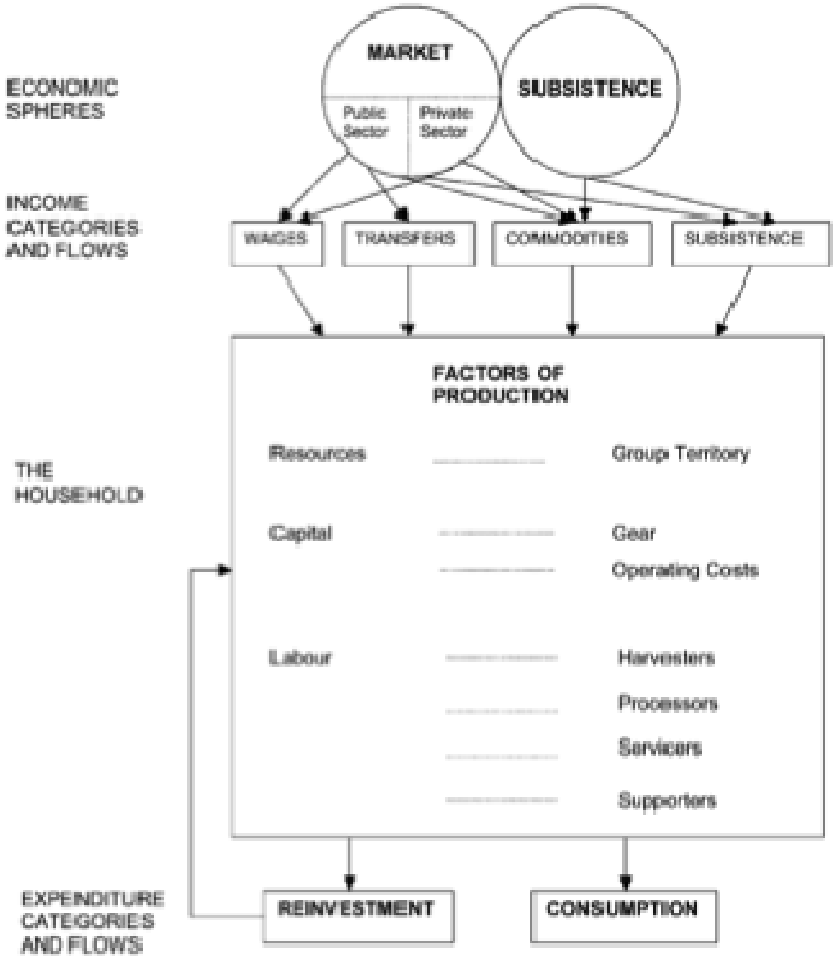


Figure 1. The household in a mixed subsistence-based economy. The direction of flow indicates the path of income (cash and in-kind) from the major sectors of the economy via income categories to the household. The household factors of production are indicated in the "household" box (source: Usher and Wenzel, 2003: 12).

(Usher et al., 2003)

To be able to fully understand the function of the household and to implement the household production model, data on all sources of income (wage, transfers and informal income) as well as all spending on consumption and investment had to be available. The SLiCA questionnaire thus enabled the research team to provide data on a large number of variables and as questions were asked about satisfaction with different aspects of the individual and household economy the following indicators can (as examples) be established:

- Household income (from the main sources of both the formal and the informal economy)

- Relative poverty
- Absolute poverty
- Ability to make ends meet
- Satisfaction with household economy
- Satisfaction with standard of living
- Satisfaction with jobs
- Satisfaction with job opportunities

This means that SLiCA is able to provide data on both the average size of income (individuals' as well as households') and distribution of incomes. Furthermore satisfaction with a number of economic conditions and living standards was asked about.

Selected results are illustrated in the figures below and will be briefly commented.

Poverty can be measured and evaluated in many different ways. In the SLiCA project absolute poverty was measured based on the US absolute poverty measure and the income data from the different regions were made comparable using purchasing power parities (PPP)[15] (Kruse et al., 2007)

Measuring relative poverty was for obvious reasons less complicated. The level used in measuring relative poverty (figure 3) was the 60% of the median income[16].

Whereas there are major difference in the level of income between individuals and households in the different regions, the figure shows that the part of the individuals that are relatively poor (with incomes below 60% of the median income) is in all regions between 40 and 50 %. Chukotka has the largest part of relatively poor.

Comparing the part of the Inuit in the different regions that economically 'makes ends meet' with some or great difficulty and the part that are not satisfied or neither satisfied nor dissatisfied with the household economy there seems to be a pattern (not a close

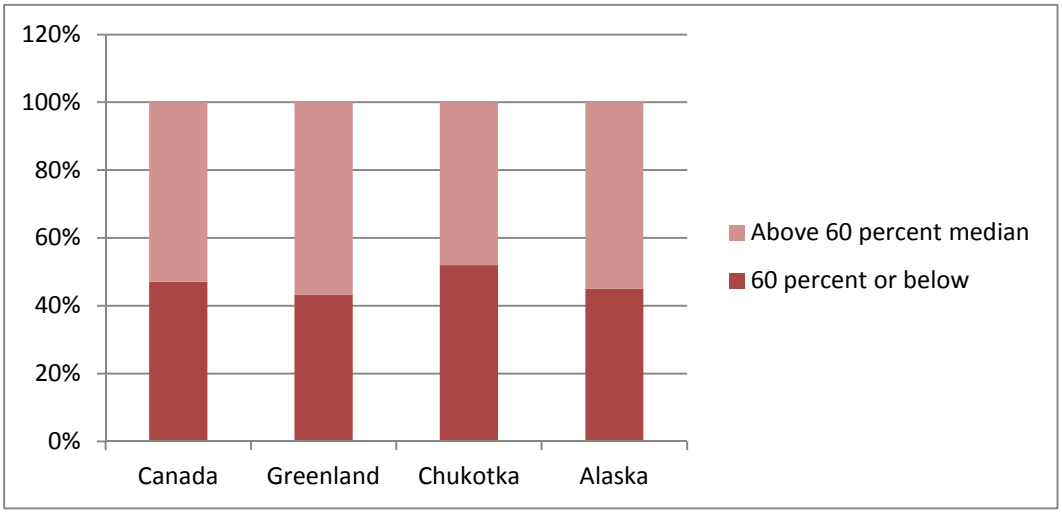
[15] Comparing income data from the different regions is a complicated task and even using PPP's does not overcome this challenge as PPP's are developed for the capitol regions of the 'mother countries' and thus necessarily reflects the price level and price structure of the more remote regions.
[16] The European Union, EU and the Organization for Economic Cooperation and Development, OECD both apply this level in their analyses of poverty.

correlation, though) in and among the regions. In Chukotka 80% have some or great difficulties 'making ends meet' and three out of four are not satisfied or neither satisfied nor dissatisfied with their household economy. In both Greenland and Alaska larger parts of the indigenous population find it easy or fairly easy to make ends meet corresponding to larger parts that are somewhat or very satisfied with their household income.

Figure/table 5. Relative poverty

Material Success Table 447: Total Household Income, Adjusted for Purchasing Power Expressed as Above or Below 60 Percent of Median Income in Country by Country

	Canada	Greenland	Chukotka	Alaska	Total
60 percent or below	47%	43%	52%	45%	47%
Above 60 percent median	53%	57%	48%	55%	53%
	100%	100%	100%	100%	100%
Estimated Total	22.220	33.022	15.581	10.195	81.018



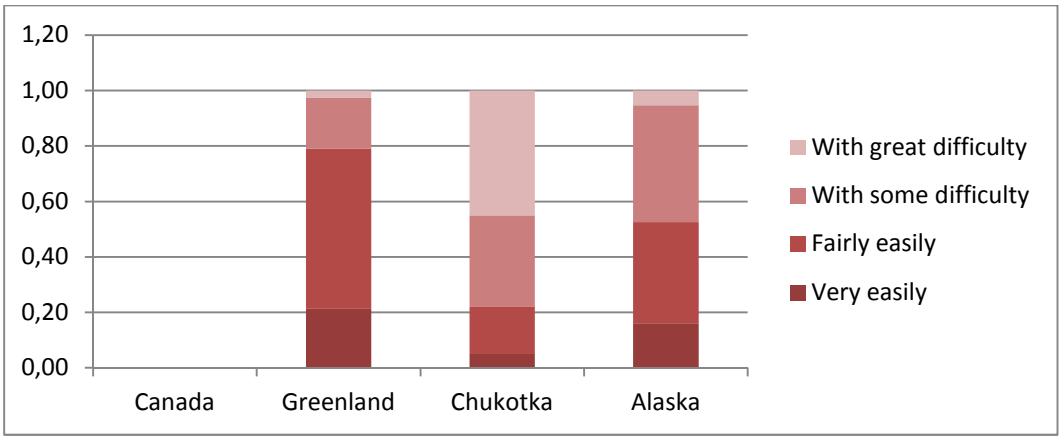
Source: Poppel et al. 2007

Figure/Table 6. Ability to make ends meet

Material Success Table 475: Ease in Making Ends Meet by Country

	Canada	Greenland	Chukotka	Alaska	Total
Very easily	*	21%	5%	16%	16%
Fairly easily	*	58%	17%	37%	43%
With some difficulty	*	18%	33%	42%	27%
With great difficulty	*	3%	45%	5%	14%
	*	100%	100%	100%	100%
Estimated Total	*	38.208	20.425	10.627	69.260

* Data Not Available



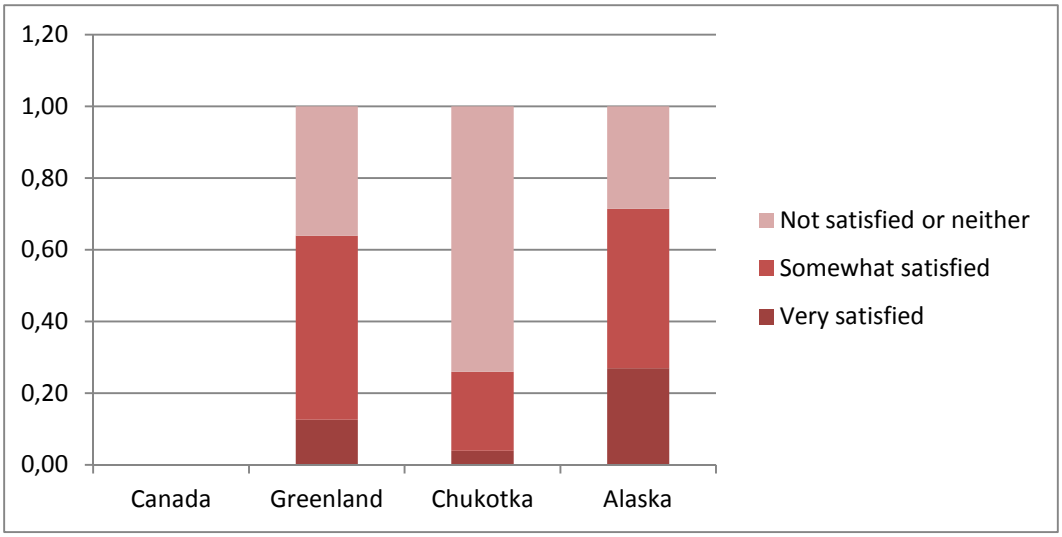
Source: Poppel et al. 2007. Note: Canadian data not available

Figure/Table 7. Satisfaction with household economy

Material Success Table 465: Satisfaction With Household Income by Country

	Canada	Greenland	Chukotka	Alaska	Total
Very satisfied	*	13%	4%	27%	13%
Somewhat satisfied	*	51%	22%	44%	43%
Not satisfied or neither	*	36%	74%	29%	44%
	*	100%	100%	100%	100%
Estimated Total	*	37.767	18.739	10.787	67.293

* Data Not Available



Source: Poppel et al. 2007. Note: Canadian data not available

Figure/Table 8. Satisfaction with Job

Material Success Table 457: Satisfaction With Job and Job Opportunities by Country

		Canada	Greenland	Chukotka	Alaska	Total
Job	Very satisfied	43%	33%	21%	58%	35%
	Somewhat satisfied	41%	54%	53%	32%	47%
	Not satisfied or neither	16%	13%	26%	11%	17%
		100%	100%	100%	100%	100%

		Canada	Greenland	Chukotka	Alaska	Total
Job opportunities	Very satisfied	11%	4%	1%	11%	6%
	Somewhat satisfied	31%	28%	9%	28%	24%
	Not satisfied or neither	57%	68%	90%	61%	70%
		100%	100%	100%	100%	100%
Estimated Total		17.870	36.617	19.508	10.658	84.653

Satisfaction with job

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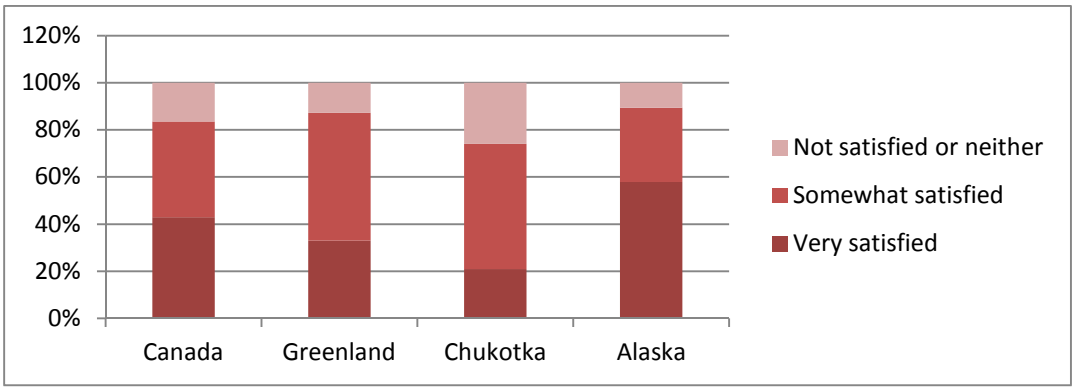
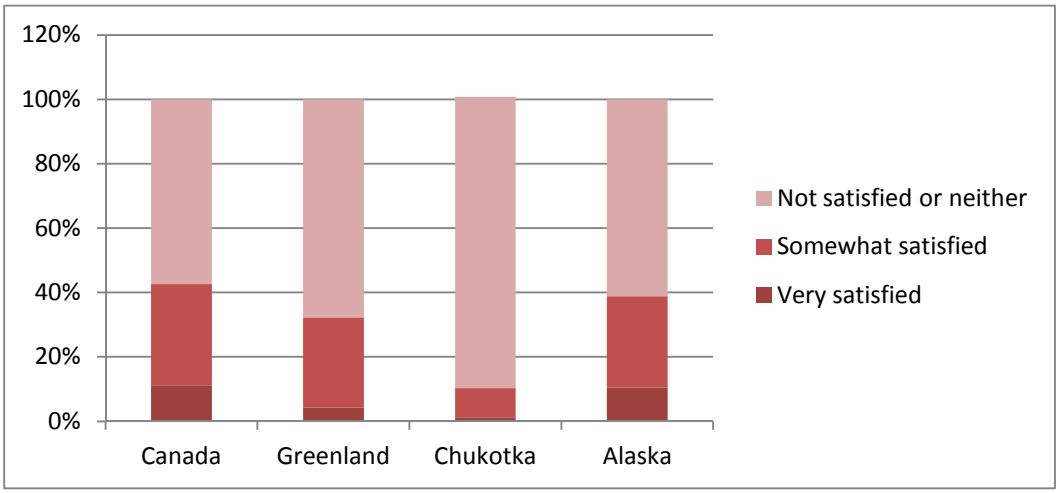


Source: Poppel et al. 2007

Figure/Table 9. Satisfaction with job opportunities



Source: Poppel et al. 2007

How well does SLiCA apply to the ASI domain MATERIAL WELLBEING and selected indicators?

SLiCA provides information about 'household income' as a whole as well as the different sources of income. As information about number and age of household members are also available the ASI indicator can be calculated.

Self-reported income is often subject to discussion based on the assumption that people tend to underestimate their earnings. Following this assumption register based information from tax authorities is preferable. When it comes to estimating income for the informal economy surveys seemingly have an advantage.

Where SLiCA has an advantage to public statistics related to 'material wellbeing' is in the evaluative questions like 'ability to make ends meet' and 'satisfaction with household economy and standard of living' as these questions ad valuable information from an individual point of view to the quantitative data.

6.6 EDUCATION

6.6.1 ASI domain, ASI and SLiCA indicators: Education

6.6.1.1 ASI on 'education'

The AHDR states that 'Education is not a neutral enterprise. It is the promotion of skills, values, history, languages, and ways of thinking and behaving' (AHDR, 2004:169). In developing an indicator that encompasses 'education' the authors of the Education chapter in the ASI Report suggest three indicators all related to post-secondary education:

1. The proportion of students pursuing post-secondary education opportunities;
2. The ratio of students successfully completing post-secondary education;
3. The proportion of graduates who are still in the community 10 years later.

Of these indicators the second indicator was picked as the ASI 'education' indicator:

- Ratio of students successfully completing postsecondary education

6.6.1.2 SLiCA on 'education'[17]

One of the most important points of departure for the SLiCA project was defining living conditions as resources that the individual can apply in different arenas (Andersen & Poppel, 2002). Focussing on the resources of the individual in relation to employment implied that both qualifications and competencies needed in traditional livelihoods and in occupations within the production and service sectors had to be analysed. The focus thus was on both formal education provided by educational institutions and informal education transferred from one generation to the next (Kruse et al., 2008). This is reflected in the SLiCA indicators listed and commented below:

- Level of education
- Traditional skills: learned in/improved since childhood/still use
- Still use traditional skills today
- Satisfaction with different conditions/circumstances related to education

[17] SLiCA data and results on education are more thoroughly analysed in Kruse et al., 2008 and Rønning & Wiborg, 2008.

The figure below (Figure 10) is based on the question in the SLiCA questionnaire about the respondents' highest level of education[18]. The category 'Vocational school or college' corresponds to the category 'postsecondary education' used in the ASI. The figure shows that less than 50 percent of the Greenlanders had a post-secondary education which was a slightly larger percentage than in Chukotka, almost twice as large as in Alaska and almost three times that of the Inuit settlement regions in Northern Canada.

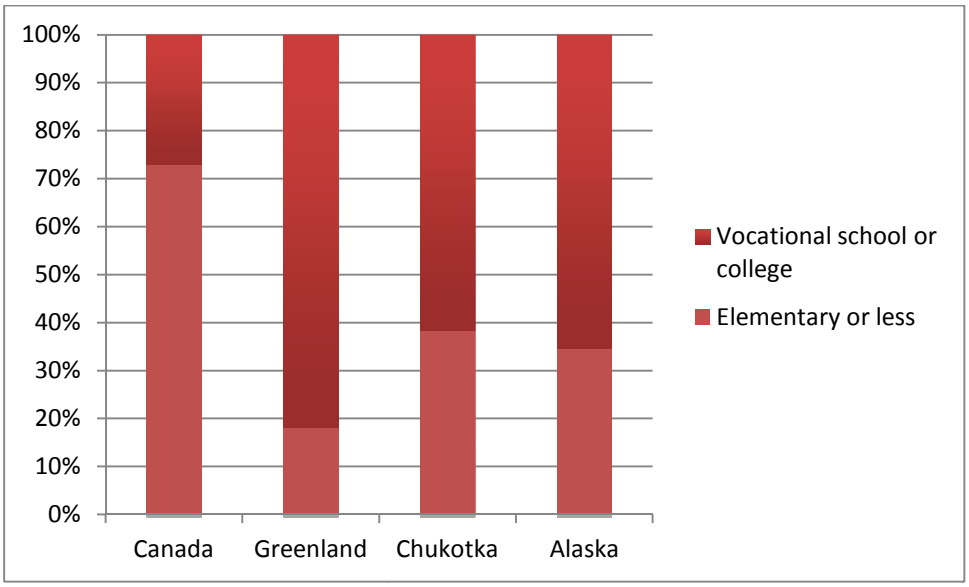
[18] The question was phrased as an open-ended question, which gave the opportunity for more in-depth analysis but at the same time created a lot of work categorizing the answers.

Figure/Table 10. Highest Level of Education Completed. Inuit Nunaat.

By country/region

Education Table 553: Highest Level of School Completed by Country

	Canada	Greenland	Chukotka	Alaska	Total
Elementary or less	44%	10%	26%	13%	22%
Some high school or in high school now	26%	34%	0%	16%	23%
High school	13%	10%	32%	46%	19%
Vocational school or college	16%	46%	42%	25%	36%
	100%	100%	100%	100%	100%
Estimated Total	21.860	37.944	19.796	10.981	90.581



Source: Poppel et al., 2007

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Graduation of bachelors and masters from Ilisimatusarfik, University of Greenland, Feruary 2013.

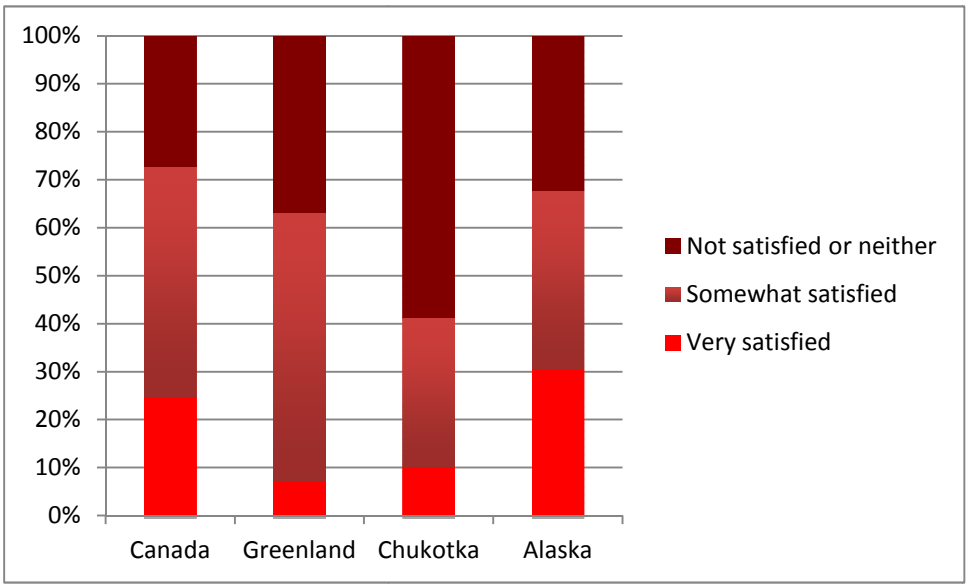
Photo: Birger Poppel

Figure/Table 11. Satisfaction with education in community.

By country/region

Education Table 579: Satisfaction with Quality of Education in Community by Country

	Canada	Greenland	Chukotka	Alaska	Total
Very satisfied	25%	7%	10%	30%	15%
Somewhat satisfied	48%	56%	31%	37%	46%
Not satisfied or neither	27%	37%	59%	32%	40%
	100%	100%	100%	100%	100%
Estimated Total	17.130	33.606	17.160	10.636	78.532



Source: Poppel et al 2007

Almost the same share of the Inuit in Greenland and Alaska are somewhat or very satisfied with education in their community (figure/table 11) and the percentage is markedly higher than that of Chukotka. To get information at a more operational level data of course need to be available at a community, district or regional level[19].

[19] The SLiCA analysis regions within what we have defined as 'the Inuit Settlement regions' are listed above.

As most Inuit communities can be defined as part of 'the mixed economy'[20] many Inuit households still depend on a combination of subsistence hunting and fishing and having paid jobs which could consist of permanent or part time jobs (in many communities often seasonal). Having the skills necessary to hunt, herd or fish – including surviving in an often harsh natural environment, preserving meat and fish as well as maintaining and repairing the equipment used for the subsistence activities is thus of vital importance. In accordance with this perception a number of questions were asked about the knowledge of skills important to the traditional livelihood: whether they were transferred during childhood or learned later, whether the respondent carried on this knowledge to his/her children and – not least important – if the traditional skills were still used today. (Kruse et al., 2008; Poppel 2006; Poppel & Kruse, 2009)

Figure 12 shows if and to what degree traditional skills are still used by Inuit (data from Canada are not available). More than 50% in the three regions confirm they use traditional skills with less than one out of five Inuit in Greenland and Alaska and a little more in Chukotka claim they do not use these skills.

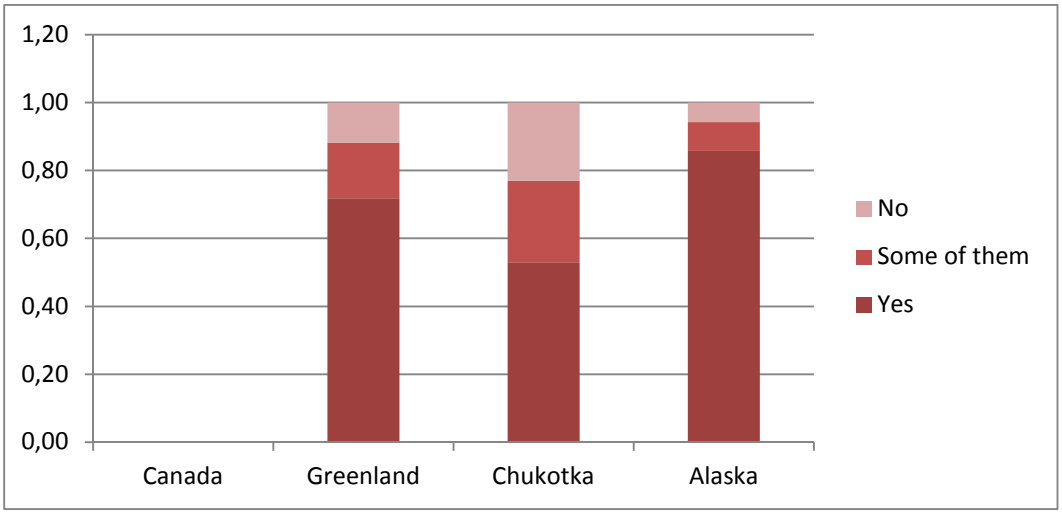
The SLiCA data on education – conventional as well as traditional – income and wellbeing provide opportunities to investigate relations between these and other living conditions variables: *"Inuit adults with a high school degree earn on average 49 percent more than Inuit who did not complete high school. Inuit completing a college education earn on average 47 percent more than Inuit with a high school education. Perhaps it should not be a surprise either that the same relationship works in subsistence. The number of traditional skills learned as a child explains 29 percent of the variation in the number of subsistence activities pursued in the last year. Both formal and traditional education contribute to production activities that in turn contribute to overall wellbeing"* (Kruse et al., 2008: 123-24).

[20] The 'mixed economy' is characterised by the co-existence of a subsistence based hunting/herding/fishing economy and a market economy. (Kruse et al., 2008; Poppel, 2006; Poppel & Kruse, 2009)

Figure/Table 12. Traditional Skills

Education Table 539: Still Use Traditional Skills Today by Country

	Canada	Greenland	Chukotka	Alaska	Total
Yes	*	72%	53%	86%	69%
Some of them	*	16%	24%	9%	17%
No	*	12%	23%	6%	14%
	*	100%	100%	100%	100%
Estimated Total	*	38.807	20.227	11.021	70.055



Source: Poppel et al. 2007. Note: Canadian data not available

7.2 How well does SLiCA apply to the ASI domain EDUCATION and selected indicators?

The SLiCA questionnaire contains questions about level and kind of formal education and thus meets the selected ASI indicator. SLiCA further includes questions about the traditional education transferred informally from one generation to the next, which is important when analyzing resources to apply in a mixed (subsistence-market) economy. Further more SLiCA provides information about satisfaction with e.g. the local supply with education institutions.

6.7 CULTURAL WELLBEING AND CULTURAL VITALITY

6.7.1 ASI domain, ASI and SLiCA indicators: Cultural wellbeing and cultural vitality

6.7.1.1 ASI on 'cultural wellbeing' and 'cultural vitality'

The authors of the chapter on *Cultural wellbeing and cultural vitality* in the ASI Report adopted the term 'cultural wellbeing' 'in reference to mainstream quality-of-life research' to encompass a broad spectre of dimensions of culture including:

- Language (use of language and language retention)
- Knowledge (and its transmission)
- Communication (including education and performance)
- Spirituality, such as religion and ritual
- Socio-cultural events and media
- Economic and subsistence practices
- Social organization, institutions and networks

(Schweitzer et al., 2010:91-92)

In conclusion '*language retention'*, '*cultural autonomy'*, and '*belonging*' were considered 'important components for an understanding of cultural wellbeing in the Arctic and a composite indicator based on these three indicator elements to 'provide a sense of the state of things within different dimensions of cultural vitality/integrity' (Schweitzer et al., 2010:105-

106). In the concluding chapter '*Language retention'* was singled out as this indicator met most of the criteria outlined for ASI indicators.

6.7.1.2 SLiCA on 'cultural wellbeing' and 'cultural vitality'

During the process of finding the living conditions dimensions most important to the Inuit and Same peoples of the Arctic the indigenous partners and the SLiCA research team focused on – among others: Community viability, Education, Employment/Harvest, Environment/Resource management, Family relations and social networks, Identity management, Language, Religion/Spirituality, and Work/Leisure that all include elements corresponding to the ASI deliberations above. This also means that indicators were developed and questions asked within these dimensions (Poppel et al., 2007: tables 57-171) some of which are listed below:

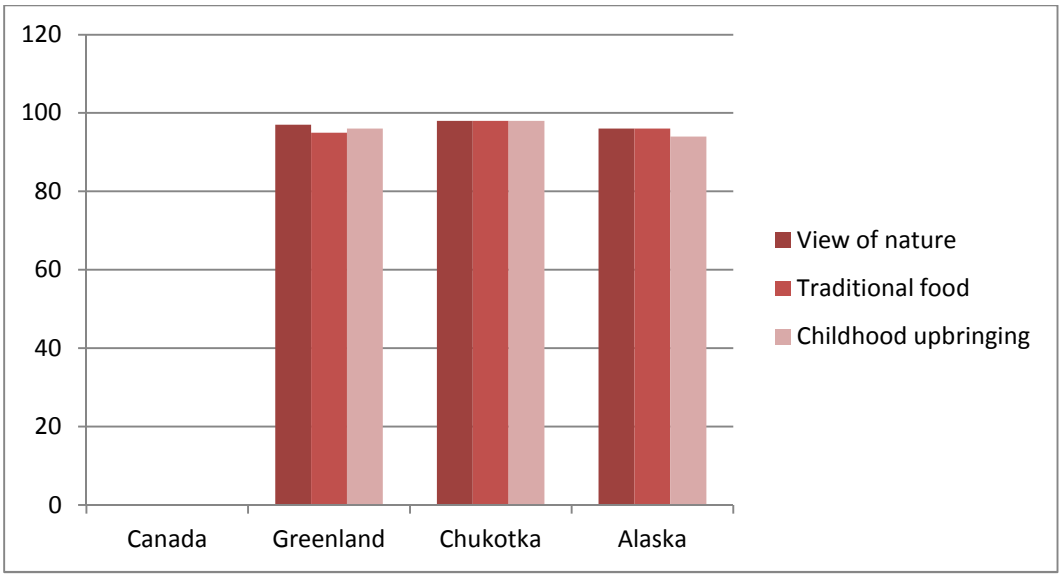
- Identity markers:
  - Activities and customs important or very important to maintaining indigenous identity
- Language retention (self-reported):
  - Language ability
  - Language use
- Participation in cultural activities;
- Satisfaction with local support of different cultural activities and values
- Religious beliefs (both traditional Inuit and Sami and Christian beliefs)
- Sense of belonging (reflected in several questions e.g. about thoughts within last five years of moving away from the town/settlement, where respondent live)

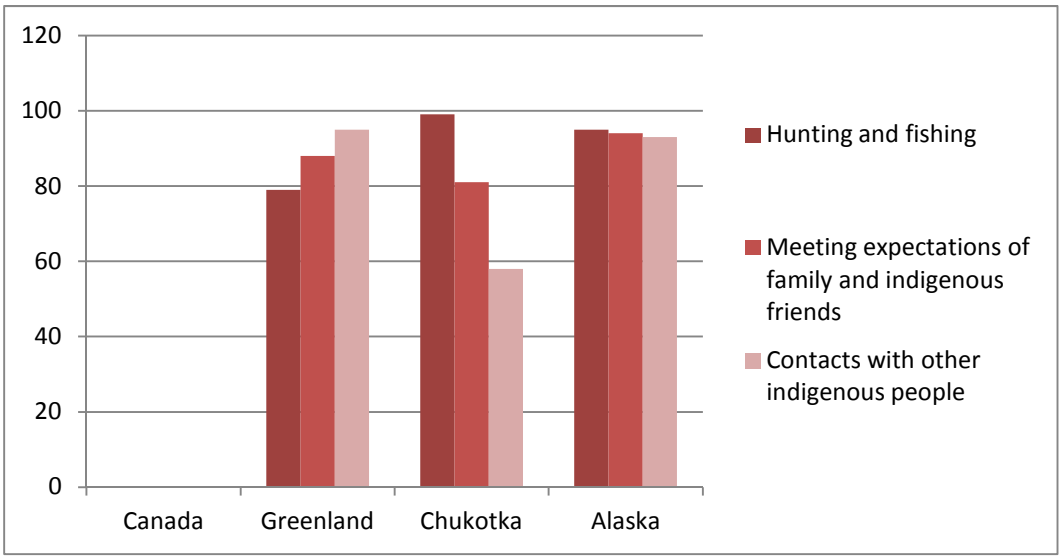
Figure/Table 13. Inuit Nunaat. Indigenous Identity

Activities and Customs Important to Maintaining Indigenous Identity by Country

	Canada	Greenland	Chukotka	Alaska	Total
View of nature	*	97	98	96	97
Traditional food	*	95	98	96	97
Childhood upbringing	*	96	98	94	96
Use of indigenous language	*	97	84	84	92
Naming kinship relationships	*	87	100	90	91
Preservation of traditional foods	*	85	89	96	87

	Canada	Greenland	Chukotka	Alaska	Total
Hunting and fishing	*	79	99	95	87
Meeting expectations of family and indigenous friends	*	88	81	94	87
Contacts with other indigenous people	*	95	58	93	84
Occupation or profession	*	86	77	87	84
Harvesting of wild berries and plants	*	75	98	90	84
Religious and spiritual beliefs	*	79	66	81	76
Participation in traditional cultural events	*	71	81	85	76
Clothes worn	*	78	71	76	75
Indigenous poetry and literature	*	79	61	73	73





Source: Poppel et al. 2007. Note: Canadian data not available

Asked about the importance of activities and customs for maintaining indigenous identity, the so-called identity markers that ranked highest were 'view of nature', 'traditional food', 'childhood upbringing', 'hunting and fishing', 'meeting expectations of family and indigenous friends' and 'contacts with other indigenous people' (Figure/Table 13) as well as using the indigenous language (not included in the figure). The identity markers both provide an insight into what is important for the Inuit and at the same time indicate areas of significance for policy planning.

Language retention is a very strong identity marker and it is thus also exposed to much political attention. It was for instance considered a major political victory for the Greenlanders when it was agreed that the Act on Greenland Self-Government (2009) stated that the Greenlandic language is the official language in Greenland.

Figure/Table 14 gives an insight into how the Inuit in the different regions self-report their language abilities. Whether the focus is on understanding, speaking, reading or writing there is a significant difference between self-reported abilities among the Inuit in Canada and Greenland on one side and in Chukotka and Alaska on the other.

Table 14. Cultural Continuity

Cultural Continuity Table 91: Indigenous Language Ability by Country

		Canada	Greenland	Chukotka	Alaska	Total
Understand	Very well	79%	73%	40%	39%	60%
	Relatively well	13%	24%	18%	15%	21%
	Not at all to with effort	7%	3%	42%	46%	19%
		100%	100%	100%	100%	100%
Speak	Very well	77%	71%	37%	32%	56%
	Relatively well	12%	25%	17%	12%	21%
	Not at all to with effort	10%	5%	45%	56%	23%
		100%	100%	100%	100%	100%
Read	Very well	52%	62%	25%	13%	45%
	Relatively well	18%	26%	17%	16%	22%
	Not at all to with effort	31%	12%	58%	71%	33%

		100%	100%	100%	100%	100%
Write	Very well	54%	58%	24%	11%	42%
	Relatively well	19%	26%	15%	11%	21%
	Not at all to with effort	27%	15%	61%	78%	37%
		100%	100%	100%	100%	100%
Estimated Total		19.870	39.629	20.417	10.957	90.873

IV cultural well-being (& VI fate control)

Language retention (self-reported)

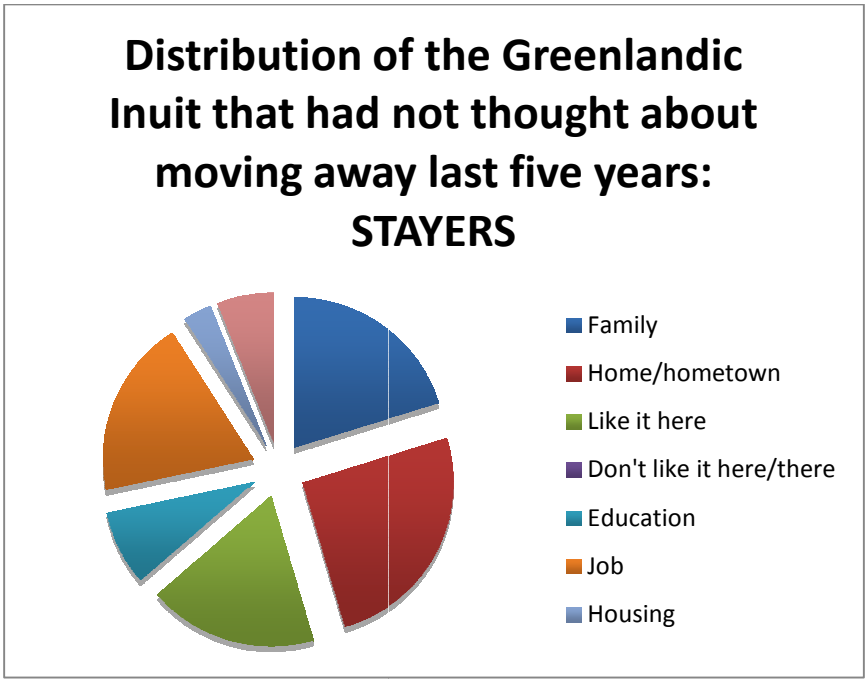
Cultural Continuity Table 91: Indigenous Language Ability by Country

		Canada	Greenland	Chukotka	Alaska	Total
Understand	Very well	79%	73%	40%	39%	60%
	Relatively well	13%	24%	18%	15%	21%
	Not at all to with effort	7%	3%	42%	46%	19%
		100%	100%	100%	100%	100%
Speak	Very well	77%	71%	37%	32%	56%
	Relatively well	12%	25%	17%	12%	21%
	Not at all to with effort	10%	5%	45%	56%	23%
		100%	100%	100%	100%	100%
Read	Very well	52%	62%	25%	13%	45%
	Relatively well	18%	26%	17%	16%	22%
	Not at all to with effort	31%	12%	58%	71%	33%
		100%	100%	100%	100%	100%
Write	Very well	54%	58%	24%	11%	42%
	Relatively well	19%	26%	15%	11%	21%
	Not at all to with effort	27%	15%	61%	78%	37%
		100%	100%	100%	100%	100%

Source: Poppel et al., 2007

8.1.3 'Belonging' – a case study from Greenland (SLiCA 2004-2006)

Figure 15 / 14



Source: SLiCA database

Cultural wellbeing and cultural continuity is often referred to in terms of 'belonging' and 'connectedness' to people and places (AHDR 2004:154, ASI 2010:104). During the SLiCA interview respondents were asked whether they within the last five years had thought about moving from the place where they were living at the time of the interview. This question was followed by an open-ended question elaborating on the former question asking about reasons (the main drivers) to stay or, respectively, to move.

64 percent of Greenlandic adults reported that they had not thought about moving away from their communities. A significantly larger part of people in settlements refers to 'place of belonging' (including: family, 'hometown' or simply 'like it here') as a reason to stay, whereas more people in towns refer to education and jobs as reasons to stay.

How well does SLiCA apply to the ASI domain CULTURAL WELLBEING AND CULTURAL VITALITY and selected indicators?

The selected ASI indicator condensing the significance of 'cultural wellbeing/cultural vitality is 'language retention', embracing both language ability and language use. SLiCA asks about both ability and use of the indigenous language as well as first foreign language and thus meets the ASI indicator. As the SLiCA findings are based on personal interviews both information about ability to speak a language and how much and where it is used is self-reported. It might support the self-reported assessments if pilot studies were carried through to validate survey findings.

SLiCA is able to further provide knowledge about other important identity markers than 'language' and furthermore has a number of questions that make it possible to indicate 'sense of belonging' that might be seen as important to cultural continuity and vitality.

6.8 CONTACT WITH NATURE (CLOSENESS TO NATURE)

6.8.1 ASI domain, ASI and SLiCA indicators: Contact with nature (closeness to nature)

6.8.1.1 ASI on contact with nature (closeness to nature)

The AHDR Report suggests 'Living close to nature' as one of the 'three dimensions of human development over and above those included in the HDI (Human Development Index) (AHDR 2004:240). One argument is that 'Arctic societies are place-based systems; they feature human adaptations that are closely tied to local environments' (ibid: 241).

Based on this AHDR conclusion the authors of the ASI Report chapter on 'Contact with nature' identified the following potential indicators as 'most suitable' (the ***highlighted*** indicators were considered the most robust for the ASI criteria)

- Time on the land
- Number of traditional activities
- ***Number of people or households engaged in the traditional economy***

- ***Harvest*** (kilograms per annum per capita)
- ***Consumption of country foods*** (kilograms per annum per capita)
- Income spent on nature-related activities
- Local control of resources
- Proportion of economy dependent on natural resources
- Youth in traditional subsistence activities
- Demography (youth retention)

(Crate et al., 2010:114)

Based on the ASI-authors' analysis '*consumption or harvest of traditional (local) food'* was selected as the indicator for 'contact with nature'.

Greenland delicacies: dried fish and dried whale meat

Photo: Birger Poppel

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Greenland delicacy: narwhale mattak (narwhale skin)

Photo: Birger Poppel

6.8.1.2 SLiCA on 'contact with nature (closeness to nature)

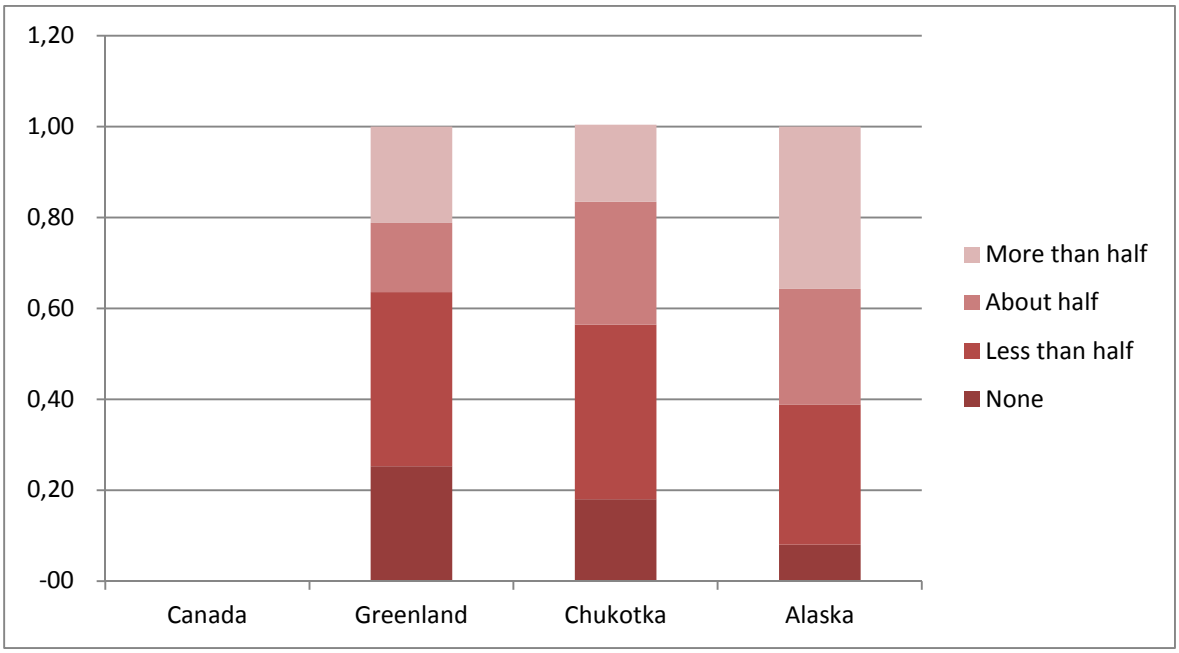
As noted in the section above the way the Inuit view nature is perceived as important to maintain the indigenous identity. More than 95% in Greenland, Alaska and Chukotka find 'view of nature' an important identity marker. Likewise, a significant majority perceive 'eating traditional food' and 'hunting and fishing' as important identity markers. These findings justify selecting 'contact with nature' as an important domain for human development. The SLiCA survey provides possibilities to cast light on this domain through several questions about

- Consumption of local food
- Harvest of local food (Proportion of Meat and Fish Harvested by Household)
- Participation in subsistence activities
- Satisfaction with availability of fish and wildlife

Figure/Table 16.

Ties to Nature Table 26: Proportion of Meat and Fish Harvested by Household. Traditional Food by Country

	Canada	Greenland	Chukotka	Alaska	Total
None	*	0,25	0,18	0,08	0,21
Less than half	*	0,38	0,38	0,31	0,37
About half	*	0,15	0,27	0,25	0,20
More than half	*	0,21	0,17	0,36	0,22
	*	1,00	1,00	1,00	1,00
Estimated Total	*	38.316	20.589	10.888	69.793



Source: Poppel et al. 2007. Note: Canadian data not available

Figure 16 shows the proportion of meat and fished consumed by the household that people perceive is also harvested by a household member. This proportion not only informs about the economic significance (to which degree the household's own harvest substitutes store bought food) but also a relation (and dependency) of the surrounding nature. The consumption of traditional food harvested by one or more household members is significant in all regions, although with variations, though (Poppel, 2006; Poppel & Kruse, 2009). As almost two out of three Alaskan Inuit, two out of three indigenous Chukotkans and one out of three Greenlanders perceive that about or more than half of what their households eat is also harvested of a household member 'contact with nature' measured by 'harvesting for own consumption' suggests that contact with nature is more important to Alaskan Inuit than to other Inuit. As most would agree that 'proportion of own household's consumption' is a reasonable indicator for contact with nature, using only this single measure is probably not sufficient as it – as an example – does not tell how many people (the proportion of the population) that participate in traditional and other activities on the land/sea.

How well does SLiCA apply to the ASI domain CONTACT WITH NATURE (CLOSENESS TO NATURE) and selected indicators?

The ASI team selected 'consumption of traditional food' as well as 'harvest of traditional food' as the indicators for the 'contact with nature' domain. SLiCA applies to both indicators in relative terms ('how large a part …?') but not in absolute terms. Ideally, harvest and diet surveys would be conducted regularly to get the overall figures as a reference for the individuals' reporting on household harvest and consumption.

SLiCA also contains a number of questions that are only possible to get from interviewing: for example 'participation in subsistence activities' and 'satisfaction with availability of fish and wildlife'.

6.9 FATE CONTROL

6.9.1 ASI domain, ASI and SLiCA indicators: Fate control

6.9.1.1 ASI on Fate control

The Arctic Human Development Report (AHDR) suggested that 'controlling one's own destiny' was one of three dimensions of human development that was included 'over and above those included in the HDI' (AHDR, 2004:240) and the authors of the chapter on 'Fate control' in the Arctic Social indicators Report further substantiates the significance of measuring 'people's ability to guide their own destiny' (Dahl et al., 2010:129) and conclude that fate control 'is the outcome of empowerment' (ibid).

The 'Fate control' chapter authors identify 12 possible indicators and group them under five categories:

Political Power and political Activism

1. Political participation
2. Perceived political influence
3. Resistance

Decision-making Power

4. Proportion of local personnel in key decision-making positions
5. Local control over place names
6. Rights to land and sea resources

Economic Control

7. Self-generated income
8. Local control of the economy

Knowledge Construction

9. Knowledge/information about politics
10. Access to information
11. Language retention

Human Rights

12. Recognition of human rights

(Dahl et al., 2010:131)

In conclusion, the fate control indicator recommended from the ASI Report is:

- Fate control index (members in government bodies; lands controlled; public expenses raised locally; speaking the mother tongue)

6.9.1.2 SLiCA on Fate control

The SLiCA research team and the indigenous partners focussed on 'control over one's own destiny' or 'fate control' in several sections of the questionnaire including questions about

- Political participation; political influence; knowledge about politics; language retention
- Satisfaction with influence on specific matters like renewable resources
- Power and political activism
- Satisfaction with Influence Indigenous People Have on Management of Natural Resources Like Fish and Game by Country
- Satisfaction with Influence Indigenous People Have on Management of Natural Resources Like Oil, Gas and Minerals by Country
- Language retention (commented above - see 'cultural wellbeing')

Some of the indicators are separately depicted and commented below [21].

The tables and figures below show some elements that overall contributes to 'fate control'. Participation in civic activities varies among activities and regions and to be fully understood shall be analysed in a regional/local/community context.

Respondents were asked a number of questions focussing on their perception of influence on renewable as well as non-renewable resource use. Furthermore a number of questions addressed concerns about the environment and the respondents' perceptions of attitudes and priorities of different authorities. In short some of the overall SLiCA findings indicate an awareness of a variety of problems to the indigenous peoples problems that most Inuit feel the lack influence on (Poppel et al., 2011).

[21] For further SLiCA analysis on this topic see Kruse et al., 2008

Figure/Table 17

Control of Destiny Table 185: Participation in Civic Activities by Country

	Canada	Greenland	Chukotka	Alaska	Total
Worked at a community event	40%	38%	55%	43%	43%
Attended a local community meeting	37%	29%	58%	55%	41%
Volunteered for local organization or group	39%	32%	27%	48%	34%
In past 12 months helped out at the school	*	6%	49%	43%	24%
Collected signatures for a petition or candidate	*	25%	26%	7%	23%
Member of a board, council, or committee	*	24%	20%	21%	23%
Participated in political gathering or debate	*	19%	17%	24%	19%
Attended regional meetings	*	12%	17%	36%	17%
Participated in a radio or TV call-in show	*	18%	9%	13%	15%
Wrote a letter to the editor	*	8%	4%	5%	6%
Estimated Total	20.400	39.315	20.541	10.863	91.119

VI Fate Control

Power and political activism

Control of Destiny Table 185: Participation in Civic Activities by Country					
	Canada	Greenland	Chukotka	Alaska	Total
Worked at a community event	40%	38%	55%	43%	43%
Attended a local community meeting	37%	29%	58%	55%	41%
Volunteered for local organization or group	39%	32%	27%	48%	34%
In past 12 months helped out at the school	*	6%	49%	43%	24%
Collected signatures for a petition or candidate	*	25%	26%	7%	23%
Member of a board, council, or commitee	*	24%	20%	21%	23%
Participated in political gathering or debate	*	19%	17%	24%	19%
Attended regional meetings	*	12%	17%	36%	17%
Participated in a radio or TV call-in show	*	18%	9%	13%	15%
Wrote a letter to the editor	*	8%	4%	5%	6%
* Data Not Available					

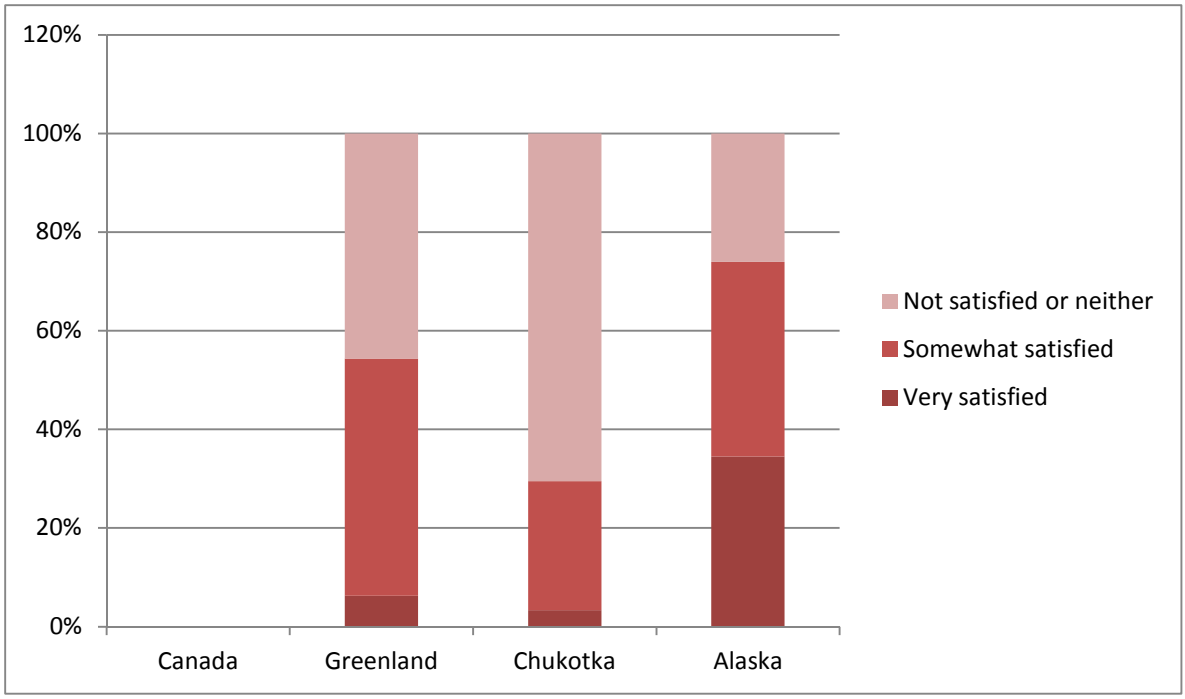
Source: Poppel et al. 2007. Note: Canadian data not available

Table/Figure 18

Control of Destiny Table 227: Satisfaction with Influence Indigenous People Have on Management of Natural Resources Like Fish and Game by Country

	Canada	Greenland	Chukotka	Alaska	Total
Very satisfied	*	6%	3%	35%	11%
Somewhat satisfied	*	48%	26%	39%	41%
Not satisfied or neither	*	46%	70%	26%	48%
	*	100%	100%	100%	100%
Estimated Total	*	33.634	14.599	10.409	58.642

* Data Not Available

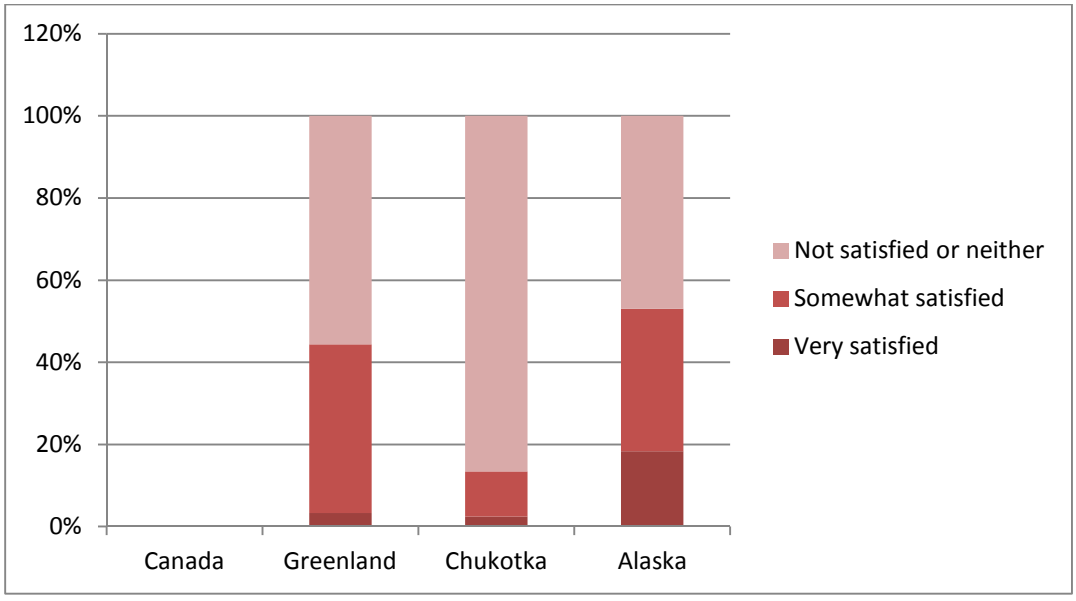


Source: Poppel et al. 2007. Note: Canadian data not available

Table/Figure 19

Control of Destiny Table 231: Satisfaction with Influence Indigenous People Have on Management of Natural Resources Like Oil, Gas and Minerals by Country

	Canada	Greenland	Chukotka	Alaska	Total
Very satisfied	*	3%	2%	18%	6%
Somewhat satisfied	*	41%	11%	35%	32%
Not satisfied or neither	*	56%	87%	47%	63%
	*	100%	100%	100%	100%
Estimated Total	*	27.275	13.918	9.462	50.655



Source: Poppel et al. 2007. Note: Canadian data not available

How well does SLiCA apply to the ASI domain FATE CONTROL and selected indicators?

The ASI recommended indicator is a 'Fate control index' composed by 'members in government bodies'; 'lands controlled'; 'public expenses raised locally'; 'speaking the mother tongue'. 'Speaking the mother tongue is the only sub-indicator that SLiCA applies to. Public authorities shall provide the other parts of the composite index.

The SLiCA questionnaire contains a number of questions that would meet most of the ASI team's 12 primary indicators like e.g. 'political power' and 'political activism' and further also satisfaction with influence on the management on different resources.

6.10 SUMMARY AND CONCLUDING REMARKS

11.1 ON HUMAN DEVELOPMENT AND INDIVIDUAL WELLBEING (based on SLiCA findings) & HOW WELL, GENERALLY, DOES SLICA MEASURE THE ASI INDICATORS?

1. The primary objective of this chapter has been to examine to which degree SLiCA results are able to contribute to the ASI indicators selected in the first ASI Report (ASI, 2010)[22]. In brief, SLiCA indicators apply directly to three out of six domains (material wellbeing; education; cultural continuity and vitality). The selected ASI indicator for contact with nature demands quantitative estimates of 'consumption and harvest of traditional food', whereas SLiCA have results expressed in relative terms. The last two ASI domains rely heavily on vital statistics and publicly gathered information.
2. The ASI indicators were selected on the basis of a number of criteria (see above), for example: availability and affordability. Especially these two criteria exclude survey data like SLiCA data. This, on the other hand, means, that if some of the SLiCA indicators – including evaluation of own health and individual (subjective) wellbeing are considered interesting and important to measure human development, the SLiCA survey documents that it is possible to gather these and other data.

[22] An overall comparison is tabled in Annex 1.

3. It is important to realize that personal interviews including questions on individual wellbeing, different background variables and living conditions as well as perceptions and attitudes are the precondition and basis for more thorough analyses of cause and effect relationships. And this information is only available if surveys are conducted on a regular basis – for instance every fifth year.

4. As the SLiCA survey so far has only been conducted once it is not possible at the 'Inuit Nunaat' level to track human development over time. SLiCA can thus be seen as a baseline study that naturally will add in value to political decision makers, indigenous peoples and different Arctic stakeholders as well as the Arctic social science community.

5. Whereas tracking human development implies follow up studies or thorough research into the history of the different Arctic regions, the SLiCA survey has a potential to carry through a large number of regional comparative studies and analysis. Some results will be briefly introduced in the following.

6. One of the advantages of conducting a survey like SLiCA is the possibility to analyze relations at the individual level of different living conditions with satisfaction with overall quality of life as well as with satisfaction with different aspects of life. Analyzing the SLiCA data from Inuit Nunaat (except Canadian data) gives us – among other – the following results that are important when wellbeing and human development is in focus be it for analytical or political reasons:

7. 'Inuit adults who receive a poverty level personal income (60 percent or less of the median income in their indigenous settlement region) are less likely to be very satisfied with their life as a whole than adults who receive higher personal incomes' (Kruse et al., 2008:123);

8. '… people who work full time during at least part of the year are more likely to be very satisfied with life as a whole as people who were likely unemployed (ibid.);

9. 'Those who are more active in subsistence are also more likely to be satisfied with life as a whole' (ibid.);

10. Both personnel income, subsistence activities and satisfaction with the combination of productive activities contribute to the explanation of variation in life satisfaction (ibid.) and

11. Further testing for the explanatory powers of a number of variables showed that 'satisfaction with the amount of fish and game available locally', and 'satisfaction with the number of job opportunities in the community' contributed significantly to explaining life satisfaction (ibid.).

12. Also 'satisfaction with influence over management of natural resources and local environmental problems' contributes to life satisfaction (ibid.)

13. In conclusion: Some of the main SLiCA findings on explanations to what contributes to life satisfaction is that ***' … productive activities, the presence of production opportunities (i.e. fish and game, jobs), and a sense of local control are associated with satisfaction with life as a whole***' (ibid.)

At the same time a survey like SLiCA can provide contextual data at the individual and household level that – in combination with official statistics – can add important contextual information to better understand and inform decision makers at different levels as well as indigenous peoples organizations, other NGO's, civil society organizations and other stakeholders.

The SLiCA findings below are examples (quoted from the SLiCA contribution to the Report from the Arctic Council's Sustainable Development Working Group October 24, 2008) of contextual knowledge adding to statistical and other basic societal information:

14. *A combination of traditional activities and cash employment is the prevailing lifestyle of Arctic indigenous peoples. It takes money to pursue traditional activities; households with higher incomes can, and do, choose to spend income on these activities. Nine in ten Inuit think traditional activities are important to their identity.*

15. *Health conditions vary widely in the Arctic: Most of the indigenous peoples surveyed rate their own health as good or excellent —almost all respondents in Canada and Greenland and three-quarters of those in Northern Alaska. The exception is Chukotka, where more than half rated their health as only fair or poor.*

16. Even though most are satisfied with life in their communities, indigenous people also cite widespread social problems: unemployment, alcohol abuse, suicide, drug abuse, family violence and sexual abuse are on average considered major social problems by more than six Inuit out of ten. Most problems are reported from Chukotka as at least eight out of ten cite most of these problems.

17. *In the face of rapid changes in the Arctic, most indigenous peoples have maintained their traditional subsistence activities. Many also continue to speak their native languages – in addition to Western languages. More than 90% of the Greenlanders and the Inuit in Canada – young and old – are fluent in their native languages. In Northern Alaska and Chukotka, indigenous people of all ages are much less likely to speak their native languages — and those who can are more likely to be 55 or older. In Northern Alaska, just 5% of those 16 to 19 say they are fluent in a native language.*

18. *The indigenous peoples of Chukotka, Northern Alaska and Greenland were asked about environmental concerns, if any. On average three out of four perceive climate change to be a problem in their communities and more than half of all Inuit mention local contaminated sites, pollution of local lakes and streams and pollution from industrial development as problems in the region. A significantly larger proportion of indigenous people in Chukotka are concerned with these problems. In Greenland pollution from other countries and in Chukotka and Alaska erosion of coastal areas or riverbanks are cited as problems by vast majorities.*

(Report from the Sustainable Development Working Group October 24, 2008)

ON 'THE SPIRIT OF TIME', PROSPECTS, AND CHALLENGES

The SLiCA process of developing a research design and a survey instrument to map and analyze living conditions and wellbeing of Inuit, Sami and the indigenous peoples of Chukotka and the Kola Peninsula started in 1997/1998. Parallel to the development of SLiCA applied to the Inuit and Saami, Quality-of-Life research internationally including research into social indicators focussing on individual wellbeing and sustainable development have been attracting still more interest and resources. A main driver of this development has been the still more obvious fact that Gross Domestic Product, GDP, as a measure of human development falls short of encompassing very important aspects of societal development as for instance the distribution of income, the individuals' perception of their livelihoods and living conditions, health conditions, resource use etc. Many initiatives have been taken to develop and investigate more adequate measures. These initiatives have been both globally[23],

[23] Prominent examples are: the OECD well-being indicators; the so-called Sarkozy Commission headed by Joseph Stieglitz, Amartya Sen and Jean-Paul Fitoussi; the Happy Planet Index;

regionally[24] and nationally/locally[25] and aiming at covering all population groups within a specific country as well as research efforts to measure well being among indigenous peoples[26]. Furthermore, this development has been inspired by and has itself inspired Quality-of-life Research (theoretically, methodologically and analytically) within different academic disciplines, social as well as behavioural sciences[27].

Especially the so-called 'Sarkozy initiative' shall be emphasized as it concludes in a number of recommendations that substantiates the work that a number of Arctic Council/SDWG supported initiatives – including AHDR, SLiCA and ASI) have accomplished. The quoted recommendations both highlight important life domains and also points to the necessity of including the National Statistical entities in the collection of data needed to develop meaningful indicators:

> *Recommendation 6: Quality of life depends on people's objective conditions and capabilities. Steps should be taken to improve measures of people's health, education, personal activities and environmental conditions. In particular, substantial effort should be devoted to developing and implementing robust, reliable measures of social connections, political voice, and insecurity that can be shown to predict life satisfaction.*
>
> *Recommendation 9: Statistical offices should provide the information needed to aggregate across quality-of-life dimensions, allowing the construction of different indexes.*
>
> *Recommendation 10: Measures of both objective and subjective wellbeing provide key information about people's quality of life. Statistical offices should incorporate questions to capture people's life evaluations, hedonic experiences and priorities in their own survey.*
>
> (Stieglitz et al., 2009:15-17)

[24] Nordic Council of Ministers has developed, among others, Sustainable Development Indicators.
[25] Gross National Happiness Index, GNHI developed in Bhutan
[26] United Nations initiative implemented by Tebtebbe: Indicators Resource Book; First Nations Statistical Institute, Canada; Community Well-being Index, Canada; Australian Bureau of Statistics: National Aboriginal & Torres Strait Islander Social Survey (NATSISS) to mention just a few.
[27] Se e.g. Sirgy et al., 2006; Møller et al., 2008; Møller & Huschka, 2009.

'Human development shall be measured in ways that reflect individual wellbeing; thus partnerships with the respondents – in SLiCA the indigenous peoples of the Arctic – is key to study living conditions and welfare priorities.' (Poppel et al., 2011). This was both the point of departure for the SLiCA process and it was a conclusion to the Arctic Council when the SLiCA project was reported to the Arctic Council Ministerial in Nuuk, 2011 in the format of a report including major findings for all SLiCA regions (Poppel et al., 2011).

In collaboration with indigenous experts and other indigenous partners the project was carried through from defining overall social goals to selecting the indicators and fleshing out the international SLiCA core questionnaire.

Applying SLiCA measures to ASI domains may at first glance seem like reverse engineering, since the development of SLiCA measures preceded the development of ASI domains. This chapter substantiates, however, that it is generally feasible to apply SLiCA indicators into the ASI framework and to most of the selected indicators. Furthermore SLiCA is able to contribute with further valuable indicators,

Survey-based data such as that produced by SLiCA are costly compared to data gathered by national or regional statistical entities – often from public registers. Single surveys also are less likely to yield standardized measures that can be compared across surveys. Surveys also likely leave gaps in coverage of regions or population groups. On the other hand, differences in national statistical programs also are a challenge to standardization and coverage of population groups. In some nations, such as the U.S. and Canada, government statistical measures are themselves developed from surveys, not public registers. And SLiCA demonstrates that it is possible to achieve standardization across nations and to produce measures of human development that reflect the special circumstances of a key region of the world, the Arctic.

There is no doubt that the value of a major international research effort like SLiCA can be augmented by conducting follow up studies using the SLiCA findings as the base line studies of rapid social change in the Arctic.

If the overall goal is to measure, assess and evaluate Arctic Human Development – and not least if the individuals' own perceptions and evaluations shall be included – it thus seems appropriate to conduct a "benchmark" survey like SLiCA every ten years for both the

indigenous and other Arctic residents[28]. Such a survey would necessarily have to be combined with regular and much smaller social indicator surveys to track change over time and further – and highly important – shall be combined with official statistics gathered by national and regional statistical entities and data and analyses from independent research in a concerted effort to bring about the necessary information and analyses for decision makers in the Arctic about human development.

[28] See Annex 2: Final Report to the Senior Arctic Officials of the Arctic Council, 19-20 October 2010 Tórshavn**:** *5.1 Survey of Living Conditions in the Arctic: Inuit, Sámi and the Indigenous peoples of Chukotka (SLiCA)*

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ANNEX 1

Table: How well does SLiCA measure the ASI indicators?

DOMAIN	PREFERRED INDICATOR (ASI 2010)	SLiCA INDCATORS	HOW WELL DOES SLiCA MEASURE THE ASI INDICATORS
Health & Population	Infant mortality/ Net migration	**Self-rated health** Satisfaction with life as a whole in this community Satisfaction with quality of life in this community **Satisfaction with life as a whole**	The short and easy answer to the question raised in the headline above is that SLiCA does not apply since the selected indicators are vital statistics. More important though, when it comes to individual wellbeing and health, SLiCA provides information of self-evaluated wellbeing and self-rated health. Both measures are generally accepted as key indicators and direct measures on wellbeing and health, where the ASI indicators merely are indirect measures.
Material wellbeing	Per capita household income	**Household income** (from the main sources of both the formal and the informal economy) Relative poverty Absolute poverty Ability to make ends meet Satisfaction with household economy Satisfaction with standard of living Satisfaction with jobs Satisfaction with job opportunities	SLiCA provides information about 'household income' as a whole as well as the different sources of income. As information about number and age of household members are also available the ASI indicator can be calculated. Self-reported income is often subject to discussion based on the assumption that people tend to underestimate their earnings. Following this assumption register based information from tax authorities is preferable. When it comes to estimating income for the informal economy surveys seemingly have an advantage Where SLiCA has an advantage to public statistics related to 'material wellbeing' is in the evaluative questions like 'ability to make ends meet' and 'satisfaction with household economy and standard of living' as these questions ad valuable information from an individual point of view to the quantitative data.
Education	Ratio of students completing post-secondary education	**Level of education** Traditional skills: learned in/improved since childhood/still	The SLiCA questionnaire contains questions about level and kind of formal education and thus meets the selected ASI indicator. SLiCA further includes questions about the traditional education transferred informally from one

		use Still use traditional skills today Satisfaction with different conditions/ circumstances related to education	generation to the next, which is important when analyzing resources to apply in a mixed (subsistence-market) economy. Further more SLiCA provides information about satisfaction with e.g. the local supply with education institutions.
Cultural Continuity and Vitality	Language retention	Identity markers: Activities and customs important or very important to maintaining indigenous identity **Language retention (self-reported):** • **Language ability** • **Language use** Participation in cultural activities; Satisfaction with local support of different cultural activities and values Religious beliefs (both traditional Inuit and Sami and Christian beliefs) Sense of belonging (reflected in several questions e.g. about thoughts within last five years of moving away from the town/settlement, where respondent live)	The selected ASI indicator condensing the significance of 'cultural wellbeing/cultural vitality is 'language retention', embracing both language ability and language use. SLiCA asks about both ability and use of the indigenous language as well as first foreign language and thus meets the ASI indicator. As the SLiCA findings are based on personal interviews both information about ability to speak a language and how much and where it is used is self-reported. It might support the self-reported assessments if pilot studies were carried through to validate survey findings. SLiCA is able to further provide knowledge about other important identity markers than 'language' and furthermore has a number of questions that make it possible to indicate 'sense of belonging' that might be seen as important to cultural continuity and vitality.
Contact with Nature	Consumption/ Harvest of traditional foods	**Consumption of local food** **Harvest of local food** (proportion of meat and fish harvested by	The ASI team selected 'consumption of traditional food' as well as 'harvest of traditional food' as the indicators for the 'contact with nature' domain. SLiCA applies to both indicators in relative terms ('how large a part …?') but not in absolute terms. Ideally, a harvest and diet surveys would be conducted regularly to get the overall figures as a reference

		household) **Participation in subsistence activities** Satisfaction with availability of fish and wildlife	for the individuals' reporting on household harvest and consumption. SLiCA also contains a number of questions that are only possible to get from interviewing: for example 'participation in subsistence activities' and 'satisfaction with availability of fish and wildlife'.
Fate Control	Fate Control Index composed by: • Members in gov-ernment bodies; • Lands controlled; • Public expenses raised locally; • Speaking the mother tongue	Political participation; political influence; knowledge about politics; language retention Satisfaction with influence on specific matters like renewable resources Power and political activism Satisfaction with influence indigenous people have on management of natural resources like fish and game Satisfaction with influence indigenous people have on management of natural resources like oil, gas and minerals **Language retention** (commented above - see 'cultural wellbeing')	T The ASI recommended indicator is a 'Fate control index' composed by 'members in government bodies'; 'lands controlled'; 'public expenses raised locally'; 'speaking the mother tongue'. 'Speaking the mother tongue is the only sub-indicator that SLiCA applies to. Public authorities shall provide the other parts of the composite index. he SLiCA questionnaire contains a number of questions that would meet most of the ASI team's 12 primary indicators like e.g. 'political power' and 'political activism' and further also satisfaction with influence on the management on different resources.

ASI indicators 'in red' are those that are directly matched by SLiCA indicators.

SLiCA indicators **'in bold'** are those that either match ASI indicators or might be considered most valuable as a supplement to the ASI basic indicators.

ANNEX 2

Meeting of Senior Arctic Officials

Final Report

19-20 October 2010 Tórshavn

Survey of Living Conditions in the Arctic: Inuit, Sámi and the Indigenous peoples of Chukotka (SLiCA)

Background: Project leader Birger Poppel summarized the major objectives and conclusions of the finalized SLiCA project which began more than 10 years ago (www.arcticlivingconditions.org). A CD-Rom containing relevant SLiCA data will be released in Nuuk. If funding is obtained, a SLiCA anthology will be available in May 2011. Poppel suggested that the AC consider running a benchmark study like SLiCA every 10 years.

Discussion: Finalization of this project is a major AC achievement. The project results are especially important for the indigenous peoples of the Arctic, as there has always been a lack of data on living conditions of indigenous peoples. The data collected is already being used and methods on how to follow up/use the data in the future were discussed. Canada raised its intention to follow-up on how to ensure Canada's data is best reflected in the final report. The Saami Council thanked the financing institutions that had made the project possible.

Decision: SAOs thanked and congratulated the Sustainable Development Working Group (SDWG) and everybody involved in the SLiCA project for its completion. The project is a major Arctic Council achievement providing a solid socio-economic knowledge basis about the living conditions in the Arctic and an excellent foundation for policy making. The report should get widespread circulation and be of use also to other projects dealing with human dimension questions, such as the planned Arctic Human Development Report II.

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ANNEX 3

ACKNOWLEDGEMENTS

The data, tables and graphs in this section all originates from the SLiCA database constructed and developed by Jack and Marg Kruse (see also Poppel et al. 2007: **www.arcticilivingconditions.org**)

The Survey of Living Conditions of the Arctic, SLiCA is

developed in partnership with:

- *Inuit Circumpolar Conference, ICC*
- *Russian Association of Indigenous Peoples of the North, RAIPON*
- *Sámi Council*

funded *by:*

Nordic Council of Ministers, NMR, The Greenland Home Rule Government, The Commission for Scientific Research in Greenland, KVUG, The Barents Secretariat, Nordic Arctic Research Programme, NARP, Danish Research Council for the Social Sciences, SSF, Swedish Research Council for the Social Sciences, Ministry of the interior – Dept. of municipalities, Norway, The Joint Committee on Research Councils for Nordic Countries, NOSS, Social Sciences and Humanities Research Council of Canada, SSHRC, National Science Foundation, NSF, Statistics Canada.

SLiCA was **adopted as an Arctic Council project** under the auspices of the Sustainable Development Working Group, SDWG at the Ministerial meeting in Barrow, October 2000. Included in the Sustainable Development Action Plan, SDAP 2004-06, 2006-08, 2008-2010/11.

The SLiCA Research team*:*

Principal investigators: Birger Poppel (Research Project Chief), Jack Kruse (Program Director), Larissa Abryutina, Hugh Beach, Ann Ragnhild Broderstad, Gerard Duhaime, Catherine Turcotte-Seabury;

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http://www.arcticlivingconditions.org

PART III:
Conclusion

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CHAPTER 7

CONCLUSION: MEASURING CHANGE IN HUMAN DEVELOPMENT IN THE ARCTIC

Joan Nymand Larsen, Peter Schweitzer, Andrey Petrov

7.0 Introduction

In this present volume of ASI we have moved the process of monitoring change in Arctic human wellbeing to the next phase. In the ASI-I report – which we launched in 2010 – we identified domains for constructing Arctic social indicators, identified the criteria for selecting indicators, and based on a careful selection process – including consideration of trade-offs in selecting specific indicators – we presented a suite of indicators which as a collective can tell us something useful about the level of wellbeing among Arctic residents. In addition, we aimed to produce a suite of indicators which could provide us with the critical information necessary to draw conclusions about changes in wellbeing overtime, and enable careful comparison within and between regions.

In the present volume we have presented the results of the second phase of ASI, which includes the measurement of individual ASI indicators and an evaluation of their applicability based on five carefully chosen regional case studies. Our original ambition had been to produce extensive sets of comparable data featuring ASI indicators for each of the six ASI domains. However, this task soon proved to be impossible given the current state of data quality and lack of data availability both at the pan-arctic level and at different geographical scales. We soon realized that we had to limit our analysis to select regions, and furthermore, that our set of indicators could not be compared between regions in any meaningful way given existing differences in data protocols in addition to other data issues. Furthermore, all five regional case studies required our teams to deviate at some level from the technical definitions of at least some individual ASI indicators. It was necessary to make adjustments to tailor the analysis to meet the regional availability of data, and hence, to settle for best possible proxies, or in some cases substitute with second-best alternative indicators – though without compromising the validity of the analysis.

Notwithstanding existing data challenges, we were able to not only draw important conclusions about human wellbeing for each of the five case study regions, but also demonstrate the strength, applicability, and value of the suite of ASI indicators and the proposed ASI monitoring system. Our analysis has also demonstrated that if more complete data sets were available, including primary data collection on harvest, the ASI system could provide a highly relevant and useful tool to inform the policy level, and for engaging in regional and local priority setting including debates on issues of wellbeing and human development for Arctic stakeholders and local users in general. The implementation of a more

complete system of ASI monitoring might be costly indeed, but as far as addressing existing data limitations however, the direct and indirect cost savings in terms of the potential value created by such a system should not be ignored.

Akureyri, Iceland. Photo: Joan Nymand Larsen

For each of the ASI domains; *Fate control, Cultural Wellbeing and Cultural Vitality, Contact with Nature, Material Wellbeing, Education, and Health and Population*, ASI indicators were identified (ASI 2010), and based on selection criteria a small suite of ASI indicators were selected:

i. Infant Mortality (Domain: Health/Population)
ii. Net-migration (Domains: Health/Population and Material Wellbeing)
iii. Consumption/harvest of local foods (Domains: Closeness to Nature and Material Wellbeing)
iv. Per capita household income (Domain: Material Wellbeing)
v. Ratio of students successfully completing post-secondary education (Domain: Education)
vi. Language retention (Domain: Cultural Wellbeing)
vii. Fate control index (Domain: Fate Control)

The suite of ASI indicators developed was applied to five case studies representing different regions in the Arctic:

i. Sakha Republic (Yakutia), Russian Federation
ii. West-Nordic region
iii. North West Territories, Canada
iv. Inuit regions of Alaska, USA
v. Inuit Nunaat - Inuit world – an application of SLiCA data (Survey of Living Conditions in the Arctic)

As discussed above, our application of ASI indicators to five select case study regions reveals that significant data challenges persist in the Arctic. However, these challenges do not prevent us from drawing useful conclusions about the state of human development and wellbeing, including the critical changes that the regions are facing on this front.

At a different level, the results also reveal important trade-offs encountered by relying on a single indicator, and as one chapter team writes: "Importantly, the examination of more than one indicator for several of the domains, and the divergence of trends in terms of human development (e.g. improved infant mortality but worsening suicide rates) accentuates the perils of depending on one indicator. Until we have more fully developed our competence in measuring human development in the Arctic, it would be prudent to continue to collect data on several measures for each domain" (Chp 2).

Some regions are more data rich than others. The Northwest Territories and the West-Nordic Region provide examples of very data rich regions. They provide us with a good measuring stock for drawing conclusions about the usefulness of an ASI monitoring system, and they reveal the potential strength of an ASI system for tracking change in wellbeing. In the case of the Northwest Territories the team concludes: "The NWT presents a case of a relatively data-rich region, and, thus, serves as a good case study for applying Arctic social indicators. It is important that in most instances we were able to develop region-specific indicators (or proxies) that follow the recommendations of the ASI Report. This fact confirms the success of the ASI project in providing a social indicators framework that is compatible with available data from existing sources in both geographical and temporal dimensions"(Chp 4). But even in these regions there are still considerable data challenges associated with difficulties of spatial disaggregation and longitudinal comparisons, varying sampling methodologies, data suppression and so forth.

At the same time, relatively data challenged regions also provide us with useful information – in particular at this early stage of testing the strength and applicability of the framework. The least data rich region (in terms of ASI indicators and their low cost measurement) among our five case studies would be Sahka Yakutia. This case study necessitated deviations from the ASI technical definitions, and required the measurement of proxies and substitute indicators. Still, it enabled us to better detail and understand the challenges we encounter as a result of

data limitations throughout much of the Arctic, and at different geographical scales – and this has value in itself.

A critical challenge was the original objective to devise indicators that would be relatively easy to measure in terms of costs and other resources. This ASI objective prevented us at first from selecting indicators that would necessitate primary data collection, including harvest data, even despite the prominence of subsistence harvest in Arctic contexts, e.g. as exemplified by its non-market contribution to material wellbeing in particular in more predominantly indigenous regions and communities. While in the end we made a decision to include subsistence harvest among the suite of ASI indicators, the challenge involving measurement, consistency, systematic and longitudinal comparisons across and within regions is unlikely to be resolved anytime soon.

ASI indicators will require updating and fine-tuning in the years ahead. One caveat is presented by the rapid changes that prompted the investigation in the first place; clearly, rapid socio-economic changes will challenge even the most robust indicators. This also highlights the importance of adjusting the set of indicators to better reflect today‘s Arctic reality of global connections and their impact on the various human systems. This will be a task for future research.

Local food store in NWT. Photo: Rasmus Ole Rasmussen

7.1 Summary of Major Findings:

The following summarizes some of the major findings from each of the case studies in terms of the applicability of the ASI indicator set, and key conclusions regarding human wellbeing.

7.1.1 Sakha Republic (Yakutia), Russian Federation

The overall results from the Sakha Republic (Yakutia) case study suggest - based on some indicators - that human development in the Sakha Republic is improving, while based on other indicators certain facets of life are still challenging. The results further suggest that regional and rural-urban differences persist, and like many other regions of the North, the areas inhabited by numerically small peoples experience lower-than-average attainments for most of the applied ASI indicators.

ASI indicators on health and population provide a mixed picture: While a decrease in infant mortality indicates an improvement in wellbeing, presistent high suicide rates until recently, and continuing high rates of out-migration suggest a decline in wellbeing. The capital city of Yakutsk, where infant mortality, suicide and outmigration have all decreased, is an anomaly. Socio-economic conditions continue to be depressed outside of the capital, and especially in rural areas. It appears this situation of declining wellbeing is even more notable in the northernmost areas of Sakha Republic (Yakutia).

ASI indicators on material wellbeing indicate that there has been a substantial increase in per household average income in the republic, the improvement is much less marked in rural areas. The fact of high out-migration and stagnant unemployment rates suggest that wellbeing is not improving throughout much of Sakha Republic (Yakutia).

Indicators on education suggest that the Sakha Republic (Yakutia) is experiencing positive human development, though the experience is still very geographically disparate between the capital city and the rest of the Republic. Cultural vitality as expressed in terms of language retention suggest a challenging and adverse situation for the indigenous numerically small peoples of Sakha Republic (Yakutia), though the situation differs among the various indigenous peoples and even within these peoples depending on where they live.

ASI indicators for contact with nature show a substantial drop in the harvest of traditional foods across all three ulusy shortly after the fall of the Soviet Union, a gradual increase in harvest in the early 2000s, and then, in the Nurbinskiy and Suntarskiy ulusy, a drop again.

Using the amount of land allocated to obshchinas as a proxy measure of Fate Control, results suggest an improvement in fate control over the past decade. At the same time, data suggest that obshchina lands are increasingly concentrated in fewer obshchinas. Whether this concentration suggests any decline in Fate Control since 2003 cannot be judged from the data available, but would require more a detailed study of the reasons for consolidation and outcomes of such. It will be critical to further examine the fate control measure (Chp 2).

Merge of traditions and new fashion in Art and Design at University of Yakutsk. Photo: Rasmus Ole Rasmussen

7.1.2 West Nordic Region

The results for the West-Nordic application suggest that there has been general improvement in human development for the region overall. The ASI domains have been relatively easy to apply to the case of the West-Nordic region, with precise definitions and data retrievable in the national statistical systems. Where there are variations between the four entities included in the West-Nordic region it has been possible to arrive at comparative results. This applies to the domains: Health and Population; Material Wellbeing; and Education.

The domains of *Cultural Wellbeing* and *Contact with Nature* make references to choices and activities which are related to involvement and activities based on individual preferences, and therefore depend on new types of data registrations or surveys. Inherent in concepts such as "traditional foods" the inclusion of traditions which are outside the traditional analyses of Indigenous Peoples in the Arctic, makes it is difficult to apply the analysis to populations in

the Arctic not registered as Indigenous. There is an inherited assumption that such "traditional foods" would not be available through commercial systems, although this may not reflect the reality in substantial parts of the Arctic.

And last, the Fate Control index raises some methodological questions on how to determine the level of control.

Overall, the ASI indicators are useful for tracking changing conditions in the West-Nordic region. At the same time, it would be necessary to develop further the domains on Contact with Nature and Cultural Wellbeing in order to make them useful and applicable.

Aquaculture has become an important contribution to the economy in Faroe Islands. Photo: Rasmus Ole Rasmussen

7.1.3 Northwest Territories, Canada

The results suggest that there has been general improvement in human wellbeing in the Northwest Territories (NWT) in the time period from 1991 – 2006 although there were considerable differences among communities. NWT experienced gains in fate control, and declines in cultural vitality, while material wellbeing has been stagnant. It is concluded that ASI indicators are suitable for monitoring human development, that data exist to apply indicators from all six domains, but that population size and composition as well as regional differences are significant variables and should be investigated further. Data reveal a negative relationship among cultural vitality and economic wellbeing, contact with nature and economic wellbeing, cultural vitality, and contact with nature with education and suicide and

fate control. The data also reinforce the difference that population size and aboriginal control make to the interpretation of indicators.

The overall assessment of human development in the NWT using the ASI framework suggests that the territory's residents face considerable challenges in wellbeing and prosperity. Most measures put NWT behind Canadian national indicators. At the same time, recent trends appear to have a positive vector in most of the measured domains. Over the last two decades substantial gains were made in fate control. These gains, however, coincided with a rather stagnant material wellbeing and diminishing vitality of Aboriginal cultures (as measured by the language retention rates).

The results suggest below-expected levels of social wellbeing, such as lower incomes, high unemployment, out-migration, and dwindling language retention. Secondly, there is s stark regional differentiation and disparities among the most prosperous communities, especially the capital, regional centers and resource towns and the rest of the communities, many of which are remote Aboriginal settlements.

NWT communities do not perform well in respect to health and demographics. In addition, out-migration is a reality for most small remote communities. Similarly, the economic wellbeing measured by per capita household income in smaller, predominantly Aboriginal communities is lower, even when income incorporates transfer payments. Jobs scarcity results in limited earned income received by residents of remote, largely Aboriginal communities.

The study found that the geography of material wellbeing remained fairly constant over the last 15 years, although the discrepancy between poorest and richest communities slightly increased highlighting the trend of increasing disparity in material wellbeing. Most substantial income gains are found in the richest communities, which are also administrative and economic centers.

Stronger erosion of Aboriginal languages is observed in Yellowknife and other larger towns. Language retention levels are also surprisingly low in some Aboriginal communities, such as Aklavik and Tuktoyaktuk. Between 1991 and 2006 language retention rates declined. In other words, based on the language retention indicator the cultural wellbeing of Aboriginal people in the NWT declined.

The closeness to nature indicator follows the general geography of Aboriginal population distribution and community size and location. Larger towns with few Aboriginal households exhibited very low levels of closeness to nature. In contrast, in more remote, Aboriginal-dominated communities the majority of households were consuming meat and fish obtained through fishing and hunting.

High school and university degree attainment rates indicate a persistent education gap between the NWT communities and the rest of Canada as well as disparities within the Territory. The education gap leads to continual earning and employment gaps in communities and population groups without access to education and training.

Aboriginal communities have higher levels of cultural wellbeing and stronger local control over their affairs, but lack economic self-sufficiency. Aboriginal communities such as Deline, Whati, Gameti, and Behchoko, show the highest composite fate control. (Chp. 4).

The Inuvik Community Greenhouse, – NWT, where flowers and vegetables are grown by the inhabitants of Inuvik. Photo: Rasmus Ole Rasmussen

7.1.4 Inuit Region of Alaska

The Inuit regions of Alaska provide an interesting application and testing ground for the ASI framework. Data availability for the region is comparatively good. Results suggest considerable variation between and within regions. The regional centers are more similar to smaller communities than expected (especially on the North Slope); the Nome Census area has the biggest differences between regional center and rural communities. Nome is overtaking Barrow in terms of several "modernity" indicators: per-capita income, employment, and post-secondary education.

The three sub-regions that make up the Inupiaq cultural region of northern and western Alaska provide a variety of useful examples of ways in which Arctic communities are exercising a modicum of control over the forces that impact their wellbeing. By conducting a comparative analysis of the percentage of surface lands controlled by the inhabitants through municipal governments, Native organizations, and community structures, we can gain a better understanding of how the exercise of fate control impacts the wellbeing of northern communities.

Higher education has played a prominent role in the evolution of the political, economic and educational arenas that constitute the Inupiaq region of Alaska today.

Data suggest that Alaska Natives, along with the Native American population in general, have important health issues that give them a life-expectancy lower than that of the general population (Chp 5).

7.1.5 Inuit Nunaat – Inuit world an application of SLiCA data

View from the top of the village down to the harbour in Sarfannguaq, West Greenland. Photo: Rasmus Ole Rasmussen

The SLiCA analysis regions – 'the Inuit Settlement region' – includes: Chukotka (Western Chukotka, Anadyr, Central Chukotka, Eastern Chukotka); Alaska: (Bering Straits, NANA, North Slope); Arctic Canada (Inuvialuit, Nunavik, Nunavut, Nunatsiavut) and Greenland (Northern Greenland, Mid Greenland, South Greenland, Disco Bay, East Greenland).

SLiCA data were gathered through almost 7,000 personal face-to-face interviews. The data meet the basic ASI criteria of robustness and scalability, but as the data are gathered through personnel interviews they not meet the basic ASI criteria of availability, affordability, and ease of measurement. As the first SLiCA project focused on indigenous peoples of the Arctic data are not inclusive to other Arctic residents (apart from immigrants in Greenland, mainly Danes). Still the survey can help inform the ASI measures, and may contribute to the task of establishing long-term monitoring of human development in the Arctic as some key information will only be available through interviews.

SLiCA data that coincide well with ASI indicators include for health and wellbeing: Self-rated health, satisfaction with life as a whole in this community, satisfaction with quality of life in this community, and satisfaction with life as a whole. For material wellbeing the data and analyses based on the SLiCA Household Production Model can contribute to distribution of incomes and the significance of subsistence. This model regarded the household in a subsistence-based economy as an enterprise possessing different factors of production and being not only a production unit but also a collective consumer and investor. The SLiCA survey found that the combination of market and non-market activities (hunting and fishing for example) and the influence people have over natural resources and the environmet were important in explaining overall wellbeing.

The SLiCA project focused on the resources of the individual in relation to employment, which implied that both qualifications and competencies needed in traditional livelihoods and in occupations within the production and service sectors had to be analysed. Using the SLiCA category 'Vocational school or college' which corresponds to the category 'post-secondary education' used in the ASI, the data show that less than 50 % of the Greenlanders had a post-secondary education that was slightly larger than in Chukotka, almost twice as large as in Alaska and almost three times that of the Inuit settlement regions in Northern Canada.

SLiCA data on cultural wellbeing include data on 'view of nature', 'traditional food', 'childhood upbringing', 'hunting and fishing', 'meeting expectations of family and indigenous friends' and 'contacts with other indigenous people' as well as using the indigenous language. Language retention is a very strong identity marker it is thus also exposed to much political attention. Whether the focus is on understanding, speaking, reading or writing there is a significant difference between self-reported abilities among the Inuit in Canada and Greenland on one side and in Chukotka and Alaska on the other.

The SLiCA survey included questions on Contact with Nature. Results show that the Inuit view nature as important to maintaining the indigenous identity. More than 95% in Greenland, Alaska and Chukotka find 'view of nature' an important identity marker. Likewise, a significant majority perceive 'eating traditional food' and 'hunting and fishing' as important identity markers. These findings justify 'carving out' contact with nature as an important domain for human development.

SLiCA also includes indicators on fate control, which correspond well with the ASI; e.g. political participation; political influence; knowledge about politics; language retention; satisfaction with influence on specific matters like renewable resources.

Based on the SLiCA case study we can conclude that personal interviews including questions on individual wellbeing, different background variables and living conditions as well as perceptions and attitudes are the precondition and basis for more thorough analyses of cause and effect relationships.

7.2 ASI Monitoring System

Human Development Monitoring in the Arctic: Ideas and Considerations

The long-term monitoring of human development in the Arctic would be greatly facilitated by the regular and frequent collection and reporting of relevant data, including those required for the proposed small set of ASI indicators. We suggest that any system for monitoring Arctic human development inculcate principles of data collection, processing and dissemination outlined in the ASI I Report and implemented in the application studies in ASI II. The core pillars of such a monitoring system should include:

- **Use of high quality data that meets standards** for robustness, validity, reliability, comparability, scalability and ease of measurement and interpretation (as discussed further in ASI I). The data needs to be clearly relevant to one or more of the six domains of Arctic human development (health and population, material wellbeing, education, cultural wellbeing and cultural vitality, contact with nature, and fate control), be sensitive to change over time, be available at least down to a regional level, and be applicable to, and reported separately for, indigenous and non-indigenous populations. Robustness entails the temporal stability of the indicator over time. Other considerations include to what extent collected data are comparable across countries, and whether the data are accessible. Since it is desirable to monitor human development at various spatial scales (circumpolar, national, regional, community, household and individual) the data used should be scalable, i.e. collected and available at different geographical scales to the maximum extent possible.
- **Preference for available and affordable data**. Any monitoring system will need to rely on existing and continuously collected data available from national, regional and local agencies, and other sources that provide such data at no or small cost. Another aspect of availability is the periodicity with which regularly collected data are gathered: data collected on at least a five-year frequency are preferred. The criterion of data affordability considers the on-going costs of data collection and monitoring. A monitoring system should mostly use data gathered during on-going censuses and surveys conducted by government agencies (though not necessarily exclusively). Such a monitoring system might rely in some cases on new data collection (for instance, were a future SLiCA to be conducted). A monitoring system would encourage collaboration among data collection entities in Arctic countries, which could occur under the umbrella of an "ASI Observing Network" (see below). Collaborative resource-sharing efforts are considered to be the most cost effective way to gather the critical amount of data necessary for monitoring human development in the Arctic.
- **Community engagement in monitoring**. In addition to conventional data sources, such as government statistical offices, NGOs, etc., an Arctic human development

monitoring system should consider how to incorporate community self-monitoring**,** for which appropriate methodologies will need to be developed and tested in close collaboration with the communities involved. Self-monitoring is critical for ensuring relevance, accessibility and high resolution of data collection. It is also important for increasing potential community benefits from such monitoring.

- **Development of inclusive and adaptable measurement frameworks**. While we suggest that a system of monitoring of human development be based on the framework of the six domains and key indicators presented in the ASI I Report, we also note that it should be adapted to the local context and needs, with the expectation that the collected data will meet data quality requirements noted above. In addition, a monitoring system should apply the criterion of *inclusiveness* when selecting indicators and data sources: that is, data for indicators need to be inclusive of all sectors of the arctic population — male and female, Indigenous and non-Indigenous, rural and urban, etc.

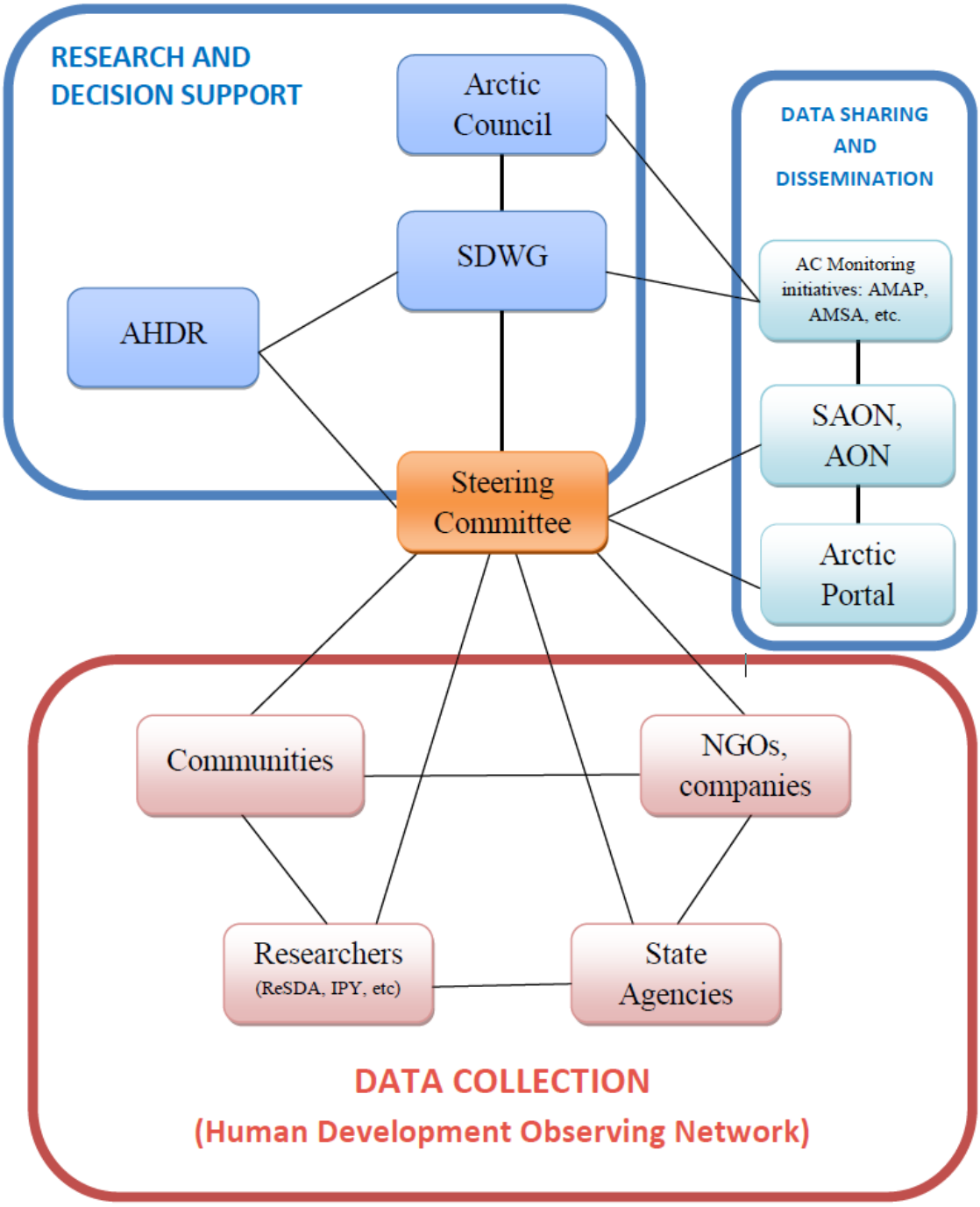
- **Focus on dissemination and utility of monitoring for decision-support.** Data and/or monitoring methodologies and results collected, including by national and regional statistical agencies, under any such monitoring system should be **free and available** for all interested stakeholders, including researchers and communities. A system for the storage and dissemination of relevant data on human development could be created in collaboration with the Arctic Portal, SAON and other partners.

Ideas Regarding the Structure of a Monitoring System for Human Development in the Arctic

The structure of a monitoring system for human development in the Arctic should, in our opinion incorporate three components: 1) data collection, 2) data management, sharing and dissemination; and 3) research and decisions support (see *Figure)*. The data collection component would include data gathered by various agents, such as communities, government agencies, NGOs, companies and individual researchers. These data and/or results of monitoring could be shared via a network of collaborators across the Arctic. The coordination of such a monitoring network could be guided and overseen by a permanent steering committee. Such a committee could be actively engaged in dissemination and transfer of the appropriate methodologies and development of regionally-adapted monitoring systems. We note that a pilot monitoring system for the Inuvialuit Settlement Region in Canada is already being developed, at the request of the Inuvialuit Regional Corporation and as part of the Resources and Sustainable Development in the Arctic Program (ReSDA; http://dl1.yukoncollege.yk.ca/resda/) (see Box).

Shared data and monitoring results could be made available via the Arctic Portal and other data repository and dissemination programs (SAON, etc.) to the Arctic Council, researchers and general public. A human development monitoring program could lay the foundation for current and future decennial Arctic Human Development Reports. A mechanism should be

developed to provide regularly updates to the Arctic Council and to other interested parties and stakeholders on the state of human development in the Arctic.



Conceptual Diagram for System for Monitoring Human Development in the Arctic

Any such mechanism would best be developed in close consultation with the Arctic Council's Sustainable Development Working Group. The monitoring network could serve as a central source for providing data on human wellbeing for Arctic Council decision support.

BOX: Inuvialuit Baseline Indicators Project: A Pilot Monitoring Project

The Inuvialuit Baseline Indicators project is a collaborative effort between the Arctic Social Indicators (ASI) project, the Resources and Sustainable Development in the Arctic (ReSDA) Program and the Inuvialuit Regional Corporation (IRC) representing the Inuvialuit of Canada. Evolving from a workshop held by ReSDA and ASI-I, Inuvialuit Baseline Indicators (IBI) project has as its goal 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 analyze community-based data.

The Inuvialuit region has been affected by a number of resource boom cycles associated with the resource activities in the Mackenzie Delta and more recently in the Beaufort Sea. The IRC, created as a result of the Inuvialuit Comprehensive Land Claim Agreement (1984), has been collecting and publishing selected socio-economic data to aid in decision-making process. It provides public access to this data to IRC members. Given a growing interest in Arctic resources within the ISR, IRC engaged in collaboration with a social impacts monitoring team of polar scientists to develop a system of indicators based on past experiences in ISR and across the Arctic, local relevance and data availability.

The objectives of the IBI project include: (1) using the ASI circumpolar framework of social indicators, to provide a background baseline analysis of IRC socioeconomic characteristics in comparison with Northwest Territories (NWT), Inuit regions of Canada/USA, and other circumpolar jurisdictions; (2) using ASI experience and community consultations to identify more relevant domains that should be included in to the socioeconomic monitoring system; (3) defining baseline indicators suitable for monitoring socio-economic conditions and impacts of resource development in ISR; (4) developing procedures that will enable community-based collection, management, and analysis of data by local actors; (5) collecting necessary data and expanding the IRC database; and (6) developing and disseminating Inuvialuit Baseline Indicators data and analysis to inform the region's stakeholders and to aid in IRC's decision making and ensuring community awareness.

The first stage of the project was to analyze ISR socio-economic wellbeing using the indicators framework developed by the ASI under the auspice of the Arctic Council. The assessment was conducted for the six ASI domains: health and population, material wellbeing, education, cultural vitality, contact with nature, and fate control. The analysis revealed considerable internal differences within the ISR, especially between Inuvik and other

communities. On most indicators ISR fared better than other NWT regions (unemployment, engagement in traditional activities, land claim status and fate control) or close to average (incomes, dependency on government transfers, consumption of county food, education). ISR fared worse than other NWT regions in respect to language retention and out-migration rates. In comparison with Inuit communities in Nunavut, ISR had a generally higher level of material wellbeing, but demonstrated very low language retention, low consumption of traditional food, and an inferior level of fate control. The long-term trends (between 1986 and 2010) were positive for several indicators, such as participation rate in education, educational attainment, housing, teen birth, engagement in hunting and fishing. Trends were negative for crime, ability to speak mother tongue, and dependency on income support, among others. The analysis shows that although ISR appears to have achieved and maintained relatively high levels of wellbeing across most of the six domains, it still faces considerable social challenges and has to deal with interregional inequalities.

Suggestions for Future Options and Opportunities Regarding Monitoring of Human Development in the Arctic

Based on the work of ASI-I and ASI-II we present some concrete suggestions on how a monitoring system for Arctic Human Development might be established. We suggest that:

1) *An Arctic Social Indicator monitoring system be designed based on principles and data criteria outlined in ASI I and ASI II. This system should be made a priority for current and future circumpolar monitoring initiatives, including a posible future International Polar Initiative. We see such a monitoring system as requiring the following:*

a. Encouraging national statistical agencies to participate in development of a metadatabase identifying ASI indicators that are already monitored by a national agency.
b. Establishing an international task force composed of national statistical agency analysts and Arctic researchers to identify the special tabulations required to produce comparable ASI indicators and to recommend approaches to produce these special tabulations.
c. Engaging local communities, non-government organizations and private parties in developing and conducting locally-focused social indicators monitoring projects, including community self-monitoring. The methodology for such projects would be created via collaboration among communities, stakeholders and scientists.
d. Encouraging national and international funding agencies and scientific associations to assist in building a circumpolar network of scientists actively engaged in monitoring wellbeing. Promote data sharing, exchange and dissemination among researchers and research organizations.

2) *Collaboration be promoted among monitoring projects in the Arctic, notably but not confined to, Arctic Observing Networks, (AON), Sustaining Arctic Observing Networks (SAON), and a new project that we outline here for monitoring human development.*
The ASI II team endorses and supports the SAON recommendations and urges further collaboration among, and coordination of, the monitoring activities and projects focused on the Arctic. Monitoring human development through a set of robust social indicators should form a fundamental part of monitoring activities along with biophysical indicators of ecosystem health.

3) *The possibility of initiating an "ASI Phase Three", with the objective of monitoring the six identified domains of human development in the Arctic, should be explored. "ASI III" could be the driving force in establishing and developing an Arctic human development monitoring system.*

ASI I and II have made significant progress toward the development of a system for tracking human development in the Arctic. We have identified a small set of indicators to monitor Arctic human development and tested, validated and refined this set for several Arctic regions. The next steps are to

a. encourage Arctic governments to adopt the indicators for the monitoring of human development;
b. to ensure access to data for the indicators;
c. to continue to evaluate the utility of the ASI indicators in different regional and local contexts
d. to conduct periodic synthesis of new knowledge pertaining to human development in the Arctic (e.g. decennial AHDRs) applying data and information from a variety of contributors and sources including local communities, stakeholders, statistical agencies and research institutions.

The ultimate goal of creating an Arctic human development monitoring system would be to assist Arctic governments and communities to *promote human development* and the *highest possible quality of life in Arctic communities*. We believe that the monitoring system described in this volume, as outlined above, would enable Arctic states and communities to measure and monitor human development in the Artic, and accordingly, based on reliable information on trends, to take actions to ensure and advance the wellbeing of all Arctic peoples.

7.3 The International Polar Year and the Monitoring of Human Development in the Arctic

The International Polar Year (IPY) 2007-2008 has been the largest coordinated research program in the polar regions to date, and has mobilized tens of thousands of researchers,

students, and citizen scientists. Unlike previous IPY endeavors, IPY 2007-2008 was characterized by the inclusion of the social science and humanities, as well as of local communities, under the theme of *Human Dimension*. Given that ASI was one of the 228 international IPY projects, a closer look at some of the other IPY projects dealing with human development in the Arctic seems appropriate.

The recently published edited volume "Understanding Earth's Polar Challenges: International Polar Year 2007-2008. Summary by the IPY Joint Committee" (Krupnik et al. 2011) provides extensive material about the organization, conduct and results of the most recent IPY. For the social sciences and humanities, two articles in that volume are of particular relevance: "Polar Societies and Social Processes" (Krupnik and Hovelsrud 2011) and "Human-Based Observing Systems" (Hovelsrud, Krupnik and White 2011). In addition, Krupnik's (2011) "Connecting to New Stakeholders in Polar Research" – which deals with the engagement of Arctic residents during IPY – deserves to be mentioned here.

The article by Krupnik and Hovelsrud (2011) discusses all 28 active social science and humanities projects that were endorsed by IPY (in addition, five knowledge exchange projects – conferences, publications, etc. – are mentioned as well). ASI is mentioned prominently on various occasions, including under the heading "from local to polar". Many of the other projects discussed in that chapter are fascinating in their own right but have little to offer to ASI.

Eight of the 28 projects are treated separately in the article by Hovelsrud, Krupnik and White (2011). All of them can be labeled as "Community-Based Monitoring" (CBM). While ASI-I and ASI-II have by design not been community-based but pan-arctic, CBM projects are methodologically relevant for the future of the ASI endeavor. One of the projects discussed is ELOKA (Exchange for Local Observations and Knowledge of the Arctic), which provides data management for local and traditional knowledge. ASI, which works with quantitative, standardized data sets most of the time, is particularly interested in ELOKA's goal of developing protocols for the collection, storage, and access of traditional knowledge data.

Another relevant CBM IPY project is CAVIAR (Community Adaptation and Vulnerability in Arctic Regions), which involved 26 communities in eight Arctic countries. Its vulnerability assessment framework did not only document climate and ecological change but also looked at social, economical, cultural and political stressors. The project involved a participatory methodology and involved local partners from the start. At the same time, it addresses complex linkages in coupled social-ecological systems, thereby bringing the social and natural sciences into dialog. Among the lessons learned are ways of how to best downscale climate models for local use.

Vulnerability is also at the center of the EALAT project ("Reindeer Herders Vulnerability Network Study: Reindeer Pastoralism in a Changing Climate"), which was initiated by reindeer herding organizations and the Sami University College. Focused on reindeer herding, it provides venues for coordinated observation and monitoring, with the ultimate goal of empowering reindeer herders. NOMAD (Social-science Migrating Field Station: monitoring

the Human-Rangifer Link by Following Herd Migration) was centered on the Kola Peninsula in Northwestern Russia, and produced qualitative data by researchers and community members. CARMA (CircumArctic Rangifer Monitoring and Assessment Network), on the other hand, focuses on wild reindeer or caribou. The multitude of reindeer/caribou project is an expression of the importance of *Rangifer* for the peoples of the North.

Finally, SIKU (Sea Ice Knowledge and Use: Assessing Arctic Environmental and Social Change) uses local and traditional knowledge about the environment as an indicator of change. One of the results of SIKU is that local observations can be more fine-grained than instrumental records. Involving Inuit partners from more than 30 communities in Russia, Alaska, Canada, and Greenland, SIKU not only recorded local and traditional knowledge but was engaged in ongoing monitoring activities of local ice and weather conditions. The lesson is that community members are very interested in monitoring conditions they consider important, meaningful, and relevant. Future ASI endeavors should be able to capitalize on that insight.

7.4 Concluding Remarks

While the pan-arctic, comparative nature of ASI-I and ASI-II has been a large part of its success, it also prevents close community interaction. The future of ASI is intended to overcome this limitation without sacrificing its global outlook. As outlined above, future ASI activities will include communities and other stakeholders at various stages of the process.

In addition, however, there is room for a multitude of local and regional spin-offs from ASI. In recent years, we have responded to many calls for permission to use the ASI framework in various contexts. As a matter of fact, we hold no patents to ASI and the principles informing ASI domains and indicators have been published and are part of the public domain. Assuming that the proper credits and references are given, anyone can use ASI as their starting point.

We encourage the critical use of ASI indicators whatever the user-defined context may be. We are convinced that by applying the ASI framework in specific situations – similar to what we intended with this book – further development will be enabled. Undoubtedly, this will lead to the recognition that certain domains and indicators are more relevant in some contexts than others. Thus, what we need from "ASI users" is neither permission requests nor royalties but feedback about lessons learned. In that spirit, we want to encourage our readers to put ASI into practice or to the test but hope that you will share your experiences with us.

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