Planning for Community Health:
A study in the Inuvialuit Region,
Northwest Territories

by

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis.

This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

Land use decisions can facilitate or hinder the creation of healthy communities and as such, the health and well-being of their residents. This research project has the goal of exploring the connections between land use planning and community health in remote, Arctic communities; it asks a central question: if we were given the means to improve community health through planning, how would we best proceed?

Arctic communities are experiencing rapid change as a result of demographic, economic and technological factors. The pressure for resource development in the Arctic is significant and communities are facing challenging decisions in terms of land use in their regions. In addition, measures of health and well-being indicate health deficits in Arctic communities in comparison with non-Arctic communities in Canada. As such, Arctic communities represent an important study region due to both this compelling health deficit, as well as increased pressure on the land base. For this research project, the Inuvialuit region, NWT was used as a case study.

A qualitative inquiry was undertaken given the research objective of generating localized and specific information in the context of remote, Arctic communities. In addition, limited information was available on the subject area which made this 'theory generating' methodology most relevant. Fifteen semi-structured interviews were conducted with expert/ knowledge holders, the majority of whom were from the study area. Information gathered was analyzed using the constant comparison method. Available statistical and quantitative data from secondary sources was compiled into community profiles and used for comparison with interview data and to add richness to the analysis.

The study indicated that there was strong connection between community health and land use in the region. The reasons given for this connection were as follows: cultural connection – describing the basis for culture that arises from the historic and current connection with the land, self-determination – as it relates to ownership and control over ancestral lands, functional relationship with land – in terms of services provided including air, water, wildlife, and food, economic basis in the land – in terms of monetary value (or replacement value) of goods obtained directly from the land and the holistic connection between the land and community well-being – describing the innate value of the land as it positively impacts people's health beyond the functional or cultural value. Variations in infrastructure and services between communities were examined but not found to be strongly

linked to community health; however there is some evidence to indicate that the level of participation in cultural activities is linked to community health.

Promoting and increasing levels of community health in the study region was shown to be linked to increased opportunities for education, local governance and control over community and regional affairs, economic development that strengthens the traditional economy, healing and treatment for individuals, and recreation opportunities that promote personal development.

Implications for planning in the study region were examined. Collaborative planning theory was used as a basis. The recommendations for planning in the study region were: recognizing the historical and cultural connections with the land, integrating the hinterland and the town lands in community design, designing to support social networks, local control over the planning process, and planning to enhance opportunities in northern communities. Explicitly considering community health in planning policy holds some promise for dealing with the complex issues surrounding land use in the north in particular in providing a measure emphasizes the needs of the local communities.

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Chapter 1: Introduction

Good health is the bedrock on which social progress is built. A nation of healthy
people can do the things that make life worthwhile, and as the level of health
increases so does the potential for happiness.

(Lalonde, 1981)

1.1 Introduction

Land use decisions can facilitate or hinder the creation of broad measures of health at the community level as well as such the health and well-being of individual residents. Examining how land use planning can positively influence health and well-being (defined from an Aboriginal perspective) in remote, Arctic communities may be of special importance due to the strong traditional connection with the land in these communities, which is strongly connected to health of northern communities. Further, Canada's North can be described as experiencing a disproportionate burden of ill-health in comparison with the Canadian average (Young, 2003) and as such, presents an important case for studying possible means for improving community health.

Arctic communities are experiencing rapid change as a result of demographic, economic, technological and cultural factors. The pressure for resource development is significant and communities in Arctic regions are often being asked to make challenging decisions in the trade-offs between economic development and the preservation of the landscape and traditional lifestyles (Wolfe, 1989; Arctic Council, 2004). Comprehensive land claim agreements, self-government negotiations, and an overall trend towards devolution of decision-making power into the hands of local communities, demonstrates an institutional recognition of the importance of Aboriginal self-determination and right to self-government. However, these developments also come with significant capacity burdens that northern communities may need time and resources to meet (Inuvialuit Regional Corporation, 2008). By any account, Arctic lands are under pressure and planning in the region needs to recognize both the unique opportunities and constraints of the North.

1.2 Study Objectives

The goal of this study is to explore the connections between community health and planning. In developing the study objectives, a central question kept arising: if given the means to improve community health through planning, how would we best proceed - in other words, what piece does planning play in solving the community health puzzle in the North? Studies of the links between planning and health in urban parts of Canada (and the rest of the world) are only just now gaining momentum in the research community and the Arctic setting provides a unique and different set of circumstances to examine. Nonetheless, urban-based research is showing strong evidence to support land use planning as a tool for improving community health, and given both the health issues in Arctic communities and the pressures on land use and regulation in the region, a study seemed both timely and worthwhile.

As a result, the following research objectives were developed: 1) to examine the connection between land use in the Inuvialuit region (the chosen study region) and health and well-being of the communities in the region, 2) to explore how land use planning can positively influence health and well-being in this context, and 3) to make suggestions for planning policy given the overarching objective of health and well-being at the community level.

At the heart of the research is the central question: Given that land use planning can impact health and well-being, what are the interventions in remote, Arctic communities that can make a useful impact? Underlying this question is the assumption that improving community health is a worthy goal of land use planning in this setting.

1.3 Connections between Planning and Health

The connection between land use planning and public health date back to the very inception of planning practice. In fact, the primary driving force behind the development of land use planning was the Industrial Revolution city – massive industrial growth, pollution and waste from both human and industrial sources, and rapid growth and development in cities had created problems of an unprecedented scale (Kotkin, 2005; Barton H. , 2005); disease and contamination were major problems that were addressed through a set of reforms known as the Sanitary Revolution. These standards put in place requirements for the minimum separation of buildings, separation of land uses, as well as sanitation and waste disposal laying the foundations for modern land use planning (Kotkin, 2005; Hancock, 1993).

Since then, land use planning and public health practice have, to a large extent, diverged. While land use planning has concentrated on the arrangement of land uses in a city or region, there has been less of a focus on 'health' as an outcome of planning, in large part due to the overwhelming success of the Sanitary Revolution measures in combination with the medical advances. Having dispensed of the significant public health issues presented by the Industrial Revolution city, a variety of other focuses emerged in land use planning, including the efficiency of transportation, prescriptive measures on land use mixes and urban form, preservation of historic values or character, and others. It is only recently that there has been a renewed interest in 'health' as an evaluative focus of land use planning.

The renewed interest in the relationship between health and planning can be greatly attributed to an increasing awareness of emerging population health challenges in which our environment has been strongly implicated. Health challenges, termed the 'diseases of modernization' (Myers, 1984) due to their increased rates associated with a 'modern lifestyle,' have come to the forefront in terms of significance in Canadian populations, primarily in the form of chronic diseases. Significant causes of ill-health in Canada are heart disease, respiratory disease, cancer, mental health diseases and motor vehicle accidents (Ontario Professional Planning Institute, 2007) In particular, high rates of asthma, cardio-vascular disease, obesity (and related illnesses) are the subject of attention in recent debates in planning and health; the obvious connections between low rates of physical activity, obesity and urban form are being explored as are the connections between urban design, air quality and respiratory disease (Ontario Professional Planning Institute, 2007).

Parallel research in the field of public health has shown that health outcomes are affected by health determinants in the following proportions: 25% health care system, 15% biological endowment, 60% social, economic and physical environment (Senate Standing Committee on Social Affairs, Science and Technology, 2001). This makes a compelling case for exploring interventions into population health and well-being that go beyond the largely curative focus of our health care system. Many preventive health measures lie outside the influence of our health care and public health systems (as they are currently conceived); a significant number of these fall within the realm of planning practice and policy (Berlin, 1989).

1.4 Health in Arctic Communities

The health of Inuit populations (the majority of the permanent population in most regions of the Arctic) lags significantly behind that of the non-Aboriginal Canadian populations (Bjerregaard, 2004;

Duhaime, 2004; Kirmayer, 2003; Kozlov, 2003; Waldrum, 1995; Young, 2003). Life expectancy, a commonly used indicator of population health status demonstrates this discrepancy; overall life expectancy in Canada is 78 years, and Inuit life expectancy in Canada is 67.8 years. While Canadian life expectancy has increased over time, the latest figures indicate that Inuit life expectancy is currently in decline, a concerning trend considering that Inuit life expectancy is currently at the level measured for Canada in 1948 (Inuit Tapiriit Kanatami, 2007). Bjerregaard P. , Young, Dewailly, & Ebbesson (2004) document the changes in Inuit health over time and demonstrate the linkages between this decline and Westernization; accidents, suicide, violence, addiction, and chronic disease rates have risen alongside the accelerating social-cultural changes of the last 50 years.

In addition to the health challenges experienced by the region, the remoteness of Arctic communities means that equivalency in terms of service provision is hard to achieve and communities are often under-resourced in both health, social service, recreation and other infrastructure and personnel. Current pressure on Arctic regions due to a variety of factors including resource development interests is resulting in what local communities are describing as an accelerating rate of change and creating strain on social and cultural traditions and norms which have traditionally been a source of strength and well-being for the people of the North (Inuvialuit Regional Corporation, 2003).

1.5 Land use in the Arctic

The dominant world view in Arctic communities continues to be one that sees the world and environment in a more holistic way than the reductionism that often characterizes Western world views. The connection to the land in the North has a profound spiritual and cultural meaning and is considered to be of primary importance to community identities and to cultural continuity (Duhaime, 2004; Bjerregaard P. , Young, Dewailly, & Ebbesson, 2004). In regions where land claim agreements have been settled both the provisions set out in the agreements as well as local governance structures reflect the importance of the land to the communities.

The study region, located in the northwestern region of the Northwest Territories, along the Arctic coast and encompassing the Mackenzie River delta, comprises six communities and is similar to many Arctic regions in that the communities are remote in comparison with southern communities, and the connection to the land is much stronger than in a southern context (Wolfe, 1989). The importance placed on the environment is highlighted in the Inuvialuit Final Agreement, also known as

the Western Arctic Claim, the land claim agreement for the region, settled in 1984, which states in its preamble three goals central to the implementation of the agreement:

- *Preserve Inuvialuit cultural identity and values within a changing northern society,*
- *Enable Inuvialuit to be equal and meaningful participants in the northern and national economy and society,*
- *Protect and preserve the Arctic wildlife, environment and biological productivity.*

It further states that the third goal, the preservation of the environment, is of the utmost importance, above all others (Western Arctic Claim Agreement, 1984).

Arctic lands are massive; they represent approximately one third of Canada's land mass and encompass about 50% of its coastline (Simon, 2008). Despite their size, Arctic lands can be described as ecologically fragile; much of the region is windswept, treeless tundra characterized by low precipitation levels, below freezing temperatures for most of the year, and permafrost in much of the region. In the summer months when the temperatures go above freezing, much of the land is covered by marsh and swamps due to limited drainage through the frozen sub-soil (INAC, 2006). Considered harsh by southern standards, these lands have been home to the Inuit who have thrived and developed a culture deeply rooted in the land and surroundings (Simon, 2008).

Communities in Canada's Arctic are distributed throughout the North, their size ranges from 200 people to over 3,000. Arctic communities are remote; most are accessible only by boat or aircraft. All have modern telecommunications service but the cost of living in the communities is very high. Communities have municipal status and are not reserve based as many First Nations communities are. All regions in the Arctic have settled Comprehensive Land Claim Agreements which are constitutionally protected treaties between Inuit and the Government of Canada and provide a framework for the role of Aboriginal groups in land use and regulation in their areas (Simon, 2008).

Land use in the Arctic encompasses a wide variety of activities. Traditional activities including hunting and gathering play an important role in the daily life of Arctic residents; traditional foods gathered remain a significant food source for many households in the region. Other land use activities include resource development activities of significant size and scope including mining, oil and gas development and hydro-electric developments (Simon, 2008).

1.6 Research Objectives

The goal of this research project is to explore the connection between land use planning and health and well-being in remote Arctic communities. It has as its central aim the question: Does planning play a significant role in community well-being in remote Arctic communities? This study was undertaken using a grounded theory approach, a qualitative methodology designed to allow researchers to generate theory about a phenomena of interest (Trochim, 2005) (described in further detail in 3.2.2), and uses the Inuvialuit region, NWT, as the study area.

While there is a notable body of research that is being generated on 'healthy cities and communities' and much policy interest is evident in this area, there is little in the way of research looking at the policy implications of land use planning as it relates to health and well-being in remote, northern communities. This was noted by Young (2003) in his review of research on Aboriginal populations with regards to their health needs: "a case can be made to compare communities in similar circumstances in terms of variables such as access to health services and infrastructure" (Young, 2003, p. 421). Further to this, at the National Inuit Health Forum in 2001, over 40 delegates from key stakeholder groups set three priority areas for further research; one of the three priorities was research to define the underlying causes of Inuit health problems. This research project is in keeping with that goal, in that it looks at both the underlying causes of community health in the study area and possible planning interventions to improve community health in the region.

In exploring the connections between land use planning and community health, the following objectives will be considered: to explore the connection between land use in the Inuvialuit region and health and well-being of the communities in the region, to examine how land use planning can positively influence health and well-being in this context, and to make suggestions for a planning policy given the overarching objective of health and well-being at the community level. Inherent in these objectives is the basic premise that northern planning (and other) policy development should proceed consistent with the inherent right of Aboriginal peoples to self-determination.

1.7 Definitions

For the purpose of this project, the following definitions of terms were used throughout:

a) Planning – for the purpose of this project, planning was determined to be anything under a purview of a planner in standard planning practice or anything that might reasonably be argued to be a necessary inclusion in planning practice

b) Community – it should be noted that land use is conceptualized more holistically by northern communities (Fenje & Rees, 1987), as such the hinterland surrounding communities as well as the land within the settlement boundaries was considered in relation to community land use, therefore for the purpose of this study community was defined as being the town site as well as the surrounding hinterland, a definition which is reflective of local patterns of use.

c) Health and well-being – in this study, health and well-being were considered holistically in keeping with the Inuit view of health (Inuit Tapirit Kanatami, 2004). Inuit take to be important in health not only the health of the individual, but also the health of the community, the environment and land. Health is considered to incorporate mental, physical, spiritual, emotional and social aspects of well-being (National Aboriginal Health Organization, 2006).

d) Community health and well-being – community health and well-being were defined for the purposes of this study as being the conditions within a community that provide for and promote individual health and well-being (as defined above).

e) the 'North' – northern communities were defined as those geographically located north of 60 degrees and existing within the Northwest Territories, Nunavut, and the regions of Nunavik (northern Quebec) and Nunatsiavut (northern Labrador). While there are important regional variations between these regions, I felt that there was enough similarity between them, in contrast with other Canadian communities to provide for some utility in this working definition. The population profile of northern communities, is in most cases, vast majoIn some instances, these communities are also referred to as 'Arctic' communities.

1.8 Structure of Thesis

This thesis has been organized into six chapters. An introductory chapter provides a review of the basic concepts considered in designing the study as well as outlining the objectives and underlying assumptions to the project. The second chapter provides a literature review focusing on the intersection between planning, community health, and northern/Arctic health research; the intersection of these three fields being the focus of this study. In addition, the historic roots of planning and public health were reviewed and connections with the current resurgence of interest in health related planning. Land use, both historically and currently in the Canadian Arctic and the study region in specific are reviewed. Health profiles and disease burden profiles for the study region were reviewed and situated in both the historical and present context.

The third chapter is an overview of methods employed for this study as well as their methodological grounding. Chapter four outlines the results of the study and analysis of these findings. Chapter five presents both conclusions and recommendations for planning policy with the goal of community health. Finally, appendices contain supplementary material from the research process. The appendix section further presents community profiles of the study communities including statistics compiled from several sources in areas relating to the research objectives which was used as data source in the analysis.

Chapter 2: Literature Review and Research Context

2.1 Introduction

This thesis is situated at the intersection of land use planning and community health research, and seeks to contribute to the growing field of 'healthy communities' research in which the health and well-being of communities is enhanced and supported by planning policy and practice. In completing this research, literature from three bodies of research was used: planning literature, with a focus on collaborative planning; healthy communities' literature with a focus on health promotion; and northern/Arctic based-literature and research on both community health and land use planning.

Figure 2-1: Conceptual Framework
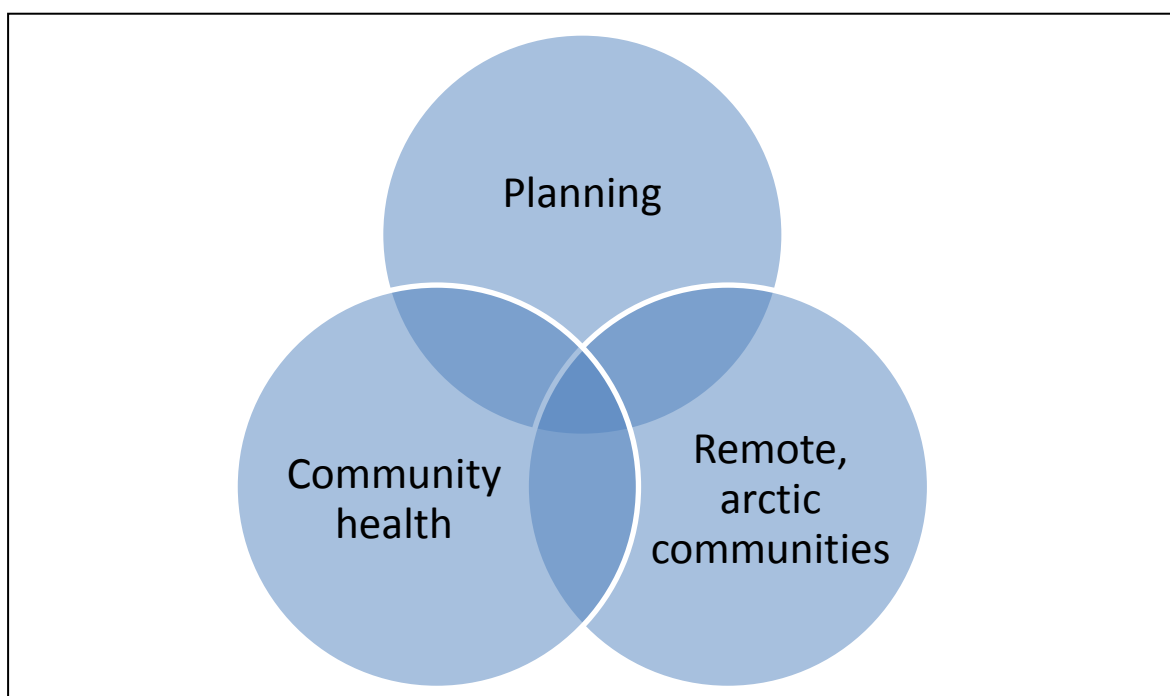
This chapter will provide an overview of planning and health both historically and currently. Land use in the study region will be considered; specifically, geography and climate of the region, human history of the region, economic, social and cultural context, and current land use policy and governance structures. Community health as a concept will be defined and reviewed. Health determinants, measurements of healthy communities, and the current body of evidence on healthy communities will be reviewed. Finally, community health in the North will be discussed with a focus on the policy context and challenges and barriers to achieving community health.

2.2 Collaborative Planning

While planning takes as its basis the organization of physical space and its attributes, it is widely recognized that good planning also demands attention to the interplay of economic, socio-cultural, environmental, and political dynamics that take place in a community (Healy, 2007). The planning discipline as a form of governance must assumedly be responsive to the needs of those which it is intended to serve (Nilsen, 2005). As such, it can be argued that planning systems in the North should be designed in consideration of the context and culture of northern communities (Nilsen, 2005).

Defined by the American Planning Association, collaborative planning (also referred to as communicative planning) is planning which "seeks to enhance the quality of life in a community by including social and economic factors as well as physical infrastructure in a process which is resident driven and managed" (American Planning Association, 1996, p. 5). Healy (2003, p.251) further defines collaborative planning as being a process "which in the more pluralist conditions of the current era, presents strategic spatial planning as a process of facilitating community collaboration in the construction of strategic discourse, and in strategic consensus building". In collaborative planning theory, a planner's primary role is seen as a facilitator who seeks to find consensus among differing viewpoints. Rather than a technocratic leader, the planner is an experiential learner who provides information to participants (Fainstein, 2000). Innes argues that what planners spend much of their time doing is talking, and that this is a form of practical, communicative action in which the planner moves the process forward by acting as a negotiator or intermediary (Innes, 1998).

Collaborative planning practice provides a useful framework for planning in northern communities; it is more appropriate than a rational comprehensive planning model for a number of reasons. First, it provides a framework in which context and cultural sensitivities can be more effectively considered. In seeing 'place' as a socially constructed concept in which locations are given meaning based on people's experience of being there and their social context (Healy, 1998), collaborative planning provides a framework in which the cultural context of the North is integrated into the planning structure.

Second, collaborative planning with its focus on community involvement and a relationship between planner and community member characterized by mutual learning and interactive dialogue (Graham & Healy, 1999), is arguably a better fit for Inuit decision making processes which are described as being similarly collaborative and communicative in nature (Nilsen, 2005). Inuit decision making has been termed *aajiiqatigiingniq* referring to the conference style decision making common

to Inuit tradition (Arnakak, 2001); collaborative planning is described as participatory and involving the co-construction of knowledge among stakeholders (Brand & Gafkin, 2007).

Northern communities have a recognized human resource capacity deficit. The rapidly evolving social and economic context in the North has resulted in growth in institutions which is often not matched by growth in the skilled workforce. Collaborative planning also provides a framework in which capacity development can be built into the planning process (Healy, 1998).

Healy (1996) describes this 'communicative turn in planning' as having a strong recognition of diversity, and the 'webs' of social and economic relations that define the world people live in and that create varied interests and needs. With these varied interests in mind, collaborative planning seeks to engage in a process which identifies issues of mutual concern and a course forward that will provide a blueprint for successful shared existence (Healy, 2003). Finally collaborative planning takes as a premise that knowledge and reasoning may take many forms, including storytelling and subjective statements; this is in keeping with the importance of oral tradition in the North and on traditional knowledge, the knowledge passed on through generations encompassing wisdom, traditions, and knowledge, usually of the land and area, which is valuable information source in northern communities. A cautionary note: while collaborative planning is characterized as having the ideals of openness and diversity but questioned for its efficacy in dealing with deep structural conflict and significant issues of displacement or political bias which critics argue it has not demonstrated an ability to deal with (Fainstein, 2000, p. 455).

2.3 Planning and Health

> *"The environment in which we live is a significant determinant of health. Yet in some ways we are literally building unhealthy conditions into the fabric of our cities [communities], and the profession charged with planning the urban environment currently lacks a conceptual framework for integrating health into spatial planning decision-making"*
>
> (Barton, 2005, p. 339)

2.3.1 History of planning and health

Land use planning and public health practice share common roots in the Industrial Revolution in Britain. A number of technological innovations resulted in massive urbanization; many British cities tripled in size in the matter of decades. However, no real design or planning was applied to the form

or function of cities. The result was a sprawling mix of industrial and residential uses (Kotkin 2005). The conditions of the Industrial Revolution city, described vividly by Engels in his book *The Conditions of the Working Class in England* would be considered shocking by today's standards.

> *There are tannery buildings, and further up there are dye works, bone mills and gas works. All the filth, liquid and solid, discharged by these works finds its way into the river…..which also receives the contents of adjacent sewers….the nature of the filth can scarce be imagined….houses are packed together…blackened by soot…*
>
> (Engels, 1845)

These conditions resulted in a death toll estimated to be three times higher for city residents at the time than for those living in the surrounding area (Kotkin, 2005). The idea that the conditions of the Industrial Revolution city resulted in poor health and the spread of disease was soon accepted and led to the series of reforms known as the Sanitary Revolution in the mid-nineteenth century. Edwin Chadwick, a public health advocate, and others concerned by the level of filth and disease in the Industrial cities, advocated for reforms. They felt that fresh water, sewage and garbage removal, and fresh air were vital components to the physical (and moral) health of people living in cities. The subsequent development of sewage and waste-removal systems and the provision of fresh water treatment profoundly changed the life of those living in the Industrial-era city. The struggle for these reforms gave birth to both the public health and urban planning fields as we know them today (Wakefield 2005).

However, it was not long after the Sanitary Revolution had begun that Louis Pasteur made his remarkable discovery, proving the existence of the germ. The development of vaccines was one result of his discovery and the power of these as a medical intervention fundamentally influenced the direction of health care in the Western world; it ushered in an era when health was approached from a bio-medical perspective in the vast majority of instances (Hancock & Duhl, 1986). The premise of this model is that disease is a linear process resulting from a single cause and that an appropriate medical intervention will provide a cure. The end result of the application of this model is the medical system we have today – one focused on diseases and their cures through high-tech interventions, and large, technically advanced hospitals.

As such, the fields of public health and planning have diverged. Planning has been, to a large extent, focused on the form and function of the community, while public health has focused on the prevention and control of communicable disease. It is only recently with the increased awareness of

the changing disease profile in western populations from one dominated by communicable disease to one dominated by chronic disease, and an awareness of how chronic disease is linked to the environment in which people live, that there has been a renewed interest in linking the fields of public health and planning.

2.3.2 Current re-connections

In the 1970's Thomas McKeown, a professor of social medicine in Britain, performed a statistical analysis in which he revealed that most of the decline in infectious disease mortality pre-dated effective therapeutic intervention. He concluded that the increased health of the English population at the time was the result of improvements in nutrition and environmental factors such as the availability of clean water supplies, and not the result of medical advances during the same time (Ashton, 1992). This analysis is cited as a key piece of evidence in the argument for environmentally driven health-promotion initiatives.

Since then, the resurgence of interest in the links between health and planning is reflected in a number of important policy documents. The Lalonde report, *A New Perspective on the Health of Canadians*, published in 1981, outlines the basic idea that health and people's environments – its social, economic and physical dimensions - are connected. Lalonde argued that the major contributors to ill-health commonly found in modern, industrialized societies were the 'dark side of economic progress and that unhealthy lifestyles and pollution were undoing improvements in population health status achieved in previous decades. The Epp report, published in 1986, *Achieving Health for All: A health promotion framework* goes further in saying:

> We believe that the three key mechanisms intrinsic to health promotion are: self-care, or the decisions and actions individuals take in the interest of their own health; mutual aid, or the actions taken to help other people cope; and healthy environments, or the creation of conditions and surroundings conducive to health.

(Epp, 1986)

The Ottawa Charter for Health Promotion, a publication of the World Health Organization (WHO), later advocated five key strategies for health promotion, the second of which was "creating supportive environments" and stated that "work, leisure, and living environments should be a source of health for people" (World Health Organization, 1986). This initiative grew into the WHO Healthy Cities Initiative which has as its central goal the development of community systems that enhance the way of life of residents while maintaining the integrity of natural systems by integrating notions of

community health and sustainability (Godlstein, 1996). In that it identified the physical/ community environment as one of three key mechanisms intrinsic to health promotion, the WHO Healthy Cities movement has facilitated important reconnections between health and well-being and 'place' in both people's awareness and in public policy (Tsourous, 1996).

 Recent interest in public health from the planning field has resulted in the organization of an Ontario Professional Planning Institute (OPPI) conference on Healthy Communities in 2006 (Ontario Professional Planning Institute, 2006), and the commissioning of the report "Healthy communities, Sustainable communities: the 21st Century Planning Challenge" published in 2007 (Ontario Professional Planning Institute, 2007), as well as an American Planning Association Journal special issue on Integrating Planning and Public Health (American Planning Association, 2006). All are indications of the interest of the planning profession in the connection between the two disciplines. The Ontario College of Family Physicians, released a report in 2005 entitled "Report on Public Health and Urban Sprawl in Ontario" which looks at the connections between urban form and health demonstrating a parallel interest in the health field (Bray, Vakil, & Elliot, 2005).

It is also being argued by some researchers in both the fields of planning and health promotion that 'place', as in the larger environment in which people live may play a more significant role in the health of communities than do health care interventions (Evans, 1990; Evans, Barer, & Marmor, 1994). In recognizing that health is more strongly influenced by our surrounding socio-cultural, political, economic and physical environments than by the treatment-focused health care system, justification for socio-ecological models of health has become more compelling (White, 1981).

While there is a growing body of evidence suggesting an important connection between the way we design our physical/ built environment and our health, and also a clear indication of interest in this connection on the part of researchers and policy makers (as evidenced by recent conferences and publications), work remains to be done in both exploring this connection and in developing appropriate policy interventions and frameworks to allow planners to make the positive contribution to public health that is both necessary and possible.

2.4 Land Use in the North

2.4.1 Human history of the Inuvialuit region

Human inhabitation of the Inuvialuit region dates back to at least 3000 years BCE (Morrison, 2003). Inuvialuit culture as it is known today arose about 700 years ago; good hunting and fishing conditions in the Mackenzie Delta region provided for cultural expansion at the time and supported the ongoing use of the region (Morrison & Kolausok, 2003, p. 10). Particularly notable were organized whale hunts that involved numerous hunters and the use of umiaks, the precursor to what is known today as the kayak (Morrison, 2003, p. 33). The whale meat, blubber and muktuk provided an important food source for Inuvialuit as well as for their dog teams, the dominant form of transportation at the time. Other notable harvesting at the time was that of caribou (*Rangifer tarandus groenlandicus*), which was hunted year round and provided not only an important food source but a source of materials for clothing (Morrison, 2003).

The advent of commercial whaling in the region changed Inuvialuit life dramatically. The whaling rush started in the 1890s when primarily American whaling ships hunting off the Alaskan coast moved further east to the Mackenzie Delta region. Whaling in the region was incredibly lucrative; so much so that the value of a cargo load of a single ship was estimated at $400,000, a vast sum at the time. This economic influx resulted in the development of a year round settlement on Herschel Island of nearly 1,000 Inuvialuit and Gwich'in who worked to support the whaling industry (Morrison W. , 1998). The outcome was an environment notorious for its social disorder that has been likened to the Klondike gold rush in its heyday (Morrison W. , 1998).

The local population had unprecedented access to material wealth in the form of goods traded for service to the whalers but also experienced devastating disease. It is estimated that within 40 years of the commercial whaling's inception in the region, 80% of the regional population had died from newly introduced infectious diseases (Morrison W. , 1998).

After the decline of the whaling industry, the fur trade within the region started to grow, stimulated in large part by significant increases in the price of furs (Morrison & Kolausok, 2003). The region was rich in desirable furbearing animals, in particular muskrat (*Ondatra zibethicus*), mink (*Mustela vison*) from the Mackenzie Delta and Arctic fox (*Alopex lagopus*) from Banks and Victoria Islands. As a result of the expanding fur trade, 50 trading posts were opened along the Arctic coast to support and regulate the booming industry (Usher, 1971, p. 31). However, the high prices for furs

dropped rapidly with the Depression, and later re-bounded and dropped again, thus creating long-term instability in the industry (Usher, 1971, p. 102).

The next major economic force to affect the region was the establishment of the Distant Early Warning or DEW Line. DEW Line sites were constructed across the Canadian Arctic region beginning in 1955 as part of the North American Air Defense system (Defense Construction Canada, 2008). The construction of the DEW line as well as the subsequent maintenance of the sites provided both jobs and economic activity in the Inuvialuit (and other Inuit regions) until the 1980s when a large number of the sites were decommissioned. Many of these former DEW line sites are now the focus of environmental remediation projects while those still in use provide among other military functions some civilian services such as weather reporting to local air carriers. In its early days, the DEW line project contributed significantly to the regional economy, but with the decommissioning of most of the sites, the military's contribution to the economy, much like the whaling and fur industry before them, went bust (Myers, 2008).

As late as the 1950s, most Inuvialuit were still living on the land and pursued hunting, fishing and trapping as their main activities. However, government policy at the time, which required that all native children attend residential schools, to a large extent enforced settlement into communities (Alunik, Kolausok, & Morrison, 2003).Settlement locations were often the result of southern activities and decisions – many were established for trading posts for the fur trade, for religious purposes or for administration. For the most part posts were visited as part of the yearly migration cycle on the part of Inuit; in the 1950s services were introduced in the settlements and benefits made available to only those who lived there (Diermenjian & Jones, 1983). In addition, when schooling became mandatory many choose to remain in settlements in order to not be separated from their children. The settlement process can be characterized as coercive on the part of the Canadian government and part of the broader paternalistic and highly problematic policy structure toward Aboriginal peoples at the time.

2.4.2 Geography and settlement of the region today

The Inuvialuit region located in the far northwest of Canada, now comprises six communities; four are located on the Arctic coast and two are in the Mackenzie Delta.**.** With the exception of Inuvik, all the communities are based around traditional hunting or trapping locations that subsequently became settlements often due to the establishment of trading posts of federal detachments (Alunik, Kolausok,

& Morrison, 2003). Inuvik was constructed by the Canadian government in the 1950s to provide an administrative centre for the region. Aklavik, the previous centre for the region had limited room to expand and experienced frequent flooding. The site for Inuvik was chosen as a replacement, and the town itself and was founded in 1958. It was then expected that all the residents of Aklavik would relocate, but many chose to stay giving rise to the town slogan, '*never say die'* in honour of those who chose to stay, despite the challenges in so doing (Inuvialuit Regional Corporation, 2008)**.**

As is the case with most Arctic communities, Inuvialuit communities are remote relative to those in southern regions of Canada. Inuvik is connected by road for approximately 10 months of the year while Aklavik and Tuktoyaktuk are connected by winter ice roads which are maintained and accessible from December to May. The three remaining communities do not have any road access. All fuel, food, building materials and other supplies are barged to communities during the summer, or flown in at considerably greater expense (Inuvialuit Regional Corporation, 2008).

The climate of the region is characterized by low temperatures and low precipitation levels resulting in the tundra that is characteristic of much of the region. The subsoil is permanently frozen, a condition known as permafrost, and most of the area is treeless due to the harsh growing conditions. Despite the low precipitation levels, much of the area is covered with lakes and bogs due to the fact that the frozen subsoil does not allow the water to drain. The winter season in the Arctic extends from approximately September to May. The region experiences 24-hour darkness for part of the winter and extremely short days for an additional portion of the winter. The opposite effect is felt during the summer in which increasingly long days culminate in 24-hour sunlight by mid-May. The result is a short but intense growing season which allows for an abundance of low-lying plants and shrubs to thrive and support the vast herds of caribou and musk ox in the region (Bjerregaard & Young, 1998; Indian and Northern Affairs Canada, 2008).

The Mackenzie Delta is an anomaly with regards to the general region of the climate, and the unique conditions found in it are thought to have contributed to the long history of human habitation in the area. The Mackenzie Delta is a relatively rich landscape in comparison with the surrounding area. The river transfers nutrients, soil, and heat to the area allowing trees to grow at a latitude well above the treeline for other areas of the Arctic. The 'delta' is also described as one of Canada's richest fur trapping areas and opportunities for hunting, fishing, and whaling on the coast were all good. In an eco-zone where poor soils and little vegetation growth result in limited land-based subsistence opportunities, the river and the ocean provided a richness of resources. Winter

temperatures average between -25 and -35 degrees Celsius and summertime averages are about 10 degrees Celsius (Alunik, Kolausok, & Morrison, 2003).

2.4.3 Social and cultural context

The social and cultural context in the Inuvialuit region can be described as one in which people are straddling two worlds. The current generation of young people are growing up with satellite TV and cell phones; their grandparents grew up on the land, in bush camps, living a traditional way of life. Communities of people who previously existed in isolated, self-reliant and nomadic communities now exist in settlements that are linked to the rest of the world by air travel and the internet. This transition in lifestyle has largely taken place over the last 50 years and the change in lifestyles has resulted in significant social challenges (Cournoyea, 2007). The acculturation stress that can result from technological changes occurring more rapidly than a culture can adapt to them has been linked to lowered mental health status with corollary links to substance abuse, suicide, and family violence (Berry, 1990); all of which have been identified as issues within the Inuvialuit region (Inuvialuit Regional Corporation, 2008).

Culture and environment remained deeply intertwined for residents of the Inuvialuit region today, and indeed for residents of Inuit regions throughout the Arctic.

> Today, no matter where we choose to travel, hunt, and camp, we find traces of our ancestors. From these, we have come to understand that our life is a continuation of theirs, and we recognize that their land and culture has been given to us in trust for our children.

> (Inuit Tapirit Kanatami, no date)

Traditional foods continue to form an important part of life for residents of the Inuvialuit region as both a valuable source of nutritious food (the replacement value of which is estimated as being several thousand dollars per person per year (Usher, 2002) and as a way of maintaining traditional connections with the land and passing on traditional knowledge and skills to the next generation. Traditional harvesting and other traditional skills act as a source of cultural continuity (Usher, 2002) and there continues to be a high value placed on 'being on the land' by residents of the Inuvialuit region. Even when basing the household economy on wage-based employment, many choose to spend weekends, holidays, and unpaid leave on the land, engaged in traditional pursuits. Not only do they contribute to health and fitness, it is also an opportunity to spend time with family and friends, to renew cultural identity and spiritual connections, and to pass on knowledge and skills

to the younger generation (Freeman, Wein, & Keith, 1992). Foods procured through traditional activities reduce the need to purchase costly store bought foods that are less nutritious and expensive; the cost of perishable foods is estimated to be up to three times that of southern cities (Usher, 2002).

Societies in the Arctic are described as being under enormous pressure due to the rapid changes being experienced by people in the region. The colonization of Arctic regions by Western nation states and the paternalistic policies of these nation states have resulted in loss of culture and social ills associated with these challenges (Arctic Council, 2004, p. 45). Arctic worldviews have persisted despite the changes in the region but traditional roles which gave people a sense of meaning, are no longer relevant in the changing world of northern communities. Material goods have made traditional life skills less relevant for today's youth and requirements for school attendance make it difficult for them to spend enough time on the land to learn traditional skills to a high degree of competence (Minor K. , 1992). The boredom that results from erosion of traditional culture and unemployment in the wage-based economy has been described as a major contributor to social problems. However, in so describing, it is important to the note that change does not necessarily lead to cultural extinction. Northern communities are undergoing some of the rapid change with potential for profound impacts (Inuit Tapirit Kanatami, 2004); Inuit leaders describe their people as resilient and with effective policy and mitigation strategies, positive outcomes are entirely plausible (Cournoyea, 2007).

2.4.4 Economic context

Before the arrival of the commercial fur trade and whaling industries in the 1920s, Arctic peoples lived in self-sufficient nomadic bands (Duhaime, Searles, Usher, Myers, & Frechette, 2004); the introduction of currency, government intervention and policies, and population decline as a result of epidemics and famine resulted in a more sedentary way of life in government administered settlements (Duhaime, Searles, Usher, Myers, & Frechette, 2004) and a change from a subsistence economy to a mixed economy (Notzke, 1999).

The economy in Arctic regions today can be characterized by the presence of large-scale resource development, lack of manufacturing, and the prominent role of public service and transfer payments in the economy (Arctic Council, 2004, p. 69). The economy is often described as a mixed economy in which the harvesting of country food plays an important role for domestic consumption (Duhaime, 2004; Usher, Duhaime, & Searles, 2003; Arctic Council, 2004, p. 69). Many people in the Inuvialuit region choose to pursue a combination of land-based/ subsistence activities and wage-based

activities. In fact, many people choose to work seasonally or part-time in order to spend time on the land engaged in traditional pursuits. While it can be argued that there has been a shift towards more time in town and less on the land with the traditional activities becoming the 'weekend' pursuits, this may be the result of new and expensive harvesting technologies which have become the norm, necessitating cash income to make harvesting possible (Arctic Council, 2004).

The northern economy can further be described as having 'structural weaknesses' related to its lack of diversification, which make it sensitive to fluctuations in global commodity markets (Rees, 1987) and susceptible to boom-bust economic cycles. The mixed economy has emerged as an adaptive strategy in many northern communities; people maintain their land-based, subsistence skills and move between wage based and traditional economic pursuits as necessary (Rees, 1987). The traditional economy is also characterized by economic mutualism which sees much distribution of goods based on kinship and family ties through a system of reciprocity that has social and cultural value beyond the economic value of the goods obtained. In considering the long history of industrial economic instability in the region, as well as the cultural and social ties to land based pursuits, it becomes clear why maintaining the integrity of and access to the land is of paramount importance to northern communities (Rees, 1987).

The Inuvialuit region is consistent with the general characterizations of northern economies listed above and is similarly challenged with isolated communities and low levels of formal schooling among residents which constrains economic development and job creation in the region (Wolfe, 1989) . The Inuvialuit have experienced several boom and bust cycles related to oil and gas development as well as related to the whaling and fur trades (Cournoyea, 2007). Despite the persistence of traditional economic pursuits in the Inuvialuit region, the lack of wage based employment opportunities within the smaller Inuvialuit communities is a concern among residents (Inuvialuit Regional Corporation, 2003) and statistics reflect a larger number of people wanting to work in the wage economy than are able to find jobs (see Appendix E, Community Profiles).

A comprehensive study conducted on economic development in the Inuvialuit region in 2001 found that the economy had made improvements in the previous 15 years, including being better able to retain the benefits of economic growth. However, the study suggested that the low rate of educational attainment and the relatively small skilled labour force within the region, combined with a diminishing requirement for low-skilled labour, was of concern and would affect future economic growth (Vodden, 2001). Also identified was a trend whereby people migrated to Inuvik, the largest of the Inuvialuit communities, or further outside the region for education and job opportunities, thus

creating a 'brain drain' most seriously felt in the smallest of the communities but also in the region overall. This trend, implicated in a human resource deficit in the region, has been echoed in other reports published by the Inuvialuit Regional Corporation since then (i.e. Beaufort Delta Agenda 2008, Mackenzie Gas Project Regional Investment Plan, 2007).

Social and economic indicators show that economic growth in the Arctic is not only slower but also narrower in scope than in other parts of Canada. Much of recent economic growth in the region has been the result of a few large developments in the mining, oil and gas, and hydro-electric sectors. Despite these economic developments, many Arctic communities continue to experience slow economic growth and high rates of unemployment (Duhaime, Searles, Usher, Myers, & Frechette, 2004) .

A study on Inuit regions in Canada found that a major issue in Inuit communities was a lack of employment opportunities across northern Canada; residents indicated a mis-match between employment opportunities and their skills. Weak infrastructure in northern communities has also been implicated as an obstacle to employment in the North. A lack of available housing in Inuit communities makes it difficult for people relocate for employment. Government jobs usually require high levels of formal education, which many Inuit do not have, and as a result these positions are often filled by outsiders (Senecal, 2007). Economic development in the region is further challenged by the fact that standard economic measures do not capture the subsistence/ land-based economy that exists in tandem with the wage economy in the North. While some goods harvested from the land are bought and sold, many are not and their contribution and significance is not captured in conventional measures of economic production. In addition, it has been argued that "the contribution of country food to Inuit culture and identity is beyond estimation... as it is the embodiment of the connection Inuit have to the land and to the traditions of Inuit ancestors" (National Aboriginal Health Organization, 2005, p. 5). The same holds true for other traditional activities including sewing and childcare.

Many Arctic regions, including the Inuvialuit region have been subject to the boom-bust cycles that often characterize economics reliant on resource development activities. Economies with such limited diversification are extremely vulnerable to volatility in resource prices and this volatility is reflected in the job market. As described in Section 2.4.1, the Inuvialuit region did not escape these boom-bust cycles. First the whaling industry and then the fur industry provided an incentive for people to move away from a traditional subsistence lifestyle and into the wage economy. Beginning in the past few decades and continuing today, the oil and gas industry is creating an analogous

situation in the Inuvialuit region. Interest in oil and gas development within the region first arose in earnest in the 1970s when significant hydrocarbon reserves were discovered and a pipeline to transport gas to southern markets was proposed. Justice Thomas Berger's well publicized report *Northern Frontier, Northern Homeland* effectively stopped the proposed pipeline by recommending a moratorium on development in the region for at least ten years in order to allow Aboriginal groups to settle their land claims and become fully empowered to participate in decision making regarding development in the area. His message was:

> We look upon the North as our last frontier. It is natural for us to think of developing it, of subduing the land and extracting its resources to fuel Canada's industry and heat our homes…but the native people say the North is their homeland. They have lived there for thousands of years. They claim it is their land, and they believe they have a right to say what its future ought to be.

(Berger, 1977)

Today, almost every land claim in NWT has been settled; all Inuit groups in the region have settled their land claims (Simon, 2008) and the pipeline is once again being considered, along with significant oil and gas development in the region, both on- and off-shore. A recent estimate of discovered recoverable oil in the area is 1.01 billion barrels of oil and 9.0 trillion cubic feet of natural gas; the total value of oil and gas discoveries in the Mackenzie Delta and the Beaufort Sea is estimated to be from $46.5 to $102.5 billion dollars (National Energy Board, 1998) which, along with steady price increases for oil and gas, has resulted in the issuing of numerous exploration licenses and work commitments on the part of oil and gas companies, both totaling in the billions of dollars to date (National Energy Board, 1998). These very significant signs of interest and investment on the part of oil and gas industry signal an almost certain future development of oil and gas resources in one form or another, and as a result, an impact on the region's economy and lands. As a result of this likely outcome, policy makers and local leaders have initiated numerous regulatory and review processes aimed at preparing for and mitigating potential negative impacts of this development while maximizing potential gain for the region (e.g. the Mackenzie Gas Impact Fund and mitigation preparations being undertaken by the Inuvialuit Regional Corporation).

The settlement of the Inuvialuit land claim agreement allows the Inuvialuit to consider large scale economic development on their lands as full participants and decision makers in the process. Significant policy work and preparation for the development of the Mackenzie Gas Project Pipeline is currently underway in the Inuvialuit region (Inuvialuit Regional Corporation, 2008). The pipeline, if

constructed, would run through Inuvialuit traditional lands (as well as lands of four other Aboriginal groups) and the associated gathering fields and processing stations would also take place on Inuvialuit traditional lands (Inuvialuit Regional Corporation, 2008). While the process is still under regulatory review, Inuvialuit are partners in the development through their shares in the Aboriginal Pipeline Group. Barring significant shifts in external factors like commodity prices, there is strong indication that the project will proceed. Despite this interest in resource development in the Inuvialuit region, Inuit and Inuvialuit leadership have stated that new economic development, in particular natural resource development, cannot proceed at the expense of more traditional activities which not only play an important cultural role, but also a significant role in the economy of Inuit regions (Inuit Tapirit Kanatami, no date; Cournoyea, 2007).

2.4.5 Land use planning in the North

Land use planning has had a rocky history in the Arctic in part due to the competing interests of local peoples, whose long standing use of the region and interest in preserving their ability to continue to do so diverges significantly from the rest of Canada's interest in exploiting the rich natural resources in the area (Fenje & Rees, 1987). At the heart of this issue is a fundamental question: is land use planning in the North a servant of national interest or a tool for northern residents (Fenje, 1984)? Underlying this question is a difference in value orientation toward the land which then impacts land use governance policy. The Inuit view can be characterized as holistic and one that sees people as integrated into the environment more so than the southerner does by comparison (Diermenjian & Jones, 1983). While this is a very brief analysis of a very nuanced and complex set of differences between two cultures, it serves to provide some contrast in world view as it applies to land use.

Much of the history of planning in the Arctic region has been under a system where the Government of Canada has regulated the vast majority land use centrally, through the Department of Indian Affairs and Northern Development (now Indian and Northern Affairs Canada or INAC). The regulatory approach was essentially *ad hoc* (Rees, 1987) and as such, could be characterized as 'unplanned' in the sense that planning allows for the consideration of future and alternative uses beyond the use currently under consideration or application. Community planning took place through program specific funding applications which resulted in a piecemeal approach that did not easily allow for consideration of long-term or big-picture issues (Harivel & Anderson, 2008). Issues were discussed related to specific development projects or other proposed land uses but no overarching plan was developed or used (Fenje, 1984).

Planning was transferred to the Government of the Northwest Territories (GWNT) in 1967 (Wolfe, 1989, p. 71). While this represented a move towards decentralization, for most of the time, GNWT has carried out its duties from Yellowknife, and much of the time, actual plans and ordinances were contracted out to southern consultants with varying degrees of success, due to an arguable lack of understanding of the unique conditions of the Arctic and the culture of the communities on the part of these consultants (Wolfe, 1989, p. 71).

Critics have argued that planning has had a limited effectiveness in improving the overall quality of life in Aboriginal and northern communities thus far (Wolfe, 1989, p. 63), and refer to these approaches which arguably, have not adequately represented the interests of northern communities (Fenje & Rees, 1987; Wolfe, 1989). Today, land use planning in the North is slowly changing; a process of devolution of powers and responsibility is underway; federal powers are being transferred to the territory and territorial powers to the communities themselves (Government of the Northwest Territories, 2008). However, the issue is made more challenging by the resource revenue implications associated with governing northern lands which create political and financial incentive for central governments to maintain a significant controlling interest in land use regulation in the North.

Wolfe (1989, pg. 66) cites the following array of problems and challenges related to planning in northern communities:

- Constraints on the emergence and use of planning regimes due to differences in core values between the communities and the values embedded in the planning regimes;
- Communities located in remote areas, distant from population centres;
- Communities that have existed in a permanent form for a short period of time;
- For some communities, location based on government defense or other strategic need with the result that the location bears little connection to good hunting or fishing grounds;
- High and rising costs of pursuing the traditional economy and uncertainty of returns;
- Lack of land for community expansion;
- High cost of installing, generating, and maintaining community physical infrastructure;
- High demand for housing, high cost, and inappropriate design for climate and lifestyle;
- High under- and un-employment in the formal wage sector;
- Few opportunities for wage employment outside the public sector;
- Lack of opportunity for or access to job training or higher education;

- Low income levels and high cost of living translating into high rates of financial poverty; and

- High incidence and complexity of health problems.

She suggests that based on these challenges, that planning needs to be de-centralized, place the community in control, exercise community priorities, and respect differences in values and cognitive styles. The challenge of this array of problems cannot be dealt with by planning alone, but some planning practice may be better equipped to address these problems than others. [1]

2.4.6 Land use policy and governance in the Inuvialuit region

The Berger Inquiry put the concept of regional land use planning on the political agenda in the Inuvialuit region (Fenje, 1987) and highlighted the need for a land claim settlement that would allow for adequate and meaningful participation of Aboriginal groups in land use decisions. Berger argued that effective planning in the region would only emerge from the settlement of native land claims and following the inquiry, most Aboriginal groups in the region began to pursue land claim negotiations as a means of protecting their interests on traditional lands (Fenje, 1984).

The Western Arctic Claim Agreement, or Inuvialuit Final Agreement (IFA), is a comprehensive land claim agreement Inuvialuit signed with the Canadian government in 1984. The IFA secured Inuvialuit ownership and control over lands in the Inuvialuit settlement region, as well as responsibility for the management and investment of the claim's financial compensation and benefits. Specifically, it secured Inuvialuit title to a region totalling 91,000 square km, though in some areas Inuvialuit were granted only surface rights, as opposed to the surface and sub-surface rights that they were granted elsewhere in the region (Western Arctic Claim Agreement, 1984). The IFA gives Inuvialuit the rights of a property owner under the federal laws of general application (personal

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[1] Special Note: 'Comprehensive community planning' is an approach currently being championed for use many First Nations communities. Most First Nations communities exist on reserves which fall outside of provincial or territorial planning jurisdictions, and under the purview of the federal government. Comprehensive community planning was developed as a policy response to both the void left by the lack of provincial and territorial regulation (Wade, 2008) and also in response to the critiques of the 'piecemeal' approach that DIAND/ INAC took in the past which was driven by sector specific management of funds and made addressing long term and multi-sectoral issues challenging (Cooke J. , 2008). Communities in the Arctic exist within and are governed by the territorial planning legislation and as such face a notably different challenge than that of First Nations communities. Arctic communities must figure out how to ensure that planning frameworks applied in their communities, but for the most part developed elsewhere, address the unique needs and serve the interests of their people.

communication, Harlow, 2008). In addition, it created resource co-management boards on which Inuvialuit had seats and a voice 'equal' to that of government (Western Arctic Claim Agreement, 1984). The IFA also established co-management structures stipulating a range of consultation and management sharing requirements for federal agencies operating in the area; agencies subject to these requirements include Department of Fisheries and Oceans, Parks Canada, Canadian Wildlife Service, and others. The various co-management bodies, ranging from community-specific Hunters and Trappers Committees to the Inuvialuit Game Council, Fisheries Joint Management Committee, and Environmental Impact Screening Committee, have taken such actions as imposing restrictions on hunting and fishing rights and convening federal environment reviews.

Written into the IFA are three governing principles: to preserve Inuvialuit cultural identity and values within a changing northern society; to enable Inuvialuit to be equal and meaningful participants in the northern and national economy and society; and to protect and preserve the Arctic wildlife, environment and biological productivity (Western Arctic Claim Agreement, 1984). The IFA is administered by the Inuvialuit Regional Corporation (IRC) and six subsidiaries (including the Inuvialuit Land Administration). The IRC board is comprised of directors who have been elected to the board of the local Community Corporation in each of the six Inuvialuit communities (Inuvialuit Regional Corporation, 2008).

The Inuvialuit Settlement Region is located in the far north-western part of Canada and comprises 1,000,000 square kilometers of which 236,000 square km is land and the remainder is sea and ice pack (Green & Binder, 1995, p. 343). Land use in the region is currently governed by three different land use regulators. Inuvialuit private lands designated by the land claim are governed by Inuvialuit Regional Corporation through their land use division, Inuvialuit Land Administration (ILA). ILA governs land use on a permit basis; there is not a land use plan in place for Inuvialuit lands. The present permitting system allows ILA to consider land use as well as socio-economic impacts, and to imposed land use and socio-economic requirements on the parties requesting a permit for use. Otherwise, land use on Inuvialuit lands is guided by community conservation plans which exist for all of the lands within the Inuvialuit Settlement Region. These are community-based planning documents developed by the Hunters and Trappers Committees, Community Corporations, and Elders committees through a consultation process in each community. The documents are used to provide guidance to land administrators and planners by identifying wildlife habitat, seasonal harvesting areas, and other important sites. However, the plans are not legally binding. The IFA

contains provisions for a land use planning regime (Sec7, Subsection 82) should one be developed, but as of yet, none is in place. (See Figure 2-3: Map of Inuvialuit Settlement region - Land use designations and Figure 2-4: Map Inuvialuit Private Lands for land designations).

Municipal lands designation in and around settlements are administered by hamlet or town offices and governed by the Government of the Northwest Territories through the Department of Municipal and Community Affairs, under the regulations laid out in the Northwest Territories Planning Act. Other lands in the region not designated as either of the two former types are crown lands administered in the Northwest Territories by the Department of Indian and Northern Affairs. The only exception to this rule that exists within the region is that of three national parks, which are administered by Environment Canada through Parks Canada[2].

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[2] Special Note: There is a significant difference in land governance structures between Inuit and First Nations communities. Inuit did not enter into treaties with the Canadian or British government and as such were not subject to the conditions that governed these treaties, including the assignment of reserve lands on which they were to live and the designation as 'wards of the state'. Rather, Inuit communities are governed by municipal councils which are responsible to the relevant territorial government and all Inuit groups have entered into comprehensive land claim agreements which provide among other things provisions for Aboriginal self-government and recognition of the interest of Aboriginal people in the land based on their long-standing use and occupancy of it (Inuit Tapirit Kanatami, no date).

Figure 2-2: Map of Inuvialuit Region relative to rest of Canada
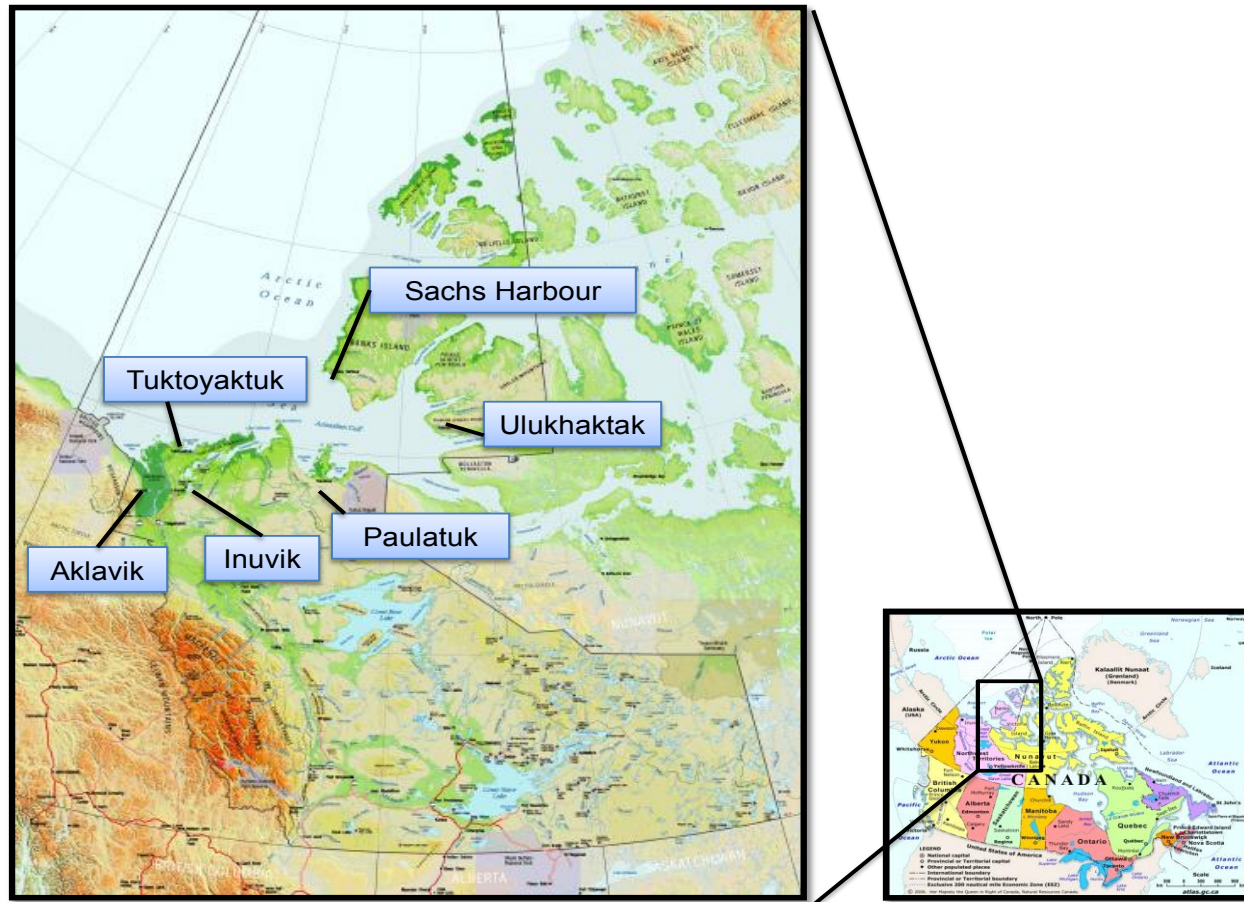
Sources: Canada map (The Atlas of Canada, 2007); NWT map (Government of Northwest Territories, no date)

Figure 2-3: Map of Inuvialuit Settlement region - Land use designations
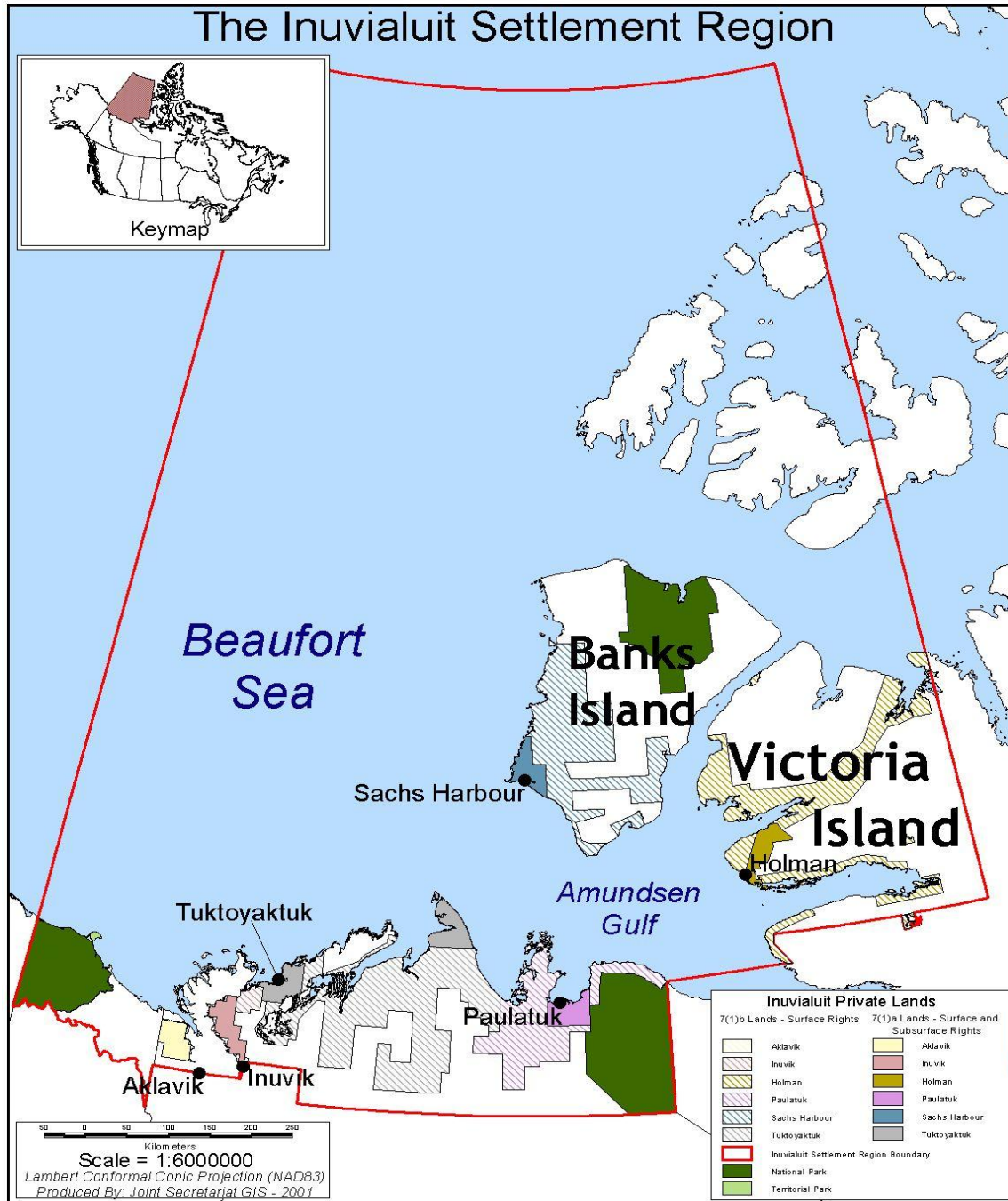
Source: Joint Secretariat, 2001.

Figure 2-4: Map Inuvialuit Private Lands
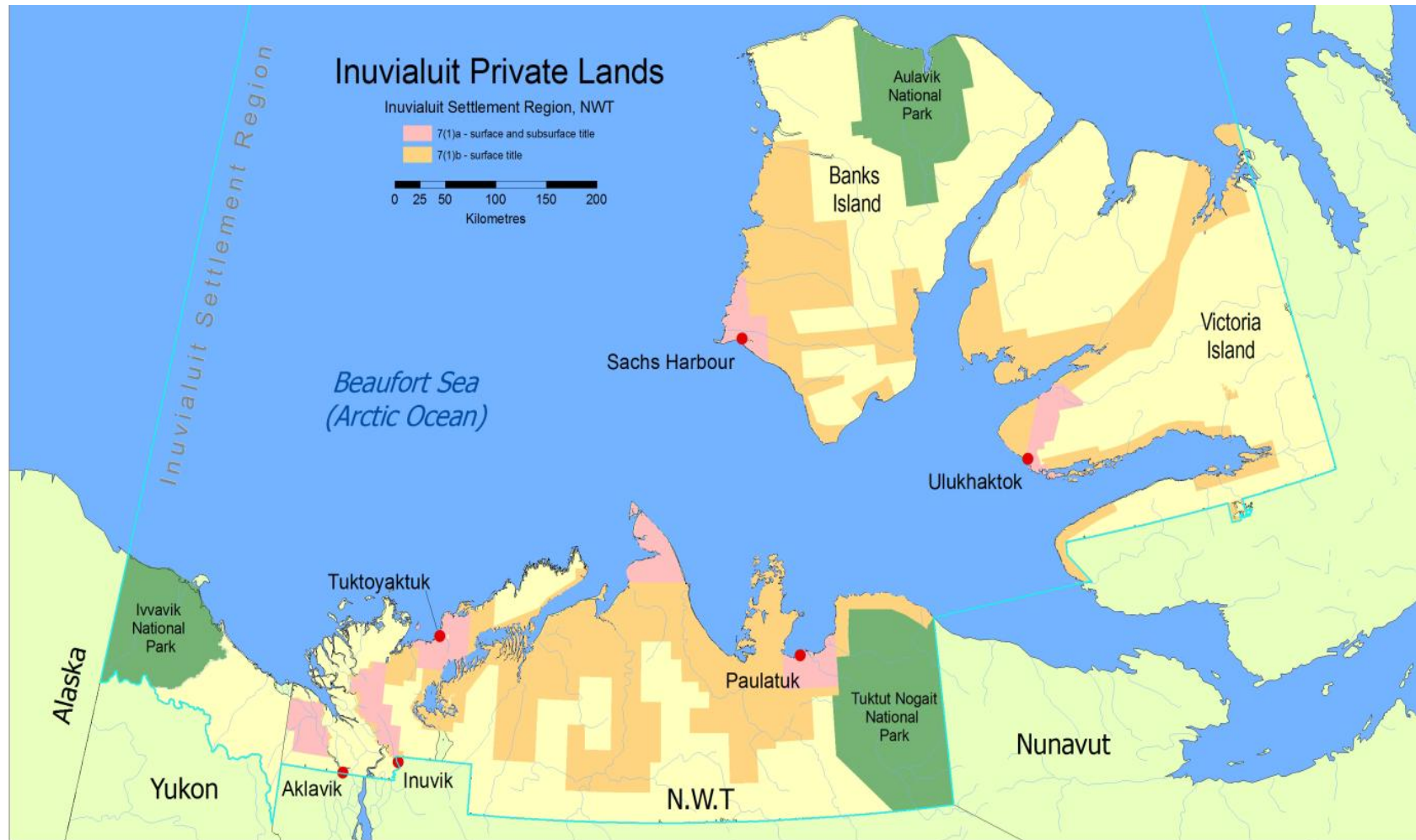
Source: Inuvialuit Land Administration, 2008.

2.5 Community Health

The following definitions were used throughout this section of the document on community health.

2.5.1 Health Definitions

2.5.1.1 Health determinants

'Health determinants' is the title given to a range of factors that are thought to contribute to a population's health (Senate Standing Committee on Social Affairs, Science and Technology, 2001). Health determinants are usually developed with the intent of informing how health conditions may be changed. There is no consensus currently on any finite set of health determinants; there is evidence to suggest that health determinants may be situation and/ or population dependant. The impact of health determinants by Health Canada on the Canadian population is estimated in Figure 2-5 below.

Figure 2-5: Estimated Impact of Determinants of Health on the Health Status of the Population
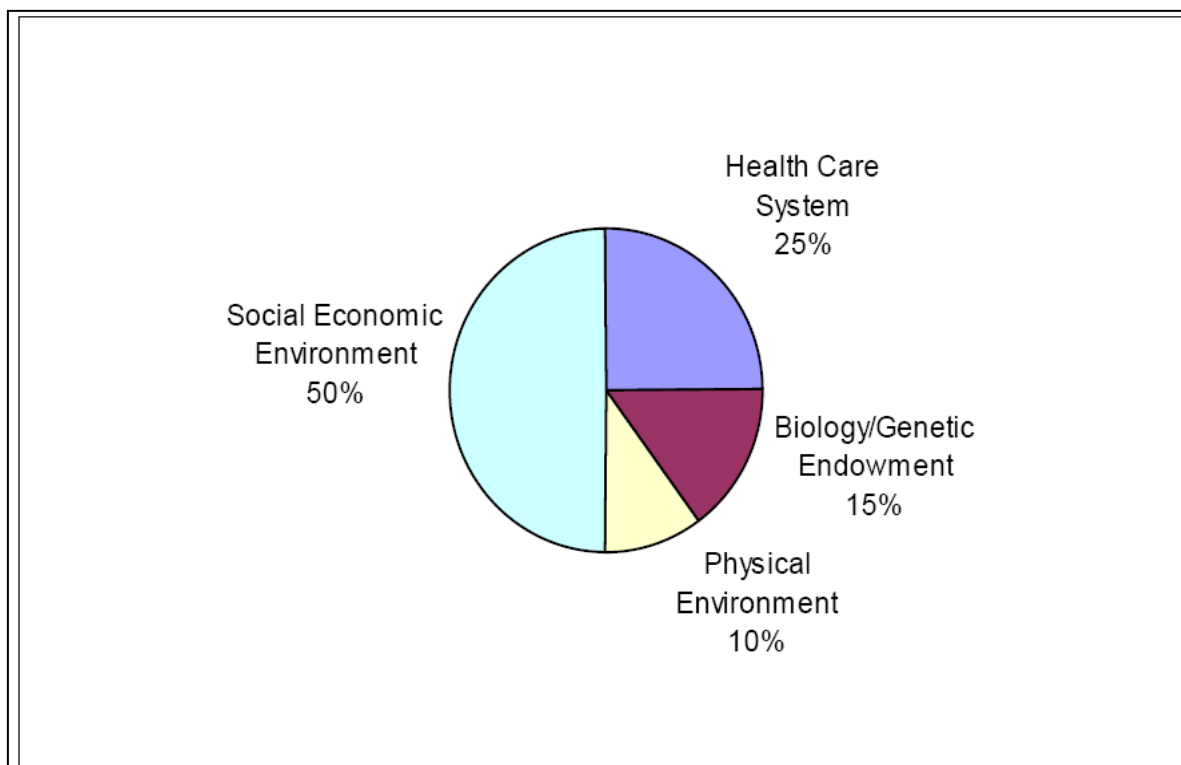
Source: Senate Standing Committee on Social Affairs, Science and Technology, 2001.

These categories of health determinants are further refined into twelve health determinants recognized by the Public Health Agency of Canada. These are income and social status, social support networks, education and literacy, employment/working conditions, social environments, physical environments, personal health practices and coping skills, healthy child development, biology and genetic endowment, health services, gender, and culture (Senate Standing Committee on Social Affairs, Science and Technology, 2001).

Health determinants are situational; understanding the situation to which they will be applied is important. In cross-cultural environments it is particularly important that contextual meanings and relationships are considered. The National Aboriginal Health Organization recognizes additional health determinants beyond those recognized by the Canadian government for Aboriginal populations. The additions considered relevant to Aboriginal communities are colonization, globalization, migration, cultural continuity, access, territory, poverty, and self-determination (National Aboriginal Health Organization, 2006).

Health determinants can be seen conceptually as the building blocks of a health promotion effort – in other words, in order to develop health policies that result in positive health outcomes, one need to access the determining factors of health. For this reason, health determinants are important considerations in health-related policy and have been used as benchmarks to track health in communities, informing program development, and policy direction. Because of the often complex interactions between health outcomes and health and human service programs, direct causal links are hard to establish, making health determinants a less reliable evaluative tool at the program evaluation level (Jeffrey, Abonyi, Labonte, & Duncan, 2006).

2.5.1.2 Community health

Taken from the World Health Organization definition of individual health, " a state of complete physical, mental, and social well-being; not just the absence of disease or disability, health is a resource for everyday life which enables an individual to identify and to realize aspirations, to satisfy needs and to change or cope with the environment" (World Health Organization, 1948), the following definition of community health: "a healthy community has continually expanding and improving physical and social environments and expanding community resources which enable people to support each other in performing all the functions of life and in developing their maximum potential" was developed by healthy city/ community pioneers Hancock & Duhl (Hancock & Duhl, 1986).

In other words, a healthy community is one in which the social and physical environments are supportive of individual health, promote healthy relationships between residents, and support the maintenance of a healthy physical environment. It should also be noted that this concept of a healthy community is one in which process and not just end product is emphasized; it is theorized that a healthy community is one in which ideas and principles of health promotion are embedded in policy and decision-making structures.

Aboriginal communities see health as being comprised of mental, physical, spiritual and social elements (Kuhlein, 2004). A definition for healthy communities in the North must therefore include the mental, physical, spiritual and social health and well-being be fostered and supported.

2.5.1.3 Community well-being Indicators

There is a variety of methods for measuring health and well-being; the debate on the efficacy and appropriateness of various measures would be enough for to fill a much larger study than this. For the purpose of this project, where the desired outcome is to relate planning to health in its broadest possible conception, generalized measures of health and well-being were considered as the primary method for measuring health in the Inuvialuit region.

The Community Well-Being Index (CWBI), a modification of the Human Development Index (HDI) for application at the community level, was used in a comparative basis and secondary data from various sources were compiled into community profiles (see Appendix E); data from were also used as a measure of community health. This compilation of data uses various measures of health and well-being that are considered standard measures, such as life expectancy, infant mortality, self-rated health and others. A secondary consideration in choosing measures of health was the availability of data for the region and other levels of aggregation. A variety of other indicators are considered where appropriate: for example, crime rates were considered as a proxy for social well-being in a community in certain instances.

The Community Well-Being Index is a modification of the Human Development Index (HDI), developed by the United Nations in 1990, in response to the failure of conventional economic indicators like gross national product to capture factors important to well-being and quality of life beyond income (Jeffrey, Abonyi, Labonte, & Duncan, 2006). The Human Development Index captures three dimensions of of development progress: income, health and knowledge (Cooke M. , 2005). The Community Well-Being Index is a composite index which includes four dimensions of well-being of Aboriginal

communities. It is a modification of the HDI for use at the community level; it includes measures of education, labour force participation, employment, income and housing. Education is considered via achievement in the formal education system, labour force participation in is measured by labour force status the week prior to the census, income is measured as income per capita, and housing via two measures – housing quality by measuring the proportion of the population that reported that their dwellings were not in need of major repairs, and housing quantity as the proportion of population living in dwellings with no more than one person per room (Cooke M. , 2005). The CWB combines these measures into a single score. It takes as its data source information from the Canadian census – this results in methodological limitations that do not allow the incorporation of "equally important aspects of well-being such as physical, psychological, and cultural well-being" (Senecal & O'Sulivan, 2005, p. 4). The index also does not capture elements of the traditional economy; much of the Inuit population is involved in traditional activities which "contribute to their material well-being but are not manifested directly in monetary income or paid employment" (Usher, Duhaime, & Searles, 2003, p. 179).

The Community Well-Being Index was used in two ways in this study. First, it served to stimulate discussion in the interviews. The strengths and weaknesses of the index with regards to application in Inuit communities were discussed, providing an opportunity to also consider intervening variables into community health in the region. Second, the data that provided by the CWBI was used in the analysis on a comparative basis with other data with an understanding of its limitations in that it is biased in its measurement towards 'western' measures of well-being.

2.5.2 Healthy communities movement

As discussed in Section 2.3.2, the inception of the Healthy Cities/ Communities movement (hereinafter referred to as the Healthy Communities movement) can be traced to the publication of the Lalonde report in 1972, prior to which time the influence of the environment on health was largely overshadowed, in terms of recognition in policy, by medical interventions and advances (Metropolitan Toronto Planning Department, 1991). Interest in 'healthy community' concepts increased with the development of the World Health Organization position on health in 1977 which stated that health was at least as dependant on actions taken outside the health care system as those taken within it (Hancock, 1993). In 1986, the publication of the Epp Report, arguing for the creation of 'healthy environments' through coordinated public policy, paved the way for the Ottawa Charter on Health Promotion, which then outlined the five strategies for achieving healthy community design and function (Metropolitan Toronto Planning Department, 1991). At the heart of the Healthy Communities movement is the concept that a preventative

environmental and social development strategy must be employed in order to achieve community health and that an urban environment must satisfy more than just basic human needs and create conditions that promote health and well-being for its residents.

In practice, the Healthy Communities movement has had some ups and downs after its theoretical conception. Notwithstanding the WHO Healthy Communities project, which is now in its fourth phase and involves 1,200 cities from 30 primarily European countries, the Healthy Communities movement in Canada has lost some momentum. Housed in the Canadian Institute of Planners headquarters in Ottawa, the Canadian Healthy Communities Project (CHCP) had as its goal: "to enhance the quality of life for all Canadians by involving municipalities and their citizens in ensuring that health is a primary factor in political, social and economic decision-making" (Canadian Healthy Communities Project, 1988). Health was conceptualized broadly by the CHCP echoing both developments in public health and recognizing the links between community health and social, economic and political factors affecting residents' well-being and quality of life (Manson-Singer, 1994). However, in 1991 federal funding for the CHCP was lost, despite the fact that over 100 municipalities had joined the project (Hancock, 1993).

Despite the arguable strength of the healthy communities approach, momentum has also been lost to the population health approach, which is more closely linked with bio-medical concepts and seeks to improve the health of the entire population through intervention in health determinants (Evans, Barer, & Marmor, 1994). The population health approach has been the catalyst for many studies examining the relationship between socio-economic status and epidemiology. It has been criticized for a narrowness of conceptualization that critics argue is related to a biomedical definition of health, and for an emphasis on economic growth as a health-enhancing factor (e.g. Poland, Coburn, Robertson, & Eakinand, 1998; Labonte, 1995). The 'sustainable communities' movement also emerged around the time as population health approach gathered interest; it is conceptually much closer to healthy communities frameworks and encapsulates many of the same ideas but explicitly includes the concept of ecological sustainability (Hancock, 1993).

2.5.3 Health status of northern communities

Historically, the term health meant the absence of illness or disease, but since then the term has been re-conceptualized to acknowledge the evidence that multiple factors beyond the absence of illness affect health. Interestingly, this broader concept of health is consistent with many traditional Aboriginal views of health which incorporate emotional, spiritual, social and physical elements (National Aboriginal Health Organization, 2006). Health in Arctic communities can be described as being a balance between mental,

physical, social and spiritual elements in the life of both individuals and the community as a whole (Kuhnlein, 2004). The National Aboriginal Health Organization recognizes individual health and community health as being mutually dependant and equally important (National Aboriginal Health Organization, 2006).

The health and well-being of Arctic communities contrasts sharply with that of the average Canadian community. By almost any measure of health or well-being Arctic communities fare more poorly, experiencing what some describe as 'third world conditions within a first world economy' (Usher, Duhaime, & Searles, 2003).This disparity in health status has been the focus of much scholarly attention and policy analysis (e.g. Bjerregaard, 2004; Deirmenjian, 1983; Duhaime et al., 2004; Kirmayer, 2003; Kozlov, 2003; Tester & McNicholl, 2004; Waldram et al., 1995; Young 2003, 1996). There are a variety of factors implicated in the regional health deficit by the people who live in the region, much of which is echoed by scholars and researchers. Social changes forced upon the Inuit as a result of Western influences and Canadian government policy are cited by Aboriginal leaders as inducing stress in the population through the rapidity of change and the cultural loss due to these changes (Cournoyea, 2007).

The physical, social, and economic environments of Arctic communities as well as historical and cultural factors interact in a complex and cumulative fashion with regards to health outcomes in the Arctic. Paleo-biological studies document that at the time of contact with Europeans, Aboriginal peoples in Canada were in very good health (Royal Commission on Aboriginal Peoples, 1996). Contact with Europeans resulted in major epidemics as Aboriginal people were exposed to diseases that were not previously present in their populations (Health Council of Canada, 2005).

During the early 20th century, Christian churches funded by the Canadian government introduced residential schools that attempted to assimilate Inuit and First Nations children into a white, European-based society. Children were removed from their families and communities and were forced to stay in the residential schools often for several years at a time. In many cases, they were not allowed to speak their language and were punished for actions that were not in compliance with the churches' strict code of behaviour (Kirmayer, Simpson, & Cargo, 2003). The resulting loss of culture and infliction of personal trauma is still impacting Aboriginal communities today; loss of parenting skills, residual trauma and substance abuse are all cited as being connected to the residential school experience (Minor, 1992). Of the approximately 6,000 people living in the Inuvialuit communities today, over 1,000 are survivors of the residential school system (pers. communication, H. Prud'homme, August 2008). The impacts of the residential school legacy are multi-generational, not only are the survivors of the school impacted through loss of culture and social dislocation but because parenting and social networks were also lost, the current

generation of young adults was also impacted. The recent settlement of the $4 billion dollar class action lawsuit brought against the Government of Canada and the churches involved in the administration of the residential schools (Indian Residential Schools Settlement, 2008) in which former attendee of residential schools system received a Common Experience Payment of approximately $10,000, plus an additional $3,000 for every additional year attended. Victims of physical or sexual abuse will receive more. The settlement of the lawsuit and the formal apology recently given by Prime Minister Stephen Harper (Government of Canada, 2008) both speak to the impact and the egregious wrong done to Aboriginal peoples through the residential school system.

Since the 1950s, Canadian government and various Christian organizations made schools, health care, housing and supplies available in settlements. These decisions were influenced by sovereignty, defense and other policy interests of the government at the time and were later criticized for their underlying aim of 'westernizing' Inuit populations and negative impacts on Inuit populations (Freeman, Wein, & Keith, 1992). This settlement movement resulted in an erosion of Inuit traditional lifestyles with net negative health consequences (Bjerregaard & Young, 1998). Bjerregaard et al., (2004) document the shifts in Inuit health as a result of the social, cultural and economic changes stemming from European colonial influence. In particular, accidents, suicide, violence, addiction and chronic disease have risen as Inuit have adopted the lifestyle and social-cultural changes that have resulted. Studies on circumpolar populations in Russia have found significant increases in physiological stress indicators associated with the 'modernization' and urbanization, and consequent impacts on culture of native groups (Kozlov et al., 2003). Young (2006) documents social and cultural change associated with settlement in the last few decades; the pattern of health in Arctic populations in Canada has undergone a transition which intensified when the pace of change intensified in the 1950s.

The diseases that are the major causes of illness and premature death in Canada and other western nations are heart disease, cancer, respiratory disease, accidents, and diabetes. These diseases can be considered the 'hallmarks' of modern civilization in terms of health. In societies experiencing a transition to a 'modern' lifestyle, such as the circumpolar Inuit communities who have gone from a largely subsistence based lifestyle, to a settled lifestyle in the last 50 years, there is a 'health transition' that occurs and that mirrors the transition in lifestyle. Cancer, diabetes, heart disease, and accidents have inclined sharply in their populations to match levels found in the rest of the western world (Bjerregaard P. , Young, Dewailly, & Ebbesson, 2004).

Arctic communities in Canada are experiencing a transition in community health that is paralleled by other circumpolar populations undergoing rapid socio-cultural change. While there is a notable

decline in infectious diseases, there is a corresponding increase in chronic disease, and a significant increase in 'social pathologies' such as violence, suicide, accidents and substance abuse (Bjerregaard et al., 2004).   Broad socio-economic, demographic and environmental factors such as income, education, housing, and employment also indicate that native populations continue to fare worse than their non-native counterparts (Bjerregaard P. , Young, Dewailly, & Ebbesson, 2004) (See Table 2-1: Northern populations (Yukon, NWT, and Nunavut) and Canadian Comparisons - Demographics below).

Table 2-1: Northern populations (Yukon, NWT, and Nunavut) and Canadian Comparisons - Demographics

General	Inuit Population	Canadian Population
Median Age	20.6 years	37.6 years
Life expectancy	67.7 male, 70.2 female	75 male, 81 female
Birth rate	Yukon 39.3 NWT 54.7 Nunavut 98.2 per thousand	40.7 per thousand
Unemployment Rate	2-3 times higher	6.7%

Sources: statistics for Inuit populations Health Council of Canada, 2005, statistics for Canadian populations, Statistics Canada, 2005.

There are also significant social health issues which are more prevalent in Aboriginal populations than in the average Canadian population (see Table 2.2)

Table 2-2: Northern populations and Canadian populations - comparison of health conditions

Health Issues	Northern Populations	Canadian Population
Infant mortality rate	Yukon 8.7 per thousand NWT 4.9 per thousand Nunavut 16.9 per thousand	5.2 per thousand
Suicide	79 per hundred thousand*	12.3 per hundred thousand
Infectious diseases	chlamydia (7x higher) hepatitis (5.3x higher) shigellosis (20x higher))	n/a
Health conditions	tuberculosis (6-7x higher, diabetes (4-5x higher) heart disease (3x higher),	n/a
Dental Decay	2-5 times higher	n/a

Sources: Northern population statistics modified from Kirmayer L. S., 2003, Canadian population statistics from Statistics Canada, 2005.   *taken from Health Council of Canada, 2005.

2.5.4 Community health in the North

Determinants of health as measured by Health Canada show disparities in community health in Northern communities in comparison with the Canadian average. Health Canada's lists 12 health determinants as key in population (and community) health. They are: income and social status, social support networks, education, employment and working conditions, social environments, physical environments, personal health practices and coping skills, healthy child development, biology and genetic endowment, health services, gender, and culture (Health Council of Canada, 2005). The status of selected health determinants in Inuit communities is listed in the following table:

Table 2-3: Selected Health Determinants and Inuit/ Aboriginal Conditions

Health Determinants	Underlying Premise	Inuit/ Aboriginal Conditions
Income and Social Status	Health status improves at each step up the income and social hierarchy. High income determines living conditions such as safe housing and ability to buy good food. The healthiest populations are those in societies which are prosperous and have an equitable distribution of wealth.	25% of Inuit are in a low income bracket in comparison with 16% of for other Canadians.
Social Support Networks	Support from families, friends, and communities is associated with better health. The importance of effective responses to stress and having the support of family and friends provides a buffer against health problems.	Survivors of the residential schools system have had trouble establishing effective relationships with families and friends as a result of being taken away from their families and communities at a very early age, the usual role modeling, parenting, and social bonds that occur were severely damaged . This buffer against health problems is unavailable for many of the direct as well as indirect survivors of residential schools.
Education	Health status improves with education. Education increases opportunities for income and job security, and equips people with a sense of control over life circumstances – key factors that influence health.	Aboriginal people as a whole are less educated than their non-Aboriginal counterparts. In 2001, 48% of Aboriginal people in Canada had completed high school, whereas 58% of their non- Aboriginal counterparts had completed it. It is important to note, however, that traditional knowledge and skills are not captured by this measure.
Employment and working conditions	Unemployment, underemployment and stressful work are associated with poorer health. People who have control over their work circumstances and less job-related stress are	Due to lower educational attainment, fewer Aboriginal people are in the workforce and they tend to be employed in clerical/ support/ labour positions. Unemployment rates

	healthier and often live longer than those in stressful or riskier employment settings.	are higher for Inuit populations at 22%, compared with 7% for the non-Aboriginal Canadian.
Social Environment	The array of values and norms of a society influence in varying ways the health and well-being of communities. Social stability, the recognition of diversity, safety and cohesive communities provide a supportive society that reduces or avoids many potential risks to good health.	The effects of colonization and various policies of the Canadian government with regards to Aboriginal peoples, continue to negatively impact indigenous cultures. Aboriginal communities' efforts for self-determination and governance are related to all areas that affect their health and well-being. It has been demonstrated that communities with active programs related to self-governance have lower youth suicide rates.
Physical Environments	Physical factors in the natural environment are key influences on health. Factors in the human built environment such as housing, workplace safety, and community and road design are also important influences.	Aboriginal communities are more likely than any other segment of the Canadian population to live in environments that have a negative impact on their health. Inuit populations are more likely to live in overcrowded conditions – 53% in 2001 lived in crowded housing. Numerous communities were under 'boil water advisories' and water for 34% of Inuit was noted as being contaminated at some point during the year. In addition, there are numerous contaminated sites in the vicinity of Aboriginal communities.
Personal Health	Social environments that enable and support healthy choices and lifestyles as well as people's knowledge, behaviours and coping skills for dealing with life in healthy ways are key influences on health.	Many Aboriginal communities do not have the infrastructure to promote healthy lifestyles. Many Aboriginal communities are under-resourced in recreation and fitness infrastructure.
Healthy Child Development	The effect of prenatal and early childhood experiences on	Aboriginal children are less likely than their non-Aboriginal

	subsequent health, well-being and coping skills and competence is very powerful. Children born in low-income families are more likely than those born in high-income families to have low birth weights, to eat less nutritious food, and to have more difficulty in school.	counterparts and are more likely to be born in poverty, to grow up in lone parent families, and to live in overcrowded dwellings. Inuit children are less likely than their non-Aboriginal counterpart to attend early childhood education programs – only 35% had attended a program in 2001.
Health Services	Health services, particularly those designed to maintain and promote health, to prevent disease, and to restore health contribute to population health.	There is a lack of health care providers in Aboriginal communities. In particular, nursing shortages are felt in Aboriginal communities where the bulk of services are provided by nurses.
Culture	Some persons or groups may face additional health risks due to a socio-economic environment, which is largely determined by dominant cultural values that contribute to the perpetuation of conditions such as marginalization, stigmatization, devaluation of language and culture, and lack of access to appropriate health care and services.	As a result of poor socio-economic conditions, the health of Aboriginal peoples is lower than the norm. This lowered health status is compounded by the lack of culturally appropriate programs and services as well as a shortage of culturally sensitive health care workers. Cultural discontinuity including the loss of indigenous languages has been associated with higher rates of depression, alcoholism, suicide and violence. Inuit have a distinct culture and strong values of self-sufficiency, resilience, and adaptability and recognize that the total environment influences health and well-being.

(Adapted from: Health Council of Canada, 2005, pp. 22-30)

Table 2-3 provides an overview of widely accepted health determining factors and provides a general description of the condition in Inuit or Aboriginal communities related to it. It is clear from this summary that Inuit communities face considerable community health challenges. However, it is important to note that this comparison is taking place based on a norm defined by the average Canadian community. In many Arctic communities the dominant world view continues to be on that sees the world in a more

holistic way than European culture. Health is seen as a balance between mental, physical, social, and spiritual elements in the life of individuals and the community (Kuhnlein, 2004); each individual's health is considered as a whole and as being tied to the health of the community (Antone & Imai, 2006). A study undertaken in 2002 on Inuit appropriate health indicators identified the following domains and issues as being of importance to community health:

Table 2-4: Identified domains relevant to Inuit community health

Domain	Description	Identified Issue/ Example
Sustainability	Our use of the land is such that the land will still be useful to future generations.	Time spent on the land
Viability	The land, its plants and animals are in good health and are not threatened with extinction or habitat loss.	Disposal of toxic waste products
Community Caring	Our communities provide supports to people in need. People take care of each other.	Family life indicators
Prosperity	Our communities generate enough wealth to take care of our needs.	Non-income measures of wealth
Equity	Resources in our communities are generated by our economic activities and are distributed in way that people think is fair.	Community sharing

Source: Labonte, Abonyi, & Jeffrey, 2002.

While this analysis does not present an evaluation of the state of community health of Inuit communities with regards to these domains, it does provide an instructive comparison about the difference in values in terms of health and wellness. In particular, it highlights the importance of and significance of the connection with the land and the need for its preservation, the importance of community support networks and community sharing, and lastly, it highlights generating wealth but stipulates that this need only be enough to meet needs, there is no value placed on wealth beyond its utility.

2.6 Chapter Summary

This literature review presented an overview and examination of issues and knowledge relating to planning, community health and northern communities. It provided background information for the research project; in addition, it will be used for comparative purposes in the analysis section.

Chapter 3: Methods

3.1 Introduction

This section contains a summary of the methods used to conduct this project. The goal of the research was to explore connections between land use planning and community well-being in communities in the Inuvialuit region, NWT. As described above, the research objectives of this study are threefold: to explore the connection between land use in the Inuvialuit region and health and well-being of the communities in the region, to explore how land use planning can positively influence health and well-being in this context, and to make suggestions for a planning policy given the overarching objective of health and well-being at the community level.

In keeping with these research objectives, grounded theory was selected as a methodology for undertaking this study. Grounded theory is described as "a specific methodology developed by Glaser and Strauss (1967) for the purpose of building theory from data" (Corbin & Strauss, 2008, p. 1). I chose grounded theory for two reasons: first, it allows the researcher to work towards generating a theory from gathered data instead of testing a theory already in existence, this was valuable in this setting as there was little in the way of theory directly applicable to the study focus, and second, because it allows the researcher to "enter the world of the participants, to determine how meanings are formed through and in culture" (Corbin & Strauss, 2008, p. 12) which I felt to be important in that the unique planning needs of the North would be best determined by Northerners speaking to the northern context and from the Northern culture.

It should be noted that the results of a qualitative study of this kind are not necessarily able to be generalized to other settings, rather the results are often considered provisional and modifiable with the work of other studies, their contribution being that they provide a basis for an increased understanding of a specific issue in a specific context thus providing specific, localized meaning on the topic of inquiry (Corbin & Strauss, 2008). Grounded theory should be responsive to the situation in which the research is done; this makes it a good fit for a study in which the goal was to discover context specific connections and implications for planning. A similar study was undertaken by Raphael et al. (1999) in Toronto, Ontario. A community-based Quality of Life project, the goal was to develop a process in which assess factors contributing to quality of life and set direction for quality of life improvement using a community based health promotion framework (Raphael et al., 1999). Similar to this thesis, the methodological goals of that project were to generate localized and specific information with regards to community well-being

in a specific community that focused on residents' perceptions/ opinions or meanings of well-being conferred by the residents first and foremost (as opposed to the researchers).

Major steps undertaken for this research project include development of a survey instrument aimed at examining expert/ knowledge holder's views on community health, drivers of community health in the North, connections between health and planning, and policy directions for the future, conducting fifteen interviews and analyzing the interview data using constant comparison analysis. In addition, data from the Aboriginal Peoples Survey (APS) in 2001, on levels of service and infrastructure for the study area, as well as community wellness data were obtained and compiled to create community profiles. The qualitative data from the surveys were compared with the literature and community profiles to add further richness to the inquiry. Tests for validity were undertaken including member checks, comparison with a second data source (APS data), and re-reading original interview transcripts for 'fit' with final analysis.

The following chart summarizes key areas of inquiry related to the main research objectives and the method employed in gathering information.

Table 3-1: Summary of methods and key areas of inquiry

Area of inquiry	Literature review	Direct Observation	Expert interviews	Community profiles
What are the defining factors in creating and maintaining healthy communities in the study region?	√	√	√	
What are the links between land use and health and well-being?	√	√	√	
What are the key community health challenges in the study region?	√	√		√
What is the impact of the level of planning service and infrastructure in Inuvialuit communities?	√		√	√
What are key approaches to improving community health in the North?			√	√
What are the implications for land use planning policy in the region?			√	

3.2 Research Design

3.2.1 Research tools: Qualitative methods

Qualitative measures can be defined as any approach where the data are not primarily recorded in numerical form (Trochim, 2005). From this very basic definition, qualitative research can be seen as research that employs primarily qualitative measures and can be contrasted with quantitative research in several core assumptions of the research method. Qualitative research places an emphasis on seeing the world from the eyes of the participants and has a holistic rather than a reductionist approach. As well, qualitative research most often uses inductive reasoning and as such develops theory rather than tests it (Berg & Berg, 2007). In contrast, quantitative research places an emphasis on seeing an objective, context free reality and searches for cause and effect relationships, testing a pre-existing theory (Berg & Berg, 2007). Qualitative research tends to answer questions of 'how' and 'why' and in contrast to quantitative samples which are large and random, requires smaller focused samples to garner the deep understanding of issues typical of qualitative research. The essential trade off of qualitative research is that the ability to generalize is lost in favour of a deep and rich understanding of the study topic or question (Corbin & Strauss, 2008).

Qualitative research was chosen for this topic as the area of inquiry because the connection between planning and community well-being in remote, Arctic communities is relatively untraveled. There is foundational literature in health promotion in the Arctic and in 'healthy cities planning' in urban settings but very little in the way of connections made in health/ well-being outcomes related to planning in remote, Arctic settings. This was an interesting gap given the high cultural significance placed on 'the land' by Inuit communities, and the current pressure on land use many Arctic regions, due to resource development activities and speculation.

3.2.2 Foundational theory - Grounded theory

Grounded theory can be described as an iterative process in which the development of a theory and the collection of data build on one another. Developed by Glaser and Strauss (1967), the purpose of grounded theory is to develop a theory about phenomena of interest through observations where data collection and analysis take place concurrently (Trochim, 2005). It has been described as "one of the most widely used modes of carrying out qualitative research where generating theory is the researcher's principle aim" (Strauss & Corbin, 1997); arguably the increased use of grounded theory also reflects the increased use of qualitative research methods in recent years.

Grounded theory was selected for this research project not only because it is a proven methodology but also for its emphasis on discovery and ability to explore new theoretical territory. In particular, the concept of 'localized meaning' (Lewis, 2006) was important to this research design, as developing theory and policy recommendations for the region that are culturally appropriate and recognize the unique geographical, historical, and social setting of the Inuvialuit region, and more broadly the Canadian Arctic, was of key importance. While the research design was premised on my belief that there might be a significant connection between planning and community well-being in Arctic communities, the idea that a concept or theory would emerge from data collected directly from the study participants, rather than from my own beliefs or the limited body of research on the topic, was appealing. I felt that in this way the study's value would be strengthened in that it would be more representative of Northern views and more specifically views of regional residents.

3.2.3 Research methods

General principals in grounded theory research as summarized by Charmaz (2006, pg 5) include: 1) simultaneous involvement in data collection and analysis, 2) constructing analytic codes and categories from data (using the constant comparative method), 3) advancing theory development during each step of data collection and analysis, 4) memo writing to elaborate categories, specify their properties, define relationships between categories, and identify gaps, 5) sampling aimed towards theory construction, not for population representativeness, and 6) conducting a literature review after developing an independent analysis.

More detail on specific steps taken is provided below:

3.2.3.1 Initial travel to study area and key contacts made in the Inuvialuit region

The initial visit to the study region in the summer of 2006 involved getting to know people in the community, meeting people through informal networks, and having some discussions regarding the feasibility of the research project with key persons in the Inuvialuit Land Administration, the Inuvialuit Regional Corporation, and the Joint Secretariat (a land, water and wildlife co-management body for the region). Building rapport and contributing to the community through a part-time job in the region contributed to a high rate of response in interview requests in comparison with what other researchers experienced (pers. communication, P. Eagles, 2006).

3.2.3.2 Establishment of criteria for participant selection

In establishing criteria for interviewees, two criteria were of high importance. People should have a high degree of knowledge about land use planning, health issues/ health promotion in the region, or community development related to health as a result of life or work experience as well as a solid grounding in the North. In other words, I wished to avoid speaking with people who had expertise in the aforementioned subject areas if this expertise was not grounded in a high degree of localized knowledge and understanding of the unique circumstances of remote, northern communities, and more specifically of the Inuvialuit region. I felt that this knowledge would best be obtained by people who had lived and worked in the North for more than five years (a number that I selected as it eliminates a large number of residents who come to the region for a short period of time driven by work opportunities), and although some exceptions were made in interviewee selection, for the most part, interviewees met these criteria. I also interviewed people who were no longer residing in the North, but who otherwise met the criteria listed above, such as having lived in the North for a significant amount of time. It should be noted that there is a significant 'brain drain' of people with policy related work experience to southern centres, most notably Ottawa, in order to participate in national forums in their subject areas.

3.2.3.3 Theoretical sampling of interviewees

Theoretical sampling is premised on the idea that in grounded practice, data gathering and analysis occur simultaneously and that as such theoretical sampling is the process of 'letting the research guide the data collection'. Analysis proceeds after the first day of data collection and continues throughout the data collection process until theoretical 'saturation' has been reached. Concepts are generated from the data, and concepts lead to further questions, to which the sampling is then responsive (Corbin & Strauss, 2008). This method was employed for this study; concepts and ideas were generated based on initial interviews and further interviewing took place to fill in gaps in knowledge in specific areas. To start, I approached a number of people through my awareness of their job position or expertise. Where interviews were requested but no response received, I only pursued the interview request one more time to be respectful of those not wishing to participate.

3.2.3.4 Interview delivery

Interviews were designed to be semi-structured in that they employed open-ended questions, allowed participants to move back and forth between questions, allowed for maximum flexibility to pursue different lines of questioning when a topic of interest arose and in order to create the greatest 'density of

information' (Corbin & Strauss, 2008) but still provided specific questions and prompts. All interviews were conducted in the fall of 2007. The interviews most often took place over a meal, in part to create a more relaxed atmosphere, and in part as a gesture of appreciation for the interviewees' time. In some cases, the interviews took place during the workday in interviewee's workplaces, most often where people felt that contributing to the research was part of their work duties. The interviews took on average 40 minutes to complete. There were 15 participants were interviewed. They included the following professions/ areas of expertise: land use remediation specialist, planning consultant, Aboriginal health policy analyst, mental health practitioner, director of community development, healthy policy coordinator, professor, director of government services, land use policy coordinator, strategic research manager, research and analysis director, chief land administrator, and land claims negotiator. All interviewees were selected for their work or professional experience related to land use, planning, or health policy in the Inuvialuit region.

In terms of process, interviewees received a letter of introduction, which was followed up on and reviewed in conjunction with a statement of consent as per ethics requirements (See Appendix). In person and at the time of the interview, I reviewed the interview process, and double checked that the interviewee was amendable to having their interview tape-recorded.

Fifteen people were interviewed out of the 28 interview requests that were made. In three instances, people agreed to participate in interviews but scheduling prevented an interview. Of the remaining 10 potential interviewees, two turned down the request and referred me to other people and the remainder did not respond to the request. It should be noted that an effort was made to have a sample that was majority Inuvialuit, but in several cases after learning about the subject matter, potential Inuvialuit participants referred me to non-Inuvialuit who they felt were more knowledgeable about the subject area. In these cases, the people who I was referred to were considered in the community as 'Northerners' having lived in the North for more than 20 years and were highly integrated into the community. The demographics of interviewees were as follows:

Table 3-2: Interviewee Demographics and Characteristics

Interviewees: n=15
Gender: male n=11, female n=4
Education: high school n=2, some post-secondary n=1, college or undergrad n=3, graduate n=19
Ethnicity: Inuvialuit n=2, Aboriginal n=3, non-Aboriginal n=10
Connection to the North: family/ personal n=9, work n=6
Years in the North: less than 5 yrs n=5, more than 5 yrs n=10, avg yrs in the North = 13.1
Work experience: health field n=3, planning field n=5, community development n=2 , researcher/other n=5

3.2.3.5 Assessing the appropriateness of the interview design

The interview was pre-tested with two different people whose subject expertise made them appropriate. In each instance, the interviewees completed the entire interview and were then asked to comment on the interview length and comprehensibility, and make any other comments that about the quality of its design. The interview transcript was also reviewed in order to assess if questions were eliciting necessary responses. A minor change in survey design in question C, Part 2 was necessary. In this question, the interviewees were asked to rank health determinants in terms of their importance in a northern setting; this was determined to be too complicated; the survey was changed to ask interviewees to categorize the health determinants into categories of low, medium or high importance rather than rank them.

3.2.3.6 Transcription

The interviews were reviewed and transcribed verbatim and transcripts were given identifier codes.

3.2.3.7 Field notes

Field notes were kept throughout the research process and served to record the direct observations, researcher thoughts and assumptions and theories as the research moved forward, as well as serving as a journal to record appointments and other research related deadlines. This practice is consistent with grounded theory methods as described by Lincoln and Guba (Lincoln & Guba, 1985)

3.3 Interview Design

As previously mentioned, the survey was designed with open-ended, semi-structured questions to allow for flexibility in questioning. The survey design is consistent with an exploratory study of this kind (Corbin & Strauss, 2008). The content of the survey was grouped into five areas: personal background in the North, personal attitude to community health, drivers and community health in the North, connections

between health and planning, directions for the future. For the most part, the survey was conducted in that order, but the survey design did allow for movement between the areas when desired (see Survey Instrument, Appendix A). The survey design attempted to be culturally appropriate in that it used language that was in common use with regards to the area of inquiry and that the use of open-ended questions made it easier for people to talk about issues that were important to them rather than being confined to pre-determined topics.

3.3.1 Personal background

The section on personal background was designed to ascertain background on the interviewee pertaining to their connection with the North; it served to 'break the ice' with interviewees.

3.3.2 Personal attitude to community health

The section on personal attitude to community health was designed to determine what interviewees would define as a healthy community, what they would list as the most important factors in creating a healthy community, and finally how strong they saw the connection between health and land use as being. This section served the purpose of defining in what way the interviewee defined a healthy community. This would allow for comparison with questions later. For example, if an interviewee defined health with a strong focus on physical health of an individual, this could be used in the interpretation of their statements further along. The listing of the top factors in creating healthy communities served a similar purpose as well as to be used for interpretation purposes in the analysis.

The final question in this section: "On a scale of 1-10, with 10 being a very strong connection, and 1 being a weak connection, how strong do you see the connection between land use and the health of the residents?" was an important question. It served to give interviewees a chance to express how strong they saw the relationship between land use and health as without needing to describe why, making the question easy to answer. From an interpretation standpoint, this question would also serve to allow the researcher to analyze the strength of this relationship in the eyes of the interviewees.

3.3.3 Drivers of community health in the North

Questions were asked in this section based on two exhibits (see Appendix B). The first, Exhibit 1, was a pie graph showing the estimated impact of health determinants of the Canadian population. Based on research conducted by Health Canada and the Canadian Institute for Health Information, this graph represents up-to-date research on estimated impact of health determinants on health of the Canadian

population. It was included to see if the interviewees felt that it was representative of northern communities or not. It served to have interviewees discuss health determinants in general, but more specifically to contrast the Canadian average with northern communities.

Figure 3-1: Exhibit 1 - Estimated impacts of health determinants of health status of the Canadian population
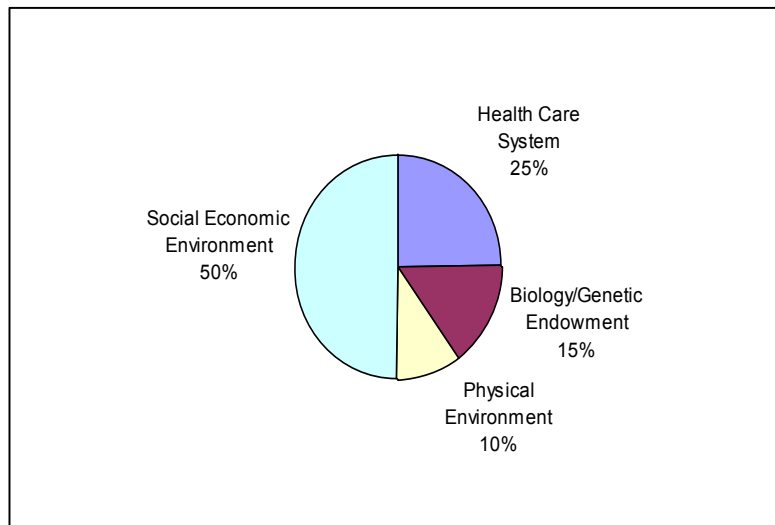
As a follow-up to this question, a second question on health determinants was asked. The twelve component health determinants (compiled in the pie chart in the previous question) were given to the interviewee as flip cards. The name of the health determinant was on each card and an explanatory paragraph on the backside (for those who wished more detail). The health determinants as well as the explanatory paragraphs were taken from research done by Public Health Agency of Canada and made available in the report titled "The Health of Canadians: The Federal Role, Volume 1 (Senate Standing Committee on Social Affairs, Science and Technology, 2001). Interviewees were asked to categorize the health determinants into categories of low, medium or high importance in terms of their relevance to health status specifically in northern communities. This question served to both give more detail as well as weighting to the more generalized response given on health determinants in the previous question.

3.3.4 Connections between health and planning

In this section, questions were asked based on the Community Well-being Index (CWB), a modification of the Human Development Index for application at the community level. The Community Well-being

Index was developed by Indian and Northern Affairs Canada. It creates a single score measurement of 'community well-being' based on four component scores: income, education, housing, and labour force (Cooke, 2005). While there has been criticism of the CWB Index for its omission of cultural measures as a component of community well-being and its emphasis on Western measures of well-being (see section 2.5.1.3 in literature review for further discussion on this), it was thought that the index would provide a useful starting point for a discussion on well-being in the communities and the scores, as presented would provide a starting point for examining other intervening variables (pers. communication, S. Senecal, 2007). In addition, it should be noted, that this index is one of the only one of its kind that has attempted any sort of measurement of community well-being in the region.

Interviewees were given a map with CWB scores mapped on it (see Figure 3.1 below). and colour-coded based on their score. They were asked to comment on a) reasons for one community doing better than another, and b) to give specific examples of these differences.

Figure 3-1: Exhibit 3 - Map of CWB Scores

Measuring well being in Western Arctic and Nunavut Communities:
The Community Well Being (CWB) index
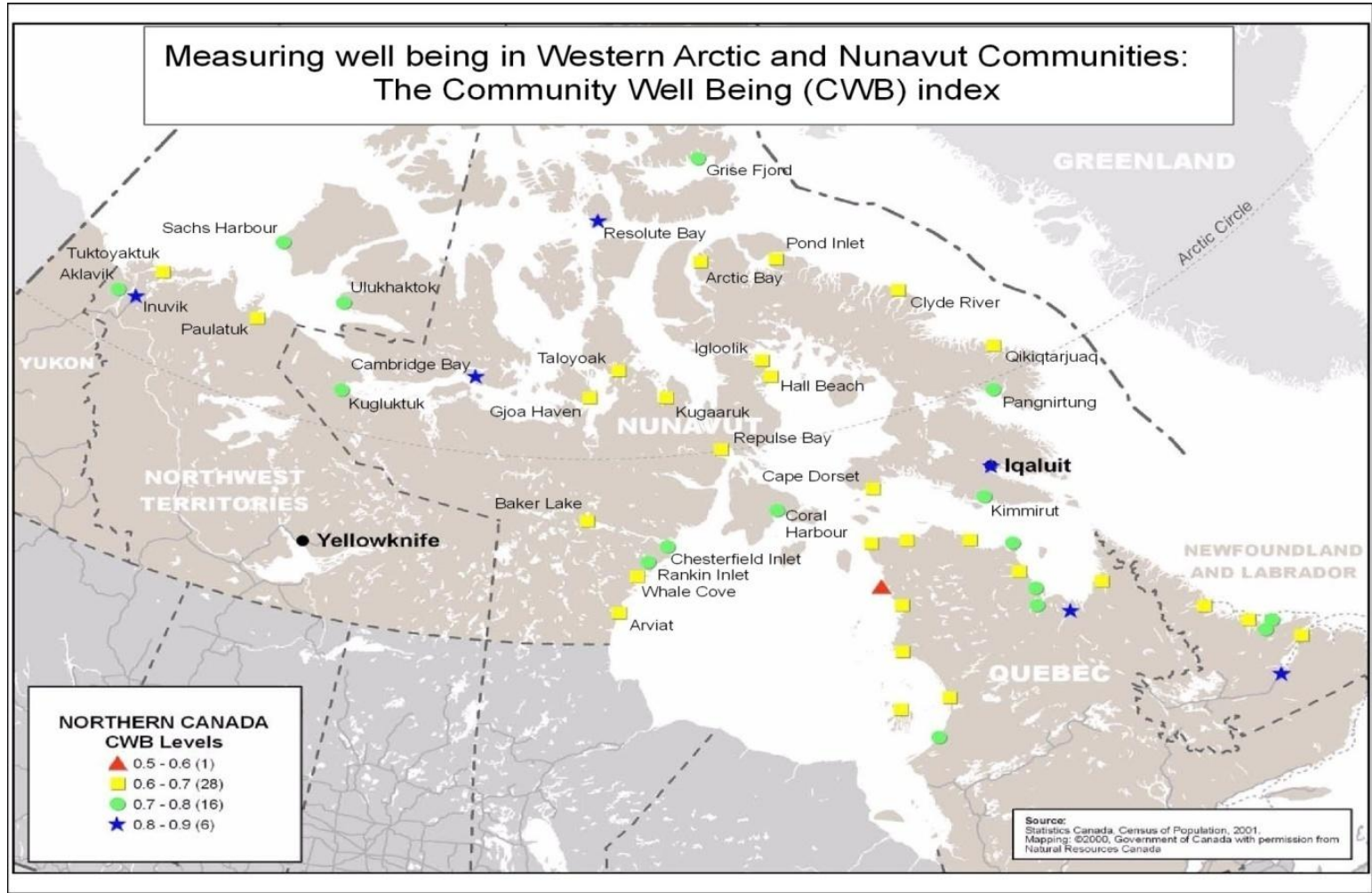
This question served to allow interviewees an opportunity to discuss the specific differences in health and/ or infrastructure and land use variation between communities. Including communities from outside of the study region was intentionally done in order to provide an opportunity for interviewees to make comparisons and analogies with communities from outside in the region. It should also be recognized that despite the long distances between some communities, they are connected by family ties and political ties, and there is a high degree of awareness of other communities.

The second question in this section involved using a fourth exhibit, a chart in which the component scores of the study region communities were broken down for comparison and comment by the interviewees (see figure 3-3 below).

Figure 3-3: Exhibit 4- Community well-being scores for Inuvialuit Communities
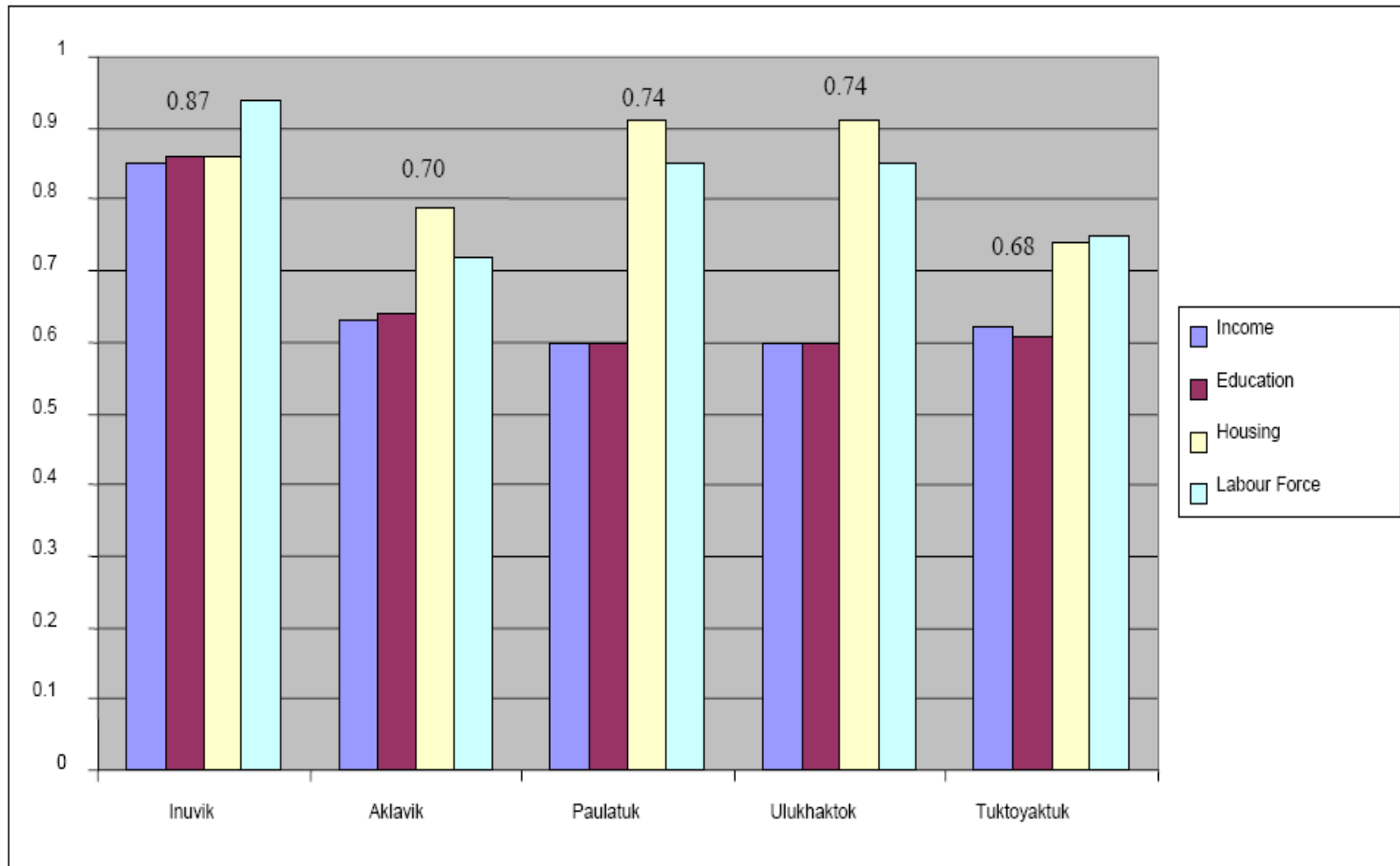
This question was designed to allow for a more detailed inquiry into the conditions specific to the study communities.

3.3.5 Directions for the Future

The final section was aimed at finding out what directions for improvement in community health were in the eyes of interviewees. They were asked to describe what they thought would be the interventions most effective for improving community health and then asked to prioritize these if numerous suggestions were given.

3.4 Constant Comparison Analysis

Constant comparison analysis is central to the process of grounded theory methods and involves a process of coding, categorizing, and comparing data first with other data, and then as theory is generated, comparing new data against the emerging theory. Lincoln and Guba (1985:339) cite Glaser and Strauss as describing constant comparison analysis as being comprised of four stages:

i.   Comparing incidents applicable to each category
ii.   Integrating categories and their properties
iii.   Delimiting the theory
iv.   Writing the theory.

The basic steps in this process have been described graphically as follows:

Figure 3-4: Phases in a Grounded Theory Study
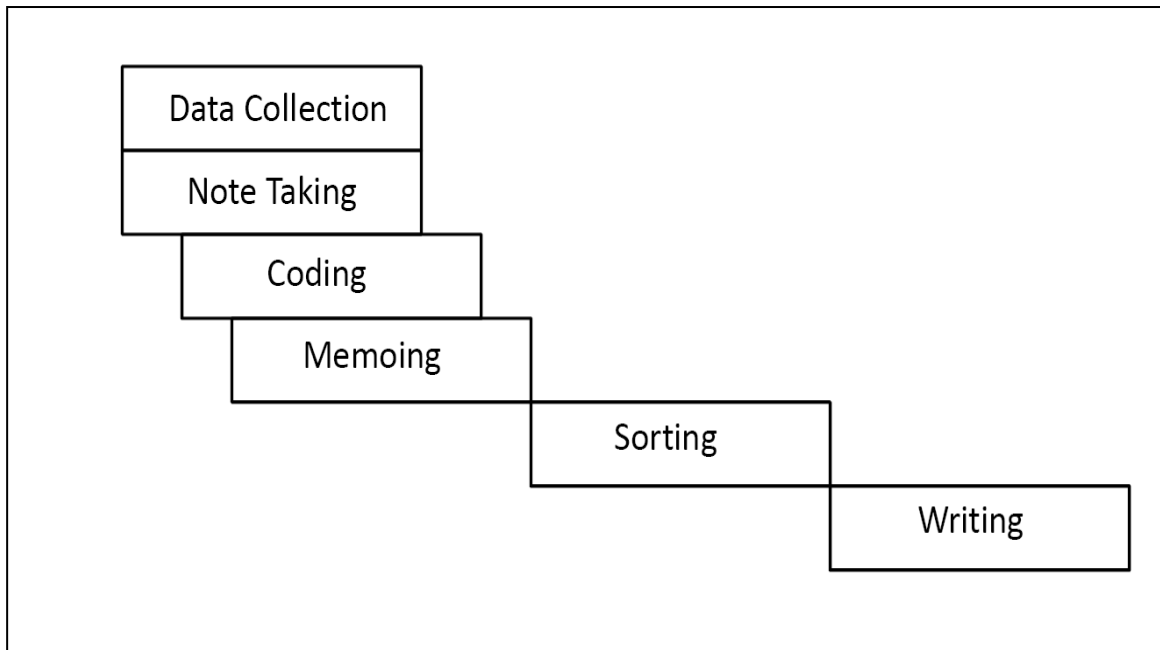
Source: Dick, 2008

3.4.1 Coding

Coding is a technique for 'assigning units of meaning' to the information compiled in the study with the goal of "dissecting the field notes while keeping the relations between the parts intact" (Miles & Huberman, 1994), in other words coding allows a researcher to organize data into categories that render it meaningful for the purposes of the research project (Lofland, Snow, Anderson, & Lofland, 2006). The coding occurs at three different levels: level one coding or substantive codes, level two coding where level one codes are condensed to assign categories of codes, and level 3 coding where core variables or basic processes are identified (Berg & Berg, 2007).

The basic coding process involves the researcher marking sections of text with similar topics or information with the same label allowing for clustering and further sorting of information and the analysis proceeds. Towards the end of the coding process, a core category may start to emerge. This category usually emerges as a result of high frequency of mention and is connected to many of the other categories that are emerging (Lofland, Snow, Anderson, & Lofland, 2006). This forms the basic grounded for the development of a theoretical framework for the project.

There are a variety of possible methods for coding; the method selected for this project is based on methods outlined by Corbin and Straus (2008). The first step was 'open coding' or coding

from the raw data to create initial themes. The second step was 'axial coding' in which overriding themes were identified from the initial themes and categories were developed.

3.4.2 Categorizing

Categorizing allows a researcher to reduce the complexity of the data by grouping data based on similar properties in their content. Lincoln and Guba (1985:347) prescribe that the process of categorizing must ultimately involve devising rules that can describe category properties that can be used to justify the inclusion of each data bit that is assigned to the category. As such, the meaning of the category is "bound up on one hand with the bits of data to which it is assigned and on the other hand with idea that it expresses" (Dey, 1993, p. 102).

In this study, categories were developed according to this accepted methodology. Categorizing was done in both spreadsheets and by hand, using print outs of memo notes. Categories were refined as data were added to each of them, in some cases, this process generated new categories or created the collapse of two categories into one.

3.4.3 Memoing

Memoing takes place in parallel with data collection, note taking and coding (see Figure 3.4). As coding proceeds a large number of memos are generated; they are essentially notes to the researcher about a category or an emerging hypothesis (Corbin & Strauss, 2008). Memos are essentially an intermediate step between coding and the first draft of completed analysis. There are different types of memos; code memos are notes that clarify the meaning behind the codes, theoretical memos are those in which theorizing about the ideas arising from the analysis is noted, and operational memos are those regarding procedural issues (Lofland, Snow, Anderson, & Lofland, 2006).

3.4.4 Saturation

Saturation can be described as the point of diminishing returns in a qualitative research study (Dick, 2008); it is the point at which nothing more is added to what you already know about a category. Once this was achieved for all developed categories, it was determined that no further sampling was necessary; this allowed for the research to proceed into sorting and writing.

3.4.5 Additional Analysis

Additional analysis was undertaken on topic frequencies. It was determined, that as described by (Lofland, Snow, Anderson, & Lofland, 2006, p. 149), it would be informative to count how

frequently subjects or topics were mentioned and to summarize some of these frequency tabulations in terms of simple descriptive statistics. This was undertaken and the results are described in the following chapter.

3.5 Literature Summary

Corbin and Strauss (2008) suggest that if everything is known about a problem before hand that there is no need for a qualitative study. As such, the role of literature is quite different in a grounded theory study in comparison with a hypothesis testing study. Grounded theory experts suggest that a complete literature review not be completed before heading into the field as it is impossible to know beforehand what concepts or problems will arise from the set of data (Corbin & Strauss, 2008, p. 35) and further that a complete literature review may constrain the process of analyzing the data and the emergent theory (Glaser & Strauss, 1967). In conducting this research project, an initial review of the literature was undertaken which allowed the framing of the research questions and the development of the survey. Following the analysis, a rigorous update and review of the literature was undertaken, with additions made the literature review, found in its final form in this document.

In addition, in a grounded theory study, literature may be treated as data. In some studies non-technical literature may be used as a primary data source. This was not undertaken for this study, although technical literature (namely the CWB Index data) was used to provide questions for the interviews. Both CWB data and APS data were used as a cache of descriptive data and used to enhance rigour in the analysis. This is described by Corbin and Strauss (2008) as a common use of technical literature in grounded theory studies.

3.6 Community Profiles

Comparisons were made between the survey results and the summarized statistical data in the community profiles section of the literature review was made. The information in the community profiles was reviewed in the same categories as the survey questions. The results of this comparison are listed in the following chapter.

3.7 Evaluation

Completed grounded theory, according to Glaser and Strauss' core goals of "moving qualitative inquiry beyond descriptive studies into the realm of explanatory theoretical frameworks" must meet

the following criteria: a close fit with the data, usefulness, conceptual density, durability over time, modifiability, and explanatory power (Charmaz, 2006, p. 6).

Glaser (1978) suggests two main criteria for judging the adequacy of a grounded theory study. Simply put, these are that the developed theory must fit the situation, and that the theory must 'work' in the situation in which it was developed. Evaluation of qualitative research was described by Lincoln and Guba (1985) who set out four major criteria for establishing rigour in qualitative studies: credibility, transferability, dependability, and confirmability (Lincoln, 1985, pp. 301-327). These were summarized by Baxter and Eyles (1997, p. 512) in the following chart:

Table 3-3: Criteria for evaluating qualitative research

Criteria	Definition	Assumptions	Strategies/ practices to satisfy criteria
Credibility	Authentic representation of experience	Multiple realities Cause not distinguishable from effects Empathetic researcher Researcher as instrument Emphasis of research endeavour	Purposeful sampling Disciplined subjectivity and reflexivity Prolonged engagement Persistent observation Triangulation Peer debriefing Negative case analysis Referential adequacy Member checking
Transferability	Fit within contexts outside the study situation	Time and context bound experiences Not responsibility of 'sending' researcher Provision of 'receiving' researcher	Purposeful sampling Thick description
Dependability	Minimization of idiosyncrasies in interpretation Variability tracked to identifiable sources	Researchers as instrument Consistency in interpretation Multiple realities Idiosyncrasies of behaviour and context	Low inference descriptors Mechanically recorded data Multiple researchers Participant researchers Peer examination Triangulation, inquiry audit
Confirmability	Extent to which biases, motivations, interested or perspectives of the inquirer influence interpretation	Biases, motivations, interests or perspectives of the inquirer can influence interpretation Focus on investigator and interpretations	Audit trail products Thick description of audit process Autobiography Journal/ notebook

While it was beyond the scope of this study to follow all suggestions given by Lincoln and Guba with regards to ensuring adequacy of the study quality, the following processes were undertaken with study quality in mind:

- Data dense interviews were conducted. This was done by using open-ended questions, in semi-structured interviews, described as the most data dense (Corbin & Strauss, 2008, p. 27)

- Reflexivity was undertaken by providing description of my goals and views. This description is found in section 1.1.

- Sensitivity of the researcher is enhanced by what the researcher brings to the study and in particular can be enhanced by professional experience (Corbin & Strauss, 2008, p. 33). At the completion of my thesis research I had spent 16 months in the study region in a professional capacity as the Planning and Policy Coordinator for the Inuvialuit Regional Corporation.

- Triangulation is cited as an important method for increasing accuracy in a study. For this study I employed a secondary, quantitative source of data, obtained through a data request with Statistics Canada. A sub-set of data from the Aboriginal Peoples Survey 2001, data were obtained relating to the survey questions and was used to compare with analyzed data from the interviewees.

- Member checks refer to the process of providing selected members of the sample group with initial study findings for verification. For this study, a selected number of interviewees were asked to review the preliminary results and analysis and comment on them, as per Lincoln and Guba's recommendation for the inclusion of member checks to increase methodological accuracy (Lincoln and Guba, 1985:236). In all instances, comments were received that indicated that the results were consistent with their experience.

3.8 Methodological Limitations

In obtaining the complete set of statistical data used in the community profiles, data from 2001 were used for consistency (i.e. data for later dates was available for some measures but not others). In particular, the large body of information coming from the APS was not available beyond 2001. With this in mind, I decided to compile all data based on 2001 numbers. In addition, index scores and data that interviewees commented on in their interview were 2001 data. Nonetheless, it should be noted that data in this document are for 2001 and that the interviewee interviews and direct observation took place in 2007.

In addition, I noted a methodological limitation with the interview template as I was conducting the surveys. The section on health determinants was found to be somewhat confusing by interviewees; two test surveys were completed and a problem was not noted at this time, but the majority of respondents asked several questions for clarification in response to the health determinants section, indicating their lack of clarity and familiarity with the terms used. In re-delivering this survey or another survey of this kind, I would chose to re-frame the questions to ask

about health determinants in a more general way, using examples and language more commonly used rather than technical, academic phraseology employed this time.

3.9 Special Note: Research in Northern Canada

Communities in Northern Canada have been the subjects of an increasing number of research projects; in many cases, however, in many cases the benefits of this research to northern communities has been limited. While measures have been put in place to ensure ethical process and northern control and decision making over research in the area, there are still important considerations in conducting research in the North. The problem is exacerbated by both the historical lack of control that local people had over their region and activities conducted there, as well as the current lack of northern based research capacity that means that most researchers come from the south, affiliated with southern institutions and leave after a brief period of time.

The Association of Canadian Universities for Northern Studies has developed a set of principles for ethical research in the North. These are summarized below:

Table 3-4: Ethical Principles for the conduct of research in the North

1.	Researchers should abide by any local laws, regulations or protocols that may be in place in the region(s) in which they work.
2.	Appropriate community consultation should occur at all stages of the research, including its design and practice. Incorporation of local research needs into research projects is encouraged.
3.	There should be respect for the language, traditions and standards of the community and respect for the highest standard of scholarly research.
4.	The research must respect the privacy and dignity of people, and in order to do so, researchers are encouraged to familiarize themselves with the culture and traditions of local communities.
5.	The incorporation of traditional knowledge into all stages of research is encouraged.
6.	For all parties to benefit fully from research, efforts should be made, where practical, to enhance local benefits that could result from research.
7.	The person in charge of the research is accountable for all decisions on the project.
8.	No research should begin before obtaining informed consent of those who might be affected.
9.	In seeking informed consent, researchers should clearly identify sponsors, purposes, sources of support, and investigators responsible for the research.
10.	In seeking informed consent, researchers should explain the potential beneficial and harmful effects of the research on individuals, on the community and on the environment.
11.	The informed consent of participants involving human subjects should be obtained for any information gathering techniques to be used.
12.	If confidentiality cannot be guaranteed, the subject must be informed of the possible consequences of this before becoming involved in the research.
13.	No undue pressure should be applied to obtain consent for research participation.
14.	A community or an individual has the right to withdraw from the research at any point.
15.	On-going explanations of research objectives, methods, findings and their interpretation should be made available to the community.
16.	Subject to the requirements for confidentiality, descriptions of the data should be left on file in the communities from which it was gathered, along with descriptions of the methods used and the place of data storage. Local data storage is encouraged.
17.	Research summaries in the local language and research reports should be made available to the communities involved.
18.	All research publications should refer to informed consent and community participation, where applicable.
19.	Subject to requirements of confidentiality, publications should give appropriate credit to everyone who contributes to the research.
20.	Greater consideration should be placed on the risks to physical, psychological, humane, propriety, and cultural values than to potential contribution of the research to knowledge.

Source: Association of Canadian Universities for Northern Studies, 2003.

Even when following these principles, the relatively large number of research projects in recent years has resulted in what some are describing as 'research fatigue' in northern communities

(pers communication, numerous, 2006). To a certain extent the large number of research projects being undertaken reflects an information deficit on northern subject matter and therefore may be of overall benefit to the region, but ensuring a positive process with the research process and that the results of the research returns to the North in a useable format, presents a larger challenge.

In NWT, the Aurora Research Institute conducts a secondary ethical review process along with an extensive community and stakeholder consultation process for all research undertaken in NWT. This lengthy process ensures that all stakeholders are in agreement with the research project and are able to place procurement, employment and other requirements on the research process, as well as report back requirements on the researchers (Aurora Research Institute, 2006).

These guidelines were used as an overlay to the ethical requirements of the University of Waterloo and the methodological requirements of grounded theory, in an effort to conduct research that was of net benefit to the communities in the study region.

3.10 Chapter Summary

This chapter outlines the methods undertaken in completing this research project as well as the basic methodological assumptions with which it was undertaken. The unique circumstances of research in the North were considered, and were overlaid on the core ethics requirements of scholarly research. The research design and methodology were chosen with the goal of conducting a research project of maximum cultural relevance and to generate information that is useful and specific to the context of Arctic communities.

Chapter 4
Results and Analysis

In this section, the results and analysis are presented. The chapter is organized as an analytical response to the key areas of inquiry as outlined in section 3.1.

4.1 Defining, Creating and Maintaining Healthy Communities

In responding to the question "how would you define community health", it was noted that none of the respondents felt that any single thing was the sole defining factor in healthy communities, all rather based their response on a suite of interacting factors. Factors related to social health of the community as well as to community services and opportunities were the two most frequently mentioned categorized responses. (See Figure 4.1).

Table 4-1: Categorized frequency of response to question B1 "how would you define a healthy community?"

	Physical health of individuals	Community social health	Community/ local self-determination	Local economic viability	Community services and opportunities	Cultural wellness
Number of responses	8	21	6	3	13	8
Percentage of recorded responses (%)	13.5	35.6	10.1	5.1	22.0	13.5

Responses to question B2, "What do you think are the most important factors in creating or maintaining a healthy community?" were grouped into sixteen primary categories and five secondary categories. The identified primary categories were: resources and mental health, social networks and norms, economic and job factors, strong leadership and good governance, access to services, local control, infrastructure and community design features, self-determination, education, culture and traditions, healthy families, recreation and volunteerism. This listing of code groups represents a listing of major factors that they interviewees in this study felt were important intervening variables into community health.

The frequency of response by code is noted in Table 4-2 below:

Table 4-2: Frequency of response by code in defining, creating and maintaining a healthy community

Code	Frequency of response
Individual physical and mental health	7
Healthy families	5
Social networks and social norms	19
Strong leadership and good governance	6
Economic and job factors	8
Access to services	10
Infrastructure and community design features	12
Culture and traditions	10
Volunteerism	8
Recreation	7
Self-determination	4
Education	3
Local control	8

4.1.1 Healthy individuals

Individual physical and mental health was mentioned by one third of respondents. Respondents commented on physical activity as an indicator of health, nutritious food, and absence of alcohol and drug abuse.

> A healthy community is where people are active…they eat healthy, eating nutritional foods, good foods. No alcohol and drugs. P07
>
> I would say [a healthy community is] physically healthy, where incidents of obesity or smoking or drug and alcohol abuse are low because of all the other options [positive things to do] in the community. P10

These comments are in keeping with current social marketing efforts in the region, in particular with regards to increased awareness of the nutritional deficits of packaged foods and positive benefits of country or harvested foods. In addition, alcohol and other substance abuse issues are high on the list of concerns and in terms of rate of impact on the population in the study region (Inuvialuit Regional Corporation, 2008).

[A healthy community has] healthy families, free of addictions… P01

This concern is reflected also in the APS data question "Inuvialuit adults saying that alcohol abuse is a problem in the community"; 76.7% of respondents indicated 'yes' that they thought alcohol abuse was a problem in their community.

Arguably, until a person achieves a reasonable level of personal health they cannot contribute in a meaningful way to their community. The health of individual community members can be seen simplistically as a resource that is incrementally added to; as the number of healthy individual's increases, the potential for positive contribution to the community increases and the drain on community resources in terms of support diminishes.

4.1.2 Education

Education is widely accepted as a key social determinant of health (Health Council of Canada, 2005). The Public Health Agency of Canada defines education as a determinant of health in the following way: "Education contributes to health…. by equipping people with knowledge and skills for problem solving and helps provide a sense of control and mastery over life circumstances. It increases opportunities for job and income security, and job satisfaction; it improves people's ability to access and understand information to help keep them healthy" (Federal, Provincial, Territorial Advisory on Population Health, 1999).

One fifth of respondents indicated that they felt that education, both in terms of having educated community members and a good base of education services available in their community, was important in community health.

A healthy community is one that has a good foundation of education
services and opportunities. P10

Education is a key determinant of health. The more educated people are,
the better off they are, absolutely. P03

This is corroborated by data from the APS which showed that when asked "What could be done to make life in your community better?" 'More schooling available' ranked as the second most significant area for improvement, after 'more jobs available'. In addition, APS respondents who indicated that they had considered moving away from their community gave education and schooling was the highest category of response when asked why, accounting for 32.3% of all respondents to the question.

The perceived inadequacy of education services in the region as well as low average test scores on standardized tests for junior and high school students in the region (Inuvialuit Regional Corporation, 2008) ranked among the top concerns of residents in a community consultation process recently undertaken by the Inuvialuit Regional Corporation. Education was the subject of a recent Inuit Tapiriit Kanatami conference (ITK represents all Inuit groups in Canada) and has been identified by Mary Simon (ITK president) as a top policy concern due to its significant implications for the future of young people and of the Inuit people as whole (Simon M. , 2008).

Education provides people with options for their future and enhances their prospects for employment and general well-being. However, as one respondent noted:

> Education means very little if it doesn't then result in the ability to support oneself or ones loved ones…P13

This respondent makes an important point in pointing to education as a skills-based entity which primary function is to provide a means to an end in terms of functionality in ones society. If the education that one is receiving is of limited use in the context in which one lives, or provides one with skills which do not then translate into employment or another form of provision of goods and services, then its utility is limited. This comment also speaks to one of the essential challenges in the region in that the mixed economy – a blend of traditional and subsistence pursuits and the historically unstable wage economy in the region – means that literacy in both may be required.

> Education is different here. You have elders who have gone through life experiences – its gets them the same level of mind as a highly educated person who has gone through university and has a PhD. P01

The education system, imported from Alberta has also been roundly criticized for its lack of cultural relevance and minimal inclusion of material on and originating from the region (pers. communication, various, 2006-2007).

4.1.3 Culture and traditions

Culture and traditions were cited as an important factor in community health.

> It is quite clear that well-being is still very much dependant on and tied to hunting, fishing, trapping, gathering, because those activities are core components of culture and the ability of culture to be passed on from one generation to another. P04

Culture and traditional activities were specifically mentioned by more than half of respondents as being a key component in community health and well-being in the study area. One respondent noted:

> When I lived in <small community in the Inuvialuit region> spring time come along, April, May everybody was happy because everybody was going out on the land. Fishing or to the coast to geese hunt. All just happy people, you could just tell from their faces and their walk and their demeanor because they are going back on the land with their families and all excited…definitely a connection between being on the land and people being happy. More at peace too. P06

This finding is strongly supported by the literature which documents the very notable negative health and well-being consequences associated with cultural loss.

Participation in traditional activities as measured by the APS is measured at 53.7% of the regional population directly participating in harvesting activities. Participation in some communities is significantly higher: 68.9% in Ulukhaktok, 69.2% in Paulatuk, and 80% in Sachs Harbour.

> When you think of people with office jobs in the North, even for people who hold regular jobs, office time jobs for them, a key thing when they are negotiating their conditions is to be able to go out on the land, during hunting season, they'll say "I'm taking a couple of weeks off, I don't care if I'm not paid, I'm just going to be out on the land". It's tied to health, it's tied to traditions. P12

Respondents referred to Ulukhaktok as an example of a community that has a better than average level of community health and made a link between that and the strong sense of culture in the community.

> When I look at Ulukhaktok, it is one of the successful communities – and it's true that it is a more traditional community. P05

There is strong anecdotal evidence to suggest that communities with high participation rates in traditional activities and a strong sense of culture tend to do well, and have higher levels of well-being. While no statistical evidence of this was found in APS or CWB data, people often comment on the importance of culture in well-being in northern communities.

4.1.4 Economic and job factors

Economic and job factors were seen by respondents as key in the vitality of the community. Without an economic future, it is argued that people tend to leave the community.

> You need hope and economic opportunities to keep people, otherwise they leave the community. P02

Notable in the answers given was the recognition that people may not make a formal economic contribution to their community but rather may make an informal one or a contribution to the traditional economy. One respondent said:

> The most important factor in creating healthy communities is the ability to contribute in a positive way to your community, whether it is through employment…or volunteering or something. P10

Another said:

> I think a really key part of individual well-being is a sense of self-worth that is based on what a person does and what they contribute to their family and their community... it can be employment or wage economy but a lot of people contribute another way by traditional knowledge or harvesting… P13

This is ability to contribute in an informal way through traditional activities or social networks is arguably very important in a region where the rate of adult full-time employment as measured by the APS 2001 for the region was 46.2%, where 28.7% of the adult population was employed part-time and 67.6% of respondents indicated that employment was a 'problem in their community' and 30.9% indicated that jobs/ employment were a reason that they had considered moving from their community.

This recognition of the importance of this contribution from the traditional or subsistence economy in the region is important. The strength of the traditional economy is one of the distinguishing factors in northern communities. To assume that as economic development in the region proceeds that this informal economy will slowly diminish to be replaced by the wage economy is to overlook its important connection to culture in the region.

4.1.5 Infrastructure, community design and access to services

Infrastructure and services were grouped together in this category in recognizing that they were two sides of the same coin; infrastructure allows for related service provision, service provision is facilitated by community infrastructure. When grouped in this way, 11 of 15 respondents mentioned infrastructure and service related to community health a total of 22 times, the second highest frequency of mention after social capital. Infrastructure and service related to health, municipal, recreation and other support services was considered in this category; education services were considered separately.

> Access to services is huge with regards to health. There is no question at all. P03

Several respondents made comments about what they saw as the connection between a lack of positive activities to participate in and resulting negative behaviours.

> The smaller a community is, the more challenges it has because it has less in the way of investments [in services and infrastructure]... so it's left off that people in a community will do more unhealthy things [rather than] healthy activities. P05

> There's a strong connection [between infrastructure and community health] because if you don't have the infrastructure so that people can do things, especially where we are at, we have long winters. If we didn't have the rec centre and the skating rink and the fitness centre and the gyms, I don't know what people would do! They'd go crazy or they'd be on the streets doing other destructive behaviours. P10

Inuvik was cited as an example of a community that had better than average community health due to its good complement of infrastructure and service.

> Places like Inuvik do well because they have a variety of opportunities and services so that people have different options whether in education, whether it's recreation-wise, whether it's work-wise, there is just more opportunities.P10

Some respondents commented on what can be argued as functional similarity of on-the-land traditional activities and town based recreational activities.

> A healthy community is one that has a good foundation of recreational opportunities whether it is on the land or in the community. P10

> …there is strong connection between infrastructure and community health... also having access to the land is important, you can get out and go to different areas, I think that's good, and it allows people to do other things whether its ski-dooing or canoeing or something else P10

Some mention was made of community design features as well as green space. Respondents commented:

> In the sense that green space can serve as a locus for community activities, I think it is very important…..recreational space is very important…but aesthetic green space is less important here, as compared with an urban environment. P13

> In southern communities, something like green space is very important because there is a separation between the urban fabric and the natural environment…but in the North, the hinterland and the urban fabric are sort of continuous…there's where to live and then the hinterland provides game and access to recreational activities, cultural activities. P14

In this way, it can be argued that access to good hunting, trapping, gathering areas acts in a similar way to infrastructure in town. Both are physical attributes of the environment that allow people to participate in activities which may also contribute to social or cultural wellness.

4.2 Links between Health and Well-being and Land Use

In discussing health and well-being in the North, interviewees felt that the physical environment or 'the land' played an important role and perhaps one that was more significant than it would be in southern communities.

> The physical environment should definitely go up [in importance] according to life up here. P01

> I would change [the diagram] to have the physical environment be more…simply because of the connection with the land. P05

> Connection to the land…that is definitely part of healthy well-being. P12

Question B4 asked respondents: "On a scale of 1-10, how strong do you think the connection is between land use and the health of community residents is?" Ten was defined as a strong, pivotal connection and one as a very weak or non-existent connection. Of 15 interviews, 13 responses were given; two respondents declined to give an exact number but both referred to the connection as being "important". Responses given ranged from 7 to 10 and the average of all responses given was 8.25 on a scale of one to ten. Comments given in relation to this question were notable. One respondent commented:

> "It is central, the connection [between the land and the health of the community]". P04

Another respondent commented,

> "The connection with the land is spiritual…it is a sense of culture, it is a sense of heritage. It is almost as if to have physical and mental well-being, you have to have a healthy connection with the land. It is way more than the routine functioning of clean air and water…it is way deeper." P05

A third respondent commented:

> "I think it is extremely connected. There are all sorts of connections that
> you can tie." P12

The reasons given for this importance of this connection were grouped into five categories:

a. cultural connection – describing the basis for culture that arises from the historic and current connection with the land
b. self-determination – as it relates to ownership and control over ancestral lands
c. functional relationship with land – in terms of services provided including air, water, wildlife, food etc
d. economic basis in the land – in terms of monetary value (or replacement value) of goods obtained directly from the land
e. holistic connection between the land and community well-being – this describes the innate value of the land as it positively impacts people's health beyond the functional or cultural value

The references to different factors were recorded, categorized, and the strength of each category based on the study sample is noted below.

Figure 4-1: Reasons for significance of the connection between land and community health
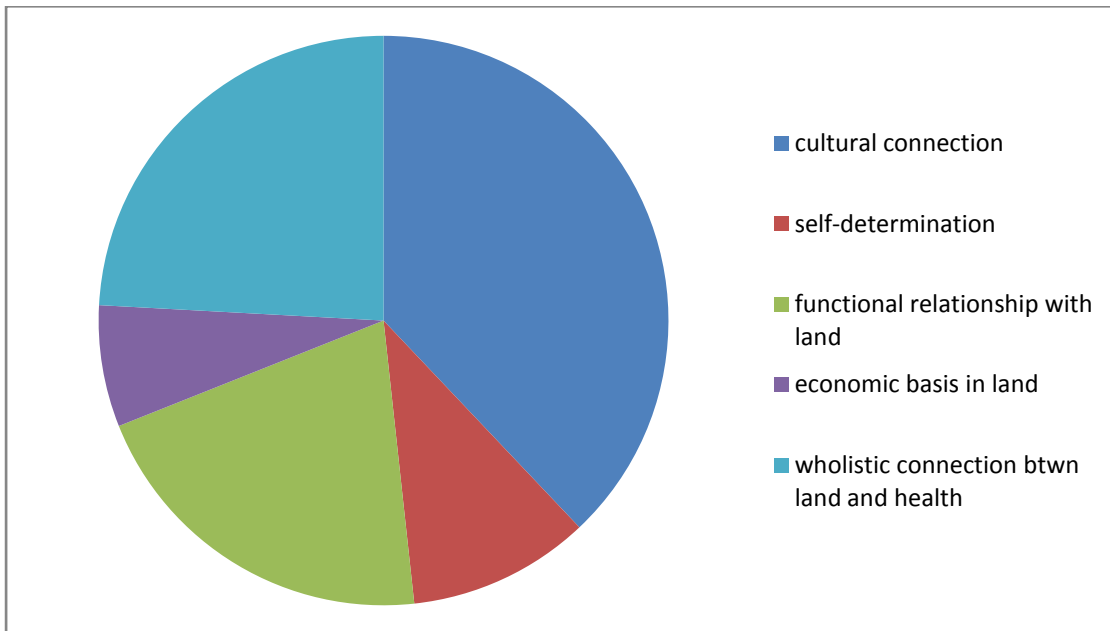
4.3 Community Health Challenges in the Inuvialuit Region

Community health challenges in the study region were described as being significant and compounding by those interviewed. For the purpose of organizing the discussion, I grouped the challenges into two categories: challenges due to the changing social, political and physical environment, and challenges due to historic factors.

4.3.1 Challenges due to the social, political and physical environment.

The Inuvialuit region, like much of the circumpolar Arctic is experiencing changes that are global in nature and in most instances, not of their own doing.

> The challenges are multiple: because of contaminants – obviously the environment is changing – climate is changing, everything is affecting the Inuit who have adapted themselves to living in communities while still making contact with the land. P12

Global warming, of which the magnitude of the impacts is still the centre of much political and academic debate, has already impacted the region in noticeable ways as described in the Inuit Observations on Climate Change project which took place in Sachs Harbour, NWT (ITK, 2006). In addition, contaminants are disproportionately accumulating in the Arctic food chain creating health issues in the consumption of traditional foods.

> Both global warming and the contamination of the Arctic food chain serve to de-stabilize the traditions and cultural connection with the land. In some regions, traditional hunting areas are disappearing as sea ice coverage decreases and in other areas traditional lands are disappearing due to rising sea levels and erosion. Elders have documented changes in wildlife migration patterns, presence of new species in the Arctic and changes in ocean currents making traditional hunting places unsafe or unproductive.

> Regional lands are more important for Aboriginal communities because…the natural resources are used as a common pool…if you use the land as a commons, you feel it is part of your identity, that's how you live, that's how you survive…with the advent of colonization and with it [the implementation of the practice of] private property…this was affected. P14

There are additional factors facing Inuit in terms of resource development interest in their traditional lands. Traditionally viewed as a hinterland by the rest of Canada, land claims have clarified and protected Inuit rights to their traditional lands. However, now Inuit communities are faced with

challenging decisions regarding the use of lands that they now officially govern – should they be developed and made available for resource extraction and at what cost? Arguably negative impacts may be mitigated in the resource development process but the human resource and technical capacity of small communities is often challenged in doing so while facing large multi-national corporations who command much in the form of resources.

The current adoption of and preference for a mixed economy in the region in which people are able participate fully as all other Canadians would in a global economy while maintaining their links with traditional activities and connection with the land means is a way of preserving the connection with the land which Inuit leaders and scholars recognize to be of central importance to their people (Simon M. , 2008). Achieving this balance moving forward may well be one of the significant challenges facing Northern communities moving forward.

4.3.2 Challenges due to historic factors

The impact of colonization and the shift in lifestyle that has occurred in Inuit communities over the past 60 years would be hard to over-state.

> The cultural disruption that was happening to people [was very difficult], there was a very dramatic shift from being much more independent to a much more dependant lifestyle…a lot of it a dramatic change into a modern wage based economy and that shift from the subsistence [lifestyle] which had a huge impact on people's identity and sense of well-being. P15

With it came a major shift in life-style and an increased dependence on the wage economy. With regards to land use, the change in land use patterns from one in which people's lives were intimately entwined with the land through a subsistence economy, to one in which people became settled in communities and began to rely more heavily on goods and services through the wage economy, had the potential to result in major cultural disruption and dislocation.

> Inuit have been almost forced to settle …in some way, at some time, there are still a lot of people going out on the land and having hunting camps and fishing shacks and things like that. But mostly its people being forced into communities and located in places there the community was decided for whatever reason…protecting sovereignty kind of reasons. At this point, you need to have something in those communities where people can not only work and survive but have some fun and have something to do and keep the youths busy. P12

Inuit leaders describe the challenges faced by Inuit communities through these changes as difficult but also to the strength and resilience of their people (Cournoyea, 2007).

> A lot of small, Northern communities, they don't have a positive identity
> of themselves, I think because of the changes they've seen are so
> dramatic, in the last 20 years, I think a lot of the time they feel down
> trodden as a result. P14

Much of history of Inuit in last century is one in which local control and decision making was removed from the Inuit people. In terms of land use, other results include both the settlement and existence of communities in the region, as well as their location. Some communities are located in areas that make it difficult for residents to achieve a good quality of life.

> I wouldn't have built it [northern community] there. There was nobody
> living here [before they built it], there's no caribou that come near there,
> there's no whales that come near there, there's no char that come near
> there, there's nothing that was related to what the local people were
> doing, so I think that I wouldn't have built it there. P11

The historic lack of control over decision making is still felt in some communities. In addition, in many communities decision making and political power is still external to their community; much of decision making in communities still takes place at the territorial and federal levels. Many argue that local decision making is key in efforts to improve community health.

> Decision making has a big role [in the health of the community]…. The
> changes in the North in smaller communities mean that they don't have a
> good sense of identity….unless the community feels like it can make a
> difference at the end of the day, they're going to continue to struggle with
> those issues and as a result, social problems result…..decision making
> and local autonomy are pivotal points if you are going to have a healthy,
> sustainable society. P04

4.4 Variations in Land Use and Infrastructure and Community Health in the Region

Variations in both land use and infrastructure among the study region communities were noted. Inuvik, as the regional service centre had the best level of infrastructure and service; this was described by interviewees as well as being plain to observe. As the regional administrative centre, and the community with the easiest transportation access to other regions, it had not only more infrastructure but also a greater diversity of services and those services provided more frequently. Tuktoyaktuk and Aklavik were

next in terms of amount of infrastructure and two next most populous communities. The remaining three communities all had noticeably lower levels of infrastructure and service. For the most part, these variations are due to government funding formulas that are decided on the basis of population.

While there are clear differences in terms of infrastructure and in each community, there was not a clear indication of a strong relationship between those variations and variations in measured health and well-being among their populations. For example, self-rated health status as measured by the APS survey 2001, indicated that in all communities between 83.3% and 91% of respondents indicated that their health was excellent, very good or good. In other words, there was very little variation between the communities in terms of how people self-rated their health. A measure of chronic conditions reported by the APS indicates again that in all communities between 50% and 69.8% of respondents reported having no health conditions. It is possible that much of the variation that is noted with self-rated measures like these may be more strongly attributed variations in age structure in the populations in each community rather than any other extrinsic factor.

The Community Well-being Index, designed to be a measure of community health, on the other hand presented measured variations between the different communities in the study region. Scores varied from a 0.87 to a 0.68 on a scale from 0 to 1. The component scores of the CWB Index (education, income, labour and housing) showed similar variation. In particular, variations in education and income scores were notable between the communities. Considering both the self-rated health scores and the CWB scores in tandem suggests that there are in fact variations in measured components between the communities but that the question of whether or not the measured components in the CWB are in fact strongly correlated with health and well-being in the Inuvialuit region. In discussing the CWB Index, the validity of the measures of the CWB was brought up.

One respondent said:

> Well, if you look at the stars [communities with high index scores], they are particularly ones that have more things happening and a lot of resources are channeled to those places, and resources, that is obviously where the work is, where people are and where people are and this definitely creates options and that sort of thing, but whether or not that is actual happiness - well this is my own personal opinion - but it creates the illusion of well-being and happiness - it depends what you are measuring. P01

This statement is significant in that it indicates that there needs to be cultural relevance in terms of what is measured and whether or not that is a valid measure of health or well-being in that context.

> The way I see income education, housing and labour, these are categories that are more influenced on a southern way of life. It's the way we would measure a town or a city in the south…but what makes it successful in the south, does not make it successful here. P05

> This all [the CWB scores for different communities] makes sense, it's based purely on income, housing, labour and education. But it doesn't show the other side of the equation that we were talking about earlier - about social cohesion, connection to culture, how people interact with each other, cultural continuity, having a link to your own culture and traditions…P12

As such, it may be useful to consider the CWB factors as important to some extent, but not as an entire picture in a northern setting where the traditional economy and strength of cultural traditions both add the health and well-being in the communities but are not captured by these measures.

> Definitely some communities are showing up as doing better because of access to services - not just health services, access to education, employment…but that is certainly not it… that is not the only thing. P03

Arguably, the CWB Index is capturing one half of the mixed economy in the North. The traditional part of the economy and the community strength and well-being gathered from participation in traditional activities is not captured by this measure.

> The method itself, the way you measure something, it's off. How are we measuring tradition, and the hunting and the trapping ad the living off the land compared to the economy and the education and everything else? Is a conventional education more important than a traditional education? Sometimes I question what we are actually measuring. I don't think all research is reflective of the successes of the community. P05

Notwithstanding the above analysis, as demonstrated and discussed in Section 4.1, survey respondents indicated that they did feel that there was a connection between both land use, and infrastructure and service in northern communities. However, it should also be noted that while respondents indicated that land use and infrastructure played an important role in community health, that they felt education, culture and traditions, economic and job factors and having healthy individuals in a community also played an important role. As such it is my assumption that in the study region land use and infrastructure can be seen to play a significant but not central role in terms of community health.

4.5 Generating Community Health and Well-being in the Region

Community health in northern communities, according to this study comprises a variety of inter-related factors, the most significant of which are the health of individuals, education, culture and traditions, economic and job factors, infrastructure, community design and access to services. When asked about enhancing or promoting community health, responses fell into the following related, but not identical, categories: education, local governance and control, economic development that supports traditional economies, healing and treatment, and recreation opportunities to promote personal development. Further detail on each of these categories is provided below.

4.5.1 Education

Education was mentioned frequently and considered to be a very important part of improving community health in northern communities. In particular, respondents commented on the need for education to allow for self-determination and choice, and the need for fluency in a national context.

> It strikes me that education is tremendously important…I think part of the answer [to community health] is very much in education. Now when you un-package education there are a huge number of variables and tremendous difficulties…but I think a significant part of the answer if the objective is to enable Inuit to a future where they make choices, to have the skills to make choices about who they are, where they live, what they do, then its education. P04

> Education is pretty important - you're part of a globalized world and if you want to meet your objectives….then you need to have education in place or you are going to get taken advantage of...P14

In addition, respondents commented on the idea that not only service provision but control over how it is delivered and in what manner, is important.

> [To improve health] number one, improves access to education programs and access to health services, absolutely, without a question. And that does not necessarily mean building physical infrastructure, but improving things like Telehealth and access to communications [services] to delivery services that way…[these programs] work, they actually work, and until people are educated, you're not going to have that control over services and also to see the land claim agreements fully implemented…with proper resources behind them. P03

Respondents also commented on the out-migration that occurs when people are not able to access education in their communities and the tendency towards a 'brain-drain' when people live and study outside the region.

> I think the key is education, until this is improved, it is an uphill battle. People have to leave their community to become educated, [the community] then loses these people and all the connections [skills] they bring. P02

Clearly education in that it provides choice and options to those who have it as well as contributing to the larger community are an important part of community health in the North. In saying education is important it is important at this point to make clear that not only is education important but education that is culturally appropriate in both content and delivery and has as its central goal the best interests of the people receiving it in order that it have a positive impact.

4.5.2 Local governance and control

Local governance and control were described by respondents as an integral part of Aboriginal self-determination and strong links were made to between this and community health by respondents.

> I think that communities that do really well have strong indigenous leadership. P08

> Good governance and leadership at the community level plays a role [in community health]. P13

> When your community doesn't have control over things, it tends to be caught up in this vicious cycle, it can have a variety of different social problems. P14

Certainly, this link has been well-recognized in the literature, most notably by Chandler and Lalonde (in press) in their landmark study showing the link between personal and cultural continuity and decreased youth suicide in BC First Nations communities. In this study, the authors document a very compelling connection between communities in which service provision is administered locally, self-government arrangements and other elements of self-determination and decreased suicide rates. They show a very high correlation between local community control and decreased suicide and the opposite effect in communities with little in the way of local control and governance. Considered in the light of social capital literature, it is clear that when people have ownership and control over their life circumstances in general that their wellness is enhanced (Federal, Provincial, Territorial Advisory on

Population Health, 1999). This would appear to be an important factor in health and well-being in communities in the study area.

4.5.3 Economic development that strengthens traditional economy

Economic development in the North is the source of much debate and policy effort. Respondents to this study shared the opinion that economic development was important in community health.

> Economic development and jobs and wealth are tremendously important.
> P04

Some respondents elaborated in that they described the need for people to have something meaningful to do with their time.

> When you have unemployment, you have low self-esteem which leads to social problems for you and those around you and then you lose your support network and you don't have much sense of your identity. P14

Seen in this way, a strong economy has two roles the first of which is wealth generation, or the organized provision of goods and services in such a way that it allows people to provide for themselves and their family, and the second, providing people with a way in which to contribute to their community and give meaning to their lives. One respondent summarized:

> To improve community health, develop a means of allowing people to make a positive contribution to their community, to society. P10

In the northern context, the wage economy is co-exists with the traditional economy; both can be seen to serve a similar purpose.

> It has to do [community health] with people still having meaningful roles and a sense of being a contributing member to society and so in a lot of the remote communities, I suspect that has a lot to do with being on the land, and that that plays a meaningful role in people's lives…even if opportunities for wage employment are low. P13

With this in mind, it can be seen that in order to strengthen the economy in the North, requires strengthening the wage economy while avoiding negative impacts on the traditional economy. Not only has the traditional economy provided a buffer to the 'bust' cycle of the way economy in the North historically, more importantly, it is community health source, or in other words, the cultural and social capital that are tied to it, are linked with health and well-being of northern communities.

4.5.4 Healing and treatment

Rates of addictions in the Inuvialuit region are of concern and have been identified as a barrier to community development (Inuvialuit Regional Corporation, 2003) and are the target of large policy initiatives; the Mackenzie Gas Impact Fund designed to mitigate impacts from potential resource development has addictions treatment as its top priority (Inuvialuit Regional Corporation, 2008).

> Addiction is the scourge of our people - it becomes a priority in people's life - either gambling or alcohol or drugs. People really need help on that one - otherwise we have kids in our communities that are parentless homes, no supports and that's why you get vandalism and all this stuff... People got to parent, they got to be responsible, they got to raise their kids, they go to talk to their kids, they got to provide a good home for their kids, and I don't think they can do that because they are so wrapped up in their addictions. P06

4.5.5 Recreation opportunities to promote personal development

Respondents felt that recreation opportunities were an important component of community health. In that they provide opportunities to avoid boredom for young people, and opportunities for personal development and achievement, and community involvement (Wolfe, 1989).

> My first gut instinct [to improve community health] would be to set up [recreation programs]. It would be sports based but it not really a [sports] program, it is life skills….it's not just about sports and winning, it's about teaching skills and its things like literacy and education…and to have options…P08

> I would have more recreation opportunities [to develop community health] whether its craft organizations or recreational organizations or service organizations, just things that can hopefully work to create connections within the community and empower people because people have to decide to make their own changes…P13

Certainly recreation infrastructure is a visible sign of investment in a community, but it should be noted that it requires social capital to run and maintain the activities that the infrastructure entails. Ensuring community involvement in recreation requires a good process to ensure that the goals and interests of the community are reflected in the recreation infrastructure developed in the community.

4.6 Chapter Summary

This chapter provides an overview of results of the study and analysis based on those results. Respondents defined community health in the northern context in relation to the health of individuals, education levels

and opportunities, the strength of culture and traditions, economic and job factors, and infrastructure, community design and access to services. Challenges to community health in the study region were discussed, and variations in land use and infrastructure between communities, while evident, were not found to be strongly connected with community health. Generating community health and enhancing well-being in the study region was linked to education opportunities and quality, local governance and control, economic development that supports the traditional economy, healing and treatment for individuals, and recreation opportunities to promote personal development.

Chapter 5: Conclusion and Recommendations

"There is really no preventative mode that is effectively being used, not on the health care side, or the land use side. We should really look at this from the planning side."P02

5.1 Planning to positively influence community health

A continuing problem for Inuit is the focus on treating illness rather than addressing areas that would prevent illness and injuries...current programs are narrowly focused on specific health issues and do not have the flexibility to respond to influencing factors such as environmental and socio-economic issues that greatly impact health.

(Inuit Tapirit Kanatami, 2004)

Health has been described as both an expression and a component of human development (Hancock, 1993), and as such, presents itself as a powerful goal and yardstick by which to measure the success or failure of public policies in a variety of arenas. The challenge that presents itself in doing so is that human health and community well-being are connected in such a complicated fashion and to such a variety of factors, that teasing apart causal relationships is hugely complex (Millar & Hull, 1997, p. 147). Making the link between expenditure of money on a single intervention and resulting positive health outcomes which creates easy policy direction will perhaps never be the case in community health. Nonetheless, there is significant evidence that points towards positive community health impacts of policy changes in a variety of areas.

Notwithstanding this challenge, examining health from a new angle is clearly warranted: the health care challenges faced by our society are growing despite increased spending in the healthcare arena; the disease profile is shifting to one in which chronic diseases are dominants and environmental factors are clearly significant. The fact that the environment – social, economic, and physical - has a definitive impact on human health is unlikely to raise much educated debate today.

Community health in the north is a challenge for a variety of reasons, the most significant of which is the legacy of social and cultural erosion perpetuated on Aboriginal peoples by Canadian

government policies which served to undermine the traditions of Inuit (and other Aboriginal people) simultaneously eroding the basis for health and well-being.

5.2 Implications for Planning in the North

> *Any significant improvement in the planning and design of native communities must devolve from the recognition and respect for native values and their associated environmental perceptions. Native people's perceptions are vastly different from those of the Euro-Canadian descendents who form the governmental structure of the country. Native values…are central to both the growth and development of the individual and the maintenance of the [community]. With the destruction of a people's environmental values comes a loss of identity, a loss of being, and a loss of belonging; the community dies.*

<div align="center">(Simon, Forster, Alcose, Brabec, & Ndubisi, 1984, p. 5)</div>

Explicitly considering community health holds some promise for dealing with the complex issues surrounding decisions on land use in the North. When considering implications planning for northern communities, it becomes apparent that the heart of the question is whether or not planning in the North has been undertaken with the interests of northern communities in mind, or if the prevailing view of the North as a hinterland has driven land use policy for the region; critics have certainly suggested that the latter is the case. Land-use planning is set in the context of the evolving relationship between northern communities and their moves towards self-determination, self-government and decreased dependency on central governments; control over land and resources is central in this endeavour (Wolfe, 1989).

Planning in Canada as a whole has been undertaken within a 'core-periphery paradigm' which has seen urban centres relying on rural hinterland for goods and services (McCann & Simmons, 2000). Increasingly, this has become global in scope, goods and services are traded internationally and global trends impact Canadian communities. It within this context of global change and impacts, that Arctic communities are managing changes in their region.

Planning, as a western construct, does not translate directly into the northern context (Diermenjian & Jones, 1983). As such, an import of the same planning system that is the norm in southern communities will not function optimally in the northern context and may not act to strengthen community health in northern communities. Northern communities have a set of unique circumstances

that sets them apart from their southern counterparts and a good land use planning system will recognize these both in policy and process.

In addition, the cultural norms and ideals of the Inuit mean that the land has a unique and powerful importance to the health and well-being of people in communities. People rely on the land not only for subsistence and recreational purposes, but also for spiritual well-being and cultural continuity (Inuit Tapirit Kanatami, no date). The land, for the most part, continues to be viewed as a common resource and birthright of northerners, to be collectively used. This concept of a 'commons', has largely been eroded in southern context. As such, a system that considers the unique culture, circumstances and history of the North should be considered in developing or enhancing land use planning systems.

The region is one that continues to be in transition; changes due to resource development pressures are accelerating in pace and stand to have huge implications for the people of the area.

> It's a crazy world for some of these people who are torn between going out on the land and going on the internet, doing a job and having a cell phone. You see in the youth, you see this dual-universe thing - this clash between traditional lifestyle and 'modern' lifestyle. P12

Northern communities are faced with the challenge of supporting increasing populations, promoting community health in the broadest sense, and providing meaningful, dignified employment (Duerden, 1992). These unique challenges in northern communities need to be recognized not only in planning policy, but in the way in which planning is conducted. Local decision making and community involvement is crucial (Kassi, 1987); the planning process should enhance community development by building community capacity and supporting local control over land resources – both of which are implicated in community health. Planning and policy frameworks in the North are evolving driven by land claim agreements which given legal paramountcy to the terms set out in the land claim and a trend towards devolution of centralized powers to more localized powers driven in part by lobbying from northern and Aboriginal groups.

The view of the North as a resource-rich hinterland set to serve the broader interests of the rest of Canada is one that prevails today (Nilsen, 2005) and must be balanced with strong recognition of local interests. The development of the North should proceed at a pace that northern residents are comfortable with; this will occur through the development of planning (and other governance regimes) that allow northern residents to fully exercise their right to self-determination and in the exercise of local governance and control. Planning in northern communities should be for the North, and take place in the

North, and be driven by northern community's interests; arguably, current changes are driven by the need to ensure that land use policy serves primarily the interests of residents of northern communities.

5.3 Implications for Land Use and Planning Policy

In examining community health both as a concept generally, and in the study region specifically, it has become clear that community health is a complex state that is achieved through the convergence of a variety of health or wellness generating factors. Interviewees saw community health as being comprised of factors related to: the physical health of individuals, the social health of the community, local self-determination, local economic viability, community services and opportunities available to residents, and cultural wellness in the community. A rough analysis presents the fact that planning policy and practice in the region could contribute to community health and wellness through secondary interventions in all of these areas. Planning interventions linked to factors in community health based on this analysis are shown in Table 5-1 below.

Table 5-1: Factors in community health and planning relevant interventions

Factor in community health	*Planning relevant interventions*
Physical health of individuals	Walkable community design, recreation infrastructure, enhanced access to hinterland
Social health of communities	Community design to promote social networks, planning to support integrity of hinterland and ongoing viability of traditional uses
Local self-determination	Land use co-management initiatives, collaborative planning, frameworks, local control over planning process
Local economic viability	Enhancing transportation infrastructure, selected use of land and resources
Community services and opportunities	Provision of community services and infrastructure to increase 'opportunities' in communities
Cultural wellness	Frameworks governing planning policy to ensure cultural relevance

As previously described, community health is complex and multi-faceted. A variety of factors affect it; a wide variety of interventions could be seen to have positive community health impacts and a wide variety of approaches may prove to have positive results. Specific recommendations for planning policy in the

North found to be the most relevant based on the results of this study and with the goal of strengthening community health in the region are described below.

5.3.1 Recognize the historical and cultural connection with the land

It is of central importance that the history of land use and cultural connection with the land in the Arctic be recognized in northern planning. Without this, there is no understanding of the meaning and context of land use in the region; understanding the relationship that northern peoples have with the land, notwithstanding the fact that this relationship may seen to be evolving, will be the basis of any good planning regime in the region.

Until about 50 years, Inuvialuit (as well as other Inuit groups) lived in semi-nomadic settlements in a subsistence based economy. Inuit leaders have commented that the Inuit will move forward with the times, and will continue to be adaptive to change as they always have but regardless of the move forward into a new lifestyle, an understanding and recognition of the history of the people of the region is warranted (Cournoyea, 2007). From recognizing and preserving sites of cultural significance, to preserving the opportunity for recreation and traditional activities on the land, planning policy and practitioners should explicitly recognize the regional history and consider these in land use decisions moving forward. In a context where much land use planning has been undertaken in a cross-cultural context, that is, that planning policy and planners have often come from places other than the northern communities they are serving, this is of particular importance. (Having more local control and planners local to the area involved in planning process in northern communities is explored further in Section 5.3.4).

The analysis presented in Section 4.2 demonstrated the strength of the connections between land use and community health. The spiritual and cultural connection with the land can be described as forming the basis of cultural strength for northern communities with strong social and wellness implications. Land use planning policy affecting as it does the ability of people to use land in various capacities, and as is often the desire of northern communities, to preserve the land intact for future generations and subsistence and cultural uses, is of huge importance to northern communities. In addition, land use planning policy is strongly tied to land claim agreements and the provisions that are laid out within them. Most modern land claim agreements contain detailed provisions regarding the various uses of land and provisions regarding decision making bodies and land claim beneficiary involvement; the specific provisions of the land claim agreement will have strong implications for planning policy and process in a region.

5.3.2 Integrate the hinterland and the town lands in community design

Factors considered to be central to community health in this study included a strong base of cultural traditions as well as adequate opportunities for recreational pursuits. Integrating the hinterland more closely with the community could provide enhanced opportunity for pursuit of cultural and recreational opportunities by making it easier and more accessible for people to pursue those activities. Numerous studies have demonstrated the link between cultural erosion and decreased health (i.e. Arctic Council, 2004; Berry, 1990; Bjerregaard P. , Young, Dewailly, & Ebbesson, 2004); interviewees in this study argued that recreation and giving people 'things to do' was of key importance in promoting health.

The hinterland has an important role to play as a collective commons in the North; it should be recognized as such in planning policy. The conceptual integration of the two land uses should be considered; the value of the hinterland to the community should be recognized; the town should be designed to maximize connection with the hinterland. A community design which goes beyond the provision of basic design elements required but goes further to integrate natural elements with recreational and cultural potential into the community design with the goal of reducing the separation of 'town life' from 'being on the land' may provide some potential for improving community well-being based on the traditional connection communities had with subsistence pursuits. The details of this would require more study and a community led process in order to be implemented effectively; however possible interventions that could be considered include the provision of clearly defined areas for traditional and other recreation activities. Access to fishing areas, paths to significant sites on the landscape and good walkable design that allows easy access to services and amenities in northern communities could be used to enhance the quality of life for people in the communities. Natural and cultural areas should be recognized in the design either implicitly or explicitly. Community design should reflect the patterns of use in the communities, the traditions and values of the people living there which can often be done by very simple provision of details such as walking paths or sitting areas, if the conceptual understanding of values and meanings of the land is incorporated in planning.

The Burwash Native People's Project attempted to develop a planning approach for native communities that was more culturally appropriate than previous planning approaches, in response to community member's complaints about lack of regard for native lifestyles in community design and minimal and tokenistic participation in the design and delivery of planning programs at the time. The project designers took as basic propositions the ideas that different cultural groups have different environmental values and perceptions (this is echoed by the communicative/ collaborative planning

literature which sees place as socially constructed (i.e. Healy, 2003, 2006) and that the imposition of one set of cultural values and perceptions on another culture result in environments which are inappropriate for these societies (this is echoed by scholars in northern planning research (i.e. Diermenjian & Jones, 1983; Arctic Council, 2004).

5.3.3 Design to support social networks

Social networks are described as extremely important in the northern communities, arguably compensating for formalized social support and reflecting the cooperative community structure that was essential to Inuit subsistence and survival historically (Wolfe, 1989). Social networks are similarly described as important by southern based researchers like Robert Putnam, in *Bowling Alone* where declining social capital is seen to undermine civic and social engagement and has a net negative effect on communities and individuals (Putnam, 1995). Research on the determinants of health describes social networks as being very important to community and individual health; Public Health Agency of Canada describes social networks as: "Support from families, friends and communities is associated with better health. Such social support networks can be very important in helping people solve problems and deal with adversity as well as retaining a sense of control and mastery over their own life circumstances. The caring and respect that occurs in social relationships and the resulting sense of connection and well-being, seems to act as a buffer against health problems" (Senate Standing Committee on Social Affairs, Science and Technology, 2001).

The informal economy and sharing of resources that takes place to a high degree in northern communities is based on family and social networks (Wolfe, 1989); in other words, residents may experience a high quality of life despite limited infrastructure and services due to strong social networks that provide support and opportunities for them in their life. Arguably, communities in the North should be designed to enhance social networks as these may act as a mitigating force in the absence of other health generating resources and are in keeping with the traditions of people in the area.

5.3.4 Local control over the planning process

Process is important; an end product is not the only result of planning, but people's degree of satisfaction with planning is related to their perception and participation in the process. In the North, the planning process needs to be one that is culturally appropriate and provides for meaningful input and control into the planning process (Wolfe, 1989). Much of the requirement for local control will now be mandated by land claims in the relevant areas, but where it is not, land use planning must proceed on this basis.

Planning should be undertaken by practitioners from the region, and policy should be generated within the region. While many will argue that there needs to be a balance of national interests and regional interests considered in land use planning in the North, there is a strong argument to be made that the balance has for too long swung in the direction of national interest at the expense of local with negative consequences for northern communities and peoples. Today, there are pressing local needs in northern communities, and the land is integrally linked to health and well-being as well as cultural continuity in the region.

Previous sections in this thesis have been devoted to the discussion of the negative impact of changes facilitated by Euro-Canadian government policies on northerners. Inuit leaders have commented often on the resilience of their people while acknowledging the stress of change on their people. Bio-medical and anthropological research has documented the health consequences of rapid socio-economic change in northern communities (i.e. (Cournoyea, 2007; Hobart, 1984). In acknowledging the challenges and social faced by northern communities it is important to guard against an overly simplistic assumption which implicitly implies a reduced adaptability in northern communities in comparison with others. In fact, there is much evidence to suggest that it is the manner in which change is occurring, rather than the change itself which has the negative detriment. Tuan (1977) and others argue that cultures are constantly changing, adapting and borrowing from other cultures but that this process is positive only when it is directed from within the culture rather than from outside it. In other words, communities must be in charge of their own destiny in order that they are resilient to change. Chandler and Lalonde's compelling evidence that youth suicide rates were sharply decreased (or non-existent) in communities where self-government and other community empowerment processes were in place (in comparison with often very high suicide rates) (Chandler & Lalonde, In press), is strong and often cited evidence to suggest the importance of local empowerment and control over life's circumstances.

Providing meaningful control and provisions for participation in land use regulation and planning in the North, should act to assert northern interests more strongly into land use policy in the North. However, it is important to note that the simple provision of co-management or other similar regimes must be undertaken with a view to meaningful participation and avoiding co-opting of interests or pressures on representatives that results in the illusion of community interests being served rather than this substantively taking place. Mitchell (2004) argues that with regards to public participation in environmental management, that processes should be "open, participatory, and fair" and that a variety of principals must be considered in designing public participation processes to ensure that they meet these

criteria including when and how public input is sought, at what point in the planning process, and by whom. Clearly, either through design or by default processes can be designed to bias against meaningful participatory involvement. Effective co-management regimes require power-sharing between community-based managers and government agencies such that each one can check the excesses of the other (Mitchell, 2004, p. 573). The details of implementation of planning process and policy must thus be considered in detail to ensure that they meet the goals and objectives that they were laid out with.

5.3.5 Planning to enhance opportunities

Respondents in this study commented on a variety of limitations for 'opportunity' within the region. In particular, limited job opportunities and limited education opportunities were discussed. Filion and Bunting (2000) describe the essential properties of cities (herein used to also mean communities) and describe two of these essential properties as being proximity, in the sense that in communities people are closer to each other and the opportunity cost for interaction is lower, and production, in the sense that economic activities are centralized in a community (Filion, Bunting, & Gertler, 2000, pp. 2-3). In the context of northern communities, the need for proximity and production may be a factor in the location of settlements that were based on traditional hunting or trading locations.

Opportunities for participation in traditional lifestyles was severely limited by the Canadian government policies of the past, many northern communities could be argued to be experiencing a lack of opportunities associated with the systematic erosion of traditional lifestyles. If these changes are not made in the context of being replaced by new opportunities in the wage based economy, then people will be left without a way to contribute to their community and without a meaningful way to spend their time.

Respondents in this research project commented on communities that were located in areas that were not traditional, or in other words, had no value for hunting or trapping or historic pattern of use experienced negative social consequences. The most extreme instance of this being the cases of Grise Fjord and Resolute in which Inuit from northern Quebec were relocated to two locations in the high Arctic in the late 1950s in response to sovereignty concerns of the Canadian government. Formerly self-sufficient communities were placed in locations with little regard for their ability to subsist in a totally different context (Hazell, 2008). The result of this was extremely negative social impacts over the long term for both communities and extreme dislocation on the part of the people who were forcibly moved (Tester, 1994). While no such extreme case exists within the study area, the point remains, that in the absence of opportunities for economic or other subsistence generating activity, communities cease to serve one of their primary purposes with negative social consequences.

With this in mind, it is my recommendation that planning policy in remote, northern communities should consider in its land use decisions the generation of 'opportunities' for residents in the region. This should be undertaken by residents of the region with their full control and participation over the process, and facilitated by planning policy. Some opportunities will be those associated with traditional lifestyles, some will be wage based or other opportunities.

5.4 Recommendations for Planning Practitioners

Health in the Arctic has to be seen in the context of the special conditions in the region, and that guarding health is key to well-being in the region.

(Arctic Council, 2004, p. 155)

Good planning should reflect the needs and interests of local communities; planners should seek to serve the interests of the communities in which they work. This will not be effectively done unless planners have a strong understanding of the context and meaning ascribed to community and land use in the region in which they work. Because values are most often implicitly rather than explicitly examined, there is a risk that in the absence of other influences, the inherent biases of the planner will become imbued in the project. It is for this reason that I believe that northern communities will best be served by trained planners who originate from the region.

Planners working in the North, but not originating from the North should be knowledgeable about the North and recognize that they are working in a cross-cultural environment where their technical expertise must be wedded with local knowledge in order to generate a positive outcome. Planning processes should be highly participatory (as discussed in Section 5.3.4) and ensure that local community interests, values, and meanings are embedded into land use plans. Planners working in the North should consider the use of highly participatory planning processes in the North. Planning processes should be undertaken in such as way that facilitates meaningful participation on the part of community members and in a timeframe that allows for significant modification of either the process or plan in order that local community needs and values are incorporated into the plans.

5.5 Recommendations for Future Research

There would be value in conducting a study similar to this but widening the basis of comparison to include all 4 Inuit regions: Inuvialuit, Nunavut, Nunavik and Nunatsiavut. There are good data availability on community health and well-being and in a broader comparison; less of it would be

suppressed. In addition, land use policy frameworks vary by region which may result in some challenges in comparison, but it could provide a very interesting analysis of the impacts of different approaches.

In terms of community health and infrastructure variations, it is clear, upon completing this research project, that communities in the Inuvialuit region have more in common with each other in terms of health and well-being, than they do differences. As such, an inter-regional comparison on the same level could yield more startling or definitive results. However, setting up such a study would also increase the complexity by requiring researchers to account for variations in political, cultural and economic factors that to a large extent were controlled within the Inuvialuit region.

The development of a community well-being index that incorporated traditional and cultural factors could also be considered. Based on information gathered in this study, and acknowledged by the authors of the CWB in an analysis paper, there are factors that contribute to well-being in northern communities that are not incorporated into the Community Well-Being Index as it is currently conceived. Further analysis into quantifying factors relating to traditional and cultural factors contributing to well-being in northern communities would be an interesting and useful area for further research.

Explicitly considering community health in planning policy holds some promise for dealing with the complex issues surrounding land use in the North, in particular in providing a measure that balances the needs of the local communities against national pressure for resource development in the region. Further research in this area could provide increased insight into the exact application of a community health-based planning framework for northern communities.

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Appendices

Appendix A

Information and Consent Letter

Dear

This letter is an invitation to consider participating in a study I am conducting as part of my Master's degree in the School of Planning at the University of Waterloo under the supervision of Professor Mark Seasons. I would like to provide you with more information about this project and what your involvement would entail if you decide to take part.

The objective of my study is to evaluate community health in Arctic communities in the context of planning initiatives. Health and well-being are related to both environmental and socio-economic factors as well as physiological factors. Examining infrastructure variations between communities and any correlated differences in health outcomes may provide useful information for improving health in remote communities.

I plan to examine and compare the health and well-being of six Inuvialuit communities: Inuvik, Tuktoyatuk, Sachs Harbour, Paulatuk, Ulukhaktok, and Aklavik. I will use health statistics information and correlate it with information that I gather about services and infrastructure in the communities. I will examine connections through interviews using open-ended, qualitative questions.

Participation in this study is voluntary. It will involve an in-person interview of approximately 30-40 minutes in length to take place in a mutually agreed upon location or an interview over the phone in which I show you exhibits available on a website. You may decline to answer any of the interview questions if you so wish. Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. All information you provide is considered completely confidential. Your name will not appear in any thesis or report resulting from this study, however, with your permission anonymous quotations may be used. Data collected during this study will be retained for 2 years in a locked filing cabinet or password protected computer. There are no known or anticipated risks to you as a participant in this study.

If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact me at 519 897 2545 or by email at aracliff@fes.uwaterloo.ca. You can also contact my supervisor, Professor Mark Seasons at (519) 888-4567 ext.5922 or email mseasons@fes.uwaterloo.ca.

I would like to assure you that this study has been reviewed and received ethics clearance through the Office of Research Ethics. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this study, please contact Dr. Susan Sykes of this office at (519) 888-4567 Ext. 6005.

I hope that the results of my study will be of benefit to the communities directly involved in the study, health service providers, as well as to the broader research community I very much look forward to speaking with you and thank you in advance for your assistance in this project.

Yours Sincerely,

Amanda Cliff

CONSENT FORM

I have read the information presented in the information letter about a study being conducted by Mark Seasons and Amanda Cliff of the School of Planning at the University of Waterloo. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

I am also aware that excerpts from the interview may be included in the thesis and/or publications to come from this research, with the understanding that the quotations will be anonymous.

I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

This project has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. I was informed that if I have any comments or concerns resulting from my participation in this study, I may contact the Director, Office of Research Ethics at (519) 888-4567 ext. 6005.

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

☐YES   ☐NO

I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

☐YES   ☐NO

Participant Name: _____ (Please print)

Participant Signature: _____

Witness Name: _____ (Please print)

Witness Signature: _____

Date: _____

Appendix B
Thank You Letter

University of Waterloo

 Date

Dear **(Insert Name of Participant),**

I would like to thank you for your help in this study. As a reminder, the purpose of this study is to identify infrastructure and services within the Inuvialuit communities that support community health.

The data collected during interviews will be compiled with other data to generate an index to evaluate the relative impact of planning initiatives on community health. I hope to be able to contribute to the efforts to promote heath and well-being in Arctic communities.

Please remember that any data pertaining to you as a participant will be kept confidential. Once all the data are collected and analyzed for this project, I plan on sharing this information with the research community through seminars, conferences, presentations, and journal articles. If you are interested in receiving more information regarding the results of this study, or if you have any questions or concerns, please contact me at either the phone number or email address listed at the bottom of the page. If you would like a summary of the results, please let me know now by providing me with your email address. When the study is completed, I will send it to you. The study is expected to be completed by April 2007.

As with all University of Waterloo projects involving human participants, this project was reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. Should you have any comments or concerns resulting from your participation in this study, please contact Dr. Susan Sykes in the Office of Research Ethics at 519-888-4567, Ext., 6005.

 Amanda Cliff

MA Candidate
University of Waterloo
School of Planning

aracliff@fes.uwaterloo.ca

Appendix C

# Semi-structured interview format (and related exhibits)

A. **Personal Background in the North**

    1. How long have you lived in the North?
    2. What is your primary reason for living in the North (i.e. personal, family, work opportunity)
    3. Do you plan to stay living or working in the North in the foreseeable future?
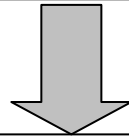
B. **Personal Attitude Towards Community Health**

    1. How would you define a healthy community?
    2. What do you think the three most important factors are in creating or maintaining a healthy community? (Prompts, only if necessary: walkability, greenspace, services, transportation, economics)
    3. Why are these important?
    4. On a scale of 1-10 how strong do you think the connection is between land use (regional land use and community infrastructure) *and* health of its residents is?
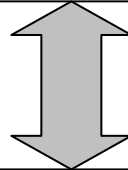
C. **Drivers of Community Health in the North**

Show pie graph of estimated impact of health determinants of health status of Canadian population (Exhibit 1)

    5. Do you think this graph holds true in the North?
    6. What if anything do you think would be different in the North?
        (allow them to make notes or modifications to one of these charts)

Give them the 12 determinants of health cards (Exhibit 2)

    3. Categorize them in terms of influence or relevance to the North (low, medium, high)

D. Connections between Health and Planning

REGIONAL ANALYSIS

Show them a map of the North with names of communities and community well-being scores

mapped – Exhibit 3 (colour coding – red, yellow, green)

1. Why do you think some communities do better than others?
2. Can you give community specific examples?

STUDY FOCUS AREA

Show them charts of the ISR (names of communities and community well-being scores broken

into components (income, education, housing, labour) –Eexhibit 4

3. Why do you think some communities do better than others?
4. Can you give examples?
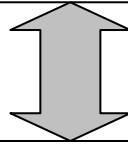
E.   Future

1. How do you think we can improve community well-being (community health) in the North in the future?
2. What are the top three priorities in your mind?
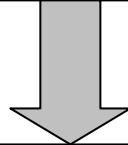
F.   Personal Profile

How would you describe yourself in terms of:

- Gender
- Age group
- Work situation
- Ethnic origin
- Education level
- Connection to the North
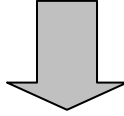
Other: *Feedback*

    Would you like to receive a copy of the results of the study?

-    Via email or regular mail?
-    Get necessary contact information

Appendix D Exhibits used with Questionnaire

Exhibit 1 – Estimated Impact of Health Determinants on Health Status of the Canadian Population
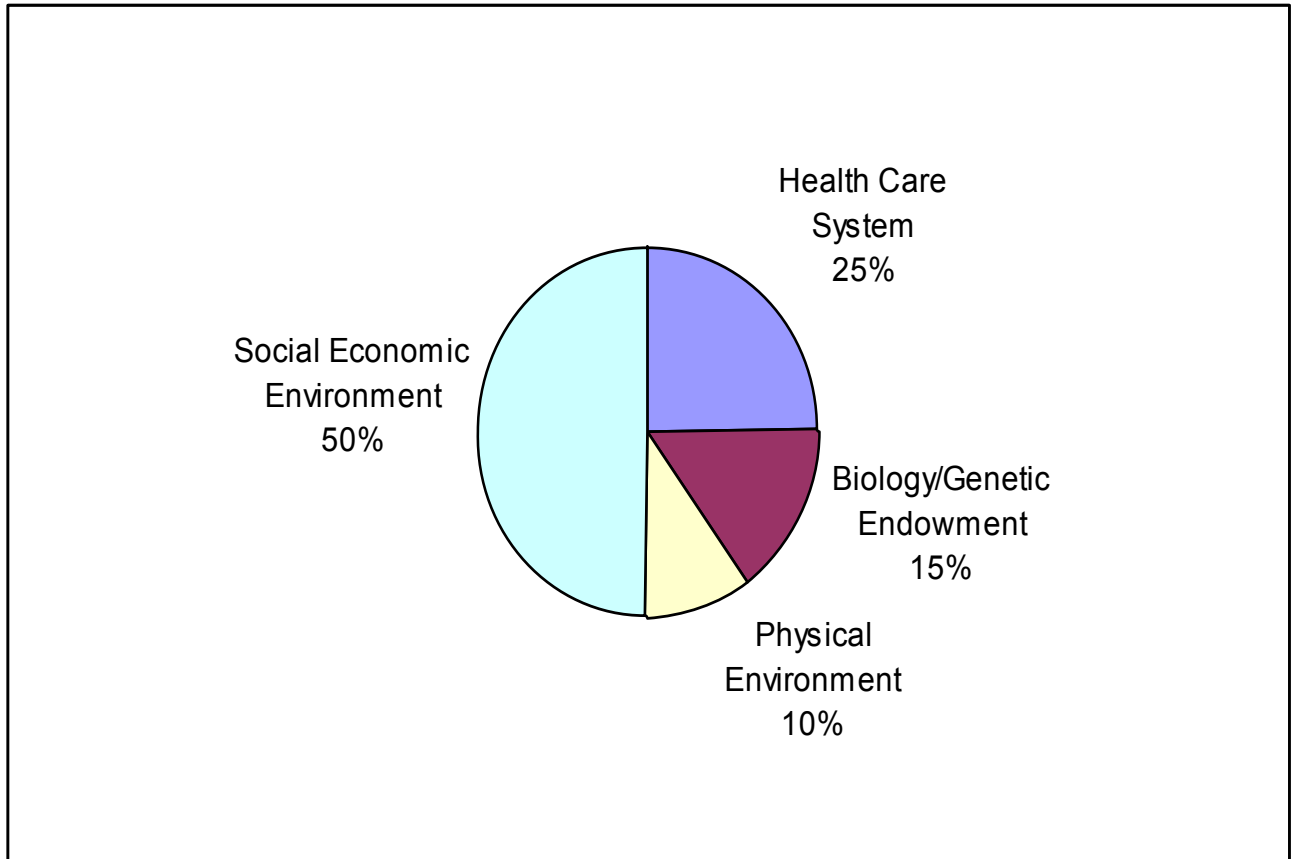
Source: CIHI (2000) and the Library of Parliament

Exhibit 2: Determinants of Health (cue cards)

Income and Social Status

✁ Front

There is a strong correlation between health and well-being and income and social status. Higher income determines living conditions such as safe housing and the ability to buy sufficient and good food. The healthiest populations are those societies which are prosperous and have an equitable distribution of wealth.

✁ Back

Exhibit 2: Determinants of Health (cue cards)

Social Support Networks

Front

Support from families, friends and communities is associated with better health. Such social support networks can be very important in helping people solve problems and deal with adversity as well as retaining a sense of control and mastery over their own life circumstances. The caring and respect that occurs in social relationships and the resulting sense of connection and well-being, seems to act as a buffer against health problems.

Back

Exhibit 2: Determinants of Health (cue cards)

Education and Literacy

✂ Front

Education is closely tied to socioeconomic status, and effective education for children and lifelong learning for adults are key contributors to health and prosperity. Education contributes to health by equipping people with knowledge and skills for problem solving and helps provide a sense of control over one's life circumstances – which has also been linked to health and well-being. It increases opportunities for job and income security, and job satisfaction. It also improves people's ability to access information to help keep them healthy.

✂ Back

Exhibit 2: Determinants of Health (cue cards)

Employment and Working Conditions

✂ Front

Unemployment, underemployment, or unsafe working conditions are all associated with poorer health. People who have more control over their work circumstances and fewer stress related demands of the job are healthier and often live longer than those in riskier or more stressful work activities.

✂ Back

Exhibit 2: Determinants of Health (cue cards)

Social Environments

✂ Front

The importance of social support also extends to the broader community. Civic vitality refers to the strength of social networks within a community or region. It is reflected in the institutions, organizations, and informal giving practices that people create to share resources and build attachments with others. Social stability, safety, diversity, positive working relationships, and cohesive communities provide a supportive society that reduces or avoids many potential risks to good health. In addition, social and community responses can add to an individual repertoire of strategies to deal with changes and foster health.

✂ Back

Exhibit 2: Determinants of Health (cue cards)

Physical Environments

✂ Front

The physical environment is an important determinant of health. At certain levels of exposure, contaminants in our air, water, food and soil can cause a variety of adverse health effects, including cancer, birth defects, respiratory illness, and gastrointestinal ailments. In the built environment, factors related to housing, indoor air quality, and the design of communities and transportation systems can significantly influence our physical well-being.

✂ Back

Exhibit 2: Determinants of Health (cue cards)

Personal Health Practices and Coping Skills

✂ Front

Personal health practices and Coping Skills refer to those actions by which individuals can prevent diseases and promote self-care, cope with challenges, and develop self-reliance, solve problems, and make choices that enhance health. These influences are most felt through these areas: personal life skills, stress, culture, social relationships and belonging, and a sense of control. Increased capacity in these areas is linked with increased health and well-being.

✂ Back

Exhibit 2: Determinants of Health (cue cards)

Healthy Child Development

✂ Front

Child development is a powerful determinant of health in its own right as well as being connected with other determinants of health. Recent evidence suggests that a young person's development is greatly affected by his or her housing and neighbourhood, family income, level of parent's education, access to nutritious foods, physical recreation and access to dental and medical care.

✂ Back

Exhibit 2: Determinants of Health (cue cards)

Biology and Genetic Endowment

✄ Front

The basic biology and organic make-up of the human body are a fundamental determinant of health. Genetic endowment is the inherited predisposition to a range of responses that influence health. In some circumstances, genetic endowment appears to predispose individuals to particular diseases or health problems.

✄ Back

Exhibit 2: Determinants of Health (cue cards)

Health Services

✂ Front

Health services that are designed to maintain and promote health as well as those that restore health and function all contribute to population health.

✂ Back

Exhibit 2: Determinants of Health (cue cards)

Gender

✂ Front

Gender refers to the array of society pre-determined roles, personality traits, attitudes, behaviours, values, relative power and influences that society ascribes to the two sexes on a differential basis. Many health issues are connected to gender. While women live longer, they are more likely to suffer depression, stress overload, chronic conditions, and injuries and death related to family violence.

✂ Back

Exhibit 2: Determinants of Health (cue cards)

Culture

✂ Front

Some people or groups may face additional health risks due to a socio-economic environment which his largely determined by the dominant cultural values that contribute to the perpetuation of conditions such as marginalization, stigmatization, loss or devaluation of language and culture, and lack of access to culturally appropriate health care and services.

✂ Back

Exhibit 3: Map of CWB scores

Measuring well being in Western Arctic and Nunavut Communities:
The Community Well Being (CWB) index

NORTHERN CANADA
CWB Levels
▲ 0.5 - 0.6 (1)
■ 0.6 - 0.7 (28)
● 0.7 - 0.8 (16)
★ 0.8 - 0.9 (6)

Source:
Statistics Canada, Census of Population, 2001.
Mapping: ©2000, Government of Canada with permission from
Natural Resources Canada
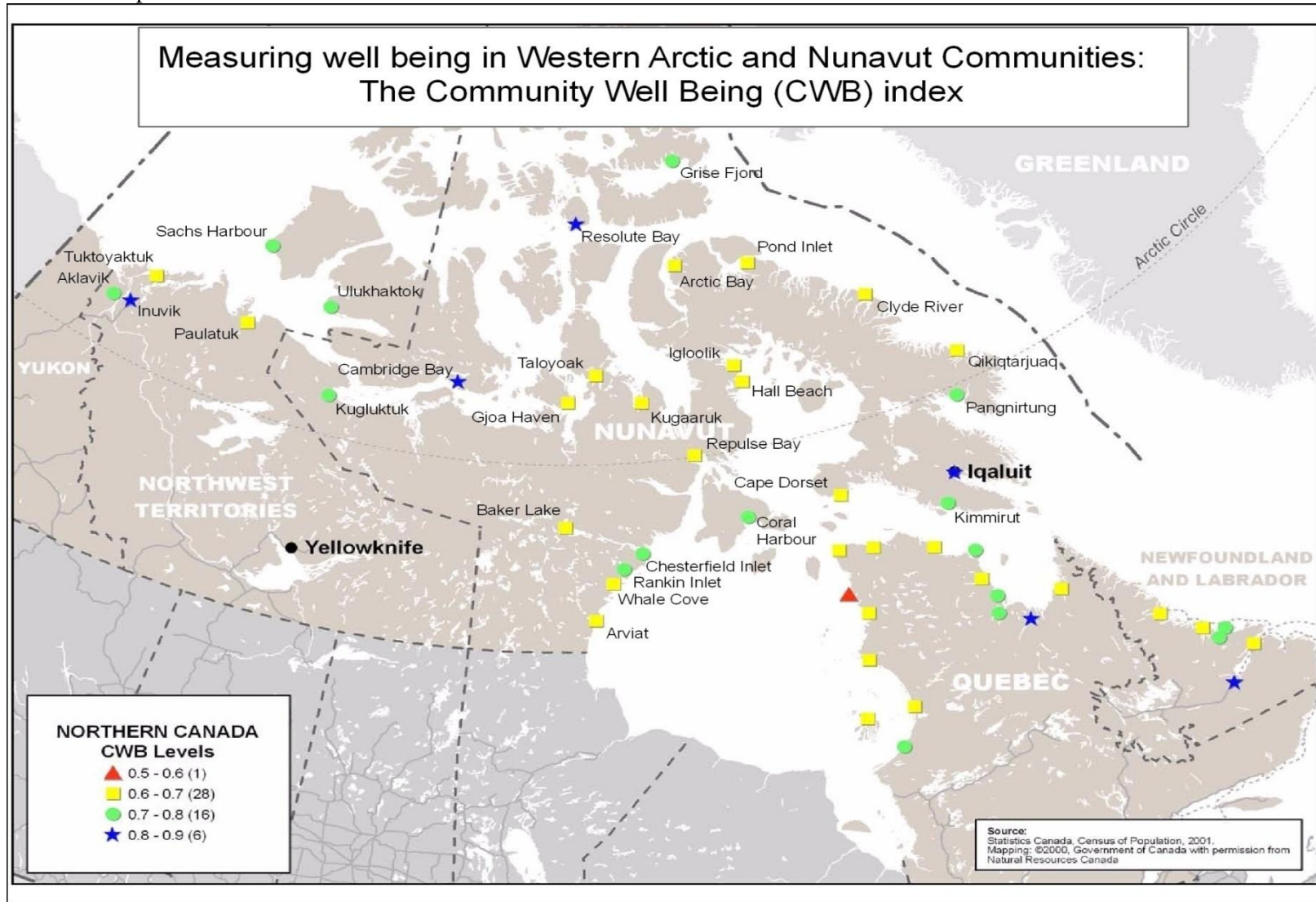
Exhibit 4: CWB Scores for Inuvialuit Communities
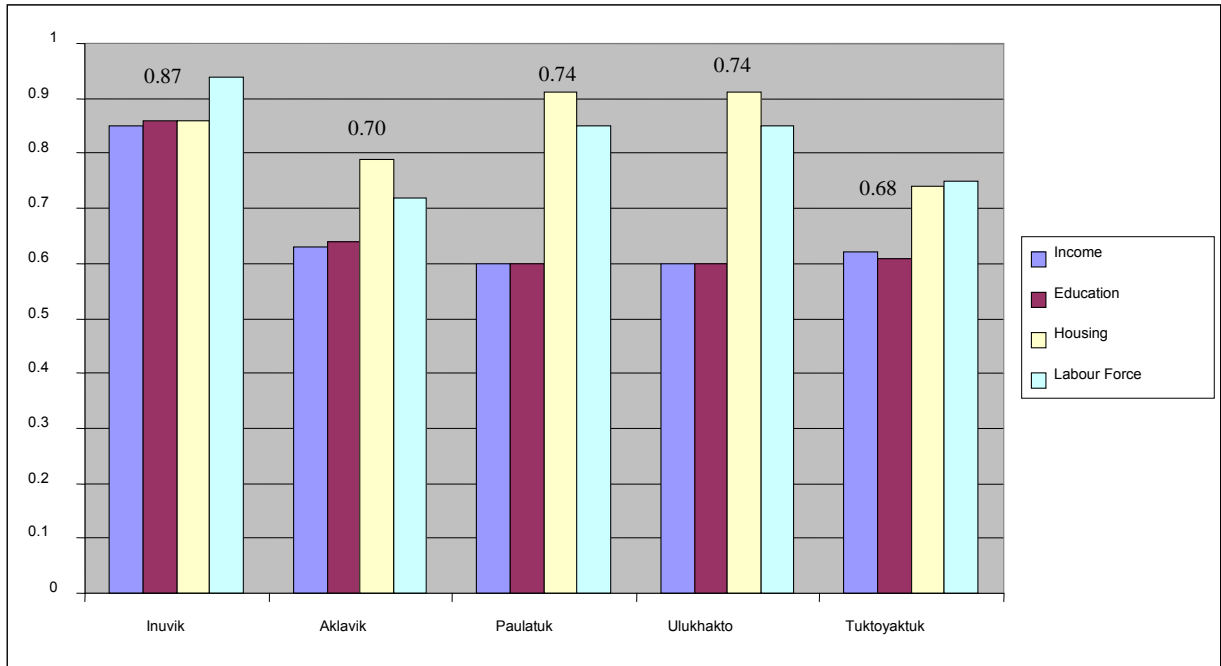
Note: Data for Sachs Harbour is not available.

Appendix E Community Profiles

The following section provides information on communities in the study region with a view to providing both background information to inform the results and analysis in Chapter 4 as well as to act as a secondary data source for either comparison or corroboration. The data in the community profiles has been selected and compiled from several data sources including: census data made publically available by Statistics Canada, data tracked and compiled by the Government of Northwest Territories Bureau of Statistics, and data from the Aboriginal People's Survey, a post-censal survey through Statistics Canada and made available through micro-data request.

Community Overview and Summary

This section provides a summary of basic community characteristics as well as a statistical summary for the communities. The following table provides a generalized overview of community characteristics; it is compiled from information publically available through the Government of Northwest Territories Statistics Branch.

Table: Community statistics summary (2001)

	Inuvik	Tuktoyaktuk	Aklavik	Ulukhaktok	Paulatuk	Sachs Harbour
Population	3399	1001	682	416	317	123
Median age (yrs)	29.9	26.5	29.0	25.5	23.8	28.5
Average population growth	-0.3	-0.1	-2.3	-0.6	0.8	-1.3
Percent Aboriginal population (%)	59	96.4	96.0	97.1	84.4	98.3
Households consuming country food (%)	17.7	49.5	39.5	45.8	51.9	42.2
Population who hunted and fished (%)	32.6	56.9	49.3	76.1	49.5	77.3
Employment rate	74.4	45.2	41.8	57.7	47.1	53.8
Participation rate	79.5	61.1	57.1	65.4	58.8	69.2
Percent with high school or more (%)	70.8	37.0	43.3	46.2	28.6	50.0
Average personal income ($)	40,760	30,948	24,700	25,291	25,079	n/a
Cost of living differential (where Edmonton is 100%)	147.50	162.5	162.5	167.5	167.5	167.5
Food Price Index	140.5	206.4	183.5	187.8	221.7	197.3

Source: Government of the Northwest Territories, Bureau of Statistics, 2006.

Inuvik is located in what was formerly a seasonal hunting and fishing area for both the Inuvialuit and Gwich'in but was built in 1955 based on the governments need to an administrative centre in the region. It is the largest community in the region and has the highest employment rate, highest median income, and highest education rate in the region. These statistics can in part be explained by the fact that it is the regional service centre and that it draws people from the outlying communities for both services and employment. It also has a high proportion of immigrants from outside the region who migrate to Inuvik for employment reasons.

Tuktoyaktuk is an anglicized version of the community's Inuvialuit name which means *resembling a caribou* for the caribou shaped reefs that are seen at low tide. The area was traditionally the home of the whale hunting Inuit, and was established in 1934 as a port of choice. It is now the sea edge base for oil and gas exploration in the region. Tuktoyaktuk has a relatively high participation rate, but a lower rate of educational achievement. Tuktoyaktuk was at the heart of the previous oil and gas boom and experienced significant expansion and economic growth at that time but since then has experienced many of the characteristics of a 'bust' economy.`

Aklavik means *place of the barren land grizzly bear* in Inuvialuktun. It is located on the Peel channeled of the Mackenzie River where the Inuvialuit and the Gwich'in traditionally met; it became a trading post in 1910. As activity in the region increased in the early part of the century, Aklavik as the regional centre at the time, grew and started to run out of space. The lack of space, due to its location bounded on three sides by the river and the high risk of spring time flooding, spurred the federal government to construct Inuvik as an alternate centre for the region in the 1950's. Aklavik is the third most populous community in the region, but the least traditional after Inuvik as measured by consumption of country foods and percentage of population hunting and fishing. Its employment rate is the lowest in the region, and the median income is also the lowest for the region.

Ulukhaktok is located on the western side of Victoria Island in an area in which material for making ulu (knife) is found. A Hudson's Bay trading post was established there in 1940. Printmaking is a strong tradition in the community and artists from the community have won international acclaim for their work. Ulukhaktok is known as a very 'traditional' community in the region and this is reflected in high consumption of country foods and percentage of population hunting and fishing. Employment rates and participation rates are good, in comparison with other communities in the region.

Paulatuk is located in an area that the Inuvialuit used to find coal for heating, and its name comes from the terms *soot of coal*. A trading post was established in Paulatuk in 1935. Thule whale hunting culture persisted in the area well into the 19th century. Paulatuk is also known as a traditional community; but measures of participation rates in traditional activities are not as high as in other communities. Paulatuk has the youngest median population age in the region.

Sachs Harbour is situated on the southwestern side of Banks Island and gets its names from the Canadian Arctic Expedition ship Mary Sachs that sunk nearby. Thule ruins indicate that Inuit lived on the island 500 years ago, more recently, the community has been permanently established only in 1929 in response to the fur trade boom and good trapping in the region. Sachs is the smallest

of the communities in the Inuvialuit region. Because much community infrastructure is required in each community (ie. waste disposal, water provision, etc), Sachs has a relatively high employment rate and participation rate as people are employed to service and maintain the infrastructure and in government positions. Sachs Harbour also has the highest rate of participation in hunting and fishing in the region which may also be attributed to the annual commercial musk ox harvest that takes place in Sachs and in which almost all community members participate. Due to its very small population size, statistical data on Sachs Harbour should be interpreted with caution and in measures later in this section, Sachs Harbour has been excluded from certain measures for this reason.

In general, communities other than Inuvik have a high proportion of Aboriginal population. In these communities it should be employment rate and participation rate may in reality be higher than was captured by these statistics, as some traditional/ subsistence activities, which are nonetheless adding the regional economy, are not captured by the census.

Paulatuk, Sachs Harbour, Aklavik, and Tuktoyaktuk all have employment rates under 50% and anecdotal information corroborates a problem with unemployment and lack of job prospects in these communities. In Sachs Harbour and Paulatuk, there is a very low median age which is the result of both a high birth rate and out-migration for employment in larger centres.

Key infrastructure variables

The following table provides an overview and comparison of infrastructure in the study communities. This chart is derived from data publically available through the Government of Northwest Territories, Bureau of Statistics. As might be expected, this data shows an overall positive correlation between community population size and increased infrastructure.

Table: Community Infrastructure Inventory

	Inuvik	Tuktoyaktuk	Aklavik	Ulukhaktok	Paulatuk	Sachs Harbour
Education infrastructure	Grade 12 College	Grade 12	Grade 12	Grade 12	Grade 11	Grade 10
Transportation infrastructure	Airport Marine re-supply Seasonal access road	Airport Marine re-supply Winter access road	Airport Marine re-supply Winter road	Airport Marine re-supply	Airport Marine re-supply	Airport Marine re-supply
Communication infrastructure	Full postal service Internet - satellite Telephone	Full postal service Internet - cable telephone	Full postal service Internet – cable telephone	Full postal service Internet – satellite Telephone	Full postal service Internet – satellite Telephone	Some postal service Internet – cable Telephone
Business infrastructure	1 bank 3 grocers	2 grocers	2 grocers	2 grocers	1 grocer	1 grocer
Recreation infrastructure	Community hall Arena Curling rink Gymnasium Swimming pool	Community hall Arena Curling rink Gymnasium Swimming pool	Community hall Arena Gymnasium Swimming pool	Community hall Arena Curling rink gymnasium	Arena Gymnasium	Arena Gymnasium
Electricity source	Gas/ diesel	Diesel	Diesel	Diesel	Diesel	Diesel
Health care infrastructure	hospital	Health centre with 4 nurses	Health centre with 4 nurses	Health centre with 2 nurses	Health centre with 2 nurses	Health centre with 1 nurse
Judicial infrastructure/ service	14 police officers	5 police officers	2 police officers	2 police officers	2 police officers	0 police officers
Municipal infrastructure	Fire hall Piped sewage Solid waste disposal	Fire hall Trucked sewage Solid waste disposal	Fire hall Trucked sewage Solid waste disposal	Fire hall Trucked sewage Solid waste disposal	Fire hall Trucked sewage Solid waste disposal	Fire hall Trucked sewage Solid waste disposal

Source: Government of the Northwest Territories, Bureau of Statistics, 2006.

Of particular note in this chart, is the education infrastructure in Paulatuk and Sachs Harbour which means that young people in both communities are not able to finish high school education without leaving their community and boarding in another. In addition, of all the communities, only Inuvik has a full-service bank, which can act to limit business activities in other communities.

Communication infrastructure is similar in all communities, more remote communities receive mail less frequently but all have internet and phone service. In terms of transportation infrastructure, Inuvik has a seasonal road that links to Yukon and British Columbia. Tuktoyaktuk and Aklavik are linked to Inuvik by ice roads from December to April. All other communities are accessible only by boat or by air service. Barges provide bulky and heavy supplies to all communities in the region once or twice per year, the remaining goods must be flown in at considerably greater expense.

All communities are serviced by the same basic municipal infrastructure with one minor variation; Inuvik has piped sewage and water service through the unique 'utilidor' system which is an above ground, heated compartments through which these services run, a modification to deal with permafrost. Health care infrastructure in all communities except for Inuvik consists of a nursing station with a complement of nurses related to the size of the community; Inuvik has a full service hospital which services the entire region through a medical evacuation system.

All communities are serviced by some recreation infrastructure (i.e. community hall or arena) however, the smaller, more remote communities have less recreation infrastructure than the larger ones.

Community Well-Being Index

The Community Well-Being Index (CWBI), a modification of the Human Development Index (HDI) for application at the community level. The Community Well-Being Index is a composite index which includes four dimensions of well-being; it includes measures of education, labour force participation, employment, income and housing. Education is considered via achievement in the formal education system, labour force participation is measured by labour force status the week prior to the census, income is measured as income per capita, and housing via two measures – housing quality by measuring the proportion of the population that reported that their dwellings were not in need of major repairs, and housing quantity as the proportion of population living in dwellings with no more than one person per room (Cooke M. , 2005).

Figure: Community Well-Being Scores for Inuvialuit Communities
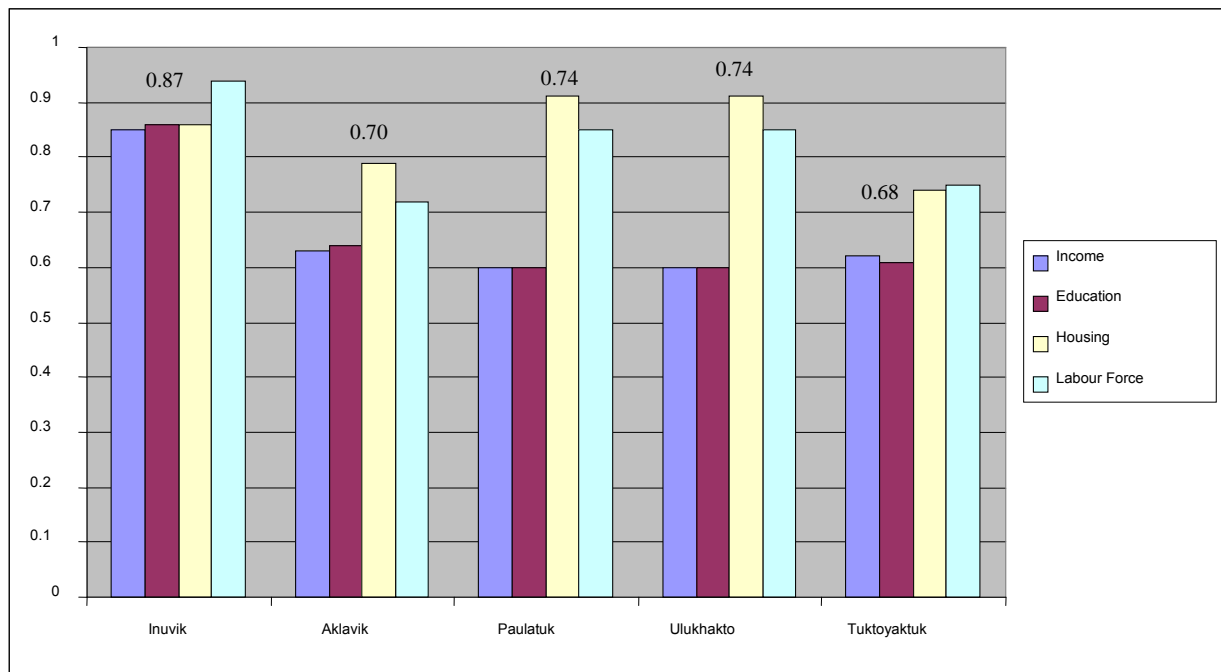
Inuvik does particularly well according to this measure of well-being. The score is buoyed up by a particularly high labour force participation rate as well as high income score, education score and housing score. A supposition could be made that in these communities lower educational attainment as measured by participation in formal education may be offset in terms of skills by residents with traditional skills and local knowledge which allows them to fill employment roles in the community. Tuktoyaktuk had the lowest score in the region and in particular a low housing score.

Community Satisfaction Measures

Community satisfaction measures are summarized below. These data were compiled from information requested from Statistics Canada from the Aboriginal People's Survey (2001), Arctic Supplement. The Aboriginal People's Survey is a post-censal survey of those who indicated Aboriginal identity on their census questionnaire. This data is for Inuvialuit adults only and is based on a sample size of 1640.

Table: Satisfaction level of Inuvialuit adults with measures of community life, by community

	All communities	Inuvik	Tuktoyaktuk	Aklavik	Ulukhaktok	Paulatuk	Sachs Harbour
Job Opportunities							
	All communities	Inuvik	Tuktoyaktuk	Aklavik	Ulukhaktok	Paulatuk	Sachs Harbour
Satisfied (%)	61.5	79.5	64.5	48	23.4E	27.2E	x
Dissatisfied (%)	38.6	x	25E	52E	64.6E	63.5	x
Quality of Education							
	All communities	Inuvik	Tuktoyaktuk	Aklavik	Ulukhaktok	Paulatuk	Sachs Harbour
Satisfied (%)	65.3	66	45	76.8	70.5	66.6	x
Dissatisfied (%)	34.5	22E	47.5E	x	23.5E	x	x
Availability of Health Services							
	All communities	Inuvik	Tuktoyaktuk	Aklavik	Ulukhaktok	Paulatuk	Sachs Harbour
Satisfied (%)	72	84.6	54.2	60	84.1	63.5	60
Dissatisfied (%)	28.3	x	45.5	28E	15.7E	18.1E	x
Housing Quality							
	All communities	Inuvik	Tuktoyaktuk	Aklavik	Ulukhaktok	Paulatuk	Sachs Harbour
Satisfied (%)	63.1	46.4	55.3	61.4	84.1	36.3	X
Dissatisfied (%)	36.8	26.7	38.2	34.5	X	54.4	x
Recreation Facilities							
	All communities	Inuvik	Tuktoyaktuk	Aklavik	Ulukhaktok	Paulatuk	Sachs Harbour
Satisfied (%)	60.7	67.1	41.8	74	80.9	61.5	X
Dissatisfied	27.4	21.8E	41.8	22.2E	X	30.7E	60E

(%)							
Don't know	11.8		16.3E	x	x	x	X

Country Food							
	All communities	*Inuvik*	*Tuktoyaktuk*	*Aklavik*	*Ulukhaktok*	*Paulatuk*	*Sachs Harbour*
Satisfied (%)	93.2	84.4	94.2	96.4	96.6	99.9	80E
Dissatisfied (%)	4.5E	X	X	X	X	X	x

Satisfaction with life at present							
	All communities	*Inuvik*	*Tuktoyaktuk*	*Aklavik*	*Ulukhaktok*	*Paulatuk*	*Sachs Harbour*
Satisfied (%)	91.9	94.9	88	92.8	99.9	91.6	60E
Dissatisfied (%)	8.5E	X	X	X	X	X	X

[E] indicates use with caution due to sample size
[X] indicates data is suppressed to meet the confidentiality requirements of the Statistics Act.

This data indicates a higher level of satisfaction with job opportunities in the two largest communities and a high level of dissatisfaction with the same in the smaller communities. All communities except for Tuktoyaktuk show a moderate level of satisfaction with education in their communities; the majority of residents Tuktoyaktuk responded that they were dissatisfied with education in their community.

Most communities in the region responded that they had a moderate to high level of satisfaction with health services in their community; lack of variation that one might see due to differences in infrastructure may be accounted for by the service provision that attempts to provide similar service to residents regardless of location. Measures of satisfaction with housing quality showed considerable variation; the lowest levels of satisfaction were in Inuvik and Paulatuk. The highest level of satisfaction was in Ulukhaktok which may be attributed to the higher levels of home ownership in the community as opposed to government sponsored housing.

Variations in satisfaction levels regarding recreation facilities presents an interesting case. The most well endowed communities in terms of facilities, did not express the highest level of

satisfaction with facilities. In particular Inuvik came in below Ulukhaktok and is home to a very new and expensive recreation complex. The high level of satisfaction in Ulukhaktok may be due to high rates of community participation and service levels with existing infrastructure, as such residents satisfaction reflects their functional use of the facilities. Overall, all communities indicated a high level of overall satisfaction with life in their community, with the highest level of satisfaction being Ulukhaktok, coming in at 99.9% of respondents indicating that they were satisfied with life in their community.

Measures of Socio-economic well-being

The following table compiles data on a variety of measures related to social and economic well-being in the study communities.

Table: Measures of socio-economic well-being by community

	All communities	Inuvik	Tuktoyaktuk	Aklavik	Ulukhaktok	Paulatuk	Sachs Harbour
Percent Inuvialuit adults saying employment is a problem in their community							
Yes (%)	67.6	63.2	58.9	83.3	79.1	71.4	66.6
No (%)	20.7	26.4E	26.7E	10E	x	x	X
Don't know/ refused/ not answered	11.1	x	16E	x	12.5E	x	x
Percent Inuvialuit adults who volunteered for a community organization							
Yes (%)	37.8	29.8	32.1	48.2	47.8	61.5	50E
No (%)	55.4	62.6	57.1	48.2	47.8	46.1	33.3
Don't know/ refused/ not answered	6.7E	x	8.9E	x	x	x	x
Percent Inuvialuit adults who attended a public meeting in the last 12 monthes							
Yes (%)	36.2	23.8^E	30.3	41.3	52.1	76.9	66.6
No (%)	56.4	67.1	60.7	51.7	43.4	30.7^E	x
Don't know/ refused/ not answered	7.2^E	x	x	x	x	X	x
Percent Inuvialuit adults who voted in the most recent election of the land claims organization							
Yes (%)	55.4	44.7	62.6	55.1	52.1	84.6	66.6
No (%)	26.4	35.8	21.4^E	34.4	13^E	X	x

| Don't know/ refused/ not answered | 9.3^E | x | 10.7^E | x | 21.7^E | X | x |

^{E} indicates use with caution due to sample size

^{X} indicates data is suppressed to meet the confidentiality requirements of the Statistics Act.

The data compiled demonstrates that in all communities in the study region residents feel that there is a problem with unemployment in their community. The two measures of social capital included. Percentage of adults who volunteered for a community organization and percentage of adults who attended a public meeting in the last 12 months both show lower levels of participation in the larger communities and higher levels of participation in the smaller communities. Voting in the most recent election of the land claims organization, does not follow the same pattern exactly but does show lower levels of participation in the two largest communities.

Measures of Community Problems

The following table outlines measures of community problems as identified by survey respondents and divided by community.

Table: Percent Inuvialuit adults identifying specific community problems as being an issue in their community

Family violence							
	All communities	*Inuvik*	*Tuktoyaktuk*	*Aklavik*	*Ulukhaktok*	*Paulatuk*	*Sachs Harbour*
Yes (%)	55	57	67	40	45.8	42.8	50E
No (%)	22	20.5E	16E	33	25E	35.7E	X
Don't know/ refused/ not answered	21.7	22E	16E	26	25E	21.4E	x

Alcohol abuse							
	All communities	*Inuvik*	*Tuktoyaktuk*	*Aklavik*	*Ulukhaktok*	*Paulatuk*	*Sachs Harbour*
Yes (%)	76.7	85.2	78.5	76.7	58.3	64.2	83.3
No (%)	10.1	x	x	16.6E	16.6^E	14.2^E	x
Don't know/ refused/ not answered	13.1	x	14.2^E	X	25^E	x	x

Drug abuse							
	All communities	*Inuvik*	*Tuktoyaktuk*	*Aklavik*	*Ulukhaktok*	*Paulatuk*	*Sachs Harbour*
Yes (%)	68.6	75	76.7	60	54.1	50	66.6
No (%)	13.6	13.2^E	x	20^E	12.5^E	21.4^E	x
Don't know/ refused/ not answered	17.6	13.2^E	14.2^E	16.6^E	29.1^E	28.5^E	x

Suicide							
	All communities	*Inuvik*	*Tuktoyaktuk*	*Aklavik*	*Ulukhaktok*	*Paulatuk*	*Sachs Harbour*
Yes (%)	43.4	44.1	50	36.6	50	14.2^E	x

No (%)	34.3	33.8	30.3	40	25^E	57.1	50^E
Don't know/ refused/ not answered	22.2	22^E	19.6^E	23.3^E	20.8^E	28.5^E	x

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In all communities there is a high percentage of respondents indicating a concern about alcohol abuse, drug abuse and family violence in their communities. Suicide is identified as less of a concern but in four of 6 communities over 40-50% of respondents indicated that they thought it was a problem in their community.

Measures of Community Life

Responses to the generalized questions about community life are noted below. Because of data suppression, a listing of top response categories has been noted.

Table: Top four response categories to the question: "What could be done to make life in the community better"

All communities	*Inuvik*	*Tuktoyaktuk*	*Aklavik*	*Ulukhaktok*	*Paulatuk*	*Sachs Harbour*
More jobs available (20.2%) Better housing (10.3%) More schooling available (10.8%) More support for community events (9.8%)	Data suppressed	More jobs available (16%E) Better police services (14.2%E) More schooling available (10.7%) Other (26.7%)	More jobs available (24.1%E) Better police services (10.3%E) Other (20.6%)	More jobs available (43.4%E) More support for community events (21.7%E) More support for harvesting (17.3%) More schooling available (13%E)	More jobs available (58.3%) Better housing (30.7%E) More support for community events (30.7%E) More schooling available (23%E)	Better police services – (50%E)

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This measure shows both interesting similarity and variation among the study communities. Of a total of 12 possible responses , only six were selected by respondents in significant numbers: more jobs, better housing, more schooling available, more support for community events, better police services, and mores support for harvesting. Otherwise, all communities (with the exception of Sachs Harbour) indicated that their first priority for improving life in their community would be having more jobs available.

Table: Top three response categories to the question: "Reasons for considering moving away from the community"

All communities	Inuvik	Tuktoyaktuk	Aklavik	Ulukhaktok	Paulatuk	Sachs Harbour
School/education (32.3%) Job opportunities (30.9%) Wanted a change (12.6%)	School/education (34.4%E)	Job opportunities (29.4%E)	School/education (40%E)	School/education (44.4%E) Job opportunities (55.5%E)	Data suppressed	Data suppressed

E indicates use with caution
X indicates data is suppressed to meet the confidentiality requirements of the Statistics Act.

This table shows that the two most significant reasons people consider moving away from their community were for job opportunities or for school or education.

Table: Top three response categories to the question: "Reasons keeping people in the community"

All communities	Inuvik	Tuktoyaktuk	Aklavik	Ulukhaktok	Paulatuk	Sachs Harbour
Family is here (49.7%) Job (22.2%) Is hometown (18.9%)	Family is here (53.7%) Job (28.3%) School/education opportunities (14.9%E)	Family is here (50%) Is hometown (28.5%) Good hunting, fishing, trapping (16%E)	Family is here (44.8%) Is hometown (20.6%E) Job (20.6%E)	Family is here (47.8%) Is hometown (26%E) Friends (13%)/ Good hunting, ishing, trapping (13%)	Data suppressed	Data suppressed

E indicates use with caution
X indicates data is suppressed to meet the confidentiality requirements of the Statistics Act.

For all of the study communities, family was the most significant reason keeping them in their community. Other reasons were jobs, that it was their hometown, that there were good hunting, fishing or trapping conditions, friends and for Inuvik only, that there were school and education opportunities available.