EVALUATION OF THE IMPACT OF THE NORTHERN MEDICAL PROGRAM ON THE COMMUNITY: PERCEPTIONS OF COMMUNITY LEADERS

by

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ABSTRACT

Background. Access to health care in northern and rural communities has been an ongoing challenge. Training undergraduate medical students in regional sites is one strategy to enhance physician recruitment and retention in rural regions. With this goal in mind, in 2004, the Northern Medical Program was created to bring undergraduate medical education to Prince George. The NMP is also hypothesized to have wider impacts on the community. This study aimed to describe perceptions of the broader impacts of the NMP.

Methods. In this qualitative study, semi-structured interviews were conducted with community leaders in various sectors of Prince George. The interviewer probed about perceived current and anticipated future impacts of the program, both positive and negative. A descriptive content analysis was performed. A conceptual framework of hypothesized impacts was created based on the literature and a model of neighbourhood social capital by Carpiano (2006).

Findings. Comments were overwhelmingly positive. Impacts were described on education, health services, economy, politics, and media. Some reported negative impacts included tension between the NMP and other departments at UNBC, and a strain on health system resource capacity. Participants also reported that the NMP has impacted social capital in the region. Social capital, defined as the resources belonging to a network of individuals, was a pervasive theme. Impacts on social cohesion, various forms of social capital, access to social capital and outcomes of social capital are described.

Conclusions. The full impact of the NMP will likely not be felt for at least a decade, as the program is still relatively new to Prince George. Findings suggest that an undergraduate medical education program can have pervasive impacts in an underserved community. Evaluation of the impact of such programs should be broad in scope. Findings also suggest that impacts of the program on other community sectors and on social capital may in fact lead to greater human capital gains than originally anticipated. A comprehensive communication strategy should be developed and maintained to ensure continued stakeholder support for the program. Next steps include identifying key quantifiable indicators of community impact to track changes in the community over time.
# TABLE OF CONTENTS

ABSTRACT .................................................................................................................. ii

TABLE OF CONTENTS .......................................................................................... iii

LIST OF TABLES ..................................................................................................... v

LIST OF FIGURES .................................................................................................... vi

ACKNOWLEDGEMENTS .......................................................................................... vii

CHAPTER 1: Introduction ......................................................................................... 1
  1.1 Purpose ............................................................................................................... 1
  1.2 Rationale ............................................................................................................ 1
  1.3 Research Questions .......................................................................................... 2

CHAPTER 2: Literature Review ............................................................................... 3
  2.1 Overview ............................................................................................................ 3
  2.2 Health Status of Northern, Rural and Remote Populations in British Columbia .... 3
  2.3 Access to Health Care in Northern and Rural, and Remote Areas ....................... 5
  2.4 Community-Based Medical Education and Distributed Medical Education Programs 7
  2.5 Community Impact ............................................................................................ 10
    2.5.1 Measuring Community Impact ...................................................................... 13
  2.6 Social Capital ..................................................................................................... 14
    2.6.1 Overview ....................................................................................................... 14
    2.6.2 What is Social Capital? .................................................................................. 15
    2.6.3 Critical Review of Social Capital Literature that Informs the Current Research 18
    2.6.4 The Relevance of Carpiano’s Model of Social Capital in the Present Study ..... 22
    2.6.5 Measuring Social Capital ............................................................................. 24
  2.7 Summary ............................................................................................................ 26

CHAPTER 3: Methodology ....................................................................................... 28
  3.1 Rationale: Qualitative Approach ....................................................................... 28
  3.2 Rationale: Analytic Induction .......................................................................... 28
  3.3 Defining “Community” ..................................................................................... 29
  3.4 Study Participants and Sampling Technique ..................................................... 29
  3.5 Data Collection .................................................................................................. 31
  3.6 Analytical Procedure ......................................................................................... 34
  3.7 Framework Creation and Modification .............................................................. 38
  3.8 Issues of Rigor .................................................................................................... 42
  3.9 Ethical Considerations ....................................................................................... 43

CHAPTER 4: Community Context ........................................................................... 45
  4.1 Geography and Demographics ........................................................................ 45
4.2 History of Prince George ..................................................................................46
4.3 Goals and Philosophy of the Northern Medical Program ..............................47
4.4 Timeline of Events Surrounding the Implementation of the Northern Medical Program ..............................................................................................................48

CHAPTER 5: Study Findings ..................................................................................53
5.1 Overview of Chapter ......................................................................................53
5.2 Study Participants ..........................................................................................54
5.3 Perceived Impacts on Community Sectors ....................................................56
   5.3.1 Context Prior to the NMP ......................................................................56
   5.3.2 Current and Anticipated Future Impacts .................................................61
   5.3.3 Potential Contributing Factors ...............................................................81
5.4 Perceived Impacts on Capital ........................................................................82
   5.4.1 Context Data Related to Capital ...............................................................82
   5.4.2 Current and Anticipated Future Impacts on Capital ...............................88
   5.4.3 Potential Contributing Factors ...............................................................115
5.5 Other Findings ...............................................................................................116
5.6 Potentially Quantifiable Indicators of Community Impact ..............................119
5.7 Summary of Findings ......................................................................................123

CHAPTER 6: Discussion .......................................................................................125
6.1 Overview of Chapter ......................................................................................125
6.2 Sector-Wide Impacts ......................................................................................125
6.3 Impacts on Social Cohesion and Social Capital ............................................130
6.4 Other Findings ...............................................................................................145
6.5 Limitations ....................................................................................................145
6.6 Implications for Research and Practice .........................................................148
6.7 Future Research and Considerations .............................................................150
6.8 Conclusion .....................................................................................................152

REFERENCES .....................................................................................................155

APPENDICES .....................................................................................................165
A2. Study Consent Form .......................................................................................166
A3. Interview Guides ...........................................................................................168
A4. Letter Inviting Leaders to Participate in the Study ........................................172
A5. Participant Demographic Questionnaire .......................................................173
LIST OF TABLES

Table 2.2.1. Summary of health status indicators for British Columbia, the Northern Health Authority, and Prince George…………………………………………………………………………………………13

Table 5.2.1. Demographic characteristics: Age range and gender of study participants….63

Table 5.2.2. Demographic characteristics of study participants: Reported length of time in position of leadership in the community, current place of residence, and length of time living in a rural, remote, or northern community…………………………………………………………..63

Table 5.6.1. Key indicators of impact of the Northern Medical Program on Prince George that can be quantified to enable changes in the community to be tracked over time……127
LIST OF FIGURES

Figure 3.7.1. Original conceptual model of hypothesized impacts of the Northern Medical Program on the community. This model is based on previous work by Lovato and colleagues and on Carpiano’s framework of neighbourhood social capital………………..48

Figure 3.7.2. A modified version of Carpiano’s Bourdieu-based model of neighbourhood social capital. Social cohesion, social capital and outcomes of social capital are included. Overarching neighbourhood- and individual-level confounding factors are omitted……..49

Figure 6.3.1. A schema representing the impact of the Northern Medical Program on social capital in Prince George in the present study. The framework is modified from Carpiano’s framework of neighbourhood social capital. Social cohesion, social capital and outcomes of social capital are included in the model…………………………………….151
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CHAPTER 1: Introduction

1.1 Purpose

The overall purpose of the current study was to describe the perceived impact of a newly implemented undergraduate medical education program on its host community. The perceived effects of the Northern Medical Program (NMP) on Prince George, British Columbia (BC) were explored. In addition, the study also aimed to identify key indicators of community impact that can be quantified to enable changes in the community to be tracked over time.

1.2 Rationale

Research has shown that the health status of northern, rural and remote populations is lower than that of urban populations\(^1\). Access to health care in northern British Columbia has been a critical issue and an ongoing challenge. One solution to improving access to care is to train medical students both from and in underserved areas with the hope that they will stay in the region when they have completed their training. The Northern Medical Program is a regional medical education campus of the University of British Columbia (UBC) instituted in Prince George to assist with increasing the physician workforce in the North.

The present study is part of the longitudinal evaluation of the Distributed MD Undergraduate Program at the University of British Columbia that will explore and evaluate the short, intermediate and long-term impacts of the NMP on the community of Prince George. The present study builds on a qualitative pilot project conducted by Bates\(^2\), Lovato\(^3\) and colleagues to explore the perceived impact of the NMP on Prince George in terms of education, health, economy, local politics, media and business. Shortly thereafter, a second study was funded by the British Columbia Medical Services Foundation to examine the impact of the NMP on the local medical community, specifically physicians already practicing in Prince George\(^4\). The research questions in the present study complement those in the ‘physician impact study’. It is hoped that together, these two
projects will provide a more comprehensive understanding of the community-wide impacts of the NMP.

Preliminary analysis of interview data from the NMP impact pilot study revealed several perceived positive and negative impacts of the program as well as a potential underlying theme of ‘social capital’. The present study attempted to expand upon these findings and explore their applicability in other key stakeholder groups in Prince George. The concept of social capital served as a theoretical foundation for the research. Therefore, in addition to identifying impacts and changes observed in the community, social capital theory and its application to the impact of the NMP on its host community were also explored.

1.3 Research Questions

The research questions for the project included the following:

1) What are the perceived current and anticipated impacts of the NMP on the community of Prince George?
   a. On health, education, economy, local politics, media, business, other sectors?

2) How does social capital theory help to explain the nature of the impacts perceived as a result of the creation and implementation of the NMP?

In addition to the research questions listed above, a product of the study findings was the identification of areas of community impact, as identified by participants, which can be quantified to measure and monitor temporal changes in the community as the Northern Medical Program matures over time.
CHAPTER 2: Literature Review

2.1 Overview

In this chapter, an overview is provided of some of the challenges individuals in northern, rural or remote areas face in accessing health care. Next the concepts of community-based medical education and distributed medical education are introduced. This section also includes a discussion of the role of delivering undergraduate medical education in regional sites in improving access to health care and health status. A summary of several studies that attempted to measure community-wide impact of programs is then presented. This is followed by a description of various methods used to measure community impact. The definition of the concept of social capital is then given, followed by a critical review of the social capital literature that most informs the current research. Several tools used to measure social capital are then summarized.

2.2 Health Status of Northern, Rural and Remote Populations in British Columbia

The World Health Organization (WHO) defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”\(^5\) It has been well documented that northern, rural and remote populations have significantly poorer health than individuals in urban areas. In 2004, the Centre for Health Services and Policy Research at the University of British Columbia published the 2\(^{nd}\) Edition of ‘The British Columbia Health Atlas’. The Atlas reports on and compares the health status of British Columbians within and between health authorities. Indicators of health status include premature mortality rate, life expectancy, potential years of life lost, age-standardized mortality rate, and infant mortality rate.\(^1\) A summary of their results is included here (Table 2.2.1).

The average premature mortality rate in British Columbia was 2.81 per 1,000 population. The Fraser, Vancouver Coastal, Vancouver Island and Interior Health Authorities had premature mortality rates of 2.67, 2.71, 2.88 and 2.91, respectively, whereas the Northern
Health Authority’s (NHA’s) premature mortality rate was found to be much higher at 3.41. Prince George’s premature mortality rate hovered near the health authority average at 3.35. The provincial average for life expectancy at birth is 79.9 years; the average in the NHA and Prince George were lower at 78.0 and 77.7 years, respectively. Potential years of life lost is an aggregate measure of the “number of years ‘lost’ to early deaths (defined as all deaths prior to age 75)”\(^1\). Trends for potential years of life lost are similar to those observed for the previously discussed health status indicators, where the statistics for the NHA and Prince George were lower that than the BC average (1.11 and 1.05, respectively, compared to 1.00). At 6.9 deaths per 1,000 population, BC’s average age-standardized mortality rate is well below that of the NHA overall (8.36 per 1,000) and Prince George (8.48 per 1,000). The infant mortality rate in Prince George is slightly less than that of BC overall (3.88 and 4.01, respectively), however the rate in the NHA is higher at 4.54 deaths per 1,000 live births.

The data presented here clearly indicate that the health status of BC’s northern populations, as defined by health indicators such as life expectancy and infant mortality rate, appears to be inferior to that of the rest of the province. Furthermore, the health of Prince George citizens appears to be worse than the rest of the province on all indicators except infant mortality rate. However, Prince George residents appear to have better health compared to other northern BC residents; the average in Prince George exceeds the Northern Health Authority average on all indicators except life expectancy and age-standardized mortality rate.

In keeping with the WHO’s broad view of health\(^5\), the impact of social determinants on reproducing the disparity in health between populations should also be considered. Social determinants of health are defined as “the economic, social and cultural factors that influence individual and population health both directly and indirectly, through their impact on psychosocial factors and biophysiological responses.”\(^6\) In 2000, Dixon and Welch\(^6\) conducted a quasi-systematic review to explore how these determinants may be applied to explain inequalities in health between rural/remote and urban communities in Australia. Inhabitants of rural areas had a significantly lower socioeconomic status (i.e. income,
education and occupation); were at increased exposure to adverse environmental conditions (i.e. poor road quality and occupational injury); were more likely to engage in risk-taking behaviours; and experienced greater “physical and cultural” barriers to access to health care. The authors also discuss how the reputation or status of the community in which a person lives might adversely affect his or her self-reported health status. Therefore, it is plausible that certain stigma associated with smaller communities (e.g. resource towns associated with mining or other resource cultivation) may be affecting a resident’s perceived health. Each social factor listed above was found to be independently associated with health\(^6\). Therefore, the social determinants of health are a promising way to explore reasons why inhabitants of rural communities have significantly worse health than their urban counterparts.

Table 2.2.1. Summary of health status indicators for British Columbia, the Northern Health Authority, and Prince George.

<table>
<thead>
<tr>
<th>Health Status Indicator</th>
<th>British Columbia</th>
<th>Northern Health Authority</th>
<th>Prince George</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premature Mortality Rate (per 1,000)</td>
<td>2.81</td>
<td>3.41</td>
<td>3.35</td>
</tr>
<tr>
<td>Life Expectancy at Birth (years)</td>
<td>79.9</td>
<td>78.0</td>
<td>77.7</td>
</tr>
<tr>
<td>Potential Years of Life Lost (years)</td>
<td>1.00</td>
<td>1.11</td>
<td>1.05</td>
</tr>
<tr>
<td>Age-Standardized Mortality Rate (per 1,000)</td>
<td>6.9</td>
<td>8.36</td>
<td>8.48</td>
</tr>
<tr>
<td>Infant Mortality Rate (per 1,000 live births)</td>
<td>4.01</td>
<td>4.54</td>
<td>3.88</td>
</tr>
</tbody>
</table>

Data Source: The British Columbia Health Atlas, 2\(^{nd}\) Ed.\(^1\)

2.3 Access to Health Care in Northern and Rural, and Remote Areas

Statistics Canada defines rural and small towns as areas located outside urban centres with populations of 10,000 or more\(^7\). The most recent census data suggest that approximately 22% of Canadians live in rural or remote communities. It has been well documented that Canadian rural and northern populations have higher unmet health needs than urban...
populations\textsuperscript{1,8,9}. There are many possible reasons for this, two of which are discussed here: the disproportionate ratio of physicians to residents in rural and northern areas compared to urban areas and the geographic dispersion between communities outside of urban centres.

The inferior access to health care that rural, remote and northern populations face may be partially explained by the fact that these regions are served by significantly fewer physicians per capita than are urban regions. A report published in 2004 by the Canadian Institute for Health Information states that only 9\% of all Canadian physicians (and 16\% of Canadian family physicians) practice in rural and small town areas, which are inhabited by nearly one-quarter of the national population. In addition, there are only half as many physicians per one thousand people in small town and rural areas compared with their urban counterparts\textsuperscript{10}. Furthermore, although family physicians in rural areas provide a greater range of services, such as obstetrics and emergency room care, according to the 2004 National Physician Survey, 15\% of rural physicians plan to narrow their scope of practice and only 6\% plan to broaden their scope\textsuperscript{9}. The combination of all these factors may plausibly be contributing to the insufficient access to health services for people residing outside larger cities.

In addition to the disparate ratio of rural to urban physicians, citizens of northern and rural areas also have to contend with the vast geographic dispersion between neighbouring communities. As a result, many residents have to travel significant distances to reach the nearest physician if there is no doctor in their community. For example, in some northern remote communities, more than two thirds of the population live further than 100km from the nearest physician\textsuperscript{9,10}.

It has been reported that individuals who live in rural and northern areas may postpone regular check ups and visits to see a physician for what they perceive as “minor ailments”\textsuperscript{10}, due at least in part to the inconvenience of travelling to the nearest health care centre. It is very likely that distance to health services and the small number of physicians practicing in rural, remote and northern areas has negatively impacted access to health care, and subsequently health, for individuals living in these communities.
2.4 Community-Based Medical Education and Distributed Medical Education Programs

The disparity in access to health care between rural and urban communities is compounded by the fact that, in Canada, only 9% of medical graduates choose to practice in rural areas\(^\text{11}\). Rural communities throughout the world are experiencing similar shortages\(^\text{12}\). In response to this issue, there has been substantial innovation in the delivery of medical education over the past couple of decades. For instance, new medical schools have been introduced into underserved areas such as the University Medical School in Tromso, in arctic Norway\(^\text{13}\). Similar models include James Cook University School of Medicine in Northern Australia\(^\text{14}\) and the Northern Ontario School of Medicine in Ontario, Canada\(^\text{15}\). The main goals of these programs are to enhance recruitment and retention of physicians in underserved areas.

Community-oriented medical education (COME) and community-based medical education (CBME) are two terms used in the literature to describe recent trends in medical education. The World Health Organization (WHO) defines community-oriented education as “education that focuses both on population groups and individual persons which takes into account the health needs of the community”\(^\text{16}\). As a way of implementing community-oriented education, community-based education is defined as “…a means of achieving educational relevance to community needs…It consists of learning activities that use the community extensively as a learning environment, in which not only students but also teachers, members of the community, and representatives of other sectors are actively engaged throughout the educational experience.”\(^\text{16}\) Some potential benefits of COME include providing students with an understanding about the interlinked relationship between health and factors related to the development of a community, better preparing students for working or practising in the community, and improving communication and linkages between health professionals in the community and the general public\(^\text{16}\). Although recommended, high levels of community involvement with CBME is uncommon\(^\text{17}\).
Another innovation in the delivery of medical education has been the creation of distributed medical education (DME). DME is defined as “a learning environment that is dispersed across a variety of locales and experiences beyond the traditional confines of the campus-based basic science departments and the tertiary care inpatient wards that have been the dominant venue for undergraduate and postgraduate medical education throughout the twentieth century.” Distributed medical education is generally highly community-based.

DME has been implemented in both undergraduate and postgraduate medical education programs and can range from students participating in short-term rural placements to students attending regional campuses, at a location separate from the institution’s main campus. Several schools in the United States\textsuperscript{19,20} and Australia\textsuperscript{21} have created undergraduate rural clinical schools to provide a comprehensive educational experience during undergraduate clinical training in a rural setting. Various Canadian\textsuperscript{22,23} and Australian\textsuperscript{24-26} medical schools make extensive use of DME for clinical rotations in underserved areas. In addition, numerous postgraduate rural sites for family medicine training have also been implemented throughout Canada\textsuperscript{27}. The University of Washington (WWAMI) program in the United States collaborates with several universities in the states of Wyoming, Alaska, Montana and Idaho, which do not have medical schools. Students in this program receive their first year of education at a regional campus and their second in Seattle. Students’ clinical years can be completed in regional sites\textsuperscript{28}. Manchester Medical School and others in the United Kingdom (i.e. Birmingham University School of Medicine) have a different model, where the parent school implements or “grows” a free-standing medical school in an underserved area over a ten-year period\textsuperscript{29}.

In 2004, The University of British Columbia instituted two satellite or regional campuses in British Columbia\textsuperscript{30}. The parent school is located in Vancouver and the regional campuses are located in Victoria, on Vancouver Island and in Prince George, in Northern BC. The present study was concerned with the evaluation of the community impact of the Prince George campus, called the Northern Medical Program. As a regional campus that is highly community-based, the NMP is hypothesized to have community impacts comparable to those of freestanding medical schools in rural or underserved areas, such as University...
Medical education is increasingly being linked with the needs of the community. To this end, a framework of social accountability for medical education in Canada has been developed\(^\text{31}\). In the context of medical education, the WHO defines social accountability as “the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region, and/or nation they have a mandate to serve. The priority health concerns are to be identified jointly by governments, health care organizations, health professionals and the public.”\(^\text{32}\) Based on this definition, the Steering Committee on Social Accountability of Medical Schools has identified four guiding principles for Canadian medical schools\(^\text{31}\). These include:

1. Emphasize to faculty and students the need to maintain professional competence, the importance of physician-patient relationships, and an understanding of professionalism and its associated obligations;
2. Respond to changing community needs by “developing formal mechanisms to maintain awareness of these needs and advocate for them to be met.”;
3. Conduct “curiosity-driven research” and translate research into practice, emphasizing evidence-based care; and
4. “Work together and in partnership with their affiliated health care organizations, the community, other professional groups, policy makers and governments to develop a shared vision of an evolving and sustainable health care system for the future”.

Medical School in Tromso, Norway and James Cook University School of Medicine in Northern Australia. It is anticipated that students who complete their undergraduate medical education training in Prince George and throughout Northern BC will choose to practice there, which in turn will contribute to reducing the disparity in access to health care between urban centres and smaller communities in BC. In addition to improving access to health care, it is hypothesized that the NMP will have substantial impacts on the wider community in terms of economic, social and other indirect benefits. It is these broader community impacts that were explored in the present study.
DME programs in existence have conducted various types of evaluation and assessment. The Spencer Gulf Rural Health School in South Australia and UBC’s Medical School have tracked sustainability, student satisfaction and comparability between regional campuses\(^{33}\). In addition to the above, the program at the University of Washington, Seattle, USA has tracked changes in physician recruitment and retention over time\(^{34,35}\). Evaluation of James Cook University School of Medicine and the University Medical School in Tromso has also been concentrated on the number of physician graduates recruited from the programs and retained in underserved areas. UBC has additionally conducted a preliminary study on the community impacts of the NMP, as described above\(^{2,3}\). Studies evaluating distributed medical education programs have focussed predominantly on the assessment of student performance and retention of graduates into the area. However, the framework of social accountability for medical education suggests that the evaluation of CBME programs should be broader\(^{31}\). The objective of the present research was to fill this gap in the literature by evaluating the wider impacts of introducing an undergraduate medical education program into a small, medically underserved community.

2.5 Community Impact

Literature describing the overall community impact resulting from the implementation of a new program is sparse. Accordingly, few studies have examined the impact of introducing a medical education program into a community and only a handful of others have explored the impact of community-based programs in general on their host communities.

A survey of the literature revealed only two published studies that have explored the impact of a medical education program on its host community. In 2003, Azizi conducted an evaluation of the impact of two community-oriented medical education programs in Sudan. The study’s outcomes were primarily concentrated on the ability of the respective programs to equip graduates with the necessary skills to practice medicine in a community context. One of the programs was found to be more highly community-oriented, which reportedly resulted in the formation of strong partnerships between the program and the community. Students in this program reported feeling more confident in their ability to practise
medicine in a community setting compared to students in the less community-oriented program\textsuperscript{36}.

A second study assessed the impact of community-based medical education programs in three regions in Nigeria. In this study, focus groups were conducted with community leaders to ascertain their perceptions of the impact and level of awareness of a newly implemented primary health care outreach program on the community. Omotara and colleagues reported high levels of awareness of the program in all three regions. Students were reportedly well-received by the communities and received a considerable amount of support from local community leaders\textsuperscript{37}.

Bates\textsuperscript{2}, Lovato\textsuperscript{3} and colleagues at UBC and UNBC have conducted a pilot study that explored the early impacts of the NMP in Prince George on six dimensions, namely education, health, economy, local politics, media and business. Interviews were conducted with nine key stakeholders in Prince George who have been involved with the NMP since its inception. Participants reported both positive and negative impacts of the NMP on all six sectors listed above. Findings also suggested an underlying theme of ‘social capital’. The present research builds on this work.

Numerous studies, unrelated to medical education, have also explored the impact of introducing a health program into the community. In a large feasibility study in 2003, Wood and colleagues explored the potential community impact of implementing a safe-injection facility (SIF) in Vancouver\textsuperscript{38}. This study stemmed from concerns expressed by policy makers that the SIF would increase drug use and public nuisance in the area, which would negatively impact the community. However, results revealed that high-risk drug users would be most likely to use the site and use safer injecting practices, which would have immediate and positive impacts on the community.

In response to similar resistance from policy makers, another feasibility study was conducted to evaluate the perceived versus actual impact of introducing group homes for mentally ill adults into a community. Neighbourhoods that already had these facilities and
those that did not were surveyed, and perceptions and levels of awareness of group homes in the area were compared. The investigators concluded that the perceived impact was significantly worse than the actual impact of the homes and that much of the resistance to implementing the facilities stemmed from the fact that residents of the community were not consulted during the process\textsuperscript{39}.

In England, Barriball & MacKenzie conducted a systematic review of the impact of nursing interventions on communities and discussed implications. The authors described several challenges implicit in measuring community impact. For example, they discussed the difficulty in proving that an outcome results from a particular intervention and noted that preventive work in the community is implicitly hard to measure. The authors recommended that criteria and methodology be developed for the planning and evaluation of health services delivered by nurses in the community. It is perceived to be essential that nurses measure the impact of their work on the community in order to guide their role development and inform purchasing processes and allocation of resources\textsuperscript{40}.

Finally, an ecological assessment of a community coalition aimed at preventing alcohol, tobacco, drug abuse and related risks was also conducted. The focus of the paper was to discuss program evaluation strategies in this context and explore how the principles of ecological assessments can be integrated within these strategies. The authors stressed that because interventions impact many levels (e.g. individual, community, etc.), multiple methods of evaluation must be employed. In addition, researchers and evaluators need to recognize that community-level interventions are more complex and subsequently require more complex methods to evaluate their impact. Measures of community-level impact employed by the authors included a “key leader survey”, a “community survey” and trend data\textsuperscript{41}.

Although community impact has been explored in many contexts and assessed with various indicators, outcomes have tended to be narrow and uni-dimensional. Most studies have only assessed community impact in one sector. The multi-sectoral impact of a program on the community (e.g. the impact on health, education, economy, etc.) has not been well
studied. To my knowledge, only one study, conducted by Bates, Lovato and colleagues, has explored the overall impact of implementing a distributed undergraduate medical education program on the host community. This study was also the only one to look specifically at the effects of instituting a large educational program in a rural or remote community.

2.5.1 Measuring Community Impact

Several methods have been employed to identify indicators of change in a community. These include measuring broad community-level indicators, health outcomes, and perceptions of impact. Another potential method to understand impact suggested herein is to use the “social determinants of health”.

Community-level indicators (CLIs) are based on observations of aspects of the community itself rather than those of particular individuals. As explained by Cheadle et al, the broad definition of a CLI allows investigators to create CLIs that are context-specific. Unlike most indicators of impact, community-level indicators are not created through the aggregation of individual-level measures (e.g. census data). For example, in a study examining the impact of a community smoking cessation program, investigators employed ‘percentage of non-smoking seating in local restaurants’ as a relevant CLI. It has been suggested that CLIs can supplement individual-level measures of the impact of community-based programs and provide a lower cost alternative, making them a feasible option for program evaluation strategies. Several clinical community-based programs, such as for cardiovascular disease interventions, have created and validated CLIs. Although these programs operate within a different context, parts of the model can be adapted for use in evaluating the impact of any program on a community.

Several other types of indicators to evaluate the impact of a program have also been suggested. For example, population health indicators (e.g. rates of malaria) and perceptions of students have been used by Azizi and Omotara et al, respectively, in two studies evaluating a medical education program’s impact on a community. Economic
indicators of impact, such as income and employment generated, have been used in one study to measure the overall impact of implementing a large community program or institution, such as a university, into a community\textsuperscript{44}. A similar study used economic indicators to estimate the impact of introducing a military base into a community\textsuperscript{45}.

A promising method to evaluate the impact of a program on the health of its host community’s population is measuring social indicators of health. In recent years, the literature base on the social determinants of health, as previously defined, has grown exponentially. These studies have received considerable attention as policy makers and researchers come to understand that social, community-level factors can have a substantial impact on health\textsuperscript{46,47}. For example, Evans and colleagues recommend that health problems should be examined more broadly instead of focusing solely on individual health risks, which has been the norm. They propose three domains pertinent to health: 1) individual characteristics, 2) external environment, and 3) health affecting interventions\textsuperscript{47}.

The most commonly discussed determinants include socio-economic status, education, gender and ethnicity. A strong link between higher levels of education and good health has been demonstrated\textsuperscript{48,49}. Poverty has been associated with lower levels of health\textsuperscript{50}. Recently, investigators have expanded the social determinants to include social capital, since several studies have found a positive association between indicators of social capital and indicators of health\textsuperscript{6,51,52}. The link between social capital and health is further discussed in Section 2.6.3.2 ‘Social Capital and Health’. Categories of social determinants provide a framework for classifying types of impact that can be examined in evaluating the impact of a program on a community.

2.6 Social Capital

2.6.1 Overview

The theory of social capital has been extensively described and debated in the literature. The upcoming section is not meant to provide a comprehensive review of social capital theory, but rather to provide the reader with an overview of the conceptualization that most
informed the present research. The section begins by defining social capital and describing some components of the theory that are pertinent to the present work. Following this, a critical review and synthesis of social capital studies that most influenced the current study is presented.

2.6.2 What is Social Capital?

“Capital” is defined as “accumulated labor…that when appropriated on an…exclusive basis by agents or groups of agents, enables them to appropriate social energy in the form of reified or living labor”\(^{53}\). Four main types of capital have been described in the literature, including physical, human, cultural and social capital. This section focuses on the concept of social capital. At a basic level, social capital refers to the financial, social and other resources that are tied to a network and the ability of members belonging to this network to access these resources to achieve a particular objective\(^{53}\).

Social capital is a sociological concept that has been described for centuries\(^{54}\). However, the construct has resurfaced in the past several decades\(^{54}\). Its modern conceptualization has received much attention in recent years, which has resulted in countless definitions and applications. Many researchers have used social capital to attempt to explain the basis for a society’s well-being or level of dysfunction. As a result, Portes and others caution that the concept is evolving into a “cure-all for maladies affecting society”\(^{54}\).

Coleman and Bourdieu have gained recognition as two of the original thinkers around the contemporary conceptualization of social capital\(^{54}\). The theory has been further developed and applied by Putnam, Portes, Carpiano and others. Coleman defines social capital as the forms of social participation that facilitate cooperation to achieve common objectives\(^{55}\). He explains that social capital is a resource available to an individual, although it is contained within a group. According to Coleman, transactions of social capital are characterized by obligations and expectations, including that of reciprocity: group members need to trust that obligations will be fulfilled. His theoretical stance emphasizes the importance of social capital for the creation of human capital. He proposes that by
investing time in building social capital, you can increase human capital, and vice versa. Bourdieu defines the concept as “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition”\(^{53}\). Members belonging to a particular network are required to supply and invest economic, cultural or social resources, which can be accessed by other members. The key to this relationship is *investment*, as Bourdieu explains that networks are not “a given”. They require substantial investment and commitment on the part of the members. Therefore, the amount of social capital belonging to a network depends on the size of the network, the density of the network and the volume of resources each member possesses.

In recent years, Robert Putnam has received considerable media attention for his theory of social capital and his assertion that social capital in American civil society is declining\(^{56}\). Putnam defines social capital as “features of social organization such as networks, norms and social trust that facilitate cooperation and coordination for mutual benefit”\(^{57}\). Many researchers have critiqued his conceptualization, noting that it is limited to the description of the level of cohesiveness and civic engagement in a particular group. In this sense, Putnam’s theory may be more closely aligned with the concept of social cohesion, defined as the degree and patterns of interaction between network members and “the associated values linked to- or emanating from- these interactions”\(^{58}\). Carpiano, Portes and others have argued that social cohesion and social capital are distinct concepts\(^{54,58}\). Social cohesion is a crucial part of the social processes that lead to the creation of and access to social capital\(^{58}\), however it is not a social *resource* that can be accessed to achieve a particular objective.

In addition to describing the potential benefits of social capital, many researchers have also described negative aspects of the theory. Bourdieu explains that social capital can lead to inequality, as access to resources often differs by social class\(^{53}\). In Portes’ historical review of social capital, he identifies four additional negative consequences of social capital: the exclusion of “outsiders”, often the public; excessive claims on network members; restriction of personal freedoms to maintain a certain level of social control; and
“downward levelling norms”, which are generally associated with networks opposing mainstream society (ex. drug dealers), and their attempt to maintain control over their membership by “keeping members down”\textsuperscript{54}. These potential negative effects of social capital will be considered in the current work.

2.6.2.1 Networks Associated with Social Capital

In 2004, Bates\textsuperscript{2}, Lovato\textsuperscript{3} and colleagues conducted a pilot study exploring the early impacts of the Northern Medical Program on the community. One pervasive theme emerging from the research was network formation. Based on this finding, it was deemed important to examine the relationship between network formation and social capital in the current study to better understand the broader impacts of the NMP on Prince George. The significance of networks in social capital theory is described below.

Social capital is a characteristic of a network or group. Networks can be formal (ex. volunteer groups, committees, etc.) or informal (ex. friends, neighbours, family). Formal networks can also include what Coleman has termed “appropriable social organizations”, such as a block group which works together to ensure the safety of the neighbourhood\textsuperscript{55}. Within Coleman’s theory are two levels of networks: primary, which includes family and friends; and secondary, which refers to networks within civil society\textsuperscript{55}. Putnam’s theory and studies of social capital are restricted to formal networks\textsuperscript{57}, which is one of the main criticisms of his work\textsuperscript{54,59}. It is important to include informal groups in the analysis of the effects of social capital because, as Krishna and Shrader point out, the degree of social cohesion, collectivity and trust may be even stronger in these types of associations\textsuperscript{59}.

Bourdieu’s theory of social capital maintains that networks composed of homogeneous members promote social capital and allow for enhanced social control over the group\textsuperscript{53}. However, in a review by the World Bank, Krishna and Shrader present conflicting evidence; some studies have shown that homogeneous networks work best, yet others reported superior function of networks composed of heterogeneous members\textsuperscript{59}. Krishna concluded that the most effective network composition might be context-specific.
Network boundaries are another area discussed in the social capital literature. Coleman’s theory states that closed networks promote social capital, while open networks invite risk. A closed network has defined boundaries. Members do not leave or join frequently or easily. Coleman explains that a closed network is important because it allows for greater social control of the group. Additionally, it facilitates the distribution of rewards and sanctions, and is important for promoting trust. A negative consequence of having a closed network is that access to social capital resources is restricted to those members within the group.

A final area considered here is the existence of “multiplex” relationships. In multiplex relationships, persons are linked to each other in several different ways. In this situation, resources from one network can be used in others. These types of relationships may be more prevalent in small communities, such as Prince George, where individuals are more likely to know one another personally and professionally due to the smaller population size.

2.6.3 Critical Review of Social Capital Literature that Informs the Current Research

2.6.3.1 Social Capital and the Community
The link between social capital and the community has been broadly applied in numerous contexts. For instance, the theory has been applied to explain why some communities are more successful than others. The theory has also been used to describe the experience of community life. In the current study, the way in which social capital manifests in an entire community as a result of the implementation of a medical education program was explored. Pertinent literature linking social capital and the community is summarized below.

In 2005, investigators at Health Canada conducted a study using Putnam’s theory of social capital to compare levels of social engagement and civic participation in small towns versus larger urban centres. Rural communities are often perceived as being tight-knit, friendly and neighbourly. The study’s findings appeared to support that perception.
Canadian rural residents were more likely to know and trust their neighbours, attend public meetings and volunteer in formal organizations. Small communities were also more likely than urban communities to have a strong sense of belonging to their community. However, the study also found that rural and urban communities did not differ in their degree of perceived social isolation, levels of political involvement, and general levels of trust towards people. Acknowledging potentially high innate levels of social cohesion and social capital in small communities will be important in the present study in terms of assessing how social capital has been impacted by the implementation of the NMP in the small community of Prince George.

In a highly publicized study, Robert Putnam compared numerous regions in Italy over twenty years to elucidate predictors of a “successful” community. After controlling for indicators such as local government organization, “social stability”, “affluence”, “prosperity”, Putnam found that a region’s success was most highly correlated with its degree of “civic engagement” (ex. participation in voting, reading societies, sports clubs, etc.). He postulated that higher levels of engagement in these organizations promoted trust, social control and social order. Years later, Putnam applied these findings to American society. He noted that Americans are becoming increasingly disengaged with civil society as indicated by declining participation in clubs, churches, politics and other formal organizations. Putnam hypothesized that the decreased levels of “neighbourliness” and trust in American society was at least partially as a result of decreased participation in civil society. The role of community engagement in explaining the “success” of a community in Putnam’s work may apply to the current study. In previous work examining the early impacts of the Northern Medical Program in Prince George, participants reported high levels of community engagement with the NMP. The role of community engagement in explaining the community-wide impacts or success of the NMP is, therefore, likely to be important.

In 2001, Campbell and Gillies applied Putnam’s theory to help describe the role of social capital in promoting health in small communities in the United Kingdom and in understanding “people’s experiences of local community life”. Interviews conducted with
community members revealed themes related to perceptions of community, trust, neighbourliness, reciprocity, types of networks, and various others. This study is likely applicable to the current research for several reasons. Firstly, the authors link social capital theory and health in small communities. The current study explores social capital in the context of the impact of the NMP, a program designed to impact health in the small, underserved community of Prince George. Additionally, the authors chose to explore social capital using qualitative methods similar to those employed in the present study.

2.6.3.2. Social Capital and Health
Numerous studies linking social capital and health have been published over the past few years. Associations have been found between social capital and overall health and well-being, mortality, and specific illnesses. Most studies exploring the relationship between social capital and health have used Putnam’s conceptualization of social capital. Since the Northern Medical Program was originally designed to impact access to health services, and subsequently, improve health, it was important that the relationship between social capital and health be explored. An excerpt of pertinent studies from the social capital and health literature is summarized below.

In 2004, Kunitz published a review on the link between social capital and overall health, specifically the role of social support and integration on health. Results revealed that higher levels of social support and integration were associated with decreased mortality, although this effect differed between ethnicities. The strongest association was observed for white males, while the weakest was observed for “non-whites” in rural populations. A similar positive association between the level of social capital and health was described by Lochner et al. Higher community social capital was correlated with lower rates of mortality and violent crime.

A connection between social capital and specific illnesses has also been described. In an “illustrative” study, Lomas compared six interventions whose target varied along a continuum from a focus on sick individuals to a focus on community structure on the prevention of mortality from cardiovascular disease (CVD). Results from the comparison
suggest that community-based public health initiatives aimed at increasing social support and social cohesion prevented more deaths from CVD than individualized public health approaches. Lomas concluded that community-based approaches should be balanced with approaches designed to modify individual risk factors, as community-level factors may play an important role in modifying health.\textsuperscript{64}

The association between community-based approaches, such as comprehensive community initiatives (CCIs), and social capital has been explored by Petersen. Outcomes of CCIs implemented in California to help address various social problems were evaluated and compared. The role of social capital in evaluating these initiatives was explored, and findings were contrasted with Putnam’s theory of social capital. CCIs implemented in communities that possessed higher levels of trust and cooperation, two forms of social capital noted by Putnam, were more successful in achieving their outcomes. Petersen also found many other forms and dimensions of social capital and noted several limitations of Putnam’s theory. Since there is a documented link between social capital and health, Petersen suggests incorporating social capital as a short-term evaluation measure indicating progress toward long-term health outcomes.\textsuperscript{65}

In addition to drawing the link between social capital and health indicators, investigators have also examined the relationship between social capital and access to health care. In 2002, Hendryx \textit{et al} applied Putnam’s concept of social capital to attempt to explain differences in perceived access to health care between communities. Residents of numerous metropolitan areas across the United States were surveyed. Higher levels of community social capital was associated with fewer reported problems accessing health care.\textsuperscript{66} An interesting finding was that one particular community with a high level of social capital reported having strong leadership by local physicians and leaders in the business sector. This finding might be important to consider in the present study, as leadership in the community emerged in the first NMP Impact Study conducted in 2004.\textsuperscript{2,3}

As previously discussed, one reason individuals in rural or remote areas have difficulty accessing health care is that there is a shortage of physicians in these regions. Outlined
below are two studies that have examined the relationship between social capital and physician retention. In rural Scotland, Farmer and colleagues found that physicians contribute to community sustainability by investing different types of capital, including social capital. In addition to contributing social capital, physicians are more likely to be retained in communities with a large stock of social capital\textsuperscript{67}. In 1997, Cutchin conducted a qualitative study in Kentucky, USA to examine the relationship between social capital and physician retention in small communities. Findings suggest that physicians who are better integrated into a community are more likely to be retained. Communities with high levels of social capital were hypothesized to assist with both physician integration and physician retention\textsuperscript{68}. The mechanism through which the NMP is anticipated to improve health is by increasing the physician workforce in the underserved regions of northern BC. The role of social capital in assisting with physician retention is important to consider in the present study.

All of the studies described above show a clear association between various conceptualizations of social capital and health and access to health care at a community- or population-level. Findings are likely to be applicable in the current study if perceived NMP-induced changes in social capital are reported to improve access to health care and health status.

2.6.4 The Relevance of Carpiano’s Model of Social Capital in the Present Study

In 2006, Carpiano proposed a framework of “neighbourhood social capital” based on Bourdieu’s resource-based conceptualization, which linked socio-economic processes, social capital and health. He hypothesized that the type and amount of social capital available will depend on “structural antecedents” such as residency length, socio-economic conditions, and social cohesion\textsuperscript{58}. Carpiano’s model contains four forms of social capital, all of which are determinants of health. These include social support, social leverage, informal social control, and community organization participation. The social capital
portion of the conceptual framework for the present study was based on Carpiano’s model of neighbourhood social capital, which is described below.

Carpiano defines social capital as “the interaction between (1) the amount and type of resources of a group or network and (2) the connection of individuals to the group (or ability to draw on these resources).” The forms of social capital in Carpiano’s framework were identified in previous research as important “neighbourhood network-based resources.” The first form is social support. Network members can draw upon this social resource to cope with issues. Social leverage can help individuals in a network access information to achieve a particular objective, such as advancing socioeconomically, as proposed by Carpiano. Informal social control is another type of social capital. It can be drawn upon to preserve social order. The final form of social capital in Carpiano’s model is community organization participation. This type of capital is defined as “residents’ formally organized collective activity for addressing neighbourhood issues”. To test his model, Carpiano conducted a study using data from the LA Family and Neighbourhood Survey. He hypothesized that each form of social capital listed above would be associated with higher perceived health and lower levels of daily smoking and binge drinking. Results indicated that some forms of social capital were associated with healthier behaviours and others were not. Social leverage, community organization participation and informal social control were associated with better health, although higher levels of community social support were associated with increased levels of daily smoking and binge drinking. Carpiano suggests that a plausible reason for the latter finding is that many individuals who smoke and drink characterize themselves as “social smokers or drinkers”, and are therefore more likely to engage in these behaviours in social situations. Some limitations proposed included the need to account for larger political processes, the types of resources in networks (not just associated values), and the power dynamic that exists within networks.

Carpiano’s model describes social capital at the neighbourhood level. For the present study, this model is being applied to describe social capital in an entire community, which is less homogeneous than a neighbourhood. Nevertheless, this framework is believed to be promising in this context because it uses a group of individuals as its unit of measurement.
It was additionally chosen because, as it is based on Bourdieu’s conceptualization, it allows distinctions to be drawn between antecedents of social capital, social capital resources themselves and outcomes of social capital. The impact of the NMP on social capital in the community is hypothesized to be multifaceted due to complex interactions within the community and between the community and other parties associated with the NMP, as reported in 2004 by Bates, Lovato and colleagues. Separating these components may allow the role of social capital to be more fully described than if Putnam’s conceptualization was used. Furthermore, Carpiano’s model incorporates a connection between social capital and health. Since the NMP is anticipated to improve health services (and thus health) by way of more physicians in the community, the model is likely to be useful for exploring the link between social capital and health in this context and can provide a foundation for exploring the link more deeply in future studies.

2.6.5 Measuring Social Capital

Most research conducted to measure social capital has employed quantitative survey methods. Accompanying the explosion of social capital definitions and applications in recent years has been the creation of numerous quantitative tools for measuring social capital. See van Kemenade (2003) for a comprehensive review.

Although the measurement of social capital to-date has been largely quantitative, Campbell and Gillies describe some advantages of using qualitative methods. The authors explain that methods such as interviews, can better capture the experiences of community residents and can provide insight into mechanisms by which social capital may affect a particular outcome. It is anticipated that qualitative methods employed in the current study will produce a more comprehensive picture of the role of social capital in illustrating the impacts of the NMP on the community.

Some authors contend that the combination of qualitative and quantitative methods to measure social capital is better. Krishna and Shrader of the World Bank recommend the use of mixed methods to “enhance confirmation or corroboration of varying
methodologies via triangulation; to elaborate or develop analysis, providing richer detail; and to initiate new lines of thinking through attention to surprises or paradoxes”59.

Arguably, one of the most comprehensive measurement tools created to-date is the Social Capital Assessment Tool (SCAT) by Krishna and Shrader59. This tool includes a community profile, a household survey and organizational profile and incorporates both quantitative and qualitative methodology. The instrument was created based on existing social capital tools in 15 countries and from 26 studies. To-date, pilot tests have been conducted in Panama. Upcoming tests for the SCAT will be conducted in indigenous, rural and urban populations in Latin America and rural areas in India59. The instrument is reportedly effective for studying the role of social capital in communities that are small and medium-sized60. Its applicability to small, rural communities makes it a promising tool for future explorations of social capital in northern British Columbia.

Irrespective of whether an investigator chooses to employ quantitative or qualitative methodology, one needs to be aware of the numerous methodological challenges and limitations in measuring social capital described in the literature. For example, to accurately describe social capital and establish directionality, Portes recommends that the definition of the concept be separated from its effects (i.e. social capital needs to come before its outcomes or effects)54. One also needs to consider “historical origins of community social capital” in context and attempt to account for other factors that might be impacting social capital and its associated effects54. Another challenge concerns differentiating between individual and community characteristics. As previously noted, most studies have used survey approaches to measure social capital. Using this process requires the aggregation of individual data to community level data. Since social capital is a network- or community-level construct, questions have been raised regarding the most appropriate unit of aggregation63. Lastly, it is important to consider the specific context in which social capital is being measured. As Krishna and Shrader (1999) point out, different measurement tools and methodologies might be necessary across different contexts to ensure that measures are “locally and contextually relevant”59. The recommendations listed above will be considered in the present research.


2.7 Summary

The literature clearly shows that inhabitants of rural or northern communities have poorer health than residents of urban centres. It has also been shown that access to health care for rural residents can be challenging, due in part to the shortage of health care professionals in these areas and the significant distance that many have to travel to reach health care services. One solution to reduce the disparity in access to health care between rural and urban areas has been to train undergraduate medical students in regional sites. It is anticipated that students trained in smaller, medically underserved areas will choose to stay there and set up practice. With this goal in mind, the Northern Medical Program was created in 2004 in Prince George, BC. In addition to enhancing physician recruitment and retention, it is hypothesized that the program will have significant impacts on the wider community. The present study aims to fill a gap in the literature by exploring the broader impacts of implementing an undergraduate medical education program into a medically underserved community.

Literature examining the broader impacts of implementing a program in a community is sparse, although multiple methods for measuring community impact have been described. One promising approach to understanding the impact of a program on the community in terms of health, concerns the use of the social determinants of health, which include social, cultural and other indicators related to one’s environment.

In recent years, the theory of social capital has been applied to help explain differences in health and overall “success” between neighbourhoods, communities and regions. Most studies linking social capital and health have employed Robert Putnam’s conceptualization, which more closely resembles the concept of social cohesion. Pierre Bourdieu’s definition describes social capital as the social, financial or other resources belonging to a network and the ability of members within that network to access the resources to achieve a particular objective. Carpiano’s Bourdieu-based model of social capital may help to better elucidate the relationship between social capital and health since it allows investigators to differentiate between the source, antecedents, forms, and outcomes of social capital, thereby providing a more temporal and comprehensive description of its impact.
Carpiano’s model has been applied to the current study and is hypothesized to heighten understanding of the impact of implementing the Northern Medical Program in Prince George.
CHAPTER 3: Methodology

3.1 Rationale: Qualitative Approach

Since little is known about the ways in which a medical education program impacts a community, a descriptive qualitative study design was employed, using the NMP as a case in point. Individual interviews were conducted using a semi-structured interview guide (see Appendix A3), which allowed themes and ideas to be explored in greater depth and provided the researcher with the flexibility to deviate from the interview guide and probe when new ideas were brought forward by participants. In addition, allowing participants to give open-ended responses to interview questions permitted the interviewer to ascertain the point of view of participants without confining their responses to predetermined categories that the research team deemed to be important. In terms of exploring the role of social capital in a community, it has been suggested that qualitative methods may better capture participant experiences and allow for a more comprehensive elucidation of mechanisms and outcomes.

This study was approached with a “constructivist evaluation” paradigm. Constructivists believe that human perceptions are shaped by cultural, linguistic and other social factors. Through this framework, one studies the multiple realities constructed by different people and the “implications of those constructions for their lives and interactions with others.” The fundamental premise of this philosophy is the fact that no one perception is “better” than another. All perspectives are equally important and valid. In program evaluation, a constructivist evaluator would consult a variety of types of stakeholders in a program to capture different experiences and perceptions related to the impact of the program, “all of which deserve attention and all of which are experienced as real.”

3.2 Rationale: Analytic Induction

In inductive analysis, one allows patterns and themes to emerge from the data whereas in deductive analysis, data is analyzed according to an existing framework. The present study
employed a third method of qualitative analysis called “analytic induction”, which combines inductive and deductive analytic techniques. It begins with “the analyst’s deduced theory-driven hypotheses and is a procedure for verifying theories and propositions based on qualitative data” (Patton, 2002). In the present study, a hypothesized theoretical framework of the NMP’s impacts on the community was developed. Impacts found in the NMP impact study conducted in 2004\textsuperscript{2,3} were used as the basis for the portion of the model illustrating ‘current and anticipated future impacts’ of the program. The portion of model depicting hypothesized impacts on social capital was based Carpiano’s model of “neighbourhood social capital”\textsuperscript{73}. Data were coded according to the study’s theoretical framework and were also open-coded in order to uncover novel patterns and themes. This method was chosen for two reasons: 1) it combines concepts from program evaluation and qualitative research\textsuperscript{72}, and 2) it allows us to explore how the data fit into and deviate from a proposed conceptual model.

3.3 Defining “Community”

The term “community” can be defined in many ways. It could refer to “any aggregate of people defined by some common interest”\textsuperscript{74}. For the purpose of this study, community was defined in a geographical sense. The impacts of the NMP on the geographic boundaries of the city of Prince George, BC, were the primary targets of the study. However, perceived impacts of the program extending beyond city limits to northern British Columbia, Canada, and throughout the world were also reported and, subsequently, analyzed.

3.4 Study Participants and Sampling Technique

The sampling frame for the proposed study was comprised of community representatives from various sectors in the Prince George community. As mentioned, this study builds on previous work that explored community leaders’ perceptions of the NMP’s impact on the community\textsuperscript{2,3}. Of the eight participants in the 2004 study, all agreed to be contacted for further studies. In the current study, six community leaders agreed to be re-interviewed. This group of representatives included key leaders and other individuals in leadership
positions in community organizations who serve to benefit from the establishment of the NMP. Community leaders were targeted since they are most likely best equipped to provide a broad, high-level overview of community-wide impact. It was important to ascertain perceptions of representatives from as many sectors of the community as possible in order to get the most holistic picture of the impact of the program on the community-at-large. The inclusion of community leaders or “key informants” for this purpose has been employed by others\(^{36,37,65,70}\). This type of sampling is termed “purposeful sampling”. Participants are purposefully chosen because they will provide “information-rich cases” from whom we can learn much regarding the subject at hand\(^{72}\). Snowball sampling was a second technique used to identify other community representatives with whom interviews should be conducted. In snowball sampling one participant gives the researcher the name of another potential subject who provides the name of a third and so forth\(^{75}\). This process relies on the assumption that bonds or links exist between members of a sample and other participants in the target population\(^{76}\). It has been suggested elsewhere that residents of small, rural or northern communities may have extensive connections to other residents in their communities\(^{6,61,67}\). Therefore, either during or upon completion of the interview, participants were asked if there were any other members of the community whose perspectives would be integral to expand my understanding of the impact the NMP is having on Prince George. Snowball sampling was chosen as an adjunct to the purposeful sampling technique since it was anticipated that, as an “outsider” in Prince George, I might encounter difficulty in identifying key leaders of a community who are not necessarily part of the “formalized” community structure. Previous research has shown that snowball sampling can facilitate gaining access to members of a community who may be particularly inaccessible for any number of reasons\(^{77}\). Community leaders in highly visible positions were previously identified and interviewed by the research team comprised of Bates, Lovato and colleagues. This group consisted of individuals such as the mayor and health authority leaders, who are considered to be part of the formal community structure\(^{2,3}\).

Interviews for the present study were split into two separate rounds. The first round of interviews was intended to be conducted with the individuals who were previously interviewed in 2004 during the pilot study evaluating the early impacts of the NMP on
Prince George\textsuperscript{2,3} (n=11). Details regarding the composition of the study sample are included in Section 5.2 ‘Study Participants’. Upon completion of their interview in 2004, all participants agreed to be contacted for future studies. In 2007, participants were mailed a letter describing the purpose of the present study and informing them that a member of the investigative team (PT) would be contacting them by phone one week after they received the letter to answer any questions and to ask them if they would be willing to participate in the project.

3.5 Data Collection

Twenty-three semi-structured interviews were conducted by PT with community leaders in Prince George over two one-week periods in September and November, 2007. All participants received a list of questions and topics to be covered during the interview (Appendix A3) in advance to allow them time to reflect on areas of impact. The interview format was semi-structured to allow participants to freely comment on their perceptions of current and future impacts within any and all sectors they deemed to be relevant. Participant responses were not restricted to their sector. As mentioned previously, many participants held positions in numerous sectors in the community. This allowed each category of sector-wide impacts to be more thoroughly developed than if each participant represented only one sector.

When possible, the interviews were conducted face-to-face in a convenient location for the participant, such as a business office. A telephone interview was conducted with a few individuals (n=6) whose schedules conflicted with the data collection dates and for those participants residing outside of Prince George. These participants were mailed the consent form and demographic questionnaire prior to the interview. Interviews lasted between 30 and 70 minutes, the average time was approximately 40 minutes.

To begin each interview participants were asked to tell the interviewer when they first learned of the Northern Medical Program. Often participants began talking immediately about the impacts they have observed. Therefore, it was the interviewee who dictated the
flow of topics during the session. At different points throughout the interview participants 
were asked to describe their involvement with the NMP, if any. If they had not yet begun 
talking about their perceptions of impact, they were asked the broad question: “have you 
noticed any changes since the program has come to Prince George?” After each response 
the interviewer probed with questions such as, “can you give me an example of that?” or 
“can you tell me a bit more about what you mean by that?” Interviewees were then asked 
if they had seen any other impacts than the ones they had already mentioned. Participants 
were also encouraged to describe other reasons for the perceived impacts of the NMP on 
the community. Interviewees were additionally asked to describe the state of the reported 
impact prior to the implementation of the program, to ascertain temporal shifts in impact. 
Participants were not directly asked to comment on perceptions of impact in a particular 
sector. In other words, they were not asked, “has the NMP had an impact on media, or 
politics, etc.” However, if they had not commented on the impact of the program on the 
sector with which they were associated, they were asked “have you noticed any changes in 
your particular sector since the program has come to town?”

Throughout the interview, the interviewer specifically probed for both positive and 
negative impacts. For example, if a participant had shared only positive perceptions, the 
interviewer might ask, “from your perspective, have there been any negative impacts or 
challenges associated with the program?” Participants were also probed for both current 
and anticipated impacts. They were asked, “is this something occurring right now?” and 
“What are some of your expectations of the program in the future?”

In most interviews, participants freely commented on both tangible and intangible impacts 
of the NMP. However, if comments were only related to tangible, sector-wide impacts, 
participants were asked, “What do you think the NMP means to your community?” This 
was followed by, “What do you think the NMP means to your sector?” Once again, probes 
such as “can you give me an example of that?”, “tell me more about that”, or “let me see if I 
understand what you’re saying…” were used to ensure the interviewer accurately 
interpreted what the participant was trying to convey.
If the participant had been previously interviewed, they were asked questions pertaining to their interview in 2004. For example, if, in 2004, a participant reported a particular impact in the early stages of program planning, they were asked if this impact still exists and how it has changed. The interviewer also took this opportunity to clarify any statements participants made in 2004 that had not been backed up with an explanation or example.

At the end of each interview participants were asked if they had anything else to add about the impacts they have seen. If not discussed during the interview, participants were also asked if they felt there was anyone else in the community with whom I should speak. The interviewees were then thanked for their time and were told that the interviewer would be in contact with them about the study findings.

All interviews were audio taped and transcribed verbatim by PT. Field notes were taken during and immediately following interviews to capture nuances or impressions that cannot be elicited from a transcript. In addition, reflections related to the quality of each interview were recorded to supplement the transcripts and field notes and allow for a more holistic description of the context within which the interview was conducted. The reflections also included the interviewer’s thoughts regarding potential biases as well as themes and areas of impact discussed during the interview. In addition to participating in the interviews, participants completed a brief questionnaire. Questions covered general demographic information, as well as information related to the participants’ position in the community (i.e. employment, volunteer, etc.), and the length of time they had resided in Prince George or other rural or northern communities (see Appendix A5).

After approximately three-quarters of the interviews had been conducted, an “informational saturation point” had been reached. At this point, a level of “sufficient redundancy” was attained, meaning that participant responses began to repeat and no new perceptions were generated from the interviews. Ordinarily, qualitative data collection ceases when saturation is reached, however, I decided to conduct several more interviews with participants from community sectors that had not been sampled to ensure that perspectives were elicited from as many sectors as possible and to verify, to the best of my ability, that
no novel perceptions regarding the impact of the program had been missed. Data collection finally ceased after twenty-three interviews had been conducted for practical and financial reasons.

### 3.6 Analytical Procedure

Transcripts, field notes and reflections were entered into NUD*IST 6.079, a qualitative analysis software program, to assist with coding and sorting of the data. A descriptive content analysis was performed according to the analytic induction procedure as described above.

Qualitative data analysis is an ongoing, iterative process. Upon completion of the first round of interviews, the transcripts, field notes and reflections were read through to provide an overall sense of the data and the emerging themes. Broad categories of preliminary codes and themes were initially created, and the first set of transcripts coded accordingly. These categories were then reviewed alongside the research questions and interview guide to assess the breadth and depth of information covered. This process informed the interview guide and probes for the second round of interviews. For instance, I took note of novel ideas and perspectives regarding areas of impact that had not been previously hypothesized so that I could probe deeper in that area in subsequent interviews to uncover if other participants shared the perspective. Conversely, if a particular concept that the investigative team postulated to be important was not mentioned, I could question participants in subsequent interviews to determine whether that idea is in fact significant in terms of elucidating impacts and expectations associated with the NMP.

After the second round of interviews had been completed, all transcripts were open-coded. Two other members of the investigative team (JB and CL) also participated in the analysis process to ensure reliability of the coding framework. To begin the process, one transcript from each community sector sampled in the first round of interviews (i.e. advanced education, health administration, social services, physician community, local business) was randomly selected for a total of five transcripts. These transcripts along with the proposed
conceptual model based on the work of Carpiano\textsuperscript{73}, the study objectives and the interview guide were provided to CL and JB who then independently coded the interviews. The analysis team then met to discuss codes and emerging themes and how they fit in or expand the proposed framework.

In the next step, the original coding scheme, the accompanying analysis notes, and suggestions stemming from the analysis team’s discussion were integrated into a more descriptive coding scheme. Codes were classified by theme and sub-theme, if appropriate. All codes that did not “fit” were left as “free nodes”. Following this, each theme with associated quotations was carefully examined to determine how well the pieces of text fit into a particular category and if there needed to be more or fewer sub-themes to adequately classify the data. Each sub-theme was also sorted into “perceived positive impacts” and “perceived negative impacts”. The first round of transcripts was then recoded line-by-line according the coding scheme, while simultaneously paying particular attention to portions of text that deviated from the framework. All transcripts were then reread to determine whether anything had been missed, and the coding scheme was revised accordingly. This cyclic process of constant comparison and revision of the data continued until the criteria for saturation had been met (i.e. all themes had been fully and completely developed and described on all dimensions)\textsuperscript{80}.

The analysis team met once again and discussed several issues with the proposed coding scheme. These included 1) the difficulty in deciphering which impacts were currently being felt, and which were anticipated, 2) the fact that the codes were too broad and had to be more specific and descriptive, and 3) the challenge in determining which pieces of information in the transcripts were background information (context) and which were impacts of the program. On this latter point, it was decided that any early, pre-program impacts (i.e. beginning with the planning stages of the NMP) were to be included in the analysis as current and anticipated future impacts. A new coding process was then devised.

The transcripts from the first round of interviews were coded again by hand in a line-by-line manner. I tried to be as specific as possible so that codes described the perceived
impact as accurately as possible. An addendum of “current” or “future” was attached to each code to separate the impacts currently felt, with anticipated impacts. The portions of coded text on each transcript were highlighted. A summary sheet indicating the sector from which the participant belonged, his or her level of involvement with the NMP and all the codes contained in the individual’s transcript was created to accompany each re-coded transcript. Once two transcripts had been re-coded according to this process, they were sent along with their associated summary sheet to CL and JB for feedback. This was done to ensure that the analysis team was in agreement regarding the quality of the coding and the coding process.

The remaining transcripts from both rounds of interviews were re-coded according to the procedure outlined above. One week after the transcripts had been coded, they were re-read, with particular attention given to portions of text that had not been coded to ensure that important information had not inadvertently been ignored. This process also served to check that the codes and themes created were grounded in the data. If a code had been missed, it was tagged, coded and sorted it accordingly. All transcripts were re-read once again to ensure all pertinent information had been retrieved. Any portions of text whose associated code was not straightforward were brought to the analysis team for discussion. Consensus was achieved and the text was recoded as agreed upon.

CL and JB then reviewed a subset of randomly selected transcripts from each sector sampled in the second round of interviews to assess the reliability of the coding. The codes from the individual summary sheets were then merged into one Master Coding Framework. The analysis team once again discussed the reliability the coding, the Master Coding Framework and the revised conceptual model. All disagreements were resolved through discussion and consensus.

Since participants were encouraged to comment on any and all areas of impact that they perceived to be important, not all topics or sectors were covered with equal depth in the interviews. Probing regarding particular areas of impact was limited to allow participants to freely comment. With the objective of obtaining the widest possible range of perceived
impacts of the program, a detailed comparison of perceptions according to background and experience was not attempted.

Discrepant perceptions of impact between participants were carefully analyzed. A deviant case analysis is defined as an “exploration of alternative explanations for the data collected…to search for, and discuss, elements in the data that contradict, or seem to contradict, the emerging explanation of the phenomena under study. Such “deviation case analysis” helps refine the analysis until it can explain all or the vast majority of the cases under scrutiny.” In the present study, the use of a detailed deviant case analysis was not necessary. In all cases, the context around the reported impact was sufficiently described by the participant, which allowed differing perceptions to be placed in context. This also allowed the theme to be more completely described.

Although many sectors of impact emerged from the transcripts (i.e. Aboriginal sector, social services sector), data were classified into five main sectors of impact to minimize overlap. This is further explained in the discussion section. The sectors of education, economy, health services, media and politics clearly emerged from the data. Initially, the education sector was hypothesized to include any impacts related to a continuum of education from secondary school to continuing education for professionals. Data revealed that impacts on education did indeed fall on a continuum from local students in secondary school to professional education. Health services included comments related to any aspect of primary, secondary or tertiary care. Comments in the economy sector included those related to local business, employment, community development, and population and demographic changes. Media was comprised of comments relating to any form of media communication including radio, newspaper, television and all levels from the local to international. Finally, the sector of politics included comments pertaining to politicians at any level of government and anything related to policy.

This study also aimed to identify potentially quantifiable indicators of community impact to track changes in the community as the NMP matures. After the qualitative analysis had been completed, I reviewed all findings related both to community sectors and physical,
human and social capital and identified reported impacts that had a quantifiable component (Table 5.6.1). For example, participants reported an increase in the number of physicians recruited to Prince George to teach in the Northern Medical Program. A quantifiable indicator stemming from this reported impact was ‘the number of physicians recruited to Prince George a) for the NMP, and b) for other reasons’.

### 3.7 Framework Creation and Modification

An initial conceptual model depicting hypothesized impacts of the NMP in terms of community sectors and social capital, was created based on previous work by Bates\(^2\), Lovato\(^3\) and colleagues, and Carpiano’s Bourdieu-based framework of neighbourhood social capital\(^58\) (Figure 3.7.1). In this section Carpiano’s framework is briefly reviewed. The overall conceptual model developed for the current project is then described.

Bourdieu’s resource-based conceptualization of social capital was the foundation of Carpiano’s framework of neighbourhood social capital. Carpiano’s model contains four main elements: 1) “structural antecedents”, 2) social cohesion, 3) social capital, and 4) outcomes of social capital. “Structural antecedents” to social cohesion and social capital include intra- and inter-neighbourhood characteristics such as socio-economic status, which may impact the networks and associated resources within neighbourhoods. Social cohesion refers to social networks and values that are necessary for the creation of social capital. Social capital consists only of the “actual or potential resources”, as defined by Bourdieu\(^53\), belonging to networks. Four forms of social capital were included in the model: social support, social leverage, informal social control and community organization participation. These were defined previously. Carpiano defines outcomes of social capital as “goals or benefits that social capital can provide for neighbourhood network members or the neighbourhood as a whole.”\(^58\) The framework proposes that social cohesion (i.e. connectedness and values) is needed to create social capital, and that social capital can impact health behaviours and risk factors. The model also includes overarching neighbourhood socio-economic factors and individual-level factors that can impact the model at each stage. The social capital portion of the conceptual framework in the present study was based on a modified version of Carpiano’s model (Figure 3.7.2), which included...
social cohesion, social capital and outcomes of social capital. The neighbourhood- and individual-level confounders that Carpiano includes in his model are beyond the scope of the current project.

The conceptual model developed for the present study was initially separated into 3 parts: 1) antecedents, 2) outcomes and short- and intermediate-term impacts, and 3) long term impact (Figure 3.7.1). The antecedents section contained background and contextual factors relevant to the initiation of the NMP’s planning phase in 2001. This section begins with the “poor state of health care in the North” characterized by the inadequate health service infrastructure in northern, rural and remote British Columbia and the difficulty residents have accessing health care. The state of health care at this time induced the citizens of Prince George and the outlying northern communities to come together in 2000 in protest at the “Health Crisis Rally” at Prince George’s multiplex. This action of coming together in protest created social cohesion, particularly in Prince George, but also throughout the North. Social cohesion and various other factors, termed “process” resulted in the creation of the NMP. The planning and implementation of the NMP is the first stage in the “outcomes and short- and intermediate-term impacts” section of the model. Based on findings from the NMP impact pilot study conducted in 2004, it was hypothesized that the creation of the NMP would have an impact on various sectors in the community (i.e. education, media, health, economics, business and local politics); on human capital, in terms of more physicians recruited and retained in the North; and on social capital, as described by Carpiano. Based on Carpiano’s framework, a direct link was drawn between social cohesion and social capital, as cohesion is presumed to be a necessary antecedent to the creation of social capital. Another connection was made between social capital and human capital, since social capital has been shown to be implicated in the production of human capital. Hypothesized outcomes of social capital included impacts on community sectors, increased human capital and improved health. Positive impacts on community sectors, social capital and human capital were all hypothesized to improve health in northern BC’s population, which was the long-term impact listed in the third section of the framework.
Upon completion of the preliminary analysis of the data, the analysis team met to discuss the proposed coding framework, the preliminary themes and how they fit into the original conceptual framework. Based on that discussion, the model was revised and refined to better reflect the data and further explain associations between areas of perceived impact. Model development was extremely useful in helping investigators in the present study come to a more integrated understanding of the data. The second iteration of the model was then presented to the analysis team for feedback. The model was once again re-worked to better reflect emerging themes. Issues related to temporality and potential overarching themes were discussed. The revised model was then presented to the entire thesis committee for discussion.
Figure 3.7.1. Original conceptual model of hypothesized impacts of the Northern Medical Program on the community. This model is based on previous work by Bates\textsuperscript{2}, Lovato\textsuperscript{3} and colleagues and on Carpiano’s Bourdieu-based framework of neighbourhood social capital\textsuperscript{58}.
3.8 Issues of Rigor

To enhance the trustworthiness of the study findings, several forms of triangulation were employed. Triangulation is the use of multiple methods in the study of phenomena to validate findings. Both ‘sources’ and ‘analyst’ triangulation, as described by Patton, were used in this study. Sources triangulation refers to “checking the consistency of different data sources within the same method”. Transcripts, field notes and reflections were three data sources used to describe one qualitative method, the interview. Analyst triangulation refers to using numerous analysts to review the data. Prior to data analysis, the analytic procedures to be undertaken were reviewed by the entire investigative team. In addition, a subset of the transcripts was analyzed by two members of the study team, who are experienced in qualitative research methodology (CL and JB). The investigative team consulted regularly to compare and contrast emerging themes and concepts. Group consensus was reached regarding the analysis process undertaken to elicit findings as well as the findings themselves. Group consensus was also used to resolve disagreements regarding themes.

To further enhance validity and minimize bias, comprehensive “member checking” was performed. Following the interviews, each participant was sent his or her transcript to ensure that the conversation between interviewer and interviewee was accurately
documented. Three interviewees asked that certain portions of their transcript containing sensitive information be deleted. These were deleted as requested. Participants were then asked to review preliminary findings of the study to ascertain whether the identified themes represented their perspectives. This step was completed prior to the oral thesis defense to allow time for changes to be made. All participants that responded to the request agreed that the findings accurately reflected the impacts they reported. An executive summary of findings was sent to all study participants after the oral defense. The process of member checking ensures the findings obtained correctly and accurately depict the thoughts and perspectives of the participants. After the analysis had been completed, findings from the first NMP impact study\textsuperscript{2,3} were reviewed and compared to findings of the present study. As previously mentioned, participants who participated in the 2004 study were re-interviewed in 2007. Therefore, I was able to compare an individual’s perceptions of impact at two points in time. Temporal comparisons are another form of triangulation\textsuperscript{80}. All of the procedures listed above contributed to maximizing the rigor of the methodology in the present study.

### 3.9 Ethical Considerations

Consent was obtained prior to commencing each interview. At that time the purpose of the study was revisited and the consent process was explained. The interviewer then went through the consent form in detail with the participant. Potential negative consequences associated with participation were minor and relate to feelings and perceptions of the impact of the NMP (i.e. disappointment) or the feeling of being inconvenienced due to the amount of time spent during the interview. Potential positive consequences of the study may similarly relate to perceptions regarding the NMP, such as pride. In addition to the consent form, participants also completed a brief questionnaire on demographic characteristics. The consent and demographic information forms were sent to participants prior to the interview for their review. In many cases, participants had completed the forms prior to the interview. Even if forms had been previously completed, the interviewer and participant still discussed them prior to commencing questioning. For face-to-face interviews, the interviewer reviewed the consent form,
answered any questions, and obtained a signature in person. For interviews that were
conducted over the telephone, the consent form was discussed just before beginning the
interview. The participant then signed the form the returned it to PT by mail. The
demographic questionnaire was also completed prior to the interview while the
participant and interviewer were on the telephone in case there were any questions or
concerns. The questionnaire was mailed with the consent form after the interview.

Participants were assured that the information provided for this study would remain
confidential. On transcripts, participants’ names were replaced with an identification
number. Quotes taken from transcripts are identified by the participant’s identification
number and by the “text unit” (TU), which indicates the line number in the transcript. All
names and identifying information mentioned during the interview were replaced by a
generic word, such as ‘name’, or ‘position’ in parentheses. Electronic copies of the
transcripts, field notes, reflections and demographic information were kept on a personal
laptop and were password protected. All hard copy participant information was kept in a
separate participant binder. The study codebook containing the names and identification
numbers of participants was kept in a study binder in a separate location. All study data
was kept in a locked filing cabinet.
CHAPTER 4: Community Context

4.1 Geography and Demographics

The Northern Health Authority in British Columbia spans north from Quesnel to the Yukon and from the Alaskan border to the Alberta border. Geographically it is the largest health authority comprising two thirds of the land mass in the province, although its population is only approximately 300,000, which is less than half that of the next largest health authority region (Interior: population 640,000). The population distribution in the north is distinct from the rest of the province, where the population proportions of younger children and older adults is respectively greater than and less than that of the averages for the remainder of British Columbia.

The present study took place in BC’s “Northern Capital” Prince George. Prince George is a relatively small community in central-northern British Columbia occupying a total land area of 315 square kilometres. Approximately 72,400 people populate the area, comprised of 64,590 Canadian born residents. 10% of Prince George’s population are of self-identified Aboriginal descent, and an additional 6% identify themselves as a visible minority. The labour force is made up of 39,650 individuals. Health and education are the biggest industries in the region, employing 18% of the eligible labour force. The unemployment rate is 11.4%.
4.2 History of Prince George

The following description is based on work by Halseth et al. In this essay, the authors describe Prince George’s growth and transformation from “frontier outpost” to BC’s Northern Capital. This growth can be characterized by four periods in time. The first period was the Frontier Outpost Period, which took place prior to 1901. During this period the First Nations people, known in the present day as Lheidli T’enneh lived in valleys around what is now Prince George. In terms of topography, Prince George is located on a plateau located between the Rocky Mountain range and the Coast Mountain range. The Nechako River system flows through the area. Because of the mountains, all transport occurred through the river system, which flowed across the plateau.

The second period discussed is the Transitional Period (1901-1940), in which Prince George began to transform into a city. The authors cite several important developments during this period, such as the development of rail line and small sawmills along the rail line; and the extension of the Cariboo Highway. Initially, agriculture predominated, but towards the end of the period, local stores, restaurants and hotels began to pop up.

Next came the Industrialization Period (1940-1980). During this time there were substantial economic developments. A highway linking Prince George with Prince Rupert was completed, as was a rail line connecting Prince George to Vancouver. Lumbering was becoming a big industry. The population of the community also grew as families migrated to the area after the war. At this point in time, Prince George was characterized as a “frontier boomtown” focussed on the forestry industry. In the 1980s Prince George’s population began to age. The local youth lacked opportunities, which led to a “large out-migration” of this demographic. At the same time, the city’s boundaries were expanded, and suburbs and shopping malls were developed.

The final period discussed is the Post-Industrial Period (1980-present). During this time there was a shift in industry. Prince George became a “retail, educational service centre”. Community development initiatives in the city resulted in a civic centre, a sports centre and an aquatic centre. Big businesses such as Canadian Tire and Wal-Mart were also
setting up shop in the community. The University of Northern British Columbia opened in 1994 with 900 students, and 150 faculty and staff. Ten years later, there were over 3500 undergraduate students, and over 600 graduate students attending, with 220 faculty and staff. The technology industry was booming alongside the educational industry. Prince George’s demographics now resembled a “mature industrial town”, characterized by population aging. However, there remained limited opportunities for local youth.

4.3 Goals and Philosophy of the Northern Medical Program

The mission of the University of British Columbia’s Faculty of Medicine is “Together, we create knowledge and advance learning that makes a vital contribution to the health of individuals and communities locally, nationally and internationally.” Part of that contribution is trying to ensure that British Columbia has enough physicians to care for its citizens into the future.

Located in Prince George, the NMP is one of two distributed sites for the MD undergraduate education program of the UBC Faculty of Medicine. The main campus is located in Vancouver, and the other distributed campus is located in Victoria, on Vancouver Island. As previously described, northern, rural and remote regions are facing ongoing chronic shortages of health care professionals. The program aims to help address the health care needs of the northern BC by admitting northern students and training physicians in the North to prepare them for northern and rural medical practice. It is hypothesized that educating medical students with a northern context and exposing them to the way of life in the North might help recruit and retain graduates of the program in the region. This study focusses on community-level outcomes anticipated as a result of the NMP. It also provides information regarding both positive and negative impacts of the program.
4.4 Timeline of Events Surrounding the Implementation of the Northern Medical Program

The following timeline outlines key events surrounding and including the planning and implementation of the Northern Medical Program. This timeline was adapted from one provided by Dr. Joanna Bates, Senior Associate Dean, MD Undergraduate Education at UBC.

2000

Jun: Health rally takes place in Prince George and there is a call for a northern medical school.

Aug: UNBC begins to review the development and operations of distributed medical schools in northern and underserved areas.

UBC lobbies the Liberal Party for an increase in medical school seats on the basis of fewer opportunities for BC youth to obtain a medical education compared to other provinces.

Dec: BC’s Ministry of Health’s Action Plan commits $620,000 to establish the BC Rural and Remote Health Research Institute at UNBC. The Institute will research northern health issues, such as population health, delivery of services, and education of health professionals in the North.

2001

Jan: Memorandum of Understanding (MOU) signed between UBC and UNBC to jointly develop a distributed medical education program. UNBC begins planning a health sciences degree program.

Feb: UNBC and UBC form the Northern Medical Program (NMP) Strategic Planning Committee (SPC) with representation from the Northern Health Authority (NHA) and Ministry of Advanced Education.

UNBC hosted a NMP planning workshop attended by UBC and UNBC faculty, and 5 international experts.

Inter-university planning committee (IUPC) formed across UBC, UNBC, and UVIC, Ministry of Advanced Education, and the Ministry of Health.

Planning committee co-chaired by Joanna Bates (UBC) and Robin Fisher (UNBC). Seventeen working groups formed across UBC/UNBC on various aspects of developing a program plan.
Mar: UNBC visits communities in the Northern Medical Region to discuss the NMP.

Apr: Ministry of Advanced Education budget allocates funding to support the planning of the NMP.

May: UBC begins to develop an admissions process for the NMP, including an evaluation of candidate’s suitability for the north. UBC Senate Admission Committee reviewed and approved the process in principle.

Jun: Principles, Terms of Reference, Goals of the NMP finalized by the NMP Strategic Planning Committee and discussed and approved at the IUPC. Faculty forum at the UBC Faculty of Medicine: UNBC faculty on the Strategic Planning Committee presented with UBC leads on the development of the NMP.

Jul: UBC and UNBC host a community forum about the NMP.

Aug: NMP Planning Committee report tabled at IUPC and accepted by the Ministry of Advanced Education and the Ministry of Health.

2002

Feb: Budget approved for the implementation of the NMP.

Mar: BC Government commits funding to the NMP and commits $12.5 million to build the medical teaching facility.

Jun: UBC appointed senior Associate Dean Undergraduate to lead expansion (Joanna Bates).

Sep: Dr. George Deagle and Dr. Dave Rutledge become the first appointees to positions (acting assistant deans) at UNBC to develop the NMP. All day retreat at UBC to discuss the NMP.

Dec: Tumbler Ridge contributed $65,000 to the NMP Trust. Tumbler Ridge was the first of 18 communities to raise $1 per family per week for a year to support future NMP students.

2003

Jan: Minister Colin Hanson appoints a committee of community leaders across different sectors to provide recommendations for the implementation of the NMP.
May: Duke Energy becomes the first major corporate contributor and invests $500,000 in the NMP. The UBC Senate approves the NMP admissions process.

Funding boards are selected for the NMP. Representatives from ten communities in northern BC are elected to the first Board of Directors for the NMP Trust.

Dr. David Snadden, Director of Postgraduate General Practice Education and Acting Postgraduate Dean at the University of Dundee in Scotland, accepts a joint appointment as Associate Vice President of Medicine at UNBC and Assistant Dean responsible for the NMP at UBC.


Curriculum Mapping project completed by Judy Vestrup for the NMP Community Action Plan. This project looked at the physicians in the community and the resource needs of the curriculum and identified gaps. She also reviewed the HR plan of the NHA, and identified methodological issues that led to an updating of the HR plan prior to its submission to the Ministry of Health.

Jul: Ground breaking for the new Northern Health Sciences Centre. Site preparation by Western Industrial Contractors of Prince George, construction of the building by Wayne Watson Construction of Prince George.

Dr. Dave Snadden arrives as Associate Dean of the NMP.

Aug: Dr. Dave Snadden bikes to Tumbler Ridge to recognize their commitment to the NMP Trust.

Nov: The NMP and UNBC officials visit communities in the north-east to inform and develop community–university collaboration.

Dec: The NMP adds local and international expertise by appointing Dr. Gary Wilson as the new Clerkship Coordinator and Dr. Hanh Kin Huynh as a new faculty member.

NMP Trust has appointed its first officers:

President: Marilyn Davies, Terrace councillor
Vice President: Colin Kinsley, Mayor of Prince George
Secretary: Rose Colledge, Tumbler Ridge councillor
Tr: Treasurer: Sharon Cochran, Vice-President Administration & Finance for UNBC.

2004

Jan: UBC and UNBC deliver the “prototypical week”. Eight UBC students volunteer a week in Prince George getting all aspects of their training. Lectures are executed through videoconferencing; problem-based learning tutors are recruited; physicians teach clinical skills, and the students spend an afternoon in family physician offices.

May: Accreditation visit from Liaison Committee on Medical Education / Committee on Accreditation of Canadian Medical Schools. The team met with the NHA, UNBC, and physicians.

Aug: Students begin classes in Vancouver. The Northern Health Sciences Centre is opened in Prince George.

Sep: Dr. Kuo Hsing Kuo and Dr. Geoffrey Payne are new faculty appointed to the NMP.

Nov: Dr. David Snadden delivers the lecture at the first Bob Ewert dinner.

Dec: Fort St. John doctors contributed $100,000 to support future NMP students.

NMP Trust involves UNBC and 24 communities in northern BC, with the goal to create an endowment of $6 million.

2005

Jan: Classes at UNBC begin on January 10, 2005 with 25 students in the NMP.

The high-tech company MTS Allstream Inc. installed about $1.4 million worth of equipment, to outfit two lecture theatres and various labs with state-of-the-art videoconferencing technology and electronic control systems that enable medical students in Prince George to connect with their peers and professors at the UBC and the University of Victoria. IBM and Cisco have contributed $197,000 worth of computing infrastructure and support services.

Feb: Canfor contributed $300,000 to the NMP Trust (NMPT).

Apr: CN donated $300,000 to the NMP Trust.

EnCana Corporation contributed $150,000 to the NMP Trust.
Jun: BMO Financial Group contributed $150,000 to the NMP Trust.

Aug: Alcan Inc. announces that they will contribute $500,000 over seven years to the Northern Medical Program Trust.

Oct: Dr. Snadden visits with physicians in Terrace and Fort St. John to discuss the development of core clinical training for third-year medical students at the clinical facilities around northwestern and northeastern B.C.

2006

Jan: Second group of NMP students begin classes at UNBC on Monday, January 9.

Mar: RBC contributes $100,000 to the NMP.

Aug: Burns Lake fulfills pledge to support northern medical education. Burns Lake’s contribution to the NMP Trust totals just over $65,700.

2007

Apr: The NMP announces it has attracted 6 aboriginal students over the past three years (representing 8% of all NMP students), a vital element in ensuring that the NMP is relevant to rural and northern communities.

May: UNBC secures a $2 million private pledge to the NMP Trust that is completing the original fundraising program more than one year ahead of schedule.

2008

May: First cohort of NMP students graduates.
CHAPTER 5: Study Findings

5.1 Overview of Chapter

This chapter begins with a description of participant demographic characteristics. The second section describes findings related to perceptions of community impact. Following this, perceived impacts on physical, human and social capital are presented. In addition to perceptions regarding impacts on community sectors and capital, participants also commented on medical education program innovation, medical education program development and conditions necessary to sustain the Northern Medical Program. These additional results are presented in the fourth section entitled ‘Other Findings’.

In the second and third sections containing perceived impacts on sectors and capital, additional results are included. Upon close inspection of the data, it was noted that, in addition to impacts, participants provided rich descriptions of the context within which the NMP was created. In providing a description of the challenges facing northern BC prior to the NMP, the participants were able to convey the importance of the program in helping meet the needs of the North. Participants also commented on other potential explanations and contributing factors to the impacts attributed to the NMP. Data on the context, background, and potential contributing factors were included in the analysis in order to frame perceived current and future impacts in an understandable and meaningful manner. For purposes of continuity, context, impacts and other potential contributing factors have been integrated into each of the sections on sector impacts and impacts on capital. In the section describing findings related to perceived impacts on community sectors, context data related to these impacts is first presented. Following this, participants’ perceptions regarding current and anticipated future impacts are described. Lastly, other factors that may have contributed to the impacts attributed to the NMP are presented. The findings section on capital is organized in a similar manner. This will become clear to the reader as the chapter unfolds.
5.2 Study Participants

As previously mentioned, interviews were split into two rounds. In the first round, my intention was to conduct interviews with all individuals who participated in the first NMP Impact Study. However, it was discovered that since 2004, several of the participants had moved on from their positions of leadership in Prince George. When possible, both the former participants and the individuals newly instituted in the position were contacted to ask if they would like to participate. Attempts were made to contact a total of 13 community leaders. I was unable to contact one former participant. Two other leaders, one former participant and one newly instituted community leader, declined participation in the study stating a lack of time as the reason for refusal. Therefore, interviews with 10 participants, 7 of whom participated in the first NMP Impact Study, were conducted in the first round. Participants previously interviewed held positions in the business, health, education and political sectors. Purposeful sampling was used in the areas of Aboriginal health services, social services, allied health, community development (business), and media to obtain a broader sample of community leaders in the second round. Sixteen organizations were contacted, 13 of which agreed to participate. The three social service organizations that declined participation felt they had insufficient knowledge about the NMP to contribute.

Twenty-three interviews were conducted with community leaders. All interviewees were high-level administrators in their respective organizations. Although the intention was to have only one participant per interview, in two cases, participants requested having a second party attend, which brought the total number of participants to n = 25. Many participants held several positions in the community, therefore their perspectives spanned across more than one sector. There were 9 participants who held positions in the health sector, 7 in social services, 5 in the business sector, 3 in politics and 2 in each of the sectors of education and media.

Participants reported having held their position of leadership for various lengths of time (Table 5.2.2). The majority of study participants (n = 20) currently reside in Prince George, while the remaining 5 participants lived in other small, northern communities in
Participants’ age ranges spanned from 30-40 years to greater than 60 years. Males and females were nearly equally represented, with 13 female and 12 male participants (Table 5.2.1).

Table 5.2.1. Demographic characteristics: Age range and gender of study participants.

<table>
<thead>
<tr>
<th>Age Range (years)</th>
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<td>31-40</td>
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<tr>
<td>41-50</td>
<td>5</td>
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<tr>
<td>51-60</td>
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<tr>
<td>&gt; 60</td>
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<table>
<thead>
<tr>
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<tr>
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<td>12</td>
</tr>
<tr>
<td>Female</td>
<td>13</td>
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</tbody>
</table>

Table 5.2.2. Demographic characteristics of study participants: Reported length of time in position of leadership in the community, current place of residence and length of time residing in a rural, remote or northern community.

<table>
<thead>
<tr>
<th>Length of Time in Position of Leadership (years)</th>
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<tr>
<td>1-4</td>
<td>8</td>
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<tr>
<td>10-15</td>
<td>6</td>
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<tr>
<td>&gt; 15</td>
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<table>
<thead>
<tr>
<th>Do You Currently Live in Prince George?</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
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<td>20</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
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</table>

<table>
<thead>
<tr>
<th>Length of Time Residing in Prince George (years)</th>
<th>Number of Participants</th>
</tr>
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<tbody>
<tr>
<td>0-5</td>
<td>4</td>
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<tr>
<td>6-10</td>
<td>5</td>
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<tr>
<td>11-15</td>
<td>3</td>
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<td>&gt; 15</td>
<td>9</td>
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<tr>
<td>N/A: I do not currently live in Prince George</td>
<td>4</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Length of Time Residing in Rural, Remote or Northern Community (years)</th>
<th>Number of Participants</th>
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<tbody>
<tr>
<td>0-5</td>
<td>4</td>
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<td>6-10</td>
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<td>11-15</td>
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<tr>
<td>&gt; 15</td>
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5.3 Perceived Impacts on Community Sectors

The first objective of the present study was to determine the broader community-wide impacts of the Northern Medical Program on various sectors in Prince George. Participants reported current and anticipated future impacts on education, economy, health services, media and politics. Overall, comments were tremendously positive. Negative impacts were reported in all sectors except the economy.

5.3.1 Context Prior to the NMP

In addition to describing perceived current and anticipated future impacts, participants also provided rich background information regarding the “state of northern BC” prior to implementation of the NMP, which provided insights into the context within which the NMP was created. Context data emerging from the transcripts pertained to education, health services, health status, social issues, environment, economy and politics.

Education

Within the category of education, participants’ comments were related to undergraduate education at UNBC, other health education programs, non-health related education programs and medical education.

Participants perceived that, for several years after UNBC was instituted, many northern students did not consider UNBC a credible option for pursuing their undergraduate education. Despite this perception, it was reported that UNBC had strong industry-based education programs in place, such as forestry. As one participant describes, “Like forestry for example. We had to beat students away because we had too many applicants, they couldn’t deal with them all.” A strong nursing education program was also being developed. The success of UNBC’s nursing program was perceived to have generated discussions among community leaders in Prince George about expanding health education programs in the region. One participant explains, “Well, essentially, the shortage of physicians in the North has been an issue for many years and the university had a good nursing program in place. They had talked about an interest in other areas like physiotherapy, the rehab program. They were looking actually at really a different
mix of health programs at the university…[Name of leader] at UBC was sort of interested in expanding the medical school…Those discussions led ultimately to the prospects around creating a medical school as opposed to other areas of health professions.” (ID: 11, TU: 47-57).

Health Services
In terms of health services, participants reported that in the 1990s up to 2000, the North was facing considerable health care professional recruitment challenges and a chronic shortage of health care professionals in the region. Most northern BC communities relied heavily on foreign-trained physicians to fill their health care professional needs. One participant described the impact of the shortage on northern communities: “…access to physicians for people in the lower mainland, it's hard to explain how important having a physician in the community is when you have one, well we try not to have only one, but when you have 2 or 3 or 4, losing a physician or losing 2 is a huge deal…So, Mackenzie, went through a period of time when we went from 4 to 1 and a bit and there was, not quite panic, but a lot of angst and anxiety in the community about that.” (ID: 01, TU: 251-259). The impact was perceived to be at least as great on the medical community itself, who felt unsupported by the government of the day: “What happened to medicine, is that we formed our own medical society because we understood that the BCMA never has represented northern physicians to any great degree. It's largely... an organization of metropolitan physicians with particular interests. So we formed our own society and we took on the provincial government. That led to a lot of unpleasantness here.” (ID: 07, TU: 12-18).

In addition to health human resource challenges, participants described the “erosion of medical services” that was occurring in the region during that time. As one participant recalls, “And remember, in the 90s, that was when they began this whole ‘you’ve got too many beds and too many staff’. So what they did, was they walked in, and took away a quarter or a third of the beds we had knowing that 10 years down the road, the baby boomers were coming. That’s 4 times the population. So you now have a health care
system that they literally decimated and now we’re handling 4 times the patients. So how do they expect that to work?” (ID: 12, TU: 191-198).

The vast geographic dispersion between communities in northern BC presented its own health service delivery challenges. Many patients reported having to travel substantial distances to access medical care. Additional challenges of delivery health services concerned the way in which northern BC’s health services was fractured on an east-west basis: “But medical services, specialized medical services for the west side [of northern BC], have always been delivered in Vancouver and it’s going to take a lot to change that. And on the east side that borders Alberta, Grand Prairie and Edmonton have been the service centres. It’s much more convenient, there are direct flights from Prince George to Dawson Creek and Fort St. John…it’s much easier from an automobile point of view for people to get to Edmonton than to Prince George. And again we’ve got a mountain range between us. So our terrain sort of divides the North two thirds of the province into three parts.” (ID: 13, TU: 255-265).

Health Status
Participants described the poor health status of Prince George citizens. Interviewees reported previous and ongoing high levels of cancer and mental illness in Prince George compared to other areas in the province. The high incidence of cancer is perceived to be linked to pollution in the region caused by Prince George’s “bowl” topography and industry.

Social Issues
Participants also described social conditions in Prince George. One participant articulated the challenges faced by the homeless in the community: “…if a physician is seeing a patient, it’s not about [the patient] going back to their rancher, it’s about the fact they might be going right back out on the street to the corner and trying to deal with their diabetes, their HIV, a foot infection, or something else. So that’s real.” (ID: 02, TU: 184-189). Several other participants noted the challenges that some First Nations individuals in the community face. As stated by one participant: “…we have a large Aboriginal
population and there’s acculturation and different pieces with that, and being on reservations and then having been moved from communities, and not feeling safe. We have a lot of children in care, in the Ministry’s care that are aboriginal, in fact more children are aboriginal than non-aboriginal in care…” (ID: 16, TU: 265-272).

Environment
Comments pertaining to the community’s physical environment were related to high pollution levels and challenges associated with the geographic dispersion and isolation of northern communities.

As mentioned above, participants commented on Prince George’s poor air quality: “We do have an air quality problem because of the topography, because of the industry, the bowl, industry downtown, and it’s not the pulp mills by the way, the sulphur smell which you smell is there because sulphur is really easily detectable by the average nose. It’s the particulate matter, wood burning, exhaust, the topography, which is a health hazard.” (ID: 23, TU: 144-149).

The geographic isolation of Prince George was also described, “I mean we are literally in the middle of nowhere. We don’t have a Surrey or a Richmond next to us. There’s Prince George and that’s it, then there’s hundreds of miles, and hundreds of miles…” (ID: 23, TU: 175-177). Stated another way, “It was never about numbers up here. We don’t do population density, we do geography. Distance and poverty and aboriginal people and all of those things.” (ID: 07, TU: 289-293).

Community leaders also commented on the impact that climate change is having on the region: “…the challenges that face [people in the North] in terms of global warming and the change in disease pattern, the change in insects, the change in all these things, the change in trees - look around you, look what happened to all of the trees! Children used to believe trees were green (laughter). No, trees are red.” (ID: 07, TU: 348-352).
Economy

Participants’ comments portrayed a failing economy in Prince George in the 1990s and uneven economic activity in many parts of the North. One participant describes the situation: “The economy was in the tank, the city was going to the dogs.” (ID: 07, TU: 10-11). He continues, “It was a culmination of 10 years of the worst form of mismanagement from Victoria. It was hideous. The economy in the North was destroyed, literally, over 10 years that that government was in power. It was horrendous.” (ID: 07, TU: 43-46). Another participant describes the state of the economy throughout northern BC: “…the economic activity across the North has been so uneven and there have been some real pockets of despair and downturn that we're still dealing with…” (ID: 08, TU: 82-85). Other participants talked about the lack of cultural amenities and entertainment options in the region. As stated by one participant, “…that image of getting on a plane in Vancouver and flying over trees, many of which are dying, for two and a half hours and landing in a place where your entertainment options are Tim Horton’s and junior hockey (laughter).” (ID: 10, TU: 226-235).

The implementation of UNBC was perceived to be the first step toward diversification and “social change” in Prince George. One participant explains: “But the university, the existence of UNBC was, in terms of the social fabric of the North, probably the single biggest marker of the future…that our future isn't just cutting trees and digging up the ground, it is related to knowledge. The existence of the university was a symbol of social and economic change and the emergence of Prince George, that was a resource town, as a commercial centre where modest amounts of research could happen, where innovation in manufacturing or information technology [could be] applied to the resource sector, where other things could happen. Somebody moving there might be able to have a life that had dimensions to it, rather than just the most recent junior hockey league score.” (ID: 10, TU: 209-219).

Politics

Throughout most of the 1990s, the New Democratic Party (NDP) was in power in British Columbia. Participants reported that the NDP government was unresponsive to the needs
of the North during that time. With the institution of the Liberal government in 2001, participants reported a shift in political support for the region. As described by one community leader, “We had ten years with a government who did not understand the needs of the North and wasn't prepared to listen.” (ID: 07, TU: 11-12). He continues, “…[with the Liberal] government, things have rapidly improved. We have two MLAs right here in the city…who were just and continue to be amazingly great MLAs, both Cabinet Members of course, both on the Treasury Board, both intensely interested in Northern issues. And people that we can phone and we can take out to lunch and we can talk to and people who will set up [meetings] and do these things with the Minister of Health. It's such an open arrangement we have with this government. They do listen…and that's a whole big improvement on what we had. What we had was untenable. The people who were in power before the present government were impossible. They were so bad I have trouble even believing it myself…” (ID: 07, TU: 105-116).

5.3.2 Current and Anticipated Future Impacts

Overall, participants’ comments regarding the impact of the NMP on the community were positive. Perceived current and anticipated future impacts were identified in the sectors of education, health services, economy, politics and media.

Education

Participants discussed perceived impacts of the program on several areas within the sector of education, including, medical education (undergraduate medical education, family practice residency programs, and specialist residency programs); undergraduate education (UNBC); local, northern, non-NMP students; other health professional education programs; and continuing education and professional skill development.

Undergraduate Medical Education and the NMP

Participants reported that the NMP had impacted the medical school admissions process at UBC’s Faculty of Medicine to attract more students who are well suited to northern
and rural medical practice. As one participant explains, “And people who go to university, if you look at the statistics of people who go to medical school, it clearly favours, overwhelmingly, students who come from an urban background. The social indicators were all related to urban-type activities. We had to change that a bit around…the social indicators, not the grade average.” (ID: 04, TU 173-177).

Many comments were made regarding the impact of the program on the educational experience of students in the Northern Medical Program. A few participants commented on students’ exposure to different types of medical practice, including experiencing medicine in social service organization settings. One community leader explains, “You know, this is a different way of doing the work and some of [the students] are saying this is the kind of medicine they want to practice when they're finished. So it's about expanding their understanding about the options open to them and the things they can do once they're out there as practising physicians.” (ID: 02, TU: 14-18).

Some participants described how community-based experience also exposes and sensitizes NMP students to social conditions and the impact of these conditions on health. Examples of social issues discussed included addiction, the Aboriginal experience, survival sex work, seniors’ issues, abuse and violence and geographic isolation of communities. One participant states, “Part of the [name of organization’s] goals, it's written right into our constitution, is that we'll be part of training individuals who will eventually provide medical care to Aboriginal people…So it doesn't mean that you have to be an Aboriginal care giver, all it means is that we hope that if you are going to provide services to Aboriginal people, that you somehow have had an experience sensitizing you to who they are and what their issues are. So when you open your door…that you've got a bit of sense as to what these people are about and the challenges they face.” (ID: 02, TU: 146-159). Another leader describes the importance of understanding the social impacts on health, “So [the students] really seem to want to be involved in a multi-disciplinary approach to medicine and they really believe in a holistic approach. They really understand that the social impacts that affect people’s health, [that] social impacts often manifest into health concerns, and they feel that by helping
address those social concerns, they are doing a lot of preventive health work.” (ID: 21, TU: 102-107).

Participants also explained how NMP students are being educated with a “northern context”, and are thus being exposed to the unique challenges that they will face if they choose to practice in the North. As described by one participant: “Some of those docs [(NMP students)] have been out in the community learning and, [it is] especially valuable to them as I understand it, getting opportunities they wouldn't normally get in a large urban centre. They're going onto native reserves and small, more isolated communities and learning to do a lot of different things. There's not a lot of specialists around, so a northern-trained doctor is probably going to have an understanding of and get to use a lot of different skills that you might not get in a large urban centre.” (ID: 09, TU: 82-29).

Several negative impacts of the NMP were also reported. Impacts related to program operation included confusion and mixed messages for program administration and staff due to the general communication challenges inherent in delivering medical education in a regional campus: “…it made for complex communication lines for everybody concerned. I'm not sure that there's an easy solution for that, but the logistics of organizing curriculum delivery in a satellite location are very different than doing in on a main campus. So if you think of each specialist group in Prince George relating to its faculty department at UBC and then a Dean of undergrad relating back to a Dean of the Northern Medical Program, [imagine] the amount of coordination, confusion, mixed messages…” (ID: 10, TU: 345-358).

Participants also articulated concerns regarding the negative impact of the NMP teaching program on human resource capacity. In the beginning phases of NMP planning, one participant reported widespread concerns on the part of Prince George medical community: “I think mainly [the local physicians] were worried because their numbers were insufficient. They were heavily burdened anyways and here they were taking on a load of students…So there was tremendous uncertainty.” (ID: 04, TU 68-71). One
participant explains the current situation: “That's my sense from the medical community here. They're at their max in terms of their ability to teach.” (ID: 01, TU: 218-223).

Financial burden for NMP students was also reported to be a negative impact of the program. As articulated by one participant: “…certainly, from a financial point of view…some of the families we know, they did have some difficulty with funding. As we all know, it's really expensive for these guys to get through [medical] school.” (ID: 03, TU: 54-58). The participant illustrates the magnitude of the impact of the financial with an example: “One student was actually prepared to go to the military program because of the funding and leave the program in Prince George.” (ID: 03, TU: 65-67).

Current and anticipated future impacts on the family practice residency program and specialist residency programs were also reported. In terms of the former, participants explained how the goal of retaining NMP students in northern communities resulted in the expansion of family practice residency programs across the North. It was anticipated that recruiting NMP students to residency programs in the North would assist with physician retention in the region. One community leader explains, “…the ability to train physicians and particularly to retain some of them later to residency programs that might come to the North was seen to be a huge strategic gain in making sure that our communities had access to physicians in the next decade.” (ID: 10, TU: 70-73). Participants also articulated a hope that specialist residencies programs would be expanded in Prince George and throughout the North, although comments were less frequent.

Undergraduate Education and UNBC
Perceived impacts of the NMP on UNBC were varied and pervasive. One participant described the perceived impact of the program on increasing student interest in biochemistry courses, and on the creation of a Bachelor of Health Science program as a pipeline to medical school: “We also introduced a Bachelor of Health Sciences degree. The original intent was to establish that degree by 2004 if not earlier. We had a sense of what we called the pipeline into the medical sciences. So it was an undergraduate degree
focussing on public health issues with various streams, a biochemical stream and maybe a health administration stream. And the aim was to create an undergraduate program that had not existed in BC at that time.” (ID: 04, TU: 129-136). The participant goes on to explain the role of the Northern Medical Program in attracting high quality students to UNBC: “[the Bachelor of Health Sciences] is proving to be a very popular program. Again, it's the existence of the medical program that attracts very good students into biochemistry or now into the Bachelor of Health Sciences. It created an attraction.” (ID: 04, TU: 142-144).

The overall enrolment of students at UNBC was not perceived to have been affected by the NMP: “I have not seen any numbers that would indicate that our enrolments have increased, in the sense of because we have a medical school, we’re a better university, so we’re going to attract more people to English, biology, physics as a result. I have not seen that. I haven’t seen any numbers that would suggest that and I haven’t seen any surveys of students that would suggest that. I would have hoped for that.” (ID: 15, TU: 416-422).

Nearly every participant reported that the NMP has positively impacted UNBC’s credibility. As one participant explains, “when UNBC was first established 11 years ago, a lot of people both in the South and the North said, 'how can a university survive in a smaller community, it's remote', all that sort of thing. The Northern Medical Program gave the university a huge, huge amount of credibility as it was established and as it has rolled out.” (ID: 08, TU: 137-142). As stated by another leader, “There’s been a real opportunity that the university has had to brand UNBC, strengthen UNBC as a university because it has a medical program. You’re a real university if you have law, engineering and medicine, that kinda thing. Medicine is huge.” (ID: 15, TU: 98-102).

Anticipated future impacts of the NMP on other health education programs, such as UNBC’s nurse practitioner program, were articulated by several participants. As one participant explained, “Well, health is probably the biggest employer in Prince George. And then when you introduce more [health education] schools, there’s an opportunity to
bring more health professional type schools, physio, OT, medical lab technology, or medical imaging, or whatever…So there’s an opportunity to attract other health-type education industries to Prince George.”  (ID: 22, TU: 225-230).  Associated with the potential for attracting more health education programs to the region, a few participants reported a potential impact of the NMP on increasing the capacity of these education programs through collaboration: “The other thing about a program like the Northern Medical Program is that as it works with the other health education disciplines within the university setting, and I'm not sure we fully realize the potential of this yet…that opportunity for cross-learning, learning jointly in a multidisciplinary environment. Increasing the capacity overall of all of the programs within the university setting whether it’s nurse practitioners learning with physicians, physicians learning with nurses, social workers, etc. There's an opportunity in a small university like UNBC to really make that happen in a way that will prepare people for multidisciplinary teamwork when they get out that they would not have at a place like UBC…we see the opportunity to increase the capacity of all the health education programs and expose people more broadly to health service delivery.” (ID: 06, TU: 189-204).

Many participants reported that the NMP had a “divisive impact” on UNBC, particularly in the early phases of NMP implementation. As one participant described, “…you know when the new building's being built and those kinds of things, there was some people feeling like the medical students were the only students that mattered. They were the shining lights. And even though other people were getting their Masters and PhDs, they weren't as important, and the university, in some sense, made them feel that way…But I really think that many students saw the videoconferencing and the lecture theatres and the list goes on of special considerations, but I haven't heard that as much recently…” (ID: 02, TU: 445-458). Another participant describes how non-NMP students may have felt slighted: “But ask yourself, what it feels like to be an undergrad social work student or nurse 200 yards from all this. One of the few downsides of the Northern Medical Program, and I think this is an issue that UNBC is probably still dealing with, is that it's still a small, closely-knit school, a relatively young university…[the NMP] really had a significant divisive impact at some levels and there was a fair bit of ill-will generated, not
because of anything done by faculty in the program or the students…but the level of attention that was showered on them goes to the point that I think was counterproductive and created some divisions and resentment that need not have been created.” (ID: 10, TU: 156-168).

Local, northern, non-NMP students

Impacts on local, northern, non-NMP students were reported. Several participants described that since the NMP was implemented, more local students are articulating an interest and ambition to pursue medicine as a career. One participant explains, “We had had students [at UNBC] before who had gone on to medical school, so undoubtedly there were students who had that ambition. But with the introduction of the [Northern Medical] program, when we started to talk to people, they were more explicit about that.” (ID: 04, TU: 161-164). Another participant perceived that the NMP has also increased local student interest in health professions, generally; “…in talking with young people, having the program here, having these other young medical students here, it has increased [local students’] interest in seeking a medical profession of any type, not necessarily a doc, but something. There seems to be more of a general talk, 'maybe I should go into the health sciences. If we didn't have the school here they wouldn't even give it a second thought…what is very much lacking in this country, is First Nations individuals in the health sciences. Because the university [of Northern British Columbia] has one of the highest percentages of First Nations students, there's groups of them that are now looking at the medical profession as well.” (ID: 09, TU 288-302).

In addition to expressing an interest in medicine, participants also articulated that the NMP provides local students with greater access and opportunity to pursue medicine. One participant states, “…there’s a good reason for [local students] to be able to stay if they want to practice or pursue medicine in the North. They have that opportunity. They can stay, rather than having to go down South to have that. So it allows them some stability in the community that they’re already in. And if they’d like to stay here, even better! (laughter). So that’s another real positive thing.” (ID: 16, TU: 156-163). There is also a perception that, being from the North, local students may have a better chance of
being admitted into the Northern Medical Program: “And students think that you know, if they study here they might have a better chance of getting in, the same way that students do their undergrad in other places, thinking it will open the door to medical school if it's their ambition.” (ID: 04, TU: 144-148).

**Continuing education & Professional skill development**

Another impact of the Northern Medical Program on the education sector pertains to continuing education and professional skill development of physicians engaged in teaching and other staff involved in the program. One participant describes the impact on local physicians: “The other piece is having [NMP] instructors who are actual physicians in the community. So we’re also having professionals expand their knowledge and expertise in the academic perspective.” (ID: 24, TU: 145-147). Other individuals involved with the program, including staff at the Northern Health Authority and the Prince George Regional Hospital (PGRH), have also reportedly developed new skills to accommodate the program.

**Health Services**

Several categories of perceived impacts of the NMP on the health service sector emerged from the transcripts. Impacts were reported in terms of: 1) the strain on the health system and its resources, 2) long term sustainability of and access to health care in the North, 3) clinical practice, 4) medical care and treatment, and 5) research.

**Strain on the health system and resources**

Several participants commented that the planning and implementation of the NMP has considerably strained health system resources. For example, the program is reported to have greatly impacted space at PGRH. As one participant explains, “It's been a big impact on our space. We've had to devote a whole floor to teaching and we're cramming people into inadequate space. So that's a bit of an issue for us.” (ID: 01, TU: 307-310).

Participants have also articulated several fiscal impacts of the program. There appears to be some general concerns regarding the overall cost-effectiveness of operating a teaching
program, although it was reported that no good statistics have been generated to-date. Nevertheless, several areas of perceived fiscal impact of the NMP have been identified. The first pertains to physical infrastructure, which includes the initial and ongoing costs of expanding PGRH. As stated by one participant, “[We had to ensure] the on-site training at the facilities at PGRH were adequate. So there's been an awful lot of capital spending that has gone on, on that front. There's no question. So we've modified and put things into place at PGRH.” (ID: 08, TU: 46-48). Another perceived fiscal impact pertained to the cost of supporting NMP staff: “For [the] Northern Health [Authority], we had the concern that we would be increasingly expected to be able to support physicians who might need protected time, who might attract research grants, who had administrative costs, who might need to use the time of nurses or respiratory therapists or other people to support teaching or research activities and that we would not be able to do that in a way that was comparable with organizations that had a long tradition of medical teaching and had a preferential funding arrangement that helped them be successful in that.” (ID: 10, TU: 93-101). A third area of fiscal impact was related to diagnostic tests. Several participants reported changes to diagnostic test ordering patterns since NMP students arrived at PGRH. As one participant explains, “I did a review of medical imaging tests last week…and what I’m seeing is more inpatient tests being done. And whether or not that’s directly related to the students I don’t know. But we have definitely seen more inpatient work…That’s not necessarily a good thing because we can’t bill for inpatient testing. We can only bill for outpatient tests. So if that’s a direct impact on PGRH, if in fact the tests are because the students are ordering more tests [is unclear]…” (ID 14: TU: 135-144). Another participant echoed the sentiment, “Then there’s the ordering of tests and the validation of those orders and are there more tests that get ordered because of [the NMP] and I think we do have some evidence that our inpatient volume of radiology tests has tripled. It has just increased dramatically, more so than the outpatient for sure…so my question in my position is, is that…part of the learning? I think there’s a part of that there.” (ID: 22, TU: 108-115).

Increased strain on the system’s human resources was another reported impact of the NMP. Many community leaders reported considerable impacts on the time and workload
of physicians, PGRH staff and staff at the NHA. As one participant describes, “When you educate people you need teachers. And where do these teachers come from? Usually the profession. So there, you’re tapping into professions that are so short already, but you need to get these people to be teachers, with that you’re making the profession shorter.” (ID: 12, TU: 130-134). Another participant adds, “I just know that [the Northern Health Authority is] a small organization, relatively speaking, but we need all the same infrastructure as a large organization and that means, in our organization, that people wear multiple hats and that goes for physicians as well as our internal staff. Anything like this does stretch our capacity and infrastructure.” (ID: 06, TU: 151-157).

Increased workload due to involvement in the NMP is also perceived to be impacting physicians’ income: “I think mainly [the physicians] were worried because their numbers were insufficient. They were heavily burdened anyways and here they were taking on a load of students, and what did this mean for their bill-able hours and so on and so forth. So there was tremendous uncertainty.” (ID: 04, TU: 68-71). Another participant described this perception in terms of clinical productivity: “[teaching]...which is a time-consuming thing, so therefore he's not giving his time to his patients and probably losing some income.” (ID: 03, TU: 202-203).

Long term sustainability of the North’s health care system & access to health services
Participants perceived the NMP to be an essential part of providing sustainable health care in the northern BC in the long-term by increasing access to health care for citizens. Some participants described this anticipated impact in general terms: “…[The NMP is] critical, I think, to the long-term sustainability of the health system in the North. Be it training for nursing, nurse practitioner, pharmacy, lab techs now, physicians, um, so all of that training, all that is imperative. If we don't train them here, we have little hope of keeping them.” (ID: 01, TU: 330-334).

Participants also anticipate that the NMP is likely to help overcome the “chronic” physician shortage in the North and reduce the number of people who don’t have a family doctor. As one community member describes, “Well, the expectation generally is that,
my wife and I who are in our mid-sixties, and everybody else, won’t have to worry about finding a GP [(General Practitioner)]. That’s number one. And we probably won’t, which is kinda unique in North America. A lot of people are facing that type of [physician shortage] problem.” (ID: 23, TU: 195-198). Another participant explained more specifically how training physicians in the North is linked to the expectation of having more family physicians: “…the ability to train physicians and particularly to retain some of them later to residency programs that might come to the North was seen to be a huge strategic gain in making sure that our communities had access to physicians in the next decade.” (ID: 10, TU: 70-73). Along the same lines, participants articulated that not only do they anticipate that there will enough doctors, they also expect that the physician supply in the North will stabilize: “For the community, I think it means that there is at least the promise of stability of physician supply into the future…You know, if students are educated here, if they did their residencies here, they would be more likely to stay and work in this region. That’s what the evidence suggested from other places we looked at.” (ID: 04, TU: 185-189). Increased physician workforce in the North is anticipated to decrease wait times to see a physician in the future.

Interviewees further commented that since the NMP has come to Prince George, patients haven’t had to travel as much to seek some types of specialty care: “We now have 6 orthopaedic specialists in Prince George who are flat out working around the clock. At one point in time we had one. So I don’t think that it’s that we’ve gotten more clumsy (laughter) as much as it’s the amount of people that had to travel out of the community [prior to the NMP]. So that enriches [the community]. Now a person who has to have something done is able to stay in the community and recoup with their family and let’s face it, love heals a lot of things!” (ID: 20, TU: 83-88). Participants anticipate that patients in northern BC will not have to leave their communities to see a specialist in the future.

More appropriate use of emergency and walk-in services in the future was another anticipated impact of the NMP. One participant explains: “The family doctor situation is a big concern. You get triaged when you go to emergency and you have to wait for a
long period of time. So if we could get some family doctors out there and change how people look at emergency rooms…Make the emergency room what it’s really supposed to be.” (ID: 14, TU: 343-348). Related to use of emergency services for primary care, community leaders also anticipate that the NMP will improve continuity of care between patients and health care providers in the future. One patient clearly articulated this expectation: “There's nothing worse as we know, than somebody having some kind of major illness and never having established that relationship with a health care provider. So it's about trying to make sure that doesn't happen anymore, trying to make sure that people aren't using [the] emerg[ency room] and walk-in clinics as their primary source of health care. Because there's no continuity, there's no plans, there's no relationships…” (ID: 02, TU: 217-221).

Comments regarding the expectation regarding the contribution of the NMP to making Prince George the main health care provider for northern BC communities were mixed. Participants did however agree that Prince George could provide many more services to outlying communities than they presently do. As stated by one participant, “But we should be able to supply [adequate health care] and that is what our vision of Prince George is for the future; is that [Prince George] will be a centre of northern development. Because that's going to happen. It's inevitable.” (ID: 07, TU: 158-161). Another participant expressed a different perspective: “I think for Prince George itself, there’s a feeling that [the NMP] will speed up the time at which [Prince George] becomes the major medical service provider to all of northern British Columbia. And currently we’re not, and I don’t see it happening in the foreseeable future, but a lot of people do.” (ID: 13, TU: 242-246).

The anticipated impact that the NMP will provide graduates with skill sets that match the needs of the North was the most commonly cited reason why the NMP is crucial to the long-term sustainability of health care in the North. As one participant states, “…the people coming out of the program, even if they don't all stay in the North, they have learned in a northern-rural context and are more likely to bring the skill set that is going to be a good match for many of our sites and communities. So I think that has a positive
impact on the community and certainly on the health authority.” (ID: 06, TU: 175-180).
Some participants commented more specifically on the health issues they expect NMP graduates to help address: “…[NMP students] are going to have a huge impact. I think their generation is going to be most important for a lot of years now because of the demographics. They’re going to be serving seniors, an older population…their health needs.” (ID: 19, TU: 147-152).

Clinical Practice
Improved clinical practice was a perceived, anticipated future impact of the NMP. Many participants reported that the NMP has increased the level of evidence-based thinking among local medical staff that are involved with teaching. This shift in thinking by local physicians is anticipated to improve clinical practice in the future. As one participant explains, “…[the NMP has] just added a whole new dimension to the practice of medicine in this city and in adjacent regions, and I think that's what we believe, in time, would be the biggest benefit and that in time, this would lead to better practice. Cause there's nothing like being engaged in a medical program, having students work with you and having to keep up your skills (laughter).” (ID: 04, TU: 355-362). As stated by another participant: “So [the NMP] challenges or supports the continued professionalization of doctors and even nurses of more evidence-based…it brings that level of inquiry to think about, well what is the evidence out there for doing things? We’ve always done things this way, because we’ve always done that. But is there evidence to support that? There’s challenges to habits people have gotten into, whether it’s medicine or nursing, about how we do things. So I think having students increases the learning for everybody. I think that whole level of inquiry, that whole kicking things up a notch or two, is just great for patients.” (ID: 22, TU: 258-267).

Medical care
Perceived current and future anticipated impacts were identified within the sphere of medical care. Several participants, both from the hospital administrator perspective and the patient perspective, discussed the role of NMP students in patient care. One leader recalled his encounter with NMP students at PGRH: “But anytime anyone’s hospitalized
in the region you suddenly realize there are a lot of medical students around! (laughter). I had an occasion in June to spend 3 days in the hospital and it seemed like I was responding to questions from medical students for most of those 3 days (laughter). They’re all over the emergency ward, they’re in surgical wards, they’re everywhere. And they’re interested in the patients and not only in their symptoms but also something about them and this has really brought it home to hundreds and hundreds of people all over the region.” (ID: 13, TU: 129-138). Most participants perceived the student-patient interaction to be positive and reported that patients were interested in participating in the NMP students’ learning process. However it was reported that some community members were uncomfortable with the interaction and chose not be involved in the students’ clinical. One participant articulated her initial hesitation, “When you hear the word ‘student’, you think, oh my God, they haven’t had enough training, they’re new and I don’t want a student checking me out in this area or doing that, they’re not that knowledgeable. But because the program is becoming very reputable, I think it lessens that anxiety as a patient, there is accountability and the physicians who are working with the students are of very high calibre and the students coming in are there for a reason.” (ID: 24, TU: 93-100). Different concerns regarding the interaction between NMP students and patients were expressed from an administrator’s perspective: “Well I think the impact on patient care is that there’s one more person asking them questions and involved in patient care. I don’t know to what extent, and it’s one of the things we’re working on, not just in relation to the medical program, but more patient or person-focussed care, trying to decrease the number of people asking questions. Being clearer with patients and families about who is involved with their care and what their role is.” (ID: 22, TU: 140-152).

General comments regarding the anticipated impacts of the program on improved medical care were also made: “I think that another concrete result [of the NMP] has been that people perceive that the health care in Prince George will rise as a result of the NMP, and that will have major benefits for recruiting in whatever field”. According to another participant, “…we’re getting good medical care, we know that we’re going to be getting
good medical care down the road and I think that’s the impact [of the NMP] at this point.” (ID: 23, TU: 120-122).

Along with improving medical care, participants also anticipate the NMP to assist with improving patient outcomes and health status in the region. As one participant describes, “there is an expectation and hope that this program is going to be very successful in regards to recruitment, retention, and decreasing some of the health dilemmas that we’ve run into…” (ID: 24, TU: 168-170). Another participant describes how the NMP is anticipated to impact the Northern Health Authority in terms of improving primary care in the region: “Now primary care isn't really Northern Health's business, but we do have a significant amount of community programs which partner differently with family practice physicians…We could probably realize much more significant benefits for people living with chronic disease, the elderly, etc. And I think the university and the Northern Medical Program can help us move that agenda forward.” (ID: 06, TU: 260-264).

**Increased research**
The NMP is reported to be currently increasing research in the region and is anticipated to continue generating research, which in time, is likely to benefit northern communities. One participant states, “I think research…we definitely have significant expectations of what the Northern Medical Program is bringing us in terms of faculty and research interests and students who want to be engaged, particularly in health services and health policy research. Clinical and biomedical research too, but the health services and policy research in a rural, northern environment. We're looking for that and we've already seen some success in that regard.” (ID: 06, TU: 250-254).

**Economy**
Participants described several perceived impacts of the NMP on Prince George’s economy. These included more money into the economy, general development in the community, population changes and increased attraction of professionals and businesses to the community.
More money into Prince George’s economy
Participants described that there has been a lot of money pouring into the Prince George economy in the way of salaries for NMP staff and faculty. Leaders explained that the growing number of individuals with disposable incomes in the community is creating an economic base. One participant explains: “By bringing professionals to town, by expanding that base of professionals, it supports things like arts and um, sports as well. So, it's an economic base. It's a population that has a disposable income that can go out and go to plays and go to hockey games and those types of things, buys new cars, all of that. So it's different than some of the other types of economic development. It's not cyclical like the resource industry, so it's a stabilizing influence on Prince George.” (ID: 01, TU: 350-356). Another participant states, “It’s brought well-paying people in, there have been big capital investment in facilities that brought money into the community…and [the NMP] certainly has a direct economic benefit…you know, there must be something about this community if it’s got a medical school. It’s part of a more fully served community.” (ID: 13, TU: 190-197).

More income in the community is also perceived to have increased retail sales and the use of services. Impacts have additionally been reported on Prince George’s housing market: “…some of the students actually bought homes in Prince George and were making house payments which was less than the rent they had to pay. These were some of the more mature students, people who had already been working the health care industry, had families and stuff.” (ID: 09, TU: 39-42).

Community Development
Participants generally felt that the NMP makes Prince George a more “fully served community” (ID: 13, TU: 197). One participant describes the development that is perceived to have occurred in part because of the NMP: “One of the things that Prince George was battling for years, was the rough logging community type of personality. And people that were here, as soon as the university opened, that started to change. We saw that the people coming in, in order to retain them, required more sophisticated entertainment, the symphony, the theatre, so we have a very nice mix of all of those
things right now and we’re working on putting together a performing arts facility here. [The NMP] enriches the whole…[the impact] isn’t just necessarily in adding 24 new doctors to the system, it is enriching and increasing the experiences of the communities that these doctors touch.” (ID: 20, TU: 60-74). Another participant described the anticipated development of Prince George by comparing it to the community of Eugene, Oregon: “I really see this community evolving into a Eugene, Oregon. It was a forestry town and to some extent it still is, but 50 years ago the University of Oregon really started to grow there and now it’s mostly a university town with the soft edges and the pride in their sports teams. It’s just a beautiful city of 150,000 people that has grown and become more diverse and sophisticated as the university has grown. So it’s got an industrial backbone, but the driving force is the connection with the university and the things that evolve from that. As universities mature, you’ll get businesses that come…there are things available at the university that they need.” (ID: 13, TU: 217-233). This theme of economic diversification was echoed by many participants. For example, one interviewee stated, “Along with [the NMP], the research opportunities, development opportunities that [go with it], that aren’t just focussed on lumber and forest and oil and gas. So for Prince George, I think [the impact of the NMP is]…more about diversification.” (ID: 22, TU: 230-234).

Accompanying perceived impacts on the diversification in services and cultural amenities in Prince George, participants also commented on the diversification of employment opportunities: “I think [Prince George] was considered kind of a mill town in the 70s and 80s and it still is, because it’s a huge part of our industry and a large component of the livelihood of many, but I think it’s broadened that and allowed us to consider other options and ways that we can offer a great city to people in different capacities besides working in the mills, so that’s been a positive.” (ID: 16, TU: 136-143).

Population and demographic changes
In addition to bringing more people to the community, participants commented on the impact of the NMP on the demographic shift that has occurred in Prince George: “[The students have] added a new, younger element to Prince George. We’ve always been blue
collar, middle aged sort of thing, or younger, because blue collar is usually associated with the working age and then they go South to retire generally.” (ID: 19, TU: 134-139).

In addition to adding a “younger element to Prince George”, many participants described how they expect the program, and the associated economic diversification, to result in greater population stability and an increased sense of “permanency” in the community. As explained by one participant, “So places like Prince George across Canada have always been temporary abodes. The reality is that people come here for 6 years and 35 years later are still here. They’re always planning to leave. And when people, until recently, when people retired they did leave…you think of yourself as living on the frontier and there’s a lack of real permanency. What the Northern Medical Program has done is reinforce the idea that this is a community that’s staying here. Where the primary purpose of the program was to train doctors for the region’s future. If you’re planning that far ahead, 5 or 6 or 7 years ahead, obviously a significant part of the community believes that it’s still going to be a vibrant community that far into the future.” (ID: 13, TU: 109-120).

Attracting professionals and businesses to the community
Attracting businesses and professionals to the region was another perceived current and anticipated future impact of the NMP on Prince George’s economy. Participants described the NMP as a ‘selling feature’ that legitimizes business opportunities and attracts employers and employees not only to Prince George, but also across the North. As stated by one participant, “…[the NMP] means a lot just in terms of the credibility of the North and these communities. The fact that we can have a program of this sophistication operate here successfully does legitimize other potential opportunities. It shows that if you can run a Northern Medical Program and train people here, why can’t you establish other successful businesses, why can’t you follow the same example and be good in transportation, be good in receiving containers, be good in secondary manufacturing? It shows that northerners can in fact offer world-class services. I like to think of it as an opportunity to show that, hey, we are world-class here. I think that’s pretty good.” (ID: 08, TU: 167-177).
Another participant describes how the NMP has assisted in attracting businesses and workers: “I think it's brought more people to the city…I think it just means that people will come to Prince George because they perceive there will be better medical treatment… I think that's the part where the economics comes into it, where companies and professionals will relocate to Prince George because they know their workers will be taken care of because there's a medical program, you know 'there's probably lots of doctors' sort of thing. And [their employees] can get back to work faster, and stuff like that.” (ID: 03, TU: 281-290).

Politics
One identified area of impact of the NMP on the political sector was the use of the program as a political tool. Remaining impacts on politics fell under the umbrella of social cohesion and social capital, and are therefore described in that section.

NMP used as political tool
Participants commented that the NMP impacted both politics and politicians. It was perceived that the NMP was a hot topic in government and that some politicians used the “hype” around the program to strengthen their position in politics: “I mean if you take the political hype out of the equation in British Columbia, because people on one side of the house or the other are always using health care as a political football…you have to go on the real raw numbers on what the success has been like.” (ID: 09, TU: 138-142). Another participant had a similar perspective: “Various parties, political and otherwise also took advantage of the opportunity to hype this into a world-changing event…” (ID: 10, TU: 133-134).

Media
In terms of perceived impacts of the NMP on the media sector, participants commented generally on the impact on the level of coverage throughout the planning and implementation of the program, and the purpose or goal of that coverage.
General level of coverage
Participants described high levels of media coverage during the initial planning stages of the program and a slight decrease as the implementation years rolled out: “Ya, [media coverage] has dropped off…But in 2004 and early 2005, the first students came here in early 2005, January, it was a lot of media. The Premier came.” (ID: 15, TU: 453-356). Despite the recent decline in media attention, participants describe continued interest in the program from the local media: “But something we’ve done every year, when the new class starts in January, we have a meet and greet with the local media, we get 100% attendance from the local media. It’s incredible. And the students I think get a rise out of it.” (ID 15, TU: 245-248). A renewed increase in coverage is anticipated in May 2008 when the first cohort of NMP students graduate: “[There are] all these firsts. Firsts coming out of everything, and that’s an automatic news hook. And this year too: first graduation. It’s gonna be huge. [Media coverage] will build again.” (ID: 15, TU: 466-468). Other perceptions related to impacts on media coverage were that NMP students were being unnecessarily sheltered from the media and also that there was unequal media coverage between UBC’s regional campuses, NMP receiving the lion’s share.

Purpose and objectives of NMP media coverage at UNBC
It appeared that the Northern Medical Program had a substantial impact on media personnel, who, in the present study, described a strong sense of responsibility for documenting “history in the making”, and especially for conveying the broader significance of the program to the general public. One participant explains, “We knew that this was history in the making at the time and you don’t always know that. But we knew that then. This was history in the making. So we were very cognisant in making sure we were documenting things and making videos…and it was a fascinating thing so that’s what we were doing. We were really all about the public.” (ID: 15, TU: 91-95). He also explained the importance of informing the public about what the program really means: “…well what my role has been is to inform and through information make people aware and excited, definitely excited, about what this means for UNBC, Prince George and Northern BC, in terms of what the medical program means. It partly was, well you do your first semester at UBC and then you transfer to UNBC to your second semester of
your first year and then you do your clerkships and then…but it wasn’t so much about that, it was about the promise or what does this mean, how significant is it that UNBC has a medical program…” (ID: 15, TU: 72-80). He continues, “is was about more than doctors, it was about communicating to communities about how this is us [(UNBC)] responding.” (ID: 15, TU: 109-111).

5.3.3 Potential Contributing Factors
In addition to describing the context and impacts of the NMP, participants also talked about other factors that might be contributing to the impacts. Comments pertained to the following areas: health services, economy, politics, human capital and social capital. These are briefly summarized here.

Health Services
Participants reported several other reasons for the reported NMP-induced capacity issues that PGRH and the Northern Health Authority are experiencing. The existence of the nurse practitioner program and the nursing program has also added to the strain on the system, particularly in terms of the NHA’s ability to deliver clinical placements. One participant describes the situation: “And this is the case with the nurse practitioner implementation and the nursing program, all of these things are happening at the same time and they have a huge impact on our capacity to deliver both the education and the placement, the clinical practice placement…” (ID: 06, TU: 137-142). System capacity is also being impacted by the implementation of a new admitting system at PGRH, and the fact that the regional hospital is reportedly over census with patients on most days.

Increased workload and strain on the system’s human resources is reportedly also due in part to the general health care professional shortage in the North as well as Prince George’s growing and aging population.

Economy
Participants reported that economic diversification and development in Prince George may be occurring, not only because of the NMP, but because citizens and leaders are
interested in developing their community. Participants spoke about the recent creation of a Sportsplex in the community, the expansion of the Prince George airport, and the growing business connection between Prince Rupert and Prince George due to the recent expansion of the Prince Rupert Port.

The impact on Prince George’s housing market may also be impacted by factors other than NMP staff and students moving to the community. Participants reported that since Prince George’s housing is more affordable relative to other areas in BC, people are choosing to relocate to or retire in the region.

**Politics**

High levels of political support for the NMP were reported by most participants. However, participants clearly articulated that the current MLAs in the area are extremely supportive, and interested in northern issues, generally. Therefore, the reported high level of political support for the program may be due in part to the characteristics of the region’s politicians.

### 5.4 Perceived Impacts on Capital

The second objective of this study was to determine if and how the program had affected social capital in the community. In addition to social capital, themes related to human capital and physical capital also emerged. Impacts on social capital were categorized into impacts on social cohesion, forms of social capital, access to social capital and outcomes of social capital. These are further described below.

#### 5.4.1 Context Data Related to Capital

Comments related to the context within which the NMP was created pertained to human and social capital.
Human capital

In the present study, human capital was defined as both the number of individuals available to perform a task and the skills sets or expertise that individuals possess. Participants generally described that Prince George, as a non-metropolitan region, historically possessed lower amounts of human capital than urban centres. As stated by one participant, “People often talk about non-metropolitan regions as lacking in human capital, partly because your post-secondary attainment is a proxy for your human capital. And these regions have lower university completion than Vancouver or Toronto mostly because we’ve never had the knowledge infrastructure here…” (ID: 15, TU: 605-610).

Despite reported low levels of human capital in the region, participants described some of the skills and expertise possessed by the local physicians, particularly related to their ability to deal with challenges posed by rural medical practice. A community leader describes one of these challenges: “…And when you are in health care and you’re going to the rural and northern areas, you’re not only working your shift. As in every health care place, you have to provide 24-hour service. So not only do you work your fixed shift, but you take calls. And call is one of the deadliest things that you could ever do…” (ID: 12, TU: 142-151). Another participant illustrates the work ethic of the rural physician using a local Prince George doctor as an example: “[Name] is quite a character (laughter)…a throwback to the kind of rural doctors that books are written about (laughter). Very opinionated but just point him in a direction and he will work untiringly to achieve the objective. And he hasn’t stopped!” (ID: 13, TU: 58-62).

As mentioned earlier in Chapter 4 ‘Community Context’, there is a paucity of opportunities for northern youth in Prince George. Prior to the implementation of UNBC, participants reported a “brain drain” or exodus of professionals from the region. One participant describes UNBC’s role in addressing this issue: “…UNBC was originally created to address a brain drain. You’ve gotta have a university in the North because our best and brightest are leaving.” (ID: 15, TU: 300-303).
Social Cohesion & Social Capital

As previously mentioned, social capital and social cohesion can conceptually be considered as distinct concepts\textsuperscript{54,58}. In the present study, social cohesion was defined as the networks that individuals form, as well as the values and sense of connectedness that characterizes networks\textsuperscript{58}. Social capital, on the other hand, refers to the resources belonging to a network and the ability of group members to access resources\textsuperscript{53}. In the following section discussing current and anticipated future impacts of the NMP, a more thorough explanation of social cohesion and social capital, as it pertains to the data, is provided. For consistency, the same categories of social cohesion and social capital used in the description of reported current and anticipated impacts are used to present context data here.

To lay the foundation for the discussion below, I present a quote from one participant who perceived the level of social capital in rural regions to be innately higher than in urban areas. He states, “…other literature talks about this notion of social capital and connections to other people. And that’s where non-metropolitan regions are seen to be higher because they’re very small, and all the elites know each other. It’s a small group, they kinda control the shots…” (ID: 15, TU: 621-617).

Social cohesion
Categories of data related to social cohesion include network or partnership formation, and values and connectedness that characterize these networks. Participants described several networks that were formed prior to the NMP.

One such network was the Interior University Planning Society. One participant describes his involvement in this committee: “My initial involvement was of course with the University of Northern BC in the mid-80s, when we actually formed the Interior University Society to get a university for the North, in the North.” (ID: 09, TU: 11-14). The Northern Medical Society was also created prior to the NMP. One participant describes the conditions under which this network was formed: “What happened to medicine, is that we formed our own medical society because we understood that the
BCMA [(British Columbia Medical Association)] has never represented northern physicians to any great degree. It's largely an organization of metropolitan physicians with particular interests. So we formed our own society and we took on the provincial government.” (ID: 07, TU: 12-18).

Other participants describe a scarcity of partnerships across the North as a result of the geographic dispersion between communities. In terms of economic connections, one participant explains, “[The North is] really fractured on an east-west basis…The Westside, the coast, historically, has always been closer to Vancouver than it has been to the interior. The coast mountain range has ensured that that happens. There’s no direct air service between Prince Rupert and Prince George because Prince Rupert does its business with the South. There’s no real economic connection between Prince Rupert and Prince George. That’s changing.” (ID: 13, TU: 246-252).

Within the broad category of ‘values’, participants describe a deep sense of ownership of UNBC in the North. As stated by one participant, “UNBC, you have to understand UNBC not as the little campus in Prince George. One of the things that [Name of UNBC Administrator] was incredibly successful at, was that he made the organization a living, breathing thing in 20 communities across the North. So Prince Rupert feels that UNBC is theirs, Fort St. John feels it’s theirs, you know there are UNBC employees in those communities, UNBC leaders spend time in those communities. So it was the North's university, not Prince George's university.” (ID: 10, TU: 248-255).

A sense of connectedness in the community was fostered by the Health Crisis Rally in 2000 and the creation of the Northern Medical Society and UNBC. In terms of the health rally, participants reported considerable citizen turnout with only a few days notice. One participant describes the event: “…a lot of the citizens here promoted a health care rally which took place at what's now the CN Centre, in…May or June of 2000. And it was at that rally that the people of this city said quite clearly, 'if you can't recruit physicians to Prince George, go train your own. Get a medical school.' So, no matter what anybody tells you…It was the people's idea. So very much the same way
that the university itself, UNBC, is 'of the people' in the best possible sense of the phrase…” (ID: 07, TU: 19-30). Although this participant believed the NMP to be a serendipitous outcome of the rally, many other participants asserted that the NMP was not created as a result of the protest, but perceived rather that the rally enhanced cohesion in Prince George and the North and added momentum to the initiation of NMP planning. One participant elaborates on this viewpoint: “[The NMP] didn't spawn from there. That certainly may have added some momentum to it, but as I'm telling you, I began working with the two universities well before that to get this going and to get something going in the North and so certainly, the university was able to take advantage of that event and the publicity around it to move it forward. But we had been discussing and planning for that sort of thing much before that event. That event was simply that. Things certainly flowed from there, but certainly that wasn't the precipitation of this program.” (ID: 11, TU: 29-36). He continues to explain the original purpose of the rally from his perspective: “…actually that rally had more to do with getting physicians' funding in place than it had to do with the university. That was the focus of the rally. It was about payment for physicians and having physicians in the community. That certainly lent to arguing that training and creating physicians in the North and for the North, that that sort of theme emerged around there, but the fundamental issue around that rally (laughter) was the physician strike and their demands for increased funding.” (ID: 11, TU: 85-92).

Social capital
Comments regarding existing social capital prior to the implementation of the NMP were related to the availability of and access to financial resources, knowledge, sense of community and collective efficacy.

Access to the community’s financial resources prior to the NMP was discussed by many participants. Interviewees’ comments portray Prince George as an innately charitable community, always willing to give to a good cause. In addition to donating to local charities, participants also described the extensive, and successful, fundraising initiative for UNBC. One participant explains: “I mean starting this university was by the community and people actually bought shares in the university. So there were $5
memberships and thousands and thousands of members before it was ever done. (ID: 18, TU: 250-253). As stated by another participant: “So Joe and Sally on the street donated $5. There were $5 pledges from all throughout the North. So I think that northerners are willing to put their money where their mouth is…” (ID: 20, TU: 139-142).

Knowledge expansion as a result of new partnerships was also reported. Participants describe how the implementation of UNBC expanded social knowledge in the community. As stated by one participant: “And what I enjoy the most, of the advent of the university here, was talking about issues in a more learned way…that we have been able to expand our knowledge socially. And issues that have been put on the table would never probably gotten on the table before with the advent of the university…” (ID: 02, TU: 334-339).

Participants also described the collective sense of community and community self-esteem that existed in Prince George prior to the NMP. One participant used the phrase “Northern Depression” to characterize the situation. He explains, “…in the late 1990s, and the year 2000…The centre we had tried to build in Prince George was rapidly diminishing as people left faster than we could recruit and replace them. The spirit here was gone.” (ID: 07, TU: 7-10). He continues, “Those years ago, in 2000…Those were dark, dark times. People were leaving here because of despair.” (ID: 07, TU: 46-48). As explained by one participant: “If the community doesn’t believe in itself, it’s hard to have growth, business growth, cultural growth, you know, because people originally came here because it was a good place to earn quick money and as soon as you could you’d leave with the money in hand. So places like Prince George across Canada have always been temporary abodes. The reality is that people come here for 6 years and 35 years later are still here. They’re always planning to leave…So you’ve got a sense of low self-esteem and you think of yourself as living on the frontier and there’s a lack of real permanency.” (ID: 13, TU: 105-118).

Several perceptions appeared to be at odds with the reported low community self-esteem in Prince George. Participants reported that northerners characterize themselves as
“pretty tough and resilient people” (ID: 04, TU: 197) who have tremendous pride in their community and the North.

5.4.2 Current and Anticipated Future Impacts on Capital

Emerging themes related to the impact of the NMP on physical, human and social capital were pervasive. Some impacts on capital appeared to be integrated within the five community sectors described above, and others appeared to depict more high-level, meta-impacts of the program. Perceived impacts on physical capital were related to impacts on the sectors of economy, education and health services. Themes related to the impact of the program on human and social capital spanned across all five sectors. However, not all reported impacts on capital could be categorized into sectors. For instance, many perceived impacts within the categories of human and social capital appeared to supersede impacts on sectors and reflected broader, community-wide impacts of the program.

Physical Capital

Embedded within identified impacts on education, economy and health services sectors in the community were perceived impacts of the program on physical capital. Participants described the extensive and continuing expansion and renovations of Prince George Regional Hospital to accommodate the program. One participant states, “...my involvement has been 2-fold: [the first is] physical, so the physical infrastructure to accommodate the program, so renovations. We've still got an outstanding capital request for a new library and lecture theatre to accommodate the program. There's some outstanding capital requests around renovations on our inpatient units to create more teaching space, more appropriate teaching space.” (ID: 01, TU: 19-24).

Increased physical infrastructure at UNBC was also reported to be an impact of the NMP. Participants generally discussed how the addition of the medical program building to UNBC’s campus increased UNBC’s infrastructure. The addition of technological
infrastructure, such as “…the videoconferencing and the lecture theatres and the list goes on…” (ID: 02, TU: 456-458), was also discussed.

Finally, participants described the impact of the NMP on the extensive community development occurring in Prince George. As one participant states, “[the] community now is much more of a diverse community. A lot more amenities in terms of supporting people, in terms of a lifestyle. So I think the NMP has contributed to that because it was a significant expansion to the university.” (ID: 01, TU: 361-365). Specific examples of development included the addition of a theatre and a symphony orchestra.

**Human Capital**

An increase in human capital, in its most literal sense, refers to an increase in the number of individuals able to perform a certain type of work. Human capital is also “created by changes in persons that bring about skills and capabilities that make them able to act in new ways.”55 Perceived impacts on human capital were identified in terms of both the number of individuals and individuals’ expertise. Participants described both a general increase in overall human capital, and increased recruitment and retention of groups of individuals. An increase in expertise brought to Prince George was also described. A perceived human capital increase in professionals currently working in the community was also noted.

**Overall increase in human capital**

General statements were made regarding the impact of the NMP on overall human capital gains in the community. To illustrate this perception, one participant compares the impact of UNBC and NMP on increasing human resources in the area: “Whereas UNBC is seen as a preventer of brain drain, the NMP is seen as a brain gain. We’re now bringing up people. We’re bringing people here that will be exposed to the North, who will then want to stay cause [the North] won’t be a scary thing.
Expertise brought to Prince George

Three types of new expertise brought to the community were described by participants. These included leadership skills, expertise in primary care and interest and expertise in research. One perceived benefit of the NMP in Prince George is the leadership that the program has brought to the community by way of university faculty, NMP administrators and NMP students. One participant describes the impact of this leadership on expanding dialogue around social issues: “One thing about having the university here was the talking about issues in a more learned way. That we have been able to expand our knowledge socially. And issues that have been put on the table would have never probably gotten on the table before with the advent of the university, and certainly the medical students only enhance that.” (ID: 02, TU: 335-339). He goes on to explain: “…[the faculty are] part of the community, they have something to say, they participate in community, they raise issues and they talk about things in a different way than a small community without that kind of institution would look at things. So it's everything from anti-racism to multiculturalism to homophobia to, and the list goes on.” (ID: 02, TU: 347-351).

Participants also described the leadership abilities of administrators of the NMP. As one community leader states, “[The NMP has] brought some really interesting people to town! [Name of administrator] is wonderful. He's good for the interaction between Northern Health and the Northern Medical Program, good in a number of ways that we probably don't even quantify.” (ID: 01, TU: 400, 403). These sentiments were echoed by another participant: “I would offer the observation that [Name of administrator]'s personal style, his culturally affinity with primary care medicine, his understanding of the behaviours and needs of physicians in small communities and his skill at diplomacy in that setting, was probably the single most important thing in the success of the program to-date.” (ID: 10, TU: 330-334).

The considerable leadership that NMP students have brought to Prince George was also reported. One participant described the initiative some students showed during a clinical rotation in a community clinic: “One of the groups that I've provided mentorship to was a
group that wanted to look at the development of say, an evening clinic, or something of that nature, here in Prince George. It's an experience that has happened in Vancouver…Certainly, the discussion we had with the medical students about the late night clinic was useful dialogue because what it did, is it forced us to think about whether our hours are the best. I mean our hours are 8:30-4:30 and that works because we have to work with the rest of the medical community too (laughter). Sometimes it doesn't always meet the needs of everyone's chaotic lives, but I think it's reinforced that we need to continue to talk about, you know, if we had more resources, having weekend and evening service.” (ID: 02, TU: 58-62, 373-380). Several participants also described how a group of students initiated dialogue on air quality issues in Prince George. As one participant explains, “…the community listens a lot to what these young doctors [(NMP students)] are saying, you know. There was an air quality issue, where a group of them wrote to the editor and the editor published the letter and everybody just sorta stood back and, like "wow", these guys know what they're talking about, they nailed it right on the head, they're concerned about air quality up here. And we want them to stay in the North, so if we don't clean up our air, they might think twice about where they want to spend the rest of their life. So they have a major effect that way and people listen to them. And I think that that is a positive thing in the community. And positive in that the students felt comfortable in doing something like that. That is a stand they decided to take a leadership role as far as air quality is concerned.” (ID: 03, TU: 108-120). Another participant recalls a UNBC student-led initiative for the homeless in Prince George: “It was called CHINUCS [(Community Health Initiative by Northern University and College Students)] and was a cooperation between the medical program, the social work program and the nurses program at UNBC. And what they would do is once a year they would put on a night for downtown homeless people. They did one for the women and one for the men…so that’s giving back to the community. They had food, lots of food and it was just really appreciated by the people.” (ID: TU: 190-197).

In addition to leadership, participants commented on other areas of expertise that newly recruited individuals have brought to the community, including expertise in primary care and research expertise. In terms of primary care, one leader explains the benefit of
having this additional knowledge and background in the community: “The Northern Medical Program has allowed those research conversations to occur. And certainly [Name of NMP administrator]’s background, as a family physician and the work that he did in [name of Country] and so, brought a strong interest in primary care, and we have a strong primary care agenda within Northern Health and what we call the Care North Strategy.” (ID: 06, TU: 56-60). Participants also reported increased research expertise in the community. One interviewee described how new community-based research projects are connecting the NMP with communities: “…one of the medical faculty members, a First Nations woman, is already having a huge impact in terms of what she means to people here. Very connected with northern communities. [Name], researches cancer here…and [Name] and his work with First Nations and environmental health involving people from both the sciences and health sciences in that. These are very significant developments and they're all community-based projects. They all have extensions into small communities, places like Hazelton, or some of the First Nations reserves. So it's having a profound impact.” (ID: 04, TU: 239-250).

**Recruitment of professionals**

The perception of the NMP’s current and anticipated future impact on recruitment of physicians, students and professionals in other sectors was reported by every participant.

Interviewees perceived that students were attracted to the NMP because of the “…promise of the institution and what it’s going to give them.” (ID: 15, TU: 369). Participants also perceived that the NMP will continue to be able to successfully recruit students to the program: “I think we know, inherently, that we won’t have that problem [of recruiting medical students]…we are going to continue to attract the students, graduates who will stay here.” (ID: 23, 203-204). Anticipated future recruitment of NMP students into medical practice in the region was also articulated. Participants in Prince George anticipate that most students, whether they choose family practice or specialty practice, will be recruited to the community after having completed their residency programs. However, outlying northern communities are reportedly less certain about whether NMP-trained physicians will choose to work in their communities. One
Participants articulated several reasons why they anticipate NMP-trained physicians to be recruited in the North. Students’ early exposure to the ‘northern way of life’ was one reason cited, “[The NMP] will get more doctors in the North and because people are trained [here]…so trained with a northern attitude, so I think that’s a huge part of it.” (ID: 18, TU: 262-265). Participants also suggested that the enhanced community appeal, due at least in part to the NMP and to economic development in Prince George, would also increase student recruitment. Furthermore, as many NMP students are originally from the North, participants expect that students will be more likely to choose to work in the North: “…they want to be in the North. Some of them are from the North and they want to stay here. One woman is from [name of community], way up North, a lot colder (laughter), and she intends on going back to [name of community].” (ID: 09, TU: 238-241).

Current and anticipated future recruitment of physicians, more generally, to the region was also perceived to be an impact of the NMP. Participants commented on the increased number of family practice physicians and specialist physicians who have come to Prince George to practice medicine, to teach and to conduct research. One participant describes how the opportunity to teach has assisted with physician recruitment: “Northern Health is starting to have greater success recruiting. I believe part of that is being able to say that we have a medical teaching program. People are aware of it. It puts you on the map to have a teaching hospital. So there's another impact.” (ID: 01, TU: 368-371). Other than the opportunity to teach, participants identified several additional reasons for the reported enhanced recruitment of physicians, including the enhanced appeal of Prince George and the opportunity to participate in a “leading edge program” (ID: 09, TU: 69). In terms of the impact on recruitment of local physicians to the teaching program, interviewees have stated that participation in the NMP provides an opportunity for local
physicians to leave a legacy and to give back to the community. One participant states, “You know, [some local physicians] are winding down their careers, they want to leave a legacy and want to do as much as they can to make the Northern Medical Program successful.” (ID: 01, TU: 135-137).

Several participants also expect that the increased physician recruitment will decrease the North’s reliance on foreign-trained physicians. As one participant explains, “I think that less international recruitment is something that everybody... I mean we have many sites that are 100% South African. I mean there's nothing wrong with that. We have recruited some absolutely excellent South African physicians. But there's something wrong with the picture when 100% of your physicians in a community are from South Africa. I think getting away from that almost complete reliance on international recruitment is something that people in the North are very anxious to get to.” (ID: 06, TU: 295-300).

The perceived impact of the NMP on increased recruitment was not limited to the medical community. Many participants reported enhanced current and anticipated future recruitment of all professionals, regardless of sector. As described by one participant: “…companies and professionals will relocate to Prince George because we know their workers will be taken care of because there's a medical program, you know 'there's probably lots of doctors' sort of thing…that's not unsubstantiated; I think that the feeling is there.” (ID: 03, TU: 286-293). Another participant elaborates on the connection between economics and health services: “So it's all about the leadership in the North, widespread, that is recognizing that proper, complete and adequate health care is part of the economic development equation. You're not going to get young professionals coming to our regions to perhaps have and raise a family if they don't know there's going to be adequate medical facilities for them. So young engineers, lawyers, doctors, whatever, wanna have a place where they know that they can raise their family and know that if care is needed it's here.” (ID: 09, TU: 199, 207). In addition to the reported enhanced sense of security regarding the availability of medical care, participants also anticipate a benefit with respect to worker productivity: “The workers, more workers are working,
they're making money and uh when they're sick, they're healed fast and getting back to work.” (ID: 03, TU: 453-455).

Retention of medical professionals
Comments related to retention were limited to retention of physicians. Participants anticipate that both practising physicians and NMP-trained physicians will be retained in Prince George and its outlying communities. Various mechanisms are hypothesized to assist with retention. In terms of retention of future NMP graduates, participants perceive that being trained in the North is one of the best ways to ensure that doctors stay in the North. As stated by one participant, “I think the smaller communities are thankful that the Northern Medical Program is trying to make a difference and that this sort of ‘trained in the North, stay in the North' approach, we're going to have a better opportunity of retaining people than we otherwise would.” (ID: 08, TU: 147-151). Similar to the reasons perceived to increase recruitment of NMP-trained physicians, participants also perceive that students are more likely to stay in northern communities if they are from the North and if they are suited to northern practice. Participants reported that increased retention of NMP students is associated with the degree to which students form networks and connections in the community. As stated by one interviewee: “You know, of every determinant of where you are going to live and do your thing, the best determinant is where you have gone to school and where you have met your significant other, which is what’s happening here. As these students go to school, they live here, they get to like to the community, they probably meet someone and that means they’re going to stay.” (ID: 23, TU: 13-136). One leader also believes that the community has a big role to play in ensuring students stay: “I mean obviously we realize that every physician is not going to stay, but the communities are hoping that if they do a good job with how they treat these students, some of them are going to stick around.” (ID: 08, TU: 158-161).

Several reasons were also reported to be assisting with the current and anticipated future retention of currently practising physicians. One participant perceives that professional stimulation and an ever-changing work environment characterized by continual learning will assist with physician retention: “…[the impacts] tie into, I mentioned, creating an
organization that's always learning, just to stay ahead of your students. That's my experience being a preceptor. I do in the long run expect it to assist with recruitment. As I said, I believe it assists with retention.” (ID: 01, TU: 376, 380). He continues, “I actually think training environment also serves to retain staff. It is interesting. People in health care go through training programs where they train in hospitals…and by and large I think they want to give back. So that retention, that ability to teach, to pass on keeps you fresh, keeps you current, and I believe it helps retain staff.” (ID: 01, TU: 334-339).

Participants have also described how the program is perceived to have impacted retention by improving the quality of life of local physicians. One participant explains, “On the retention one, what we were experiencing prior to this, docs that were here, they came here, they were overworked, there wasn't enough numbers. Like at one point, we had one vascular surgeon, now I think we have three. [One local physician] didn't quit, he stayed cause he wasn't working 13 hour days, 7 days a week. So what it is, is that a lot of the docs who were leaving now have a better quality of life. They have assistance, they don't have to work all the time. They have the opportunity to teach, they have the opportunity to be part of something exciting. So that's the retention side of it.” (ID: 09, TU 93-105).

As another participant states, “…there are now sufficient physicians being able to share the workload and have collegial relationships and contribute to the capacity of individuals to continue to work and practice in those communities and not experience the burnout and depression that was so common to the physician workforce at that time.” (ID: 11, TU: 114-118).

**Social Cohesion & Social Capital**

The second objective of the present study was to determine if and how social capital in Prince George had been impacted by the NMP. Participants’ comments were categorized into social cohesion, forms of social capital, access to social capital, and outcomes of social capital. The present section focuses on forms of social capital that emerged from the transcripts and the ability of network members to access social capital. A brief discussion of social cohesion and potential outcomes of social capital is also presented.
As previously defined, social capital refers to the financial, social and other resources that belong to a network of individuals, and the ability of network members to access resources to achieve a particular objective\textsuperscript{53}. Social cohesion on the other hand refers to the networks and connections that individuals form, as well as the values and sense of connectedness that characterizes the group\textsuperscript{58}. Participants’ discussion of the impact of the NMP on social cohesion and social capital was rich and broad. As mentioned above, themes related to social cohesion and social capital spanned across all five sectors. However, the reported impacts on social capital are not limited to community sectors, as many appear to reflect broader impacts of the community as a whole.

**Social Cohesion**

Perceptions related to social cohesion were sorted into 3 categories: 1) network and partnership formation, 2) connectedness, and 3) values. Social cohesion, as described by participants, was found to be both an antecedent of social capital (i.e. necessary for the creation of social capital) as well as an outcome of social capital.

**Network and partnership formation**

Comments related to network and partnership formation in both the planning and implementation phases of the NMP was a pervasive. Two main categories of networks emerged from the data: 1) organizational networks, and 2) community networks.

Participants described several networks and partnerships formed between various organizations that were created as a result of the NMP. The first partnership formed was between UNBC, UBC and the government to bring medical education to Prince George. As described by one participant, “[UNBC]…eventually negotiated a memorandum with UBC and then under the leadership of [name of senior administrator at UBC] and others, that eventually gave rise to the Northern Medical Program, which began four years later, which is really record time.” (ID: 04, TU: 10-13). Another participant described the government’s involvement: “I was well aware of the promises the university was extracting from the government of the day, the New Democrats, and how they were proceeding with this. So I was well aware of the political pressure…I knew at the
administrative and organizational level that UNBC was proceeding to work with UBC and the provincial government in terms of establishing this.” (ID: 23, TU: 27-37). He continues, “And of course, by 2003, in 2001, the Liberal government was elected and they followed through.” (ID: 23, TU: 71-72).

A partnership formed between the Northern Health Authority and the NMP at UNBC was also described. One community leader describes this partnership in the early program planning phases: “prior to the program beginning and I had worked with...[Name of UNBC administrator] and [Name] at UBC to try and bring the two together to try and create the Northern Medical Program. So I was involved in the 'vision days'. Well, it was actually our health region that promoted this idea between the two universities.” (ID: 11, TU: 6-11). Participants also discussed the partnership formed between the Northern Medical Society, UNBC and the NHA. As one participant describes, “[Name] picked up the ball immediately, he was then [position] at UNBC. And he did an amazing service to this community with all of his efforts to set this program up, I mean that was an astonishing effort. We [the medical community] certainly collaborated with him and were involved at all stages and he was careful to involve us.” (ID: 07, TU: 90-95).

The second category of networks consisted of various levels of ‘community’. All citizens in northern BC comprised one large network. Within the North, many other smaller networks were formed during the program planning phases. These included all citizens in Prince George; all community leaders in Prince George; NMP students and the medical community; and NMP students and community leaders in Prince George.

In terms of program delivery, partnerships were reportedly formed between community members and the NMP in the UBC medical school’s admission process. One participant describes how participation in this process encourages cohesion in the community with NMP: “The other thing that sustains the interest and the awareness in the program is physicians and community members participate in the UBC intake process. So there's actually a number of local politicians and community members that every year participate in the process.” (ID: 01, TU: 273-276).
Partnerships related to the education of NMP students were also reported. Many participants spoke about the affiliation between their community organization and the NMP in terms of providing clinical experience and seminars and lectures for the students. As described by one participant, “We have here at the [Name of organization], first year medical students coming for two-week rotations and then we have the residents coming through on a two-week rotation…And I have done, been involved in and done several lectures up at the university. And I actually have one coming up on September 17th to talk about what the non-profit sector and community-based groups can do to provide service in the community.” (ID: 02, TU: 4-14). The majority of community organization leaders described partnering with the NMP in terms of student education. However, one leader reported having no relationship with the NMP; something that she would like to see changed: “I’ve been sort of surprised that we haven’t been involved…At one point we wrote a letter to the Northern Health Authority commenting on what we thought was a lack of training for medical personnel, so nurses and doctors, in geriatrics. So I think that when they established the Northern Medical Program, I was hoping that there would be some connection and some recognition of our concerns, but there hasn’t been.” (ID: 17, TU: 31-40). She continues, “I think the program needs to be brought closer to the senior community, and it could be done in the ways we’ve described: having some clinical, I think the ideal one, would be to set up appointments at the activity centres and people could make appointments, longer appointments, and do a full assessment on seniors about their home life, their social life, their diet, their general health.” (ID: 17, TU: 291-296).

One common theme reported by all leaders of community organizations was the desire to expand their involvement with the NMP. One interviewee states, “I would like to see more involvement. I would like to see more medical [students] coming here cause we have a lot of members who have health concerns and I’d like to see more [students] come here, gain knowledge and experience and at the same time be able to give back to the community.” (ID: 21, TU: 135-141).
Another reported connection between the medical program and community organizations was community leaders’ involvement as preceptors and clinical teachers: “The other thing is we’ve actually had staff who have been clinical assistants as part of the program as well. So they’ve gone in as experiential patients.” (ID: 24, TU: 88-90).

The mentorship of NMP students by the medical community and other community leaders was described by several participants. Traditional mentoring in the educational or clinical sense was described, as was more informal mentoring by community leaders. As explained by one participant, “So what I find is, up at the university, the profs up there really reach out to students. If they’re new to the community, they’re in the program…” (ID: 24, TU: 93-100). As previously mentioned, many participants hope that the personal and professional networks that students form while pursuing their education will assist in retaining them in the North.

Despite the reported large number of new networks formed between the NMP and the community, many leaders commented on the need for increased and ongoing collaboration. As explained by one participant, “[We need] more collaboration between parties. Get the Chamber of Commerce, get the different health organizations, you know, CNIB, cancer, whoever it may be, the social services, health services all together, I think once a year is appropriate, to have these discussions so everyone is on the same page, they know what’s happening and they have input. Feedback I think is minimal and the input we have is minimal.” (ID 19: TU: 97-102). Another participant expressed his hope for continuing community involvement: “I guess my hope for the program is that it continues what it’s doing, continue evolving and to be involved in this community and the whole community of the North. Because as northern residents we look at things differently and we see things differently. And I would like the medical program just to be involved in that and keep doing that, and not become, and I haven’t seen this, an elitist sort of program, and be seen as an untouchable program, for only a small percentage of people.” (ID: 21, TU: 242-249).
The final theme related to partnership and network formation concerned the existence of overlapping or “multiplex” relationships. Many participants described having overlapping networks, which was attributed to Prince George being a small, tight-knit community. For example, several community leaders in the political or business sector reporting having both social and professional connections with Prince George’s medical community. As previously mentioned, many participants also reported being more formally involved with numerous sectors in the community, either professionally or voluntarily.

**Connectedness**

Also falling under the umbrella of ‘social cohesion’ was the theme of “connectedness” within community networks. Participants described a sense of connectedness in various ‘levels’ of networks.

The first network was comprised of the British Columbia government and northern BC communities. One participant described how the NMP has assisted in connecting the government with the North: “It’s symbolic far more than that. It’s the region being treated by government like you matter. That matters a lot. That’s what gets people re-elected. Not saying we’ve spent such and such money, it’s ‘we’ve demonstrated that we care about you’. And that’s what the NMP is huge for.” (ID: 15: TU: 293-296). The Northern Medical Program is perceived by this participant to be a symbol of the government fulfilling a “social contract” with the North. The participant clearly explains his perception: “The way I define social contract is that all citizens have equal opportunity. So you trade some of your personal powers and freedoms to society in exchange of having the benefit for everyone. I really see the NMP as part of giving this region some of what the greater Vancouver region has. We provide so much wealth out of this region to the province and we ask for some in return. And this is a huge part of what we get in return.” (ID: 15, TU: 285-292). He continues, “And so people in northern regions always feel, in northern Canada at least, you know we produce a lot of wealth here, whether it’s oil and gas, hydroelectric power, forests, minerals, you name it. We produce a lot of wealth for the province, everywhere North of Cache Creek and yet we don’t have
any political say. And so government needs to be benevolent in some way. And you know, you guys are important to us, so we’re going to do certain things to make sure you feel part of the state and that you, in some way, feel that you are able to participate and be equal. But through their actions, through policy and investment. Not just saying it. And that’s, the NMP is a huge part of that.” (ID: 15, TU: 337-347). Other participants similarly perceived that the NMP was a type of “pay back” from the government: “…some of the other health authorities for instance are saying, ‘how come everything nowadays goes North?’ And we're now thinking, oh, we hadn't been aware of that. We thought we were playing catch up here, which we are, but nonetheless, there is some feeling in the province amongst the other health authorities and our answer to that is, show us the last piece of original work or the last original idea you came up with. You don't do much, you don't sing for your supper. I think if we produce the results we should get the support.” (ID: 07, TU: 336-344).

The impact of the program on the connectedness between the local medical community and the Northern Health Authority was also described: “I think there's a cohesive element to the Northern Medical Program. I think the whole medical community has gotten behind teaching. I don't think it could've been successful if the whole medical community hadn't gotten behind teaching. If you look at Victoria, it wasn't…a priority for the medical staff there…[the NMP] is something that helped bring Northern Health and physicians together. Both had a common interest in making this program as successful as possible. If you have common interests it's much easier to build that common ground and that working together becomes a way of being as opposed to just something that you're forced to do.” (ID: 01, TU: 118-135).

Connectedness was also described in a broad network consisting of the general public in Prince George and the North with the Northern Medical Program. Connectedness within this network was characterized by high levels of interest, awareness and excitement about the program on the part of the citizens throughout the North. As stated by one participant, “The engagement of ordinary citizens in this program was nothing short of
astonishing. I think part of that was people believed [in the NMP].” (ID: 10, TU: 126-132).

In a smaller network comprised of Prince George community leaders and the NMP, connectedness was fostered by ongoing, annual social events in the community, such as the Dr. Bob Ewart Memorial Lecture, to sustain interest in the program. One participant explains, “…we had a major fundraising dinner in December, the Dr. Bob Ewart Memorial fundraising dinner and that was basically the medical profession, about 550 people, came to a night out…It was a pretty exciting night, it just sorta got the ball rolling.” (ID: 03, TU: 29-35).

Values
Many participants described the values that characterize many of the networks reportedly created as a result of the program. Educating “northern students for the North” was a value held by all community-level networks. This perception is clearly stated by one participant: “…the other thing for the community is educating northern people for the North. That’s a value held very deeply.” (ID: 06, TU: 206-208).

Trust was another value described by participants, although it was only described in the context of the partnership between the local medical community and the NMP: “If it wasn’t for [Name of NMP administrator], [the NMP] would have been a shambles in three months. The northern docs decided that they could trust [Name]. They didn’t trust UBC or the Faculty of Medicine, they trusted [Name].” (ID: 10, TU: 337-340).

Community leaders also described the “norms” associated with various networks. Commitment and dedication to the NMP was associated with all networks. One participant describes the dedication of the health administration to the program: “We’ve always said that we will do whatever we need to do to make the Northern Medical Program successful, so whatever type of organizational support they need, we’ll do, because we see this program as critical to the success of [the] Northern Health [Authority].” (ID: 01, TU: 67-73).
A second norm articulated by interviewees concerned obligations and expectations of reciprocity held by the broader community. One participant generally described the expectations on the medical community in the context of expanding clinic hours: “…it’s just that right now with the expectations of physicians currently engaged in the program, it was just too much to ask for more.” (ID: 02, TU: 72-73). Expectations of NMP students were also described: “…the perception of the general public was that, not only were these fine young people coming to Prince George for three and a half years of medical education, you know, we actually had draft rights on them. If you pull down their lower lip, it’ll say ‘property of a northern BC community’, and these particular, whatever it was, 22 kids, [the community] had every reason to believe that barring accidents, that all 22 of them will be happily settled into a family practice in the North in about 5 years time.” (ID: 10, T: 175-183).

Social Capital

Forms of Social Capital
Six forms of social capital were identified. These include social leverage, social support, community organization participation, knowledge and information channels, sense of community and community empowerment. A detailed explanation of these forms is included in the discussion section.

Social leverage
Social leverage in the community was illustrated in several different ways. Participants commented on the formidable efforts made by local community leaders to solicit support for the NMP in the initial phases: “I mean in the early days, I did this two or three times. I went across the North talking to community and community leaders about the program about the potential impacts, soliciting their support. And first of all I needed the political alliance to move this forward and secondly I wanted to build their interest into the program I didn't want to create a medical school that was disconnected from the communities it serves.” (ID: 04, TU: 210-216). Many participants also commented on the extensive leveraging used to raise funds for the NMP Trust. The Trust was a fund
created by northern communities to decrease the financial burden of NMP students who would be carrying out their clerkship training in remote locations throughout the North. Lobbying efforts were described by one participant: “And you know, we went out community-by-community asking, to raise funds and you know, we're up to the $4 million dollar mark.” Another interviewee described his experience lobbying City Council: “The last $300,000 of our money came from the city [of Prince George]. [Name] and I went to City Council...We told them that we were at 1.7 [million] and asked them to top up. We gave a presentation, told them why we thought it was in their best interests to do that, and they agreed. It was kind of neat. Because we lobbied each Councillor before we went and a kinda slammed dunk 'er at Council Meeting.” (ID: 03, TU: 412-420).

Other community leaders described their efforts in helping families of students integrate into the community: “So when [Name] and I were involved, we looked not only at helping the students, but also making sure the partners and spouses get indoctrinated into the community here through support systems or work. And we were trying to get people to help them get jobs, orient them, family members getting kids in school, things like that.” (ID: 03, [TU: 37-42]. Participants also commented on the efforts made to increase the number of residency spots in the North to accommodate NMP students: “…we asked for the eight additional residency spots I think it was at the last Bob Ewart Memorial, that's our annual big show downtown...But at that, one of the guests is Deputy Premier of the province, she's a local MLA...And I asked at that for more residency places in the northeast and the northwest and we got them. They were approved.” (ID: 07, TU: 182-187).

Social support
Another form of social capital emerging from the transcripts was ‘social support’. Several community leaders described the social support given to NMP students and their families when they arrived in Prince George. As one participant explains, “…if you had asked people on the sidewalk 'what is the most important thing that's happened in the North this year', a very large part of them would have said the medical school. It was a
very heart-warming thing to see. People wanted to make sure that these kids, that somebody got them out to the right restaurant in town, that if they came to Prince George, they had a best friend right way, that, if any one of them wanted to go moose hunting there would have been a line up of trucks to take them moose hunting. It was just anything that could be done, people were willing to do.” (ID: 10, TU: 133-143). Social support for Prince George’s medical community was also reported. One participant described how an increase in the number of physicians in the community has provided local doctors with more support, “I think physicians derive significant professional strength by having other individuals to share their practice, to help deal with the pressures of being on call, and to maintain the professional stimulation, in terms of bringing back or being exposed to new ideas in the field…it has an intrinsic value, having more colleagues in practice with them.” (ID: 11, TU: 121-127).

Community organization participation

As opposed to ‘partnership formation’ described in the section on social cohesion, community organization participation in this study refers to grassroots committees initiated in the community, by community members to help address some of the anticipated challenges of implementing the NMP in Prince George, as identified by members of organizational networks formed to create the NMP. Community organization participation in this context illustrates the willingness of members of the Prince George community to invest in and engage with the NMP to make it successful.

Several examples of community organization participation were discussed by participants. Community leaders commented on the formation of and participation in the community-based NMP Community Action Group, which was an assembly of community leaders that brainstormed ways to ensure the NMP was successfully implemented and sustainable in Prince George. The committee is described by one participant: “Well, the committee, which consisted of the city manager, the mayor, sort of the leaders of the community, tried to address what it would take to persuade the other universities and the province to establish a program like this. A lot of it centred around fiscal issues. One of the things that we determined fairly early on was that it was going to
be necessary to set up a Northern Medical Trust fund and that it would have to cover the whole region, not just the Prince George region…We talked about recruitment issues, we talked about capital plans, how much capital it was really going to take and a variety of things over an extended period of time.” (ID: 13, TU: 41-55).

Community members also created the NMP fundraising committee for the NMP Trust. As explained by one participant: “…we co-chaired a committee for the program to raise 2 million dollars for Prince George. That was part of a 6 million dollar goal for all northern communities, and there are 21 different communities in the catchment, in the area, from Williams Lake north to Fort St. John and then Belmont to Prince Rupert. So there's about 350,000 people in that area and so our goal was to raise our 2 million and try to support the other communities…Prince George being the largest community, and having the lion's share. So, we did that and we actually accomplished that in 3 years and raised the 2 million dollars.” (ID: 03, TU: 6-16).

Many leaders throughout the North were also involved in a committee responsible for managing and administering the NMP Trust: “So that 6 million dollars is in a Trust fund. It's administered by the majority of people on the Board, who are in the communities. They control the money. If they didn't think the program was serving their interests, that money might be diverted elsewhere (laughter) or just chill out for a while. So it gives them a connection to, not just to the program, more importantly to the students in the program and that will have huge benefits, especially for students in their senior year, and that's going to happen to students this year for the first time, [they will] get their clinical electives paid for out of this Trust fund.” (ID: 04, TU: 216-224).

Knowledge and information channels
‘Knowledge and information channels’ is another form of social capital that participants spoke widely about. Participants commented that for some community members, knowledge related to the medical education process had increased since the NMP was implemented. For example, one participant explained that he has learned a lot about predictors of physician retention as a result of his involvement with the program.
Although knowledge has increased among community leaders, participants perceived that the general public lack understanding regarding the process. As one participant explains, “We found out after the fact that the statistics really say that about 70% of students in residency end up being, uh, living and practising in the area that, where they took their residency. So guess what? We got a problem here (laughter) because these kids are going somewhere else for their residency in a lot of the cases, and not necessarily in northern British Columbia. So that kinda set us back a little bit, you know, scratching our heads, and wondering what the heck's going on?” (ID: 03, TU: 77-83). Another participant describes lack of knowledge regarding the distributed nature of the NMP: “I think for people on the sidewalk it meant, we're training our own doctors now and within the North you had to read to the fine print with a magnifying glass to find out that there was any involvement by UBC in this.” (ID: 10, TU: 273-279).

Participants also discussed the NMP’s role in increasing knowledge regarding social issues in the North. One interviewee comments on a generally heightened understanding of the community regarding issues that Aboriginal individuals face: “…the feedback we're getting from this community, from the Aboriginal community, is that there is a growing understanding about what Aboriginal people's experience is in northern British Columbia.” (ID: 02, TU: 226-230). He goes on to elaborate on the role of the university and the NMP in increasing social knowledge: “I think the Northern Medical Program adds… So you know, now we have people who are well-educated, they're part of the community, they have something to say, they participate in community, they raise issues and they talk about things in a different way…So from my perspective, when I look at the whole UNBC experience, that's what's really been helpful. And because when we're talking about things like the sexual exploitation of children and those kinds of things that dialogue just gets elevated. And we're talking about things in a more intelligent and meaningful way.” (ID: 02, TU: 354-363).

General knowledge exchange within networks involved in the NMP was described. Participants described knowledge exchange between community organizations and the NMP, which reportedly resulted in improved clinical practice at several community
organizations, and increased knowledge and understanding of community issues by NMP students. Another participant perceived that the NMP has opened communication lines between northern and southern BC. She explains, “…my bet is that there is more technology here because UBC and UVic are saying ‘you don’t have a blee blee bleep? Oh for heaven’s sake, have one.’ So we’re probably benefiting that way too because [as a result of the NMP] people in the South now know more about what is and what isn’t available. As soon as you open communications, which obviously [the NMP] has done, you’re going to get a little more equity.” (ID: 21, TU: 270-276). She goes on to describe other anticipated impacts of this open communication: “When they were training doctors only in the larger centres, like Vancouver…I don’t think they ever really gave it a thought, as to what situations were actually being dealt with by physicians in the outlying areas…But when they are actually involved here, and I’m talking about the administration of the program, they’re gonna see and they’re gonna start rectifying some of the inequities. Even in Vancouver, not only will we bring some Vancouver culture here, but in fact, some of the cultural benefits of the North will also be transposed to the South.” (ID: 21, TU: 280-296).

Sense of community & collective efficacy
Enhanced sense of community and collective efficacy was another theme that emerged from participant transcripts. Participants reported that the NMP has impacted their collective self-identity and self-esteem. Feelings of pride in the community were reportedly associated with perceptions of enhanced community appeal and credibility. One participant explains the perceived impact on collective self-identity: “I think one of the biggest things is…I think it's about how a community views itself. I think when you're a community that's training physicians that changes even your own sense of who you are. And I think that's exciting because people are proud of the fact that the university now has a medical school and that we're part of that.” (ID: 03, TU: 117-125). Comments regarding enhanced community self-esteem were also made: “[The NMP has] certainly made us feel better about ourselves. There can’t be too much wrong with us if we can have a medical school, if we can have a more mature type of university, more than just an undergraduate university.” (ID: 13, TU: 216-219). Related perceptions of
enhanced community credibility and appeal are described by another participant: “…well [the NMP] means a lot just in terms of the credibility of the North and these communities. The fact that we can have a program of this sophistication operate here successfully does legitimize other potential opportunities.” (ID: 08, TU: 167-170). The high level of community pride in the NMP was reported by nearly every participant.

Community empowerment
The last form of social capital that emerged from participants’ comments was community empowerment. Participants described the collective sense of accomplishment that radiated through the community when the NMP was implemented. This sense of accomplishment was accompanied by increased hope, optimism and forward thinking in the North, which allowed communities to begin “taking responsibility” for their health care. One participant describes the collective sense of accomplishment felt by the community, traced back from the “health crisis rally” through to the implementation of the NMP: “So you know, the thousands of people that went to rally, they feel they had an impact, finally! (laughter). They feel good about that, it is brought up! You know people say 'we made it happen'. Just like we made the university happen, we made the medical school happen. So you know, as individuals, you can do something if you work collectively.” (ID: 02, TU: 128-135).

Another interviewee describes the perceived impact of the program on the community’s optimism and sense of empowerment: “…the Northern Medical Program…has, I think enabled the community to take more of a futuristic focus rather than a 'cup half empty', it's all bad and we don't have enough practitioners in the North. It's allowed a more optimistic, 'we can do something about this' perspective in the community.” (ID: 06, TU: 107-111). The NMP Trust was one way communities rallied together to address their physician shortage issues: “…[the NMP is] about giving empowerment to people, and I think that’s huge here. That’s why all those communities have bought into the [NMP] Trust. It’s not because they have a couple hundred thousand dollars to burn and they’re more than happy to give UNBC some cash, it’s because they see it as a huge investment in the sustainability of their communities. That’s why they’re doing it. And that’s why
it’s bigger than, ‘what’s this year’s [NMP] intake [of northern students]? How many are from the North?’ It’s bigger than all that. It’s ‘how is this entity enabling these communities to realize their visions to be sustainable.’” (ID: 15, TU: 353-361).

**Access to Social Capital**
Participants described their ability to access knowledge, financial resources and other “products” of the NMP. Participants’ perceptions of existing ‘closed or restricted networks’ are also presented below.

**Access to knowledge**
Participants commented that although members of elite networks within the community have gained knowledge regarding the NMP, information channels to relay knowledge to the public have not been as open as they could be. One participant perceived there is insufficient communication between the NMP and the northern communities that support it: “We’ve done a terrible job, we haven’t done a good enough job of really communicating to communities how they’re getting value for their money.” (ID: 15, TU: 143-147). He continues, “…then there’s other parts that relate to research that have a way bigger opportunity than people realize in terms of health research, of what a medical school enables in terms of your ability to conduct research. Are we involving the region in that? I know that [Name] in cancer research and one of the students from [Name of a community] are doing research in [Name of community], but are we involving the communities? I don’t think we’re doing a very good job of that.” (ID: 15, TU: 152-159).

This participant perceives that increased communication or knowledge translation to the public could be associated with various benefits: “There is an unbelievable capacity for fundraising out of the [Northern Medical] program. We need to invest in someone who is going to tell the story of the NMP, and that’s their job. Whether that’s the donors, the media, the communities. No one has invested in that and I think that’s a big mistake in the long term, in terms of that social contract, in terms of the symbolism, in terms of the connection between the program and the university and the communities, because the NMPT, the Trust, was really the first example of communities buying into a university program. The potential down the road for UNBC and other universities is huge, being
able to evolve that into other programs potentially. But if those communities don’t see a payback, don’t come to them again. There’s a lot at stake...more than just the NMP on this stuff.” (ID: 15, TU: 470-490).

It was perceived that a greater amount of communication is also needed to curb unrealistic expectations and disappointment regarding potential human capital gains from the program. He explains, “It's going to be partially an education thing, where we will have to explain to people that a lot of [NMP students] when they graduate will go elsewhere, maybe they want to be a surgeon, so they have to go to UBC or U of T for that part. Or maybe, they’ve finished their MD, now they’re gonna specialize, so they’re leaving the region. But, we’re going to have to have something in place, of really tracking those people over the next 40 years. When (name of student) goes to Toronto to be a surgeon and in 20 years comes back because he had a good experience at the NMP and he goes to Fort St. John, that’s gotta be news. There’s going to be a real expectation on May 10th, [when the first cohort of NMP students graduate] and we’re going to have to delay that as long as possible. Unless it’s a good story (laughter).” (ID: 15, TU: 554-568). Perceived insufficient communication between the NMP and the community was also expressed by other leaders: “Communication is always a difficult thing, because communication means time. And you only have a certain amount of time to fit in all your priorities. So I’m not going to blame the medical program but [the communication] could be better.” (ID: 21, TU: 143-147). One way that the NMP is perceived to be communicating with communities is through the NMP Trust: “The NMPT has only been the second [link between northern communities]. It’s very interesting how that’s happened. So, that’s one area where we’ve done a good job of reporting back to communities and keeping them engaged.” (ID: 15, TU: 214-220).

**Access to financial resources**

Participants commented on the ability of community leaders and citizens to access financial resources during the fundraising campaign for the NMP Trust. One participant
describes how he was able to tap into all available avenues for funds in Prince George. He explains, “We had exhausted all of our avenues and our committee members were all pretty well worn out, so we went to City Council, told them what we were hoping they would do and they did it, so that's how we got the last $300,000.” (ID: 03, TU: 422-425).

In addition to raising $2 million dollars in Prince George, community leaders aimed to raise an addition $4 million throughout the North. One participant explains how leaders managed to achieve their goal: “In May of 2007, and anonymous donor, well we had 4 million dollars and we were running out of leads to get the other 2 million, and an anonymous donor donated the 2 million. So we have a 6 million dollar Northern Medical Program's Trust…” (ID: 09, TU: 45-48).

Related to NMP Trust contributions, one participant described some concerns of northern outlying communities who were unable to donate to the Trust. He explains, “Some communities found it easier to participate in that Trust than others. A very plain example of that is the city of Terrace, which has been a wonderful supporter of the Trust whereas 140km down the road, Prince Rupert, I don't think has contributed one dime. And it doesn't mean that Prince Rupert doesn't want to be supportive of the program, but it does mean that they haven't had the financial wherewithal and then a little bit of what starts to creep in, and this is bad because the corridor is so thinly and sparsely populated, it sets up a two-class system of communities and people start to think, well we haven't been contributing, maybe we're not going to get help from this program anyways, maybe that program shouldn't be going on, let's just concentrate on Vancouver programs…” (ID: 08, TU: 85-96).

Closed or restricted networks
Participants also made comments about closed or restricted networks that exist in the community. As previously described, several participants felt that the general public, who are not as intimately connected with the program, may not know much about the NMP or the anticipated benefits of the program. One participant generally describes a perceived disconnect between the program and the community: ‘I’ve been up to the medical program and I’ve spoken with the medical program and stuff and it’s kind of like
going into a different place, a different reality…When you live in a northern, or any community, you’re going to segments of the population in different areas and different areas are going to be seen as more or less elite as other areas. And that is something as a whole society that we’re addressing.” (ID: 21, TU: 117-124). The general public is also perceived to lack understanding regarding the medical education process, which is reportedly expected to cause disillusionment regarding anticipated recruitment and retention rates of NMP students. One participant describes his experience, “The people ‘in the know’ understand it. I don't think the general public understand it. I mean, we didn't understand until we got involved, so...(laughter), you know to understand what the residencies were and how important, you know that's nebulous with a lot of people. You know, doctors go to school for a long time... and then you become a doctor. But they don't understand what's all involved in that, you know. So, residencies are something new, so I'd say that somewhere near 80% [of the Prince George community] do not know.” (ID: 03, TU: 167-174). Furthermore, participants commented that average citizens do not get to participate in events designed to sustain awareness of the NMP, such as the Dr. Bob Ewart Memorial Lecture. One participant describes the evening, “And we had a major fundraising in December, Dr. Bob Ewart memorial fundraising dinner and that was basically the medical profession, about 550 people, came to a night out and the students were brought up from Vancouver and sponsored by individual doctors.” (ID: 03, TU: 29-25). Another participant explains that this event is only accessible to some: “I guess, well, those kinds of [social events, such as the Dr. Ewart Dinner] continue. But not everybody in the community gets to participate in those kinds of things.” (ID: 02, TU: 325-327).

**Outcomes of Social Capital**

Identified outcomes of social capital included expanding partnerships; personal satisfaction from involvement with the NMP; valuing health care providers and community organizations; feelings of gratitude; and collegiality or improved relationships. It should be noted that all outcomes appear to have resulted from partnerships formed during the planning and implementation phases of the NMP. Expanding partnerships or “bridging” occurred on several levels. Participants reported
that formal, professional networks created as a result of the program have expanded to personal relationships (e.g. between NMP students and community leaders), greater community involvement and volunteerism by NMP students, and the creation of professional medical networks for NMP students. Expanding research partnerships and links between the health and education sectors were also reported.

Other outcomes of social capital included personal satisfaction from involvement with the NMP, the valuation of health care providers and community organizations, feelings of gratitude toward the program, and improved collegiality, particularly between the local medical community and the Northern Health Authority.

### 5.4.3 Potential Contributing Factors

Participants additionally described factors other than the NMP that could be impacting human and social capital in Prince George. These are described below.

**Human Capital**

Participants explained that the success they are currently seeing in terms of recruitment of physicians to Prince George might be due in part to the existence of the NMP, and in part to the enhanced recruitment efforts by the Northern Health Authority and various changes made to the BC Medical Association contracts.

**Social Capital**

Several factors other than the NMP are perceived to have affected the degree of social leverage in the community. The Northern Medical Society, which represents northern physicians, is very active in lobbying for health care infrastructure and health education training programs. Lobbying efforts for a cancer clinic, CT angiography, and a laboratory technician training program are a few examples.

A potential outcome of social capital emerging from the data was improved collegiality between the local medical community and the Northern Health Authority. It was
reported that the NMP brought the two groups together and generally improved their level of cooperation and working relationship. Other potential factors contributing to the improved relationship were described: “I think it’s [also] a belief of Senior Executive [of the Northern Health Authority] of the importance in having medical staff involved in [NMP] planning and operations, and I believe it’s the orientation of our medical staff as well. They…are much more likely to be involved, want to be involved in planning and administration than I’ve experienced elsewhere. So I think there’s a large number of factors [contributing to the improved relationship].” (ID: 01, TU: 278-282).

5.5 Other Findings

In addition to comments related to the impacts of the Northern Medical Program on the community, participants also commented on medical education innovation, development of the NMP, and conditions necessary to sustain the NMP. Comments related to conditions necessary to sustain the NMP were by far the most numerous.

Innovation in Medical Education

Participants described the innovative nature of UBC’s distributed model of undergraduate medical education. The delocalization of training across the province of BC was hailed as a great advancement in medical education. As one participant stated, “… this is seen to be, the expansion of the UBC medical program, the regionalization of medical education, as one of the brightest stars. In my last year in office we were going through another accreditation visit…and the accreditors said: “do you have any idea what you've created? This is one of the most exciting innovations in medical education to have happened in several decades in North America.” (ID: 04, TU: 310-317). The new technology that accompanied the regionalized programs, such as videoconferencing for lectures, was also acknowledged as a great innovation, as was the new integrated, community-based clerkship model, which allows undergraduate medical students to experience their clinical education in outlying communities.
Development of the Northern Medical Program
Participants also reported that the Northern Medical Program would be expanding in September 2008, admitting 32 students instead of 24. Several participants expressed a desire for continued growth: “Well, I think everybody wants it to continue to grow. What an optimum size is, nobody knows. But we want growth.” (ID: 13, TU: 236-237). In addition to overall program growth, clinical placements for students have also expanded since the program was implemented in 2004. NMP students can now complete their clerkship rotations in several outlying communities in Northern BC.

Conditions Necessary to Sustain the Northern Medical Program
Providing NMP students with clinical placements has been an ongoing challenge. The integrated community clerkship model described above was perceived to be crucial to ensure that all NMP students receive clinical placements: “what we’ve been trying to do is establish these community-based clerkships, in Terrace and other places like Fort St. John. And that has gone more slowly than we would've hoped…I mean that's going to be absolutely essential, to broaden the base of clerkship training…frankly we have to get there if we are really going to absorb that larger cohort of students.” (ID: 04, TU 102-115). This perspective is shared by another participant: “We've always said that this program, these students have to go elsewhere, they can't all be here. And next year when the program goes from 24 to 32 it's gonna be absolutely essential that in two years, so three years from now, these students go elsewhere because we're at our max. That's my sense from the medical community here. They're at their max in terms of their ability to teach. More clerkships are going to have to happen elsewhere.” (ID: 01, TU: 217-223).

Insufficient human and physical resources to support the Northern Medical Program has caused concern for a few participants in terms of program sustainability. One participant explains: “I worry about sustainability over the long run, particularly as we expand, as our physicians age.” (ID: 01, TU: 305-306). These sentiments were echoed by a local physician, who explains, “There is fear that we might not be able to keep up because we had hoped there would be an understanding that as we increased the number of students, government would increase the infrastructure available to us, like beds and operating
rooms and personnel and enable us to recruit more people, and that's been a little slow coming.” (ID: 07, TU: 168-175).

Despite the reported expansion of family practice residencies across the North, many participants were concerned that there were still not enough residency spots. As stated by one participant: “There is a bit of concern and I’ve had my physician and other physicians express that there’s not enough residency seats in the community and that is undoubtedly going to hit the fan in terms of newspaper coverage when we find we lose, I don’t know, we’re graduating 25, 26 this May, if a third or a half of those people have to go elsewhere for residency, that means that we’ve kinda lost our ability to keep them in the community, which is important.” (ID: 23, TU: 124-130).

One participant perceives that, if the Northern Medical Program is to succeed in recruiting more northern students, it is essential that there be enhanced community education, particularly with students in high school, regarding what is required to be accepted into the program. He explains: “I know that they do this with Aboriginal students, but we really need to think about it in terms of non-metropolitan students generally, and educating them in places like Fort St. John, and Terrace and Quesnel about, you know in grade 10, if you want to be a doctor, this is what you’ve gotta think about. There’s still a lot of work to be done on educating northern kids on how to get into medicine.” (ID: 15, TU: 524, 533).

Continued political support for local physicians was perceived to be essential for sustaining the program. As one participant describes, “[teaching] is a time-consuming thing, so therefore [a physician] is not giving his time to his patients and probably losing some income. And so if medical coverage in this area is so important, I think the government has to come to us and say 'ok, if you are going to supervise x number of residents, then there will be x amount of money for you to make up for what you've lost in your practice.'” (ID: 03, TU: 202-207). Another participant expressed concern regarding the potential for political support for the program to waiver unless the NMP
actively pursues support: “I really fear that with every municipal election that happens there’s fewer and fewer councillors in the positions when they originally committed to supporting the NMP. We’re going to gradually lose this connection with communities unless we’re very active in pursuing them. I worry about that.” (ID: 15, TU: 173-177).

The need for increased media coverage and communication around the NMP was expressed. One participant in particular perceived that communicating the program’s successes was essential to maintaining community commitment to the NMP. He explains: “I think we’re all a bit to blame, but we’ve not really invested in the capacity, in the communication capacity of the NMP, whether that’s UNBC, UBC, the Faculty, the NMP itself. No one has really said ‘we have a great story to tell, it’s more than just the first year, it’s more than just fundraising, research, it’s about students’ success, it’s about students getting placed in communities…No one has invested in that and I think that’s a big mistake in the long term, in terms of that social contract, in terms of the symbolism, in terms of the connection between the program and the university and the communities…It’s a bigger story and that’s where I think we’re really losing an opportunity.” (ID: 15, TU: 468-493).

5.6 Potentially Quantifiable Indicators of Community Impact

A product of the present study was the identification of key indicators of impact that could potentially be quantified to enable changes in the community to be tracked as the NMP matures over time. A list of indicators is presented below (Table 5.6.1). The indicators listed below emerged from participant transcripts.

Indicators related to medical education were related to following NMP students through their stages of development; tracking the number of local, northern students in the program; and tracking the expansion of the NMP generally and the expansion clinical placements throughout the North. Tracking costs, impacts on patient care, the number of patients unattached to physicians and continuity of care are examples of quantifiable indicators in the health services sector. Indicators in the economy sector included general population and demographic indicators, capital investments and business expansions and
relocations. Tracking the level of media coverage of the program from local to international levels, and comparing coverage between UBC’s distributed medical education campuses were included in the media sector. Tracking capital improvements and additions are potential indicators within the area of physical capital. Finally, indicators related to human capital could include tracking research activity; recruitment and retention of NMP-trained physicians, practising physicians, and other professionals; and monitoring workload and stress levels in physicians and staff associated with the NMP.

Table 5.6.1. Key indicators of impact of the NMP on Prince George that can be quantified to enable changes in the community to be tracked over time.

<table>
<thead>
<tr>
<th>Area of Impact</th>
<th>Quantifiable Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUCATION</td>
<td></td>
</tr>
<tr>
<td>Medical Education</td>
<td>Number of NMP students recruited to Family Practice Residency Programs in the North</td>
</tr>
<tr>
<td></td>
<td>Number of residency (family practice and specialist) in the North (i.e. are they expanding?)</td>
</tr>
<tr>
<td></td>
<td>Number of NMP students pursuing residency training in the North vs. other areas</td>
</tr>
<tr>
<td></td>
<td>Number of NMP students admitted/not admitted to residency programs in the North</td>
</tr>
<tr>
<td></td>
<td>Number of northern high school and undergraduate students hoping to pursue medicine as a career</td>
</tr>
<tr>
<td></td>
<td>Number of northern students applying to the NMP per year</td>
</tr>
<tr>
<td></td>
<td>Number of northern students admitted/not admitted to the NMP per year</td>
</tr>
<tr>
<td></td>
<td>Number of clerkship placements throughout the North</td>
</tr>
<tr>
<td></td>
<td>Number of NMP students interested in rural medicine</td>
</tr>
<tr>
<td></td>
<td>Number of NMP students practising rural medicine</td>
</tr>
<tr>
<td>Area of Impact</td>
<td>Quantifiable Indicator</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
<td>Number of students admitted to the NMP per year</td>
</tr>
<tr>
<td></td>
<td>Number of community-base clerkships across the North</td>
</tr>
<tr>
<td></td>
<td>Association between social indicators in NMP application process and student practice intentions/chosen practice</td>
</tr>
<tr>
<td>Undergraduate Education at UNBC</td>
<td>Enrolment in biochemistry courses and reason for enrolling (include demographics)</td>
</tr>
<tr>
<td></td>
<td>Enrolment in Bachelor of Health Sciences degree program and reason for enrolling (include demographics)</td>
</tr>
<tr>
<td></td>
<td>Overall enrolment at UNBC and reason for enrolment (include demographics)</td>
</tr>
<tr>
<td><strong>HEALTH SERVICES</strong></td>
<td></td>
</tr>
<tr>
<td>Strain on System and Resources</td>
<td>Number and cost of inpatient diagnostic tests ordered by NMP students</td>
</tr>
<tr>
<td></td>
<td>Amount of time (daily/weekly) devoted to the NMP by physicians, hospital staff, others involved with NMP</td>
</tr>
<tr>
<td></td>
<td>Total number of patients seen by physicians and other health care practitioners not involved and involved with the NMP</td>
</tr>
<tr>
<td>Access to Health Care &amp; Sustainability</td>
<td>Number of individuals in the community with/without a family physician</td>
</tr>
<tr>
<td></td>
<td>Physician to patient ratio across North</td>
</tr>
<tr>
<td></td>
<td>Average length of time patients wait at clinics, emergency rooms and for specialist appointments/procedures</td>
</tr>
<tr>
<td></td>
<td>Amount of travel (and expenses) by northern citizens to see a family doctor and/or specialist</td>
</tr>
<tr>
<td></td>
<td>Number of patients visiting emergency rooms for primary care issues in the North</td>
</tr>
<tr>
<td>Area of Impact</td>
<td>Quantifiable Indicator</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Medical Care &amp; Patient</td>
<td>Measures of continuity of care between patients and physicians (e.g. follow up visits,</td>
</tr>
<tr>
<td>Outcomes</td>
<td>compliance with appointments and medications)</td>
</tr>
<tr>
<td></td>
<td>Measurement of population health indicators across North</td>
</tr>
<tr>
<td></td>
<td>Extent of student involvement in patient care</td>
</tr>
<tr>
<td></td>
<td>Measurement of clinical efficacy of student involvement in care</td>
</tr>
<tr>
<td>ECONOMY</td>
<td></td>
</tr>
<tr>
<td>Money in Economy</td>
<td>Capital expenditures – community development</td>
</tr>
<tr>
<td></td>
<td>Number of homes bought/sold/built</td>
</tr>
<tr>
<td></td>
<td>Retail sales/amount spent on services</td>
</tr>
<tr>
<td>Population &amp; Demographics</td>
<td>Employment/unemployment rates (overall, and per industry/sector)</td>
</tr>
<tr>
<td></td>
<td>Population counts in Prince George and across North</td>
</tr>
<tr>
<td></td>
<td>Population demographics (i.e. age)</td>
</tr>
<tr>
<td>Attracting New Businesses</td>
<td>Number of new businesses in Prince George (and reason for relocation to Prince George)</td>
</tr>
<tr>
<td>POLITICS</td>
<td></td>
</tr>
<tr>
<td>Political Support</td>
<td>Number of politicians originally committed to NMP in positions of power across North</td>
</tr>
<tr>
<td></td>
<td>Ongoing surveying of politicians’ level of support for the NMP</td>
</tr>
<tr>
<td>MEDIA</td>
<td></td>
</tr>
<tr>
<td>Level of Coverage</td>
<td>Amount and type of NMP coverage (e.g., number of articles; local, provincial, national,</td>
</tr>
<tr>
<td></td>
<td>international)</td>
</tr>
<tr>
<td></td>
<td>Comparison of amount and type of coverage between all UBC’s distributed sites</td>
</tr>
<tr>
<td>SOCIAL CAPITAL</td>
<td></td>
</tr>
<tr>
<td>Social Cohesion, Social</td>
<td>Various quantitative measurement tools in existence. See</td>
</tr>
<tr>
<td>Area of Impact</td>
<td>Quantifiable Indicator</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------</td>
</tr>
</tbody>
</table>

**PHYSICAL CAPITAL**

<table>
<thead>
<tr>
<th>Area of Impact</th>
<th>Quantifiable Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prince George Regional Hospital &amp; UNBC</td>
<td>Capital expenditures: lecture theatres, clinical teaching rooms, other?</td>
</tr>
</tbody>
</table>

**HUMAN CAPITAL**

<table>
<thead>
<tr>
<th>Area of Impact</th>
<th>Quantifiable Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>Measures of research activity (e.g. abstracts, presentations, peer-reviewed articles, etc.) by NMP faculty and students</td>
</tr>
<tr>
<td>Recruitment</td>
<td>Number of physicians (family practice and specialists) recruited (and reasons why)</td>
</tr>
<tr>
<td>Recruitment</td>
<td>Number of foreign-trained physicians practising in North</td>
</tr>
<tr>
<td>Recruitment</td>
<td>Number of foreign-trained physicians recruited to North</td>
</tr>
<tr>
<td>Recruitment</td>
<td>Number of professionals in other sectors recruited to Prince George (and reasons why)</td>
</tr>
<tr>
<td>Retention</td>
<td>Number of physicians remaining in Prince George over the long-term (already licensed, NMP-trained, other rural-trained, other?)</td>
</tr>
<tr>
<td>Current Human Capital (Local Prince George Physicians)</td>
<td>Amount of social engagement with other physicians</td>
</tr>
<tr>
<td>Current Human Capital (Local Prince George Physicians)</td>
<td>Physician bill-able hours and income</td>
</tr>
<tr>
<td>Current Human Capital (Local Prince George Physicians)</td>
<td>Number of clinical hours worked by physicians</td>
</tr>
<tr>
<td>Current Human Capital (Local Prince George Physicians)</td>
<td>Number of depression or stress-related diagnoses in physicians</td>
</tr>
</tbody>
</table>

### 5.7 Summary of Findings

Perceived impacts of the Northern Medical Program on the community were broad and pervasive. Although the program was designed to increase physician recruitment and retention in northern BC, its impacts appear to span across many other areas. Reported impacts were categorized into community sector and type of capital. Impacts on five sectors, namely education, economy, health services, media and politics were reported. The vast majority of comments were positive, however negative impacts of the program
were reported on all sectors except economy. Many impacts were specific to one sector, although there was substantial overlap in other impacts between sectors. For instance, many impacts in the sector of education also impacted health services, the economy and media. An overlap in impacts was additionally noted between the sectors of politics and media.

Impacts on physical, human and social capital also emerged from the transcripts. Comments related to physical and human capital were entirely positive. Both positive and negative impacts were noted in the category of social capital. Significant overlap in perceived impacts between types of capital was noted. Some reported impacts on capital are associated with the sectors listed above. Impacts on physical capital were related to the sectors of education, health services and economy. Several perceptions in the categories of human capital and social capital were related to all five sectors. However, many themes emerging under the headings of human and social capital could not be classified into a particular sector. The impacts on human capital, specifically with respect to expertise possessed by individuals, appeared to supersede impacts on community sectors. Impacts on social capital appeared to be overarching and reflected broader, meta-level impacts of the program on the community.
CHAPTER 6: Discussion

6.1 Overview of Chapter

This chapter begins with a discussion of perceived sector-wide current and anticipated impacts of the Northern Medical Program on the community. This is followed by a discussion of the impacts of the NMP on social capital and the application of social capital theory in this context. The final conceptual model depicting relationships between data emerging from the present study is then presented. Following this, additional findings related to sustainability of the NMP are discussed. Finally, I discuss limitations of the study, implications for research and practice and directions for future research.

6.2 Sector-Wide Impacts

The findings of the present study suggest that the Northern Medical Program is impacting the sectors of education, health services, economy, politics and media in Prince George, and to a lesser extent, northern BC. Most perceptions of current and anticipated future impacts were positive. Although fewer in number, the negative impacts perceived by participants are equally important to consider because they shed light on directions for future research and practice. The perceived negative impacts appeared to be sector-specific, with two exceptions. Firstly, there was widespread agreement among participants that the program has significantly stretched the human and physical resource capacity in the entire community, from program staff to physicians involved in teaching to community social service organizations who provide educational seminars and clinical placements for NMP students. Secondly, tension between faculty and students of the NMP and other departments at UNBC was reported. Both of these perceived negative impacts spanned across the education and health services sectors.

Overall, participants reported a greater number of impacts on education, health services and the economy; fewer comments pertained to impacts of the program on politics and
media. It is reasonable to expect that the health services and education sectors would be impacted by the Northern Medical Program, since the goal of the program is to train medical students for northern practice. However, a considerable number of impacts were also reported on the economy. These impacts were less straightforward than those reported in the health services and education sectors. Since participants described numerous potential contributing factors to Prince George’s current economic development, it is difficult to determine the degree to which the reported impacts on the economy were attributable to the NMP.

Perceived impacts of the program were classified by community sector. Impacts could have also been categorized as those ‘currently occurring’ and those ‘anticipated to occur in the future’. However, many impacts were reported to be ongoing. Therefore, to avoid repetition, perceptions of impact were classified by sector instead. The five sectors used to categorize the reported impacts were not the only sectors in the community affected by the NMP. Several impacts could have also been classified into other sectors such as ‘community social service organizations’, the ‘environment’, ‘special populations’ or ‘Aboriginal populations’. However, impacts in these additional sectors also impacted the five sectors described in this study. For example, to minimize overlap, the impact of the NMP on increasing interest in Aboriginal students to pursue medicine as a career was classified under ‘education’, and not under ‘impacts on Aboriginal populations’.

There is a dearth of studies in the literature that have explored the impact of a medical education program on the community. Similarities and differences exist between findings in the present study and those in the three studies that have assessed community impact. In the first study, two community-oriented medical schools in Gezira and Khartoum, Sudan were evaluated\(^{36}\). The school in Gezira had a more community-oriented curriculum. Relationships were reported to have been formed between medical and community committees in this region. Similar to the school in Gezira, the highly community-oriented curriculum of the NMP resulted in the formation of numerous partnerships and networks. The communities hosting both Sudanese medical schools were not involved with educational planning, although in Gezira, community input was
solicited to set priorities for health service delivery. Participants in the present study similarly reported some community involvement with and input into the program, although many commented that the current levels of program engagement with the community are insufficient. In Azizi’s study, the partnership between the two medical schools and the Ministry of Health was described as “weak”. In the present study, community leaders in Prince George reported strong partnerships with municipal and provincial governments. Another finding in Azizi’s study was that staff shortages and financial constraints were impeding the goals of the faculties of medicine in both medical education programs. Human and physical resource shortages were also described in the present study. The degree to which these constraints are impeding the objectives of UBC’s faculty of medicine have not been explored to date, but should be considered in future studies. Azizi also reported that medical students educated in the more community-oriented program in Gezira felt more confident and competent and believed they had been exposed to a wider variety of clinical issues. The greater exposure of rural medical students to a diverse range of clinical issues has also been reported by Habbick and Leeder. In the present study, community leaders reported that students educated in the Northern Medical Program are exposed to a wide variety of community and clinical issues. Azizi’s findings suggest that NMP graduates may feel additionally confident in practising medicine in the community as a result of the high degree of community-oriented medical education they receive.

The second study that examined the community impact of a medical education program was conducted by Omotara and colleagues in three communities in Nigeria. Findings indicated a high level of awareness of the program in all three areas. Considerable awareness of the Northern Medical Program in Prince George and throughout northern BC was similarly reported. Omotara et al further reported a high degree of support for medical students from community leaders. High levels of social support for NMP students by leaders in Prince George were reported in the present study. Positive clinical experiences of community members with medical students in Nigeria was another reported finding. Community leaders in the present study also reported having had positive interactions with students in the Northern Medical Program. Mathers et al
similarly found that student participation in medical visits was well-received by patients\textsuperscript{86}. Participants in Mathers et al’s study additionally perceived that patients are likely to benefit from having a student involved in their care, as physicians’ explanations to patients tended to be more thorough and detailed when students were present\textsuperscript{86}. Similar benefits of having NMP students involved in patient care in Prince George are likely, although not reported in the present study.

Lastly, Lovato\textsuperscript{3}, Bates\textsuperscript{2} and colleagues at UBC and UNBC conducted a pilot study in 2004 to evaluate early community-wide impacts of the Northern Medical Program in Prince George. A conceptual comparison of findings suggests that perceived impacts noted in 2004 have endured. Similar perceptions of impact were not only reflected in comments made by participants that were re-interviewed, but also in comments of other study participants.

Many findings in the present study were consistent with those found in 2004. The tension created between students and faculty of the NMP and other departments at UNBC was described in both studies. For instance, in both 2004 and 2007, participants reported that non-NMP students at UNBC felt slighted because of the attention that was showered on the NMP. Assessment of friction at the university should be ongoing to ensure that grassroots support for the program from UNBC is not affected. Participants in both ‘NMP impact studies’ similarly reported that local students, including First Nations individuals, have articulated a greater ambition and opportunity to pursue medicine as a career since the NMP was implemented in Prince George. Individuals with rural backgrounds and those of Aboriginal descent are severely underrepresented in all health disciplines, including medicine\textsuperscript{87}. Research has shown that physicians with rural upbringings are more likely to practice in rural areas\textsuperscript{88,89}. Therefore increased interest in pursuing medicine may result in greater admission of rural-raised and Aboriginal students into medical school, which could translate into more physicians in underserved areas. Having more physicians of Aboriginal descent is also likely to assist in improving the health status of Aboriginal Canadians\textsuperscript{87}. In 2004, community leaders in Prince George anticipated a strain on the health system, especially on the regional hospital, as students
moved into clinical training in their third year\textsuperscript{2,3}. Their foresight appears to have been accurate; space, revenue and workload of physicians and staff at Prince George Regional Hospital were reportedly negatively affected by students’ presence in the present study. Increased workload of physicians who take on teaching responsibilities was similarly reported in Ryser et al’s study of the NMP’s impact on Prince George physicians\textsuperscript{90}, and in Mathers et al’s study examining the impact of converting a general hospital into a teaching hospital\textsuperscript{91}. Enhanced recruitment of physicians to teach in Prince George was also reported in the present study and in the NMP Impact Study that preceded it. Improvements in access to health services through recruitment and retention of future NMP-trained physicians was originally anticipated by program administrators. The reported increase in Prince George’s physician workforce may already be improving access to health care in the region. Increased recruitment of professionals in fields other than health care also emerged in both 2004, and in the present study. Attracting new employers and businesses to the region may mean more employment opportunities for workers in Prince George and the outlying communities, which may help decrease the historically high rates unemployment throughout the region\textsuperscript{82}.

Several ways to measure community impact have been described in the literature, although there is a trend toward quantifying impact. In the present study, community-wide impact was explored qualitatively. In a study exploring factors that impact community health promotion, Campbell and Gillies assert that the use of qualitative methods are essential in community-level studies, as investigators need to elicit citizens’ experiences in order to attempt to conceptualize ‘community’\textsuperscript{70}. Although quantitative methods can be useful, and in many cases less time-intensive, findings of the present study suggest that using only quantitative indicators of impact would limit understanding of the broader impacts on the community, the context within which the impacts have occurred and the degree to which impacts are interrelated. In evaluating community-level interventions, Goodman and colleagues implore researchers to recognize that the complexity of these interventions, compared to those at the individual level, necessitates the use of multiple and more complex methods to properly assess impact\textsuperscript{41}. Based on findings in the present study, it is similarly recommended that studies exploring
community impact use qualitative methods in addition to quantitative ones to maximize understanding of community-wide impacts, which are complex and interrelated phenomena.

6.3 Impacts on Social Cohesion and Social Capital

In the NMP impact pilot study conducted in 2004, Bates, Lovato and colleagues hypothesized that social capital may be an important indicator of the NMP’s impact in Prince George. It is evident from findings in the present study that social capital theory is likely an important aspect of understanding community impact, especially in this context, as it accounts for the level of engagement of the community and for the reported intangible impacts of the program such as community pride and community self-esteem.

Numerous perspectives and models of social capital exist in the literature. The theory with which investigators choose to frame a particular study greatly influences the nature of the results. In the present study, Carpiano’s Bourdieus-based theory of neighbourhood social capital was employed. Along with Carpiano, Portes and others, I perceive Bourdieus’s resource-based conceptualization to be a promising way to explore the concept of social capital and its applications, since it allows the researcher to differentiate between social cohesion, networks that concentrate social capital, the social capital resources themselves, the ability of a network member to access these resources, and the outcomes of social capital.

This conceptualization of social capital is illustrated using an example from the present study. During the initial planning phases of the Northern Medical Program, a network was formed between the Northern Health Authority and the physicians in Prince George. One of the values that members of this network shared was dedication and commitment to the success of the NMP. The group met regularly throughout the planning process; these meetings fostered a sense of connectedness within the network since all members came together for a common purpose. Therefore, the network consisting of health authority representatives and local physicians possessed a high level of social cohesion.
Every individual in this network brings different knowledge, perspectives, experiences, and contacts they have to the group. Each person also brings knowledge and connections they have gained through their involvement in other networks. These resources belong to the network of physicians and health authority representatives and can be accessed by any network member to achieve a particular objective. For example, suppose that at one meeting, a representative from the health authority states that the organization is having difficulty creating an estimate of the number of patients that a physician involved in teaching will be able to see each day. A local physician could provide an estimate based on the number of patients he sees per hour on an average day. The form of social capital illustrated here, although not explicitly emerging from the data, is knowledge regarding clinical productivity that a local physician brings to the network. The representative of the health authority was able to access this resource to achieve the objective of estimating the impact of physician involvement in teaching on the number of patients doctors can see in a day. As a result of the exchange of knowledge and cooperation by group members, additional social cohesion was created. Therefore, in this situation, social cohesion was both an antecedent and an outcome of social capital.

In 2004, Bates\textsuperscript{2}, Lovato\textsuperscript{3} and colleagues reported partnership formation as an impact of the NMP during the early planning and implementation phases of the program. Findings in the present study suggest that the partnerships and networks formed in these initial phases were the foundation for all reported impacts on social capital. Based on participants’ description of the context prior to the development of the NMP, it is evident that a certain level of social cohesion and social capital existed in the community. However, it is likely that the NMP created more social capital for the community to draw on. These gains in social capital were the result of extensive, multilayered and intertwined partnerships and networks that were formed. The definition of “network” in the context of the NMP is complex, as each network contains “multiplex” relationships, a term coined by Gluckman\textsuperscript{60}. Participants’ connections with multiple community sectors and the overlap between their personal and professional interactions are examples of multiplex relationships in this context. For example, one participant in the study had network ties in the political, economic and health services sectors. Another participant in
the political sector had professional interactions with local physicians, who he also saw socially. In a network, each member contributes the social capital he possesses to the group. Each network member also has access to the social capital contributed by all the other members of the group. If an individual belongs to two networks, he can take the social capital possessed by one group and contribute it to the other group, resulting in substantial increases in the social capital contained in each network. Therefore, the extensive partnership and network formation, as reported by participants, likely resulted in exponential increases in community social capital.

Networks formed in the present study were characterized by various norms. A pervasive network norm emerging from the transcripts consisted of expectations of reciprocity on the NMP by the Prince George community, and to a lesser extent, all of northern BC. In a review of the characteristics of community-oriented health education schools, Richards & Fulop explain that “Those schools that are the most highly community-oriented are not just in the community, but of the community”^2. Participants in the current study perceive the NMP to have been created by the community for the community. All study participants reported a community-wide sense of ownership over the program. Community members invested a great deal of time, energy and funds in the way of the NMP Trust, to support the program and its students. This sense of ownership coupled with community members’ high degree of investment likely generated considerable expectations of reciprocity of the NMP. For example, the local physicians involved in the program were reportedly expected to dedicate a tremendous amount of time and energy to teaching, while keeping up their clinical practices. NMP students were expected to give back to Prince George through involvement in community organizations, assuming various leadership roles in the community, and most importantly, staying in the community to practice medicine when they graduate. There was variation in terms of the number of NMP students expected to be retained, but all participants held this expectation to some degree. In his examination of university-community partnerships, Baum explains that program stakeholders often expect “a significant social change from their investment, often encouraging unrealistic aims...Funders [and other stakeholders] encourage the belief that universities can provide near-term solutions for
significant, pressing, severe and urgent…problems. Such expectations urge
dissemblingness, fantasy or both\textsuperscript{93}. Additional efforts are needed to better manage the
community’s expectations of the program and the physicians and students associated with
the program. Open lines of communication between all stakeholder groups should be
maintained to ensure that expectations held by all parties are well aligned.

**Forms of Social Capital**
The types of social capital emerging from participant transcripts included social leverage,
social support, community organization participation, knowledge and information
channels, sense of community and community empowerment. Carpiano’s framework of
neighbourhood social capital includes social leverage, social support and community
organization participation\textsuperscript{58}. Information channels as a form of social capital was
previously identified by Coleman in his examination of the role of social capital in
preventing students from dropping out of high school prior to graduation\textsuperscript{55}. Campbell
and Gillies described the importance of sense of community in a study exploring the role
of social capital in promoting health in small in communities\textsuperscript{70}. The final form of social
capital that emerged in the present study was identified by Lochner in a review of social
capital measurement\textsuperscript{63}.

**Social leverage**
Carpiano describes social leverage as capital that “offers information that can be used to
maintain or improve individuals’ quality of life and pursue social mobility”\textsuperscript{58}. In other
words, members of a network can access information or use connections to improve their
social status or social conditions. In the context of the present study, social leverage was
illustrated two ways. Firstly, it refers to the role of the Northern Medical Program in
improving the social conditions for all community members in Prince George and
throughout the North. This type of social leverage was illustrated by the extensive
leadership shown by NMP students in raising awareness regarding social issues such as
air pollution and street-involved individuals. Social leverage also refers to community
leaders’ usage of their social status to influence other parties about the importance of the
NMP for improving social conditions in the North. Participants reported that community
leaders made sizeable efforts in the early program planning phases to solicit support for the NMP from the citizens of northern BC and from northern BC’s municipal governments. Buy-in from the community members and their political leaders was perceived to be essential in developing and sustaining the NMP. The importance of soliciting and maintaining community support has also been described in a study by Baum examining the dynamic of community-university partnerships. Similar use of influence was exemplified by another group of community leaders to raise funds for the NMP Trust. This group leveraged their social position to convince citizens of the importance of contributing financially to the Trust to support NMP students.

Social support
Social support is capital that network members can access to help them cope with issues. In the current study, many NMP students were able to draw on citizens and leaders of Prince George for social support to help them adjust to a new community. Community members reportedly showed students around town, socialized with them, introduced them to new people and generally made themselves available for whatever students’ needed.

Social support within the Prince George medical community was also perceived to have been elevated because of the NMP. In Ryser et al’s study examining the impact of the NMP on local physicians, most doctors sampled felt the program improved morale by providing them with enhanced emotional support and additional opportunities for interaction with colleagues. In the present study, participants reported that the NMP has attracted more physicians to Prince George, which has allowed local physicians to share the heavy clinical workload, which relieves stress and improves their quality of life. This finding contradicts the reported increased workload of physicians involved with the NMP due to added teaching and administrative responsibilities. Ryser et al similarly reported increased physician workload due to involvement in the NMP. However, contrary to findings in the current study, few physicians in Ryser et al’s study reported improvements in professional support; many felt that additional professional support to manage workloads was needed. This finding regarding improvements in professional
support suggests the need to increase and monitor the NMP’s impact on human resource capacity.

Community organization participation
Community organization participation refers to “residents’ formally organized collective activity for addressing neighbourhood issues”\(^{58}\). In the context of the present study, citizens came together to address community-level issues related to the implementation of the Northern Medical Program in Prince George. The NMP Community Action Group, composed of community leaders in Prince George, is one example of community organization participation in the current study. Leaders worked together to address anticipated fiscal, capital and other challenges associated with the implementation and operation of the NMP. Some recommendations included building strong partnerships between the NMP and UNBC, the communities in the North and the provincial government; financially supporting NMP students’ education with a trust fund; and expanding the regional hospital. Stemming from these recommendations, the NMP Trust Fundraising Committee was created. Citizens of Prince George committed themselves to help alleviate the anticipated large financial burden on NMP students who would have to complete some of their clinical training in remote communities throughout northern BC. It was through this “formally organized collective activity”\(^{58}\) that $6 million dollars was raised to support NMP students’ education.

Knowledge and information channels
A fourth type of social capital noted in the transcripts was knowledge and information channels. Coleman was the first theorist to propose information channels as a form of social capital\(^{55}\). Individuals can draw on knowledge possessed by a network to which they belong to achieve a variety of objectives. Participants in the current study reported that community leaders working in sectors other than of health services and education learned a lot about the medical education process. One example given was newly gained understanding about the difference between undergraduate and postgraduate medical education and how the location of postgraduate residency training may influence where a student chooses to practice medicine. This new information raised concerns that the
The community would lose the ability to keep NMP students in northern BC if students completed their residencies elsewhere. These concerns led to the successful lobbying of government by community leaders for additional residency positions in the region.

Participants reported that not everyone was privy to this new knowledge. In particular, information regarding the role of residency training in predicting physician retention was reportedly not accessible to the general public. Participants reported that the expectation among the general population was that once students graduated from the NMP, they would immediately begin practising in the community. When this inevitably fails to occur, pervasive disappointment in the community and potential feelings of having been misled are likely. Referring to community-university partnerships, Baum explains that often in these partnerships, the “neediest” groups are those with the least “knowledge about…programs”93. One negative aspect of social capital is that access to information belonging to a network is restricted to members of that network. Coleman explains that closed or restricted networks promote social capital since norms, values and expectations of network members can be better enforced when a network is a small and tight-knit55. If a network is too large or unrestricted (i.e. as in this case, comprised of the entire community), the social capital belonging to that network cannot be concentrated. Despite the fact that a closed network can concentrate social capital for its members, closed networks may restrict access to information and other resources to individuals outside that network who might benefit the most from the information54,59. As key partners and stakeholders in the Northern Medical Program, efforts should be made to inform the public to a greater degree regarding the number of students the community is likely to retain and the length of time it will take before citizens see more NMP-trained physicians practising in the community.

A second example of new knowledge learned as a result of the NMP was a heightened understanding of social issues and inequities that exist in Prince George and throughout the North. As previously described, participants perceive that the students and faculty at the NMP assisted in expanding the dialogue in the community around social conditions. According to some interviewees, this has translated into a growing understanding in the
community regarding a wide range of social issues, such as those faced by Aboriginal people. Increased awareness of social issues that Aboriginal populations face can translate into future action to address these issues. For instance, increased efforts to address health issues may assist in reducing the gap in health status that exists between First Nations individuals and non-First Nations individuals in the North. Greater awareness can also help improve levels of tolerance of other cultures in the community and help reduce racism.

**Sense of community and collective efficacy**

Enhanced sense of community and collective efficacy is another form of social capital that emerged in the present study. Participants reported that the NMP has increased the overall credibility and appeal in the North. The effect of the presence of medical students on enhancing a community’s appeal has also been reported in Mathers et al’s study of the impact of converting a general hospital to a teaching hospital. In the present study, feelings of pride coupled with reported increases in community self-esteem and self-identity increased citizens’ sense of community in Prince George. In research with local Prince George physicians, it was reported that perceptions regarding the impact of the NMP on Prince George’s sense of community were mixed, although many agreed that the NMP has provided “an additional venue to develop a sense of community through interaction and participation”.

In the context of the present study, it is hypothesized that a greater sense of community may have led to more accurate judgments of the community’s collective efficacy. Collective efficacy is defined as the ability to carry out a course of action, or to achieve a particular objective. In his essay on collective efficacy perceptions, Goddard explains that underestimating one’s capacity to execute an action is likely to impact which actions they choose to follow and the extent to which they use their skills and expertise. Participants in the current study explained that although northerners are strong, resilient individuals, they had low levels of spirit, hope and optimism regarding the state of health services prior to the implementation of the NMP. I propose that an increased sense of community led to more accurate judgments of citizens’ collective efficacy, or ability to
execute a task. In other words, Prince George citizens were able to draw on a strengthened sense of community to assist them in believing they could do something about the health services issues they were facing.

**Community empowerment**
More positive judgments of collective efficacy, may have in turn led to enhanced community empowerment, which is the final form of social capital proposed herein. Lochner et al explains that collective efficacy combines the social cohesion within a group and the willingness of group members to act to achieve an objective\(^{63}\). In the current study, participants reported that the network of community members in Prince George had high levels of social cohesion. The willingness of community members to act is illustrated by the significant financial and other investments they contributed to the NMP. When the NMP was implemented, a widespread sense of achievement and community empowerment reportedly radiated throughout the community. In 2004, participants similarly reported a community-wide sense of accomplishment when the NMP was implemented\(^{2,3}\). Findings in the present study suggest that the sense of accomplishment, due to the realization that citizens were able to affect change in their community, created renewed optimism and forward thinking. The collective efficacy of the community and the feelings of community empowerment that ensued have reportedly led to the creation of various new goals and objectives for the city to tackle, such as implementing a full service cancer centre in the region. Community empowerment allowed the citizens of Prince George to believe that if they can succeed in bringing a medical program to their community to help improve access to health care, they can also achieve other goals to improve their community and their quality of life.

**Comparison of Social Capital in Carpiano’s Framework and in the Present Study**
In 2006, Carpiano tested his model of social capital using individual-level data and quantitative survey methods\(^{96}\). The present study explored Carpiano’s theory using more holistic, qualitative methods. In both studies it was found that different levels of networks exist within a neighbourhood, in Carpiano’s study, and a community, in the present study. Resources associated with each level of network also differed in both
studies. Both studies similarly found that informal networks are at least as important as formal networks for the proliferation of social capital.

In the context of the impact of the Northern Medical Program in Prince George, it was found that Carpiano’s definition of social cohesion did not completely capture the impacts that emerged from the data. Carpiano hypothesized that social cohesion, in terms of network values and connectedness, was necessary for social capital to be created in one of four forms: social leverage, social support, community organization participation and informal social control. In the present study, social cohesion did manifest as shared values and a sense of connectedness necessary for social capital to occur. However, the extensive formation of new partnerships and networks that were characterized by connectedness and values was a pervasive theme, which I felt, additionally reflected social cohesion in the community. In other words, in the data, social cohesion was a characteristic of networks and was also reflected by the abundance of partnerships and networks formed. Therefore, I chose to explicitly include “network and partnership formation” under social cohesion in this study’s model of social capital.

Three of the four forms of social capital described in Carpiano’s model applied in the present study. These included social leverage, social support and community organization participation. The fourth form, informal social control (i.e. maintaining social order) was not found to be applicable in describing the impact of the NMP on the community. This is likely because Carpiano’s model was used in the context of a neighbourhood. Informal social control is likely more relevant in a smaller unit of analysis, such as a neighbourhood, since it would be easier to accomplish and assess than in a larger unit, such as a community in the current study. Three additional forms of social capital not included in Carpiano’s model also emerged from the present research: knowledge and information channels, sense of community and community empowerment. Figure 6.3.1 represents the role of social capital in describing the impacts of the NMP in Prince George.
Carpiano’s framework of neighbourhood social capital was based on a conceptualization by Pierre Bourdieu. Bourdieu’s theory emphasized a resource-based model of social capital and focussed on social capital’s role in reproducing inequities between general or elite populations and vulnerable or underrepresented populations\(^53\). In the present study, exclusion of the public or other special populations (i.e. seniors) from networks formed to support the NMP and reported variation in the ability of these populations to access network resources were pervasive themes. Based on participants’ comments regarding the inequities faced by Aboriginal populations, seniors groups and other special populations in the region, the degree of exclusion and lack of access of these groups to social capital should be explored future studies.

Widespread popularity and media attention of Robert Putnam’s theory of social capital has likely coincided with the pervasive application of his theory in the literature. Putnam’s conceptualization emphasizes the role of civic engagement and values such as trust in creating “successful communities”\(^65,66,70\). However, many theorists agree that Putnam’s definition of social capital more closely resembles the concept of social cohesion\(^54,58,59\). In the initial stages of the literature review conducted for the present study, it was thought that Putnam’s theory would not be relevant to explain the impact of the NMP on Prince George. As anticipated, findings from the present study revealed that Putnam’s conceptualization was limited in its ability to describe the nature of the impacts perceived to be associated with the NMP. However, it was found that high levels of ‘civic engagement’ and sense of connectedness in the community were described as perceived impacts of the Northern Medical Program in Prince George. Putnam’s theory does not account for the resource-based forms of social capital that emerged, the issues around the ability to access social capital and the outcomes associated with social capital. Furthermore, the theory also does not account for varying levels of informal and formal networks and the social resources associated with each of them.

Measurement of social capital to-date has been predominantly quantitative. Findings in the current study suggest that social capital measurement should also include a qualitative component. In the context of the impact of the Northern Medical Program on the
community, many participants reported intangible impacts such as a sense of ownership of the NMP and a heightened sense of community. Qualitative methods may be superior to quantitative methods in evaluating these intangible impacts. In addition to describing the impacts, participants in the present study also provided rich descriptions of the context within which the impact occurred. This provided a more complete picture of the NMP’s impact than a number could.

Irrespective of whether social capital is being measured quantitatively or qualitatively, there are several methodological issues that need to be considered. Portes suggests that the definition of social capital needs to be separated from its outcomes so that directionality can be established. Carpiano’s Bourdieu-based theory of social capital incorporates Portes’ suggestion. In the present work, the antecedents of social capital, the forms of social capital and the outcomes of social capital were conceptually separated. In addition to helping establish directionality, it is thought that this separation allows findings to be presented to readers in a more understandable way. Findings in the present study suggest that failing to separate impacts on social cohesion, social capital and outcomes of social capital would have resulted in the loss of pertinent information and in the simplification of the perceived impacts of the NMP.

Portes additionally recommends that the “historical origins of community social capital” be assessed, and that investigators consider other factors that could be impacting social capital and its outcomes. Collection of data regarding the historical levels of social capital and other potential factors contributing to observed impacts on social capital were not explicitly included in the present study’s methodology. However, data regarding the context and other contributing factors did emerge from the transcripts and were analyzed accordingly. Ideally, it would have been helpful to have previously collected information on baseline levels of social capital (i.e. social capital levels prior to the NMP) available for this study. Future collection of this data is likely not practical or feasible. Since individuals often have difficulty remembering facts and events that occurred in the past, additional research into historical levels of social capital in Prince George would likely encounter important methodological problems pertaining to recall bias by informers.
In terms of choosing a particular measurement tool or methodology to measure social capital, many theorists agree that no one tool applies in all contexts\textsuperscript{59,69}. It is important to ensure that the methodology chosen to measure social capital is “locally and contextually relevant”\textsuperscript{59}. Based on the present study, measurement of social capital in this context could include a quantitative component, although it is recommended that qualitative data continue to be collected.

An anticipated long-term impact of the Northern Medical Program is to increase physician recruitment to the region, and more importantly, keep doctors in the community. In 1997, Cutchin conducted a qualitative study examining physician retention in rural areas\textsuperscript{68}. Three key “domains of integration” to enhance physician retention emerged. Findings in the present study indicate that the NMP is impacting all three domains of physician retention described in Cutchin’s study. The first domain was “physician self”, which included physicians’ experience in rural areas and rural background. In the present study, participants reported a change in medical school admission indicators to attract students from underserved areas and those well suited to rural practice. Cutchin’s second domain of physician integration, “medical community”, pertained to the level of physician interaction and the number of doctors in the region. Increased recruitment of physicians and additional opportunities for physician communication and interaction was reported in the present study and in Ryser et al’s work evaluating the impact of the NMP on physicians in Prince George\textsuperscript{90}. The third domain of physician retention in Cutchin’s study was “community-at-large”, which included social networks, community development, political leadership and level of citizen involvement in community. In the present study, the reported creation of numerous social networks and enhanced social cohesion and social capital in Prince George were attributed to the implementation of the NMP. Participants in the present study also reported increased economic development, strong political leadership and a high level of involvement in the program and the community from citizens. If broad-spanning impacts on wide range of community sectors are the key to physician retention, the NMP may be well on its way to achieving that goal.
Participants in the present study anticipate the Northern Medical Program to improve the health status of northern BC’s population in the long-term. It has been documented that residents of rural, remote and northern communities in British Columbia have poorer health than residents of the province’s urban areas\(^1\). The Northern Medical Program was originally designed to improve access to health services in northern BC, and subsequently improve the health status of the region’s citizens. In the current study, reported impacts of the NMP on the sector of health services (and human capital) included increased physician recruitment and retention and improved continuity of care, both of which are likely to improve patient outcomes.

The impact of medical teaching on the education and skill development of physicians was reported in the present work and in several other studies\(^2,86\), including one by Ryser \textit{et al} where 60\% of sampled physicians in Prince George reported having more opportunities to remain current in the field since the NMP was implemented in 2004\(^90\). Educating students results in the expansion of physicians’ academic knowledge and expertise, which are likely to affect clinical practice and patient care in the long run, as physicians re-examine their current practices. General Practitioners (GPs) have reported that teaching students has caused them to re-evaluate habits and common practices\(^86\).

The appropriate use of emergency and walk-in services was another long-term anticipated impact of the program. If the NMP is successful in increasing the community’s physician workforce, there will be more GPs available to patients. Increased availability of GPs will presumably result in more patients going to see their own physician for routine clinical problems, reserving the use of the walk-in clinics or emergency rooms (ERs) for emergencies. Making a GP the first contact in primary care has to been shown to reduce “use of specialists and emergency rooms, and as a consequence, health care expenditures”\(^98\). However, additional community education regarding what constitutes an emergency will likely have to be provided to facilitate the transition from emergency room to family physician for many citizens.
Appropriate use of ER services was linked to greater continuity of care between patients and their health care provider in the present study. This perceived impact is related to the expectation of more physicians in the community, and therefore, more community members with a GP. Continuity of care is defined as a continued partnership between patients and health care providers that can deal with most of the patients’ health care needs. Numerous benefits of continuity have been documented, including improved patient satisfaction, improved compliance with medical appointments and medication and “enhanced physician recognition of the patient’s health needs”, and health outcomes in the long term.

In addition to impacting clinical indicators of health, the program could also improve health through other mechanisms. Participants in this study reported a wide range of impacts on sectors other than health services. Education, politics, media and economy were four other sectors reportedly impacted by the NMP. The program was also reported to have impacted social capital in the community. Education, politics, media, economy and social capital are all social determinants of health. Therefore, by positively impacting health services and a broad range of other documented determinants of health, it is likely that the Northern Medical Program will succeed in improving the health status of northern BC’s residents.

Figure 6.3.1. A schema representing the impact of the NMP on social capital in Prince George in the present study. The framework is modified from Carpiano’s framework of neighbourhood social capital. Social cohesion, social capital and outcomes of social capital are included in the model.
6.4 Other Findings

In addition to discussing current and anticipated future impacts, participants described various conditions necessary to sustain NMP operation and the positive impacts participants attributed the program. Two conditions frequently reported by participants are discussed here.

The NMP’s current levels of human and physical resource capacity were perceived to be insufficient to sustain the program in the long-term. With the expansion of the Northern Medical Program and associated increases in student admission, the overtaxing of program staff, faculty and facilities will likely only worsen, which could severely and negatively impact the quality of students’ education. Thus, it does not appear that the NMP will be sustainable unless the program’s human resources and physical infrastructure are increased to meet program demands. In addition, physician and staff workload should be continually monitored.

One participant expressed concern that political support for the program may begin to waiver in the future as politicians who were not originally committed to the program come to positions of power. In a case study to explore the partnership between a university and a community, Baum stresses the importance of re-creating partnerships as leaders change to sustain support for the program and to ensure successful operation\textsuperscript{93}. Ongoing effort is required to maintain a strong, long-lasting partnership with all levels of government to secure adequate funding for the program and to maintain a strong political alliance with BC’s northern communities.

6.5 Limitations

There are several limitations of the present study. Firstly, the NMP is a relatively new program, having only been implemented in 2004. In 2006, the first cohort of medical students began their clerkship rotations. Only in 2009, will all four years of medical students be engaged in clerkship training. Since student presence in clinics and hospitals will continue to increase, conceivably so will the level of awareness of the program in the
community. Awareness is also likely to increase in May 2008, when the first cohort of medical students graduate from the program. More students participating in clinical training is also likely to further impact physical and human resource capacity as well as PGRH and other areas within the sector of health services. In terms of recruitment and retention of NMP-trained physicians, it may take several years to see a benefit. Many students graduating from the NMP will have to leave northern BC to complete their residency training. Once they have completed their residency, it is anticipated that many former NMP students will return to the region to practice. Therefore, the full impact of the NMP on the community may not be fully experienced for a decade or more.

A second limitation relates to the theoretical difficulty in measuring perceptions of community impact. In a study evaluating the impact of nursing interventions, Barriball and Mackenzie reported challenges in showing that an outcome was produced by one particular intervention, especially in a multidisciplinary setting, such as health care. Similarly, evaluating whether reported impacts attributed to the Northern Medical Program actually occurred as a result of the program and not something else was a challenge in the present study. The lack of baseline measures of perceived or actual impact for comparison was a second limitation in this evaluation of NMP impact on the community. However, these issues were at least partially addressed through extensive probing during interviews to uncover any other potential causes for reported impacts. Participants were also asked when the reported impact occurred to try and establish temporality.

The degree to which perceptions of participants represent those of the general community is another issue. As Baum noted in his study of community-university partnerships, community leaders in positions of power may only speak for a few. However, soliciting the perspectives of community leaders is important for studies evaluating community-wide impact. As stated by Goodman, leaders are important because they direct local service organizations, “operate at level of social ecology”, and they influence public opinion, allocation of resources, and policy development. Nevertheless, to provide some indication of ‘representativeness’ socio-demographic data regarding length
of time residing in Prince George or a rural or remote community and length of time in position of leadership in the community were collected.

In addition to considering the degree to which perceptions of sampled participants represent those of the general community, it is also important to consider the degree to which perceptions of impact accurately reflect actual impact. Perceptions of the impact of the NMP may have been influenced by participants’ interaction with the program. Individuals who have been more intimately involved in the program, and arguably more invested, are likely to perceive the program’s impact to be more positive. Participants who have positive interactions with the program are similarly likely to report more positive impacts. Individuals whose contact with the NMP has been non-existent, minimal, negative or unsatisfactory in some way are more likely to report fewer positive impacts or more negative impacts.

The present study examined the community-level impacts of the NMP, and did not evaluate impacts at the individual level. This limits the generalizability of the study findings. For instance, perceptions of NMP impact on some local Aboriginal students cannot be generalized to the entire Aboriginal community. Perceived impacts on patient care can also not be generalized to individual patients, who, although not reported herein, might be experiencing longer wait times to see a physician because of reported slowing of clinical work. Nevertheless, a community-level view of impacts is appropriate for the stage of development of the NMP at this point in time. As the program matures, it is recommended that more individual-level outcomes be collected in addition to broader, community-level outcomes.

Another limitation concerns the study’s conceptual framework. The final conceptual model of the study is based on transcript data. Participants’ perceptions were the sole source of data for the background information regarding the context prior to the NMP and for the current and anticipated future impacts of the program. Secondary sources were not consulted to confirm or dispute perceptions, as this was deemed to be beyond the scope of the current project.
6.6 Implications for Research and Practice

Findings from the present study contributed to understanding the impact of introducing an undergraduate medical education program into a small, medically underserved community. Perceived impacts of the Northern Medical Program are broad and pervasive, touching many sectors in the community. Themes described herein are likely applicable to medical education programs with distributed or regional sites, and to rural medical schools, such as the University of Sherbrooke, Northern Ontario Medical School and other medical schools in Canada, as well as international schools such as the University Medical School in Tromso, Norway. This work will provide information to the NMP regarding the degree to which the program has lived up to the expectations held by its host community.

Implications for Research

This study’s findings suggest that programs intended to affect one community sector are likely to impact many others, especially if the program is implemented in a small, tight-knit community.

The NMP was designed to improve access to health care and health status in the long-term by increasing the physician workforce in Prince George and throughout the North. However, the NMP may also be affecting health through its impact on social capital. All forms of social capital emerging in the present study are associated with positive health outcomes. It has been suggested that social capital can be used as an “interim short term indicator of progress toward desired long-term goals” regarding health. Measuring social capital in Prince George as the NMP matures might provide some insight into the program’s impact on population health status in the region. As previously discussed, the NMP’s impact on determinants of health other than health services are also likely to assist in improving the population’s health status. Based on findings in the present study, it is recommended that approaches designed to improve health should be multi-sectoral in nature and should include indicators of social capital in their evaluation strategy.
Implications for Practice

Findings suggest that negative impacts of a program can also be broad and pervasive. Concern regarding current levels of physical and human resources was frequently reported by participants. Fiscal impacts such as overall cost-effectiveness and costs related to increased in-patient diagnostic testing were also reported. Participants additionally expressed concerns related to patient care. The first concern was that patients are being negatively affected by a greater number of people asking them questions. Having many health care professionals with varying roles and levels of expertise involved in their care was also perceived to be negatively impacting patients. Perceptions of a larger, more representative sample of patients should be solicited to further explore the impact of having multiple individuals involved with their care. All of these perceived impacts should be monitored on an ongoing basis.

Findings also revealed how uncapped showering of attention on a new program can be counterproductive by creating tension between it and other programs at a university. In the context of the NMP, the level of tension at UNBC should be assessed and monitored to ensure UNBC’s support for the program is sustained.

Some participants reported that connections between the NMP and the community have diminished as compared to the early planning phases. A seniors’ social service organization in Prince George reported having no contact with the program despite being intensely interested and willing to assist with NMP students’ training. More generally, participants reported that the program has ceased to solicit input and feedback from the community in the past couple of years. In a review of community-oriented medical education, Habbick and Leeder found that community input is essential to making a program successful. In a technical report on community-based education, the WHO similarly recommend that the community be involved in program planning, implementation and evaluation phases. Although challenging, the authors stress that communication should occur at all stages with all key stakeholders. Habbick and Leeder report that a community-oriented medical education program attempted to be
implemented in Israel was not successful due mainly to the “failure to adequately recruit all participants, including the community, as partners.” Based on Habbick and Leeder’s findings and those in the present study, the NMP should ensure that there is constant involvement and consultation with the community in all aspects of program operation in order to sustain support for the NMP.

As discussed previously, participants reported that the public’s expectations of the program and associated human capital gains are unrealistic due to perceived insufficient communication between the NMP and Prince George citizens. It is essential that the program communicate realistic expectations to the public, and all stakeholders who have invested in the NMP’s success. A comprehensive communication strategy to manage expectations and sustain support for the program should be implemented. Referring to community-based health education (CBHE), the WHO suggests that, in most regions, community newsletters or articles in the local newspaper are an effective method of disseminating information to increase understanding of CBHE concepts by the public. Newsletters, newspaper articles or broadcasts on local radio stations could be effective in the current context. However, the community should be consulted regarding strategies that would be most useful to them.

6.7 Future Research and Considerations

A product of the current findings was the identification of various indicators of the NMP’s community impact that could potentially be quantified to track over time. A list of potential indicators has been compiled in Table 5.6.1. Indicators of community impact were found in all five community sectors and all three types of capital described in this study. The sectors of education and health services had the greatest number of indicators. Based on frequency of responses and importance participants ascribed to particular impacts, priority should be given to measuring indicators related to medical education, in terms of tracking recruitment and retention of northern and non-northern students to the NMP and NMP-trained physicians as they progress through residency
training to medical practice. Tracking of indicators identified as strains on the health system and resources should also be undertaken.

As indicated in Table 5.6.1, social capital has been measured quantitatively in many contexts. It may therefore be possible to quantitatively track some components of social cohesion and capital that emerged from the transcripts. However, findings in the present study suggest that non-quantifiable indicators are also important to understand the full impact of the Northern Medical Program on Prince George and its outlying communities. Although many quantitative tools have been created to measure social capital, perceptions related to such things as pride and community empowerment cannot easily be quantified. Ongoing, longitudinal tracking of community-wide impact should be approached using mixed methods. A promising mixed-methods tool to further explore the role of social capital in northern BC is the Social Capital Assessment Tool (SCAT) created by the World Bank, as the instrument has been shown to have applicability in small and medium-sized rural regions. When embarking on this next phase of the research, it will be important to ascertain the accessibility of data on these various indicators. It is likely that data in the sectors of education, health services and economy will be more readily available than those related to politics or media. A feasibility study to determine availability and quality of data on the quantifiable indicators listed in Table 5.6.1 is recommended. Upon completion of the feasibility study, data collection on these indicators should begin immediately to obtain a baseline level of impact as close as possible to the graduation of the first cohort of students.

It would be ideal to look retrospectively at some quantifiable indicators of community impact if the data are available. Longitudinal research on quantifiable and non-quantifiable indicators of impact of the NMP should be continued. Qualitative interviews should be ongoing to ascertain feelings, perceptions and challenges related to NMP operation that cannot be elicited from a questionnaire. Interviews should continue to be conducted with community leaders in Prince George, and enhanced efforts should be made to recruit participants who were not originally committed to the NMP so that the program can get a sense of the level of commitment and support of these individuals for
the NMP. If feasible, it is advisable that interviews also be conducted with a more representative sample of individuals from each important sector of impact. For example, many potential impacts around patient care were reported. Conducting a small study with patients, nurses and other health care staff, and patient advocates could further shed light on the impact of student participation in patient care. Before beginning the next phase of data collection, it recommended that a detailed comparison of findings of the NMP impact study conducted in the 2004 and the present study be conducted to more fully evaluate temporal changes in perceptions. This will set up a process for comparing impacts and perceptions of impacts in subsequent studies.

In the current study, the discussion on the role of social capital in describing the impact of the NMP on the community was focussed on social cohesion and the various forms of social capital. Further theorizing around the role of social capital in Prince George is needed. For example, the community’s ability to access social resources and perceptions related to potential outcomes of social capital were not thoroughly explored. Similar to findings reported by Carpiano, further research is also needed to assess the different types of social capital resources possessed by different levels of networks within the community.

6.8 Conclusion

The present study aimed to explore perceptions of the broader impacts of implementing a medical education program in a small, medically underserved community. Perceived current and anticipated future impacts of the program spanned the sectors of education, economy, health services, media and politics. Both positive and negative impacts were noted for all sectors, except economy, where no negative impacts were reported. A second objective of the study was to determine if and how social capital in Prince George had been affected by the implementation of the NMP. Participants’ comments in this area were pervasive. As hypothesized by Bates, Lovato and colleagues, impacts on social capital may be an important aspect of understanding the impact of the NMP in Prince George. One participant eloquently described the perceived impact of social
capital in Prince George in terms of the main goal of the NMP, increasing human capital: “One of the interesting things I’ve come across is related to human capital and social capital. People often talk about non-metropolitan regions as lacking in human capital, partly because your post-secondary attainment is a proxy for your human capital. And these regions have lower university completion than Vancouver or Toronto mostly because we’ve never had the knowledge infrastructure here until now. So we have lower human capital. And then other literature talks about this notion of social capital and connections to other people. And that’s where non-metropolitan regions are seen to be higher because they’re smaller and all the elites know each other…So we have lower human capital and higher social capital, so the argument then to me is, if you make some minor investments in human capital, it could have a huge payoff, because you have a stronger social network here. You have connections between NMP, Northern Health, government, the universities, UBC and here, potentially with the other programs at the university, like nursing and biochemistry and those kinds of programs. So in theory, for a relatively low investment, however you define that, to increase the human capital you can get a great payoff because of this high level of social capital. That to me, I find really interesting and no one’s really talked about that. Because it is again a potential outcome of the NMP.” (ID: 15, TU: 604-628).

In conclusion, it was originally anticipated that the Northern Medical Program would impact the sector of health services by improving access to health care in the North through the recruitment and retention of physicians. It was also hypothesized that the program would have broader impacts on the community. From the findings, a list of potentially quantifiable key indicators of community impact was created. However, the data suggest that non-quantifiable social indicators of community impact, such as community empowerment and community self-esteem are equally important. In addition to impacting health services, the program also appears to be impacting education, economy, politics, media and social capital, all of which are social determinants health. Reported impacts on health services, education, economy and social capital also appear to promote human capital gains, in terms of increasing the number of physicians, other health and non-health professionals as well as the level of expertise possessed by these
individuals. Therefore, the broader impacts of the NMP on the region are likely to improve health to a greater degree and result in larger human capital gains than originally anticipated.
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Ref Type: Report

Ref Type: Report


Ref Type: Conference Proceeding

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Ref Type: Report


Ref Type: Journal (Full)

Ref Type: Journal (Full)
Ref Type: Journal (Full)

Ref Type: Journal (Full)

Ref Type: Journal (Full)

Ref Type: Journal (Full)

Ref Type: Journal (Full)

Ref Type: Abstract


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Ref Type: Report


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APPENDICES


The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road, Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL - MINIMAL RISK

PRINCIPAL INVESTIGATOR:
Chris Lovato

INSTITUTION / DEPARTMENT:
UBC/Medicine, Faculty of Health Care & Epidemiology

UBC BREB NUMBER:
H07-00081

INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
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Other locations where the research will be conducted:
On the UNBC campus and in the Prince George community, at a location convenient for study participants (i.e. business offices, etc.).

CO-INVESTIGATOR(S):
Patricia Toomey
Neil Hanlon

SPONSORING AGENCIES:
N/A

PROJECT TITLE:
Evaluation of the Impact of the Northern Medical Program on the Community: Perceptions of Community Stakeholders

CERTIFICATE EXPIRY DATE: April 23, 2008

DOCUMENTS INCLUDED IN THIS APPROVAL:

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Version</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol: Community Impact Project</td>
<td>N/A</td>
<td>March 24, 2007</td>
</tr>
<tr>
<td>Protocol: Consent Forms</td>
<td>N/A</td>
<td>March 24, 2007</td>
</tr>
<tr>
<td>Protocol: Advertisements</td>
<td>N/A</td>
<td>March 24, 2007</td>
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The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.

Approval is issued on behalf of the Behavioural Research Ethics Board and signed electronically by one of the following:

Dr. Peter Suedfeld, Chair
Dr. Jim Rupert, Associate Chair
Dr. Arminee Kazanjian, Associate Chair
Dr. M. Judith Lynam, Associate Chair
Dr. Laurie Ford, Associate Chair
A2. Study Consent Form

THE UNIVERSITY OF BRITISH COLUMBIA

STUDY ID: _____ _____
DATE: _____ _____ (dd/mm/yy)

Evaluation Studies Unit
Faculty of Medicine
2775 Laurel Street
Vancouver, BC
V5Z 1M9

INDIVIDUAL INTERVIEW - CONSENT FORM
Evaluation of the Impact of the Northern Medical Program on the Community: Perceptions of Community Stakeholders
Page 1 of 2

Principal Investigator:
Dr. Chris Lovato, Associate Professor, Dept. of Health Care & Epidemiology, UBC
Tel (w): 
E-mail:

Co-Investigators:
Patricia Toomey, Graduate Student, Dept. of Health Care & Epidemiology, UBC
Tel (w):
E-mail:

Dr. Neil Hanlon, Assistant Professor, Dept. of Geography, UNBC
Tel (w):
E-mail:

Dr. Joanna Bates, Senior Associate Dean of Education, Faculty of Medicine, UBC
Tel (w):
E-mail:

Dr. Gary Poole, Associate Professor, Dept. of Health Care & Epidemiology, UBC
Tel (w):
E-mail:

You are invited to participate in a research study co-sponsored by the Evaluation Studies Unit at the University of British Columbia. Please note that:

a. Your participation is entirely voluntary.
b. You may withdraw at any time from the study without prejudice.

After you have read the following explanation, please feel free to ask any questions that will allow you to understand the nature of the study.
INDIVIDUAL INTERVIEW CONSENT FORM – NMP Impact Study

Page 2 of 2

What This Study Is About:

We are interested in exploring changes that you have experienced in your community or organization that you feel may be a result of the Northern Medical Program (NMP) since its implementation in 2004. Your input is very important to us, and we thank you in advance for your participation.

How This Study Is Done:

We would like your participation in an in-person interview. We are willing to set up an interview whenever it is most convenient for you. This confidential interview should take 30 to 60 minutes of your time. The interview will be conducted by the co-investigator on the project, Patricia Toomey. This study is being conducted as part of a graduate thesis project.

We would also like to tape and transcribe the interview, to make sure we capture everything you say. We will also ask for your consent previous to taping the interview.

*Your confidentiality will be respected. No information that discloses your identity will be released or published without your specific consent to the disclosure. We will keep interview tapes in a locked cabinet and transcriptions in a password-protected computer file and locked cabinet.*

Contact for information about the study:

If you have any questions or desire further information with respect to this study, you may contact this study’s Principal Investigator or co-investigator: Dr. Chris Lovato at... or by email... and Patricia Toomey at... or by email... .

Contact for concerns about the rights of research subjects:

If you have any concerns about your treatment or rights as a research subject, you may contact the Research Subject Information Line in the *UBC Office of Research Services* at 604-822-8598.

Consent:

Your participation in this study is *entirely voluntary* and you may refuse to participate or withdraw from the study at any time, including after the interview, without jeopardy to your community affiliation or status. Your signature below indicates that you have received a copy of this consent form for your own records, and that you consent to participate in this study.

Participant Name __________________________ Signature __________________________ Date __________________________
A3. Interview Guides

Semi-Structured Interview Guide – NEW PARTICIPANTS

**Title:** Evaluation of the Impact of the Northern Medical Program on the Community: Perceptions of Community Stakeholders

**Interviewer:**

Hello, my name is __________. You have been selected for a research project exploring the impact of the Northern Medical Program on your community. On behalf of the entire research team, I would like to thank you in advance for your volunteer participation.

This interview should take about 30-60 minutes of your time. I would like to tape this interview so that I can transcribe it and be certain not to lose what you say. The tapes will be kept in a locked cabinet and transcriptions will be kept in a password-protected file. You records will not be identified by name, an unidentifiable code will be used instead.

May I start the tape recorder?  [start recording]

**Interview Questions:**

Probes to be used throughout:
- Can you give me an example of that?
- Can you tell me a little bit more about that?
- Can you think of any other reason for the particular impact you are describing, other than the NMP?

1. When did you first learn about the Northern Medical Program?
   Probes:
   a. Initial announcement (2001) / other?
   b. Initial contact person(s)?
   c. Background / interest

2. How closely have you followed the issue/development of the program?

3. Do you contribute to the NMP, or are you involved with the NMP in any way?
   a. NMP Trust, other?

4. What does the Northern Medical Program mean to you?
   Probes: (use similar probes as #2, as well as other possible community impacts, and potential future impacts)

5. What are your expectations of the NMP?
   a. Have your expectations changed since the NMP was established?
6. From your perspective, how do you think the Northern Medical Program has impacted the community? (Probe re: positive, negative, neutral impacts)
   a. Health: PGRH, NMS, other
   b. Education: clinical faculty, students (high school, college, university), other
   c. Media
   d. Political
   e. Economy
   f. Business (Small and large business, industry)
   g. Where else have you seen an impact?

7. Can you suggest the names of other leaders or representatives in the community whose perspectives you think would help us better understand the impact of the NMP on the community as a whole?

8. Do you have any other comments you would like to share with us?

Thank you very much for your time. We would like to contact you in the future to confirm and share our study findings with you. Is this okay with you? [end recording]
Semi-Structured Interview Guide
– PARTICIPANTS PREVIOUSLY INTERVIEWED

Title: Evaluation of the Impact of the Northern Medical Program on the Community: Perceptions of Community Stakeholders

Interviewer:

Hello, my name is ______________. You have been selected for a research project exploring the impact of the Northern Medical Program on your community. On behalf of the entire research team, I would like to thank you in advance for your volunteer participation.

This interview should take about 30-60 minutes of your time. I would like to tape this interview so that I can transcribe it and be certain not to lose what you say. The tapes will be kept in a locked cabinet and transcriptions will be kept in a password-protected file. You records will not be identified by name, an unidentifiable code will be used instead.

May I start the tape recorder? [start recording]

Interview Questions:

Probes to be used throughout:
- Can you give me an example of that?
- Can you tell me a little bit more about that?
- Can you think of any other reason for the particular impact you are describing, other than the NMP?

1. How did you contribute to the development of the program?
   a. NMP Trust, other?

2. Has your background/interest/involvement in the NMP changed since your interview in 2005?

3. How closely have you followed the issue/development of the program?

4. What does the Northern Medical Program mean to you? How has this changed since your first interview?
   Probes: (use similar probes as #2, as well as other possible community impacts, and potential future impacts)

5. What are your expectations of the NMP? How has this changed since your first interview?
   a. Have your expectations changed since the NMP was established?
6. In your last interview you spoke about how you think the Northern Medical Program has impacted the community. You said ________, how has this changed since 2005? [Probe re: positive, negative, neutral impacts]
    a. Health: PGKH, NMS, other
    b. Education: clinical faculty, students (high school, college, university), other
    c. Media
    d. Political
    e. Economy
    f. Business (Small and large business, industry)
    g. Where else have you seen an impact?

7. Can you suggest the names of other leaders or representatives in the community whose perspectives you think would help us better understand the impact of the NMP on the community as a whole?

8. Do you have any other comments you would like to share with us?

Thank you very much for your time. We would like to contact you in the future to confirm and share our study findings with you. Is this okay with you?  [end recording]
A4. Letter Inviting Leaders to Participate in the Study

[Participant Address]

[Date]

Dear ___________________

I am writing you today to inform you about a research project that is being conducted to evaluate the impact of the Northern Medical Program (NMP) on the Prince George community. The title of the study is “Evaluation of the Impact of the Northern Medical Program on the Community: Perceptions of Community Stakeholders”.

In 2005, you participated in an individual interview for the first “Community Impact Project” which was initiated by Drs. Joanna Bates (UBC), Chris Lovato (UBC), Neil Hanlon (UNBC) and David Snadden (UNBC). During this interview you indicated that it would be acceptable for us to contact you regarding the follow-up study.

We are conducting this research study to expand on the first interviews and find out more about the impact that the NMP is having on the community. The interview will take approximately 30-60 minutes of time and will be conducted at a time and location that is convenient for you. In addition to the interview, we will ask you to complete a brief demographic questionnaire.

As with all research, participation in this study is voluntary. I will be contacting you by telephone one week after you have received this letter to answer any questions you may have and to ask if you would like to participate. Please also feel free to contact me at the number below.

Thank you for your time and consideration.

Kind Regards,

Trish Toomey
Dean of Health Care & Epidemiology
A5. Participant Demographic Questionnaire

STUDY ID: _____ _____
DATE: _____ _____ (dd/mm/yy)

Participant Demographic Questionnaire

Study Title: Evaluation of the Impact of the Northern Medical Program on the Community: Perceptions of Community Stakeholders

The following questions were designed to provide us with more information regarding your level of involvement in the community. Instructions for completing the questions follow each question and are italicized.

1. What is your age range in years? *Please check only one box.*
   - □ <30 years
   - □ 30-40 years
   - □ 41-50 years
   - □ 51-60 years
   - □ >60 years
   - □ I choose not to answer

2. What is your gender? *Please check only one box.*
   - □ Male
   - □ Female

3. What position do you currently hold in the community?

   ________________________________

4. How long have you held the position listed in Question 3? *Please check only one box.*
   - □ <1 year
   - □ 1-4 years
   - □ 5-9 years
   - □ 10-15 years
   - □ >15 years
   - □ I do not know
5. Do you currently live in Prince George? *Please check only one box.*

☐ Yes
☐ No

6. If you answered “Yes” to question 5, how long have you been living in Prince George? *Please check only one box.*

☐ 0-5 years
☐ 6-10 years
☐ 11-15 years
☐ >15 years
☐ I do not know
☐ Not Applicable

7. In total, how long have you lived in a rural, remote or northern community? *For example, if you have lived in Prince George for 5 years, and another northern community for 5 before that, you would check the box “6-10 years”. Please check only one box.*

☐ 0-5 years
☐ 6-10 years
☐ 11-15 years
☐ >15 years
☐ I don’t know
☐ I have never lived in a rural, remote or northern community