NORTHERN HEALTH CONNECTIONS

EVALUATION REPORT

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(With assistance from Jennifer Crain and Christos Vardacostas, MA candidates at UNBC)

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Executive Summary

Background: Access to health care facilities and services has been a chronic concern for rural and remote communities in northern British Columbia (BC). In response to this concern, the Northern Health Authority (NHA) initiated a unique medical transportation service called Connections in 2006. Since its inception, this service has provided subsidized transportation for patients in rural and northern communities in BC to get to out-of –town health care centers through a fleet of customized buses. The service has been available to northern residents who have had non-emergency medical appointments with doctors and at diagnostic centers in northern BC and the lower mainland. It has provided round trip transportation via a combination of coach buses (for long distance trips) and mini-buses (for short distance trips) along specific routes with fixed weekly schedules contracted from a private transportation company. The coaches and min-buses are equipped with wheelchair lifts, audio-video devices and other amenities for travelers' comfort. As well, the service has made arrangements with local inns to offer reduced rate accommodations for the Connections clients.
As a unique service with great potential and promise for other jurisdictions facing similar problems of access to health care, the NHA felt the need for an independent evaluative study of the Connections service and provided the funds for such study.

Objectives of the Study: The main objective of the study was to evaluate the efficacy of the Connections transportation service in terms of enhancing rural and northern BC communities' access to health care services, in particular for those with limited means and resources. In doing so, it examined the demographic, socioeconomic and health profiles of residents in rural, remote and northern communities in BC who have used the service.
The second objective of the study was to analyze the patterns as well as the reasons for using the service by clients in relation to the main objective of the study.
The third objective was to capture the clients' perceptions and ratings of the service as a key element in the continuity and potential adjustment or expansion of the service.

Methodology and Data Collection: The study surveyed a random sample of past and current clients of the Connections service through a detailed questionnaire to collect the required information for service evaluation. A pilot study was undertaken to fine tune the questionnaire before applying it to the entire sample. The survey methods and protocols for handling client information were approved by the Ethics Boards of both the University of Northern British Columbia (UNBC) and NHA. Data was collected from about 300 clients through questionnaires mailed out to clients and distributed to clients riding the buses. A portion of the clients receiving the mail-outs indicated their preference to provide their answers through phone interviews, which was administered by the UNBC Computer Assisted Telephone Interview Lab. The data thus collected were pooled together and linked with the existing administrative data from the Connections client database for analysis.

Study Results:

Demographic Profile of the Clients: The majority of clients (over 62%) were found to be female with a mean age of about 53 years. The male clients had a higher mean age of 57 years, which was not statistically different from the mean age of female clients. The vast majority of clients were born in Canada (86%) and of Caucasian descent (77% of those who revealed their racial background). About half of the clients were either married or lived with a partner.

Socioeconomic Profile of the Clients: The majority (63%) of clients had educational levels of up to high school, with only 17% with a degree from a college or university. Almost half (47%) of the clients were retired. Another 21% were unemployed and 3% were disabled. Less than half of those employed had part-time jobs.

More than half of the clients had annual household incomes of less than $30,000, and about three quarters of them earned less than $40,000 a year. As well, a quarter of the clients had no vehicle, with another quarter whose households owned only one vehicle. Such socioeconomic data clearly indicate that the majority of clients were of low socioeconomic status.

Health Profile of the Clients: The health of clients as rated by themselves was found to be poor or fair for over half (52%) of the clients. A vast majority (76%) of them had at least one health problem. The most prevalent types of health problems included joint problem, high blood pressure, digestive problems, breathing problems and diabetes.

Patterns of and reasons for Use: The clients came from all over northern BC, most of them from more populated areas as expected. The major destinations for medical appointments were Prince George (37%), Vancouver (37%), Terrace (10%) and Prince Rupert (3%). About half of the clients had used the service at least twice, and most of them (43%) traveled for more than eight hours to get to their destinations.

Clients Perceptions of the Service: The overwhelming majority (95%) of the clients were quite happy with the service and indicated that they were going to use it again and recommend it to others. For 20% of the clients, the Connections service was the only option to access to medical care and a significant proportion (43%) were not sure if they had some alternative.

Concerns and Suggestions: Very few clients had issues or concerns with the service. The most typical concerns were limited scheduling, costly overnight stays, inadequate drop-off points, and lack of waiting places for pick-up. Suggestions were basically geared to addressing such concerns.

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1.0 Project Description

1.1 - Background

Rural and remote areas experience myriad systemic barriers to accessing health care. These include a limited health care supply, difficulty recruiting and retaining health care professionals, and disparities in the number and distribution of general practitioners and specialists. Geography further exacerbates these and other systemic barriers. Canada's expansive and often rugged terrain means that many people must travel great distances to receive the care they need. Moreover, inclement weather and the limited availability and accessibility of affordable transportation options often make medical travel even more difficult in rural and remote regions. The region of Northern British Columbia (BC) is no exception. With a population of approximately 300,000 spread out over an area larger than France, travel for specialized health care services is a reality for northern patients and their families.

Northern Health is British Columbia's largest regional health authority by geography, occupying the northern two-thirds of the province. In response to barriers to accessing health care, the Northern Health Authority established the Northern Health (NH) Connections service in the spring of 2006. NH Connections is a low-cost, publicly subsidized medical transportation service for Northern BC residents needing to visit a specialist or receive other health care services not available in their home community. Through a fleet of customized busses, patients can travel year round to medical appointments in Northern BC, Vancouver, Kamloops, and Grand Prairie, Alberta. Since its establishment in 2006, the NH Connections customer base has grown to 7,985 registered users, and is expected to keep increasing. Many of these users have traveled with NH Connections multiple times, and as such, the program has serviced 23,496 passengers since its establishment.[1]

1.2 - Study Objectives

This study is a baseline evaluation study using a survey questionnaire and telephone-based interviews. One of the objectives of this study is to examine the demographic, socioeconomic, and geographical patterns of the uptake of NH Connections by rural and remote communities in Northern BC. A second objective is to analyze the patterns of use of the program in the light of the main objective of the program, namely, the enhancement of the health care delivery in Northern BC. Such analysis, in effect, evaluates the extent to which NH Connections has attained or is attaining its main objective. A third objective related to the latter goal is to capture the targeted communities' perception and rating of NH Connections as a key element in its continuity.

[1] The values for the number of registered users and passengers are as of May 20th 2009.

Accordingly, this study asks NH Connections clients about a variety of topics including their employment, education, income, health status, and knowledge and impressions of NH Connections. Moreover, the study also uses administrative data on clients' age, sex, area of residence, and destination in order to make linkages between service usage patterns and measures of socioeconomic, demographic, and health status.

Enhancing access to health care is the underlying philosophy of NH Connections. As such, the results of this evaluation are critical for its continuation and possible modification to better serve the medical needs of the target populations in Northern BC. As well, should the service prove effective, it will provide evidence of best practice that could be imitated in other jurisdictions with similar access problems.

1.3 - Study Timelines

The following table provides detailed specification of the study timelines.

Table 1.3 Study Timelines

December 2007	Project proposal developed and presented to Northern Health
June – August 2008	Questionnaire designed and research ethics applications compiled and submitted to UNBC's and Northern Health's research ethics boards
August 2008 – September 2008	Study reviewed and approved by UNBC's and Northern Health's research ethics boards
September 2008	Pilot study preparation and execution
October – November 2008	Pilot study follow up: edits to study documents in terms of content and layout Collaborated with staff at UNBC's Computer Assisted Telephone Interview lab to finalize pilot testing and content of telephone interviews Prepared samples for 3 modes of administering the questionnaires: 1) within NH Connections fleet during travel, 2) mail-out, 3) telephone-based interviews
December 2008 – March 2009	Data collection: mail-out sample, bus sample, telephone-based interviews
January – April 2009	Data entry of completed questionnaires: mail-out and bus samples Data cleaning and preparation
April 2009	Preliminary data analysis and results
May – June 2009	Full data analysis
June 2009	Draft report completed
July 2009	Final report completed

2.0 Literature Review

The primary objective of the Canada Health Act is to ensure that all residents of Canada have reasonable access to medically necessary insured services without direct charges (Health Canada 2002). In spite of this goal, disparities in access to health care persist, most notably in many rural, remote, and northern regions. Harsh climate and weather, sparse populations, and communities often separated by expansive and challenging geography (Government of British Columbia Ministry of Health 2002; Leipert and Reutter 2005), contribute to reduced service provision in many regions of Canada. Rural Canada also exhibits higher unemployment levels, lower educational and income levels, and is overrepresented by several vulnerable groups including the elderly, under-20 youth, and Aboriginal populations (DesMeules *et al.* 2006; Forbes and Janzen 2004; Government of British Columbia Ministry of Health 2002; Kirby and LeBreton 2002). Overall, rural Canadians have higher death rates, higher infant mortality rates and shorter life expectancies than do urban Canadians (DesMeules *et al.* 2006), and have the lowest "disability-free life expectancy" in Canada (Laurent 2002; Shields and Tremblay 2002). It has been argued that an 'inverse care law' exists, because although rural residents tend to have poorer health status and greater needs for primary health care, they are underserved and face more barriers to accessing health care than urban residents (Romanow 2002).

2.1 - Systemic Barriers

Rural and remote areas experience a myriad of systemic barriers to accessing health care including limited health care supply, difficulty of recruitment and retention of health care practitioners, declining scope of care offered by rural physicians, declining quality of care by overburdened health providers, disparities in the numbers and distribution of physicians and specialists. These barriers have been extensively reviewed elsewhere (Safaei and Crain, 2006).

2.2 - Geographic Barriers

The systemic barriers of access to health care in rural and remote regions mean that many people must travel outside their communities to access the care they need. Thus, availability, affordability (in terms of financial, time, and social costs), and suitability of transportation are key enabling factors in overcoming geographic barriers and accessing medical care.

Limited availability and accessibility of transportation is a well-known barrier to access health care in rural and remote regions (Arcury *et al.* 2005; Goins *et al.* 2005; Leipert 2005; Nemet and Bailey 2000; Schopp *et al.* 2000; Sherwood and Lewis 2000; Wardman *et al.* 2005; Wilson and Rosenberg 2002). For example, lack of transportation was identified as a barrier to accessing health care in 76% of respondents partaking in a study on access and utilization of health services by British Columbia's rural Aboriginal

population (Wardman *et al.* 2005). Moreover, rural West Virginia residents identified limited medical transportation programs and limited public transportation as barriers to accessing care (Goins *et al.* 2005). Physical limitations may even prevent some people from operating their own vehicles (Bellamy *et al.* 2003), thus availability of transportation may not necessarily denote accessibility.

The demographics and deficient public transportation options associated with many rural and remote areas may preclude access to transportation for health care, even if systemic barriers are not a factor. Although many rural communities have strong social capital networks and informal helping systems (Ministerial Advisory Council on Rural Health 2002), some people may still experience difficulties in accessing transportation to get them to and from medical appointments in their home community. The migration of working age youth and adults to cities, an ageing population, chronic high unemployment, and poorer health status (Ministerial Advisory Council on Rural Health 2002) of many rural and remote regions means there may be many people who cannot drive themselves to the doctor, or know of others who can assist. Relying on others may also instill a sense of obligation and loss of independence.

Furthermore, the absence and inconvenience of public transit in rural areas makes vehicle ownership a necessity for many rural inhabitants (Sherwood and Lewis 2000; Shucksmith *et al.* 1996). However, vehicle ownership can be a financially burdensome undertaking for even the well-off earners of society, let alone for low-income rural households. The necessity of car ownership thus can be cause of financial deprivation, rather than an indicator of financial well-being (Shucksmith *et al.* 1996 as cited in Farrington et al. 1997). Cullinane and Stokes (1998) also acknowledged the high costs of owning a private vehicle, and emphasized that the ongoing costs of fuel, insurance, and maintenance turns the vehicle into a financial burden. Some rural residents, however, cannot afford to own a vehicle. Browne and Fiske (2001) found that many women in their study (conducted in northwestern Canada) could not afford vehicles or taxis, which was especially isolating in the absence of a public transportation system in their reserve community.

When travel outside of the community is required, often great distances must be covered. In Canada in 2004, the overall average travel distance to the nearest family physician was 3.4 kilometers, and 10 kilometers to see a specialist (Pong and Pitblado 2005). When considering rural and remote regions, however, the figure increases dramatically. On the extreme end, the average distance for the general population to a family physician in the Territories was more than 200 kilometers, and over 670 kilometers to see a specialist (Pong and Pitblado 2005). In other rural areas, average distances ranged from 7 to 33 kilometers to see a family physician, and 13 to 90 kilometers for specialist services.

Travel to distant health care services is prohibitively expensive and time consuming. In Leipert and Reutter's (2005) qualitative study on how women maintain their health in isolated northern British Columbia, one respondent reported that she had to cut down on her food expenditure in order to be able to afford the cost of the airfare to Vancouver to visit a specialist. Hubbell's study (2006) on health access barriers faced by rural Mexican American women, demonstrated that long travel distance was the primary reason the

women surveyed were not getting mammograms. The Ministerial Advisory Council on Rural Health (2002) also reported that in the Canadian arctic, residents may be required to travel up to six hours by plane for hospital-based services. Hotel, food, and incidental costs while away from home are also expensive and burdensome (Kornelsen and Grzybowski. 2005), especially if the person seeking care is accompanied by an escort or spouse (Rankin *et al.* 2001). Extended periods away from home also mean lost wages for some (Rankin *et al.* 2001; Schopp *et al.* 2000). In their study of the cost of accessing surgical specialists by rural and remote residents in Australia, Rankin et al. measured an average savings of AU$1077 in travel related costs when a specialist was available locally, rather than having to travel to a metropolitan area for service.

Inclement weather, rugged terrain, and inadequate infrastructure present added barriers to distance, and have implications for people's safety, health outcomes, and willingness to travel (Bellamy *et al.* 2003; Browne n.d; Goins *et al.* 2005; Government of British Columbia Ministry of Health 2002; Kornelsen and Grzybowski 2005; Leipert and Reutter 2005; Ministerial Advisory Council on Rural Health 2002; Procyk *et al*. 2005; Rural Maternity Care Research n.d; Triller *et al.* 2005). British Columbia's terrain is especially challenging and largely characterized by forested and mountainous topography, making transportation between communities hazardous and time consuming, especially in winter (Government of British Columbia Ministry of Health 2002). Concerns about winter travel have also been found to be a common source of anxiety for women faced with leaving their rural British Columbia communities to give birth (Kornelsen and Grzybowski 2005). Transportation can also be especially difficult for First Nations populations living on reserves (Government of British Columbia Ministry of Health 2002). Accessing care in the winter months was also found to be especially problematic by Goins *et al.* (2005), in their West Virginia study. As one participant noted (page 209), "On account of the snow they close the mountain down; they close the road and then you have to call Medivac..."

Various social costs are also incurred when traveling outside of one's community for medical care (Ministerial Advisory Council on Rural Health 2002; Rural Maternity Care Research n.d; Kornelsen and Grzybowski 2005). A source of stress for almost all participants in Kornelsen's and Grzybowski's study on rural women's experiences of birth was being uprooted from family and community networks. The same study also found that having a travel escort (children and/or spouse) can have adverse social implications, for example, tension from being confined to a hotel room for many days.

2.3 - Interventions to Overcome Geographic Barriers

A variety of strategies haven been implemented to assist rural residents in overcoming geographic barriers to accessing health care. This section explores the nature of these strategies, as well as some of the strengths and limitations of each.

Telehealth is the use of information and communications technologies to share health-related information among health care providers, and to deliver health services over both

long and short distances (Canadian Society of Telehealth n.d). Electronic transmission of voice, data, images, and other information provides an alternative to physical transportation of patients, health practitioners and educators (Canadian Society of Telehealth n.d). For the rural health care provider, Laurent (2002) found that telehealth decreases professional isolation and increases opportunities for continuing education. For patients, telehealth allows greater and more equitable access to health care providers including medical specialists, faster diagnoses and treatment for some conditions, and eliminates the need for travel in some cases (Canadian Society of Telehealth n.d; Laurent 2002). The savings potential in terms of time, money, and social well-being is clear.

Telehealth is not without its limitations however. Some of these include technical difficulties such as interoperability between differing technologies (Canadian Society of Telehealth 2001; Pong 2002), a lack of policies on reimbursing physicians for providing telehealth services, patient preference and need for in-person health care (Pong 2002), and deficient staff training on operating telehealth equipment (Laurent 2002). While this is not an exhaustive list of the strengths and limitations of telehealth, it presents evidence that telehealth is limited in its ability to eliminate distance-related barriers, in spite of its convenience and effectiveness for some applications.

Outreach programs are another means to alleviate the need for travel. In a comparative study of preventive services in Manitoba, Gupta et al. (2003) found that the Manitoba Breast Screening Program (administered by CancerCare Manitoba) significantly improved access to screening. In fact, rural women actually surpassed their urban counterparts in screening rates. The program operates at three permanent facilities in Winnipeg, Brandon and Thompson, and mobile screening mammography vans are sent to rural regions, as well as to some Winnipeg neighbourhoods with low rates of mammography. As an active recruitment strategy, the services and the van arrival schedule are made known to eligible women in advance. Furthermore, in a study of a rural clinic-based automated drug dispensing system in the Adirondack Mountain region of New York State, Triller et al. (2005) found that travel-related costs to access pharmacies were significantly reduced. For example, residents of one community who received medications from the nearest clinic rather than the pharmacy saved an average travel distance of over 50 kilometers, and $12.23 on automobile travel per visit.

Outreach programs are an effective way of bringing care to those who face geographic and financial barriers of accessing medical services and prescriptions. What such programs cannot guarantee, however, is continuity of care. As noted by the Ministerial Advisory Council on Rural Health (2002), physicians and specialists generally do not live in Canada’s remote and northern communities; rather they are flown in to provide health care. It can be difficult to establish good patient-physician relationships because it is often not the same physician visiting the communities each time. This is also a symptom of the retention challenges discussed earlier.

Medical travel benefits are a component of some provincial and territorial health insurance plans, and cover the cost of travel and accommodation to varying degrees**.** The government of Newfoundland and Labrador for example, reimburses a portion of travel

and accommodation expenses for residents and their essential escorts who must travel more than 200 kilometers (one way) to access medically necessary insured services (Government of Newfoundland and Labrador Department of Health and Community Services 2005). Examples of eligible expenditures include a portion of airfare (cost shared at 50% after the applicable deductible), accommodations (up to $75 per day); temporary residence costs (up to $1000 for each consecutive period of 31 days); and daily meal allowances. Yukon residents receive a $30 per day subsidy for accommodation, meals, and transportation, beginning on the fourth day of receiving medical services, for up to 90 days (Yukon Health and Social Services n.d.). The Northwest Territories' Medical Travel Program also covers a portion of intercommunity and local transportation, escorts, and accommodation (Northwest Territories Health and Social Services 2006). Medical travel benefits are also available to Manitoba residents through the Manitoba's Northern Patient Transportation Program; however subsidies are generally limited to those residents living within a certain geographic area (Province of Manitoba n.d.). Medical transportation benefits are also available to "registered Indians and recognized Inuit and Innu throughout Canada" (Health Canada 2005).

Medical travel benefits alleviate a portion of the costs of medical travel, but it is apparent that a significant portion of the costs still rest with the patient. Furthermore, there is no evidence indicating coverage for lost wages or child care costs. The social costs of leaving one's community also cannot be reimbursed.

Rural medical transportation programs are a promising means by which to overcome transportation and financial barriers to accessing health care. The majority of such programs provide transportation services for specific clientele such as elderly and physically disabled clients, and are designed to operate within one's own community or its immediate periphery. Examples of the types of services offered include shared taxi services, car pools, dial-a-bus, volunteer driver systems, and fixed rate van services (Herold *et al.* 2002). There is a dearth of research and policy attention towards nonemergency medical transportation initiatives however, including looking at models for community transportation, how they are financed, and their impact on health status (Bellamy *et al.* 2003). Moreover, published discourse surrounding nonemergency medical transportation services that cater to a wide range of clientele and that cover expansive geographic jurisdictions is virtually nonexistent in the literature. This is likely because of a corresponding lack of such services.

Notwithstanding, the following discussion provides a few examples of medical transportation initiatives that are in operation.

The Shriners is an international charitable organization whose philanthropy focuses on helping physically challenged and burned children (Gizeh Shriners of British Columbia and the Yukon n.d). In 2001, the British Columbia and Yukon chapter of the organization has also operated the Care Cruiser Program that provides free non-emergency medical transportation. Five highway coaches travel throughout the province of British Columbia, and any BC child, and their parents or care givers, who are receiving treatment at any Shriners Hospitals for Children (including one in Portland, Oregon), BC Children's

Hospital, BC Women's Hospital and Sunny Hill Hospital are eligible for the service. Three of the coaches are wheelchair lift-equipped, two can accommodate stretchers, and one has a motorized hospital bed. Hub communities for pick-ups and drop-offs (not door-to-door except on rare occasions) are Vancouver, Cache Creek, 100 Mile House, Williams Lake, Quesnel, Prince George (for central northern BC), Merritt, Kamloops, Revelstoke, Vernon, Kelowna, Penticton (for the BC interior), and Castlegar (for the Kooteney region).

On a smaller scale is the Children and Adult Rural Transportation System (C.A.R.T.S.) of Columbia County, New York. This program provides free medical transportation to low-income individuals of Columbia County who lack another means of getting to a medical appointment. C.A.R.T.S operates a fleet consisting of three sedan automobiles, a minivan, and a wheelchair accessible minibus (Healthcare Consortium n.d.).

A non-emergency medical transportation program in West Virginia, called Transportation for Health, was originally implemented in five communities (but later reduced to three), the project built upon existing transportation systems. Despite the high satisfaction rate by the users, the cost of “deadhead” miles and salary expenses were found to be challenging factors in the ability of the project to become financially self-sustainable (Bellamy *et al.* 2003).

A voluntary medical transport scheme in rural England, called Rural Wheels, was introduced to provide access to a new medical centre in a rural area. The non-profit scheme was meant to provide transport for medical purposes (including visits by relatives and friends to in-patients) when no other means are available (Sherwood and Lewis 2000). As of 1998, the program was run almost entirely by the elderly, consisting of 17 volunteer drivers and two dispatch coordinators. The program has served as a vital service for the community, especially for its over-60 female inhabitants who at the time of the study comprised a majority of its clients.

Another example is the Ontario Community Transportation Action Program (CTAP). CTAP is a provincially-funded initiative to stimulate greater coordination of local transportation services, based on the needs of the elderly and disabled (Fuller *et al.* 2002). This program is not limited to transportation for medical reasons and covers other general purpose transportations.

Also notable is Hope Air, a national charity that helps Canadians to finance airfare for medical travel. Since 1986, Hope Air has helped pay for more than 48,000 flights with Air Canada, West Jet and Provincial Airlines (Hope Air 2005). Clients must pay a $50 processing fee, but the remainder of the flight is covered by the program. Flight requests are accepted from all ages, illness groups, provinces and territories, but clients must demonstrate financial need, have a scheduled appointment for non-emergency medical treatment covered under a provincial medical insurance plan, and require a return flight. As Hope Air is not an ambulance service, patients must be able to board an aircraft with little aid, sit in a regular seat and must not need medical attention on board. However, flight requests for necessary escorts are accommodated wherever possible.

When compared to NH Connections, the above examples of medical transportation services seem to be limited in geographic scope, the frequency and availability of the service, the target populations, and the extent of public subsidies. As such, NH Connections appears to be a unique medical transportation program in North America. The evaluation of such a major program is critical both for the continuity of the program and practical lessons for other communities in Canada and around the world.

3.0 Methodology

This section of the report presents the methodology used for this research, namely the research ethics review process, sampling and recruitment of participants, data collection, and data analysis.

3.1 - Research Ethics

Standard research ethics protocol of UNBC requires all research involving human subjects conducted by UNBC researchers be approved by the Research Ethics Board. Furthermore, because this study also impacted both Northern Health staff and patients within its jurisdiction, ethics approval was also sought from Northern Health's Research Ethics Board. Research involving human subjects must be done in such a way that participants' anonymity and confidentiality is protected. The Informed Consent form which provided participants with this assurance in addition to other study information can be found in Appendix A.

3.2 - Selection of Participants and Data Collection

The study population (N=2,070) comprised all registered users[2] of NH Connections, in addition to all new users who traveled using an NH Connections vehicle during the en-route data collection period (December 2008 – January 2009).

Administrative information collected by NH Connections staff was used for both sampling and analysis purposes. Client information collected during initial intake and booking of travel includes the client's name, mailing address, phone number, sex, age, their pick-up and drop-off location, and the physician with whom they have an out-of-town appointment. Upon agreeing to use the NH Connections service, clients consent to the use of their personal information for research purposes. As such, client intake information in a spreadsheet format was made available to the research team by the NH Connections Operations Manager.

To gather additional information on the demographic, socioeconomic and health profiles of clients using NH Connections and their perception of the service, a questionnaire was designed and administered to a total sample of 500 clients (total) using three modes:

1) An en-route questionnaire for interested clients (N=150) to complete during travel within NH Connections vehicles to and from medical appointments. When clients called NH Connections to schedule travel, staff informed them of the study and invited them to complete a questionnaire during their trip. NH Connections drivers were also provided with a package containing information about the study (including a copy of the questionnaire and Informed Consent Form) to assist them in administering the

[2] Based on the client base on November 20th 2008 when the database query was performed by staff of Diversified Transportation Ltd., and excluding companion travelers assisting patients.

questionnaire to passengers en-route. The Driver Information Package can be found in Appendix B. Drivers collected the completed questionnaires and a member of the research team retrieved the completed questionnaires from the NH Connections terminal in Prince George as needed.

2) A mail-out questionnaire for past clients administered across two mail-outs (N=250 and N=100) using random, representative sampling (see Table 2 for community coverage); the second sample served to increase the number of respondents. The questionnaire mail-out package contained:

   - A cover letter i) inviting the client to participate in the study, and ii) that a member of the research team would be contacting them by phone to determine their interest in participating, and to answer any questions they may have about the study;
   - The project information sheet (including the Informed Consent Form);
   - The questionnaire; and
   - An addressed and stamped envelope for returning the completed questionnaire and a signed copy of the Informed Consent Form to UNBC.

   The questionnaire mail-out package can be found in Appendix A.

3) Phone interviews of past clients unwilling or unable to fill out the questionnaire they received in the mail. Interviews were conducted by the UNBC Computer Assisted Telephone Interview (CATI) lab. As part of the telephone interview process, CATI staff made follow-up calls to the past clients after the mail-out, within sufficient time for participants to receive and review the study information package. The follow-up call not only gave potential participants the opportunity to ask any questions about the study, but also to partake in a telephone interview if they preferred that option to completing and returning the questionnaire. Interested participants were given the option to do the interview during the initial follow-up call, or to schedule it for a later date.

3.3 - Description of the Questionnaire

The questionnaire included mainly close-ended questions, but also included some open-ended questions in the form of “other, specify” in the event that the response options were not applicable to the respondent’s experience, in addition to a question inviting the respondent to share any thoughts on what, if anything, could be done to improve the NH Connections service.

The questionnaire is comprised of three main sections. Section 1 titled “About you” comprising mainly socioeconomic and demographic measures, asked about participant’s personal information including place of birth, ethnicity, marital status, number of dependants, household income, type of dwelling, vehicle ownership, education, employment, and health status (15 questions).

Section 2 titled “About your trip” asked participants about how they learned of the NH Connections service, how many times they had used the service and the reason(s) for using it, the length of their trip(s), and whether they were accompanied by a companion for travel assistance (6 questions).

Section 3 titled “Your thoughts on the NH Connections service” asked participants about their impressions of the service in terms of cost, safety, convenience, efficiency, staff, socialization, overall usefulness, and access to health care. A final open-ended question also gave participants an opportunity to add any other thoughts on how to improve the service (7 questions.)

3.4 - Sample coverage

The two random representative samples of NH Connections past users compiled for the mail-outs represented 41 Northern BC communities (See Table 3.4 below).

Table 3.4 - Communities served by the NH Connections service

Burns Lake	Greenville	Lac La Hache	Smithers
Chetwynd	Hazelton	Mackenzie	South Hazelton
Dawson Creek	Hixon	Massett	Taylor
Dunster	Horsefly	McBride	Telkwa
Endako	Houston	New Hazleton	Terrace
Fort Fraser	Hudson’s Hope	Port Edward	Topley
Fort Nelson	Kincolith	Port Simpson	Tumbler Ridge
Fort St. James	Kitimat	Prince George	Valemount
Fort St. John	Kitkatla	Prince Rupert	Vanderhoof
Fraser Lake	Kitwanga	Quesnel	Williams Lake
Granisle			

To make sure that the samples were representative of the communities, sample weights were applied to different communities. Such weights were calculated based on the relative shares of past clients from different communities in the overall sample frame from the Northern Health Connections database.

3.5 - Response Rates

The number of cases which were suitable for final analysis turned out to be 297. Therefore, the overall response rate for the entire survey was about 60%. However, the response rate from en-route survey was much higher at 76%. Whereas, the combined rate for mail-outs and phone interviews was at 52%. See Table 3.5 for the break-down of sample clients in terms of the survey type.

Table 3.5 - The Composition of Sample Clients in terms of Survey Types

Survey Type	Count	Response rate (%)
En-route (Bus)	114	76
Mail-out	120	52.3
Phone	63	
Total sample	297	59.4

3.6 - Method of Analysis

Data collected through the above survey types were compiled into separate files and linked to other data available from the Northern Health Connections clients' database. For the purpose of this report, all the relevant data were pooled together to form a sample of 297 clients for data analysis. In the interest of being accessible to a wider audience, the bulk of analysis in this report is descriptive in nature. The statistics software Eviews Version 5.1 was used to analyze the data and provide summary output. The following section provides a detailed account of the findings of the study.

4.0 Study Results

One of the objectives of this evaluation study was to examine the demographic, socioeconomic and geographical profiles of the clients using the Northern Health Connection program in order to have a better understanding of whom this program serves. Such information is valuable in revealing the reach of the Connection program across communities. It also serves any subsequent adjustment of the program for improving the service to these communities.

4.1 - Demographic Profile of the Clients

Of the 295 respondents who revealed their gender, the majority were female accounting for 62% of the respondents. This is not an unusual finding given the higher prevalence of health problems among women in general. As well, the majority of clients were in the mid to old age category with a mean age of about 55 years. The mean age for females (53.65) was lower than that for males (57.01) showing a gap of less than 4 years. This gap, however, was not statistically significant (p-value<0.129). Table 4.1.1 reports the age structure of the clients in greater detail. Over 31% of the clients belonged to the age category 40 – 60 and over 43% belonged to the age category 60 – 80. Therefore, over 78% of the clients were in the mid to old age category. Such high proportions of older clients are, to an extent, a reflection of our ageing society. But perhaps more so because of greater prevalence of health problems among the older people who have opted for using the Connections service.

Table 4.1.1 The Age Profile of the Sample Clients

Age Category	Count	Percentage
0 – 20	24	8.08
20 – 40	31	10.44
40 – 60	**93**	**31.31**
60 – 80	**129**	**43.43**
80 – 100	10	3.37
Age Not Specified	10	3.37
Total	297	100.00

The overwhelming majority of clients (about 86%) were born in Canada. Of those born in Canada who revealed their racial background (close to 70%), almost 77% were Caucasian, 17% First Nations, and 6% Metis. Table 4.1.2 shows the racial profile of the sample clients.

Table 4.1.2 The Racial Profile of the Sample Clients

Racial Background	Count	Percentage
Caucasian	128	43.10
First Nations	28	9.43
Metis	10	3.37
Not born in Canada	43	14.48
Not specified	87	29.29
Other	1	0.34
Total	297	100.00

Although the proportion of aboriginal clients appears to be commensurate with the proportion of aboriginal people living in northern British Columbia, one would expect to find greater presence of such clients due to their greater burden of health problems and inadequate economic status. It would be helpful to investigate why the aboriginal people may have not availed themselves of the service to a greater extent. One possible reason might be that the service has not been promoted to aboriginal people as it should be. Given that aboriginal communities are often more isolated and harder to reach than other communities, greater efforts may be needed to promote the service to these populations. Another possibility might be a proportionally lower response rate by aboriginal clients to mail-out and en-route surveys than non-aboriginal clients. Indeed, the proportion of aboriginal clients in the sub-sample of phone interviewees was almost double the proportions in the entire sample.

Data on the marital status of the clients revealed that half of the clients were married or living with a partner (44.5% and 5.72.%, respectively). The other half consisted of those who were divorced (9.43%), widowed (13.47%) and single (18.52) who lived on their own and were not dependent on others. See details in table 4.1.3.

Table 4.1.3 The Marital Status of the Sample Clients

Marital Status	Count	Percentage
Married	132	44.44
Living with partner	17	5.72
Divorced	28	9.43
Widowed	40	13.47
Single	55	18.52
Not specified	25	8.42
Total	297	100.00

The vast majority of the clients (over 75%) had no dependents. Those with dependents had mostly one or two. Clearly, people with dependants would find it harder to travel for medical purposes, especially if they have to travel far away from home.

4.2 - The Socioeconomic Profile of the Clients

The information collected on the educational achievements of the clients indicated that the majority of them (about 63%) had an educational level of high school or less. Among those with higher education, only 17% had graduated from a college or university. The educational profile of the clients is reported in Table 4.2.1. Such data are consistent with the nature of the economies and limited opportunities for more educated people in rural and northern areas.

Table 4.2.1 The Educational Profile of the Sample Clients

Educational Level	Count	Percentage
No education	1	0.34
Less than high school	37	12.46
Some high school	71	23.91
High school graduate	78	26.26
Some college or university	54	18.18
College or university graduate	51	17.17
Not specified	5	1.68
Total	297	100.00

Less than half of the clients were retired. Another 21% were unemployed and 3% were disabled. Of the remaining clients who were economocially active, 13.5% worked full-time and 11% worked part-time. Such data strongly indicate that the vast majority (about 73%) of the clients were economically inactive and, therefore, in greater need of the subsidized medical transportation service. Table 4.2.5 gives the details of employment status of the clients.

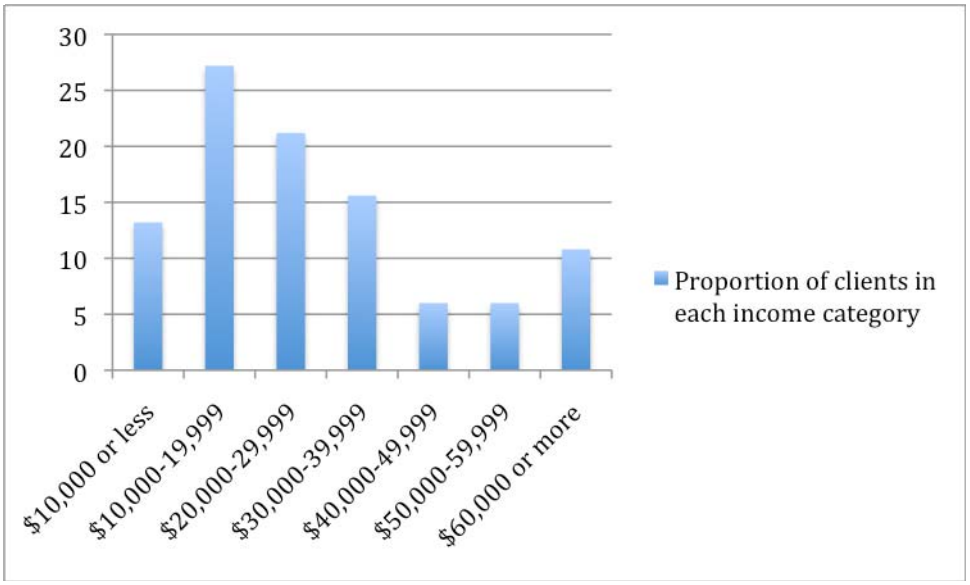
Table 4.2.2 The Employment Status of the Sample Clients

Employment Status	Count	Percentage
Retired	140	47.14
Unemployed	63	21.21
Disabled	9	3.03
Part-time employed	33	11.11
Full-time employed	40	13.47
Student	5	1.68
Not specified	7	2.36

Total	297	100.00

Another indicator of economic status surveyed was the household annual income. The clients were asked to indicate which of the seven categories their household income belonged to. The lowest income category was $10,000 or less, and the highest income category was $60,000 or more. About 16% of the clients did not indicate their income category. The remaining 84% had their income distributed as shown in the following chart (Figure 4.2).

Figure 4.2 - Income Profile of the Sample Clients



As shown in the above figure, more than half of the clients who revealed their income had household incomes of less than $30,000 a year. About two thirds of the clients had incomes of less than $40,000. Interestingly, a sizable (about 11%) proportion of the clients had incomes of $60,000 or more. Clients in the latter category may have had a noneconomic reason for using the service. At any rate, it is quite apparent form this data that most of the clients belonged to the very low to moderate income categories. Such income profile is consistent with the employment status of the clients.

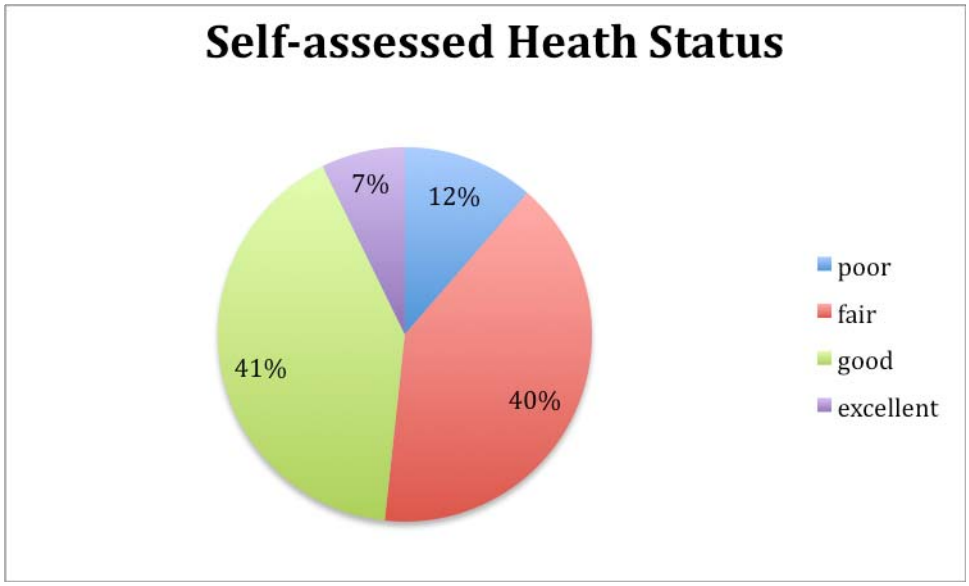
To have a fuller understanding of the socioeconomic status of the clients, information on housing and vehicle ownership as significant assets were obtained. About a third of the clients were renting a variety of accommodations. As well, less than a quarter of the clients had no vehicles. Another quarter had only one vehicle in their household. Vehicle ownership is also important as a substitute for using the Connections service for those clients who could drive.

4.3 - The Health Profile of the Clients

To evaluate the efficacy of the Connections service in terms of reaching out to clients who need this service most, data were collected on the health profile of the clients using the service. Such a profile consists of self-assessed health conditions of the clients as well as the variety and frequency of health problems for which the clients were seeking treatment.

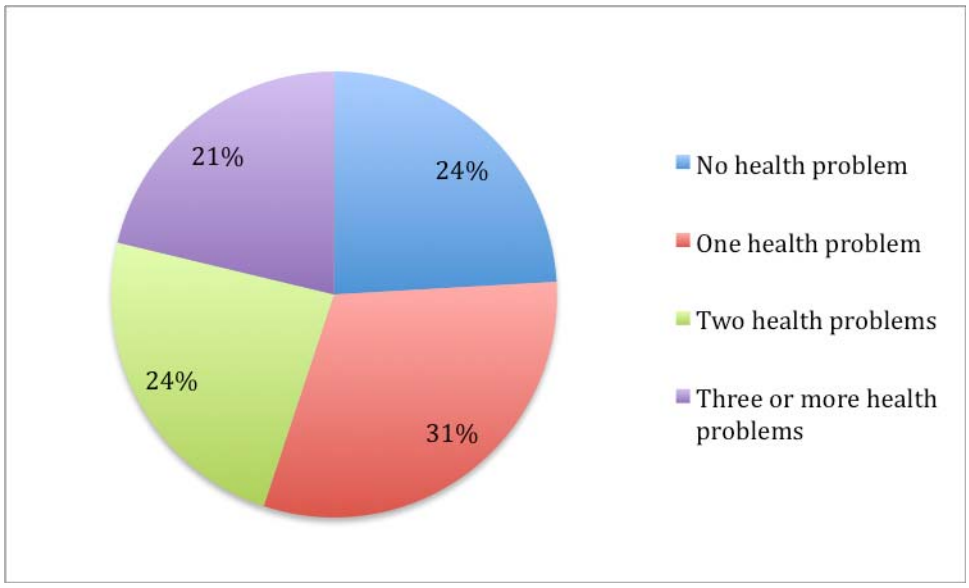
The self-assessed health profile of the clients is depicted in the following pie chart where the clients have rated their health as poor, fair, good, and excellent.

Figure 4.3.1 – The Self-assessed Health Profile of the Sample Clients



As shown in the above figure, more than half (52%) of the clients have rated their health as either poor or fair. Of those with better health, 40% rated their health as good. Only 7% of the clients assessed their health as excellent. This overall picture indicates that the majority of the clients are not in good health. The health picture becomes clearer when one looks at the health problems reported by the clients. As indicated in Figure 4.3.2 below, the vast majority of the clients have reported at least one health problem, including those who have rated their health as good or excellent.

Figure 4.3.2 – The Number of Health Problems of the Sample Clients



The above chart shows that more than three quarters (76%) of the clients reported at least one health problem. Moreover, more than half of them (55%) had at least two health problems.

The above health profiles clearly indicate that the clients using the service are not generally in good health and are suffering from a number of health problems. The following table provides an account of the more typical health problems along with their prevalence in the sample clients who reported health problems.

Table 4.3 – Typical Health Problems of the Sample Clients

Health Problem	Prevalence (%)
Joint problem	48.44
High blood pressure	32.00
Digestive problem	24.00
Breathing problem	20.00
Cancer	19.11
Diabetes	18.67

It is notable that approximately half of the clients with health problems suffer from joint problems making it hard for them to drive and therefore more convenient to use the Connections service.

4.4 - Patterns of and Reasons for Service Use

In this section of the report patterns of service use by the clients and their reasons for travelling via the Connections are described. Such description is useful in its own right as it gives us a better understanding of the service uptake. Moreover, it provides critical information for any potential adjustment of the Connections service to better serve the needs of the target population in northern BC. A better understanding of the needs of the clients would also help planning health care provision for northern communities.

4.4.1 - The Geographical Origins and Destinations of the Clients

As Table 3.4.1 above shows, the Northern Health Connections service clients come from all rural and remote northern communities of British Columbia along the main routes of the Connections service. The surveyed clients in the study sample reflect this diversity of geographical locations to a large extent. Due to sampling restrictions, some of the very small communities with few clients have not been captured in the sample. As Table 4.4.1.1 below shows, the clients mostly reside in major cities of northern BC and their surrounding communities.

Table 4.4.1.1 – The Geographical Origin of the Sample Clients

Origin	Percentage of Clients
Prince George	14.48
Quesnel	13.47
Smithers	9.43
Prince Rupert	8.75
Burns Lake	6.06
Vanderhoof	5.05
Terrace	4.71
Mackenzie	4.71
Valemount	3.70
Other*	27.96
Not specified	1.68

By survey design, the proportions of the clients in the sample represent the proportions of total clients from various communities served by the Connection service. As such, greater proportions of clients in the sample come from Prince George, Quesnel, Smithers and Prince Rupert as the most populated communities in northern BC. The category “Other” in this table consists of 34 other smaller communities in northern BC.

Equally important is the geographical destination of the Connections service clients. As expected, the service destinations are usually larger cities with major health care centers. Table 3.4.2 reports the breakdown of destinations for the sample clients.

Table 4.4.1.2 – The Geographical Destinations of the Sample Clients

Destination	Percentage of Clients
Vancouver	37.03
Prince George	36.70
Terrace	9.76
Prince Rupert	2.69
Other*	10.10
Not specified	3.70

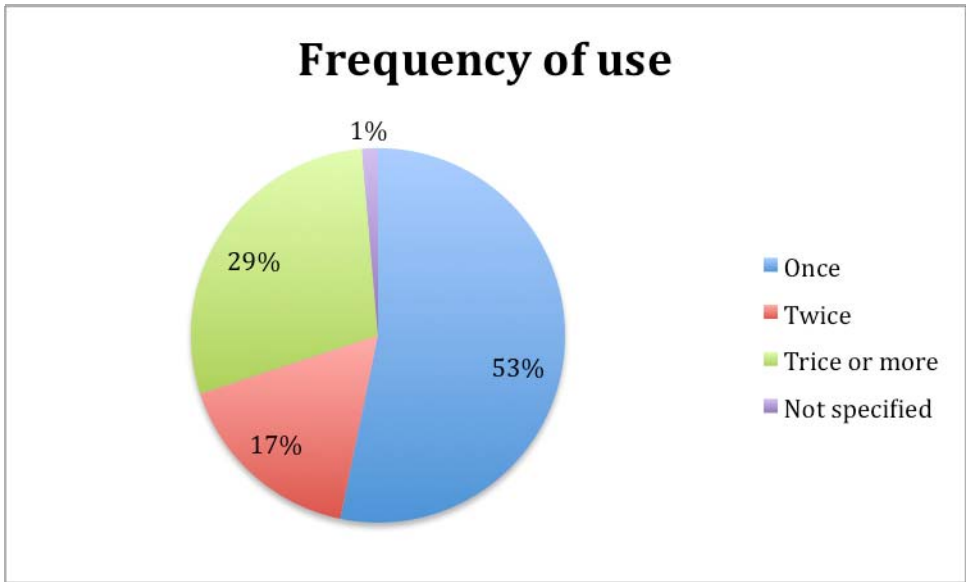
***** Includes Kelowna, Smithers, Chiliwack, Victoria, Fort St. John and a few smaller communities.

As can be seen from the above table, Vancouver and Prince George are by far the most visited destinations, each roughly attracting 37% of the clients. Other destinations are presumably visited for less serious health problems.

4.4.2 – Travel Direction, Frequency and Duration

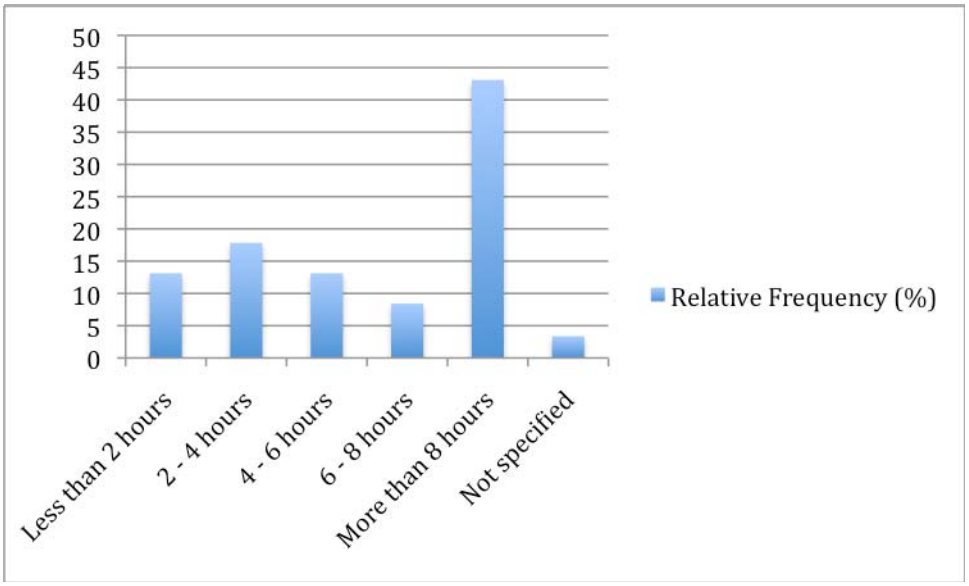
The vast majority of clients (about 80%) have used the service in both directions - from home to a health care facility and back from the health care facility to home. Of those who used the service in one direction, the majority travelled from home to a medical facility or health care center.
More than half of the clients used the service once. Of those using the service more than once, the majority used the service very often (three times or more). The details are reported in Figure 4.4.2.1 below.

Figure 4.4.2.1 – Frequency of Service Use by Sample Clients



As time passes and more people get to know about this service, it is expected that the service be used more frequently.
Travelling time varied for clients depending on their geographical location and the type of medical treatment needed. As Table 5.2 shows, a greater proportion (over 43%) of the clients have travelled more than eight hours to get to their medical appointments at their destinations. These are typically clients travelling "long haul" from Terrace and Prince Rupert to Prince George, and those travelling from Prince George and nearby communities to Vancouver. A sizable proportion of clients (about 31%) travelled up to four hours. The latter are typically "short haul" travels from surrounding communities to Prince George, Terrace or Prince Rupert. See the details of travelling times and their relative frequency among the clients.

Figure 4.4.2.2 – Travel Durations for Sample Clients



4.4.3 – Medical Reasons for Travel

Clients have indicated a wide range of medical reasons for their travel. Such reasons have been broadly classified as 1) Seeing a doctor for examination; 2) Non-surgical Treatments; 3) Medical operations; and 4) Post treatment follow-up (See Table 5.3 below). It must be noted that the percentages in this table add up to more than 100% due to multiple medical reasons for certain clients.

Table 4.4.3 – Medical Reasons for Travelling

Medical Reason	Percentage of Clients
Seeing a doctor for examination	43.77
Non-surgical treatment	28.62
Medical operations	17.84
Post treatment follow-up	14.81
Other*	8.08
Not specified	3.03

Consistent with the frequency of service use, most clients have presumably used the service for the first time to receive a medical examination. Non-surgical treatment, medical operations and post-treatment follow-up are more applicable to the clients who have used service more than once. The "Other" category in this table includes a variety of other reasons including diagnostic imaging, lab tests and medical consultation.

4.4.4 – Service Awareness and Travel Assistance

Since its beginning, the NH Connections service has been popularized among the northern communities in BC. The NH Authority has played a major role in raising the awareness in those communities of its Connections service. Health providers have also been effective in passing the word about the availability of the service. Friends, relatives and media have played a role as well. Table 4.4.4.1 gives the corresponding percentages of the clients who became aware of the service through the aforementioned channels.

Table 4.4.4 – Channels of Service Awareness for the Clients

Channel	Percentage of Clients
Northern Health Authority	42.76
Health providers	35.01
Friends	21.88
Media	14.48
Relatives	9.43
Not specified	6.73

Here, too, the sum of the percentages exceeds 100% as some clients have received the news about the service from multiple channels. It is expected that as more clients use the service, they would spread awareness of the service among their respective communities.

The majority of clients (over 61%) have traveled on their own to their medical appointments. However, a good proportion of them (37%) have chosen to travel with a companion. The companions, typically a family member or relative, have traveled in accompany of the clients (patients). The Connections service has been sensitive to this critical need and welcomed the companions.

4.5 – Clients' Perceptions and Ratings of the Service

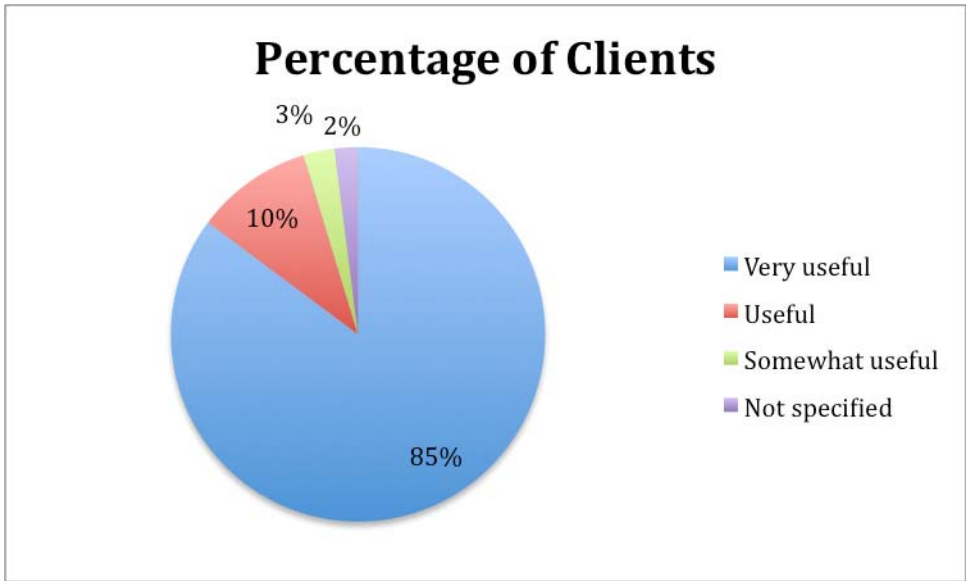
A key objective of this evaluation study was to gauge how the clients who have used the NH Connections service perceived such service. This is obviously important for greater uptake of the service and the wellbeing of the communities served. The overall perception of the clients was captured in part by asking their willingness to use the service again and whether they recommend it to others. Table 4.5.1 gives the proportions of clients who suggested they would use the service again as well as the proportions of clients who said they would recommend the service to others.

Table 4.5.1 – Clients' Responses for Future Use by Themselves and Others

Response	Would use the service again	Would recommend the service to others
Yes	94.95%	95.29%
Maybe	2.36%	2.02%
No	0.67%	0.67%
Not specified	2.02%	2.02%

As the above table shows, the overwhelming majority (about 95%) of the clients responded positively for using the service again and also recommending it to others. Such evidence clearly shows that the service is well received by the clients who have used the service. This highly positive perception of the service is also reflected in clients' rating of the service as reported in Table 4.5.2.

Figure 4.5.1 – Clients' Rating of the Service

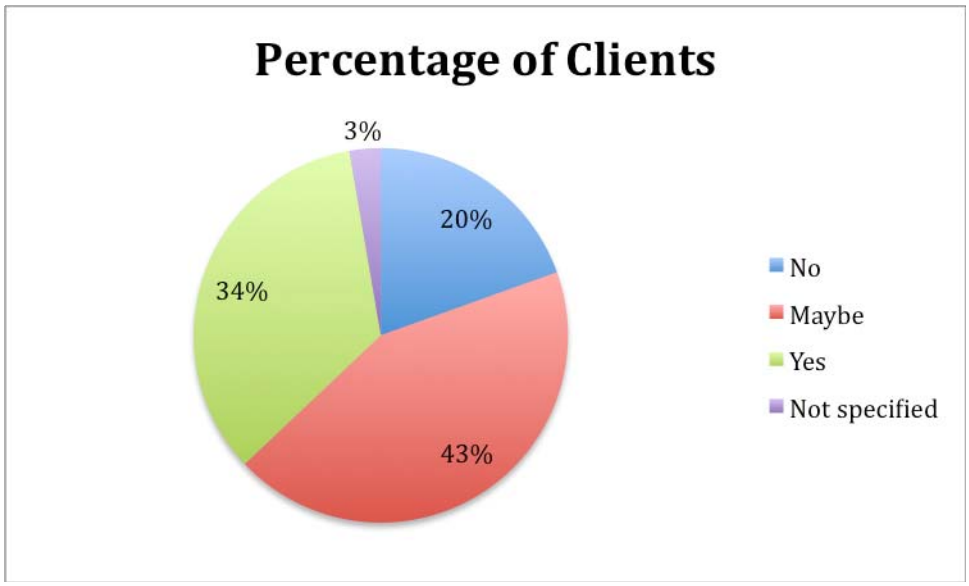


Over 85% of the clients rated the service very useful with an additional 10% who rated it as useful.

It appeared that the service is quite essential for a good portion of the clients (about 20%) who had no other alternative to the NH Connection service. About 43% of the clients

thought they might have some other options, but they perceived the Connection service as a preferred choice. Yet, about a third of the clients were certain of having some other alternative, which they did not necessarily prefer over the Connections service (See Figure 4.5.2 below).

Figure 4.5.2 – Availability of Alternatives to Connection Service



The evidence presented above portrays a strongly positive perception of the Connections service among the clients. To have a better understanding of the aspects of the service most appealing to the clients, information on certain desirable characteristics of the service as confirmed by the clients was collected. Such information is summarized in Table 4.5.2 below.

Table 4.5.2 – Service Features Valued by Clients

Service Features Valued	Percentage of Clients
Affordable	76.09
Comfortable	72.05
Friendly Drivers	76.09
Safe	35.35

Over three quarters of the clients found the service affordable. The same proportion of clients were pleased with the friendliness of drivers who did their best to make the trip as pleasant as possible. Most (72%) of the clients indicated that the service was comfortable. Interestingly, only 35% of the clients suggested that the service was safe. This finding is a bit anomalous as many clients voiced their aversion to driving specially during the winter.

4.6 – Concerns about the Service and Clients' Suggestions for its Improvement

In spite of significant support and praise for the Connections service by the vast majority of the clients as reported so far, a minority of clients raised certain concerns that need to be considered for further improvement of the service.
A frequently cited concern was limited scheduling of the service. More frequent service is obviously costly and would have to be balanced against the excess capacity of the existing fleet of the buses, if any.
Another concern by a few clients was that there were no waiting places for pickup of the clients, which could be very inconvenient during winter. Still fewer clients complained about some delays in departure times.
The surveyed clients were asked to comment on the Connections service and suggest ways for its improvement. Their comments drew upon their perception and rating of the service as well as their concerns. Almost all of the clients commented that they were very pleased with service and considered it as an excellent service rarely provided to the people of northern BC. However, there were some few clients who wanted their concerns to be addressed and made some suggestion for enhancing an already valuable service. Those suggestions are integrated and summarized as follows:

- Increase the frequency of the service and make it available on Sundays as many medical appointments are scheduled for Mondays or Tuesdays
- Provide waiting places for client pick-up when the weather is cold
- Provide more explanation and information (e.g. maps) about pick-up and drop-off locations to clients
- Increase the number of drop-off locations, especially in the lower mainland
- Drop-off clients closer to the hospitals and other medical centers to avoid inconvenience and taxi charges
- Provide evening departures to avoid costly overnight stays in destinations
- Provide more leg room, foot rest and reclining seats for long haul services
- Notify clients to bring in their headphones or provide them on the bus
- Make sure that the audio/video system on the bus works properly
- Improve the lighting in the bus for better reading
- Advertise the service to a greater number of people, especially through doctors and other health care providers.

5.0 Conclusion

This study was intended to evaluate the efficacy of the Northern Health Connections service in terms of achieving the key objective of enhancing rural and northern communities' access to health care services, in particular for those with limited means and resources by 1) examining the socioeconomic and health profile of the clients; 2) analyzing the patterns as well as the reasons for using the service and 3) capturing the perceptions and ratings of the service by clients. It surveyed a random representative sample of about 300 clients from across the northern BC through mail-outs, phone interviews and en-route questionnaires over a period of three months.

The findings of the study described throughout section 4 of this report clearly indicated that the clients using the Connections service are typically individuals who are economically inactive as retirees, unemployed and female who are mostly in their mid to older age with limited education, income and assets with less than good health. Therefore, the Connections service appears to serve people with lower socioeconomic position who would find it difficult, if not impossible, to access health care services outside their communities otherwise. As such, the service does enhance northern communities' access to health care.

The results also indicate that the majority of clients used the service in both directions – from home to a medical appointment and back to home. Many of the clients use the service repeatedly and most of them take the service for durations more than eight hours. The service was used to get to medical appointments for examination by doctors, non-surgical treatments, receiving an operation and post operative treatment and follow-up, mostly by specialists at major hospitals far from their community of origin. So, the service uptake patterns reflected the needs of clients and the reality of geographical dispersion of the communities in the north as well as the skewed distribution of Medical care concentrated in a few major cities in BC.

Finally, the clients' perception of the Connections service was extremely positive as reflected in their high ratings of the service and its desirable features and great satisfaction they often revealed in their comments on the service. Few clients raised some issues and suggested ideas for improving the service.

Therefore, the NH Connections service appears to have succeeded quite well in achieving its main objective of enhancing British Columbian rural and remote communities' access to health care services. It has set a very good example that could be duplicated elsewhere. Ultimately, however, enhanced access to needed health care must result in better health. As such, a follow-up study would be needed to examine the improvement in health of the individuals using the Connections service.

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7.00 Appendices

7.1 Appendix A:

Questionnaire Package

UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

Dr. Jalil Safaei, Associate Professor
Economics Department - University of Northern British Columbia
3333 University Way, Prince George, BC V2N 4Z9
Tel: (250) 960-6698, Email: safaeij@unbc.ca

Month X 2008

«FirstName» «LastName»
«Address1»
«City», «State» «PostalCode»

Dear, «FirstName» «LastName»

I am contacting you to invite you to participate in the Northern Health (NH) Connections Evaluation Study. You may participate in the study by *either* completing the enclosed questionnaire and informed consent form, *or* by providing your answers over the phone in a confidential telephone interview. Sharing your thoughts on NH Connections is important for the continuation and improvement of this service.

Please find enclosed:

1) The Questionnaire
2) Two copies of the Informed Consent Form, which also has additional information on the purpose of the study (one copy is for you to keep, and please sign the other copy and return it along with your completed questionnaire in the envelope provided); and
3) A UNBC addressed and stamped envelope for returning:
    a) the completed questionnaire and
    b) one signed copy of the Informed Consent Form.

A member of the study team will contact you by phone to see whether you would like to schedule a phone interview and answer any questions or concerns you may have.

In the meantime, if you have any questions please do not hesitate to contact me at the phone number or email address listed above. Thank you for your participation in this study.

Sincerely,

J. Safaei

Dr. Jalil Safaei

NH Connections Evaluation Study
INFORMED CONSENT FORM

PLEASE NOTE: IF YOU HAVE ALREADY COMPLETED A QUESTIONNAIRE EITHER ON PAPER OR OVER THE PHONE, PLEASE DO NOT COMPLETE THE QUESTIONNAIRE A SECOND TIME.

YOU MUST SIGN TWO COPIES OF THIS CONSENT FORM TO PARTICIPATE IN THIS STUDY.

- ***COPY #1: PLEASE KEEP THIS SIGNED COPY OF THE INFORMED CONSENT FORM FOR YOURSELF.***
- ***COPY #2: PLEASE SIGN AND RETURN IT TO YOUR DRIVER ALONG WITH YOUR COMPLETED QUESTIONNAIRE IN THE ENVELOPE PROVIDED.***

FOR RESEARCH PURPOSES ONLY, WE WOULD LIKE TO KNOW THE NAMES OF PEOPLE WHO COMPLETED QUESTIONNAIRES FOR THIS PROJECT. PLEASE NOTE THAT YOUR NAME WILL NEVER BE REVEALED IN ANY RESULTS DISSEMINATION ACTIVITIES SUCH AS RESEARCH REPORTS, NEWSPAPER ARTICLES NOR ANY OTHER MEDIA. ALL RESULTS FROM THIS STUDY WILL BE PRESENTED IN OVERALL PERCENTAGES OR OTHER GROUP-BASED STATISTICS.

Principal Investigator:
Dr. Jalil Safaei, Economics Program, UNBC, (250) 960-6698

Purpose of this study:
When it comes to health care, residents of rural and remote areas experience many challenges. These include shortages of family doctors, specialists, and other health care providers. Many people, therefore, must travel far to get the care they need. Bad weather, rugged landscapes, and limited and expensive transportation options also make medical travel difficult in rural and remote regions. To help overcome these challenges Northern Health established NH Connections in 2006.

The purpose of this study is to determine the impact NH Connections is having on health service delivery in Northern BC. Of primary interest is to determine the extent to which the service is being used by various communities, and ultimately, the overall effect on the health of Northern BC residents.

Improving access to health care is the underlying philosophy of NH Connections. The results of this study are important for the continuation and possible adaptation of the program, in order to better serve the medical needs of Northern BC residents. As well, should the service prove effective, it will provide a good

example of a service that could be imitated in other regions with similar health care problems.

How this study is conducted:
We would like you to complete a questionnaire (enclosed) which will take approximately 10 minutes to complete.

Why and how you were chosen for this study:
You are part of a randomly selected group of NH Connections clients who have been invited to participate in this study. Sharing your experiences and opinion of the program is a valuable contribution to the continuation and improvement of the service.

Anonymity and Confidentiality:
The anonymity and confidentiality of all participants will be respected. All user administrative information collected by Northern Health, in addition to all of the information shared in the questionnaire or telephone interview will be secured on a laptop, and backed-up using DVDs. The laptop and DVDs will be kept in a locked cabinet of a locked research room at the University of Northern British Columbia. Computer files will be password protected, and code numbers (not participant names) will be used. Only members of the UNBC research team will have access to the data. Participants will not be identifiable in the analysis of data, nor in any research reports or other results dissemination activities.

The information will be kept until the research team completes the analysis of results. All original data from this research will be kept secure at UNBC until after the results are disseminated. At this time, all documents and materials related to the questionnaire or interview will be destroyed. Databases housing information from the study will be kept for at least 5 years.

Potential risks and benefits:
This study has been assessed by the Research Ethics Boards of UNBC and the Northern Health Authority. The research team considers this study to be of no risk to participants. Participants can reasonably expect that possible harms from participating in this research will be no greater than those encountered in their everyday life. By participating in this research you will have the opportunity to share your experiences with, and opinions of, NH Connections. Doing so is a valuable contribution to the continuation and improvement of the service, in order to better serve the medical needs of Northern BC residents. As well, should the service prove effective, it will provide a good example of a service that could be imitated in other regions with similar health care problems.

Voluntary Participation:
Participation in this study is on a voluntary basis. If you participate, you may choose not to answer any questions that make you uncomfortable. You have the

right to withdraw from the study at any time. If you do so, all information you provided will be removed from the study and destroyed.

Research results:
Results are anticipated for the spring of 2009. Copies of the Executive Summary of results will be available to clients using the NH Connections vehicles. Copies of the Executive Summary of results and the full study report will be available at www.northernhealth.ca, or by contacting NH Connections at 1-888-647-4997.

Contacts for information about the study:
If you have any questions about this study, please feel free to contact Dr. Jalil Safaei at UNBC at (250) 960-6698, or by email at safaeij@unbc.ca.

Contacts for complaints or information about the rights of research subjects:
Complaints or concerns about this study can be directed to UNBC's Office of Research at (250) 960-5820, or by email at reb@unbc.ca

Sponsor:
This research was made possible through funding provided by the Northern Health Authority.

I have read the above description of the study and I understand the conditions of my participation. My signature indicates that I agree to participate in this study.

Name (please print clearly) *(Or Parent/Guardian if client is aged 16 or under)*	**Signature**	**Date**

I have received a copy of the signed Informed Consent Form for my records.

Name (please print clearly) *(Or Parent/Guardian if client is aged 16 or under)*	**Signature**	**Date**

NH Connections Evaluation Study
QUESTIONNAIRE

FOR RESEARCH PURPOSES ONLY, WE WOULD LIKE TO KNOW THE NAMES OF PEOPLE WHO COMPLETED QUESTIONNAIRES FOR THIS PROJECT. PLEASE NOTE THAT YOUR NAME WILL NEVER BE REVEALED IN ANY RESULTS DISSEMINATION ACTIVITIES SUCH AS RESEARCH REPORTS, NEWSPAPER ARTICLES NOR ANY OTHER MEDIA. ALL RESULTS FROM THIS STUDY WILL BE PRESENTED IN OVERALL PERCENTAGES OR OTHER GROUP-BASED STATISTICS.

YOUR NAME: _____
LAST NAME **(please print clearly)** **GIVEN NAME**

PLEASE ANSWER THE QUESTIONS BY MARKING AN "X" BESIDE THE APPROPRIATE ANSWER. YOU MAY SKIP ANY QUESTIONS THAT YOU ARE NOT COMFORTABLE ANSWERING.

SECTION 1: About you

1. Were you born in Canada?

( ) Yes ( ) No (please go to question 3 if not born in Canada)

2. If born in Canada, would you mind telling us if you are …?

( ) First Nations ( ) Métis

( ) Other (Please specify) _____

GO TO QUESTION #4

3. If not born in Canada, how many years in total have you lived in Canada? _____

4. Are you currently ….?

( ) single ( ) living with a partner ( ) married ( ) divorced ( ) widowed

5. Do you have dependants that you support financially, such as children or other family members (of your own or others'), even if they don't live with you?

( ) No ( ) Yes (How many? _____)

6. Please indicate which of the following best describes your overall annual household income.

( ) less than $10,000 ( ) $10,000-19,999 ( ) $20,000-29,999

( ) $30,000-39,999 ( ) $40,000-49,999 ( ) $50,000-59,999

( ) $60,000 or more ( ) Don't know

7. What type of place do you live in?

( ) a detached house ( ) a semi-detached house ( ) a town-house

( ) a condo ( ) an apartment ( ) a basement suite

( ) a trailer ( ) mobile home ( ) a duplex/triplex

( ) other (Please specify _____)

8. Do you own or rent your place of residence?

( ) own ( ) rent

9. What kind of vehicle(s) do you have? Indicate the number of each if you have more than one.

( ) truck ( ) car ( ) van ( ) SUV

( ) I don't have a vehicle (Please go to question 11)

10. Please indicate on the line below the make and year of your vehicle(s) (for example: Mazda 1999).

_____

11. What is the highest level of schooling you obtained?

( ) no schooling ( ) less than high school ( ) some high school

( ) high school graduate ( ) some college or university

( ) college or university graduate

12. What is your employment situation? Mark all that apply.

( ) unemployed ( ) part-time employed ( ) full-time employed ( ) retired

13. Which of the following best describes your occupation (even if unemployed/retired)? Mark all that apply.

( ) administrative ( ) educator (teacher, tutor, etc.) ( ) student

( ) sales or service ( ) manager ( ) technician

( ) trades person (plumber, welder, etc.)

( ) natural resources worker (farming, forestry, mining, fishing, etc.)

( ) transportation worker (driver, equipment operator, dispatcher, etc.)

( ) other (Please specify) _____

14. How would you rate your current health, in general?

( ) poor ( ) fair ( ) good ( ) excellent

15. Which of the following health problems apply to you? Mark all that apply.

( ) digestive problems ( ) heart disease ( ) cancer ( ) mental illness

( ) breathing problems ( ) joint problems ( ) diabetes ( ) high blood pressure

( ) other (Please specify) _____

SECTION 2: About your trip

1. How did you learn about the Northern Health Connections bus service? Mark all that apply. Through…

( ) a relative ( ) a friend ( ) a health provider ( ) media (TV, radio, etc.)

( ) the Northern Health Authority (poster, pamphlet, website, etc.)

( ) other (Please specify) _____

2. How many times have you used the Northern Health Connections bus service? (Please consider a round-trip as one time use.)

( ) first time ( ) two times ( ) three or more times

3. What was the reason for your most recent NH Connections trip? Mark all that apply.

( ) to see a doctor for examination

( ) to receive non-surgical treatment by a specialist

( ) to get an operation (surgery) ( ) for post-treatment/surgery follow up

( ) other (Please specify) _____

4. Which option best describes how you used the service?

( ) from home to a health centre ( ) from a health centre back to home

( ) both ways

5. How long did you travel (in one direction) during your most recent bus trip to get to your doctor or hospital appointment?

( ) less than 2 hours ( ) 2 - 4 hours ( ) more than 4 – up to 6 hours

( ) more than 6 – up to 8 hours ( ) more than 8 hours

6. Did anyone come with you on the bus to help you during your most recent trip?

( ) No ( ) Yes (Please specify his/her relationship with you) _____

SECTION 3: Your thoughts on NH Connections service

1. What did you like about this service?

( ) cheaper than other travel options ( ) comfortable ride
( ) faster than other travel options ( ) friendly staff
( ) safer than other travel options ( ) good for socialization
( ) other (Please specify) _____

_____

2. What did you dislike about this service?

( ) booking is a hassle ( ) too few buses ( ) limited schedule ( ) costs money
( ) other (Please specify) _____
( ) nothing comes to mind

3. Would you use the service again, if you needed to?

( ) No ( ) Maybe ( ) Yes

4. Would you recommend the service to others?

( ) No ( ) Maybe ( ) Yes

5. How would you rate the Northern Connections bus service overall?

( ) not useful at all ( ) not very useful ( ) somewhat useful
( ) useful ( ) very useful

6. If you did not have access to the NH Connections service, would you be able to get the medical care you needed?

( ) No ( ) Maybe ( ) Yes

7. In your opinion, what could be done to improve the service?

Thank you very much for taking the time to answer our questions.

7.2 Appendix B:

Information package for NH Connections Drivers

NH Connections Evaluation Study
INFORMATION FOR DRIVERS

Background
The University of Northern British Columbia and Northern Health are working together on the Northern Health Connections Evaluation Study. The purpose of this study is to determine the impact NH Connections is having on health service delivery in Northern BC. Of primary interest is to determine the extent to which the service is being used by various communities, and ultimately, the overall effect on the health of Northern BC residents.

Improving access to health care is the underlying philosophy of NH Connections. The results of this study are important for the continuation and possible adaptation of the program, in order to better serve the medical needs of Northern BC residents. As well, should the service prove effective, it will provide a good example of a service that could be imitated in other regions with similar health care problems.

What is your role as an operator?
As an operator of an NH Connections vehicle, you are an important part of the NH Connections Evaluation Study team. Your assistance in administering the questionnaire to passengers en route is greatly appreciated by the research team. **We ask that you invite only patients (and <u>not</u> patient escorts/ companions) to complete the questionnaires. Patient escorts/companions are not the focus of this study, but may assist the patient they are accompanying to complete a questionnaire.** This includes minors, and/or other persons who are traveling with a companion for assistance during travel. Please also make sure that participants have not already provided their responses to this study in a telephone interview. The steps involved with this task are as follows:

1) NH Connections will receive a supply of questionnaire information packages for drivers to give to passengers upon boarding the NH Connections busses. The information package contains:
    i) An invitation letter to the passenger to complete a questionnaire;
    ii) 2 copies of the Informed Consent Form (a second copy is for the passenger to keep);
    iii) The questionnaire itself;

iv) A pen; and

v) An envelope for their completed questionnaire and one signed Informed Consent Form

Samples of these are attached for your review. Please read them over to familiarize yourself with their content. While it is not your responsibility to know the details of this study to the degree of the researchers, it would be helpful for you to get a general sense of the questionnaire and its accompanying information.

2) Drivers are asked to collect the completed questionnaire packages from passengers, and to forward the completed packages to operations staff in Prince George. **It is crucial that passengers completing the questionnaire also sign 2 copies of the informed consent form. One copy is for them to keep, and they must submit the other signed copy with their completed survey. Without a signed informed consent form, the research team cannot use their questionnaire in the study.**

3) The questionnaire was designed to make it as easy as possible to complete, and to eliminate any confusion about how the questions are meant to be answered. However, some passengers may have questions about its content and/or the study itself. The enclosed Frequently Asked Questions (FAQs) are designed to assist you in answering passengers' questions. If, however, the FAQs do not adequately address their questions:

   i) You may explain to them that they should answer the question they way they think is best, or

   ii) If it is question about the study in general, suggest they refer to their Informed Consent Form for the contact information of Dr. Jalil Safaei, the study's Principal Investigator (researcher), who can address their questions or concerns about the study. The may also refer to the Northern Health website at www.northernhealth.ca.

We hope that this information will help you in your role of administering and collecting the completed questionnaires and Informed Consent Forms from participants in the NH Connections Evaluation Study.

The research team thanks you for your assistance with this important task.

Frequently Asked Questions (anticipated)

1) ***Why am I being asked for my name on the questionnaire and informed consent form?***
   We ask for your name in order to make sure your signed Informed Consent Form and Questionnaire remain together as they should, and not with that of another study participant. The name and signature of the questionnaire respondent is a standard and necessary component of any research consent form. Also, this information helps us in the research process to learn whether NH Connections is serving Northern BC residents to the best of its intentions, and to plan for future improvements to the service. Your name will never be revealed in any results dissemination activities such as research reports, newspaper articles nor any other media. All results from this study will be presented in overall percentages or other group-based statistics.

2) ***Why am I being asked about my cultural / ethnic background in question #1?***
   By asking for your ethnic or cultural background, we are able to learn more about the various groups of Northern BC residents that NH Connections serves (for example First Nations communities and immigrants). By learning more about its customers, NH Connections is better equipped to provide services to better meet the needs of those people using the service. This question is optional and you do not have to answer it if you are not comfortable doing so, as with any questions on the questionnaire.

3) ***Regarding question #3 in Section 1 "How many years in total have you lived in Canada?" What if I left Canada, and went to live in my home country, but then returned to live in Canada again?***
   By asking for the total years you have lived in Canada, we would like to include all of the time you have spent living in Canada, even if you left and came back. Add up all the years you have lived in Canada, and exclude the time you spent in your home country in between, if applicable.

4) ***Regarding question #4 in Section 1 "Are you currently…?" what if I'm divorced or widowed but have since remarried? Do I check more than one?***
   Please mark only one set of brackets. For example, if you are married, but were divorced or widowed in the past, only check "married".

5) ***Regarding question #5 of Section 1, what is a dependant?***
   A dependant is anyone who you help support financially (family or not). In most cases this means a family member like a child or elderly relative, for example, that lives with you.

6) ***Regarding question #6 of Section 1, "Please indicate which of the following best describes your overall annual household income", do I include any tax benefits or other income like Employment Insurance, for example?***

   If you are able to include income in addition to any job-related income, then yes include it. But if you're not sure, then just mark what you think your job-related income is.

7) ***Regarding question #13 in Section 1 "Which of the following best describes your type of work? What if I'm a manager working in one of the areas indicated (natural resources, transportation, trades, etc.), what do I mark?***

   If you are a labourer in any of those industries, then mark beside the industry itself. If you're a manger or administrator in any of those industries, then mark "manager" or "administrative", as well as the industry you work in. For example, "manager" and natural resources worker