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Management Consulting

DAWSON REGION DENTAL SERVICES

Feasibility & Business Options Analysis

Submitted to:

Michael Prochazka
Assistant Deputy Minister – Operations
Department of Economic Development

Submitted by:

Amos Westropp, Principal
Westropp Management Consulting Inc.

Dated 31 March 2022

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INTRODUCTION

Access to dental services, like access to other forms of healthcare, is important for an individual's health and wellbeing. Where access to dental services is limited or not locally available, which is typically the case for many of Canada's rural and remote regions, outcomes connected to oral health can suffer. In Yukon, oral health services are concentrated in the territorial capital, while outlying communities have limited access. One of these communities, Dawson City, has been without a dental clinic since 2009, and while the town is served by an itinerant dentist and children's programming, there is interest in the resumption of locally based dental services.

The purpose of the following report is to explore whether a business case exists for reintroducing dental services in Dawson City and the surrounding region along with the identification and analysis of factors that would enhance or hamper the success of different models under consideration.

The report begins with a description of the barriers affecting access to dental services in Canada, which is followed by a high-level summary of industry trends emerging within Canada's dental profession, as well as an overview of Yukon's dental profession. The report contains analysis of the regional market and estimates of both the need and demand for dental treatment within the region. Several models are introduced as options to increase the availability of local dental services and are assessed according to operational and financial efficacy. The report concludes with a series of recommendations to support future planning exercises.

FACTORS AFFECTING ORAL HEALTH

A range of factors affect an individual's oral health. Diet, genes, and oral hygiene, each contribute oral health status and play a role in the prevalence of oral health disease and tooth decay within given populations. Other more indirect factors can also play a role in oral health, such as:

- Affordability: Do the provider's charges relate to the patient's ability to pay for health services.
- Availability: Does the provider have the requisite resources, such as personnel and technology, to meet the needs of patients?
- Accessibility: How easily can patients physically reach the provider's location?
- Accommodation: is the provider's operation organized in ways that meet the constraints and needs of the patient.[1]

While overall access to oral healthcare in Canada is improving because of increasing numbers of dentists relative to the population, access to dental services varies across Canada and tends to be concentrated in urban centres and more sporadic among remote and rural populations. In Yukon, for example, there are no private clinics staffed by a licensed dentist in communities, while there are 11 dental clinics in Whitehorse.

[1] Canadian Academy of Health Sciences, *Improving access to oral health care for vulnerable people living in Canada*, 2014.

A report investigating the oral health of First Nations people in Canada explored different barriers affecting First Nation access to dental care. The survey found that cost was not so much of a barrier for First Nations people. This is not a surprising finding as the federal government administers Non-Insured Health Benefits, a program that pays for eligible dental and other medical services as well as travel, where services are not locally available. If there is an issue related to cost, it likely involves circumstances where the price charged by a clinic for certain procedures exceeds the fee schedule established by Non-Insured Health Benefits, with the patient paying any difference out-of-pocket.[2]

The more substantive barrier highlighted in the report was the location of services and whether dental services were accessible when needed. "The principal reason given by First Nations for not going to a dental professional in the past two or three years was the unavailability of services in their communities." The 2019/20 annual report published by the Non-Insured Health Benefits program tends to affirm the survey data. Only 35% of Yukon recipients eligible for NIHB support obtained dental services. Utilization rates for Yukon were relatively stable between 2015/16 and 2019/20 hovering between 35% and 37%.[3] One explanation for the low utilization rates is the higher proportion of Yukon First Nations people residing in Yukon communities, many of which, are a considerable distance from the territory's major service centre – Whitehorse.

Problems accessing dental care services reported by First Nations aged 12 years and over who had not been to a dental professional in 3 years or more

Problems accessing dental care services	≥ 12 (wtd %)
No problems	17.80%
Services not available in my community	59.50%
Services not available when requested/needed	16.30%
Waiting list too long	18.30%
Could not afford direct cost of care	5.60%
Could not afford transportation cost	4.20%
Could not arrange transportation	4.60%
Chose not to visit available dental professional in community	4.40%

Access to services is a broader problem affecting many Yukon communities. One of the themes underpinning a report commissioned by the Yukon First Nations Chamber of Commerce, investigating Yukon's transportation system, addresses the challenges of travel from communities to Whitehorse for goods, services, healthcare, and work. The report suggests that those "with higher travel needs may also face unique barriers that make them less able to travel than most Yukoners. These barriers may be personal (age or disability), financial (lack of resources), spatial (distance from services or transportation), or institutional (lack of a driver's licence)."[4]

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[2] First Nations Information Governance Centre, *Report on the Findings of the First Nations Oral Health Survey 2009-2010 National Report*, Ottawa, September 2012.

[3] Indigenous Services Canada, *First Nations and Inuit Health Branch Non-Insured Health Benefits Program – Annual Report 2019/2020*, Ottawa, 2021.

[4] *Yukon Community Travel Project – Final Report*, June 2021.

The absence of local oral health services and the time needed to travel to reach service providers can be major barriers. Distance from service providers can prevent individuals in need of treatment from obtaining it, especially if they do not have the means to travel great distances, a support network to drive them, or affordable commercial transportation options in their region. Furthermore, winter travel from remote northern communities can be hazardous when temperatures fall below 40° C and snowfall affects road conditions.

> "Transportation between rural communities and Whitehorse is a significant issue for both medical and non-medical travel. The lack of transportation options other than personal vehicles has a negative impact on health. Transportation is particularly challenging for people with chronic health conditions and aging residents."
>
> Review Committee, Putting People First – The final report of the comprehensive review of Yukon's health and social programs and services

Costs of dental services can be another barrier particularly among low-income groups. Oral healthcare is not an insured service under the *Canada Health Act*, and provincial and territorial governments do not offer oral care programs that apply to the general population. A growing number of Canadians receive support through employer benefit plans or they pay for private insurance as a means of offsetting the costs of dental care. Income assistance programs typically include support for dental care. Furthermore, the federal government provides dental benefits to members of the military and the RCMP in addition to First Nations and Inuit through NIHB.

The Yukon Bureau of Statistics indicated in a report assessing territorial health and social services programming that 38% of Yukoners do not have dental and other health benefits (public, employer, private), which the Bureau concludes adversely affects their health.[5] While less prevalent in the literature examining the link between oral health and poverty is the plight of the underinsured, people who may have some form of dental care coverage but the coverage is insufficient given the need for treatment and its cost.

Financial support for oral healthcare is important because the cost of dental services can act as a major deterrent to people who need treatment. A range of studies have established a correlation between income and oral health outcomes, partly attributing poor oral health among lower income groups to their inability to obtain treatment and ongoing preventative care due to cost. A comprehensive national survey of oral health conducted between 2007 and 2009 found that 17.3% of respondents did not obtain dental services due to cost. Rates for avoiding dental service due to cost were highest among low-income earners and those without dental benefits. In addition, another 16.5% indicated they previously had rejected recommended treatment because of cost.

Where access to oral healthcare is affected by the absence of local services or affordability issues, hospital emergency rooms become the de facto service provider. Between 2016 and 2020, emergency room visits by people with oral health problems to the Whitehorse General Hospital,

[5] Ibid.

Watson Lake Community Hospital, and Dawson City Community Hospital, were 3,492, 416, and 414 respectively. "Recent Canadian work has demonstrated the influence of poor access to oral healthcare on the healthcare system through the use of hospital emergency departments for dental conditions that are most effectively treated in regular oral healthcare settings."[6]

Clearly, some of the visits to emergency rooms will concern serious oral health issues, such as trauma to the mouth due to a sport related injury. Other oral health concerns may be less serious and could be resolved through a dental clinic provided service proximity and cost are not barriers to access. In 2017/18, 27% of emergency room visits to the Whitehorse General Hospital respected matters that ought to have been addressed in a clinic setting such as a doctor's office. The same percentage can be used to estimate the number of oral health related visits to the emergency rooms that could have been addressed by a dental clinic. Of the 4,322 visits made to the emergency room for oral health problems, 1,166 visits could have been diagnosed and treated through a dental clinic, provided barriers, such as cost, and service proximity were not issues.

Hospital visits due to oral health problems			
Year	Whitehorse	Watson Lake	Dawson
2016	713	98	109
2017	718	91	83
2018	664	61	83
2019	726	78	62
2020	671	88	77
Total	3492	416	414

In Yukon, the territorial government has committed to the introduction of a territory-wide dental plan that is intended to assist members of the population who do not have the means to pay for dental care. The introduction of such an intervention would likely increase demand for dental services across Yukon. At the federal level, the governing Liberals recently announced their intention to introduce a federal dental care program to facilitate access to dental services by low-income families, one of several commitments the government made to the New Democratic Party to secure its ongoing support in Parliament. It is unclear to what extent the two regimes will interact or how benefits will be coordinated.

Both governments and the non-profit community have responded to the cost of dental services in Canada through targeted programming that is designed to increase access to dental services for economically and socially disadvantaged groups. Many programs focus on children's dental health, while others apply more broadly. The City of Toronto, for example, offers dental service to residents through its Public Health clinics. Eligibility requirements vary by clinic, but residents may qualify for free or subsidized services through low-cost dental clinics in cases where they have no private or public insurance. Programming targets newcomers to Toronto, children, the elderly, low-income families, and homeless populations.

The Province of British Columbia has been supporting community dental clinics, which have experienced significant growth across the province since 2000. Prior to 2000, there were only three not-for-profit dental clinics in the province. The number of community clinics reached 18

[6] Northwest Consultants *et al*, *Brushing Up on Oral Health – Northwest Territories 2014,* GNWT Health and Social Services, 2014.

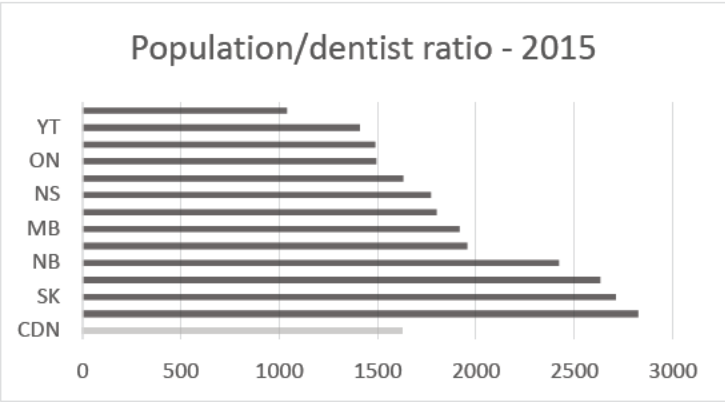
in 2012. Community clinics offer services in each of BC's health regions in both rural and urban areas of the province. The emergence of community dental clinics is intended to respond to unequal access in dental services by reducing the cost of those services for people who are unable to pay the full cost. Similar community clinics operate throughout the United States.

INDUSTRY TRENDS

In 2001, there were 18,590 licenced dentists in Canada. By 2018, the number of dentists had risen to 26,749, an increase of 44% in 17-years. The Canadian Occupational Projections System tracks salaries for dentist. Salaries per year range from a low of $30,128 to a high of $261,517. The median age of dentists in 2018 was 47, average age at retirement was 65, and 87% of dentists are self-employed. According to a news release issued by Immigration, Refugees and Citizenship Canada, close to 40% of Canada's dentists are internationally trained and have immigrated to Canada, compared to 37% of pharmacists and 36% of physicians.

The Canadian Occupational Projections System suggests that Canada will experience a dentist shortage between 2019 and 2028 as expansion demand and retirement "are expected to total 12,200, while 7,000 new job seekers (arising from school leavers, immigration and mobility) are expected to be available to fill them." Greater public awareness of the importance of oral health in concert with population growth will increase demand for dental services during the next decade. This will be partly tempered as a larger percentage of retirees may not have dental insurance. A second factor respects the field of dental hygiene. Several provinces allow dental hygiene clinics to operate without the clinical supervision of a dentist, which will impact the demand for dentists.

A report released by the Canadian Dental Association, entitled the *State of Oral Health*, compiled information on the number of dentists practicing within territorial and provincial jurisdiction. According to the data, the population per dentist ratio in Canada was 1,622 in 2015. There is moderate variation in the ratio by jurisdiction, with a low of 1,038 for the Northwest Territories and a high of 2,823 in Nunavut. There are 28,324 dental offices, which include dentists as well as other professionals involved in oral health, such as dental surgeons, orthodontists, and periodontists. Virtually all dental offices in Canada employ fewer than 99 employees.



The Canadian Dental Association notes that there is a significant concentration of dentists within major urban centres in Canada. One impact of the increasing number of dentists within cities is the intense competition for clinics when they are put on the market. Bidding wars are frequently the result. Timothy Brown is the Chief Executive Officer of ROI Corp, a brokerage for dental clinics. He noted in an article assessing dentistry trends that the cost of establishing a new clinic is $600,000, which makes the purchase of an existing practice more appealing since an existing clinic has a facility already outfitted with equipment and supplies, an established patient roster, and staff.[7]

The Canadian Dental Association further notes that "regional factors affect the resale value of dental practices." Communities in rural and remote areas can have difficulty attracting dental clinics due to low population density and dispersal. Private clinics will not be profitable without a sufficient volume of patients, which can be difficult to achieve in remote rural areas. "Outside major urban centres there is significantly lower resale value for dental practices which has led to an even greater need for new dentists to form group practices."

Dentists who want to practice in Canada have three options available to them. They can establish their own clinic, purchase an existing clinic from a retiring dentist, or become an associate dentist within a practice. Data from the Canadian Dental Association suggests that most dentists (54%) operate solo dental practices, 19% have established partnerships, and another 19% work as associates in private practice. Partners typically assume equal responsibility for managing the office and derive an equal share of revenue, while associates are employees of the practice although they may receive a share of net revenue depending on the structure of the practice.

According to the Canadian Dental Association, "there has been a shift towards the corporatization of dentistry in Canada." Corporate dentistry comes in several forms. It can involve the merger of two practices or the acquisition of one practice by another. Certain corporations owned by one or two dentists may manage and deliver dental services at clinics in multiple locations. These types of professional practices can be distinguished from Dental Service Organizations (DSO), which are owned by third parties.

DSOs administer and control "all business and management of the practice, including hiring and training employees, and associates, procuring equipment, marketing and promotion, and setting fees for service." The largest DSO in Canada is the Dental Corporation of Canada (DCC), which has generated revenues of $230M since its inception in 2011. DCC is a publicly traded company (DNTL.TO) that has acquired 430 dental practices across Canada, including at least two Whitehorse-based clinics. It presently employs 7,100 people including 1,300 dentists, 1,600 hygienists and 4,200 auxiliary dental health professionals. Dental Corp clinics have had over 4M annual patient visits or encounters.

[7] News article, entitled *Too many dentists means tough times for them, good deals for customers: report*, https://globalnews.ca/news/429450/too-many-dentists-means-tough-times-for-them-good-deals-for-customers-report/

The business model employed by DSOs is typically based on a low fee, high volume strategy, which, critics highlight, comes at the cost of the patient/dentist relationship, as patients may not see the same dentist each visit and remuneration structures may encourage dentists to focus on patient billing rather than patient care. A benefit of the model, however, is that responsibility for clinic administration falls to a central organization leaving the clinic's dentists to focus on the delivery of patient services. Given the size of DSOs, they can also leverage significant purchasing power when buying equipment and supplies at rates that are lower than those paid by smaller independent clinics.

In the United States, corporate ownership accounts for 30–40% of all dental clinics, while the solo dentist model continues to experience a steady decline from 65% in 1999 to 46% in 2021. The Canadian Dental Association estimates that CSOs account for a much smaller share of the market (about 2% of dental clinics) in Canada but notes the figure will likely increase in future. It is also likely that as corporate practices find it increasingly easier to buy existing dental practices and to recruit the workforce needed to operate them, Canada will also experience a decline in individually managed clinics.

Dental services are going mobile. Dental and hygiene practitioners are responding to consumer preference for more accessible service with mobile clinics that bring the dental chair to the patient's doorstep. Vans and recreational vehicles are being refurbished and outfitted with operatories along with the tools, equipment, and supplies found in a typical fixed clinic. In BC's lower mainland, for example, there are several private clinics that offer dental hygiene and denture services to homes and businesses, while other mobile clinics choose to focus service delivery on the elderly and people with mobility issues.

Government programs have also sought to increase access to dental care through mobile dental clinics. For the past 10-years, the City of Toronto's Public Health Department has delivered oral health services to low-income neighbourhoods and marginalized and transient populations through a repurposed 38-foot Faber RV, outfitted with two 2 operatories and equipment. The dental team consists of a dentist, hygienist, and dental assistant, who are responsible for set up and up and tear down. The mobile clinic operates according to a fixed schedule and offers basic dentistry services – cleanings, fillings, and simple extractions. It has a 7-hour workday with two hours set aside for travel (1-hour to and from) and clinic set up and take down. The dental team sees about 5 patients per day during 5-hours of clinic time.

FEES & PRICES

A dentist earns revenue based on the number of patients the dentist treats and the fees the dentist charges for different treatments. While each dental clinic sets its own prices for treatment and routine care (usually according to 15-minute increments), the price structure is based on a fee guide published annually by the relevant territorial or provincial dental association along with the reimbursement rates established by insurance companies.

Clinics can set prices over and above those identified in the fee guide for business reasons or where a dentist possesses advanced skillsets within a particular area. But dental clinics tend to

align their pricing structure with the fee guide because insurance companies use the fee guides as the basis for determining coverage for different types of treatment. Dental fees vary from jurisdiction to jurisdiction.

Non-Insured Health Benefits

As previously discussed, the federal government through its Non-Insured Health Benefits program pays for the costs of dental care for First Nation and Inuit. It has established its own national fee guide, which sets out eligible treatment and the costs it will pay for treatment. In its most recent annual report, the Non-Insured Health Benefits Program paid approximately $25M in claimant fees to private clinics across the north (amounts were not disaggregated by territory) and spent an average of $953 per claimant.

NIHB benefits include support for medical travel where services are not locally available. In 2019/20, NIHB spent approximately $76M on medical travel for Northern recipients in need of medical services not available in their home communities. Overall medical travel costs have increased by 43% since 2015 from $376M to $537M in 2019/20. Given the growth in medical travel, NIHB would likely support increased investments in local service delivery for dental care as a means of directing more funding to primary care rather than travel.

The rates established by NIHB for reimbursing the cost of dental services tend to be less than the fees set out in territorial fee guides (estimated at 80% of the fees established by territorial dental associations). However, the NIHB program does not impose a limit or cap on the value of annual dental services, unlike most employer benefit plans or private insurance plans. If a patient, who qualifies for NIHB, has significant treatment requirements within a given year, NIHB will cover the treatment, provided it conforms with NIHB eligibility requirements.

It should be noted that for dental professionals who are not familiar with the Non-Insured Health Benefits program, the Health Information and Claims Processing Services – the system that processes claims for reimbursement – can be cumbersome and complex. The process for submitting claims to HICPS is very different from the process used to submit standard insurance claims and the system requires time to become familiar with its processes to avoid issues connected to billing and receiving payment.

CLINIC OPERATIONS & PATIENT MANAGEMENT

A dental clinic's revenues depend on patient encounters. The more patients examined and treated daily, the greater a clinic's revenue. A patient roster lists the clinic's active patients, generally defined as patients who have paid a visit to the clinic in the last 14- to 18-months. Ideally, patients are not treated once but return on an ongoing basis for annual dental care or re-care. The provision of dental services must be supported by an appropriate number of support staff, such as chairside dental assistants, receptionists, dental hygienists, and billing clerks, or productivity will suffer. Staff resource should reflect patient volume or the number of patient encounters involving the dentist.

	Dentist	Source
Patient Roster	1,472 to 1,619	SNDC
Patient Roster	1,600 to 2,300	DBS
Annual Encounters	3,680 to 4,048	SNDC
Annual Encounters	2,500 to 3,000	NNOHA
Patients/day	9 to 15	DBS

According to DBS Companies, a dental advisory services company, a full-time practice with one dentist should have a minimum of 1,600 active patients. It further advises that the maximum number of active patients a single dentist can manage is 2,300. The range established by the Safety Net Dental Clinic Manual, a manual identifying steps for starting dental clinics serving disadvantaged populations, suggest a range of between 1,472 and 1,619 active patients for one dentist, which would amount to 3,680 to 4,048 encounters each year. (The difference in the two ranges likely reflects the objectives underlying a business model versus a non-profit model.)

The Safety Net Dental Clinic Manual also identifies patient roster numbers and encounters per year for mobile clinics. A mobile clinic with two operatories should have a patient roster of 500 to 800 people with encounters ranging from 1,400 to 2,000. The number of encounters will vary and depend on several factors. A dental team who is responsible for driving the mobile clinic to the location as well as for set up and take down will have less clinic time during an 8-hour day than a dental team that does not have these responsibilities. To reduce the impact of travel and setup/take down on clinic hours, a municipal government in Ontario hires personnel to drive the mobile clinic to and from the location and to manage the clinic's setup and take down.

According to DBS Companies, a dentist should see between 9 and 15 patients each day. Average visits per day are estimated at 10.38. An important variable affecting a dentist's productivity is the resources supporting the dentist during treatments. An operations manual issued by the National Network for Oral Health Access suggests that a dentist responding to 2,500 to 3,000 treatments annually will require at least two full-time dental assistants to achieve optimum service or the dentist's productivity may suffer.

"An insufficient number of dental assistants can result in multiple operatories being used inefficiently, because, under such circumstances, dentists will be working alone when it is more productive to have a chair-side assistant."[8] The number of operatories or treatment rooms will also affect productivity. Both DBS Companies and Safety Net Dental Clinic Manual suggest that an efficient dental clinic will require two operatories per dentist along with one operatory per hygienist.

	Hygienist	Source
Annual Encounters	1,300 to 1,500	NNOHA
Patients/day	7.5 to 8.5	DBS

Dental clinics offer scaling, cleaning, and polishing services, which are performed by dental hygienists. The Canadian Dental Association recommends that people have their teeth cleaned at least once a year as part of a routine oral hygiene regimen to prevent tooth decay. In terms of productivity, a hygienist should be able to see between 7.5 to 8.5 patients in

[8] National Network for Oral Health Access, *Operations Manual for Health Centre Oral Health Programs – Chapter 5: Workforce and Staffing*, version 1.0, Denver, November 2011.

an 8-hour workday (DBS Companies). Annual encounters per hygienist range between 1,300 and 1,500 with an average of 1,337.7 encounters (NNOHA). Using the dental fee guide issued by the Yukon Dental Association, revenue from hygiene services based on 1,300 and 1,600 annual encounters is estimated to range between $210,600 and $259,200. (Dental services are far more difficult to estimate because of the range of services and variables affecting treatment.)

In terms of floor space, a fixed clinic with three operatories needs up to 1,800 square feet. It is based on a staffing complement of one dentist, two dental assistants, one hygienist, and one receptionist/file clerk. The clinic can be housed in a free-standing facility or within a multipurpose building such as a community center or hospital. A standalone clinic would require a staff room and washrooms. Other factors to consider are whether:

- the clinic is easy to access;
- there is sufficient parking for staff and patients;
- the location is central to the population to be served;
- the is clinic near local schools;
- the building has access to sufficient volumes of water and sewage systems; and
- the parcel is zoned appropriately.

The table to the right identifies the type of space and the square feet needed for a clinic with 3-operatories and a staff complement of 5. A conversion factor of 3% is applied for hallways and walls.

Type of Space	Unit	#	Sq. Ft.
Fixed Operatories (10x11	110	3	330
Panoramic X-ray	30	1	30
Clean-up Alcove	30	3	90
Laboratory	60	1	60
Darkroom	60	1	60
Unit Supply Area	40	1	40
Reception Area	100	1	100
Staffroom	250	1	100
Office	120	1	120
Restroom	75	1	75
Waiting Room	120	1	120
Janitorial Closet	40	1	40
	Subtotal		1165
	Conv. Factor		349.5
	Total		1514.5

Clinics are outfitted with equipment, such as dental chairs, operating stools, dental handpieces, x-ray units, ultrasonic cleaners, autoclaves, dental units, air compressors, vacuum systems, and computer hardware. Information management systems are another important aspect of operations (i.e. patient management software, digital radiographs and other imaging applications, billing systems, patient files, clinical charting, treatment planning, appointment scheduling, and insurance processing).

YUKON DENTAL PROVIDERS

Yukon's Licenced Dental Professionals Registry publishes a list of dental professionals who are licenced to practice in Yukon. The list is categorized according to occupational groupings. In 2021/22, 36 dental hygienists, 7 dental therapists, 52 dentists, and 13 dental specialists were licenced to practice in the Territory. Not all the practitioners identified on the registry listing reside in Yukon nor do they necessarily provide services here.

According to key informants with knowledge of the Whitehorse market, there are likely 20 dentists who practice at clinics in Whitehorse. Of the 20 dentists, four to five reside outside the territory and periodically visit Whitehorse to deliver services at local clinics or step in as locums. Another dentist travels through Whitehorse to deliver dental services to Yukon communities as the itinerant dentist (more information on the itinerant program is available below).

Based on population data from the Yukon Bureau of Statistics, Yukon's population on September 30, 2021, was 43,568. Using the population data and the number of dentists licenced and practicing in the territory, Yukon's population per dentist ratio is 2,075 per dentist. The figure is somewhat higher than the 2015 national average of 1,622 people to one dentist and Yukon's ratio of 1,407 people per dentist. It should be noted that the 2,075 per dentist ratio does not include other dental professionals, such as orthodontists, denturists and dental specialists who practice in Yukon, which may partially explain the difference from data presented in 2015.

Furthermore, during the intervening period, the territorial population has experienced significant population growth, which may not have been accompanied by growth in the number of dentists practicing in Yukon. Obviously, the ratio would look very different if its application was limited to Whitehorse and surrounding communities, as Whitehorse is the primary market for Whitehorse-based clinics. With a population of 34,526 drawn from Carcross, Tagish, Mendenhall, in addition to Whitehorse, the ratio would be 1,701/dentist.

There are 11 clinics operating in Whitehorse, 10 of which are privately operated, which are registered with the Yukon Corporate Online Registry. One clinic is federally administered and delivers oral health services to patients qualifying for Non-Insured Health Benefits. At least two clinics are owned by the Canadian Dental Corporation, a Dental Services Organization profiled in the section addressing trends in dentistry. It should be noted that Yukon operates a preschool clinic in Whitehorse and temporary clinics in communities.

Clinic	Registry #
Elias Dental	836613
Yukon Dental	315013
Riverstone Dental Clinic	314869
Whitehorse Dental Clinic Inc	313037
Triniti Dental Clinic Prof. Corp	536036
Arctic Elite Dental Clinic	314319
Dandelion Dental Centre	316845
Klondyke Dental Centre	316864
Pine Dental Clinic	318234
Murraya Dental Centre	220175
NIHB - Dental Office	Federal

While the Whitehorse market is well served by dental service providers, communities are largely underserved due to their distance from Whitehorse's dental clinics. Currently, there are no private clinics in communities offering regular dental services to adults. Adults (aged ≥ 19) in communities who need routine care or treatment must travel to Whitehorse or make an appointment with the itinerant dentist, who typically makes 2 annual visits to the communities. Adults in need of emergency dental services, advanced treatments delivered in clinical settings, or preventative services (scaling and cleaning) must make a to trip Whitehorse.

Community Dental Services

Previously, dental clinics operated in Dawson City and Watson Lake. Dr. Helmut Schoener was Dawson City's resident dentist from 1978 to 2009. Initially, Dr. Schoener operated the clinic 5-days a week but reduced clinic operations to 3-days a week because of low patient utilization, especially in winter months as mining and tourism activity declined. To augment his patient base, Dr. Schoener served as an itinerant dentist traveling to surrounding communities, such as Mayo and Elsa (when the mine was in production), delivering dental services to residents and school aged children participating in school dental programming.

Dr. Ronald Pearson, a Whitehorse-based dentist ran a part time clinic in Watson Lake from 1981 to 2011. Dr. Pearson would visit Watson Lake to provide dental services 6-times a year with visits lasting one week, although Dr. Pearson reduced the annual visits to 2 one-week visits in the latter years of the clinic's operations. Yukon provided funding to Dr. Pearson to offset the cost of travel (mileage, accommodation, per diems), travel time, and clinic set up. Funding also covered travel for a hygienist once per year.

Several factors may discourage Whitehorse based dentists from delivering services in communities. As previously discussed, dental services are generally provided through private clinics in Canada based on a fee for service structure. A typical dentist can see between 9 and 15 patients (average 10.38) during an 8-hour workday provided there is a sufficient number of operatories and support staff.[9] To generate revenue, dentists need a steady flow of patients moving through their operatories. When a dentist is absent from the clinic and locums are unavailable, office overhead and staff expenses accrue and at the same time revenue may be in decline.

According to several key informants, Whitehorse dental clinics are extremely busy and have been for the past 10-years. The onset of Covid 19 and public health restrictions temporarily closing clinics only exacerbated matters, resulting in a significant patient backlog. Given the prevailing conditions in the Whitehorse market, it is unlikely that any of the clinics would be willing to reduce clinic capacity to offer services in Yukon communities when demand levels in the Whitehorse market are as strong as they presently are.

Both time and effort are required to plan and organize the delivery of itinerant dental services in communities, which takes away from treatment or clinic administration. A certain amount of community outreach is also required in advance of community visits. Travel to and from communities takes time, which could otherwise be used to deliver dental services in the fixed clinic. Community clinics are outfitted with basic equipment, but the facilities are not necessarily ideal for dental services. Other reasons include the prevalence of broken appointments or no shows and the challenges of being away from family for extended periods.

[9] DBS Companies, *2017 Benchmark statistics relating to dental offices*, 2017, and National Network for Oral Health Access, *Operations Manual for Health Centre Oral Health Programs*, Chapter 5, version 1, 2011.

YUKON ORAL HEALTH PROGRAMMING

While adults in rural communities may experience challenges finding dental care, the situation among school aged children is different. Preschool and school aged children in communities benefit from programming offered by Health and Social Services to support children's oral health. The preschool dental program delivers services to newborn children up to preschool age children. Parents and guardians can consult with preschool dental therapists employed by Yukon about the oral health needs of their children, and preschool dental therapists routinely visit communities to offer dental examinations through preschool or home-school clinics. These services are free of charge.

In the case of school aged children, oral health services are offered in makeshift clinics in schools and health centres in Yukon communities. Dentists, under contract with Yukon, conduct exams and prepare treatment plans, while dental therapists and hygienists employed by Yukon implement the treatment plans. Procedures that are beyond the capacity of the dental therapist and hygienist are brought to the attention of the child's parents or guardians, who would be responsible for pursuing treatment. Where a resident dentist is offering services in a community, students in grades 9 through 12 would no longer qualify for the program; a measure that is intended to increase utilization at the private clinic.

Yukon administers an Extended Care Benefits Program (ECBP) to offset the costs of dental care for Yukoners aged 65 years and older. Yukon contributes up to $1,400 in 2-year periods to eligible recipients. The program description describes the ECBP as the payer of last resort, and dental fees are paid according to the Yukon Dental Association Fee Guide. Billing is done directly to Yukon's Insured Health Services Branch.

ITINERANT DENTAL TEAM

Yukon administers an itinerant dental program to facilitate the delivery of locally available dental services to communities. The program is intended to defray the travel costs (transportation, accommodation, and meals) of the dental team consisting of a dentist and an assistant. If it were not for the itinerant dental program, dental services for adult populations would not be available in communities. Presently Yukon has one itinerant dentist on contract offering dental services to the following communities: Old Crow, Dawson City, Watson Lake, Village of Teslin, Carmacks, Mayo, Faro, and Pelly Crossing. The budget for the itinerant dentist program is set at $80,000 per year.

Between 2020/21 and 2021/22, the itinerant dental team made 22-visits to communities. The average visit for the period had a duration of 3.22 days. Total planned and unplanned encounters were 472 with an average encounter rate of 5.4 patients per day for the period and a median encounter rate of 4.7 patients per day. Total number of actual encounters during the 2-year period was 381, 126 of which qualified for Non-Insured Health Benefits. Dawson City had the highest number of patient encounters (178), most visits (6), and highest number of service days (27), while the lowest patient encounters were in Pelly Crossing where there were none. In addition, no visits were made to Pelly or Teslin in 2021/22.

It is very likely that there is a positive relationship between service duration and utilization rates. In Nunavut, where visits can last between two and three weeks, visiting dentists typically see between 8 to 10 patients per day but the rate can vary and will depend on the needs of the patient under care that day.[10] Visits by itinerant dental teams to certain communities can last up to 6 weeks depending on population and service demand. The Government of Nunavut expects each itinerant dental team to remain in communities between 2 and 3 weeks per visit. During this time, the dental team can familiarize itself with the community, and community members can get to know members of the dental team and the services they provide. Several key informants stated that a 1 week minimum should be the standard length for community visits.

2020/21 - 2021/22 Community Visits

Community	# of visits	Service days	Encounters	Encounters/day
Dawson	6	27	178	6.59
Old Crow	3	8.5	47	5.53
Watson Lake	3	8	47	5.88
Carmacks	4	9	47	5.22
Mayo	2	8	33	4.13
Faro & Ross River	2	7	20	2.86
Teslin	1	2.5	9	3.60
Pelly	1	1	0	0.00

Shorter visits affect the dental team's productivity. Travelling from community to community can last up to 6-hours, during which there is no billable treatment. Upon arrival in a new community, the dental team will need to set up the clinic and test equipment, which also consumes the dental team's time. Although basic equipment is available in community health centres and schools (e.g. dental chair, dental light, x-ray machine, and air compressor), community clinics are not turnkey operations. The dental team must bring equipment with them, which can include a portable dental unit, sterilizing machine, x-ray developer, and ultrasonic cleaner. Equipment and supplies must be packed into crates and transported in a large SUV, which is both time consuming and physically demanding, as the crates must be unpacked and packed with each community visit.

Broken appointments can be an issue affecting the viability of services delivered by an itinerant dentist. During the last two years, there were 91 broken appointments out of a total of 472 planned and unplanned encounters for a 19% broken appointment rate. Daily broken appointments in 2020/21 were 1.09 per day and 1.64 per day in 2021/22. Broken appointments will affect the dental team's productivity, and the financial impacts can be significant in the absence of appropriate mitigation strategies. Applying a rate per visit of $494, broken appointments are estimated to have resulted in lost revenue of $44,954 between 2020/21 and 2021/22, assuming the dental team was unable to find substitute patients.

[10] A former itinerant dentist, consulted for this project, who delivered dental services in Yukon communities identified an average rate of 10 patients/day.

One strategy is to maintain flexibility with respect to hours of operation. Dentists, familiar with the operating hours of fixed clinics, may be surprised to find that they do not translate well in northern communities. It would be impractical, for example, to schedule appointments prior to 10am in communities. Furthermore, the dentist may be in demand well after 8pm when service is scheduled to end, especially in summer months with extended daylight. Elders may seek earlier appointments, people working during the day may request appointments after work, while young adults may arrive for appointments well into the evening.

A good practice for maintaining decent utilization rates is to overbook appointments or to create overlap in appointments recognizing that the dental team is likely to encounter no shows during each day services are offered. There will be situations where patients have not arranged appointments in advance of a visit and simply show up for treatment. Nor will the itinerant dentist necessarily have a lot of information in advance on the needs of the patients the dentist will be treating who have booked appointments. A former itinerant dentist consulted for the report indicated that he would tend to book an hour per patient. “You treat what’s in front of you. It might be extensive, or it might be minor. You don’t know when you’ll be back.”

A factor affecting utilization rates is the dental team’s connection to the community. The dental team can strengthen utilization rates by fostering relationships with the community and by spending time there and meeting community members, to learn about the culture, whether previous experiences with dental services were positive, and explain the services offered by the dental team. In addition, the dental team should engage with the First Nation government. Each First Nation government has a health directorate that delivers health programming to citizens, including oral health programming. The First Nation government’s health directorate could act as an effective conduit between First Nations Citizens and the dental team.

It is likely becoming obvious that an itinerant dental team’s organizational skills are a prerequisite for successful community visits. Prior to leaving Whitehorse, the dental team will need to ensure that it has the right equipment and enough supplies to last the entire trip. The dental team should build in a certain level of redundancy to mitigate the impact of equipment breakdowns, which can cause prolonged delays affecting productivity. The range of equipment the itinerant dental team brings to communities is quite limited compared to the specialized equipment available to a dentist in a fixed clinic, because the itinerant dental team must minimize the amount of equipment traveling with them. The dental team will need processes to identify appropriate quantities of supplies. If the dental team does not pack supplies in sufficient quantities or fails to bring supplies, service disruptions may ensue, as it is unlikely that the dental team will find replacements in communities.

Some types of treatment are impractical for an itinerant setting or not as much of a priority, given the overall needs of patients. The itinerant dental team is focussed on the treatment of specific issues and emergencies. Urgent treatment is the priority. Treatments requiring multiple appointments (e.g. crowns, bridges, inlays) can be problematic. If a patient needs a crown, for example, the dentist will see the patient at one appointment to prepare the tooth and take an impression. The impression is then sent to a lab, which fabricates a crown based on the

impression. When completed, the lab sends the crown to the dentist and a second appointment is needed for the crown to be cemented. The entire process requires at least two to three appointments.

An itinerant dentist's community visits are limited to two or three times a year. It could be a six to eight month wait between the initial appointment and the cementation process. While there are temporary crowns, they are designed for a much shorter timeframe. When the dentist returns to the community after six or eight months, there is no guarantee the patient will reside in the community. As payment is generally made upon completion of the treatment, in these cases, the dentist would lose revenue because of the treatment that had been previously carried out and lab costs.

Prevention services are not presently delivered by the itinerant dental team. Prevention services are typically performed by a dental hygienist who scales teeth by removing plaque buildup to pre-empt the onset of gum disease. As mentioned previously, the dental team prioritizes the treatment of tooth decay and oral disease. It would not be an efficient use of the dentist's skills and training to perform scaling particularly if it meant patients were not receiving treatment. Ideally, prevention services would follow the dental team's visit after the Dentist had prepared treatment plans.

DAWSON REGION MARKET ANALYSIS

For adult residents of Dawson City in need of dental services, access can be a challenge. The itinerant dental team is the only locally available service provider and the dental team's availability is limited. In 2021/22, the itinerant dental team delivered dental services for 13-days out of 365-days, providing treatment services to 3% of Dawson City's residents. For the remaining 352-days, the adult population of Dawson City and surrounding areas did not have access to local dental services. Nor does the adult population have any local access to hygiene services – cleaning, scaling, and polishing – an important component of preventing oral health disease.

If you have a broken tooth and you are in pain, your options are to visit the hospital's emergency room department for a temporary fix and/or travel the 600 kms to Whitehorse to seek treatment. Work commitments or childcare may delay the trip to Whitehorse. Treatment may require an extended stay since diagnosis and treatment can take time, particularly if lab work is required or there are complications. Furthermore, a return trip may be needed in a few months for the dentist to assess progress and perform additional treatment.

In 2017, residents of Dawson City petitioned the territorial government to re-establish community dental services. The petition was signed by 130-supporters, and it called on Yukon "to establish a dental examination room in [the] new hospital to accommodate visiting dentists and hygienists or at the very least facilitate accessible dental care for citizens living in and around Dawson City." The petition is available online[11] and identifies a range of individual concerns, one of which is a recuring theme – the need to make dental services locally available to address the

[11] To access the online petition, visit: www.change.org/p/bring-back-dental-treatment-room-for-dawson/c

high costs of travel to Whitehorse. (It should be noted that at the time of the petition, Dawson City had recently lost its only dental practice and the visiting dentist had not been going to Dawson City.)

Dawson City had been served by a dentist up until 2009 who operated a part-time clinic. A challenge affecting the viability of the clinic at that time was the population of Dawson City and surrounding area, which made it difficult to build and solidify a reliable patient base. This was further complicated by the transient nature of the town's population. During the summer months, Dawson City's population grows due to an influx of workers to meet the demand in tourism and placer mining. With the onset of winter as mining and tourism wind down, Dawson City's population declines.

Rather than restricting the focus of the inquiry to the commercial viability of increasing dental services in Dawson City, it would be more practical to define the market to include communities within the region given limitations in Dawson City's population base to examine models that could address the needs on a regional basis. Five additional communities are included in the region – Pelly Crossing, Keno City, Mayo, Stewart Crossing, and Old Crow – because of their proximity to Dawson City.

Community	Population
Dawson City	2277
Mayo	471
Old Crow	265
Pelly Crossing	396
Total	3409

By defining the market on a regional basis, the population base increases from 2,277 (Dawson City's population) to 3,409 (the regional population).[12] Because of its proximity to the communities in the region when compared to Whitehorse, Dawson City could serve as a regional hub for dental services as it may be able to attract residents from other communities were the availability of dental services expanded in Dawson City. The table below identifies highway distances and travel time by automobile between each community and Whitehorse and Dawson City, except Old Crow.

	Distance to Dawson (kms)	Travel Time (hrs)	Distance to Whitehorse (kms)	Travel Time (hrs)
Dawson City	n/a	n/a	532	6 hr 9 min
Keno Hill	287	3 hr 34 min	463	5 hr 33 min
Pelly Crossing	250	2 hr 57 min	283	3 hr 16 min
Mayo	229	2 hr 43 min	406	4 hr 41 min
Stewart Crossing	178	2 hr 7 min	353	4 hr 3 min

[12]The communities of Inuvik, Fort McPherson, and Aklavik, with a combined population of 4,724, were initially included in the Dawson Region market, as the only highway into these communities also connects them to Dawson City. Inuvik, however, has a dental clinic, staffed by 3 dentists and 1 hygienist. It would be unlikely that residents of these communities would travel the 600 to 800km down the highway to Dawson City for dental services.

The average distance between Whitehorse and the communities is 407 kms and the average travel time is 4 hours and 44 minutes. Average distance of the communities from Dawson City is 236 kms and the average travel time between the communities and Dawson City approaches 3 hours. The distance between Dawson City and regional communities makes daily roundtrips to Dawson City somewhat more practical than daily roundtrips to Whitehorse.

The communities comprising the Dawson Region are remote due to their location and distance from urban centres. Statistics Canada has developed a new methodology used to measure remoteness. "For each populated community (census subdivision), the index is determined by its distance to all the population centres defined by Statistics Canada in a given travel radius, as well as their population size." The table below identifies the remoteness scores for each of the communities comprising the Dawson Region Market along with the scores for the most and least remote communities in Canada for comparison purposes.

Community	Index of Remoteness	Most Remote	Index of Remoteness
Old Crow	0.7859	Grise Fiord	0.9677
Dawson	0.6314	Kugaaruk	0.9438
Keno Hill	0.6211	Taloyoak	0.9438
Mayo	0.6069	**Least Remote**	
Stewart Crossing	0.5927	Mississauga	0.0256
Pelly Crossing	0.5764	Markham	0.0172
		Toronto	0

Remoteness Index Cut-off Points

- **0 > 0.2** – Most communities in this range are part of or next to the largest population centres in Canada (CMA or CA)
- **0.2 > 0.4** – This range includes all communities that have a connection to population centres (CAs) with populations that range between 30,000 and 99,999.
- **0.4 > 0.6** – Communities within this range have a moderate degree of remoteness. Travel time is longer and population centres they have access not as large.
- **0.6 ≥ 1** – Communities within in this range have a relative geographic isolation that is typical of the territories that experience a comparable degree of physical isolation from population centres

Source: Indigenous Services Canada, *Presentation - The 2016 Remoteness Index*, March 2021.

Most of the communities in the Dawson Region Market lie close to or above .6, which means they are a considerable distance from major population and service centres. Old Crow is the most remote community in the region primarily because it is only accessible by airplane. Each of the communities are considered remote because it takes more time to access the communities due to distance, weather, and transportation infrastructure. Fewer services are available in the communities because of low population counts and low population density, and the cost of living in the communities tends to be significantly higher due to factors, such as transportation costs.

While adults may have difficulty accessing dental care, the situation for school aged children in the region is different, as they can access oral health services through Yukon's Children's Dental Health Program in their schools. According to program records provided by Health and Social Services, the program participation rate for 2019/20 and 2020/21 was approximately 66% with 596 students out of a total 904 obtaining a dental exam.

Mayo's school had the highest program participation rate of 84%, while Pelly Crossing had the lowest participation rate of 51% over the two-year period. Of the 596 students receiving a dental exam, treatment plans were prepared and implemented for 308 students or 52% of the students to address oral health issues, such as tooth decay. Treatment plans identify the oral health issues identified by the dentist and set out the restorative work to address the issues (e.g. fillings to address tooth decay or fluoride treatment to strengthen and protect tooth enamel).

2019/20 - 2020/21 Children's Dental Program - Program Participation Rates

Community	School Enrollment	Exam	Participation Rate	Students Treated	% of Students treated
Dawson	528	349	66%	175	50%
Mayo	129	108	84%	50	46%
Old Crow	95	62	65%	41	66%
Pelly	152	77	51%	43	56%
Total	904	596	66%	308	52%

Approximately 37% of the population of the Dawson Region are Indigenous (i.e. First Nation, Metis, or Inuk). Each community is home to the administrative centre of a Yukon First Nations government. Furthermore, the Yukon First Nations governments have concluded land claim and self-government agreements with Yukon and Canada. The self-government agreements recognize the law-making authorities of the Yukon First Nations governments to enact legislation applying to Citizens, settlement land, and the government's internal management. Each government delivers a range of programming to advance the health and well-being of Citizens.

While a large proportion of Yukon First Nations Citizens qualify for Non-Insured Health Benefits, not all do. Yukon First Nations determine citizenship requirements through their constitutions. The federal government uses a different set of criteria to determine eligibility for the Non-Insured Health Benefits program. In the case of First Nations people, NIHB eligibility is connected to the regime established by the *Indian Act*. There may be situations where some members of a First Nations family qualify for Non-Insured Health Benefits while other family members do not.

Travel from communities to Whitehorse for dental care is costly, time-consuming, and potentially hazardous during winter months. However, a portion of the Dawson Region population may be quite content with travel to Whitehorse to visit the family dentist. Although there are costs

associated with the trip, it may be viewed as an opportunity to stock up on goods, visit family and friends, or take a brief hiatus from community life. Perhaps, the visits coincide with travel for work, other appointments (e.g. medical), or travel to destinations outside Yukon.

Whatever their reasons, this group of people are less sensitive to the costs of travel and service proximity and may not be as interested in locally available dental services. Although there is no data available on their perceptions and preferences for local service delivery versus Whitehorse-based service delivery, it would be important to gauge the proportion of this group in relation to the broader population before investing in additional dental services or new services could suffer from underutilization.

The Region has 478 people that fall within the 65 and up age range or 14% of the total population. Of the four long-term care facilities in the territory, one is in Dawson City. McDonald Lodge is a 15- bed residential facility, including respite beds, that offers home care nursing and support services to residents in need of "light to moderate assistance." In addition, Yukon First Nations governments within the Region offer a range of supportive housing options to Elders and Citizens in communities. Where new dental service models are under consideration, they should be designed to address the oral health needs of senior citizens in communities, which are different from those of other population groups.

ESTIMATING REGIONAL NEED & DEMAND

There are two aspects to consider in any business case involving the delivery of dental services: *need* and *demand*. Need is defined as the percentage of the population that requires dental treatment based on a clinical diagnosis. The Demand side is more difficult to determine as it is more closely tied to one's perception of need, the proximity to services, as well as one's capacity to pay for treatment. There are also cultural factors that will impact an individual's comfort with accessing dental services.

Estimates for need and demand are based on extrapolations from the following reports:

1. Minister of Health, *Report on the Findings of the Oral Health Component of the Canadian Health Measures Survey 2007–2009 (CHMS)*, Ottawa, Health Canada, 2010.
2. *Dental Care 2018, Statistics Canada*, Catalogue no.82-625-X • Health Fact Sheets, September 2019.
3. The First Nations Information Governance Centre, *Report on the Findings of the First Nations Oral Health Survey (FNOHS) 2009-10*, The First Nations Information Governance Centre, Ottawa, 2012.
4. Indigenous Services Canada, *Non-Insured Health Benefits Program Annual Report 2019/2020,* First Nations and Inuit Health Branch, 2021.

Throughout the following discussion, the term **General** refers to the *Report on the Findings of the Oral Health Component of the Canadian Health Measures Survey 2007–2009* supplemented by the *Dental Care, 2018* update as noted*.* **First Nation** refers to *The Report on the Findings of the First Nations Oral Health Survey* 2009-10 and the *Non-Insured Health Benefits Program Annual Report 2019/2020*.

Caveats

The limits in using the survey-based data are primarily due to their focus on southern, mainly large urban, centers. For example, the *Dental Care 2018* update explicitly does not include the territories. However, the benefit of the survey reports is, in addition to the self-reported data, they also provide clinical assessments, which establish a basis for estimating need for dental treatment.

It must be noted that there is a wide difference between the First Nation report of frequency of dental visits (Tables 5 and 6) [13] and the NIHB utilization rate based on actual dental service billings (Figure 5.6). The difference can be largely attributed to survey respondents including school based dental screening as "a visit to a dental professional," which it is, but also would not show up as a claim in NIHB data.

In terms of estimating potential visits to an actual dental service, the NIHB data will be used as the basis for developing a base case estimate for Yukon Indigenous peoples. However, understanding the reason for an apparent data disagreement increases the confidence in using the survey-based reports in other areas, in particular, the reasons given as barriers to accessing dental professionals.

Need

Based on the two survey reports referenced above the clinically assessed need[14] for dental treatment for Yukon's population by age group is:

% of Population		
Age	First Nation	General
3 to 5	62.4	18.6
6 to 11	80.7	24.1
12 to 19	77.5	24.9
20+	83.1	37.6

The determination of First Nation need for dental treatment is derived from Table 54 of the FNOHS and subtracting the percent not needing treatment from 100% to derive the percent of the First Nation population needing some form of dental treatment.

The determination of General need for dental services is derived from Table 43 of the Canadian Health Measures Survey with several adjustments to enable consistent age groupings with the FNOHS age groupings. Specifically, the 20+ age group is developed by taking a weighted average

[13] It should be noted that the FNOHS 2009-10 survey included an NWT community and made an effort to distinguish between urban and rural utilization. The reliability, however, of the remote disaggregated estimates cannot be determined as confidence intervals are not provided and there appears to be 17.2% of 12+ remote population missing from Table 6. The aggregate estimates in Table 5 are considered more robust.

[14] The need for dental treatment was assessed by dental professionals and is described in the respective reports.

of the percentages of the 20-29, 40-59 and 60-79 age groups reported based on sample sizes reported in Table 1 to develop a 20+ estimate.

This derived estimate, and the 6-11 and 12-19 were subtracted from 100% to derive an estimate of the percent of the general population needing some form of dental treatment. In addition, since the General population report did not include the 3-5 age group, an estimate was developed by using the same ratio as reported in the First Nation report between 3-5 and 6-11 age groups.

The need for dental treatment is estimated using the FNOHS estimates for the First Nation population in the Dawson Region and the Canadian Health Measures Survey for the rest of the population. The Canadian Health Measures Survey estimates cannot be used for the total population in the region as the original sample was only 3.1% Indigenous.

Based on the clinical assessment data in the two reports used as sources, there is a significant difference in dental treatment needs. Whether this difference occurs in Yukon cannot be determined given current data sources. Estimates are based on the best data available at this time.

The Dawson Region is defined to include the following communities: Dawson City, Old Crow, Pelly Crossing, Stewart Crossing, and Mayo, Keno City. The table below presents data specific to the Region on the estimated need for treatment.

Dawson Region Population				**Estimated Treatment Need**		
Age Gp	FN	General	Total	FN	General	Total
3 - 5	38	67	104	24	12	36
6 - 11	94	119	212	76	29	104
12 - 19	129	122	251	100	30	131
20+	946	1792	2738	786	674	1460
Total	1207	2099	3306	986	745	1731

Treatment consists of procedures, addressing oral disease (e.g. gum disease) and tooth decay, such as fillings, crowns, bridges, etc. Based on the estimate of need, just over 50% of the population comprising the Dawson Region Market requires some form of treatment. Need for treatment is more prevalent among the Indigenous population and is estimated at approximately 82%.

Demand

The Demand side is more difficult to determine as it is more closely tied to one's perception of need as well as the proximity of services and comfort with accessing services. The Non-Insured Health Benefits annual report provides hard data for Yukon (actual percent of claimants as a proportion of total eligible clients Figure 5.6) in contrast to reported use of professional dental services in the other two survey-based reports referenced.

The existence of a need for treatment does not mean that treatment will be sought nor that only those needing treatment will access dental services. Both FNOHS and CHMS indicate there is a high level of service access. However, the actual utilization of dental services captured by the NIHB expenditures report provides a much more solid basis upon which to estimate current levels of dental service access than self-reports.

As previously discussed, several barriers affect access to dental care. The major reason given for not accessing dental services by First Nation respondents in the FNOHS was that it was not available in the respondent's community. The federal government covers the costs of prevention, treatment, and travel expenses, for Indigenous Yukoners who are eligible for the NIHB program. Cost was, therefore, less of a concern.

For the General population cost was the major factor given for not accessing or declining treatment and about a third of this population reported not being insured. Only NIHB has full cost coverage in the sense that there are no limits to the number of treatments performed on an NIHB patient. Whereas most insurance programs have an annual limit (e.g. a maximum of $1,500/annum) and limit the number of treatments that are eligible for coverage within a year. Having dental insurance does not mean that cost of treatment is not a consideration.

If we use the NIHB utilization data and the ratio difference between FN and General utilization rates for the 6 and over population, we can develop an estimate of the proportion of FN and General populations who have accessed dental services in the past year at the Yukon level.

Estimated Population Accessing Dental Treatment Previous Year Compared to Estimated Need			
	FN	General	Total
Accessed Treatment	2921	10222	13142
Estimated Treatment Need	6808	11403	18211
Estimated Treatment Gap	3887	1181	5068

It is very likely that the further away people are from a dentist, the higher the gap will be between accessed treatment and need for treatment. It is reasonable to assume that Whitehorse residents, with a high degree of accessibility to dental services, would have a much lower gap than Yukon's other regions. Similarly, regions with easy access to Whitehorse services are expected to have a lower gap than regions further removed from Whitehorse.

The treatment gap estimation for FN population is consistent with the predominant reason given by the FN population that the lack of access within community is a major factor as to whether individuals access services. This also makes sense for all people living in remoter regions, and a similar pattern is assumed for the General population as well.

To develop an estimate of regional level need for treatment and access to treatment, the estimated Yukon levels of access and gap were disaggregated to the regional level. A combination of the distribution of the population and a 'weighted distance from service factor' was used to estimate the probability of accessing dental services and the treatment gap for communities.

The estimate involved first applying the proportion of the total population, FN and General, to the estimated Yukon access to treatment estimate then adjusting by the reciprocal of the distance from service factor estimate. The distance from service factor estimate was based on multiplying the FN and General population by kilometer distance of each center from Whitehorse and aggregating to the regional level and dividing by the respective FN and General populations.

The estimate provides a perspective on current dental service needs in the Dawson Region recognizing that factors other than need for treatment impact individual willingness to seek treatment. Out of a total population of 3,306, 552 people in need of treatment access treatment, accounting for 21% of the regional population. Another 1,033 people or 31% of the regional population in need of treatment do not access treatment. The percentage of the population estimated with access to treatment includes children accessing oral healthcare through the Children's Dental Program.

	Estimated Access to Treatment			Estimated Treatment Gap		
	FN	General	Regional	FN	General	Regional
Dawson Region	295	402	697	690	343	1033

DELIVERY MODELS

The Dawson Region's remote geography and dispersed population present challenges to both private and publicly driven solutions that aim to address the availability of dental services. Rural populations place a high value on locally available services, a value held by both First Nations and non-First Nations people. This group likely views the drive to Whitehorse and return trip as a significant burden, not just in terms of cost, but in terms of time – time away from work, time away from home, and time away from family.

The following models are considered and are intended to increase the availability of local dental services for the Region's inhabitants. The question the models attempt to answer is whether a new model of dental services is merited or whether the existing framework could be bolstered to offer greater access.

Option 1 – Increased Itinerant Services

We noted earlier that there is a positive relationship between service days (or days the dental team delivers treatment) and utilization rates. Longer visits promote greater community utilization. One option would be to extend dental team treatment days by community. This could be achieved by increasing the treatment days within the current contract of the itinerant dentist. Another option would be to introduce a second itinerant dentist and specify communities that

would be the focus of the respective dental teams. In either scenario, extending the time spent by each dental team in communities is the objective.

By increasing service days, average utilization rates should reach an average of 10 patients per day. This would amount to 50 to 100 patients by community during one- or two-week visits. It also incorporates time for travel and set up and take down. If utilization rates did not improve in certain communities, the dental team should approach the health department of the First Nation government, or better yet, engage each of the First Nation governments prior to the trip to introduce the dental team and identify the team's schedule and services. The First Nations government can broadcast visits through newsletters and other means used to communicate with Citizens. More engagement prior to and during a visit with the community should contribute to better utilization rates.

If Yukon were to adopt Nunavut's approach to visit durations, what would be the impact on the number of patients treated? Recall that the Government of Nunavut expects its itinerant dental teams to spend at least two weeks during each visit in communities. Utilization rates in Nunavut are approximately 10 patients per treatment day. If Yukon were to extend treatment days to 10-days/annum for each community that is presently served by the itinerant dental team, the team should be able to treat around 100 people/community. Treatment days for Dawson City and Watson Lake could be increased to three weeks per visit, given their populations, bringing the total number of annual patient encounters to 1,360.

Itinerant Dental Team Visits Expanded			
	Visits	**Treatment Days**	**Clients Seen**
Old Crow	2	10	100
Dawson	2	38	380
Watson Lake	2	38	380
Teslin	2	10	100
Carmacks	2	10	100
Faro	2	10	100
Pelly	2	10	100
Mayo	2	10	100
Total	16	136	1360

Option 2 – Fixed Dental Clinic

A second option would be to re-establish a fixed dental clinic in Dawson and resume dental services on a full- or part-time basis through a privately or publicly operated clinic serving as a regional dental hub. For Dawsonites, a fixed clinic in Dawson resolves the issue of service proximity. It would increase the range of dental procedures available in town and would also include hygiene services as well as more advanced procedures (e.g. crowns, bridges, etc.).

Although there are not a lot of vacant lots for sale in the downtown core of Dawson City, the Tr'ondëk Hwëch'in have parcels of settlement land (community), some of which is vacant. There may be interest on the part of the Tr'ondëk Hwëch'in government or private to consider a lease arrangement with a dental practice where the construction of a new clinic was under consideration. A model involving the acquisition and construction of the clinic by the dentist would be unfeasible due to the initial capital outlay. Either a third-party interest could lease the land or Yukon could make land available. Another option would be to convert space in the

Dawson City Hospital, but it would require discussions with the Yukon Hospital Corporation to determine whether housing the clinic would be feasible given the hospital's operating requirements. The current space in the Hospital used by the itinerant dentist would not be suitable for a 3-operatory clinic.

To support a fixed clinic, Yukon could consider awarding a contract to the clinic owner to provide services connected to the Children's dental program. Using program enrolment from 2020/21, the 279 children (161 children from Dawson City, and the remaining 118 from communities) participating in the program would account for 17% of the minimum patient roster of 1,600 patients. Either the dental team could visit community schools or children could be bused to Dawson City for services and treatment.

There are additional advantages to a fixed clinic. A fixed clinic will have established hours of operation making access to services more predictable. It would shorten the time between the onset of oral health issues and diagnosis and treatment, reducing the length of time people are in pain or inconvenienced by oral health issues. A fixed clinic would reduce patient volume at the emergency department of the Dawson Hospital as people experiencing oral health issues could visit the dental clinic. It would eliminate the need for Dawsonites to travel to Whitehorse for comprehensive dental treatment and considerably reduce travel and time and cost for residents in other communities. Trips to Dawson City from communities could be reasonably completed in one day eliminating the need for accommodation.

Other benefits include:

- Issues connected to set up, take down and travel do not apply to a fixed clinic.
- The physical and mental energy of the dentist is conserved and directed toward treatment.
- Fixed equipment performs better, suffers fewer breakdowns, and depreciates at a slower rate.
- The dental team is not confined to using only the equipment it can carry in a vehicle.
- Internet and phone access are in place.
- Coordination with health centre schedules is not required.

There are certain drawbacks. The issue with a fixed clinic is that it is fixed in one location. And while Dawson City is considerably closer than Whitehorse for the communities making up the Dawson Region, the drive to Dawson from each of the communities is at least two hours. The question then becomes is Dawson City close enough to the outlying communities within the Region to address the proximity barrier. If distance remains an issue, a Dawson dental hub will not benefit from utilization by residents in other communities.

We know from the experiences of the former Dawson City dentist that a full-time clinic in Dawson City was not feasible due to the town's population base. We also know that a single dentist needs a minimum patient base of 1,600 patients to be viable. Dawson City's population exceeds 2,000 people and more people are likely eligible for dental benefits today than when the former dentist

started his practice in 1978. When community populations are considered, the population base exceeds 3,000 and the minimum roster would amount to 47% of the current regional population.

The community populations, however, are not exactly 'next door' to Dawson City. It is also unclear what kind of utilization rate a clinic in Dawson City might garner not only among the other communities but as well from Dawson City residents. It has been 13-years since Dawson City has had a local dental clinic. During the intervening period, it is likely that people who needed oral health services pursued other options, such as finding a Whitehorse dentist. The questions are to what extent have people successfully adapted to the absence of local service delivery and are these adaptations sufficiently successful that they serve as a major deterrent to using a local dental clinic. There is no accurate way to answer these questions without first surveying the market.

Option 3 – Mobile Dental Clinic

Option 1 would lead to increased treatment days but access to services would remain sporadic and limited during the year and treatment would remain the focus while prevention would not. A Dawson-based clinic would offer comprehensive treatment and prevention services during routine hours making access predictable. But the clinic would be in a fixed location, and although it would reduce service proximity issues, it would not eliminate them entirely. Is there an option that could address proximity issues entirely while offering comprehensive oral care according to a routine schedule?

As discussed previously, travel to Whitehorse for medical and dental appointments can create hardships for rural Yukoners. According to the findings of the review panel tasked with assessing Yukon's health and social programs, "traveling to Whitehorse for medical care causes some people to bear significant costs related to accommodation, time off work, and childcare. When possible, Yukoners want more of their health needs provided in their own communities."[15]

An option for tackling the issue of service proximity is a mobile clinic similar to the ones used in northwestern Ontario and Toronto. An RV outfitted with a comprehensive dental clinic could deliver the clinic to the communities comprising the Dawson Region throughout most of the year. The mobile clinic could be outfitted with three operatories, two of which would be used by a dentist and dental assistant to provide treatment, and a third used by a hygienist to deliver preventative services. While the dental team's productivity would not be as high a fixed clinic's, a support team could drive the mobile clinic from community to community and execute set up and tear down, to preserve clinic time for the dental team.

If a mobile clinic were introduced as an intervention, and addressed the issue of service proximity in the Dawson Region, what effect would it have on the treatment gap? Data from the Canadian Health Measures Survey suggests that 74.5% of the 6 to 79 age group reported having visited a dental professional within the last year (Table 9). The pattern of children and adolescents having

[15] Review Panel, *Putting People First – The final report of the comprehensive review of Yukon's health and social programs and services*, April 2020.

higher utilization rates is also reflected in the First Nation population, although the rates are lower for all ages (Table 5).

Applying rounded rates (.62 for First Nation and .75 for General), the estimated demand for dental services if the barrier of community-based access was addressed is described in the table below.

	Dawson Region		
	FN	General	Total
Estimated demand to treatment	295	402	697
Estimated treatment gap	690	343	1033
Estimated demand for treatment if access barriers reduced	748	1574	2322

The estimated demand for dental services is higher than estimated treatment needs as dental services include preventative maintenance in addition to treatment for dental problems. A mobile clinic addressing service proximity would increase the estimated demand for treatment from 697 to 2,322, an increase in excess of 200%.

What about Yukon's other remote communities? A mobile clinic could facilitate the delivery of dental services to communities throughout Yukon using the territory's network of highways and roads. Four regions are considered for purposes of this discussion to focus mobile dental service coverage in Yukon:

- Northern or Dawson Region: covering Old Crow, Dawson City, Pelly Crossing and Mayo
- Western Region: covering Beaver Creek, Burwash Landing, Destruction Bay and Haines Junction
- Central Region: covering Carmacks, Faro, Ross River and Watson Lake
- Southern Region covering Carcross, Johnson's Crossing, Mendenhall, Tagish, Teslin and Whitehorse area

Again, the need for dental treatment is estimated using the FN estimates for the First Nation population in the region and the General for the rest of the population. Appendix A sets out the need by region. The treatment gap estimate involves applying the proportion of the total population to the estimated Yukon access to treatment estimate, then adjusting by the reciprocal of a distance from service factor estimate.

Estimated Access to Treatment				Estimated Treatment Gap		
	FN	General	Regional	FN	General	Regional
Northern Region	295	402	697	690	343	1033
Western Region	131	194	325	247	81	328
Central Region	306	352	658	776	182	958
Southern Region	2250	9358	11608	2113	491	2604
Total	2921	10222	13143	3887	1181	5068

As the table above illustrates, treatment gaps are lowest in the Southern Region where there is easy access to Whitehorse. This is reflected in the number of people in the Southern Region in need of treatment who obtain treatment versus those who do not. Approximately 82% of the Southern Region in need of treatment access treatment, compared to 50% for the Western Region and 40% for the Central and Northern Regions.

How would the treatment gap change if barriers to locally available dental services were addressed by the introduction of a mobile clinic based on routes providing oral health services to the regions that are most in need of access? More individuals within each of the regions would access the treatment they need improving oral health outcomes for communities.

Estimated Demand for Dental Services if barriers to access reduced			
	FN	General	Total
Northern Region	748	1574	2322
Western Region	286	582	869
Central Region	823	1130	1952
Total	1857	3286	5143

FINANCIALS

This section explores the financial implications of the following models: increased itinerant services, fixed clinic, and mobile clinic. Three derivative scenarios are examined within the fixed clinic concept, namely: a clinic that is owned and operated by the dentist; a clinic that is leased to the dentist by a private interest; and a clinic that is housed in the Dawson City Community Hospital. To assist with the financial analysis of each model, income statements, cash flow statements, breakeven analysis, have been prepared addressing: start-up and capital costs; billing revenue projections; and operating costs, including payroll.

Increasing the treatment days of the itinerant dental program would require additional funding. The current contract has a limit of $80,000 and is based on about 36-treatment days resulting in a daily program travel subsidy of $2,222. If treatment days were increased to 168, the program budget would need to increase to $302,222 per year, which would theoretically produce 1,360 patient encounters each year.

If a fixed clinic was established, what level of productivity could be reasonably expected from the dental team? While the average daily rate for dentist encounters is 10.38, a conservative rate of 8 dentist encounters per day has been selected along with a daily rate of 7 visits per day for the hygienist. The price assigned per visit for the dentist is based on a mixed price consisting of Yukon's per capita dental expenditure of $494 and NIHB's per claimant amount of $953 for a rate of $723. The hygienist's price per visit is based on Yukon's fee guide and amounts to $125 per visit. Assuming 308 working days per year, the dentist would have 2,464 encounters and the hygienist 2,156. The table to the right identifies the revenue potential per year (see Schedule x – Revenue Projections).

Fixed		
	Annual Encounters	Revenue
Dentist	2464	$1,782,704
Hygienist	2156	$ 269,500
Total	4620	$2,052,204

Revenue for the fixed clinic is the product of the number of treatments, number of visits per day and average revenue per visit. While there is certainty with respect to the clinic's operational costs, there is uncertainty around utilization, which could result in significant variance in clinic revenue. A major factor affecting revenue is the level of service offered by the clinic (basic or comprehensive), whether it is comparable to the level of services offered by a Whitehorse-based clinic, and whether residents of the Region would be more comfortable visiting the clinic instead of a Whitehorse-based clinic. If revenue dropped to $500 per patient from the projected revenue of $723, it will have declined by a third, making the fixed clinic model unsustainable.

The mobile clinic would not attain the level of productivity of a fixed clinic, but properly outfitted with the correct number of operatories and support staff, the dental team could approach the efficiency of the team operating in a fixed clinic. The daily dentist per patient rate is set to 7.5, while the daily per patient rate for the hygienist is set to 6.5. There are, however, factors at play that affect the revenue generation potential of the mobile clinic that are not applicable to a fixed clinic scenario.

Mobile		
	Annual Encounters	Revenue
Dentist	1223	$ 884,479
Hygienist	1060	$ 132,438
Total	2282	$1,016,916

For one thing, the mobile clinic will be in transit during trips to communities and it will require periodic maintenance, which impinge on available treatment days. In some respects, the mobile clinic has more operational risk because certain assumptions are based on southern rather than northern operating experience in urban rather than remote areas. A proper degree of redundancy should be built into any future projections to address breakdowns, which could have significant implications on the initial capital outlay. Redundancy must be further considered and could affect certain operating assumptions. For example, if additional equipment and replacement parts are needed during travel to communities, they may reduce the clinic space, which would curtail the scope of services and the productivity of the dental team.

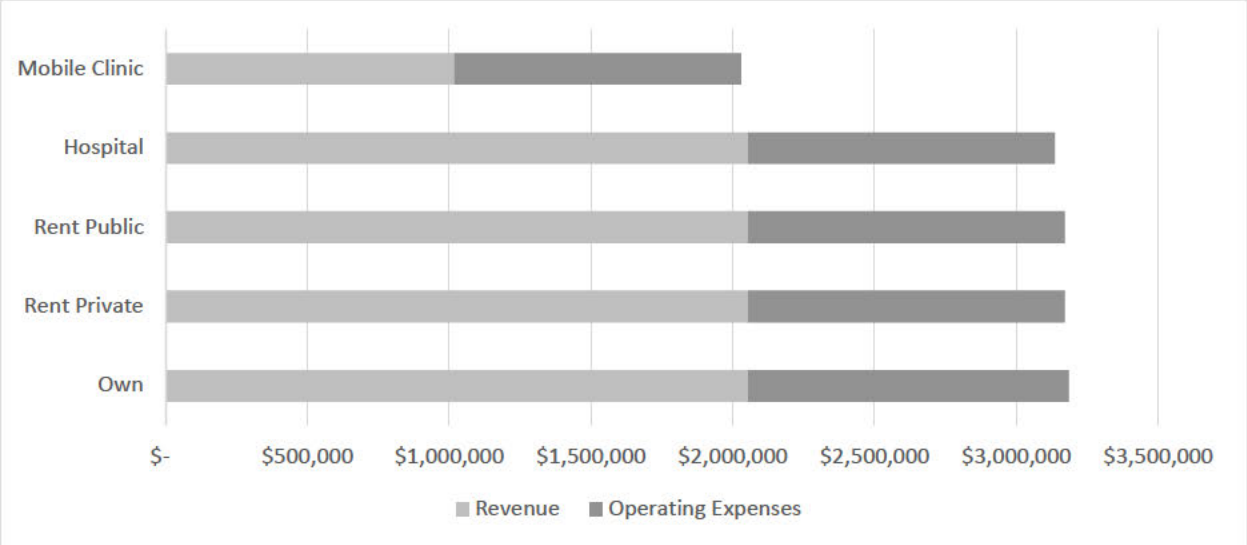
Clinic expenditures vary and depend on the model. Some of the line items making up expenditures consist of wages and benefits, clinical supplies, equipment maintenance, insurance,

contingency, utilities, office fees, staff training, etc. Wages were sourced from the National Occupation Code, while costs for other line items are based on research and the professional opinions of key informants. The mobile clinic has additional costs not applicable to the fixed clinic models, such as vehicle maintenance, fuel, automobile insurance, etc. The table below presents aggregated expenditure data (see Schedule x – Operating Expenditures).

	Own	Rent Private	Rent Public	Hospital	MC
Wages and Benefits	627,121	627,121	627,121	595,771	526,439
Direct Expenses	294,496	294,496	294,496	289,793	279,394
Fixed Expenses	210,411	196,950	196,950	196,950	205,736
Total	1,132,028	1,118,567	1,118,567	1,082,514	1,011,568

It should be noted that southern estimates are used for wages, which account for between 45% (mobile clinic) and 56% of operating expenditures. It may be wise to apply some form of wage premium or consider another type of incentive to ensure compensation is sufficiently attractive or it may prove difficult to hire staff. There is also merit in establishing dental teams consisting of contracted personnel to deliver services through the mobile clinic corresponding to the FTE complement. It is likely that the type of work would prove attractive to professionals on a parttime rather than fulltime basis.

Given the revenue assumptions for each model and projected utilization, the mobile clinic would be the least feasible of the models. Cost per patient analysis illustrates the issue. While the fixed clinic cost per patient rates fluctuates between $439 to $459 and $222 for the itinerant dentist model, the cost per patient for the mobile clinic is $827 or nearly double the rate for the fixed clinics. The difference between the fixed and mobile clinics has to do with the expected daily productivity of the mobile clinic compared to the fixed clinic.



Startup costs also vary by model. Scenarios have been costed with respect to the construction of a building to house the clinic, the purchase of a repurposed 40-foot recreational vehicle, and the

remodeling of existing commercial space, located in either a commercial building or the Dawson City Community Hospital. The new build is the cheapest, but it is assumed that Yukon would supply the land, without which a new build would be too costly and unfeasible in the long-term given the costs of construction and land.

Startup Costs

Clinic size		1800	sq ft
Remodel	$	200	/sq ft
Construction	$	400	/sq ft
Construction	$	600,000	(1500x400)
Remodel	$	300,000	(1500x200)
Land	$	475,000	
Large Equipment	$	193,837	
Supplies	$	59,266	

There is inherent uncertainty in estimating start-up costs given the technical nature of equipment, absence of available land in Dawson, whether there are buildings that could be retrofitted to meet the needs of a community dental clinic, and supply chain issues caused by the pandemic, that would affect future construction costs and timelines for obtaining equipment.

As the rental model illustrates, there is utility in going to the market to determine whether a third party, such as a commercial developer or First Nation development corporation, would be interested in leasing office space to the dental practice. A dental practice could be quite appealing to a private developer as there is less risk that a clinic would miss lease payments, making the endeavour a predictable source of revenue. The concept could be broadened to serve as a healthcare hub, were a suitable facility available, to house a range of health service providers.

The mobile clinic support costs are full of unknowns. It is unclear how many support vehicles might be required to transport dental teams or whether a garage would be available to store the vehicle when not in use. A maintenance schedule will affect treatment days and where there are unforeseen breakdowns, repairs could be costly, and service interrupted for prolonged periods.

It is unclear what spare equipment might be required to reduce risk of interruptions to services while in communities. The public option for mobile clinic services is really the only viable option but even here it may require more than one mobile clinic to offer services to the entire territory. And, as winter can wreak havoc on equipment, machinery, and vehicles, it may be more practical to limit the mobile clinic to three seasons.

The breakeven analysis is intended to determine the level of revenue needed to pay the operational expenses of the business, in this case, on an annual basis. Total expenses are the sum of the direct expenses, which are core dental expenses, fixed expenses, amortization, and applicable tax. It should be noted that option one incorporates amortization as a non-cash expense to reflect a cash outlay for principal being paid. For all models, a sustaining capital allowance is provided based on 5% of gross revenues (which is conservative) to recognize the need for replacement and periodic maintenance of equipment, building, and vehicle.

The breakeven analysis suggests that minimum revenue levels need to range between $1M to $1.4M depending on the model for the models to be self-sufficient on a go forward basis. It should be noted that the breakeven analysis ignores the initial capital expenditures. The model where the clinic is privately owned has the highest revenue level, but the property and improvement are assets that are not reflected in the analysis.

Total Expenses	(1,316,151)	(1,281,401)	(1,281,401)	(1,256,017)	(1,112,158)
Less Principle on mortgage	(81,900)				
Add back Amortization	64,045	24,045	24,045	24,045	151,590
less Sustaining Capital Allowance (	(76,958)	(76,958)	(76,958)	(76,958)	(50,846)
	(1,410,964)	(1,334,314)	(1,334,314)	(1,308,930)	(1,011,414)
Breakeven Annual Revenue	1,410,964	1,334,314	1,334,314	1,308,930	1,011,414

In option one, there is little or no direct capital by government. The breakeven point for options two and three is about the same recognizing the dentist is renting from the private or public sector. The mobile clinic has the lowest breakeven point because it has the lowest expenses due to the number of clinic days and operating costs are $150,000 less. The mobile clinic shows a loss because of amortization, which is calculated at 30% per year for vehicles versus building amortization of 4% per year. All assumptions are based on a ten-year horizon to establish a consistency in the analysis across the options.

RECOMMENDATIONS

While the mobile clinic would not be viable as a commercial enterprise, it is a model that is worth additional consideration as it could deliver improved dental services to communities. Additional research could be conducted into the operational performance of mobile clinics in Northern Ontario, whether they can reach levels of productivity approaching those of a fixed clinic, as well as the effects of rugged conditions and inhospitable weather on vehicle performance.

A decision to increase dental services, built around a model involving a major capital outlay, ought to be informed by market research into the perceptions of the residents comprising the Dawson Region. As discussed previously, there are individuals who do not view the trip to Whitehorse as a burden. Residents of other communities may be interested in local dental services but may not be prepared to switch dental providers because of Dawson City's proximity.

It would be important to gauge the proportion of residents within the region who would likely use either a fixed clinic based in Dawson City or a mobile clinic. Utilization rates have been an issue historically in Dawson City. Surveying the market is a way to collect information on the likelihood that major investments in local service delivery will have a decent return on investment because of solid utilization rates.

The introduction of new capital-based interventions designed to increase dental services in the region should be accompanied by the recalibration of existing government interventions. Direct competition between a private dental clinic and the government should be avoided, while

opportunities for the clinic to implement dental programming on behalf of the territory should be explored, to support clinic operations and ongoing financial viability.

Any future step toward increased dental services should involve the engagement of the Non-Insured Health Benefits program. As previously discussed, NIBH spends a significant proportion of its program dollars funding the medical travel of its recipients. More localized dental services would benefit NIHB recipients in the Region. It would reduce NIHB expenditures on travel, which could be redirected to support initial capital outlays or ongoing clinic operations at least during the initial stages of operations. Discussions could include the merits of maintaining a federal clinic within Whitehorse and whether it would be a more effective use of resources to support direct delivery of services in communities, which unlike Whitehorse, are underserved by oral health services.

Finally, as Yukon considers community-oriented delivery options going forward, it should engage the Yukon First Nations governments within the region or more broadly to gather information on the oral health needs of their Citizens, how various models under consideration could be effectively deployed to meet these needs, and whether there are opportunities for collaboration among governments and private sector players to make local oral health services a reality.

74(1)(a), 75(1)(a)(ii), 75(1)(a)(iv), 75(1)(b)(i)

74(1)(a), 75(1)(a)(ii), 75(1)(a)(iv), 75(1)(b)(i)

74(1)(a), 75(1)(a)(ii), 75(1)(a)(iv), 75(1)(b)(i)

74(1)(a), 75(1)(a)(ii), 75(1)(a)(iv), 75(1)(b)(i)

74(1)(a), 75(1)(a)(ii), 75(1)(a)(iv), 75(1)(b)(i)

74(1)(a), 75(1)(a)(ii), 75(1)(a)(iv), 75(1)(b)(i)

APPENDIX I – Need by Region

	Northern Region Population			Estimated Treatment Need		
Age Group	FN	General	Total	FN	General	Total
3 - 5	38	67	104	24	12	36
6 - 11	94	119	212	76	29	104
12 -19	129	122	251	100	30	131
20+	946	1792	2738	786	674	1460
Total	1207	2099	3306	986	745	1731
	Western Region Population			Estimated Treatment Need		
Age Group	FN	General	Total	FN	General	Total
3 - 5	11	28	39	7	5	12
6 - 11	31	46	78	25	11	36
12 -19	57	42	98	44	10	54
20+	363	661	1024	302	249	550
Total	462	777	1239	378	275	653
	Central Region Population			Estimated Treatment Need		
Age Group	FN	General	Total	FN	General	Total
3 - 5	42	54	96	26	10	36
6 - 11	104	79	183	84	19	103
12 -19	173	96	269	134	24	158
20+	1,008	1277	2285	838	480	1318
Total	1,327	1506	2833	1082	533	1615
	Southern Region Population			Estimated Treatment Need		
Age Group	FN	General	Total	FN	General	Total
3 - 5	146	979	1126	91	183	274
6 - 11	379	1927	2306	306	464	770
12 -19	763	2061	2824	591	513	1104
20+	4,061	23109	27170	3375	8689	12064
Total	5,349	28,076	33,426	4,363	9,849	14,212
	Yukon			Estimated Treatment Need		
Age Group	FN	General	Total	FN	General	Total
3 - 5	238	1127	1365	148	210	358
6 - 11	607	2172	2779	490	523	1013
12 -19	1122	2320	3442	870	578	1447
20+	6378	26839	33217	5300	10091	15392
Total	8345	32458	40803	6808	11403	18211

APPENDIX II – Itinerant Dentist Personal Suitability

This appendix outlines characteristics of an effective itinerant dentist. Some of the points would also be applicable more generally to dental teams with practices in northern remote communities:

Physical Health

- must be able to carry heavy equipment and supplies
- walk to work in cold temperatures
- long hours are generally required to make the trips profitable
- must be prepared for rougher living conditions
- accommodations may not be outfitted with a kitchenette; diet may be affected
- hard work is made harder with no support staff (only one assistant)

Clinical skills

- Dentist must be able to work completely independently. There is no safety net. There is no one else on site to hand a procedure off to. There is no opportunity for second opinions with an onsite mentor
- For pre-planned treatment, virtual consults along with photos and scans of x-rays can be arranged
- Dentists can opt out of dentures and routine cleaning, but must be capable of handling emergencies
- Extractions are essential
- Basic root canals or at least pulpotomy/pulpectomy (emergency pre-root canal procedures)
- Large fillings under compromised conditions
- Cannot say the tooth “needs” a crown that the patient cannot afford or may lack coverage for. This is challenging. Have to be able to do “something”, even under conditions that are far from ideal

Personal and family Situation

- Difficult to leave family for extended periods of time on trips
- Difficult or impossible to bring family
- Difficult to maintain a dental practice or residence elsewhere while doing locum work
- Good for an eccentric individual willing to take on a non-standard lifestyle

Mental and emotional strength

- Dentistry is emotionally exhausting, and everything is amplified in a remote community setting
- Cultural differences can be pleasant, but it takes insight, experience, and sensitivity to fully appreciate motivations of different populations
- Concepts of time and schedule are less rigid in the North than in the South
- Some communities have high incidences of social problems. Patients may arrive for treatment intoxicated or under the influence of drugs

- Some incidents may require the involvement of the police
- Cold (-47 Celsius in the winter)
- Far from home. Isolation can be difficult
- No support system. Easier with electronic communications
- Activities ancillary to dental work (i.e. logistics and arrangements) are harder than the actual clinical work
- Candidates best suited to the role are compassionate
- It is a profit driven business but with a clear humanitarian component
- It is not a money maker. It is for someone who appreciates the type of work, lifestyle, and associated freedom
- Hard work with extended time off in between similar to oil and gas or mining industries