

Appendix 4-Figures & Tables

KOTH EVALUATION FINAL REPORT
APPENDIX 4

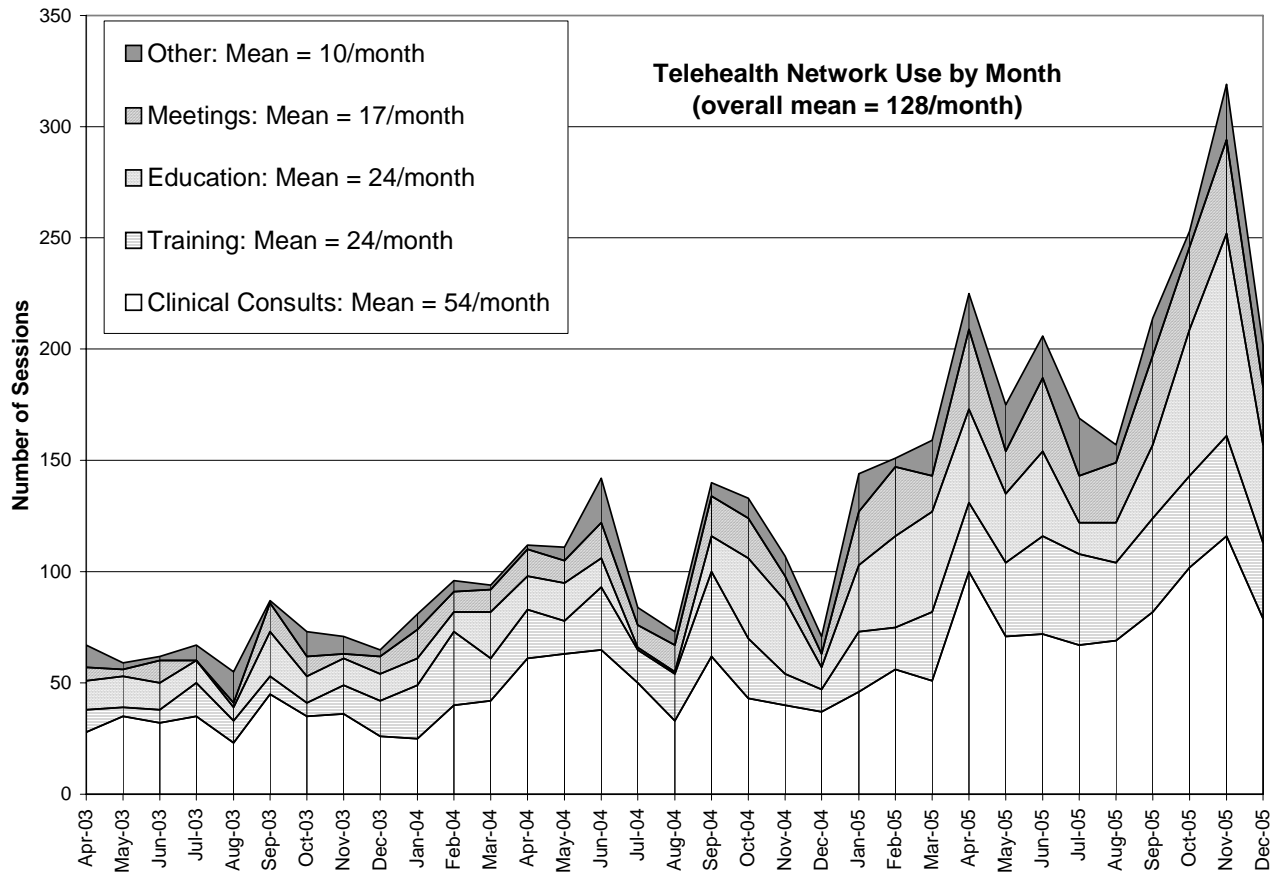


Figure 1. Type of use of the Keewaytinook Okimakanak Telehealth Network over 33 months (source: KOTH)

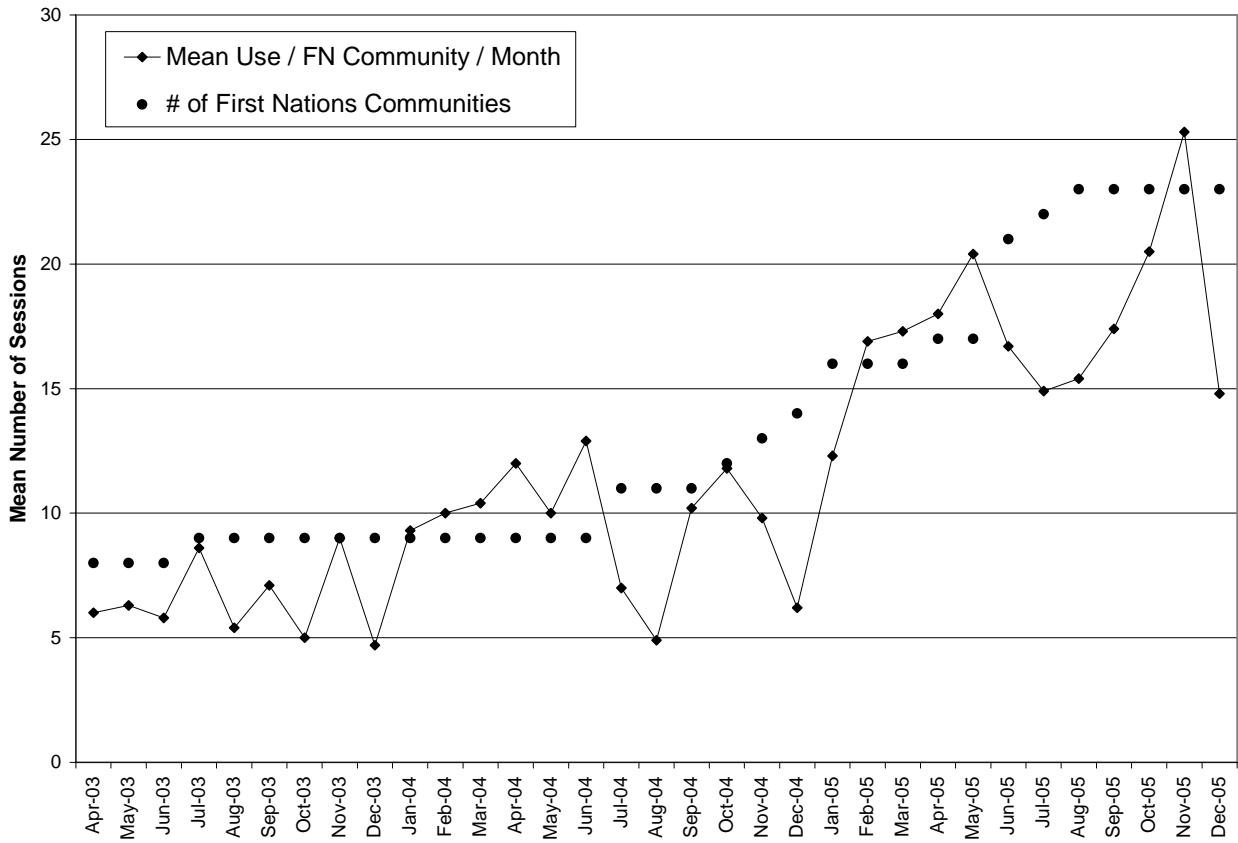


Figure 2. Number of First Nations communities and average use of Keewatinook Okimakanak Telehealth Network by these communities over 33 months (source: KOTH)

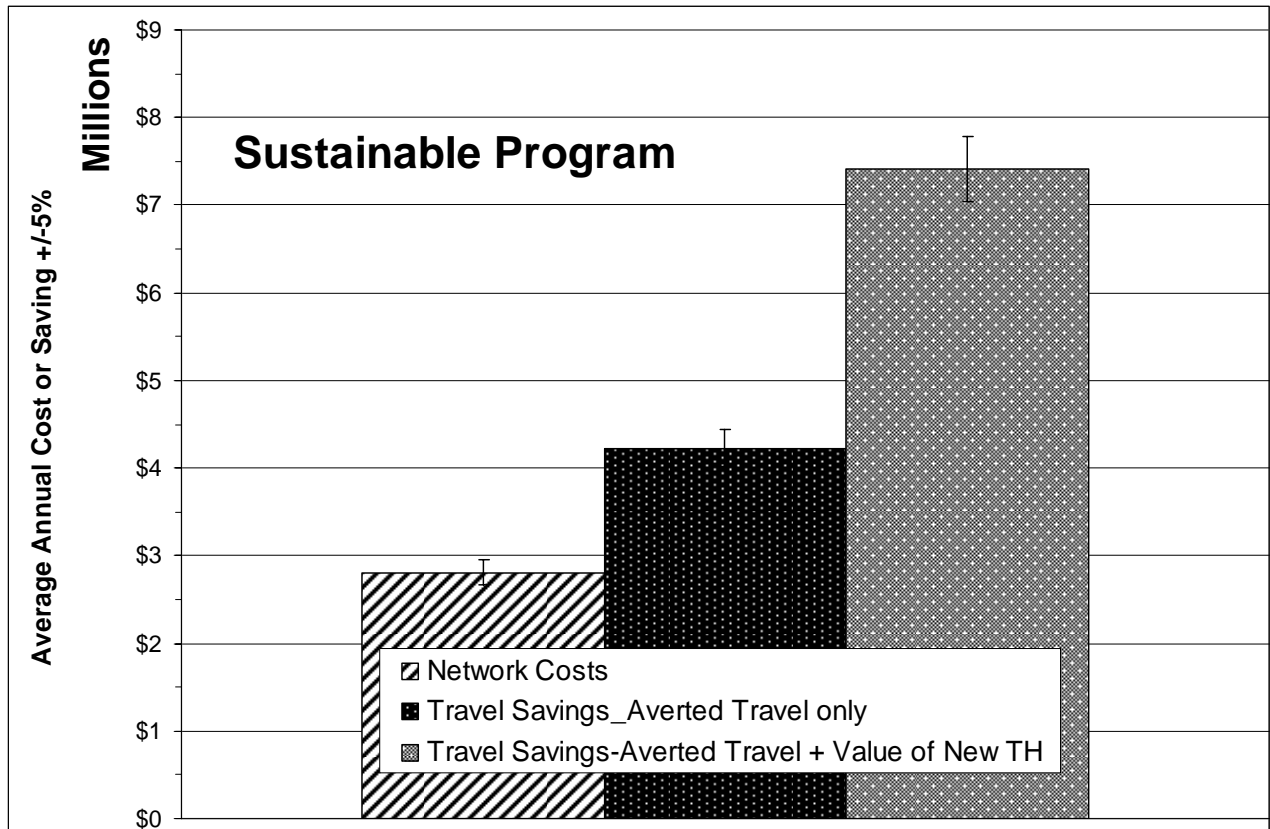


Figure 3. Summary of Economic Model Output for the Sustainable Program showing average annual network costs and estimated travel savings (averted travel savings only or averted travel savings plus monetary value of "new" telehealth).

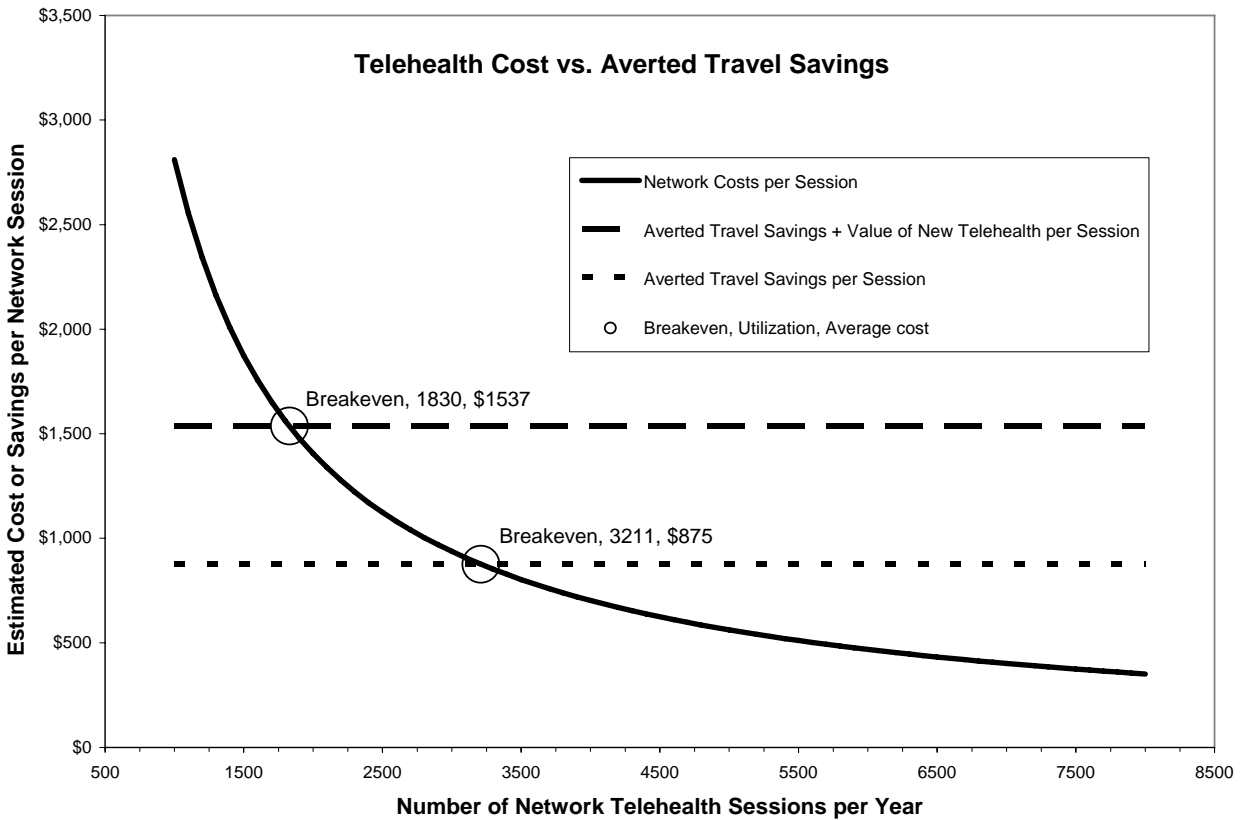


Figure 4. Estimated average cost of a Keewaytinook Okimakanak Telehealth session and average potential savings for different levels of utilization for a sustainable program.

Table 1. Selected characteristics of First Nations communities

Legal Entity (recognized by INAC) ¹	Tribal council	DIAND- Registered Indians on reserve and crown land- 2004 ²	City Centre ³	Service Centre ⁴	Geo- graphic Zone ⁵	Environ- mental Index ⁶
Bearskin Lake	Windigo First Nations Council	499	Thompson	Sioux Lookout	4	C5
Cat Lake	Windigo First Nations Council	481	Thompson	Sioux Lookout	4	C2
Deer Lake	Keewaytinook Okimakanak	838	Thompson	Sioux Lookout	4	C4
Eabametoong A/N: Fort Hope	Matawa First Nation Management Inc.	1159	Thompson	Geraldton	4	C2
Fort Severn	Keewaytinook Okimakanak	477	Thompson	Sioux Lookout	4	D6
Kasabonika Lake A/N: Kasabonika	Shibogama First Nations Council	737	Thompson	Sioux Lookout	4	C5
Kee-Way-Win A/N: Keewaywin	Keewaytinook Okimakanak	439	Thompson	Sioux Lookout	4	C4
Kingfisher	Shibogama First Nations Council	414	Thompson	Sioux Lookout	4	C4
Kitchenuhmaykoosib Inninuwug A/N: Big Trout	Independent First Nations Alliance	889	Thompson	Sioux Lookout	4	C5
Lac Seul A/N: Kejick Bay, Frenchman's Head	not affiliated with any Tribal Councils	824	Thunder Bay	Sioux Lookout	4	C1
Mishkeegogamang A/N: New Osnaburgh,	Independent Bands	959	Thunder Bay	Sioux Lookout	2	C
Muskrat Dam	Independent First Nations Alliance	197	Thompson	Sioux Lookout	4	C4
Neskantaga A/N: Lansdowne House	Matawa Tribal Council	277	Thompson	Geraldton	4	C3
Nibinamik A/N: Summer Beaver	Matawa Tribal Council	327	Thompson	Geraldton	4	C6
North Caribou A/N: Weagamow	Windigo First Nations Council	702	Thompson	Sioux Lookout	4	C4
North Spirit Lake	Keewaytinook Okimakanak	398	Thompson	Sioux Lookout	4	C4
Pikangikum	Independent First Nations Alliance	1907	Thompson	Sioux Lookout	4	C3
Poplar Hill	Keewaytinook Okimakanak	396	Thompson	Sioux Lookout	4	C3

KOTH EVALUATION FINAL REPORT
APPENDIX 4

Legal Entity (recognized by INAC) ¹	Tribal council	DIAND-Registered Indians on reserve and crown land-2004 ²	City Centre ³	Service Centre ⁴	Geo-graphic Zone ⁵	Environmental Index ⁶
Sachigo Lake	Windigo First Nations Council	459	Thompson	Sioux Lookout	4	C5
Sandy Lake	not affiliated with any Tribal Councils	1961	Thompson	Sioux Lookout	4	C4
Slate Falls A/N: New Slate Falls, Fry Lake	Windigo First Nations Council	153	Thunder Bay	Sioux Lookout	4	C1
Wapekeka A/N: Angling Lake	Shibogama First Nations Council	359	Thompson	Sioux Lookout	4	C5
Webequie	Matawa Tribal Council	622	Thompson	Geraldton	4	C4
Wunnumin	Shibogama First Nations Council	483	Thompson	Sioux Lookout	4	C4
<i>Summary N=24</i>	<i>Independent n=6 Keewaytinook Okimakanak n=5 Windigo n=5 Matawa n=4 Shibogama n=4</i>	<i>Total=15,957 Average=665 Median=482 Min=153 Max=1961</i>	<i>Thompson n=21 Thunder Bay n=3</i>	<i>Sioux Lookout n=20 Geraldton n=4</i>	<i>Zone 4 n=23 Zone 2 n=1</i>	<i>C n=1 C1 n=2 C2 n=2 C3 n=3 C4 n=9 C5 n=6 D6 n=1</i>

¹ Legal Entity (recognized by INAC): INAC = Indian and Northern Affairs Canada. Source: First Nations and Inuit Health Branch-Health Canada and Chiefs of Ontario www.chiefs-of-ontario.org

² DIAND-registered Indians on reserve and crown land-2004: DIAND = Department of Indian and Northern Affairs (another name for INAC). Total number of Registered Indians on Reserve and on Crown Lands (includes band members and other band members). Source: DIAND 2005. Registered Indian Population by Sex and Residence 2004. First Nations and Northern Statistics Section, Corporate Information Management Directorate, Information Management Branch, Department of Indian Affairs and Northern Development, Ottawa. Available from: http://www.ainc-inac.gc.ca/pr/sts/rip/rip04_e.html

³ City Centre = Nearest major population centre. Source: INAC 2004 Band Classification Manual. Corporate Information Management Directorate, Information Management Branch, Indian and Northern Affairs Canada, Ottawa. Available from: http://www.ainc-inac.gc.ca/pr/pub/fnnrg/bcm_e.html

⁴ Service Centre = Nearest community to which a First Nation can access government services, banks and supplies. Source: INAC 2004.

⁵ Geographic Zone = Zone 2 – the First Nation is located between 50 and 350 km from nearest service centre with year-round road access. Zone 4 – the First nation has no year-round road access to a service centre. Source: INAC 2004.

⁶ Environmental Index = a combination of environmental classifications based on latitude and a remoteness index based on distance to service centre. Environmental Classification: C=50-55°N, D=55-60°N, Remoteness Classification 0-6 = increasing distance from service centre. Source: INAC 2004.

Table 2. Number of sessions per month by type of use of Keewaytinook Okimakanak Telehealth Network, April 2003-December 2005 (source: KOTH)

Month-Year	Clinical Consults	Education	Training	Meeting	Demo	Family visit	Test	Network TOTAL	Total in FN Communities
Apr-03	28	13	10	6	4	0	6	67	48
May-03	35	14	4	3	0	1	2	59	50
Jun-03	32	12	6	10	0	2	0	62	46
Jul-03	35	10	15	0	4	2	1	67	77
Aug-03	23	6	10	2	4	3	7	55	49
Sep-03	45	20	8	13	0	0	1	87	64
Oct-03	35	12	6	9	4	1	6	73	45
Nov-03	36	12	13	2	0	4	4	71	81
Dec-03	26	12	16	8	2	1	0	65	42
Jan-04	25	12	24	13	4	2	1	81	84
Feb-04	40	9	33	9	4	0	1	96	90
Mar-04	42	21	19	10	0	2	0	94	94
Apr-04	61	15	22	12	0	1	1	112	108
May-04	63	17	15	10	2	2	2	111	90
Jun-04	65	13	28	16	10	4	6	142	116
Jul-04	50	1	15	10	1	0	7	84	77
Aug-04	33	1	21	12	2	1	3	73	54
Sep-04	62	16	38	18	2	1	3	140	112
Oct-04	43	36	27	18	2	1	6	133	142
Nov-04	40	33	14	11	6	1	2	107	127
Dec-04	37	10	10	6	5	2	1	71	87
Jan-05	46	30	27	24	10	2	5	144	196
Feb-05	56	41	19	31	1	2	1	151	271
Mar-05	51	45	31	16	8	2	6	159	277
Apr-05	100	42	31	36	3	2	11	225	306
May-05	71	31	33	19	10	3	8	175	347
Jun-05	72	38	44	33	11	4	4	206	350
Jul-05	67	14	41	21	6	5	15	169	328
Aug-05	69	18	35	27	1	0	7	157	354
Sep-05	82	33	42	40	8	4	5	214	400
Oct-05	102	66	41	37	1	5	1	253	471
Nov-05	116	91	45	42	5	5	15	319	582
Dec-05	79	44	34	26	3	2	14	202	340
Grand Total	1767	788	777	550	123	67	152	4224 ¹	5905 ²
Percent	41.8%	18.7%	18.4%	13.0%	2.9%	1.6%	3.6%	100%	
Total in 2005	911	493	423	352	67	36	92	2374	4222
Percent	38.4%	20.8%	17.8%	14.8%	2.8%	1.5%	3.9%	100%	
Average	76	41	35	29	6	3	8	198	
Median	71.5	39.5	34.5	29	5.5	2.5	6.5	188.5	
Minimum	46	14	19	16	1	0	1	144	
Maximum	116	91	45	42	11	5	15	319	

¹ There were 801 cancellations (426 in 2005) that were not included in the totals.

² Total number of telehealth consultations in First Nations communities was higher than the network total because there were occasionally more than one First Nations community connected during a telehealth session, particularly for educational and administrative sessions.

Table 3. Patient's perspective on the helpfulness of the telehealth appointment

How many telehealth appointments have you completed?	How helpful did you find this telehealth appointment?					Total
	Very helpful	Somewhat helpful	Not too helpful	Not helpful at all	No opinion	
1 (this was my first appointment)	85 54.1%	55 35.0%	6 3.8%	0	11 7.0%	157 100.0% (64%)
2-4	53 66.3%	24 30.0%	1 1.3%	0	2 2.5%	80 100.0% (33%)
5 or more appointments	7 87.5%	0	0	0	1 12.5%	8 100.0% (3%)
Total	145 59.2%	79 32.2%	7 2.9%	0	14 5.7%	245 ¹ 100.0%

¹ 17 missing/unknown responses

Table 4. Patient willingness to repeat telehealth appointment

How many telehealth appointments have you completed?	If you had to repeat this appointment, would you do it again by telehealth?		Total
	Yes	No	
1 (this was my first appointment)	144 93.5%	10 6.5%	154 100.0% (63%)
2-4	79 97.5%	2 2.5%	81 100.0% (33%)
5 or more appointments	7 87.5%	1 12.5%	8 100.0% (3%)
Total	230 94.7%	13 5.3%	243 ¹ 100.0%

¹ 19 missing/unknown responses

Table 5. Patient's willingness to recommend telehealth to others

How many telehealth appointments have you completed?	Would you recommend telehealth to another person?			Total
	Yes	No	Don't Know	
1 (this was my first appointment)	135 89.4%	11 7.3%	5 3.3%	151 100.0% (63%)
2-4	73 90.1%	7 8.6%	1 1.2%	81 100.0% (34%)
5 or more appointments	7 87.5%	1 12.5%	0	8 100.0% (3%)
Total	215 89.6%	19 7.9%	6 2.5%	240 ¹ 100.0%

¹ 22 missing/unknown responses

Table 6. Frequency of telehealth consultation by type of medical specialty ¹

Specialty Type	Frequency
Anesthesiology	1 (3.2%)
Cardiology	3 (9.7%)
Endocrinology	1 (3.2%)
GI	6 (19.4%)
Hematology	3 (9.7%)
Oncology	2 (6.4%)
Psychiatry	7 (22.6%)
Surgery	8 (25.8%)
Total	31 ² (100%)

¹ Survey conducted July, October and November 2005 at two hub sites.

² There were 4 missing responses.

Table 7. Specialist's response to the question "Overall, how would you rate today's telehealth session?" ¹

Rating	Frequency (percent)
Excellent	6 (17.6%)
Very good	13 (38.2%)
Good	10 (29.4%)
Poor	3 (8.8%)
Very Poor	2 (5.9%)
Total	34 ² (100%)

¹ Survey conducted July, October and November 2005 at two hub sites.

² There was 1 missing response.

Table 8. Percent of time that service was available in each community for September 2003 to August 2005

First Nation Community	Start-up Date for Telehealth	Available	Not Available
Bearskin Lake	July 2005	99.0%	1.0%
Cat Lake	January 2005	94.7%	5.3%
Deer Lake	April 2002	95.1%	4.9%
Eabametoong	August 2005	98.4%	1.6%
Fort Severn	April 2002	92.9%	7.1%
Kasabonika Lake	October 2004	70.4%	29.6%
Keewaywin	April 2002	97.4%	2.6%
Kingfisher	February 2003	99.5%	0.5%
Kitchenuhmaykoosib Inninuwug	July 2004	98.3%	1.7%
Lac Seul	¹	87.4%	12.6%
Mishkeegogamang	January 2005	97.7%	2.3%
Muskrat Dam	June 2005	99.2%	0.8%
Neskantaga	April 2005	98.6%	1.4%
Nibinamik	August 2005	²	²
North Caribou	July 2004	88.4%	11.6%
North Spirit Lake	April 2002	95.7%	4.3%
Pikangikum	June 2005	68.1%	31.9%
Poplar Hill	April 2002	95.6%	4.4%
Sachigo Lake	July 2005	98.8%	1.2%
Sandy Lake	August 2003	97.0%	3.0%
Slate Falls	June 2005	79.6%	20.4%
Wapekeka	April 2003	98.5%	1.5%
Webequie	August 2005	93.9%	6.1%
Wunnumin	March 2003	98.0%	2.0%
Average		93.1%	6.9%
Minimum		68.1%	0.4%
Maximum		99.6%	31.9%
Balmertown		99.6%	0.4%
Sioux Lookout		99.9%	0.1%

¹ Quality of Service has not yet been established in Lac Seul.

² Nibinamik had just started service in August 2005 and so complete data were unavailable.

Table 9. Number of Technical Quality Issues Reported by Communities for September 2003 to August 2005 ¹

Site Name	Number of Reported Technical Issues			Totals per Community
	Hardware ²	Network ³	Software & Misc. ⁴	
Bearskin Lake	3	2	0	5
Cat Lake	8	5	0	13
Deer Lake	6	28	1	35
Eabametoong	3	3	0	6
Fort Severn	4	39	0	43
Kasabonika	5	13	1	19
Keewaywin	4	16	0	20
Kingfisher	2	4	2	8
Kitchenuhmaykoosib Inninuwug	11	23	0	34
Lac Seul ⁵	0	0	0	0
Mishkeegogamang	3	3	1	7
Muskrat Dam	2	5	0	7
Neskantaga	2	2	1	5
Nibinamik ⁶	1	0	0	1
North Caribou	6	16	1	23
North Spirit Lake	8	36	1	45
Pikangikum	11	16	0	27
Poplar Hill	13	21	1	35
Sachigo Lake	2	1	0	3
Sandy Lake	10	21	2	33
Slate Falls	5	4	0	9
Wapekeka	2	10	0	12
Webequie	4	7	1	12
Wunnumin	3	16	1	20
Total (N=24)	118	291	13	422
	28.0%	69.0%	3.0%	100.0%
Balmertown	8	4	8	20
Sioux Lookout	8	6	1	15
Total (N=26)	134	301	22	457
	29.3%	65.9%	4.8%	100.0%

¹ An technical quality issue, called an incident by NORTH Network, is defined as any problem or issue reported to NORTH Network's helpdesk.

² Any incident involving videoconferencing systems, medical equipment malfunctions, routers or virtual private network devices.

³ Any incident involving the net work connection between the site router interface and the point of presence for KNET in Toronto.

⁴ Any other incident involving operating systems on any of the hardware.

⁵ Quality of Service has not yet been established in Lac Seul.

⁶ Nibinamik had just started service in August 2005.

Table 10. Number of clinical telehealth sessions that were for initial or follow-up consultation for seven First Nations communities (April 2003 to June 2005)

Consultation Type	Pooled Numbers		Statistics for seven communities			
	Total	%	Min	Average	Median	Maximum
Initial	190	47%	35%	52%	55%	69%
Follow-up	212	53%	31%	48%	45%	65%
Total ¹	402					

¹ 124 missing/unknown responses were excluded

Table 11: Assumptions of the Economic Model—Telehealth Network Costs for the Sustainable Program ¹

Cost Item	Total Cost
Equipment Costs (Capital)	
Telehealth platforms, Peripherals and medical devices, Computers, monitors, etc., Cables, Software (<i>replacements only</i>)	
Land lines or microwave towers or satellite earth stations	
Shipping & handling, Installation, Warranty/ maintenance/ insurance	
Construction/ renovation, Office furnishings, Other equipment	
Subtotal-Capital Equipment Costs-(Annual)	<i>\$243,110</i>
Equipment Costs (Annual)	
Access and line charges (hook-up included above with installation)	
Building operations, Room rental, Overhead	
Subtotal-Equipment costs (Annual)	<i>\$483,600</i>
Other Costs (Annual)	
Promotion/ marketing, Training/ education, Travel, Project management	
Subtotal-Other costs (Annual)	<i>\$136,917</i>
Personnel Costs (Annual)	
CTCs, managers, educators, support personnel	
Subtotal-Personnel costs (Annual)	<i>\$1,946,775</i>
Total Annual Telehealth Network Costs	\$2,810,402

¹ Data Source: KOTH sustainability budget-January 2006

Table 12: Assumptions of the Economic Model—Telehealth Utilization and Averted Travel ¹

Model Assumptions	Clinical	Educational	Training	Adminis- trative	Other	Total
Total number of sessions- Projected Network Utilization	1990	1039	743	704	391	4866
Average number of First Nations (FN) communities per Network session ²	0.77 ³	2.82	1.45	3.64	1.19	1.77
Total number of sessions- Projected FN Utilization	1538 ⁴	2933	1080	2563	465	8579
Percent of FN sessions that averted travel	60%	10%	1%	10%	1%	
Averted number of trips (FN)	923	293	11	256	5	1488
Average number of people / trip (FN)	1.5	3	1.5	3	1	
Valuation Factor (% of travel cost assumed to be savings)	100%	100%	5%	100%	1%	
Number of "new" telehealth sessions (FN)	615	2640	1069	2307	460	7091
Valuation Factor (% of travel cost assumed to be savings) – "new" telehealth	50%	30%	5%	5%	1%	

¹ It is important to distinguish between utilization for the whole network and utilization in the 24 First Nations communities. One network session may have one or more First Nations communities as participants.

² This ratio (number of First nations communities per Network session) is used to go back and forth between estimated utilization for the network and utilization for 24 First Nations communities.

³ The ratio for clinical sessions is less than 1 because some clinical sessions do not involve First Nations communities—these sessions may be between the main referral centres, such as Sioux Lookout, Thunder Bay, Winnipeg and Toronto.

⁴ The savings module is driven by utilization in First Nations communities—this is where most averted travel occurs for people who would normally leave and then return to their community.

Table 13: Assumptions of the Economic Model—Estimated Savings for Averted Travel and Value of "New" Telehealth

Cost Item	Unit cost	Clinical	Educational	Training	Administrative	Other	
Transportation Costs							
air fare (return-patient or 1st person)	\$450	<i>0.9</i> ¹	\$405	1	\$450	1	\$450
air fare (medevac)	\$5,000	<i>0.1</i>	\$500				
air fare (patient goes home after medevac)	\$270	<i>0.1</i>	\$27				
air fare (return-escort or other people)	\$450	<i>0.5</i>	\$225	2	\$900	<i>0.5</i>	\$225
				2	\$900	<i>0</i>	\$0
Transportation sub-total			\$1,157		\$1,350		\$675
Daily Costs							
accommodation-patient-SL hospital	\$799	<i>0.9</i>	\$719				
accommodation-patient-SL hospice	\$28	<i>0.1</i>	\$3				
accommodation-escort or others-SL hotel	\$90	<i>0.5</i>	\$45	3	\$270	<i>1.5</i>	\$135
food and misc.	\$50	<i>1.5</i>	\$75	3	\$150	<i>1.5</i>	\$75
Total cost for each day			\$842		\$420		\$210
Number of Days per trip			2.5		2.5		1.5
Daily Costs sub-total			\$2,105		\$1,050		\$315
Other Costs / Trip			\$1		\$1		\$1
Total average cost / trip			\$3,263		\$2,401		\$991
							\$1,981
							\$591
Total annual savings			\$3,010,570		\$704,189		\$535
"New" telehealth travel savings			\$1,003,523		\$1,901,310		\$52,987
Total annual savings-with "New" telehealth travel savings			\$4,014,093		\$2,605,498		\$53,522
							\$736,232
							\$2,748
							\$27
							\$4,223,068
							\$2,721
							\$3,189,026
							\$7,412,094

¹ Values in italics are the estimated number of people/trip. Fractional estimate indicates that 90% of all patients were schedevaced and 10% were medevaced (assumption).