

Driving Distance to Telemedicine units in Northern Ontario as a Measure of Potential Access to Healthcare

John C. Hogenbirk, Laurel O’Gorman &
Wayne Warry

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Rationale & Purpose

- Many communities in Northern Ontario are medically underserved.
- Telemedicine is one approach to help improve access.
- Purpose of study was to determine the proximity of communities in Northern Ontario to telemedicine units...
using proximity as a measure of access.

Ontario Telemedicine Network (OTN)



- Not-for-profit organization funded by the Ontario Ministry of Health and Long Term Care (MOHLTC)
- Enables access to medical care services by using technology to connect patients to physicians throughout Ontario.
- OTN is the largest telemedicine service provider in Canada (Coach, 2015) and one of the largest in the world (Holmes, 2009).
- KOTM (Keewaytinook Okimakanak) works in conjunction with OTN to provide telemedicine services to fly-in communities in NW Ontario.

Methods

- Travel time by private vehicle from center of each community to the nearest telemedicine unit calculated using posted speed limits and road distance.
- ArcGIS 10.0 Network Analyst extension
 - MNR Cultural Points data (communities by population size group)
 - DMTI Ontario Road data
 - telemedicine unit locations from OTN
- Pearson's Chi-squared test to determine if there were differences in travel time:
 - among community population group
 - between rural and urban census subdivisions (CSDs).

Driving Distance to telemedicine units (N. Ont.)



Dot size \propto pop size

Colour shows drive time





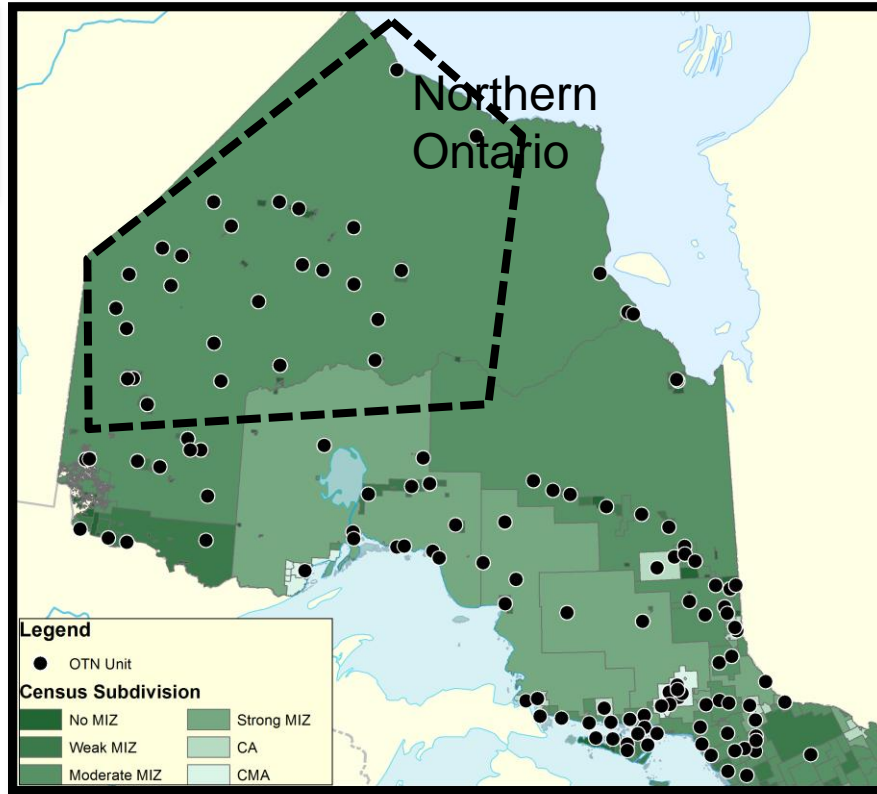
Telemedicine units by community size (N. Ont.)

	Population Size Group	Mean Number of units per community (min-max)	
N=4	50,000+	48 (33-66)	Many Northern Ontario communities contain multiple telemedicine units.
3	10,000 to 50,000	15 (5-32)	
57	1,000 to 10,000	3 (0-17)	
222	500 to 1,000	0.3 (0-7)	The mean number of telemedicine units drops below 1 for communities of 1000 people or less.
638	Under 50	0.03 (0-5)	

Telemedicine units by Rurality

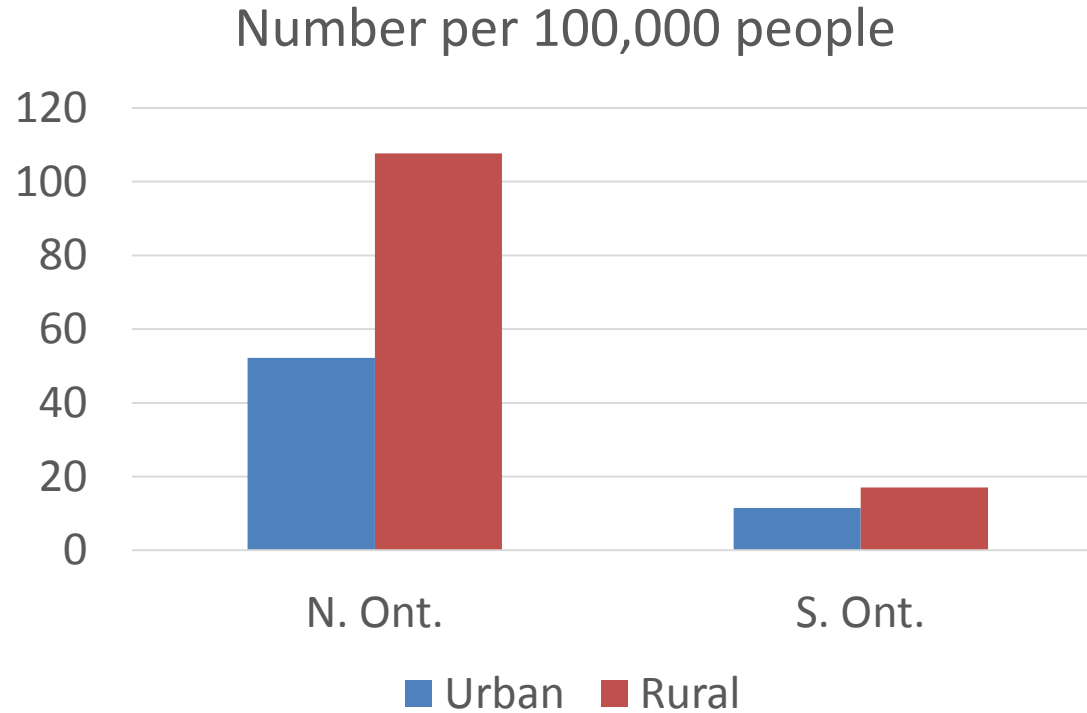


(Statistics
Canada)





Telemedicine units per capita by CSD



Summary of Findings

- All communities in Northern Ontario with populations over 10,000 and 97% of communities with populations over 1,000 are within 1 hour of a telemedicine unit
- For communities with populations under 50, 83% are within 1 hour of a telemedicine unit
- All urban CSDs are within 1 hour of a telemedicine unit, compared with 84% of rural CSDs.

Discussion

- Proximity \neq Access
 - Proximity is a theoretical measure of maximum potential access
- Other considerations
 - Number of units within a given community
 - Unit location (organization, room, hours)
 - Weather
- Not all communities could support a telemedicine unit

Conclusions

- Vast majority of communities in Northern Ontario are within a 1 hour drive of a telemedicine unit and so maximum potential access is excellent
- Ongoing studies will examine the (1) type of use of and (2) characteristics of the patient and providers who use virtual care for health service delivery in the north, especially in rural and remote areas.

Acknowledgements

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The views expressed in this presentation are those of the authors and do not necessarily reflect that of the MOHLTC nor the OTN.

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Thank you

John C. Hogenbirk, Senior Research Associate

jhogenbirk@laurentian.ca

Centre for Rural and Northern Health Research

www.cranhr.ca