

REMOTENESS INDICATORS AND FIRST NATION EDUCATION FUNDING

*Presented by:
Dr. Bakhtiar Moazzami, Ph.D. Economics
of*



OBJECTIVES

1. Review various remoteness models and indices.
2. Review the newly published remoteness report by Statistics Canada (NPR).
3. Examine various educational cost drivers in First Nations schools and to propose an alternative remoteness index specifically designed for First Nation education funding.
4. Review the provincial approach to remoteness and rurality and First Nations comparability funding models.
5. Estimate remoteness indices for First Nations schools in Ontario and compare them to the newly published remoteness index (NPR index) and Geographic Zone index used by Indigenous and Northern Affairs Canada (INAC).

CRITERION FOR SELECTING A REMOTENESS INDEX

Choice of index must be based on the issue at hand and the specific policy the indicator is designed to influence.

The context & unit of measurement in developing remoteness indicators:

- Access to government services (government, banking and supplies),
- Population centre: some remote and rural, some urban, some small, etc.
- Education,
- Health care,
- **Unit of measure matter** (population size, road distance, travel cost, etc.)
- **Definition of rurality** and remoteness matter significantly. **For example,** depending on the definition selected, Canada's rural population may vary between 22% and 38% of Canada's total population.

ESTIMATING COST OF SCHOOLING: CONSTRUCTING A REMOTENESS INDEX

- We need a cardinal (not ordinal) index that shows the cost difference between communities.
- The NPR and INAC indices are ordinal indices at best.
- Has to be based on the Producer Price methodology:

“What is the average capital and operating costs of providing educational services to children in one community compared to similar services in Toronto?”



PROPERTIES OF REMOTENESS & ACCESSIBILITY INDEXES

- Indices should be developed for the specific issue or policy under consideration;
- Indices should have a clear practical purpose;
- Indicators should be based on theoretical consideration; Proxies used should be sensible;
- Indicators should allow for periodic updating and monitoring;
- Indicators should be easy to calculate and intuitively appealing;
- Ranking of various communities as urban, rural, remote, etc. must be stable so the planners can plan for the long-term rather than changing the funding plans as the ranking of the communities change.

EDUCATION COST DRIVERS

- Socio-economic & demographic factors (Ministry of Education Technical Paper 2017-18 recognizes these cost factors)
- Small schools, low enrolment, lack of economies of scale
- Limited resources influences course offerings and hiring practices
- Prevalence of special needs students



EDUCATION COST DRIVERS

- Remoteness and geography
 - How to define the concept?
 - Does population centre make sense in the present context?
- Lack of access to educational services
- Unique language and cultural curriculum
- No road access communities
- We focus on cost factors associated with remoteness

PROXY FOR REMOTENESS & LACK OF ACCESS

- The distance of each school from the nearest college and university since they provide complementary services. If a community includes more than one college or university, then all those institutions will be included in the index.
- The distance of each school from post-secondary institutions in the capital of each province as they are generally larger institutions and provide a more complete set of pedagogical services.
- Schools located in the capital city are used as benchmarks where remoteness factor equals zero.

PROPOSED REMOTENESS MODEL

(BASED ON GRAVITY MODEL)

$$PR_i = \frac{1}{\sum_{k=1}^n \left[\frac{\text{Number of Students in } k\text{th Post-secondary Institution}}{D_{ik}} \right]} \quad (3)$$

$$RI_i \text{ Index} = \left[\frac{PR_i - \text{Minimum value of } PR_i}{(\text{Maximum value of } PR_i - \text{Minimum value of } PR_i)} \right] \times 100 \quad (4)$$

- Based on the average or mean distance (Harmanic mean) between communities and the post-secondary institutions, weighted by the sizes of the institutions.
- It will be large for schools in rural and remote regions and small for those close to urban centres with post-secondary institutions (between 0 and 100).

PROPOSED REMOTENESS MODEL

- The index equals zero for schools in the provincial capital as they are not remote and have full access to educational services.
- The index maintains the relative remoteness of schools. Example: a school with a remoteness index of 40 is twice as remote as the one with the remoteness index of 20. In that sense, our proposed index is a cardinal index.

PARLIAMENTARY BUDGET OFFICER STUDY: COSTS OF FIRST NATIONS EDUCATION PROGRAM SPENDING COMPARE TO PROVINCIAL EDUCATION SPENDING

They find that INAC funding mechanisms:

- Do not adequately take into account important cost drivers for band-operated schools;
- Favour students living on reserves who attend provincial schools;
- Put band-operated schools in remote northern regions at a significant disadvantage.

REMOTENESS INDEXES IN USE

INAC uses Geographic zone indicator: measures distance from the nearest service center, which is defined as the nearest community where a First Nations school can access government services, banks and suppliers.

- **Zone 1:** The First Nation is located within 50 km of the nearest service centre with year-round road access.
- **Zone 2:** The First Nation is located between 50 km and 350 km from the nearest service centre with year-round road access.
- **Zone 3:** The First Nation is located over 350 km from the nearest service centre with year-round road access.
- **Zone 4:** The First Nation has no year-round road access to a service centre and, as a result, experiences a higher cost of transportation.



ISSUES WITH INAC REMOTENESS INDICATOR

SIMON MANAGEMENT SERVICES STUDY (2006)

- The distance to access provincial pedagogical services for the school.
- The distance to the nearest provincial school with the same language of instruction.
- The additional costs of hiring qualified replacement teachers.
- The distance to the nearest First Nation School within the same Nation for language and cultural sharing.



ISSUES WITH INAC REMOTENESS INDICATOR

- The distance to be traveled to a city to recruit teachers or professional services for the school.
- Road access that also affects the ability to hire teachers who may not want to travel the distance, and the additional cost of maintaining boarding for teachers and other professionals.
- Access to library resources particularly for remote communities, available in the working language of the community.
- Cost of moving teachers to the community for the school year.



ISSUES WITH THE STATISTICS CANADA'S MEASURING REMOTENESS & ACCESSIBILITY REPORT

- Choice of population centres as a point of reference defined as CSD's with at least 1000 population and 400 or more people per km² density.
- Concept of proximity based on travel cost is problematic.
- Combining communities with and without road access.
- Use of gross revenue in calculating access to services is inappropriate.



ISSUES WITH THE STATISTICS CANADA'S MEASURING REMOTENESS & ACCESSIBILITY REPORT

- Choice of a representative point of a CSD: centre of the largest population centre or geographic centre.
- Mathematical formulation of the index.
- Their index is an ordinal index at best.



STATISTICAL AREA CLASSIFICATION (SAC TYPE)

- Different definitions generate a different number of rural and urban populations.
- The appropriate choice of a definition be determined by the question being addressed.
- They suggest using “rural and small town” definition as the starting point defines as the population living in towns and municipalities outside the **commuting zone of larger urban centres** defined as centres with a population of 10,000 or more.

STATISTICAL AREA CLASSIFICATION (SAC TYPE)

- The degree to which a given CSD is socially and economically integrated with an urban core.
- SAC type ranges from 1 (CMA), 2(CA) to 7 depending on the degree of rurality.



SAMPLE OF ONTARIO SCHOOLS

Our sample consists of:

- 57 First Nation Bands operating schools in Northern Ontario,
- Primary and secondary schools,
- Represent about 9000 students,
- Schools with an index of 0 to 20 are close to education services,
- Schools with an index of 20 to 40 are further away,
- Schools with an index of 40 to 60 are relatively remote,
- Schools with an index of 60 to 80 are remote,
- Schools with an index of 80 to 100 are very remote.



COMPARISON OF REMOTENESS INDICATORS FOR FIRST NATIONS WITHIN GEOGRAPHIC ZONE 1 IN ONTARIO

Band Name	CSD	Geographic Zone	RI Index	SAC Type	NPR Index	Parallel
Lac Seul	Lac Seul 28	1	85.07	6	0.57720	50
Couchiching First Nation	Couchiching 16A	1	82.29	6	0.46080	49
Eagle Lake	Eagle Lake 27	1	84.48	6	0.48660	50
Constance Lake	Constance Lake 92	1	22.93	6	0.54670	50
Long Lake No.58 First Nation	Long Lake 58	1	57.66	7	0.54860	50
Ginoogaming First Nation	Ginoogaming First Nation	1	58.07	7	0.55880	50
Garden River First Nation	Garden River	1	30.36	2	0.32780	47
Nipissing First Nation	Nipissing First Nation	1	17.36	4	0.30240	46

COMPARISON OF REMOTENESS INDICATORS FOR FIRST NATIONS WITHIN GEOGRAPHIC ZONE 2 IN ONTARIO

Band Name	CSD	Geographic Zone	RI Index	NPR	SAC Type
				Index	
Mishkeegogamang	Osnaburgh 63B	2	94.59	0.734	7
Ojibway Nation of Saugeen	Ojibway Nation of Saugeen (Savant Lake)	2	85.02	0.6758	7
Lac La Croix	Neguaguon Lake 25D	2	82.24	0.7139	7
Nickousemenecaning	Rainy Lake 26A	2	80.15	0.5115	7
Ojibways of Onigaming First Nation	Sabaskong Bay (Part) 35C	2	89.91	0.5525	7
Northwest Angle No.37	Northwest Angle No. 37 First Nation	2	93.08	0.8279	7
Shoal Lake 39 First Nation	Shoal Lake 34B2	2	97.91	0.3068	7
Wabigoon Lake Ojibway Nation	Wabigoon Lake 27	2	83.11	0.5152	7
Naotkamegwaning	Whitefish Bay First Nation	2	92.19	0.5173	7
Ojibway Nation of Saugeen	Ojibway Nation of Saugeen (Savant Lake)	2	83.77	0.6758	7

FIRST NATIONS WITH NO YEAR-ROUND ROAD ACCESS

We need to estimate remoteness factor based on the actual cost of access. Example:

- Saskatchewan applies a northern factor of 1.3 to schools in the north to account for the higher cost of providing transportation services and therefore accessing educational services.
- Ideally, we want to develop spatial producer price indices for First Nation schools in Canada.
- In the absence of such an effort, we can still develop relatively accurate cost estimates, if we have information on a representative sample of First Nation schools in each province.
- In the short-term, the provincial comparability estimates can be refined.



QUESTIONS OR COMMENTS

