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Identifying financially remote First Nations reserves

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Identifying Financially Remote First Nations Reserves

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Abstract

[Chen et al. \(2021\)](#) show that almost one-third of First Nations band offices in Canada are within 1 kilometre (km) of an automated banking machine (ABM) or financial institution (FI) branch and more than half are within 5 km. Further, over three-quarters of band offices are within 20 km of an ABM or FI branch and almost 90% are within 50 km. We focus on 49 First Nations locations that are more than 100 km away from an ABM or FI branch or do not have an identifiable travel route (by road or boat) to an ABM or FI branch. We refer to these First Nations as *financially remote*. We show that these locations have small populations and limited access to internet and mobile services. As a result, these First Nations have poor access to cash sources and physical delivery of financial services as well as limited access to digital payments and electronic banking.

We also assess the remoteness of these locations according to an alternative method based on measures of agglomeration (community population) and proximity to other communities. We find that, according to this measure, these 49 financially remote First Nations are generally among the most geographically remote communities in Canada. Further, we show that these First Nations are also among the lowest scoring communities in Canada according to a measure of community well-being based on indicators of educational attainment, labour force activity, income and housing.

The geographical remoteness of these 49 First Nations, their small populations, limited infrastructure and digital services, and relatively low community well-being all likely contribute to their poor access to cash and financial services.

Topics: Bank notes; Digital currencies and fintech; Financial institutions; Financial services; Payment clearing and settlement systems

JEL codes: E, E4, E41, E42, E5, G21

Introduction

Chen et al. (2021) explore access to cash for First Nations reserves by measuring the distance between band offices and their closest sources of cash. They find that cash sources—primarily automated banking machines (ABMs) and financial institution (FI) branches—are clustered within a relatively short distance from band offices. However, they also find that some band offices are far from ABMs and FI branches. Accordingly, Chen et al. (2021) conclude that a focus on access of the most remote reserves to cash and financial services could be relatively informative about economic inclusion and related considerations. This was also emphasized in comments that the [Tulo Centre of Indigenous Economics](#) provided on Chen et al. (2021). In this paper, we identify a sample of financially remote First Nations locations, which could be a basis to improve understanding of payments and access to financial services in such communities.

Financially remote First Nations communities

The basic idea

We define remoteness in a way that is most relevant to our interests by considering what we call *financial remoteness*. Building on Chen et al. (2021), we consider remoteness based on a large travel distance from reserve band offices to cash sources, which are primarily ABMs (owned by financial institutions or white label machines) and FI branches. A large distance to an FI branch also indicates poor access to physical delivery of financial services more generally. Further, we consider access to internet and cellular service at these locations, which is essential for digital or mobile banking. In other words, we identify First Nations reserves that are furthest from ABMs and FI branches as financially remote. We show that these specific locations also have relatively poor access to internet and cellular service and therefore poor access to electronic banking as well.

Application

Table 1 is drawn from Chen et al. (2021) and presents the distribution of reserve band offices according to their identified travel distance to a cash source. We focus on band offices as the point of origin for the analysis because the band office is a reserve’s administrative and commercial hub.¹ **Table 1** shows that almost one-third of band offices are within 1 kilometre (km) of a cash source, over half are within 5 km and over three-quarters are within 20 km. Our sample of remote locations consists primarily of those in the far right-hand tail of this distribution, which we define (arbitrarily) as band offices more than 100 km from a cash source.

Table 1 shows that 93% of reserve band offices are within 100 km of a cash source. The band offices in this table that are *more than* 100 km from a cash source fall under two groups.

- Band offices with an identified travel route (road) to the closest cash source that is greater than 100 km. Note that locations that are more than 100 km from any cash source must be at least 100 km away from an FI branch because the latter are a subset of cash sources.

¹ Discussions of the data on band office locations, cash sources and measurement methods are in Section 3 and Section 4 of Chen et al. (2021). **Appendix 1** of this paper provides basic demographics about Indigenous people living in Canada.

- Band offices that have no identified travel route to cash and are assigned an extreme distance of 500 km from a cash source in **Table 1**.² Note that locations with no identified travel route to any cash source are similarly remote from both ABMs and from FI branches.

Table 1: Distance between reserve band offices and cash sources

	Percentage of band offices that have a cash source within a travel distance of:						
	1 km	5 km	10 km	20 km	50 km	100 km	400 km
ABMs and FI branches	29%	54%	63%	76%	87%	93%	96%
ABMs, FI branches and NWCo stores	32%	54%	63%	77%	88%	93%	97%

Note: Cash sources in the first row include financial institution automated banking machines (FI ABMs), white label ABMs and FI branches. The second row also includes Northwest Company (NWCo) store locations as a cash source, separately from NWCo ABMs, which are in the first row. Including NWCo store locations in the second row reflects the incremental cash services provided at those outlets (such as cheque cashing). Inclusion of NWCo store locations has virtually no impact on the results (Chen et al. 2021).

Chen et al (2021) also identify a third group of reserve band offices that have an identified travel route to cash that requires a trip by ferry (or boat).

Accordingly, our sample of financially remote First Nations locations is defined as follows.

- Reserve band offices with an identified road route to a cash source that is greater than 100 km. This yields 22 financially remote band offices, which are shown in **Table 2**.
- Reserve band offices with no identified travel route to a cash source. This yields 23 financially remote reserve band offices, shown in **Table 3**.
- Reserve band offices with an identified travel route to a cash source that requires a ferry trip. This yields four financially remote reserve band offices, shown in **Table 4**.

We obtain a sample of 49 financially remote locations, which are plotted on a map of Canada in **Chart 1**. Almost three-quarters of these band offices are in Ontario (14) and British Columbia (23), with a handful in Quebec, Manitoba, Alberta, the Northwest Territories and the Yukon.

Table 2, **Table 3** and **Table 4** also provide various summary data for these locations. As well as being remote from ABMs and FI branches, the census subdivisions (CSDs) of these band offices generally appear to have small populations (Statistics Canada 2016).³ The total population recorded for these 49 CSDs is 37,255 (excluding Fort McMurray, Alberta, which is in one of these CSDs; see **Table 3**, line 31). Fourteen of these band offices are located in CSDs that are not reserves, and the total population of the reserves themselves that are associated with these 49 band offices is 9,581. Enumeration could be incomplete for a number of these locations. Regardless, it appears that the total population of these areas is small. Further, lowering the distance threshold from 100 km to 50 km in the first group of locations would add another 36 reserves that have a total population of only 11,044 (Statistics Canada 2016).

² These band offices were “top coded” at 500 km in Chen et al. (2021) because that is just beyond the largest travel distance they identified.

³ Statistics Canada uses the term “census subdivision” (CSD) to refer to municipalities or areas that are comparable to municipalities for statistical reporting and aggregation, including First Nations reserves. Several of the CSDs in **Table 2**, **Table 3** and **Table 4** appear to be incompletely enumerated.

Chart 1: Locations of 49 financially remote reserve band offices



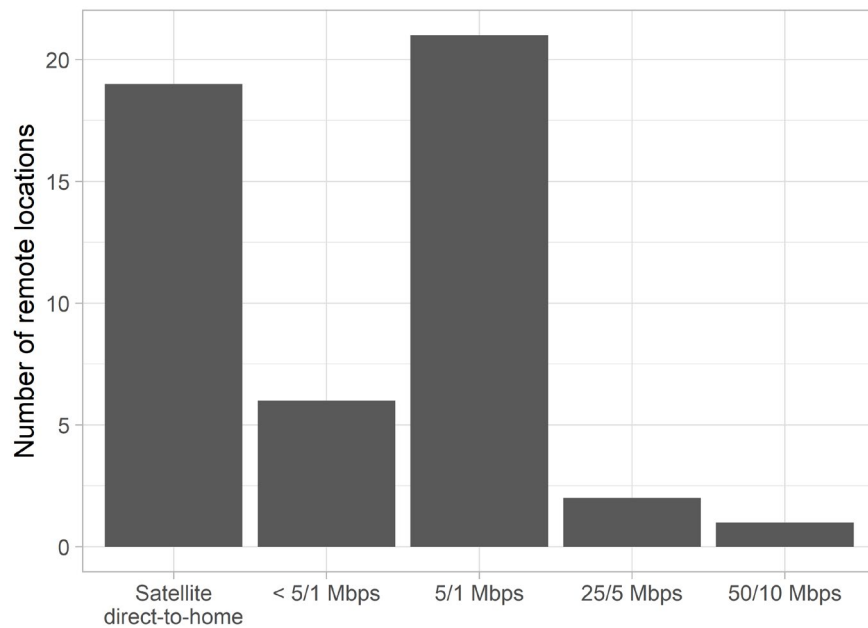
Table 2, Table 3 and **Table 4** also indicate that internet access and mobile phone coverage is poor in many of these locations. According to the Canadian Radio-television and Telecommunications Commission (2020), 19 of these 49 locations rely on satellite direct-to-home access, which typically has relatively slow download and upload speeds, suffers from poor latency and is susceptible to weather-related disruptions. Another six have broadband access (wireline or cable, for example) with download/upload speeds less than 5/1 megabits per second (Mbps), and 21 locations have access to broadband speeds of 5/1 Mbps (the 2016 standard). Only three band office locations have access to broadband speeds greater than 5/1 Mbps, and only one can access broadband speeds of 50/10 Mbps plus unlimited data transfer capacity (the current standard). **Chart 2** illustrates this information.

Table 5 complements these results by showing internet access by households on the reserves associated with these 49 band offices. We see that 40% of these households have access to broadband speeds less than 5/1 Mbps or rely on satellite-to-home internet, while 60% have access to speeds of 5/1 Mbps or more. By comparison, 87% of households on all First Nations reserves in Canada have access to broadband speeds of 5/1 Mbps or more, and 35% have access to broadband download/upload speeds of 50/10 Mbps plus unlimited data transfer capacity. Further, 87% of all Canadian households, and 99% in urban areas, have access to broadband download/upload speeds of 50/10 Mbps plus unlimited data transfer capacity.⁴

Finally, just over half of the population on the reserves associated with the 49 remote band offices have mobile long-term evolution (LTE) coverage. LTE, also known as 4G, is the current standard that is widely deployed in most mobile networks. By comparison, almost three-quarters of the population on all First Nations reserves, and 99% of Canadians generally, have access to LTE networks.

⁴ Until 2016, the CRTC and governments across Canada shared a goal of universal broadband access with download/upload speeds of 5/1 Mbps. The Government of Canada has since committed to providing broadband access with speeds of 50/10 Mbps to 90% of all households by the end of 2021, 98% by 2026 and for the remaining areas by 2030 ([ISED 2019](#) and [Prime Minister of Canada 2020](#)). The federal government also made a particular commitment to meet the needs of Indigenous communities. See Chen et al. (2021) for related discussion, especially Appendix 4.

Chart 2: Distribution of broadband speeds for 49 financially remote First Nations locations



Note: At least 75% of the dwellings in these areas have access to the indicated broadband speed.

Sources: [National Broadband Internet Service Availability Map](#) and author calculations

Table 5: Estimated broadband internet and mobile access by households (2019)

Download/upload speed in megabits per second (Mbps)	49 financially remote First Nations reserves	All First Nations reserves	All Canadian households (urban households)
Less than 5/1 Mbps or satellite-to-home	40% of households <i>(mostly satellite)</i>	13% of households	2% of households
5/1 Mbps or more (Service standard until 2016)	60% of households	87% of households	98% of households (100%)
50/10 Mbps plus unlimited data transfer capacity (Current service standard)	6% of households	35% of households	87% of households (99%)
LTE (4G) mobile coverage	56% of population	73% of population	99% of population

Sources: [National Broadband Internet Service Availability Map](#), [CRTC Communications Monitoring Report 2020](#) and author calculations

For additional context, we consider the number of retail or service outlets near these 49 financially remote band offices. We use the Google application programming interface (API) to count the number of retail or service providers near these offices. The API classifies such locations by [type](#), which includes airports, schools, lodging, post offices, groceries, department stores, gas stations, contractors and restaurants. Generic points of interest are also captured, which includes administrative and other services. The API found 746 service providers within a radius of 50 km from all 49 band offices, and the median number of retail/service providers within 50 km of each band office is 18. These results play no further role in our analysis.

In sum, these 49 locations have the worst access to cash, including FI branches, of all First Nations band offices. Correspondingly, physical delivery of financial services for these locations is poor. These locations also have relatively poor internet access, which inhibits electronic banking and digital payments. In other words, these locations are *financially remote*.

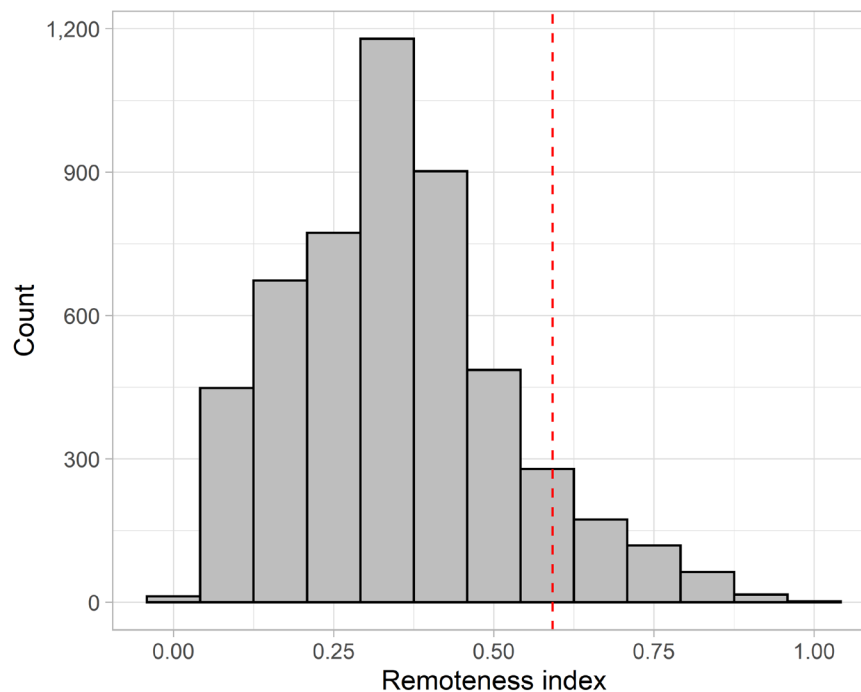
An alternative measure of remoteness

In this section, we consider the remoteness of the 49 locations identified above according to an alternative measure developed at Statistics Canada by [Alasia et al. \(2017\)](#), which is also used by Indigenous Services Canada. This assesses the geographical remoteness for all communities in Canada, represented by their CSDs, including First Nations. This index combines measures of agglomeration (community population) and proximity to other communities (with distance converted to travel cost) to produce a weighted index score of relative remoteness on a scale from 0 to 1. A higher score on this index indicates greater remoteness. **Appendix 2** provides more information on this. **Appendix 3** shows that this remoteness index is highly correlated with a measure of credit intermediation services provided by these authors.

Chart 3 presents the distribution of this remoteness index for all CSDs in Canada. The mean remoteness score of all CSDs is 0.34. The dashed red line in **Chart 3** indicates the mean remoteness score of the 49 CSDs in **Table 2**, **Table 3** and **Table 4**, which is 0.59. This is at the 91st percentile of the whole distribution; only 9% of all CSDs in Canada have a higher remoteness score according to this index.⁵

⁵ The mean remoteness score of First Nation band office CSDs excluding the 49 locations in our sample is 0.43.

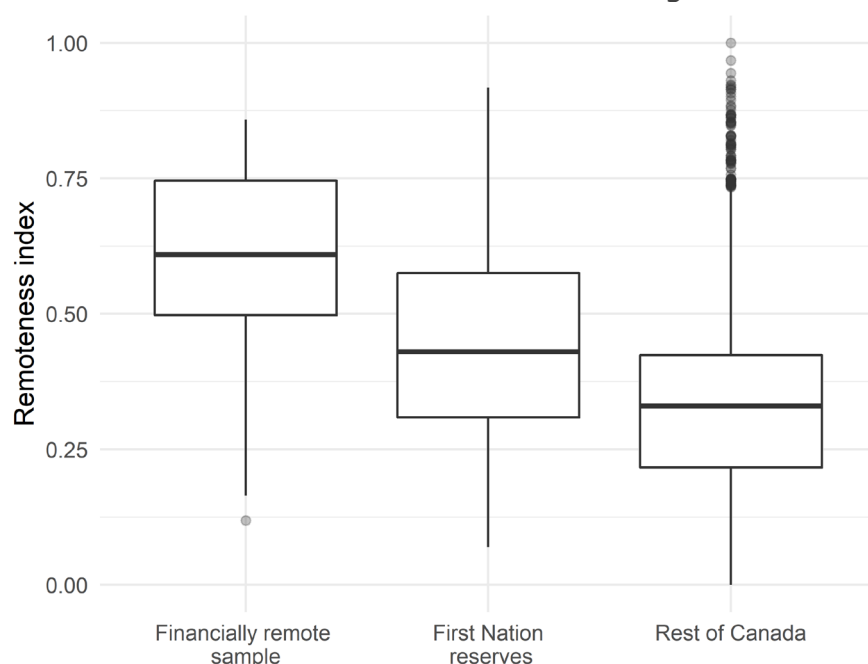
Chart 3: Distribution of Alasia et al. remoteness scores for all census subdivisions in Canada (2016)



Note: A higher score on the Alasia et al. index indicates a more remote location; 1.0 is the maximum score (most remote). The dashed red line indicates the mean remoteness score of the 49 financially remote locations, 0.59. This is at the 91st percentile of the distribution for all CSDs in Canada.
 Sources: [Statistics Canada, Index of Remoteness 2016](#) and author calculations

Chart 4 presents additional information on the distributions of these data, showing a box plot of the Alasia et al. remoteness scores for our sample, for First Nations reserves excluding the 49 locations in our sample, and a box plot for all CSDs excluding these 49 locations. Note that the second box plot of this chart (FN reserves) indicates that there are some geographically remote First Nations (a relatively high score according to the Alasia et al. measure) that are not financially remote as defined in this paper.

Chart 4: Distribution of Alasia et al. remoteness scores for financially remote locations, and for First Nations reserves and all census subdivisions excluding locations from our sample



Note: The horizontal perimeters of each box correspond to the interquartile range (IQR), which is between the 25th and 75th percentile of the distribution of observations. The median is indicated by the horizontal line within each box. The lower and upper whiskers extending from each box represent the lowest and highest observations within the ranges defined as $Q1 - 1.5 (IQR)$ and $Q3 + 1.5 (IQR)$, respectively. Observations beyond that (outliers) are indicated by the dots. Box plots for “First Nations reserves” and “Rest of Canada” exclude the financially remote sample.

Source: Author calculations

As noted above, the mean Alasia et al. remoteness score of our sample is 0.59. There is some variation of these scores across **Table 2**, **Table 3** and **Table 4**.

- The 22 CSDs in **Table 2** (an identified road route to cash greater than 100 km) have a mean remoteness score of 0.57.
- The 23 CSDs in **Table 3** (no identified route to cash) have a mean remoteness score of 0.66.
- The four CSDs in **Table 4** (travel route to cash requires a ferry trip) have a mean remoteness score of 0.29. Three of these CSDs are less remote than the all-Canada average of 0.34.

The first two groups are clearly remote according to this measure. The latter group of four CSDs, however, is less remote than the average of all Canadian communities.

Taken together, these results indicate that the 49 financially remote locations in our sample are generally among the most remote communities in Canada. Five of the locations in our sample, however, are less remote than the average for all CSDs in Canada, and three of these five locations are in **Table 4** (locations that require a ferry trip to get to a cash source).

Community well-being

In this section, we examine how our sample of financially remote CSDs fares according to a well-known measure of community well-being: the [Community Well-Being \(CWB\) index](#). Indigenous Services Canada and Statistics Canada developed this index to assess the socio-economic well-being of communities across Canada, including Indigenous communities. It comprises four components:

- education—how many community members have at least a high school education, and how many have acquired a university degree;
- labour force activity—how many community members participate in the labour force, and how many labour force participants have jobs;
- income—a community's total income per capita; and
- housing—the number of community members whose homes are in an adequate state of repair and are not overcrowded

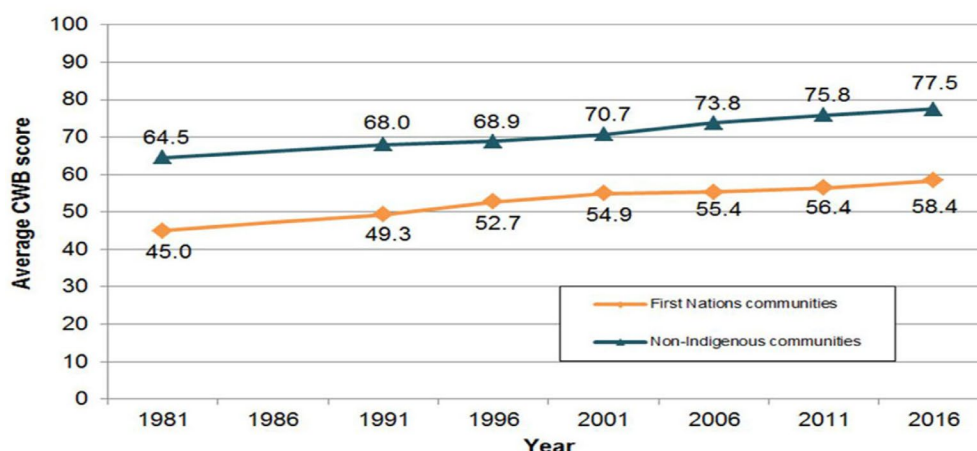
The sources for these data are Statistics Canada's Census of Population and National Household Survey. The four components noted above are combined to produce an index score on a scale of 0 to 100, with a higher score indicating greater community well-being. As shown in **Chart 5**, First Nations communities have scored significantly and consistently below non-Indigenous communities on the CWB index since this measurement began in 1981.⁶

In 2016, 98 of the 100 lowest-scoring communities in Canada were First Nations (Indigenous Services Canada 2019b). However, 22 other First Nations CSDs scored at or above the non-Indigenous average CWB score, and two First Nations communities were among the 100 top-scoring communities.⁷ Put differently, 15% of First Nations CSDs are among the lowest-scoring 100 communities (98/637), but only 0.3% are among the highest-scoring communities (2/637). Note also that lower socio-economic outcomes in First Nations communities as measured by the CWB index are associated with greater remoteness as measured by the Alasia et al. (2017) index (Indigenous Services Canada 2018). That is, more-remote First Nations communities are likely to have relatively low CWB scores.

⁶ For discussions of the CWB index, including criticisms, see Indigenous Services Canada (2018, 2019a, 2019b), Richards (2020) and Feir, Gillezeau and Jones (2018). For more on challenges related to data collection and assessing welfare in Indigenous communities, see Heisz (2019) and Trevethan (2019).

⁷ There are 5,162 CSDs in Canada, 637 of which are First Nations.

Chart 5: Community well-being of First Nations and non-Indigenous communities



Note: This chart shows the average Community Well-Being (CWB) scores for all First Nations and non-Indigenous communities in Canada, from 1981 to 2016.

Source: [Indigenous Services Canada 2019b](#)

Comparing the CWB scores for the financially remote reserves with other groups of CSDs in Canada is complicated because 12 of these 49 locations—about one-quarter—do not have a CWB score. According to [Indigenous Services Canada](#), a CWB score for a community might not be available if the community has fewer than 65 people, the data quality was poor, or the CSD was not fully enumerated in the Census. Further, the excluded communities are likely among the least economically developed. In this regard, [Feir, Gillezeau and Jones \(2018\)](#) use nighttime light density of First Nations communities, controlling for the effects of population size and density, to assess their economic status and the coverage of the CWB. They show that the CWB index systematically excludes many of the poorest First Nations communities.

We also consider light density (in 2013) of all the CSDs in our dataset, using the [nighttime luminosity data collected by the US Air Force Defence Meteorological Satellite Program](#). Each light pixel is assigned a value between 0 (no light) and 63 (maximum light). The mean light density score of the 49 locations in our sample is 2.9, and the mean light density score of all other First Nation band office CSDs is 11.4. This suggests that the financially remote locations collectively could be among the least developed First Nations. However, these particular results are not definitive because they do not take into account the effects of population size or density in these various locations.

In sum, we do not have CWB scores for one-quarter of the 49 financially remote locations, and these locations are likely among the poorest First Nations in Canada. By comparison, about 12% of the remaining 588 band office CSDs and 14% of all CSDs across Canada do not have a CWB score. So we are missing a significantly larger proportion (roughly double) of CWB scores for the financially remote locations compared with these other groups—and these missing scores likely pertain to the poorest communities. This implies that summary measures and statistical distributions of the CWB scores of the financially remote locations are likely to be biased relative to these other groups.

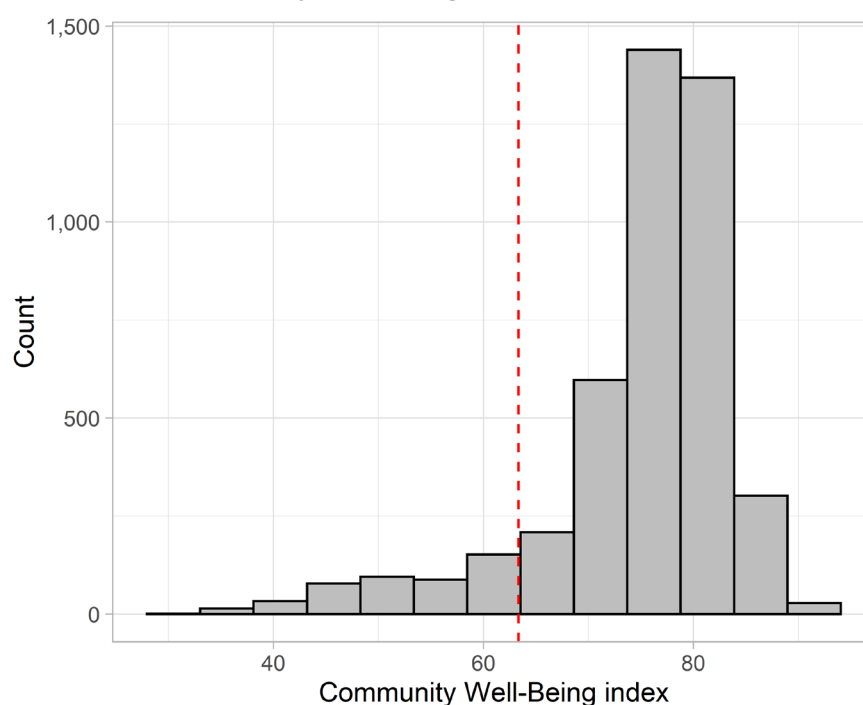
Chart 6 presents the distribution of all available CWB scores across Canada; their mean score is 74.6. The dashed red line in **Chart 6** indicates the mean CWB score of the financially remote CSDs for which a score is available, 63.7. This is at the 12th percentile of the larger distribution—88% of all CSDs have higher CWB scores. **Chart 7** presents box plots of the available CWB scores of the financially remote locations and for all other CSDs in Canada (excluding our sample of remote locations).

Little variation exists in the mean CWB scores across the three subsets of financially remote locations, shown **Table 2**, **Table 3** and **Table 4**.

- The CSDs in **Table 2** (an identified road route to a cash source greater than 100 km) have a mean CWB score of 64.0. Four of the 22 CSDs in this table, however, do not have a CWB score.
- The CSDs in **Table 3** (no identified route to a cash source) have a mean CWB of 62.9. Seven of the 23 CSDs in this table do not have a CWB score.
- The CSDs in **Table 4** (travel route to cash requires a ferry trip) have a mean CWB of 62.0. One of the four CSDs in this table does not have a CWB score.

As noted, we do not have CWB scores for a relatively large proportion of the locations in our sample, and these locations are likely among the poorest First Nations. This suggests that the CWB results shown in **Chart 6** and **Chart 7** *overstate* the community well-being of the set of 49 financially remote locations compared with other CSDs in Canada. The gaps in the coverage of the CWB measure also preclude reliable comparisons between the average CWB scores of our financially remote sample and other First Nations bands as well as comparisons of their statistical distributions, such as the box plots provided in **Chart 7**.⁸

Chart 6: Distribution of community well-being scores for census subdivisions in Canada (2016)

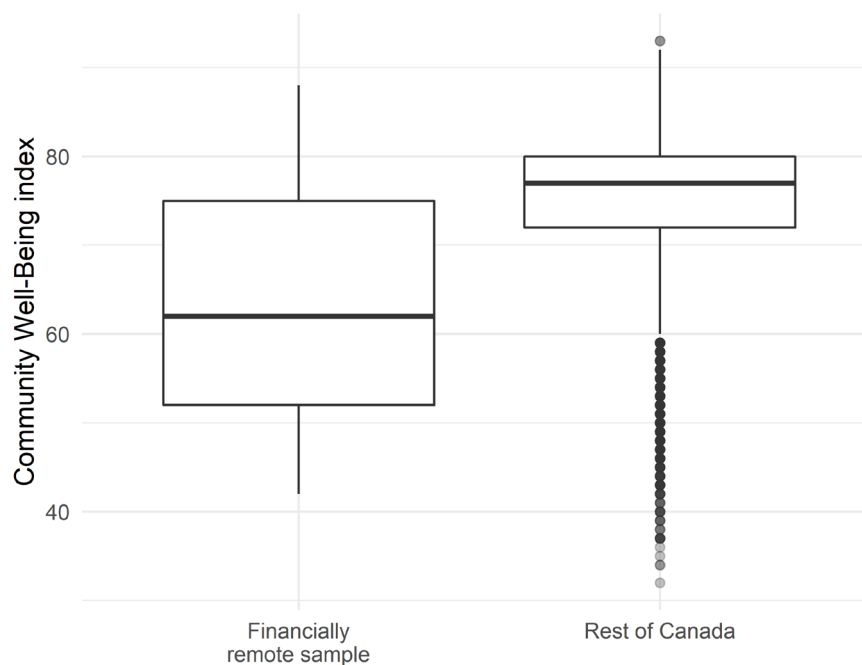


Note: A lower score indicates lower community well-being. The dashed red line indicates the average CWB score for financially remote First Nations locations, 63.7. This is in the 12th percentile of all available community well-being scores of communities in Canada. See text for discussion.

Sources: [Government of Canada Community Well-being Index](#) and author calculations.

⁸ The mean of available CWB scores for all First Nations band office CSDs excluding the available CWB scores of the financially remote locations is 60.5. This is below the mean of the available CWB scores of the financially remote locations (63.7).

Chart 7: Distribution of community well-being scores for financially remote locations and all other census subdivisions in Canada (2016)



Note: The horizontal perimeters of each box correspond to the interquartile range (IQR), which is between the 25th and 75th percentile of the distribution of observations. The median is indicated by the horizontal line within each box. The lower and upper whiskers extending from each box represent the lowest and highest observations within the ranges defined as $Q1 - 1.5(IQR)$ and $Q3 + 1.5(IQR)$, respectively. Observations beyond that (outliers) are indicated by the dots. See text for related discussion.

Source: Author calculations

Conclusion

In this paper, we identify a sample of 49 financially remote First Nations locations, where remoteness is indicated by the physical proximity of band offices to cash sources and financial services. Most importantly, a band office is considered to be remote when it is more than 100 km from an ABM or FI branch or when a travel route to an ABM or FI branch could not be identified. We also show that these 49 locations have small populations. Further, expanding the set of remote reserves by reducing the threshold that defines remoteness from 100 km to 50 km does not change the conclusion that the total population of these communities is relatively small. The 49 financially remote First Nations that we identify also have poor access to internet and mobile services. As a result, these First Nations locations have poor access to cash sources, to physical delivery of financial services, and to digital payments and electronic banking.

We complement this analysis by assessing the remoteness of these locations according to an alternative method that draws on measures of agglomeration (community population) and proximity to other communities. We find that these 49 First Nations are generally among the most remote communities in Canada according to this measure. In addition, we show that these First Nations are among the lowest scoring communities in Canada according to a measure of community well-being based on indicators of educational attainment, labour force activity, income and housing.

The geographical remoteness of these locations, their small populations, limited infrastructure and digital services, and relatively low community well-being all likely contribute to their relatively poor access to cash and financial services more generally.

Looking ahead, future research could focus on improving understanding of the methods of payment and financial services in such remote communities (or a subset) and in lower-income urban settings.⁹ This work could provide insight into economic integration and the scope for possible innovation to improve outcomes in such communities. Finally, an alternative and perhaps more refined approach could use pseudo-household datasets to provide a representative distribution of households in a given area and represent origin points from which to measure proximity to financial services.¹⁰

⁹ Such work would take into account, as appropriate, the [First Nations principles of Ownership, Control, Access, and Possession](#). Administered by the First Nations Information Governance Centre, these principles set out how First Nations' data and information should be collected, protected, used or shared.

¹⁰ Statistics Canada derives the [pseudo-households](#) from the Canadian census and are simulated geospatial points representing populations in an area. These representative points are placed along roadways within the area of interest, and the population of the area as determined by the Census is distributed among these points. Information about addresses and the position of dwellings is used to help guide the distribution of households and populations. This concept of pseudo-households also supports the data reported in **Chart 2** and **Table 5**.

Table 2: Remote reserves—Band offices with identified travel route more than 100 km from a cash source

Band name	Province	Band office CSD	CSD population (2016)	Geodistance to town (km)	Travel distance to cash (km)	Broadband speed (Mbps)	Mobile service
1. Algonquins of Barriere Lake	QC	Lac-Rapide	<u>NA</u>	100.76	110.01	5/1	Yes
2. Gull Bay	ON	Gull River 55	247 people	147.01	169.26	< 5/1	No
3. Lac Des Mille Lacs	ON	Lac des Mille Lacs 22A1	<u>0</u>	89.36	100.25	Satellite	Yes
4. Lac La Croix	ON	Neguaguon Lake 25D	177	57.80	117.10	5/1	No
5. Ojibway Nation of Saugeen	ON	Ojibway Nation of Saugeen	90	93.89	113.09	< 5/1	No
6. Slate Falls Nation	ON	<i>Kenora, Unorganized</i>	6,737	115.40	174.19	5/1	No
7. Whitesand	ON	Whitesand	325	163.08	233.83	5/1	Yes
8. Bloodvein	MB	Bloodvein 12	687	102.81	120.77	5/1	No
9. Dease River	BC	<i>Stikine Region</i>	477	354.59	118.44	5/1	No
10. Douglas	BC	<i>Fraser Valley C</i>	1,023	58.30	164.56	Satellite	No
11. Ehattesaht	BC	Chenahkint 12	<u>0</u>	78.74	236.27	Satellite	No
12. Nisga'a Village of Gingolx	BC	Nisga'a	<u>1,880</u>	76.45	309.85	Satellite	Yes
13. Nisga'a Village of Gitwinksihlkw	BC	Nisga'a	<u>1,880</u>	82.20	105.97	Satellite	Yes
14. Nisga'a Village of Laxgalt'sap	BC	Nisga'a	<u>1,880</u>	82.58	141.27	5/1	Yes
15. Nisga'a Village of New Aiyansh	BC	Nisga'a	<u>1,880</u>	79.61	100.63	Satellite	Yes
16. Tahltan	BC	<i>Kitimat-Stikine D</i>	99	379.65	171.20	5/1	No
17. Ulkatcho	BC	Squinas 2	134	191.90	119.86	< 5/1	No
18. Xeni Gwet'in First Nations Government	BC	Chilco Lake 1A	25	150.94	116.87	< 5/1	No
19. Pehdzeh Ki First Nation	NT	<i>Wrigley</i>	119	459.27	214.65	5/1	Yes

Band name	Province	Band office CSD	CSD population (2016)	Geodistance to town (km)	Travel distance to cash (km)	Broadband speed (Mbps)	Mobile service
20. First Nation of Nacho Nyak Dun	YK	<i>Mayo</i>	200	313.69	194.35	5/1	Yes
21. Kluane First Nation	YK	<i>Burwash Landing</i>	72	215.22	124.17	5/1	Yes
22. Selkirk First Nation	YK	<i>Pelly Crossing</i>	353	237.31	103.41	5/1	Yes

Note: Geographical (geo) distance measures distance between two points on the surface of a sphere ("as the crow flies"). The Google Travel Matrix Application Program Interface (API) is used to measure travel distance between each band office and nearest cash source as identified by geodistance. Eight census subdivisions (CSDs) are not reserves; these are in *italics*. Apparently peculiar population data are underlined. Three band office CSDs record a population of N/A or zero; this might reflect privacy or other concerns. Nisga'a villages populations sum to 1,880. A "town" is an area with a population of at least 1,000 and at least 400 people/square km. Broadband speed is for band office CSD and excludes wireless mobile. Mobile service refers to LTE (long-term evolution).

Sources: [Chen et al \(2021\)](#), [Statistics Canada, Census Subdivision Profile, 2016 Census](#), [Innovation, Science and Economic Development Canada, National Broadband Internet Service Availability Map](#), [CRTC Communications Monitoring Report 2020](#) and author calculations

Table 3: Remote reserves—Band offices with no identified travel route to a cash source

Band name	Province	Band office CSD	CSD population (2016)	Geodistance to town (km)	Geodistance to cash (km)	Broadband speed (Mbps)	Mobile service
23. Montagnais de Pakua Shipi	QC	Pakuashipi	237 people	214.53	50.34	25/5	Yes
24. Kingfisher	ON	Kingfisher Lake 1	511	345.29	35.27	5/1	No
25. Marten Falls	ON	Marten Falls 65	252	209.94	59.27	Satellite	No
26. North Spirit Lake	ON	<i>Kenora, Unorganized</i>	6,737	168.65	54.19	5/1	No
27. Northwest Angle No. 33	ON	Northwest Angle 33B	95	53.81	28.88	5/1	No
28. Temagami First Nation	ON	Bear Island 1	153	54.69	23.74	5/1	Yes
29. Wawakapewin	ON	Wawakapewin (Long Dog Lake)	22	379.54	36.66	Satellite	No
30. Red Sucker Lake	MB	Red Sucker Lake	675	91.31	74.22	Satellite	No
31. Athabasca Chipewyan First Nation	AB	<i>Wood Buffalo</i>	<u>71,589</u>	168.48	20.96	5/1	Yes
32. Da'naxda'xw FN	BC	Dead Point 5	10	32.89	23.40	Satellite	Yes
33. Dzawada'enuxw FN	BC	Quaee 7	78	76.11	68.46	5/1	No
34. Gitxaala Nation	BC	Dolphin Island 1	353	55.23	57.52	Satellite	No
35. Gwawaenuk Tribe	BC	Hopetown 10A	<u>0</u>	41.26	35.72	Satellite	No
36. Hesquiaht	BC	Refuge Cove 6	44	70.00	35.58	25/5	Yes
37. Ka'yu:'k't'h'/Che:k'tles 7et'h' First Nations	BC	Houpsitas 6	181	64.60	38.52	Satellite	No
38. Kwiakah	BC	<i>Strathcona C</i>	2,431	39.80	35.78	Satellite	Yes
39. Kwikwasut'inuxw Haxwa'mis	BC	Gwayasdums 1	27	34.97	26.28	Satellite	Yes
40. Lhoosk'uz Dene Nation	BC	Kluskus 1	36	107.20	107.88	Satellite	Yes
41. Tlatlasikwala	BC	Hope Island 1	<u>0</u>	36.05	38.20	Satellite	No

Band name	Province	Band office CSD	CSD population (2016)	Geodistance to town (km)	Geodistance to cash (km)	Broadband speed (Mbps)	Mobile service
42. Wuikinuxv Nation	BC	Katit 1	90	105.89	78.78	< 5/1	No
43. Nahanni Butte	NT	<i>Nahanni Butte</i>	87	248.56	86.59	5/1	Yes
44. Smbaa K'e First Nation	NT	<i>Smbaa K'e</i>	88	197.76	121.58	< 5/1	Yes
45. Aishihik	YT	<i>Yukon, Unorganized</i>	1,515	154.08	86.59	Satellite	No

Note: Geographical (geo) distance measures the distance between two points on the surface of a sphere ("as the crow flies"). The Google Travel Matrix Application Program Interface (API) is used to measure travel distance between each band office and nearest cash source as identified by geographical distance. Six of the census subdivisions (CSDs) in this table are not reserves; these are in *italics*. *Wood Buffalo* CSD is a "Specialized Municipality" CSD that includes the city of Fort McMurray, which has a population of 67,573 (Statistics Canada 2016). Apparently peculiar population data are underlined. Two band office CSDs record a population of zero; this might reflect privacy or other concerns. A "town" is an area with a population of at least 1,000 and at least 400 people/square km. Broadband speed is for band office CSD and excludes wireless mobile. Mobile service refers to LTE coverage (long-term evolution).

Sources: [Chen et al \(2021\)](#), [Statistics Canada, Census Subdivision Profile, 2016 Census](#), [Innovation, Science and Economic Development Canada, National Broadband Internet Service Availability Map](#), [CRTC Communications Monitoring Report 2020](#) and author calculations

Table 4: Remote reserves—Band offices with travel route to cash that requires a ferry trip

Band name	Province	Band office CSD	CSD population (2016)	Geodistance to town (km)	Travel distance to cash (km)	Broadband speed (Mbps)	Mobile service
46. Chippewas of Georgina Island	ON	Chippewas of Georgina Island	261 people	2.10	5.67	5/1	Yes
47. Beausoleil	ON	Christian Island 30	614	18.27	4.79	5/1	Yes
48. Penelakut Tribe	BC	Penelakut Island 7	452	6.40	4.50	50/10	Yes
49. Uchucklesaht	BC	Elhlateese 2	5	27.10	28.04	Satellite	No

Note: Geographical (geo) distance measures the distance between two points on the surface of a sphere ("as the crow flies"). The Google Travel Matrix Application Program Interface (API) is used to measure travel distance between each band office and the nearest cash source as identified by geographical distance. The [Uchucklesaht Tribe website](#) provides a different location for the band office than indicated in our dataset (and reflected in **Table 4**, based on Indigenous and Northern Affairs Canada files). That website indicates that its tribe office is located in Port Alberni, British Columbia, and that the population of the tribe is 299, living in two villages about 24 miles (39 km) from Port Alberni (one of which is Elhlateese). A population record of zero might reflect privacy or other concerns. A "town" here is an area with a population of at least 1,000 and at least 400 people/square km. Broadband speed excludes wireless mobile. Mobile service refers to LTE (long-term evolution) coverage.

Sources: [Chen et al \(2021\)](#), [Statistics Canada, Census Subdivision Profile, 2016 Census](#), [Innovation, Science and Economic Development Canada, National Broadband Internet Service Availability Map](#), [CRTC Communications Monitoring Report 2020](#) and author calculations

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Appendix 1: Demographic information on Indigenous people living in Canada

To provide some context, we provide basic demographic information of Indigenous people living in Canada, drawn from Chen et al. (2021). According to the 2016 Canadian census, 1.7 million people with Indigenous identity live in Canada, which is just under 5% of the Canadian population. **Table A-1** presents the distribution of the Indigenous population by major identity groups from that census, including First Nations, Métis and Innu. The population of First Nations is 977,235, and just over one-third of this population lives on reserve.

The First Nations population has been increasing rapidly in recent years. Between the 2006 and 2016 censuses, this population grew by more than 39% ([Statistics Canada 2017](#)). During this period, the on-reserve population increased by 13%, and the off-reserve population grew by 49%. The proportion of First Nations people living on reserves has been declining for a number of years. For example, in the 2001 census, 45% of the First Nations population lived on reserve, but only about one-third of that population lived on reserve by 2016 (Richards 2018, 2020). Over this period, the proportion of First Nations people living in rural, non-urban communities and small cities (those with a population less than 100,000) remained fairly stable, at around 30%. The share of First Nations people living in large cities, however, increased from 25% to 37% (Richards 2018, especially Figure 2 and Figure 3).¹¹

In addition to the 329,345 registered First Nations people living on reserve, several thousand First Nations people who are not registered or treaty status also live on-reserve. In total, 334,385 people live on First Nations reserves in Canada, according to the 2016 census.

Table A-1: Indigenous population of Canada (2016 Census)

Indigenous identity	Population
First Nations, registered or treaty status	744,855
First Nations, not registered	232,380
Total First Nations	977,235
of which live on-reserve	334,385
Métis	587,545
Innu	65,025
Multiple and other Indigenous identity	43,975
Total Indigenous population in Canada	1,673,780
Population of Canada	35,151,728

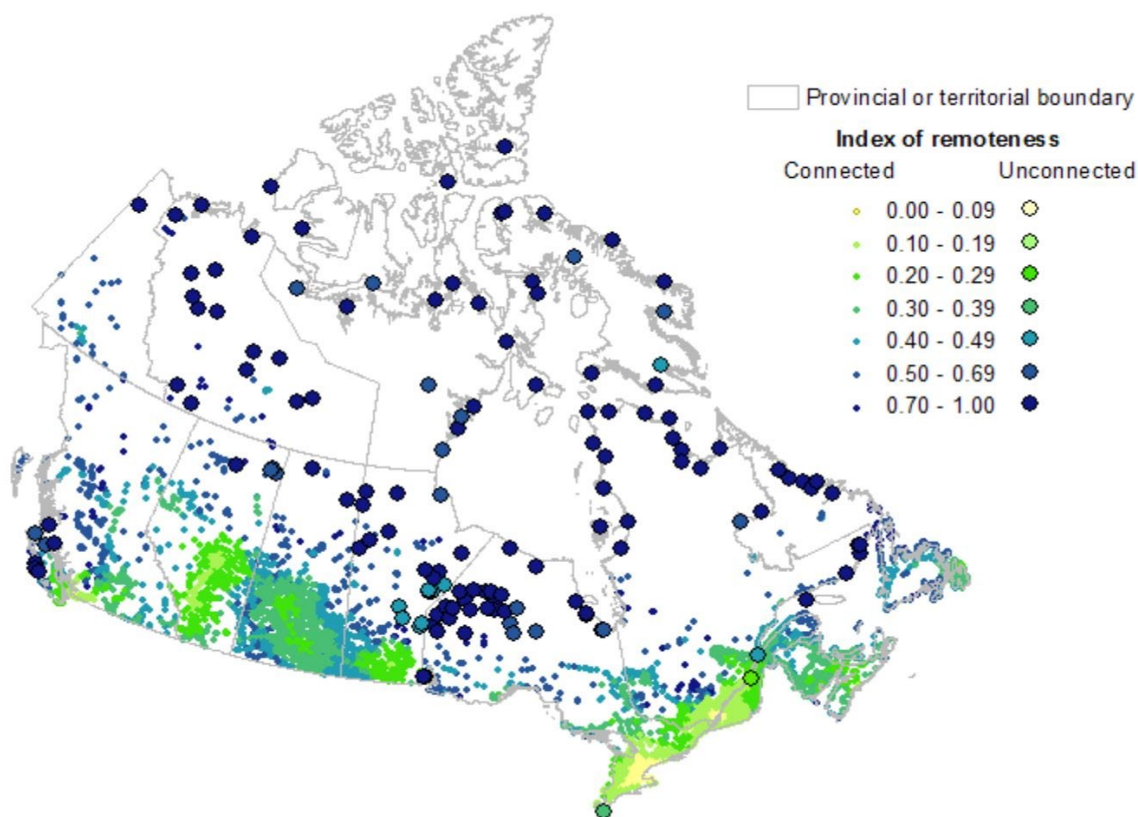
Sources: [Statistics Canada, Aboriginal Population Profile, 2016 Census](#), [Statistics Canada, Focus on Geography Series, 2016 Census](#) and [Statistics Canada 2016 Census Profile](#)

¹¹ See Anderson (2019) for a statistical profile of Indigenous people living in Canadian cities. Further, some evidence shows that urban Indigenous populations are undercounted in the Canadian census (Rotondi et al. 2017).

Appendix 2: Alasia et al. (2017) Community Remoteness Index

The remoteness index from [Alasia et al. 2017](#) combines measures of agglomeration (community population) and proximity to other communities (distance converted travel cost) in a gravity model. This produces a weighted score of relative remoteness, on a scale from 0 to 1, for every community (CSD) in Canada. Higher scores indicate greater remoteness.

Chart A-1: Distribution of the community remoteness index across Canada



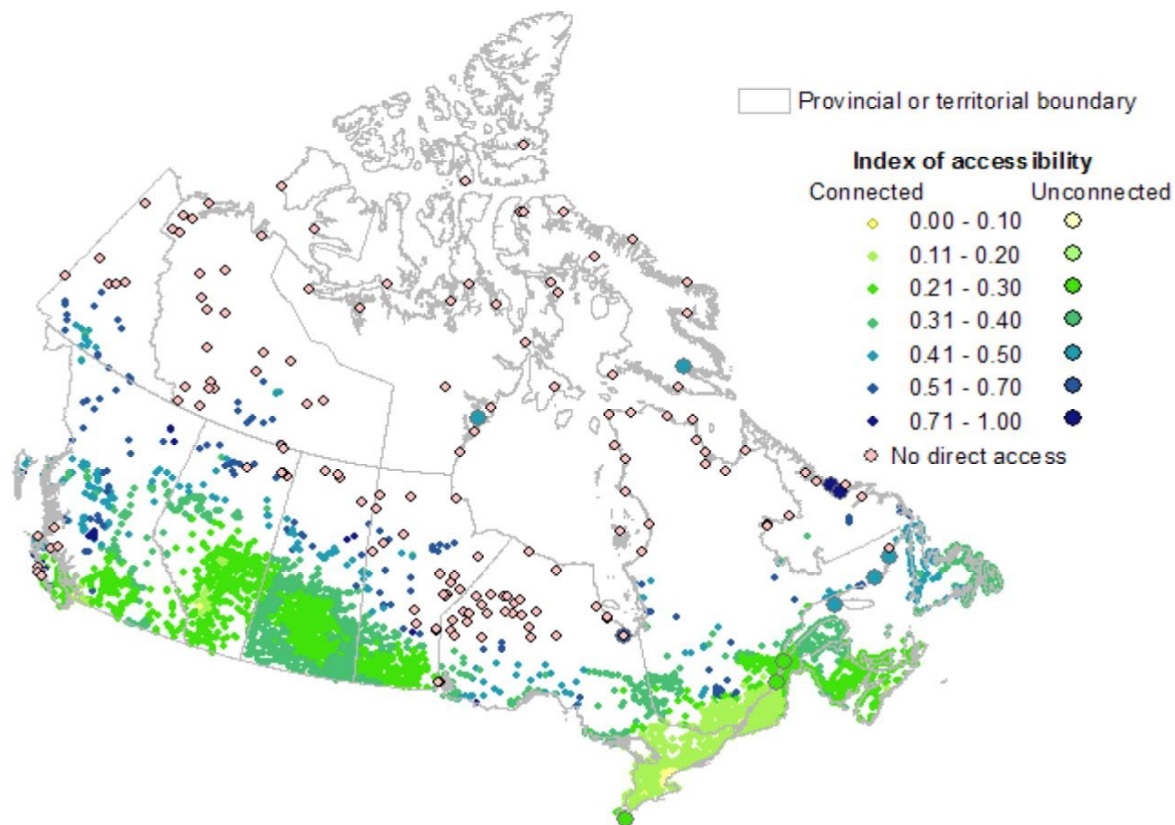
Source: [Alasia et al \(2017\)](#), page 21

This map shows the distribution of the remoteness index values across Canada, including First Nations communities. Each dot is the representative point of a CSD. There are two dot sizes. Small dots represent CSDs that are connected to the main road network. Large dots represent CSDs that are not connected to the main road network. The index is mapped by selected index value ranges. The first six groups have a range of approximately 0.1 from 0.00 to 0.69. The last group includes values between 0.7 and 1. The dot colours darken when the index value range represents higher index value, which indicates greater remoteness. Therefore, the lighter coloured dots correspond to less remote CSDs and the darker colours to more remote CSDs. See also [Indigenous Services Canada \(2018\)](#).

Appendix 3: Access to credit intermediation, from Alasia et al. (2017)

This map shows the spatial distribution of a measure of access to credit intermediation and related activities across Canada. These computations are done using the value of the service available in the CSD. Therefore, most CSDs yield an accessibility measure, including both those connected to a population centre through the road network and those not connected by road. This is especially true for services that are commonly available, such as retail services.

Chart A-2: Distribution of credit intermediation accessibility measure across Canada



Source: Alasia et al. (2017), page. 38

This map presents the distribution of a measure of accessibility to credit intermediation and related activities in CSDs across Canada. These services are identified by the North American Industry Classification System (NAICS) code 522 - Credit intermediation and related activities. Each dot is the representative point of a CSD. There are two dot sizes. Small dots represent CSDs that are connected to the main road network. Large dots represent CSDs that are not connected to the main road network. Higher values of the measure correspond to less accessibility to credit intermediation. The dot colours darken with higher values of the measure, which indicates less accessibility. The pink dots ("no direct access") indicate CSDs that are not connected to the main road network and in which credit intermediation services are not available.

The results indicate that regions close to major metropolitan areas generally have higher level of access to credit intermediation services, and access to credit intermediation services tends to decline rapidly in more rural and peripheral areas. The correlation coefficient between the Alasia et al. remoteness index and accessibility of credit services is 0.85.