



Report: Defining Rural

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What is known?

- 'Rurality' is generally perceived as being a socially constructed phenomenon.
- The concept of rural can be explained through the "identity" of a community or village.
- Due to the absence of a standardized rural definition, a combination of quantitative and qualitative rural definitions are important.

What does this report add?

- Using a simplified version of the IOR to characterize what it means to be rural, adopts a unique geographic element through accessibility.
- Further research should be conducted to follow the development of rural definitions that encompass both aspects of quantitative and qualitative rural definitions.
- Better understandings of what it means to be rural can be gained from the strengths of quantitative geographically based statistical data and meaningful qualitative social data displayed in rural communities.

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What is Rural?

What does it mean to be rural? The concept of rural found in the literature is often explained from a sociological perspective. For instance, rural can be further explained by the idea of "rurality" itself, or more a rurality alluded to as "extractive" or "northern" (Stark, Gravel, and Robinson 2014). Although varying definitions exist, rurality is generally perceived as being a socially constructed phenomenon that extends widely to agricultural or resource-dependent regions/communities (Williams and Kulig, 2012). Rurality is also commonly relational as it refers to proximity and spatial isolation from/to other places and services (Bourke et al., 2012).

Rurality is perceived as being a social constructed phenomenon.

The second concept of rural can be explained through the "identity" of a community or village (Dampier et al. 2014). However, this method is often linked to a set of myths related to living in small and isolated settlements (Peters, 2018) that often describe rural regions as "declining" regions. From this perspective, rural regions are viewed as being unable to withstand economic changes, endure declining population counts, higher poverty levels as well as a pleather of social problems including



lagging behind urban areas in education and health status (Markey, Halseth, and Manson 2008). From a narrowed health perspective, rural areas are viewed using the deficit discourse, which refers to rural health as deficient, classifies urban health as the standard and compares rural health to urban health, acquainting rural health for what it lacks compared to urban, as opposed to what it accomplishes in its own context (Bourke et al., 2010).

The myths of rural decline are fought by various communities within rural regions using means such as "resilience," "capital," or "identity" (Buikstra et al. 2010). However, communities are often seen as singularities, with shared goals, spirit, leadership, and actions (Besser 2009). As such, overlap exists in the literature between community identity and rurality in "declining" regions. Although communities are now beginning

to challenge the myth of singularity from a conceptual perspective, we believe researchers should avoid defining or describing rural regions using an urban-centric lens, referring to them as "declining" regions or view them from a deficit discourse perspective (Carson, Carson, and Lundmark 2014; Storey and Hall 2018; Markey, Halseth, and Manson 2008; Bourke et al., 2010).

Rural regions and communities have been subject to numerous independent definitions of “rural,” each with their strengths and weaknesses. Due to the absence of a standardized rural definition, a combination of both quantitative and qualitative rural definitions has formed.

In Canadian literature, quantitative definitions of rural primarily utilize secondary data sources, such as census data to define “rural.” This can allow for geographical visualization of statistical data, but potentially reinforce the notion of “decline” (O'Hagan and Cecil 2007; Smailes, Griffin, and Argent 2014). Qualitative definitions of rural have the benefit of looking for resilience and social capital in communities where present, while withdrawing from the discourse of decline perspective, linked narrowly to population growth (Stark et al. 2014). However, disadvantages exist when applying qualitative rural definitions to analyze and visualize rural data. As such, disciplines across areas of health care professionals, policymakers, and health researchers lack consensus around which definition of “rural” is used to describe rurality across Canada and in particular, Ontario (Pitblado et al., 2005). Definitions found are often used for convenience rather than validity, where the need for data to easily merge is prioritized over consistency between theory, method, and practice. We recognize these challenges and believe research should avoid defining rural areas using an urban-centric lens.

For this report, a literature search of quantitative and qualitative definitions of “rural” was conducted to identify measures of defining rural areas in Ontario, Canada that can be subsequently used for data analysis and visualization. Analyzing both quantitative and qualitative definitions of rurality ensured that both social and statistical aspects of rural definitions were evaluated before determining which rural definition(s) is/are most appropriate to utilize for our project. On the one hand, it is necessary that geographically based statistical data can be represented consistently in both table and visual format; while on the other hand there are important qualitative considerations of what constitutes a “rural region.”

Quantitative Rural Definitions

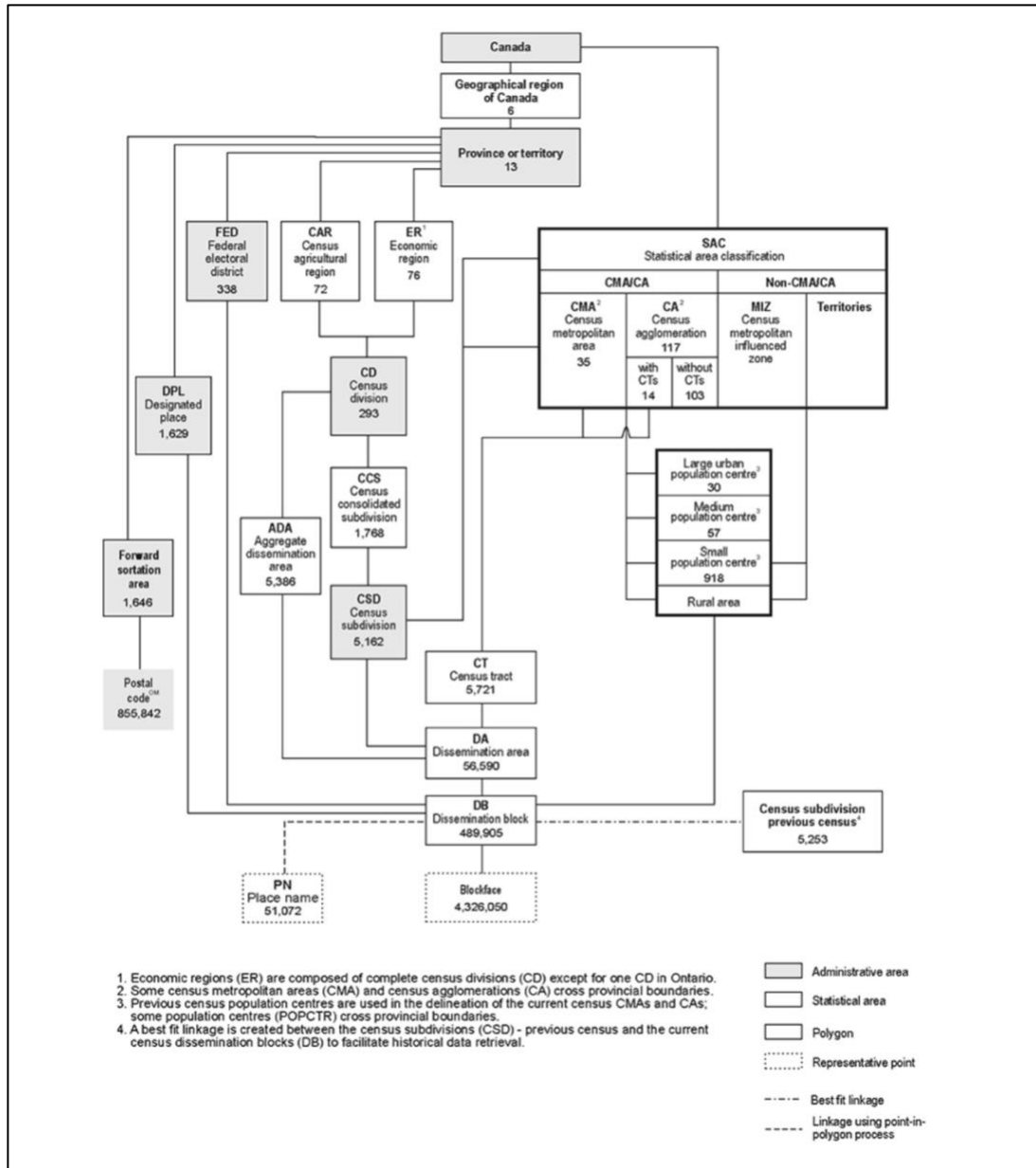
Quantitative definitions commonly define rural using statistical data varying from population demographics, community characteristics, and geographic distance to the nearest service center (Smith et al., 2013). An advantage of using quantitative rural definitions includes simply measuring and visualizing geographically based statistical data for analysis and research. In Canada, the most common concepts of urban and rural have been based off quantitative urban–rural classifications.

Statistics Canada has created six quantitative geographical definitions of rural, primarily using three definitions to describe population demographics: Rural and Small Town (RST), Census, and Beale non-metropolitan regions. Each of these definitions is based on Statistics Canada hierarchy of standard geographic units. In order to fully comprehend census data, understanding the foundation of the geography of this data is required.

The hierarchy of standard geographical units represents different levels of geography serving as either administrative areas or statistical areas. Administrative areas are legislated by federal or provincial laws, whereas statistical areas are not legislated but created by Statistics Canada to support the collection and dissemination of data. The position of each geographic area in the hierarchy indicates its relation to other areas. However, only lines joining boxes in the hierarchy indicate relationships between the geographic units. No relationship exists for geographic units, where boxes are not joined together by a line. Due to this, boundaries may overlap on a map and cannot be aggregated to form the other. Despite this fact, most geographic areas can be subdivided or aggregated to form other geographic areas. In addition, not all geographic areas cover all of Canada's territories. The relationship between each geographic area in the hierarchy can be either a top-down approach, moving from largest (very general) to smallest (very specific), or a bottom-up approach, where small areas build up to larger ones.

For example, Canada is divided into provinces and territories, which can be further divided into census divisions (regions). These census divisions are then divided into census subdivisions (municipalities), which are eventually divided into dissemination areas, then dissemination blocks. The reverse is also true. The hierarchy of standard geographical units is shown in Figure 1 below.

Figure 1. Hierarchy of standard geographic areas for dissemination, 2016 Census



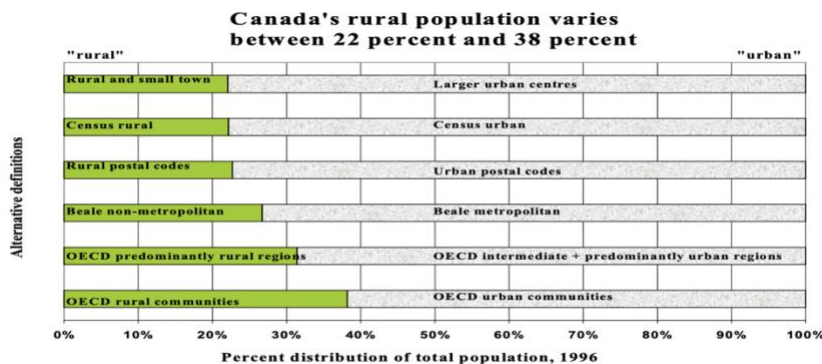
As previously mentioned, the most common concepts of urban and rural have been based off quantitative urban–rural classifications. Statistics Canada uses population centers (POPCTRs), depicted from the hierarchy of standard geographical units to characterize urban areas and all communities outside of POPCTRs as rural. Taken together, POPCTRs and rural areas cover all of Canada, therefore establishing a simple urban-rural dichotomy. From this description, Statistics Canada formed the census rural definition, referring to rural individuals as those living outside areas with a population of 1,000 or more and a population density of 400 or more inhabitants per square kilometer (population center) (Du Plessis et al., 2001). The intention behind this definition was to establish a foundation for users to better understand the dynamic of Canada’s landscape (Statistics Canada, 2017).

The second quantitative rural definition formed by Statistics Canada is the RST definition. RST areas refer to Census Subdivisions (CSDs) outside of Census Metropolitan Areas (CMAs) (urban core population of 100,000) and Census Agglomerations (CAs) (urban core population of 10,000 to 99,999), which taken together make up the larger urban center, including a population of 100,000 or more (Du Plessis et al., 2001). RST areas are further classified into Metropolitan Influenced Zones (MIZ), based on commuting patterns and the level of influence RST areas have from nearby metropolitan areas. As such, RST areas range from being strong MIZ, moderate MIZ, weak MIZ, and RSTs with no influence from metropolitan areas (Statistics Canada, 2018). Generally, all CSDs in Canada are either a component of a CMA or a CA or not a component (outside CMAs and CAs). As a result, the MIZ provides users a thorough geographic view of CSDs outside CMAs and CAs (Statistics Canada, 2018).

The third definition used by Statistics Canada to define rural areas is the Beale non-metropolitan region definition. This definition describes rural as areas outside metropolitan regions with urban centers of 50,000 people or more (Du Plessis et al., 2001). The Beale definition is also derived by first classifying census divisions and determining whether they belong to a metropolitan area and then by the population of that metropolitan area using the Canadian rural/urban hierarchy.

In each of these three definitions described by Statistics Canada, rural is commonly classified according to demographic characteristics. However, as outlined, the methods used to define rural vary slightly. Dependent on which definition of rural is used, between 22 and 38 percent of Canadians reside in rural areas, with large differences between provinces, territories, and regions (Du Plessis et al., 2001). The rural percent distribution using alternative definitions is shown in Figure 2 below.

Figure 2. Rural percent distributions based on alternative definitions



Source: Statistics Canada. Census of Population, 1996. See text for explanation of each definition of rural.

In addition to Statistics Canada, the Canadian Institute for Health Information (CIHI) and the Canadian Collaborative Mental Health Initiative defines rural using Statistics Canada’s RST definition. These rural communities are defined as areas with fewer than 10,000 people and are situated outside of commuting zones of large metropolitan areas and cities (CMHA, 2009; PHAC, 2006). By comparison, the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) use a working rural definition that excludes cities such as Hamilton, Ottawa, London, Windsor, Greater Toronto Area, Niagara Region, Waterloo Region, Thunder Bay, and Sudbury. Within these urban areas, municipalities with less than 100,000 are also considered rural (OMAFRA, 2007). This definition coincides with many of

the other works within quantitative research, where the use of demographic characteristics is used to define rural (Du Plessis et al., 2001).

A different quantitative approach that is also used to define rural is through using measures related access to health service needs. The Ontario Ministry of Health and Long-Term Care (MOHLTC) and the Ontario Medical Association (OMA) developed the Rurality Index of Ontario (RIO) as a way of determining a community's degree of rurality based on the size of the population, population density, and travel times to the nearest general and advanced health care referral centers (Kralj, 2000). With this information, RIO can identify underserved rural communities and require additional funding support for physician services (Kralj, 2000). This quantifying approach of defining rural uniquely differs from previous definitions, as it is based on access to health service needs.

Finally, a newer measure of rurality is Statistics Canada's 2016 Index of Remoteness (IOR). Researchers at Statistics Canada developed an alternative tool called the "remoteness index" to measure the relative remoteness of Canadian communities (Alasia et al., 2017). Prior to this development, the lines between urban, rural and remote areas blurred. Population centers and statistical area classifications was widely used to distinguish urban and rural communities. With this tool, clear distinctions could be made between urban, rural and remote areas, as needed to measure health care inequalities in Canada (CIHI, 2018).

The index is a continuous measure of the relative remoteness of Canadian communities (CSDs) based on their size and their proximity to service centers and population centers (Subedi, 2019). With values ranging from zero to one, zero corresponds to the minimum value of remoteness, and one represents the maximum value of remoteness (Alasia et al., 2017). Although the RI is a continuous scale, one of its advantages is that it can be easily categorized for the classification of Canadian communities by their relative remoteness (Subedi, 2019).

In this project the IOR was utilized to distinguish rural areas from urban areas within Ontario, Canada. Being that the index of remoteness is an important determinant of socio-economic and health outcomes, classifying the remoteness index into five discrete categories of remoteness geographies ensured as a useful tool to distinguish and analyze urban, rural and remote communities in Ontario, based on accessibility of services (i.e. health services).

With the IOR, our team created a combined rural definition based on an innovative rural classification system. Our approach of defining rural areas in Ontario uses the IOR score given to each CSD and codes each CSD by the IOR quintile for Ontario. Each IOR score fell under one of five categories (1) easily accessible areas (highest 20% of IOR scores by CSD); (2) accessible areas; (3) less accessible areas; (4) remote areas; and (5) very remote areas (lowest 20% of IOR scores by CSD). Each CSD with an index of remoteness score classified in the bottom three categories; (3) less accessible areas, (4) remote areas, and (5) very remote areas, were defined as rural areas. Census subdivisions with an IOR score classified under (1) easily accessible areas or (2) accessible areas were defined as urban areas.

The approach of merging our preferred use of CSDs with the IOR definition allows for a more inclusive method of defining rural, one that differed from what existed in literature. The use of a definition that favored measuring accessibility of services to distinguish rural and remote areas was an added benefit to a project focused on rural health inequality. The classification method used was also suitable for displaying data that varies linearly with no true outliers. IOR values falls under this category, providing advantages when analyzing and visualizing rural and remote areas.

Utilizing census subdivisions as our preferred geographical unit, ensured that rural boundaries correspond to municipal boundaries and areas treated as an equivalent to a municipality. Being as most local governments are also CSDs and CSD-level decisionmakers, providing rural data and defining rural at the CSD level warrants advantages for statistical purposes. In addition, local elected officials will be able to base decisions for rural communities that closely reflect on the ground boundaries at the local level as needed for its rural citizens.

Generally, quantitative indicators have the advantage of an agreed-upon metric by which they are measured (Humphreys, 1998). Measurable, numerical relationships found in quantitative rural definitions allow geographically based statistical data to be easily represented and visualized. Provided through quantitative definitions, statistical analysis contributes significantly to knowledge and research. Within our project, we have used quantitative geographical classifications to define, represent and visualize rural areas in Ontario.

Qualitative Rural Definitions

Qualitative rural definitions introduce a social approach to describe rural areas, rather than the commonly used population size, density, and distance to service centers, regularly used in quantitative definitions. Qualitative studies allow for on the ground research that challenges negative presumptions and can uncover processes and strategies that counter the deterioration of rural and remote villages (Peters, 2018). Communities are recognized as individual entities and a deeper understanding of what it means to be a rural community in a “declining” region is exhibited (Peters, 2018). Emphasis and considerable importance is also positioned on the strength and social capital regularly found in communities, limiting the discourse of decline viewpoint found in areas of research (Stark et al. 2014).

To further expand on this within rural health, rural areas are classified as having poorer health outcomes compared to urban areas (Alston et al., 2006). However, from a qualitative discourse perspective, rural health outcomes could instead be commended for nearly reaching urban outcomes despite lower patient-health professional ratios and less access to specialist care (Smith et al., 2008). Allowing rural specific comparisons to define or describe rural, will aid in uncovering what it fully means to be rural, whilst counteracting the discourse of decline. Evidence of this is not limited to rural health but can be expanded further to areas such as education, employment and tourism. Urban-based and top-down models should be considered unsuitable for rural spaces in all areas.

Cloke (2010), a writer and researcher, attempts to utilize both empirical knowledge, behaviours, and social definitions of rural by suggesting that rural involves: (1) extensive land uses, (2) small and generally low-order settlements, and (3) a way of life that recognizes "the environmental and behavioral qualities of living as part of an extensive landscape" (Markey et al., 2010). By his way of describing rural, elements outside of the common population size and density are no longer the focal point. Experiences and behaviors seen by rural community members and overall environmental characterization defines what it means to be rural.

Similarly, England and Brown qualitatively describe rural life as characterized by two contrasting landscape types—agricultural and extractive (Stark et al., 2014). In the same manner, natural resources, food production and local initiatives are valued from this qualitative description of rural and contributes to efforts made to dissemble the notion that rural communities are declining.

Markey, Halseth, and Manson (2008) also identify that rural regions encompass important characteristics such as access to resources, higher qualities of life, and unmatched natural conveniences. Failure to acknowledge these significant contributions, especially utilizing urban-based and top-down business models that are unsuitable for rural spaces, ultimately evokes greater monetary gain for services that are concentrated in urban centers and adds to the decline of rural communities (Markey et al., 2008)

Within each of these qualitative mentions of rural, important rural specific characteristics are described. Characteristics such as rural health, rural landscape, rural behaviors, employment, environment, and other rural specific characteristics (Markey et al., 2010; Stark et al., 2014). Failing to consider these elements can potentially further the notion of “decline” for rural areas. In essence, the use or consideration of qualitative rural definitions, primarily in research is important when trying to gain a full understanding of what constitutes a “rural region.”

Combining Definitions

A thorough analysis of quantitative and qualitative definitions of rural was performed to select a definition that best supports our project. The quantitative definitions not selected include the rural census definition. This definition primarily addresses localized issues, usually at the neighborhood level, as it is built off very small building blocks, i.e., enumeration areas. Similarly, the Beale "non-metropolitan" region definition uses building blocks larger than required for our analysis, i.e., census divisions (Stark et al., 2007). As the Beale definition analyzes geographical regions, it was also excluded from our analysis. Rather than focusing on regional issues, our project primarily focuses on community-level issues, best evaluated at the CSD level.

In addition, OMAFRA's rural definition was also not appropriate in the context of identifying access to health care services. OMAFRA'S rural definition uses a threshold population of 100,000, which may pose a problem when addressing health policy issues. There are significant differences in healthcare services between large rural communities close to 100,000 and those small rural communities under 10,000 (Ministry of Health and Long-Term Care, 2011).

Furthermore, although qualitative definitions of rural highlight the social aspects of rurality beyond the purely quantitative/statistical interpretations of rural, they are complex, subjective, and not easily measurable. Hence, this form of defining rural was also excluded from our analysis.

The definitions deemed most suitable for our project included Statistics Canada's RST definition and the RIO. These definitions were chosen as they build off of smaller building blocks; census subdivisions, which is particularly relevant when examining rural areas at the community level (Du Plessis et al., 2001). Community-level issues examined at the CSD level, such as access to health care services and facilities, is a primary area of focus within our research project. However, the inclusion criteria for rural areas were relatively narrow, based on each definition. Rather than excluding potential rural areas, our focus was to utilize a rural definition that widens the scope and uses a more inclusive approach. Hence the creation of a simplified version of the IOR definition, determined by classifying communities by quintiles of remoteness. Using Statistics Canada's 2016 Index of Remoteness (IOR) a rural classification system was formed.

Methods

The IOR for each CSD in Ontario was broken down to calculate the quintiles of remoteness. Three CSDs from the 575 CSDs found in Ontario did not have IOR scores and were therefore excluded from our analysis. The remoteness scores were first placed in numerical order from lowest to highest, and the sorted values were then divided into fifths.

The IOR scores of approximately 113 census subdivisions were found in each fifth. Hence, each quintile represented a classification group, and the five groups were categorized as (1) easily accessible areas; (2) accessible areas; (3) less accessible areas; (4) remote areas; and (5) very remote areas. The classification scheme used is shown in Table 4 below.

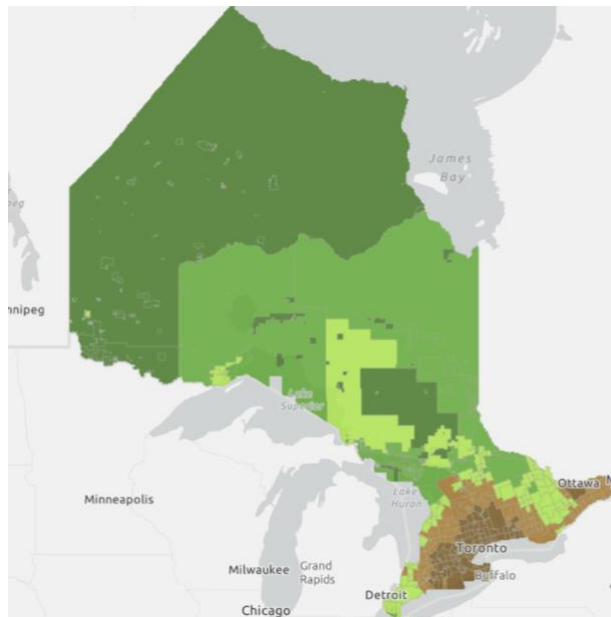
Table 4. Classification of Index of Remoteness Scores

Classification	Index of Remoteness Scores
Easily accessible area (Urban)	0.00 to < 0.1116
Accessible area (Urban)	0.1116 to < 0.182
Less accessible area (Rural)	0.182 to < 0.3252
Remote area (Rural)	0.3252 to < 0.4483
Very remote area (Rural)	>=0.4483

As outlined in Table 4, IOR scores that fall within the less accessible area, remote area, and very remote area were classified as rural. Therefore, the cut-off for rural was a score of 0.182 and higher. Areas with scores below 0.182 were classified as urban; these included easily accessible areas and accessible areas.

ArcGIS was also used as a tool to showcase the geographic distribution of CSDs by quintiles of remoteness in a map. Through this method, rural and urban areas are distinctly color coded by areas of remoteness (See Figure 3).

Figure 3. Classification of rural and urban areas based on quintiles of remoteness



The map uses the quintiles of remoteness to correspond with color coding rural and urban areas into five distinctive shades of green and brown. Green areas represent the rural areas and brown areas represent urban areas. Within rural areas light green, green and dark green colors represent “less accessible,” “remote” and “very remote” areas, respectively. Correspondingly, the dark brown and light brown colors represent the “easily accessible” and “accessible” areas respectively. Areas with black dots represent CSDs for which RI values were not available, either because they were not connected to any transportation network, or because they did not report any population in the 2016 Census of Population.

Conclusion

Our approach of using a simplified version of the IOR to characterize what it means to be rural, adopts a unique geographic element through accessibility. This measure is distinct from those adopted by other geographic classifications found within quantitative rural definitions. The remoteness index places significant importance on community-specific needs for goods, services and health care, as required for all communities in Canada. Although, the project resulted in the use of a quantitative rural definition, further research should be conducted to follow the development of rural definitions that encompass both aspects of quantitative and qualitative rural definitions. Better understandings of what it means to be rural can be gained from the strengths of quantitative geographically based statistical data and meaningful qualitative social data displayed in rural communities.

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