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Assessing Transportation Disadvantage in Rural Ontario, Canada: A Case Study of Huron County

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Abstract

In virtually all rural areas of Ontario, Canada, the limited availability of transportation alternatives means that rural residents without access to a personal vehicle are at an increased risk of transportation disadvantage. To date, little research has been conducted in Ontario as to the transportation limitations of rural residents, nor has a comprehensive study of groups at risk of transportation disadvantage been conducted. To address this gap, this research involved the development and testing of a transportation disadvantage framework, using Key Informant Interviews with service providers operating within Huron County, Ontario. Five demographic groups were found to be at risk of transportation disadvantage within Huron County: (1) older adults, (2) those with physical or mental disabilities, (3) youth, (4) people in low-income households, and (5) women. The results confirm that transportation disadvantage exists on a continuum, with some groups more disadvantaged than others, as well as some services more attainable than others. The framework was found to be a useful, and accessible, starting point for assessing groups at risk of transportation disadvantage in a rural community. The findings suggest that a coordinated transportation service, serving multiple demographic groups, may contribute to reducing transportation disadvantage while better utilizing the resources of existing service providers.

Keywords: rural transportation; car dependence; transportation disadvantage; mobility; accessibility; rural Canada

1.0 Introduction

Access to transportation is essential for almost every facet of daily life. Whether it is going to work, getting groceries and supplies, participating in community or civic functions, seeking entertainment or social inclusion, or accessing healthcare and other social services, transportation is often critical to maintaining one's quality of life. In many rural communities, however, transportation options are generally limited to personal vehicles, which raises the question of how rural residents are to get around if, for any number of reasons, personal transportation is not available or not possible. People without access to personal transportation can be described as 'transportation' disadvantaged as they lack the mobility necessary to access the activities and services essential for their quality of life.

Though rural communities are highly diverse, and their conditions may vary, by definition all rural areas share two characteristics: long distances and low population

densities (Bollman & Prud'homme, 2006). These characteristics make transportation particularly challenging for rural residents, as distances may be too long for the use of active transportation (e.g., walking or cycling), longer distances may result in higher costs for motorized transportation, and services and their users may be quite far apart. As a result, rural residents without access to personal transportation are at increased risk of transportation disadvantage.

In the Canadian province of Ontario, there are limited transportation alternatives to personal vehicles in virtually all rural areas. Nevertheless, relatively little research has been conducted on this issue in Ontario and the concept of transportation disadvantage for rural residents has rarely been applied. While most previous research has focussed on specific groups and/or specific needs, this research set out to investigate the presence of transportation disadvantage more comprehensively within various groups residing in rural areas.

Overall, the purpose of this research was to develop a theoretical framework for identifying transportation disadvantage in the context of rural Ontario, and evaluate the framework using an applied case study. The development of the framework was based on a review of the literature, where demographic groups at risk of transportation disadvantage and their accessibility needs were identified from existing studies and reports. The applicability of the framework was then assessed using semi-structured Key Informant Interviews with fourteen service providers in Huron County, Ontario.

2.0 Literature Review

Everyone needs mobility of some form in order to access their basic needs, and in a rural context, where distances are long and people and services spread out, this means that transportation is essential. In many rural areas across Ontario, reliable transportation alternatives do not exist, and therefore *transportation* access directly equates to *personal vehicle* access and/or ownership. Indeed, Gray et al. (2001) raise the important distinction between the “absolute need for a car to maintain mobility when no other option is available (for example, disabled people or rural populations), and the perception of reliance on a car, without actively considering the alternative” (Gray, Farrington, Shaw, Martin, & Roberts, 2001, p. 116). They refer to this distinction as structural dependence (absolute need) and reliance (perception of need) and indicate that most residents of rural areas can be described as being structurally dependent on a personal vehicle.

In rural areas, this structural dependence on personal vehicles often leads to increased transportation disadvantage, which has been described as “the inability to travel when and where one needs without difficulty” (Denmark, 1998, p. 234). Denmark (1998) further describes transportation disadvantage as existing “on a continuum, with some persons being more transportation disadvantaged than others” for a combination of physical, legal, economic, or social reasons (Denmark, 1998, p. 234).

Importantly, transportation disadvantage is also a function of both *accessibility* and *mobility* (Cullinane & Stokes, 1998; Kamruzzaman & Hine, 2011). Accessibility can be described as the degree to which services and activities can be reached (Gray, Shaw, & Farrington, 2006), and while this often means physically moving to reach a service, this does not always have to be the case (Cullinane & Stokes, 1998). For instance, services may be brought to residents in the form of deliveries, homecare, or online services. Nevertheless, many accessibility needs must still be accessed in-

person, requiring the corresponding concept of mobility, which can be described as the ability to physically move around and make trips or journeys (Cullinane & Stokes, 1998). On its own, mobility is not inherently important, however, when combined with accessibility it becomes more critical. Due to longer distances between clients and services in rural areas, rural residents often need to be mobile in order to access the necessities of life, and in most cases rural mobility equates with motorized transportation. As a result, those without mobility may be particularly transportation disadvantaged if they are unable to access the essentials of daily life.

2.1 Groups at Risk of Transportation Disadvantage

A review of the literature identified five key demographic groups residing in rural areas who are at increased risk of transportation disadvantage due to limitations in their mobility. The review intentionally included both academic and grey literature, due to the applied nature of this topic, and the valuable reports and articles from practitioners. The geographic scoping of the literature focussed on Canada where possible but also drew from comparable jurisdictions, such as the United States and the United Kingdom, where the topic of transportation disadvantage is particularly developed.

The review found that the first, and probably most well-recognized, group with reduced mobility is older adults. Older adults are typically classified as those aged 65 and older with particular limitations arising around the age of 80-85 years (Rosenbloom, 1999). By this age, people tend to experience a number of limitations to their mobility including physical, mental, social, legal, and economic hurdles. For example, older adults may have functional impairments (e.g., visual, cognitive) that prohibit the use of a vehicle (Owsley, 1999), a decreasing social network (Hall, Havens, & Sylvestre, 2003), be unable to afford a vehicle on a fixed income (Senate of Canada, 2008), or have lost their license due to safety concerns (Scott et al., 2009). Indeed, unlike in some provinces, Ontario has adopted age-based licensing restrictions in the form of the *Senior Driver Renewal Program* which requires that drivers 80 years of age and over undertake testing in order to renew their licence every two years (Hanson & Hildebrand, 2011a).

A second group found to be at risk of transportation disadvantage in rural areas are those with physical or mental disabilities.¹ The mobility obstacles faced by this group are somewhat similar to older adults, in that physical or mental conditions may prevent the operation of a motor vehicle, or even the use of conventional public transportation in some cases. Beyond physical capabilities, legal restrictions may also inhibit the mobility of members of this group. For instance, in Ontario licensing may be restricted as described in Regulation 340/94 (s. 14) which states that any applicant for, or a holder of, a driver's licence must not “suffer from any mental, emotional, nervous or physical disability likely to significantly interfere with his or her ability to drive a motor vehicle of the applicable class safely”.

Youth residing in rural areas are another group often at risk of transportation disadvantage due to both *de jure* and *de facto* reasons. The definition of ‘youth’ varies across the literature with different age cohorts experiencing different levels

¹ The Canadian Medical Association lists the following medical categories which may result in an inability to operate a vehicle: diseases of the nervous system, sleep disorders, metabolic diseases, cardiovascular diseases, cerebrovascular diseases, peripheral vascular diseases, limited vision or hearing, respiratory diseases, renal disease, musculoskeletal disabilities, effects of anesthesia or surgery, and other general debilities (Canadian Medical Association, 2000).

of transportation disadvantage. For instance, some authors describe independent travel as becoming important between the ages of 12-15 years, and particularly important between the ages of 16-19 years (Gilbert & O'Brien, 2005). However, others make use of the United Nations' definition of youth, which is between 15 and 24 years of age (Herold & Kaye, 2001). This distinction is important as driver licensing begins at 16 years of age in Ontario and therefore those below this age are legally prohibited from driving. Nevertheless, it is also important to consider that even once a driver's license is acquired, other obstacles may still exist for youth associated with licensing conditions (e.g., inability to drive alone) as well as vehicle access and affordability (Herold & Kaye, 2001).

Another key group at risk of transportation disadvantage in rural areas are members of low-income households. In Canada, low-income is generally determined using one of three methods: Low Income Cutoffs (LICOs), the Low Income Measures (LIMs) or the Market Basket Measure (MBM) (Giles, 2004). Each measure incorporates different indicators and utilizes a different methodology. While the LICO measurement has been most commonly used, it has also been criticised for underestimating the extent of low-income households in rural areas as it does not take transportation costs into account (Senate of Canada, 2008).

Regardless of this variation, however, access to transportation is often limited for those categorized as low-income no matter what definition is used. Indeed, this group may have difficulty affording the high costs of vehicle purchase and operation, and thus be deprived of transportation for primarily financial reasons, though additional reasons may also compound the issue (Senate of Canada, 2008). For instance, one study found that low-income households often exhibit a "range of transportation problems that reflect a lack of driving skills, inability to obtain a valid driver's license, lack of access to consumer credit, as well as the high costs of insurance, maintenance, and repairs" (Fletcher, Garasky, Jensen, & Nielsen, 2010, p. 140). Low-income households, individuals, or the rural homeless may also be reliant on local networks of family or friends that may make them unable, or unwilling, to relocate to urban areas where public transportation may be available (Cloke, Milbourne, & Widdowfield, 2003).

The final demographic group at risk of transportation disadvantage identified in the literature are women residing in rural areas. Notably, not all women in rural areas are at risk of transportation disadvantage, but considerable research has shown that women living in non-car or single-car households often are transportation disadvantaged, and in particular mothers with young children (Fuller & O'Leary, 2008; Garven & Associates, 2005; Gray et al., 2001; Maar et al., 2013; O'Leary, 2008; Senate of Canada, 2008).

The underlying cause of this transportation disadvantage among women is often due to limited vehicle access. Unlike older adults, youth, and those with disabilities, women in rural areas may be able to drive in legal and physical terms, but simply lack access to a personal vehicle in order to do so. Issues of vehicle access have been particularly observed among low-income and/or unemployed women who also reside in non-car or single-car households (Fuller & O'Leary, 2008). In addition, women's transportation disadvantage has also been associated with their standing within the household, where their transportation needs may be seen as secondary to the needs of the main wage-earner (often the man of the household), particularly when there is only one vehicle (O'Leary, 2008).

2.2 Accessibility Needs

As already noted, a lack of mobility is not an inherent problem except where it prohibits access to the essentials for quality of life. As with the preceding section on mobility limitations, a review of the academic and grey literature was also conducted in order to identify important accessibility needs for rural residents with transportation limitations. This section will present the findings of this review consolidated into four key themes.

One important accessibility need is access to social inclusion opportunities. These include social activities such as visiting friends and family, attending cultural or religious events, participating in civic functions, and participating in recreational or leisure activities, among others. The linkage between transportation access and social inclusion has been made quite frequently in the literature, particularly in the United Kingdom (Gray et al., 2006; Halden, Farrington, & Copus, 2002; Kamruzzaman & Hine, 2011; Nutley, 1996; Social Exclusion Unit [SEU], 2003). Sources from the United States and Canada have similar findings that without transportation access rural residents are particularly at risk of social exclusion as many are forced to stay home rather than participate in activities, attend events, or visit each other (Bailey, 2004; Hall et al., 2003).

Another key accessibility need for all people is to access the supplies needed for survival. For instance, the availability of groceries was presented as a particular issue by the United Kingdom's 'Social Exclusion Unit' which made the connection between the centralizing of food retailers, lack of transportation, and resulting poor access to healthy and affordable food (SEU, 2003). Similarly, the literature on rural accessibility often describes the need for people to access essential services such as social programs, pharmacies, banking facilities, post offices, and, in particular, the need to access health services. Indeed, there is substantial literature from Canada on the accessibility of health services and the obstacles faced by rural residents, particularly older adults (Hall et al., 2003; Hanson & Hildebrand, 2011b; Maar et al., 2013; Pong et al., 2011; Ryser & Halseth, 2012; Sylvestre, Christopher, & Snyder, 2006).

The third accessibility need for rural residents is that of access to training, education, and employment. The literature on the topic often identifies the need for transportation to access opportunities associated with training and education as well as the need to access employment for livelihood (Brabo, Kilde, Pesek-Herriges, Quinn, & Sanderud-Nordquist, 2003; Burkhardt, Hedrick, & McGavock, 1998). In particular, low-income individuals (Fletcher et al., 2010), women (Garven & Associates, 2005; O'Leary, 2008), and youth (Cartmel & Furlong, 2000; Herold & Kaye, 2001) residing in rural areas have been found to be at particular risk of being unable to access training, education, and employment opportunities due to transportation limitations. For instance, one study from rural Ontario found that 48 per cent of rural youth could not access employment as they lacked transportation (Herold & Kaye, 2001).

The final accessibility need worth highlighting is that of access to shelters and other social support services. The literature reiterates a common understanding that any person, at any stage in their life, may require access to shelters or social supports (Brabo et al., 2003; Cloke et al., 2003; Sylvestre et al., 2006). In particular, multiple authors in rural Canada and Ontario have raised a potential linkage between lacking access to transportation and increased risk of domestic abuse (Purdon, 2002; Senate

of Canada, 2008; Stone, 2010). This linkage is explained by the fact that without access to transportation, women and children in rural areas may be physically unable to leave abusive households and thereby remain stuck in situations of abuse.

2.3 Transportation Disadvantage Framework

This research was guided by a framework resulting from the consolidation and cross-referencing of themes arising from the literature review (see Table 1). The framework depicts the results of the literature review where direct links were identified between disadvantaged groups and accessibility needs in the various documents reviewed. Where explicit links were not made the cell is left blank.

The framework was then used to guide the interviews in order to evaluate the presence of transportation disadvantage within the case study of Huron County, Ontario, Canada. The interviews also helped to determine the accuracy of the framework as well as to reinforce, or contradict, the linkages identified through the literature review.

Table 1. *Transportation Disadvantage Framework*

	Key Accessibility Needs				
		Social Inclusion	Access to Supplies and Essential Services	Access to Training, Education, and Employment	Access to Shelters and Social Support
Transportation Disadvantaged Groups	Older Adults	✓	✓		✓
	Physical or Mental Disability	✓	✓	✓	✓
	Youth	✓		✓	✓
	Low-Income Households	✓	✓	✓	✓
	Women	✓	✓	✓	✓

3.0 Case Study

This research used a case study methodology to apply the transportation disadvantage framework in the context of Huron County, Ontario, a rural community with no major urban centre, located along the shore of Lake Huron (see Figure 1). As of 2011, Huron County had a total population of 59,100 (a decrease of 0.4 per cent from 2006), and an area coverage of 3,399.63 km² resulting in a population density of 17.4 persons per km² (Statistics Canada, 2012). According to recent data, 51 per cent of Huron County's population is female, 17 per cent is age 65 or over, and 25 per cent is under the age of 20 (Statistics Canada, 2012). In addition, approximately 6 per cent of the population is unemployed and 7 per cent

lives on low income (Statistics Canada, 2013). Much like other parts of rural Ontario, Huron County has an aging population with the proportion of those over 65 years of age projected to reach 35 per cent by 2041 (Ministry of Finance, 2015).

Huron County is an excellent case study from which to conduct rural research given its description as rural, with limited metropolitan influence, according to Canada's primary methods of rural classification (Community Information Database, 2011). The settlement pattern of Huron County is similar to other agricultural areas of Southern Ontario, where populations are not concentrated solely in settlements but are also dispersed across farms and small hamlets. Indeed, according to the Huron Transportation Task Force Report, only 35 per cent of Huron County's residents reside in towns while the majority live in villages or countryside areas (Croteau, 2008). Due to the lack of urban areas, residents of Huron County commonly travel to the larger urban centres of Stratford and London, which are approximately 20-30 minutes' drive away from the border of the County.

As is common in rural Ontario, residents of Huron County are highly reliant on personal vehicles and there are very few transportation alternatives (MMM Group, 2011). In terms of general use, intra-community transportation, the only option is private taxi companies with varying degrees of coverage and availability. Specialized transportation services do exist within the County to provide important services to specific demographic groups, such as school buses for youth to attend primary and secondary school. Specialized transportation also exists for older adults and those with disabilities, such as the *EasyRide* service, which represents a partnership of six community support agencies from Huron and Perth Counties that provide demand-responsive service for older adults and those with disabilities (OneCare, 2012). *EasyRide* provides door-to-door transportation through volunteer drivers, wheelchair accessible vehicles, as well as vans, cars and taxis which are coordinated through a central dispatcher (OneCare, 2012). The purpose of the service is to provide transportation to access appointments, shopping, errands or social activities.

3.1 Key Informant Interviews

This study utilized a qualitative research methodology to determine the presence of transportation disadvantage within Huron County. Specifically, Key Informant Interviews were conducted with service providers working with each of the demographic groups previously identified as being at risk of transportation disadvantage in the case study area. In terms of defining demographic groups, participants were asked to self-identify their client groups using their own definitions. Service providers were selected based on their firsthand knowledge of a wide breadth of service users and their particular limitations. Service users were not directly interviewed due to limited access and confidentiality concerns as clients often represented vulnerable and hard-to-reach groups.

Figure 1: Map of Huron County, Ontario, Including Road Network, Settlement Areas and Distance to Nearby Urban Centres.



Source: Corporation of the County of Huron, <http://huroncounty.ca/misc/directions.php>

In total, fourteen Key Informant Interviews were conducted over the months of April and May, 2012. A conscious attempt was made to have each demographic group equally represented by the participants, resulting in each group being described by at least two participants that worked predominantly with these clients. Interview participants were identified through consultation with municipal staff, and University of Guelph faculty with particular knowledge of the case study area. Due to the small population of Huron County, fourteen participants represented a large proportion of service providers and the sample constituted contact with all major

transportation service providers in the County. Of the fourteen participants, seven provided some form of transportation (formally or ad hoc) to their client groups. The participants were based in communities across the County, including Goderich, Clinton, Exeter, and Wingham. Due to the confidential nature of the interviews, the organizations and individuals will not be named in this research and instead a general description of each participant is provided in Table 2.

Interviews were semi-structured in nature and were recorded (with each participant's permission) and later transcribed. The participants were asked to describe their own experiences providing services to their clients, the role of transportation in accessing their services, and (where appropriate) the general mobility of their clients and their ability to reach other accessibility needs. Interviews were guided by the framework presented earlier, derived from the linkage between groups at risk and their key accessibility needs in order to evaluate the presence of transportation disadvantage within Huron County. Following the transcription of the interviews, a thematic analysis was conducted to identify themes and convergence/divergence among participants' responses. Furthermore, the responses were analysed to determine where they reinforced literature review findings, where they contradicted them, and where they presented new ideas or issues not initially identified in the literature review. Finally, due to the small number of interview participants and the importance of each participant's context, interview findings were not aggregated and instead responses are presented in the participant's own words wherever possible.

Table 2. *Participant Summaries*

	Primary Client Group(s)	Primary Service Category	Description
Participant 1	Older Adults	Access to Essential Services (primarily health)	Participant 1 provides predominantly health related services to older adults in Huron County. This organization does provide its own formalized transport for its client group.
Participant 2	Low-Income Households	Access to Supplies	Participant 2 is a food bank located in Huron County. This organization does not provide transport for its clients.
Participant 3	Low-Income Households	Access to Training, Education, and Employment	Participant 3 provides services primarily for low-income households in order to help them access training, education, and employment at multiple locations in Huron County. This organization does not provide formal transport for its clients.
Participant 4	Older Adults; Physical or Mental Disability	Various (primarily health)	Participant 4 provides transport for older adults and those with physical or mental disabilities in order to reach a range of destinations. However, the organization has an emphasis on health services.

<i>Continued</i>	Primary Client Group(s)	Primary Service Category	Description
Participant 5	Various (Focus on older adults, youth, and low-income households)	Various	Participant 5 supports the delivery of a wide range of services primarily to older adults, youth, and low-income households. This organization does not provide transport for its clients.
Participant 6	Youth	Access to Shelters and Support	Participant 6 provides support and shelter to youth, specifically in their upper teens, in Huron County. This organization provides transport as a last resort for medical appointments or other essential services on a case-by-case basis.
Participant 7	Physical or Mental Disability	Various (essential services, employment, social inclusion)	Participant 7 provides a range of support for those with developmental challenges residing in the southern half of Huron County. This organization provides formal transport for its clients to access its services as well as other needs.
Participant 8	Physical or Mental Disability	Various (essential services, employment, social inclusion, supplies)	Participant 8 provides various services for those with mental illness residing in the southern part of Huron County. This organization provides transport formally to access its own services and informally in few cases for external services.
Participant 9	Youth	Social inclusion	Participant 9 provides social inclusion opportunities particularly through the form of recreation. This organization works with youth particularly 10 years and older with clients across Huron County. This organization does not provide any transport assistance to its clients.
Participant 10	Low-Income Households	Essential Services; Access to Training, Education, and Employment	Participant 10 provides financial assistance to low-income households throughout Huron County as well as support in accessing training, education, and employment. This organization provides transport for its clients to access medical appointments and some employment, education, and training purposes.

<i>Continued</i>	Primary Client Group(s)	Primary Service Category	Description
Participant 12	Youth	Social inclusion; Skills training	Participant 12 provides social, recreational, and learning opportunities for young children (under 10) as well as skills training and other learning opportunities to their parents. This organization does not provide transport but does conduct its services throughout Huron County in an effort to bring the service closer to rural clients.
Participant 13	Women	Access to Shelters and Support	Participant 13 provides access to shelters and support services for a range of clients but with an emphasis on women. For those facing domestic abuse, Participant 13 provides transport for a range of purposes including access to shelters and counselling, among other support services.
Participant 14	Women	Access to Shelters and Support	Participant 14 provides access to shelter and support. This organization operates a women's shelter in Huron County as well as providing a crisis line; counselling; advocacy; housing search support; among other supports for women facing a crisis of any kind. This organization provides transport in order to access their own services as well as for accessing health and other essential services for their clients.

4.0 Results

Overall, this study identified that each of the five evaluated demographic groups residing in Huron County did face mobility and accessibility limitations suggesting that they were at a heightened risk for transportation disadvantage. However, this risk varied quite considerably between groups, with some groups being more disadvantaged than others, thereby reaffirming the hypothesis of a transportation disadvantage continuum presented by Denmark (1998).

4.1 Older Adults

For older adults, the study found that within Huron County it is widely accepted that this group experiences mobility limitations for a variety of reasons, including physical/mental conditions, social reasons, legal restrictions, financial barriers, and other practical reasons (e.g., snow removal). In terms of accessibility, older adults typically require particular access to social inclusion, access to supplies, and access to essential services. Within Huron County this research found that the framework was accurate. Indeed, interview participants described specific services falling into

these categories including: dining programs, grocery shopping, adult day care, exercise/wellness programs, social events, meals-on-wheels, telephone reassurance, personal support services, and particularly healthcare appointments. For example one participant provided the following quote:

Huron has so many pockets of small towns and villages. There are people who live way up in North Huron who are half an hour or more from the nearest grocery store and have always lived on the same farm and we get clients in their 80's who say 'my husband and I own this farm and we're not moving but we don't have a car'. You hear more and more of this, it's not stopping, it's not a need that's diminishing (Interview Participant #4).

This participant emphasises not only the challenges of accessing services in particularly rural portions of the County but also the personal challenges of their clients and their difficulty leaving their family home and farming identity.

Overall, it was found that older adults had some degree of access to each service category, even without access to a personal vehicle. The study found that service providers recognized the mobility limitations of older adults and delivered services accordingly. In particular, due to the underlying aging at home strategy, service providers have emphasized home-care in the delivery of many services, whether it be in the form of personal support workers going to client's homes or food delivery through the meals-on-wheels programs. While costly for providers, this does provide a means for older adults to access services without the need for mobility. However, while a specialized transportation service does exist (EasyRide) it was found that the primary obstacle to its use was financial. While subsidized, it was still found that the cost may still be out of reach for some older adults, particular to rural residents due to the per kilometre rate.

It was also found that an aging population will continue to place pressure on service providers to meet the ever increasing needs of older adults residing in the County. Participants seemed to expect that older adults could not rely on their (often dispersed) children or other family/friends to meet their needs and the responsibility for transportation would thus fall on public and non-profit entities. With already limited financial capabilities, it was felt that meeting these needs, within the capabilities of clients, would be a major challenge for service providers in the future.

4.2 Physical or Mental Disability

This study also confirmed that people with physical or mental disabilities residing in Huron County generally face mobility limitations. These individuals often lack access to their own transportation, in terms of personal vehicles, due to physical, legal, and financial reasons. Perhaps not surprisingly, those with physical or mental disabilities are often physically unable to operate a personal vehicle due to limited motor skills, cognitive abilities, or other physical characteristics. Another key mobility limitation for those with physical or mental disabilities is licensing. However, the key mobility limitation faced by those with physical or mental disabilities found throughout this research was lack of financial resources.

The Huron County case study indicated that those with physical or mental disabilities required particular access to social inclusion opportunities, supplies, essential services, as well as training, education, and employment. One participant provided the following quote summarizing their clients' challenges:

Transportation is the number one issue. It prevents them from getting jobs, getting to programs, getting to appointments. There would be a number of people out there that probably are not even hooked up to [our service] yet or another agency to help them figure it out (Interview Participant #8).

This participant emphasized not only the challenges for his/her clients, but also anticipated that there are others in the community with similar challenges and needs, who are not associated with service providers.

Similar to older adults, the interviews identified a clear emphasis on independent living amongst those with physical or mental disabilities, with the option to move into a care facility being a last resort. Service providers also acknowledged the mobility limitations of their clients and adjusted their delivery accordingly. Overall, the service providers felt that they were meeting their clients' needs to the best of their ability. Indeed, each of them offered elements of the aforementioned accessibility needs and provided ways to reach them. Some providers concentrated their services in a central location, and supported clients in reaching them by providing transportation or reimbursing volunteer drivers/taxis. In other cases, service providers provided in-home services or deliveries, with one participant stating: "The model of service is to go to where people are" (Participant # 11).

Nevertheless, there were some service gaps identified by interview participants, particularly around their geographical coverage, their differing mandates, and obstacles associated with the existing transportation services. In terms of geographical disparities, it was found that one organization covered only the southern half of the County, and the comparable organization covering the north half did not offer a comprehensive transportation service. Another gap in service availability was raised in regard to the organizations' mandates, and specifically, differing options for those with physical disabilities and those with mental disabilities. The final gap identified in the interviews relates to the existing transportation services, particularly around cost, for providers and clients, as well as availability (e.g., time of day).

4.3 Youth

Youth residing in Huron County generally face mobility limitations due to legal restrictions (licensing), limited vehicle access, and limited financial resources. Interview participants working with youth indicated that their clients generally walked to destinations if possible, relied on others to drive them, or even hitchhiked. Within the most rural parts of the County, where active transportation is not an option, parents/guardians were generally relied upon for transportation, however it was also noted that they were not always willing or available to provide transportation for every destination.

This study confirmed that youth residing in Huron County experience mobility limitations as well as restrictions in their ability to meet their accessibility needs. While there is a clear continuum of risk of transportation disadvantage within those defined as youth, those residing in rural areas will almost always be reliant on others to meet their transportation needs. In terms of accessibility, this research found that youth had adequate access to education, at least until the end of secondary school, through the school bus service. It was also found that access to shelters and other support services was available as service providers delivered this service to youth wherever they were located. Similarly, for young children and their families, social

inclusion and parenting skills training was available within smaller communities, meaning they would not have to travel to larger centres to reach this service.

Nevertheless, some key accessibility gaps were also identified: transportation to access employment, and transportation to access social inclusion and recreation opportunities, beginning particularly around the age of 10 where independence becomes important. For these accessibility needs there are no services available aside from taxis which are often very costly. Finally, it was also identified that some youth are living independently in Huron County and therefore require access to additional needs such as food or shelter as emphasized in the following quote:

There are some young people that, for a variety of reasons, are living completely independently. And those are the ones that require the most support. What happens is that they move to rural areas due to the affordability of rent. So often these are old farmhouses in the middle of nowhere and once there it really limits their ability to access any kind of resources (Interview Participant # 6).

This emphasizes a reality (often overlooked in rural areas) that some young people may be living outside their family homes. These individuals may be expected to have a different set of needs, presumably more closely associated with those on low-income than with other youth living with their parents or other adult caretaker.

4.4 Low-Income Individuals and Households

Those considered to be low-income households, or individuals, are widely recognized as having mobility limitations when residing in rural areas. While this is most often tied to the high cost of vehicle purchase and ownership, this research also found that licensing was frequently an issue for this group. For instance, interview participants noted that they often had clients who had lost their license due to driving offences, or had large fines prohibiting them from renewing their licenses. As a result, this study confirmed that those with low-income residing in Huron County are at risk of transportation disadvantage. Multiple factors were identified that may limit this group's mobility including the following list provided by a participant:

Lots and lots of our clients do not have transportation. They just don't have enough money to have a car or they've lost their license and don't have money to get it back. People have ID issues where they cannot collect back the ID they need. They don't have enough money to pay the fees required. So for whatever reason the majority of our clients do not have transportation (Interview Participant # 2).

This quote emphasizes the long-list of—often subtle—challenges faced by low-income individuals living in this rural county.

In regards to destinations, the interview process also revealed that access to social inclusion and supplies (i.e., food) may be particularly difficult for low-income individuals and households that lack their own mobility. In contrast, the study found that transportation assistance did exist within Huron County to support those with low-income in accessing essential services (i.e., healthcare), education and training, as well as *pre-employment* support. A key gap emerged, however, with regard to *post-employment* access to workplaces on a regular basis once employment is attained. As such, here we can see two connected accessibility issues: firstly, the

ability to access employment counselling, job search tools, interviews and other activities in the pre-employment stage, and secondly, the ability to access a workplace on a regular basis to attend employment in the post-employment stage.

4.5 Women

Women may have mobility limitations for any number of reasons and, for the most part, can be expected to have the same mobility opportunities and limitations as men. Nevertheless, when compared with men, women do face different social or cultural obstacles which may reduce their mobility, particularly related to vehicle access. Women, of course, require access to a range of services and activities with few differences from the needs of men. Therefore, this section of the research concentrated on a key accessibility need that does—generally—differ from men: access to domestic abuse shelters and related social support services.

In regards to domestic violence this research found two key mobility limitations which exist for women in abusive households: finances and control. This research found agreement between participants that most of their clients in Huron County who were victims of domestic violence were also individuals with low-income. Transportation access can be a particular issue for women in abusive, low-income households, as they may live in a one-car or no-car household, making it very difficult to escape an abusive situation using their own transportation. Observations from participants suggested that even when women were living in a household with a vehicle, they may not have ready access to it as their access may be considered secondary to the male in the household.

Another key consideration for women in abusive households is in relation to *control* of transportation as expressed in the following quote:

The central thing about abuse is control and so partners who are controlling always control access to vehicles and transportation. So that would be one of the highest reasons that women would not have access to a vehicle, or have access but not be able to use it because they couldn't explain, or it would be dangerous to say 'I went to Wingham to meet with a councillor' (Interview Participant # 14).

Control is thus an issue that is rarely considered in regards to transportation as it is less tangible; however the reality for a woman in an abusive household may very well be that there are one, or even two, vehicles 'available' however she may not have the ability to use them due to limited control.

In general, within Huron County service providers working with victims of domestic abuse recognize the mobility limitations of their clients. These participants provide a telephone hotline and organize third party meeting places nearby client's homes in order to minimize travel, and also provide volunteer drivers or pay for taxis when access to a shelter is required. Nevertheless, one gap revealed in this research was that of geography, where the north of the County was reported by interview participants to have less access to support services than the south.

A summary of the key limitations for each demographic group in Huron County is provided in Figure 2 below.

Figure 2: Summary of Key Limitations.

Older Adults	Existing transportation services may not be affordable Increasing demand from an aging population Homebound older adults who do not seek help due to feelings of pride and independence
Physical or Mental Disabilities	Limited access to supplies (i.e., food) High cost of existing transportation services Geographical variance in access (south of county appears to be better served than north) Those with physical disabilities appeared to have better access to transportation than those with mental disabilities (specific mention of access to social inclusion and training, education, and employment) due to organizational mandates Those with disabilities that do not seek help due to stigma (specific mention of mental illness)
Youth	Limited access to social inclusion opportunities such as sports, social gatherings, clubs, etc. Limited access to employment Limited access to basic needs for youth living independently
Low-Income Households	Limited access to social inclusion opportunities Limited access to supplies (particularly affordable groceries and food banks) Lack of reliable and affordable access to workplaces once employed
Women	Limited access to education and employment to pre-empt domestic violence Secondary access or lack of control over existing vehicles Geographical variation in access (observation of less access to shelters/support in north of county) Overall, access to shelter and support seems to be available for women in Huron County

5. Discussion

The term *transportation disadvantage*, as used in this research, is defined as “the inability to travel when and where one needs without difficulty. Transportation disadvantage, as a concept, exists on a continuum, with some more transportation disadvantaged than others” (Denmark, 1998, p. 234). This study found that transportation disadvantage did indeed exist on a continuum within Huron County, with certain groups more able to access transportation support or alternatives than others. However, this research also identified that transportation disadvantage existed on a continuum not only *between* groups but *within* groups depending on the accessibility need/service to be reached. For instance, youth are provided with transportation in order to access education until the end of secondary school; however transportation is not available for social inclusion or employment purposes. Therefore, youth wishing to access primary or secondary education are not considered to be at risk of transportation disadvantage, whereas those wishing to access other accessibility needs would be considered so.

Moreover, it was found that transportation disadvantage in Huron County was compounded among those belonging to multiple vulnerable groups, representing a form of intersectionality. For instance, low-income youth or older women generally faced additional transportation limitations, which clearly arose during the research however was not explicitly accounted for in the initial framework. In fact, only the older adult and youth groupings were mutually exclusive with the remainder being available in any combination. It is thus expected that each additional vulnerability an individual faces would compound limitations in their mobility and ability to reach their accessibility needs.

In addition to identifying the diverse groups at risk of transportation disadvantage and their destinations, another important finding that emerged from this research was that a range of organizations were already involved in transporting their clients, either on a formal or ad hoc basis. In multiple cases, this study found that existing organizations were already spending considerable human and financial resources on providing (or avoiding the need for) transportation, often uncoordinated with other similar providers who served different clients. This suggests that a solution to transportation disadvantage in Huron County is not necessarily an entirely new service with new resources, but rather better coordination between organizations with different clients but similar destinations/routes. This is particularly true in that each organization highlighted their limited capacity and financial resources, and often felt they could not justify creating a service within their means and the pool of clients they served. Coordinated transportation provides an opportunity to not only pool resources, but also clients, in order to offer a more efficient service to a wider population. This opportunity was described by one participant who stated “If you could take all of the agencies and all those pots of money and pool them together, what could you do with that?” (P10). Nevertheless, there may also be challenges in overcoming disputes over territory, mandates, and funding obligations, which lends credence to the important role of the local and provincial governments in coordinating and facilitating such a project.

The opportunity to coordinate existing services rather than creating new services, has been increasingly recognized in Ontario since this research was completed. For instance, the Rural Ontario Institute and the Ontario Healthy Communities Coalition have recently co-led a project entitled *Accelerating Rural Transportation Solutions* which published a practical report on coordinated transportation in August 2014 (Dillon Consulting, 2014). This coincided with the launch of the Community Transportation Pilot Grant Program, from the Ontario Ministry of Transportation, intending to support the better utilization of existing transportation resources (e.g., vehicles, staff, drivers) (Ministry of Transportation, 2015). Based on the findings of this research, this would appear to be an appropriate starting point in order to meet the needs of a range of demographic groups and increasing accessibility needs in rural communities.

Overall, it is clear that a range of groups residing in Huron County require mobility assistance in order to access the services they require to maintain quality of life. Taken individually, these groups may not be large enough to justify a transportation service, however when pooled together, the similarities in limitations and destinations suggests that a multi-client, or general-use, service should be explored. Similarly, the existing specialized services and resources spent on providing/avoiding client travel could potentially be coordinated in order to provide a more efficient service that better meets the needs of a range of disadvantaged

groups residing in Huron County. A general-use service may also capture residents with mobility limitations who are unconnected, or currently outside the mandate of service providers.

While the role of the provincial government in rural public transportation remains unclear in Ontario, this study has confirmed that considerable financial resources are already being spent by service providers, who are themselves often directly or indirectly funded through provincial transfers. This suggests that the province also has a financial interest in more efficient delivery of transportation in Huron County and across rural Ontario.

6. Conclusions

This research has made several contributions to the field of rural transportation. First, it has created and tested a framework intended to help identify the presence of transportation disadvantage in a rural case study. Based on the similar characteristics that Huron County has with other rural communities in Ontario, described in Section 3, we may expect that these findings would be similar if conducted elsewhere in the province (particularly in southwest and eastern Ontario). Finally, this study has built upon previous research and definitions of transportation disadvantage in order to provide an expanded understanding of the barriers to access for a wide range of demographic groups.

The framework and research methods used throughout the completion of this study were found to be valid and warrant confidence. Overall, the methodology provided a comprehensive look at the barriers faced by a wide range of demographic groups at risk of transportation disadvantage, and the use of Key Informant Interviews conducted with service providers provided valuable information which could be cross referenced with other participants for confirmation. The framework was found to be a strong starting point for question development and analysis, as it allows for diagnosis of a wide range of accessibility issues along with a comprehensive look at groups at risk—a different approach from most previous research which has often focused on a single group or accessibility need. Due to the limited need for data, the framework can be easily used and replicated by rural municipalities or interest groups. Overall, the framework was found to be useful as a diagnostic instrument from which further elaboration could be done to design responses to the issues identified.

In recent years, we have seen new actors enter the sphere of rural transportation in Ontario with promising results. In some parts of the province, Local Health Integration Networks (LHINs) have recognized transportation as part of their mandate and taken a lead in establishing services, such as *CareLink* in the Erie St. Clair LHIN. Elsewhere, municipal governments have led the creation of transportation services, such as *Ride Norfolk* in Norfolk County, Ontario. These recent examples provide useful lessons, however the persistent challenges of financial limitations and narrow mandates will need to be overcome in order to establish coordinated services that are sustainable and appropriate for rural communities, while also being available, accessible, and appropriate for all rural residents in need.

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