FY 2025 Houston EMA/HSDA Ryan White Part A Service Definition **Medical Transportation (Van Based)** (Revision Date: 05/10/2023)	
HRSA Service Category Title: **RWGA Only**	**Medical Transportation**
Local Service Category Title:	**a. Transportation targeted to Urban** **b. Transportation targeted to Rural**
Budget Type: **RWGA Only**	**Hybrid Fee for Service**
Budget Requirements or Restrictions: **RWGA Only**	• Units assigned to Urban Transportation must only be used to transport clients whose residence is in Harris County. • Units assigned to Rural Transportation may only be used to transport clients who reside in Houston EMA/HSDA counties other than Harris County. • Mileage reimbursed for transportation is based on the documented distance in miles from a client's Trip Origin to Trip Destination **as documented by a standard Internet-based mapping program (i.e. Google Maps, Map Quest, Yahoo Maps) approved by RWGA.** Agency must print out and file in the client record a trip plan from the appropriate Internet-based mapping program that clearly delineates the mileage between Point of Origin and Destination (and reverse for round trips). This requirement is subject to audit by the County. • Transportation to employment, employment training, school, or other activities not directly related to a client's treatment of HIV is not allowable. Clients may not be transported to entertainment or social events under this contract. • Taxi vouchers must be made available for documented emergency purposes and to transport a client to a disability hearing, emergency shelter or for a documented medical emergency. • Subrecipient must reserve 7% of the total budget for Taxi Vouchers. • Maximum monthly utilization of taxi vouchers cannot exceed 14% of the total amount of funding reserved for Taxi Vouchers. • Emergencies warranting the use of Taxi Vouchers include: van service is unavailable due to breakdown, scheduling conflicts or inclement weather or other unanticipated event. A spreadsheet listing client's 11-digit code, age, date of service, number of trips, and reason for emergency should be kept on-site and available for review during Site Visits. • **Subrecipient must provide RWGA a copy of the agreement between Subrecipient and a licensed taxi vendor by March 31, 2023.** • All taxi voucher receipts must have the taxi company's name,

	the driver's name and/or identification number, number of miles driven, destination (to and from), and exact cost of trip. The Subrecipient will add the client's 11-digit code to the receipt and include all receipts with the monthly Contractor Expense Report (CER). • A copy of the taxi company's statement (on company letterhead) must be included with the monthly CER. Supporting documentation of disbursement payments may be requested with the CER.
HRSA Service Category Definition: **RWGA Only**	**Medical transportation services** include conveyance services provided, directly or through voucher, to a client so that he or she may access health care services.
Local Service Category Definition:	a. Urban Transportation: Subrecipient will develop and implement a medical transportation program that provides essential transportation services to **HRSA-defined Core Services** through the use of individual employee or contract drivers with vehicles/vans and rideshare services to Ryan White Program-eligible individuals residing in Harris County. Clients residing outside of Harris County are ineligible for Urban transportation services. Exceptions to this requirement require prior written approval from RWGA. b. Rural Transportation: Subrecipient will develop and implement a medical transportation program that provides essential transportation services to **HRSA-defined Core Services** through the use of individual employee or contract drivers with vehicles/vans to Ryan White Program-eligible individuals residing in Houston EMA/HSDA counties other than Harris County. Clients residing in Harris County are ineligible for this transportation program. Exceptions to this requirement require prior written approval from RWGA. Essential transportation is defined as transportation to public and private outpatient medical care and physician services, substance abuse and mental health services, pharmacies and other services where eligible clients receive Ryan White-defined Core Services and/or medical and health-related care services, including clinical trials, essential to their well-being. The Subrecipient shall ensure that the transportation program provides taxi vouchers to eligible clients only in the following cases: • To access emergency shelter vouchers or to attend social security disability hearings; • Van service is unavailable due to breakdown or inclement weather; • Client's medical need requires immediate transport; • Scheduling Conflicts. **Subrecipient must provide clear and specific justification (reason) for the use of taxi vouchers and include the documentation in the client's file for each incident. RWGA must approve supporting**

	documentation for taxi voucher reimbursements. For clients living in the METRO service area, written certification from the client's principal medical provider (e.g. medical case manager or physician) is required to access van-based transportation, to be renewed every 180 days. **Medical Certifications should be maintained on-site by the provider in a single file (listed alphabetically by 11-digit code) and will be monitored at least annually during a Site Visit.** It is the Subrecipient's responsibility to determine whether a client resides within the METRO service area. Clients who live outside the METRO service area but within Harris County (e.g. Baytown) are not required to provide a written medical certification to access van-based transportation. All clients living in the Metro service area may receive a maximum of 4 non-certified round trips per year (including taxi vouchers). Non-certified trips will be reviewed during the annual Site Visit. Provider must maintain an up-to-date spreadsheet documenting such trips. The Subrecipient must implement the general transportation program in accordance with the Transportation Standards of Care that include entering all transportation services into the Centralized Patient Care Data Management System (CPCDMS) and providing eligible children with transportation services to Core Services appointments. Only actual mileage (documented per the selected Internet mapping program) transporting eligible clients from Origin to Destination will be reimbursed under this contract. The Subrecipient must make reasonable effort to ensure that routes are designed in the most efficient manner possible to minimize actual client time in vehicles.
Target Population (age, gender, geographic, race, ethnicity, etc.):	a. Urban Transportation: Persons living with HIV and Ryan White Part A/B eligible affected individuals residing in Harris County. b. Rural Transportation: Persons living with HIV and Ryan White Part A/B eligible affected individuals residing in Fort Bend, Waller, Walker, Montgomery, Austin, Colorado, Liberty, Chambers and Wharton Counties.
Services to be Provided:	To provide Medical Transportation services to access Ryan White Program defined **Core Services** for eligible individuals. Transportation will include round trips to single destinations and round trips to multiple destinations. Taxi vouchers will be provided to eligible clients only for identified emergency situations. Caregiver must be allowed to accompany the person with HIV. **Eligibility for Transportation Services is determined by the client's County of residence as documented in the CPCDMS**.
Service Unit Definition(s): **RWGA Only**	One (1) unit of service = one (1) mile driven with an eligible client as passenger. Client cancellations and/or no-shows are <u>not</u> reimbursable.
Financial Eligibility:	Refer to the RWPC's approved current year *Financial Eligibility for Houston EMA Services*.
Client Eligibility:	a. Urban Transportation: Only individuals living with HIV and Ryan

	White Program eligible affected individuals residing inside Harris County will be eligible for services. b. Rural Transportation: Only persons living with HIV and Ryan White Program eligible affected individuals residing in Houston EMA/HSDA Counties other than Harris County are eligible for Rural Transportation services. Documentation of the client's eligibility in accordance with approved Transportation Standards of Care must be obtained by the Subrecipient prior to providing services. The Subrecipient must ensure that eligible clients have a signed consent for transportation services, client rights and responsibilities prior to the commencement of services. Affected significant others may accompany a person living with HIV as medically necessary (minor children may accompany their caregiver as necessary). Ryan White Part A/B eligible affected individuals may utilize the services under this contract for travel to Core Services when the aforementioned criteria are met and the use of the service is directly related to a person living with HIV. An example of an eligible transportation encounter by an affected individual is transportation to a Professional Counseling appointment.
Agency Requirements	Subrecipient must be a Certified Medicaid Transportation Provider. Subrecipient must furnish such documentation to Harris County upon request from Ryan White Grant Administration prior to March 1st annually. Subrecipient must maintain such certification throughout the term of the contract. Failure to maintain certification as a Medicaid Transportation provider may result in termination of contract. Subrecipient must provide each client with a written explanation of Subrecipient's scheduling procedures upon initiation of their first transportation service, and annually thereafter. Subrecipient must provide RWGA with a copy of their scheduling procedures by March 31, 2023, and thereafter within 5 business days of any revisions. **Subrecipient must also have the following equipment dedicated to the general transportation program:** • A separate phone line from their main number so that clients can access transportation services during the hours of 7:00 a.m. to 10:00 p.m. directly at no cost to the clients. **The telephone line must be managed by a live person between the hours of 8:00 a.m. – 5:00 p.m.** Telephone calls to an answering machine utilized after 5:00 p.m. must be returned by 9:00 a.m. the following business day. • A fax machine with a dedicated line. • All equipment identified in the Transportation Standards of Care necessary to transport children in vehicles. • Subrecipient must assure clients eligible for Medicaid transportation are billed to Medicaid. This is subject to audit by the County. The Subrecipient is responsible for maintaining documentation to evidence that drivers providing services have a valid Texas Driver's

	License and have completed a State approved "Safe Driving" course. Subrecipient must maintain documentation of the automobile liability insurance of each vehicle utilized by the program as required by state law. All vehicles must have a current Texas State Inspection. The minimum acceptable limit of automobile liability insurance is $300,000.00 combined single limit. Agency must maintain detailed records of mileage driven and names of individuals provided with transportation, as well as origin and destination of trips. ***It is the Subrecipient's responsibility to verify the County in which clients reside in.***
Staff Requirements	A picture identification of each driver must be posted in the vehicle utilized to transport clients. Criminal background checks must be performed on all direct service transportation personnel prior to transporting any clients. Drivers must have annual proof of a safe driving record, which shall include history of tickets, DWI/DUI, or other traffic violations. Conviction on more than three (3) moving violations within the past year will disqualify the driver. Conviction of one (1) DWI/DUI within the past three (3) years will disqualify the driver.
Special Requirements: **RWGA Only**	Individuals who qualify for transportation services through Medicaid are not eligible for these transportation services. **Subrecipient must ensure the following criteria are met for all clients transported by Subrecipient's transportation program:** Transportation Provider must ensure that clients use transportation services for an appropriate purpose through one of the following three methods: 1. Follow-up hard copy verification between transportation provider and Destination Agency (DA) program confirming use of eligible service(s), or 2. Client provides receipt documenting use of eligible services at Destination Agency on the date of transportation, or 3. Scheduling of transportation services was made by receiving agency's case manager or transportation coordinator. The verification/receipt form must at a minimum include all elements listed below: • Be on Destination Agency letterhead • Date/Time • CPCDMS client code • Name and signature of Destination Agency staff member who attended to client (e.g. case manager, clinician, physician, nurse) • Destination Agency date stamp to ensure DA issued form.

FY 2026 RWPC "How to Best Meet the Need" Decision Process

Step in Process: **Council**		Date: **06/12/2025**
Recommendations:	Approved: Y:_____ No: _____ Approved With Changes:_____	If approved with changes list changes below:
1.		
2.		
3.		

Step in Process: **Steering Committee**		Date: **06/05/2025**
Recommendations:	Approved: Y:_____ No: _____ Approved With Changes:_____	If approved with changes list changes below:
1.		
2.		
3.		

Step in Process: **Quality Improvement Committee**		Date: **05/13/2025**
Recommendations:	Approved: Y:_____ No: _____ Approved With Changes:_____	If approved with changes list changes below:
1.		
2.		
3.		

Step in Process: **HTBMTN Workgroup #3**	Date: **04/16/2025**
Recommendations:	Financial Eligibility:
1.	
2.	
3.	

Barbie Robinson, MPP, JD, CHC
Executive Director
2223 West Loop South | Houston, Texas 77027
Tel: (832) 927-7500 | Fax: (832) 927-0237

Harris County Public Health
Building a Healthy Community

Michael Ha, MBA
Director, Disease Control & Clinical Prevention Division
2223 West Loop South | Houston, Texas 77027
Tel: (713) 439-6000 | Fax: (713) 439-6199

FY 2020 PERFORMANCE MEASURES HIGHLIGHTS

RYAN WHITE GRANT ADMINISTRATION

HARRIS COUNTY PUBLIC HEALTH (HCPH)

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Highlights from FY 2020 Performance Measures

Measures in this report are based on the *2021-2022 Houston Ryan White Quality Management Plan*, *Appendix B. HIV Performance Measures*. The document can be referenced here: https://publichealth.harriscountytx.gov/Services-Programs/Programs/RyanWhite/Quality

Transportation

- Van-Based Transportation:
  - During FY 2020, 863 (67%) clients accessed primary care after utilizing van transportation services.
  - Among van-based transportation clients, 57% clients accessed LPAP services at least once during this time period after utilizing van transportation services.

- Bus Pass Transportation:
  - During FY 2020, 473 (37%) clients accessed primary care after utilizing bus pass services.
  - Among bus pass clients, 22% of clients accessed LPAP services at least once during this time period after utilizing bus pass services.
  - Among bus pass clients, 92% clients accessed any RW or State service after accessing bus pass services.

Ryan White Part A
HIV Performance Measures
FY 2020 Report

Transportation
All Providers

Van-Based Transportation	**FY 2019**	**FY 2020**	**Change**
A minimum of 70% of clients will utilize Parts A/B/C/D primary care services after accessing Van Transportation services	550 (68.6%)	863 (67.0%)	**-1.6%**
55% of clients will utilize Parts A/B LPAP services after accessing Van Transportation services	455 (56.7%)	734 (57.0%)	**0.3%**

Bus Pass Transportation	**FY 2019**	**FY 2020**	**Change**
A minimum of 50% of clients will utilize Parts A/B/C/D primary care services after accessing Bus Pass services	908 (36.6%)	473 (37.7%)	**1.1%**
A minimum of 20% of clients will utilize Parts A/B LPAP services after accessing Bus Pass services	534 (21.5%)	279 (22.2%)	**0.7%**
A minimum of 85% of clients will utilize any RW Part A/B/C/D or State Services service after accessing Bus Pass services	1,941 (78.2%)	1,159 (92.4%)	**14.2%**

Industry-Informed Perspectives on the Benefits of Rideshare-Based Medical Transportation

Megan Callahan, MPH; Nicole Cooper, DrPH, MPH; Jennifer Sisto Gall, MPH; and Justin Yoo, BA

The recent article "Rideshare Transportation to Health Care: Evidence From a Medicaid Implementation" examined the association between utilization of rideshare-based nonemergency medical transportation (R-NEMT) among Medicaid beneficiaries and self-reported metrics of ride quality and late or failed passenger pickups.[1] The authors reported findings that higher values of rideshare trips as a proportion of total trips were not associated with perceptions of ride quality but were associated with reports of more frequent late and failed pickups.

The finding suggesting a negative relationship between R-NEMT utilization and health care access is not reflective of Lyft's experience providing Medicaid beneficiaries with access to transportation over the past 5 years. Indeed, around the country we have consistently observed meaningful positive outcomes as a result of R-NEMT. Previous studies have found that R-NEMT utilization is associated with fewer missed primary care appointments, shorter average wait times, and a higher rate of on-time pickup compared with other modes of NEMT.[2,3]

Lyft appreciates the authors' addition to the emerging literature on R-NEMT. However, the study by Eisenberg et al suffers from a number of limitations that raise concerns about both external and internal validity.

Critically, large national rideshare companies were not included in the study design, heavily limiting the generalizability of the study findings. Based on internal and market-level data, Lyft maintains that neither Lyft nor any other major or national ridesharing company was operating in the study setting during the study period. Lyft and similar companies are large national providers of NEMT services in Medicaid, and their omission causes any generalization of study findings to rideshare as a class to be inappropriate and misleading.

Further, the rideshare entity involved in this study is a particularly poor proxy for national rideshare companies like Lyft. Although the authors do not name the state that was the object of study, the only Northwestern state employing a statewide broker model between 2016 and 2018 was the state of Idaho. During this time Idaho was under contract with a broker employing a *rideshare-like model*, which operates differently from national rideshare companies. Lyft has a nationwide rideshare presence and an existing network of drivers that can launch seamlessly in new NEMT markets. However, in Idaho, the broker was a new entrant to the local market, and a new supply of drivers had to be recruited to meet existing demand. This de novo ramp-up period, which would not be required by a scaled, national rideshare company like Lyft, could have contributed to the access issues reported in the study.

In addition to the issue of low generalizability, the study has key methodological limitations that raise concerns about internal validity. One major limitation is the lack of trip-level outcome data. In this study, the authors examine not the association between an R-NEMT trip and outcomes, but rather the association between the proportion of R-NEMT trips and outcomes, with both defined at the level of a Medicaid beneficiary. This design that aggregates data to the individual level puts the study at risk of ecological fallacy. In other words, there is no way to know if a given outcome came from an R-NEMT trip or from a trip that involved another mode of NEMT. This is of particular concern for the failed pickups outcome, where even 1 failure may be enough for an individual to agree with the statement, "The driver often failed to pick me up for a medical appointment." By aggregating data to the individual level, the study obscures the true relationship between R-NEMT utilization and outcomes and could even mask a trip-level association that is in the opposite direction of the individual-level association.

Additional issues further complicate the interpretability of the findings. The study contrasts use of R-NEMT with use of nonrideshare NEMT, but users of these 2 modes may not be comparable. For instance, nonrideshare NEMT includes transportation provided by a variety of vehicle types, such as ambulatory vehicles and wheelchair-accessible vehicles (WAVs). The assignment of a beneficiary to a WAV is unlikely to be random and is likely informed by varying rider needs. Although the authors attempted to adjust for these potential differences, sample sizes for some covariates were too small for substantive subanalyses.

The defined levels within the variables of interest also pose problems. For the independent variable, the levels are defined as no R-NEMT trips, some R-NEMT trips (< 50%), and many R-NEMT trips (≥ 50%). However, this scheme would group together someone

who received 1 of 2 rides using R-NEMT with someone who received 299 of 300 rides using R-NEMT, although these scenarios reflect 2 very different realities. Although the authors attempt to adjust for the number of total trips, this variable cannot be treated as a confounder, and including it in the model specification does not address fundamental issues with study design.

In summary, significant methodological limitations and the very model of transportation studied raise concerns about the internal and external validity of study findings. Findings from research performed by academics and Lyft's health care partners suggest that rideshare can have a major positive impact on health care access and utilization. More high-quality research is needed to assess the impacts of R-NEMT on health care access for Medicaid beneficiaries, particularly given recent increases in R-NEMT utilization, as well as technological and operational improvements in the sector. ■

Author Affiliations: Lyft, Inc (MC, NC, JSG, JY), San Francisco, CA.
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Author Disclosures: Ms Callahan, Dr Cooper, and Ms Sisto Gall are employees of Lyft, a transportation network company whose perspectives are represented in this manuscript, and are shareholders of Lyft stock. Mr Yoo is a contracted employee of Lyft.

Authorship Information: Concept and design (MC, NC, JSG); drafting of the manuscript (MC, NC, JSG, JY); critical revision of the manuscript for important intellectual content (MC, NC, JSG, JY); administrative, technical, or logistic support (JY); and supervision (MC, NC, JSG).

Address Correspondence to: Nicole Cooper, DrPH, MPH, Lyft, Inc, 185 Berry St #5000, San Francisco, CA 94107. Email: ncooper@lyft.com.

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Reply to "Industry-Informed Perspectives on the Benefits of Rideshare-Based Medical Transportation"

Yochai Eisenberg, PhD; Randall Owen, PhD; and Caitlin Crabb, PhD

We appreciate the opportunity to address Lyft's concerns with our study on rideshare-based nonemergency medical transportation (R-NEMT). Our study found that a higher proportion of rideshare trips was not associated with ride quality but was associated with reporting late and failed pickups—potentially affecting health care access.[1] Lyft's letter criticizes our methodology and internal/external validity, which we will address here. It is important to note that although we studied a program with similarities to Lyft, Lyft was not involved. Overall, readers should recognize that our study was conducted within the scope of evaluation research using the best data and measures available, while noting its limitations. Moreover, our article appears to have achieved one of its primary goals: to contribute to a dearth of published literature on R-NEMT and promote discussion on the topic.

Lyft indicates that its experience and previous studies have found a positive relationship with R-NEMT and health care access. Indeed, our article highlights extant findings but also cites the mixed results in peer-reviewed literature and a limited number of studies reporting outcomes. One study cited by Lyft found fewer missed primary care appointments among R-NEMT compared with usual care.[2] However, when scaled up to a larger study, R-NEMT was not associated with fewer missed appointments.[3] The other source cited in Lyft's letter was a short blog post, which lacks crucial information, including methods and measures, to assess the validity of the findings.[4]

Lyft's letter implies that our findings lack external validity because the program was not administered by a large national rideshare company and is therefore not representative. An alternative view is that these evaluation findings add a valuable perspective: Not all R-NEMT is provided by large

national companies, so we should not dismiss research on R-NEMT implementation within smaller rideshare companies.

Another concern was the absence of trip-level outcome data, a valuable component of specific trip analysis; however, data required for such an analysis were unavailable. Rather, we focused on perceptions of ride quality and access as part of a statewide NEMT evaluation. Our study employed a survey using common measures of perceptions in transportation and health care literature.[5] Importantly, we described in our paper[1] how such perceptions may be associated with an individual's willingness to use NEMT. We argue that it is not only the individual-trip experiences that affect perceptions but also the cumulative experiences of the NEMT service. This is not a case of ecological fallacy but a difference in research aims.

Lyft's letter suggests that it was inappropriate to compare consumers who use R-NEMT and traditional NEMT because some may have different needs. Yet, our study accounts for many of those needs by including factors such as age, mobility, and developmental disabilities. We also note that 29% of the people who use manual wheelchairs or powerchairs did have at least 1 rideshare trip, suggesting that excluding them from the analysis (as indicated by Lyft) is not appropriate. Additionally, Lyft suggests that the R-NEMT categories we used in our analysis were too coarse and that our attempt to control for potential confounding using "total trips" was insufficient. We disagree: "Total trips" is a valuable confounder that controls for frequency of rides. Additionally, we ran models (not shown here) with a continuous variable instead of the R-NEMT categories and found similar results.

High-quality R-NEMT research is needed. We call on rideshare companies and state Medicaid agencies contracting with them to facilitate experimentation through independent research evaluations. Specifically, there is a need for longitudinal research that employs randomized controlled trial or quasi-experimental design. Nonetheless, there is value in nonexperimental cross-sectional designs, especially to inform this burgeoning area of R-NEMT evaluation. ■

Author Affiliations: Department of Disability and Human Development, University of Illinois at Chicago (YE, CC), Chicago, IL; College of Education and Human Development, University of Nevada (RO), Reno, NV.

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Address Correspondence to: Yochai Eisenberg, PhD, Department of Disability and Human Development, University of Illinois at Chicago, 1640 W Roosevelt Rd, MC 626, Chicago, IL 60608. Email: yeisen2@uic.edu.

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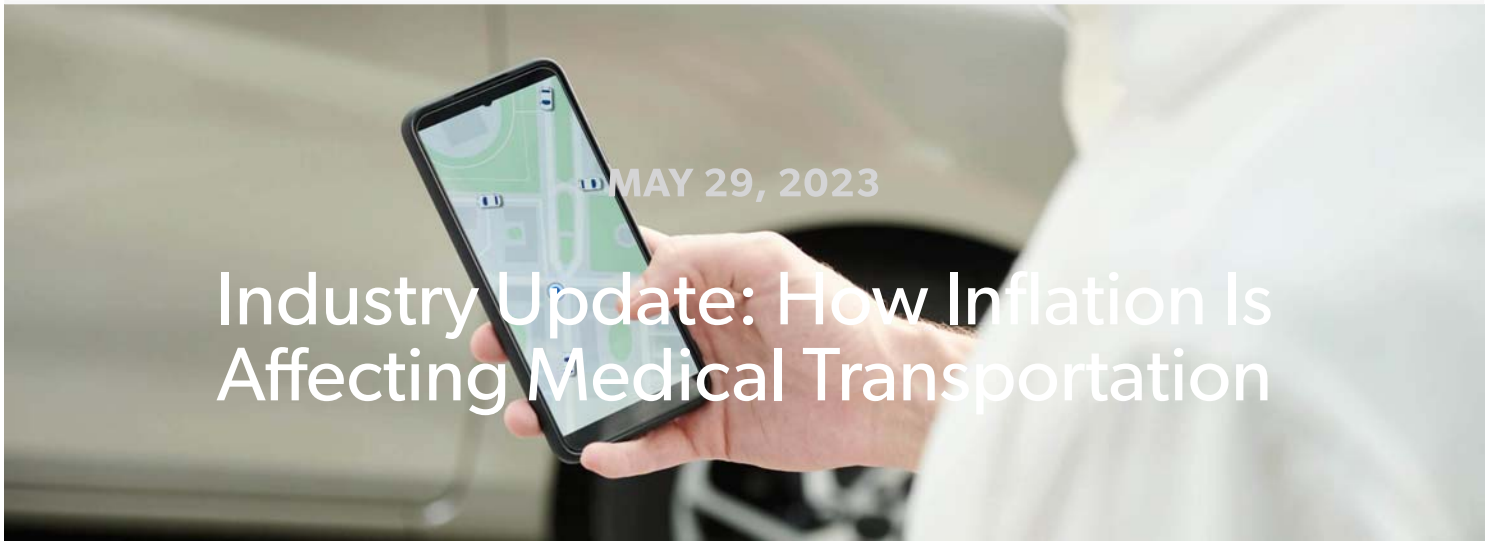

MAY 29, 2023

Industry Update: How Inflation Is Affecting Medical Transportation

By Cliff James, VP, Program Performance and Analytics

Inflation has affected everyone. We don't have to look far to be reminded of it. It cuts into employees' incomes, and it has touched every service in some way. We see it in the cost of materials to make medical equipment and supplies, and we see it in the costs to run the thousands of businesses that fulfill workers' comp services. One such area is non-emergency medical transportation (NEMT), a vital service in helping injured workers attend medical appointments, pharmacies, and lab visits related to workplace injury.

Transportation services are especially important because they help injured workers overcome barriers that would otherwise impact health outcomes – lack of access to a vehicle or driver's license, an injury that prevents driving, or medication that prohibits driving. In fact, nearly 5.8 million Americans miss or delay their healthcare due to a lack of transportation, according to a study in the American Journal of Public Health. And the RAND Corporation notes that NEMT is associated with greater use of preventive and primary health care, lower use of emergency services and inpatient services, and timely medical care among certain health conditions.

A good market indicator of the impact of inflation on transportation is the rising cost of rideshare services such as Uber and Lyft. According to a CNBC report, average prices rose 92% between January 2018 and July 2021. On top of that, cars themselves have become more expensive, with a record 82% of car shoppers paying above sticker price for a new vehicle in January 2022, according to Edmunds.

Used cars are also costing more; the U.S. Bureau of Labor estimates that the average price increased by 40.5% between 2021 and 2022. And payments on both used and new vehicles have skyrocketed due to increased interest rates. Inflation also means car parts are more expensive and more difficult to obtain and repairs are more costly, forcing insurance prices up. Nationally, car insurance rates are increasing by an average of 4.9 percent, according to a Bankrate report. At the same time, commercial insurance for rideshare companies is also increasing, and their coverage for hired and non-owned vehicles starts at $1 million per occurrence.

No area is left unaffected by inflation, and that includes the labor market for drivers – many of whom provide medical transportation services. Full-time drivers can demand more money because of the strong market and income alternatives. Drivers have begun delivering things like groceries rather than transporting people, making medical transportation less readily available. And 70% of new Uber drivers say they are driving to help with the cost-of-living increase imposed by inflation.

There's also a driver shortage at play. Nearly every industry has grappled with employee shortages in the past few years, and transportation is no different. Data from the American Trucking Associations shows that over the next decade, the industry will have to recruit nearly one million new drivers to keep up with demand. Uber and Lyft also experienced a driver shortage; a CNBC report says that in July 2021, they were at 40% below capacity. With the professional driver shortage occurring across all industries, NEMT providers are working harder than ever to secure reliable drivers.

Ambulance services, too, have been affected by inflation. According to NCCI, payments for ambulance services account for more than 75% of total medical transportation costs and the average payment per episode for ambulances, both ground and air, has increased since 2013. In 2019, a single trip could exceed $45,000 for an air ambulance service and $1,400 for a ground ambulance service. While these costs are

reflective of both emergency and non-emergency ambulance services, emergency episodes do typically comprise the lion's share of ambulance services – and come with an even higher price tag.

While many of the inflation-related factors, such as the cost of gas or cars, are uncontrollable, Healthesystems is working closely with our vendor partners to control transportation costs and reduce abuse of service through all available capabilities. This includes using analytics to determine whether the most cost-effective transportation mode is being used and monitor cost and fee trends. One outcome of our analysis is a goal to utilize ridesharing where possible. Despite increases in rates across transportation, ridesharing is more economic than traditional sedan services for shorter trip lengths, in most cases.

As inflation rates are on the rise – they are up 6.4% for the 12 months ending in January 2023 – Healthesystems will continue to monitor inflation and other trends and provide updates on how they affect the workers' comp industry.

Tags: inflation, medical transportation, transportation, workers' comp trends

Go Back

HEALTHCAREDIVE

DIVE BRIEF

Without vehicle or viable public transit, 1 in 5 miss needed healthcare: report

Published April 28, 2023

Shannon Muchmore
Senior Editor

Courtesy of Dallas Area Rapid Transit

Dive Brief:

- More than 20% of people without a personal vehicle and with only poor or fair access to public transportation said they had foregone healthcare needs because of difficulty finding transportation, according to a report this week from the Urban Institute.
- Adults with a disability, Black adults, people with low incomes and those on public insurance were more likely to report going without needed healthcare because of transportation issues, it found.
- Overall, 5% of U.S. adults said transportation barriers kept them from care they needed, the Urban Institute said.

Dive Insight:

Payers and providers in recent years have bolstered their efforts to address social determinants of health such as lack of transportation. Missed medical appointments can cost the U.S. healthcare industry as much as $150 billion annually.

Insurers, particularly in the Medicare Advantage program, have expanded benefit offerings to include a ride to a doctor's appointment in some cases. Providers have partnered with companies such as Uber and Lyft to provide transportation.

Lyft has been in the non-emergency medical transportation business since 2016 and launched an additional patient request option in 2021. Uber started Uber Health in 2018 with an NEMT platform. The company most recently expanded into same-day prescription delivery. Still, some research has questioned the effect Uber and Lyft have on helping people make appointments.

"For policymakers, these findings highlight a potential return on investments in public transit in the form of improved access to health care, as well as the gaps that may need to be filled by Medicaid coverage of nonemergency medical transportation or expanded access to telehealth when public transit options are limited," the report said.

Telehealth services have seen an uptake during the COVID-19 pandemic as people stayed home and avoided doctor's offices. Federal regulations were relaxed to allow for this, but some are still considered temporary.

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Impact of health and transportation on accessing healthcare in older adults living in rural regions

Sarah Krasniuk, Alexander M. Crizzle *

School of Public Health, University of Saskatchewan, 104 Clinic Place, Saskatoon, SK S7N 2Z4, Canada

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ABSTRACT

Introduction: Living in rural areas pose challenges to accessing healthcare, often requiring individuals to travel to major cities. This study examined the impact of health and transportation among older adults using no healthcare services, family doctor services, and medical specialist services, and compared to those living in rural and small population centers.

Methods: Between 2020 and 2021, a survey was disseminated to 244 older adults (*Mean* age = 72.2 years ± 5.3 years, 50.2% male) living in rural (n = 139) and small communities (n = 105) of Saskatchewan, Canada.

Results: In total, 135 participants did not use healthcare services (i.e., family doctor or medical specialist); 55 used family doctor services, and 54 used medical specialist services; 10.6% reported cancelling medical appointments due to the lack or cost of transportation. Living in a rural community was a significant predictor of using family doctors. Additionally, living in a rural environment, not perceiving health as excellent or good, receiving rides from others, and traveling to larger centers for medical care were significant predictors of using medical specialists. Living in a senior's complex and having diabetes were significantly associated with poorer health. Receiving rides from friends, family, or volunteer driving programs was the most available transportation option in rural vs small population centers.

Conclusions: Accessing healthcare is influenced by both health and transportation for older adults living in rural versus small communities. The lack of available and affordable transportation, coupled with the distance and occurrence of medical appointments, impacts healthcare access or cancelling medical appointments.

Introduction

Older adults represent the fastest growing population in Canada; it is estimated that the prevalence of individuals aged 65 years and older will increase from 17.5% in 2019 to 25% by 2040 (Public Health Agency of Canada, 2020). This trend is already evident in rural and remote geographic areas which comprise approximately 95% of the landmass and almost a third of the general population (i.e., 29%); 22% who are older adults (Canadian Institute for Health Information, 2021a; Canadian Rural Revitalization Foundation, 2021; Council of Canadian Academies, 2017). Studies show that older adults living in rural areas have high rates of chronic diseases (e.g., circulatory, cardiovascular, cerebrovascular, metabolic, neurological, respiratory), increasing the risk of multimorbidity, disability, reduced quality of life, and mortality (Dassah et al., 2018; Moazzami, 2015; Moin et al., 2021; Rasmussen et al., 2021; Zhao et al., 2019). Given the aging population and the large number of older adults living in rural areas, a better understanding of the complexities and challenges related to accessing healthcare is paramount to supporting the ability to age in place (Colibaba et al., 2020; Johnston et al., 2021; Nixon et al., 2018; Rudnicka et al., 2020; Wilson et al., 2020).

Studies show that rural areas (e.g., of Australia, Canada, Korea, Mexico, New Zealand, United States) have numerous challenges in providing access to healthcare, namely a limited supply of primary care physicians and medical supplies, as well as other healthcare professionals (e.g., specialists, physiotherapists, surgeons) (Buykx et al., 2010; Clark et al., 2021; Karunanayake et al., 2015; McDonald & Conde, 2010; McFadden et al., 2016; Mullan et al., 2023). For example, about 13.6% of family doctors and 3% of specialists work in rural and remote areas (Martin et al., 2018). Consequently, those living in rural communities often must travel large distances to urban settings to access healthcare, which can be difficult on days with poor weather conditions

* Corresponding author at: Associate Professor and Director of the Driving Research and Simulation Laboratory, Mailing Address: School of Public Health, 5D40 Health Sciences, University of Saskatchewan, 107 Wiggins Road, Saskatoon, Saskatchewan S7N5E5, Canada.
E-mail address: alex.crizzle@usask.ca (A.M. Crizzle).

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(e.g., in rain or snow) (Karunanayake et al., 2015), and for those who can no longer drive and depend on alternative transportation (e.g., use public services, rely on rides) (Carrillo-Balam et al., 2020; Choi et al., 2019; Douthit et al., 2015; Jang et al., 2020; Mattson, 2011; Neville et al., 2020). Although 35.6% of the population live in rural areas of Saskatchewan (Saskatchewan Bureau of Statistics, 2017a, 2017b), only 44% of all rural communities have transportation options beyond a private vehicle (Larijani et al., 2019).

In rural areas (e.g., of Canada, United States), there are limited to no available, accessible, affordable, or adequate transportation alternatives to driving (Bittner et al., 2011; Council of Canadian Academies, 2017; Kotval-K, 2017; Lamanna et al., 2020). Due to small population sizes, transportation services are used sparingly and have poor scheduling and connectivity of services, resulting in low ridership that outweigh operating costs, which has led to the closure of various transportation services such as the Saskatchewan Transportation Company in 2017 (Saskatchewan Transportation Company, 2018) and the Greyhound Bus Service in Western Canada in 2018 (Greyhound Bus, 2018). Since the closure of these companies, former bus riders (aged 21 + years, 75% were 50 + years) in northern (16%), central (58%), and southern locations (26%) of Saskatchewan report increases in travel costs, missed or cancelled treatments, or the decision to not seek medical care (Alhassan et al., 2021). A study reported that more than 5.8 million people in the United States delayed medical care from not having transportation (Wolfe et al., 2020).

Many studies show that older adults living in rural areas have challenges accessing healthcare in Canada (e.g., Clark et al., 2021), South Korea (e.g., Choi et al., 2019; Jang et al., 2020), Mexico (Carrillo-Balam, 2020) and the United States (e.g., Douthit et al., 2015; MacLeod et al., 2015; Syed et al., 2013; Wolfe et al., 2020). The behavioral model of health service use conceptualizes how predisposing characteristics (e.g., demographics, social structure, beliefs), enabling resources (e.g., support from family, friends, and community, financing), perceived/actual need (e.g., health status, diagnoses), health behaviors (e.g., use of personal health services), and outcomes (e.g., unmet healthcare needs) contribute to healthcare services used (Andersen & Newman, 1973; Lederle, Tempes, & Bitzer, 2021). Prior studies show that older adults who experience difficulty accessing healthcare is predicted by having a lower income and chronic disease (Carrillo-Balam, 2020; Choi et al., 2019; Clark et al., 2021; Douthit et al., 2015; Jang et al., 2020; Syed et al., 2013; Wolfe et al., 2020), being in poorer health (Douthit et al., 2015) and having functional limitations (Choi et al., 2019; Wolfe et al., 2020), poorer education (Clark et al., 2021), gender (i.e., women) (Choi et al., 2019; MacLeod et al., 2015), race (e.g., African American) (MacLeod et al., 2015), pain, as well as having no drivers in the household (Choi et al., 2019). A qualitative study reported that older adults had unmet healthcare needs, experienced long wait times, and difficulties travelling to larger cities for specialist services (Neville et al., 2020). Consequently, older adults are more likely to miss medical or not make appointments, although they make more emergency department visits for primary care services (Carrillo-Balam et al., 2020; Clark et al., 2021). Additionally, healthcare professionals have reported increases in stress and in disruptions to care (e.g., increased waiting times, overcrowding in waiting rooms) due to the increased demand on primary care services (Alhassan et al., 2021).

While prior studies report associations between transportation and healthcare, many do not focus on older adults exclusively, which is a gap noted in the literature (Carrillo-Balam et al., 2020; Clark et al., 2021; Douthit et al., 2015; Jang et al., 2020; Wolfe et al., 2020). Additionally, most studies compare access to healthcare between rural and urban settings; however, some studies do not define rural (Choi et al., 2019; Wolfe et al., 2020) and others have defined rural as communities residing outside of certain metropolitan cities or provinces (Jang et al., 2020) or having less than ten thousand residents (Clark et al., 2021; Douthit et al., 2015), which is not indicative of the small rural communities seen in Canada (defined as less than one-thousand residents) (Statistics Canada, 2017). Accordingly, there is limited information in the literature that has compared rural settings to small population centers (defined as areas with populations between 1,000 and 29,999) (Statistics Canada, 2017). Small population centers may have better access to healthcare given a larger population density, and thus may have less issues with accessing healthcare than rural communities. The purpose of this study was to examine the impact of health and transportation among older adults using no healthcare services, family doctor services, and medical specialist services, and compared to those living in rural and small population centers. Based on previous research showing that older adults living in rural areas have poorer health, access to transportation, and access to healthcare than urban areas (Choi et al., 2019; Clark et al., 2021; Douthit et al., 2015; Jang et al., 2020; Wolfe et al., 2020), we hypothesized that older adults living in rural areas would have poorer health, access to transportation, and access to healthcare than those living in small population centers.

Methods and data

This cross-sectional study took place from 2020 to 2021 and was approved by the Research Ethics Board at the University < institution blinded> (REB BEH <# blinded >).

Protocol

An online survey was developed in collaboration with stakeholder organizations that represent the interests of older adults (i.e., Saskatoon Council on Aging, Saskatchewan Seniors Mechanism, Saskatchewan Association of Rural Municipalities). Prior to data collection, the survey was piloted tested with a convenience sample of ten older adults living in rural areas of Saskatchewan to ensure clarity of questions, wording, as well as the deletions or insertions of additional questions. All stakeholder organizations distributed the online survey to its members and sent paper-based surveys to individuals interested but who did not have internet. Additionally, since data collection took place during the COVID-19 pandemic, we had some difficulty recruiting participants. To increase recruitment strategies and sample size for this study, we recruited participants through two panel surveys of representative older adults living in rural areas of Saskatchewan. The staff at the < university-based research support and consulting service, name blinded > called individuals from both panel surveys to complete the survey over the phone.

Participants

Recruitment

Our sample size calculation was based on population data available in Saskatchewan (Saskatchewan Bureau of Statistics, 2017a; Statistics Canada, 2017). An estimated 170,430 older adults (i.e., age: 53.4%, 65–74 years; 30.8%, 75–84 years; and 15.8%, 85 + years; gender: 45.3% male and 54.7% female) lived in Saskatchewan with 18.7% of residents (all ages) being classified as living in rural communities (Saskatchewan Bureau of Statistics, 2017a; Statistics Canada, 2017). Using a 95% confidence level and 5% margin of error, this study required 234 participants to be representative of older adults living in rural communities of Saskatchewan.

The survey was distributed through our stakeholder organizations (n = 29; response rate unknown), as well as two panel surveys to recruit older adults living in rural and small communities in Saskatchewan. From August 20, 2020, to October 20, 2020, 296 of 1,276 (response rate = 23.2%) participants were recruited from Ekos (a vendor that caters to academic and professional research). Additionally, 184 of 1142 (response rate = 16.1%) participants were recruited from the < university-based research support and consulting service, name blinded > panel from October 22, 2020, to January 8, 2021. However, some participants from the panels reported being from medium and large

populations centers and were excluded from this paper. Both Ekos and < university-based research support and consulting service, name blinded > recruit their panelists exclusively through random digit dialing.

Inclusion criteria

For this study, participants were required to be aged 65 years and older, reside in Saskatchewan, and live in a rural or small population center for at least one year. Rural was defined as areas with a population of less than 1,000 individuals and small population centers was defined as having a population between 1,000 and 29,999 individuals (Statistics Canada, 2017). The two panel surveys resulted in a sample of 480 with 237 being excluded due to living in medium and large population centers. The final sample from the panels was 132 older adults living in rural areas and 111 in small population centers. Additionally, we recruited 24 older adults from rural areas and 5 from small population centers from our stakeholder organizations. The total sample was 272 older adults (156 older adults from rural areas and 116 from small population centers). Subsequently, two participants were removed from not living a minimum of a year at their current residential location and another 25 for being younger than age 65. One participant was removed for having missing data on most healthcare service use and access questions. The final sample was 244 seniors: 139 (57.0%) from rural areas and 105 (43.0%) from small population centers.

Survey measures

The survey included 75 questions (open and closed ended) that provided information about the socio-demographics, health, mobility, driving status, residential characteristics, transportation needs, healthcare service use and access, and social engagement activities of residents living in Saskatchewan. For this study, we examined the responses of older adults living in rural and small population centers on questions about socio-demographics, health, mobility, driving status, transportation needs, and healthcare service use and access. The survey questions are presented in Tables 1 to 3.

Data analysis

Survey responses were entered and analyzed using SPSS, Version 28 (IBM Corp., 2021). Summary statistics (e.g., means, standard deviations, ranges, frequencies, and percentages) were used to describe survey responses. Chi-square tests (or Fisher's exact tests) were used to examine significant associations. Pairwise comparisons via z-tests with Bonferroni-adjusted p-values were performed for each between-group difference test with statistically significant outcomes. Multinomial logistic regression was performed to determine the predictors of healthcare service use (i.e., family doctors or medical specialists) relative to using healthcare services (i.e., reference category).

Results

Sample characteristics

As shown in Table 1, the sample (50.2% male) ranged in age from 65 to 96 years old (Mean = 72.2, SD = 5.3). Most participants had completed a post-secondary education (73.0%), were retired (85.6%), and lived with their spouse or partner (65.8%) in their private home (83.6%). Personal income varied across participants: 16.7% did not disclose; 14.2% estimated a maximum income of ≤$9,999 to ≥$20,000; 44.8% estimated between ≥$25,000 to ≥$50,000; and 24.3% estimated between ≥$75,000 to ≥$100,000.

Most participants perceived their health to be good/excellent (79.0%) and were mobile; 83.6% were able to walk a quarter of a mile and without assistive devices. Almost everyone (99.2%) reported having one or more medical conditions (Mean = 2.7, SD = 2.0, Range = 0–17).

Table 1
Sample Characteristics.

Characteristics	*n (%)*	
	Responses	Response Rate
Socio-demographics		
Population center		
Rural	139 (57.0)	244 (100)
Small	105 (43.0)	
How old are you (years)?		
65–74	171 (70.1)	244 (100)
75–84	69 (28.3)	
85+	4 (1.6)	
What is your gender?		
Male	122 (50.2)	243 (99.6)
Female	121 (49.8)	
Do you live in a:		
Private home	204 (83.6)	244 (100)
Apartment or condominium	5 (2.0)	
Retirement home or seniors' complex	7 (2.9)	
Farm	27 (11.1)	
Low-income housing	1 (0.4)	
Are you still working?		
Yes	77 (31.6)	244 (100)
No	167 (68.4)	
Are you retired?		
Yes	208 (85.6)	243 (99.6)
No	35 (14.4)	
What is the highest level of education completed?		
Primary/secondary	66 (27.0)	244 (100)
Post-secondary	179 (73.0)	
Income		
Prefer not to disclose	40 (16.7)	239 (98.0)
≤$9,999 to ≥$20,000	34 (14.2)	
≥$25,000 to ≥$50,000	107 (44.8)	
≥$75,000 to ≥$100,000	58 (24.3)	
Health		
Overall, would you say your health is:		
Excellent	67 (27.6)	243 (99.6)
Good	125 (51.4)	
Fair	42 (17.3)	
Poor	9 (3.7)	
Have you been diagnosed with any of the following (Check all that apply)? (yes)		
Mild/moderate cognitive impairment	6 (2.5)	243 (99.6)
Dementia	2 (0.8)	243 (99.6)
Arthritis	93 (38.3)	243 (99.6)
Multiple sclerosis	3 (1.2)	243 (99.6)
Stroke	9 (3.7)	243 (99.6)
High blood pressure and/or cholesterol	118 (48.6)	243 (99.6)
Cardiovascular disease	25 (10.3)	243 (99.6)
Parkinson's disease	3 (1.3)	228 (93.4)
Cancer	26 (10.7)	243 (99.6)
Diabetes	42 (17.3)	243 (99.6)
Asthma/other breathing problems	33 (13.6)	243 (99.6)
Back problems	63 (25.9)	243 (99.6)
Foot problems	41 (16.9)	243 (99.6)
Hearing problems	41 (16.9)	243 (99.6)
Eye problems	59 (24.3)	243 (99.6)
Sleeping disorders	39 (16.0)	243 (99.6)
Number of medical conditions		
0	2 (0.8)	243 (99.6)
1	73 (30.0)	
2	61 (25.1)	

(*continued on next page*)

Table 1 (*continued*)

Characteristics	*n (%)*	
	Responses	Response Rate
3+	107 (44.0)	
Do you ever use a cane or walker outdoors?		
Yes	40 (16.4)	244 (100)
No	205 (83.6)	
Are you able to walk a quarter of a mile?		
Yes	204 (83.6)	244 (100)
No	40 (16.4)	
Transportation		
Do you have a valid driver's license?		
Yes	233 (95.9)	243 (99.6)
No	10 (4.1)	
Do you currently drive?		
Yes	228 (97.9)	233 (95.5)
No	5 (2.1)	
Does anyone else in your household drive?		
Yes	160 (65.6)	244 (100)
No	84 (34.4)	
Do you get rides from anyone?		
Yes	66 (27.2)	243 (99.6)
No	177 (72.8)	
How many kilometers do you drive annually?		
0–14,999	105 (45.1)	233 (95.5)
15,000–29,999	90 (38.6)	
30,000–49,999	32 (13.7)	
50,000+	6 (2.6)	
Are you currently using alternative transportation options?		
Yes	20 (8.8)	227 (93.0)
No	208 (91.2)	
What transport options other than driving are available for you (Check all that apply)? (yes)		
Bus	15 (6.4)	234 (95.9)
Taxi	51 (21.8)	234 (95.9)
Shuttle services	15 (6.4)	234 (95.9)
Rides from friends, family, or volunteer driving programs	145 (62.0)	234 (95.9)
Handi-van/ bus	26 (11.1)	234 (95.9)
Mobility van/bus	11 (4.7)	234 (95.9)
Private services	14 (6.0)	234 (95.9)
Healthcare service use and accessibility		
Are you currently using any health services?		
Yes	115 (47.1)	244 (100)
No	129 (52.9)	
Which health services do you use (Check all that apply)? (yes)		
Family Doctor	104 (90.4)	115 (47.1)
Medical Specialist	54 (47.0)	115 (47.1)
Community health center	21 (18.3)	115 (47.1)
Allied health center	17 (14.8)	115 (47.1)
Walk-in clinic	6 (5.2)	115 (47.1)
Hospital emergency room	11 (9.6)	115 (47.1)
Hospital outpatient clinic	4 (3.5)	115 (47.1)
Do you travel to a larger city for your medical appointments?		
Yes	187 (76.6)	244 (100)
No	57 (23.4)	
How far do you travel for medical appointments?		
0–25 km	24 (12.9)	186 (76.2)
26–75 km	55 (29.6)	
76–200 km	90 (48.4)	
200 + km	17 (9.1)	
How many times per month do you travel for medical appointments?		
1	59 (36.0)	161 (66.0)
2	21 (13.0)	
3	18 (11.2)	
4	19 (11.8)	
5	8 (5.0)	
6+	37 (23.0)	
How do you primarily go to your medical appointment (Check all that apply)? yes		
Drives self	210 (91.7)	229 (93.5)
Walks	19 (8.3)	229 (93.5)
Motorized scooter	1 (0.4)	229 (93.5)
Gets a ride	21 (9.2)	229 (93.5)
Takes a taxi	2 (0.9)	229 (93.5)
Takes a senior or community van	3 (1.3)	229 (93.5)
Takes transportation for people with disabilities	3 (1.3)	229 (93.5)
Takes public transit	1 (0.4)	229 (93.5)
Other[2]	9 (3.9)	229 (93.5)
Do you stay the night before for your medical appointment?		
Yes	47 (19.3)	244 (100)
No	197 (80.7)	
Have you not gone to a medical appointment because of the:		
Lack of transportation		
Yes	11 (35.5)	31 (12.7)
No	20 (64.5)	
Cost of transportation		
Yes	15 (6.1)	244 (100)
No	229 (93.9)	

Note. [1]Of those employed, 27 (35.5%) are full-time and 49 (64.5%) are part-time. [2]Other modes of transport to medical appointments include the bunny bus and Saskatchewan Patient Transportation Service (hires driver to take to other appointments).

The most common conditions were high blood pressure and/or cholesterol (48.6%), arthritis (38.3%), back problems (25.9%), and eye problems (24.3%).

Almost all participants had a valid driver's license (95.9%) and currently drove (97.9%). Of those without a driver's license, 22.2% were required to cease due to medical reasons, 44.4% voluntarily ceased driving, and 33.3% listed another reason (e.g., limited mobility). Only 27.2% reported receiving rides from others, including their spouse (53.8%), child (32.3%), friend (51.5%), a volunteer driving program (1.6%), or another relative (15.6%). Only 8.8% reported that they currently used alternative transportation: 10% used bus services, 5% used shuttle services, and 75% got rides from friends, family, or volunteer driving programs. Most reported that buses (93.6%), taxis (78.2%), shuttle services (93.6%), handi-vans or buses (88.9%), mobility vans or buses (95.3%), and private services (94.0%) were not available; 38.0% reported that rides from friends, family, or volunteer driving programs were not available. Lastly, 0.8% of participants reported using paratransit or volunteer driving programs.

Almost half of participants (47.1%) currently used healthcare services: 53.9% of them reported visiting a health provider or healthcare facility 1x per month; 27.3% reported 2x per month; and 18.0% reported 3-10x per month (Mean = 1.9, SD = 1.5, Range = 1–10). Participants mostly visited family doctors (90.4%), followed by medical specialists (47.0%), community health centers (18.3%), allied healthcare services (14.8%, e.g., chiropractor, home care, physiotherapy), hospital

Table 2
Healthcare Service Use.

Characteristic	Healthcare Service Use Responses *n* (%) None (*n* = 135)	Family doctor (*n* = 55)	Specialist (*n* = 54)	*p*
Socio-demographics				
Population center				
Rural	64 (47.4)	39 (70.9)	36 (66.7)	**0.003**
Small	71 (52.6)	16 (29.1)	18 (33.3)	
How old are you (years)?				
65–74	97 (71.3)	34 (61.8)	41 (75.9)	0.31
75–84	36 (26.5)	21 (38.2)	12 (22.2)	
85+	3 (2.2)	0 (0.0)	1 (1.9)	
What is your gender?				
Male	73 (54.1)	21 (38.2)	28 (52.8)	0.13
Female	62 (45.9)	34 (61.8)	25 (47.2)	
Do you live in a:				
Private home	114 (84.4)	44 (80.0)	46 (85.2)	**0.005**
Apartment or condominium	5 (3.7)	0 (0.0)	0 (0.0)	
Retirement home or seniors' complex	2 (1.5)	0 (0.0)	5 (9.3)	
Farm	14 (10.4)	10 (18.2)	3 (5.6)	
Low-income housing	0 (0.0)	1 (1.8)	0 (0.0)	
Are you still working? (yes)	49 (36.3)	16 (29.1)	12 (22.2)	0.15
Are you retired? (yes)	110 (81.5)	47 (87.0)	51 (94.4)	0.07
What is the highest level of education completed?				
Primary/secondary	32 (23.7)	17 (30.9)	17 (31.5)	0.42
Post-secondary	103 (76.3)	38 (69.1)	37 (68.5)	
Income				
Prefer not to disclose	27 (20.1)	6 (11.8)	7 (13.0)	0.03
≤$9,999 to ≥$20,000	19 (14.2)	9 (17.6)	6 (11.1)	
≥$25,000 to ≥$50,000	55 (41.0)	18 (35.3)	34 (63.0)	
≥$75,000 to ≥$100,000	33 (24.6)	18 (35.3)	7 (13.0)	
Health				
Overall, would you say your health is:				
Excellent	47 (35.1)	11 (20.0)	9 (16.7)	0.**004**
Good	63 (47.0)	36 (65.5)	26 (48.1)	
Fair	22 (16.4)	6 (10.9)	14 (25.9)	
Poor	2 (1.5)	2 (3.6)	5 (9.3)	
Have you been diagnosed with any of the following (Check all that apply)? (yes)				
Mild/moderate cognitive impairment	3 (2.2)	2 (3.6)	2 (1.9)	0.81
Dementia	1 (0.7)	1 (1.8)	0 (0.0)	0.57
Arthritis	47 (35.1)	22 (40.0)	24 (44.4)	0.47
Multiple sclerosis	1 (0.7)	1 (1.8)	1 (1.9)	0.75
Stroke	4 (3.0)	3 (5.5)	2 (3.7)	0.72
High blood pressure and/or cholesterol	56 (41.8)	35 (63.6)	27 (50.0)	0.02
Cardiovascular disease	10 (7.5)	6 (10.9)	9 (16.7)	0.17
Parkinson's disease	0 (0.0)	1 (2.1)	2 (4.3)	0.08
Cancer	11 (8.2)	7 (12.7)	8 (14.8)	0.36
Diabetes	14 (10.4)	12 (21.8)	16 (29.6)	**0.004**
Asthma/other breathing problems	12 (9.0)	11 (20.0)	10 (18.5)	0.06
Back problems	34 (25.4)	11 (20.0)	18 (33.3)	0.28
Foot problems	20 (14.9)	9 (16.4)	12 (22.2)	0.48
Hearing problems	21 (15.7)	10 (18.2)	10 (18.5)	0.86
Eye problems	33 (24.6)	9 (16.4)	17 (31.5)	0.18
Sleeping disorders	20 (14.9)	9 (16.4)	10 (18.5)	0.83
Number of medical conditions				
0	0 (0.0)	1 (1.8)	1 (1.9)	0.009
1	49 (36.6)	14 (25.5)	10 (18.5)	
2	39 (29.1)	13 (23.6)	9 (16.7)	
3+	46 (34.3)	27 (49.1)	34 (63.0)	
Do you ever use a cane or walker outdoors? (yes)	19 (14.1)	7 (12.7)	14 (25.9)	0.10
Are you able to walk a quarter of a mile? (yes)	112 (83.0)	49 (89.1)	43 (79.6)	0.39
Transportation				
Do you have a valid driver's license? (yes)	132 (97.8)	54 (98.2)	47 (88.7)	0.01
Do you currently drive? (yes)	128 (97.7)	54 (100.0)	46 (95.8)	0.35
Does anyone else in your household drive? (yes)	88 (65.2)	36 (66.7)	36 (66.7)	0.98
Do you get rides from anyone? (yes)	27 (20.0)	15 (27.8)	24 (44.4)	**0.003**
How many kilometers do you drive annually?				
0–14,999	54 (41.2)	27 (50.0)	24 (50.0)	0.84
15,000–29,999	53 (40.5)	21 (38.9)	16 (33.3)	
30,000–49,999	20 (15.3)	5 (9.3)	7 (14.6)	
50,000+	4 (3.1)	1 (1.9)	1 (2.1)	
Are you currently using alternative transportation options? (yes)	8 (6.1)	3 (6.4)	9 (18.8)	0.02
What transport options other than driving are available for you (Check all that apply)? (yes)				
Bus	9 (7.1)	0 (0.0)	6 (11.1)	0.06
Taxi	37 (29.1)	7 (13.2)	7 (13.0)	0.01
Shuttle services	12 (9.4)	2 (3.8)	1 (1.9)	0.11
Rides from friends, family, or volunteer driving programs	77 (60.6)	30 (56.6)	38 (70.4)	0.31
Handi-van/ bus	19 (15.0)	2 (3.8)	5 (9.3)	0.08
Mobility van/bus	7 (5.5)	2 (3.8)	2 (3.7)	0.82
Private services	11 (8.7)	2 (3.8)	1 (1.9)	0.16
Healthcare service use and accessibility				
Do you travel to a larger city for your medical appointments? (yes)	95 (70.4)	42 (76.4)	50 (92.6)	**0.005**
How far do you travel for medical appointments?				

(*continued on next page*)

Table 2 (*continued*)

Characteristic	Healthcare Service Use Responses *n* (%)			*p*
	None (*n* = 135)	Family doctor (*n* = 55)	Specialist (*n* = 54)	
0–25 km	19 (20.2)	3 (7.1)	2 (4.0)	0.07
26–75 km	21 (22.3)	16 (38.1)	18 (36.0)	
76–200 km	46 (48.9)	19 (45.2)	25 (50.0)	
200 + km	8 (8.5)	4 (9.5)	5 (10.0)	
How many times per month do you travel for medical appointments?				
1	30 (35.3)	13 (39.4)	15 (34.9)	0.96
2	13 (15.3)	2 (6.1)	6 (14.0)	
3	8 (9.4)	5 (15.2)	5 (11.6)	
4	9 (10.6)	5 (15.2)	5 (11.6)	
5	4 (4.7)	1 (3.0)	3 (7.0)	
6+	21 (24.7)	7 (21.2)	9 (20.9)	
How do you primarily go to your medical appointment? (Drives)	124 (92.5)	46 (97.9)	40 (83.3)	0.03
Do you stay the night before for your medical appointment? (yes)	24 (17.8)	13 (23.6)	10 (18.5)	0.64
Have you not gone to a medical appointment because of the:				
Lack of transportation (yes)	4 (50.0)	0 (0.0)	7 (50.0)	0.03
Cost of transportation (yes)	9 (6.7)	2 (3.6)	4 (7.4)	0.67

Note. ***p*-value** = statistically significant with Bonferroni's correction $p < .008$ (p of 0.05 Ã· 6 based on 2 rows × 3 columns).

emergency rooms (9.6%), walk-in clinics (5.2%), or hospital outpatient clinics (3.5%). Additionally, 12.0% reported using telehealth during the pandemic. Primary reasons for visits included: regular checkups or bloodwork (n = 46), prescription refills (n = 12), vision (n = 7), medical imaging (e.g., CT, ultrasound, x-ray, ECG, bone density; n = 6), physiotherapy or chiropractor (n = 6), surgery (n = 5), diabetes (n = 3), breathing or lungs (n = 3), ears (n = 3), heart (n = 3), cancer (n = 2), knee (n = 2), feet (n = 2), arthritis (n = 2), dental (n = 2), vaccination (n = 2), postherpetic neuralgia (n = 1), splinter (n = 1), rash (n = 1), back pain (n = 1), infusion (n = 1), injection (n = 1), bladder (n = 1), vertigo (n = 1), prostate (n = 1), Achilles tendon injury (n = 1), toe injury (n = 1), COVID-19 test (n = 1), consultation for new doctor (n = 1), or for medical/commercial license (n = 1). Most participants using healthcare services reported traveling to larger towns or cities to access family doctors (91.6%), followed by medical specialists (52.6%), community health centers (18.9%), allied health services (13.7%), hospital emergency rooms (9.5%), hospital outpatient clinics (4.2%), and walk-in clinics (2.1%).

Most participants drove themselves to medical appointments (91.7%). Others received rides from a friend, family, or volunteer driving program (9.2%), walked (8.3%), took a senior or community van (1.3%), took paratransit or a handi or mobility van or bus (1.3%), used a motorized scooter (0.4%), and/or took public transit (0.4%). Almost a fifth of participants (19.3%) stayed the night before their medical appointments in a hotel or motel (66.0%) or with a family or friend (34.0%). Approximately 4.5% cancelled medical appointments due to the lack of transportation options, while 6.1% cancelled due to the cost of alternative transportation.

Table 3
Associations by Rural vs Small Population Center.

Characteristic	Responses *n (%)*		*p*
	Rural (*n* = 139)	Small (*n* = 105)	
Socio-demographics			
How old are you (years)?			
65–74	103 (74.1)	68 (64.8)	0.29
75–84	34 (24.5)	35 (33.3)	
85+	2 (1.4)	2 (1.9)	
What is your gender?			
Male	75 (54.3)	47 (44.8)	0.14
Female	63 (45.7)	58 (55.2)	
Do you live in a:			
Private home	106 (75.5)	99 (94.3)	**<0.001**
Apartment or condominium	2 (1.4)	3 (2.9)	
Retirement home or seniors' complex	6 (4.3)	1 (1.0)	
Farm	25 (18.0)	2 (1.9)	
Low-income housing	1 (0.7)	0 (0.0)	
Are you still working? (yes)	52 (37.4)	25 (23.8)	0.02
Are you retired? (yes)	115 (83.3)	93 (88.6)	0.25
What is the highest level of education completed?			
Primary/secondary	35 (25.2)	31 (29.5)	0.45
Post-secondary	104 (74.8)	74 (70.5)	
Income			
Prefer not to disclose	20 (14.0)	20 (19.0)	0.65
≤$9,999 to ≥$20,000	22 (16.4)	12 (11.4)	
≥$25,000 to ≥$50,000	60 (44.8)	47 (44.8)	
≥$75,000 to ≥$100,000	32 (23.9)	26 (24.8)	
Health			
Overall, would you say your health is:			
Excellent	43 (31.2)	24 (22.9)	0.49
Good	69 (50.0)	56 (53.3)	
Fair	21 (15.2)	21 (20.0)	
Poor	5 (3.6)	4 (3.8)	
Have you been diagnosed with any of the following (Check all that apply)? (yes)			
Mild/moderate cognitive impairment	4 (2.9)	2 (1.9)	0.70
Dementia	1 (0.7)	1 (1.0)	>0.99
Arthritis	55 (39.9)	38 (36.2)	0.59
Multiple sclerosis	1 (0.7)	2 (1.9)	0.58
Stroke	7 (5.0)	2 (1.9)	0.31
High blood pressure and/or cholesterol	64 (46.4)	54 (51.4)	0.44
Cardiovascular disease	14 (10.1)	11 (10.5)	0.93
Parkinson's disease	2 (1.6)	1 (1.0)	>0.99
Cancer	18 (13.0)	8 (7.6)	0.18
Diabetes	23 (16.7)	19 (18.1)	0.77
Asthma/other breathing problems	22 (15.9)	11 (10.5)	0.22
Back problems	38 (27.5)	25 (23.8)	0.51

(*continued on next page*)

Table 3 (*continued*)

Characteristic	Responses *n (%)*		*p*
	Rural (*n* = 139)	Small (*n* = 105)	
Foot problems	26 (18.8)	15 (14.3)	0.35
Hearing problems	24 (17.4)	17 (16.2)	0.80
Eye problems	31 (22.5)	28 (26.7)	0.45
Sleeping disorders	23 (16.7)	16 (15.2)	0.76
Number of medical conditions			
0	2 (1.4)	0 (0.0)	0.46
1	43 (31.2)	30 (28.6)	
2	31 (22.5)	30 (28.6)	
3+	62 (44.9)	45 (42.9)	
Do you ever use a cane or walker outdoors? (yes)	22 (15.8)	18 (17.1)	0.78
Are you able to walk a quarter of a mile? (yes)	116 (83.6)	88 (83.8)	0.94
Transportation			
Do you have a valid driver's license? (yes)	132 (95.7)	101 (96.2)	>0.99
Do you currently drive? (yes)	129 (97.7)	99 (98.0)	>0.99
Does anyone else in your household drive? (yes)	89 (64.0)	71 (67.6)	0.56
Do you get rides from anyone? (yes)	38 (27.3)	28 (26.7)	0.88
How many kilometers do you drive annually?			
0–14,999	57 (43.2)	48 (47.5)	0.79
15,000–29,999	54 (40.9)	36 (35.6)	
30,000–49,999	17 (12.9)	15 (14.9)	
50,000+	4 (3.0)	2 (2.0)	
Are you currently using alternative transportation options? (yes)	14 (11.2)	6 (5.9)	0.16
What transport options other than driving are available for you (Check all that apply)? (yes)			
Bus	5 (3.8)	10 (9.6)	0.07
Taxi	10 (7.7)	41 (39.4)	**<0.001**
Shuttle services	1 (0.8)	14 (13.5)	**<0.001**
Rides from friends, family, or volunteer driving programs	90 (69.2)	55 (52.9)	**0.010**
Handi-van/ bus	4 (3.1)	22 (21.2)	**<0.001**
Mobility van/bus	2 (1.5)	9 (8.7)	0.013
Private services	2 (1.5)	12 (11.5)	**0.001**
Healthcare service use and accessibility			
Do you travel to a larger city for your medical appointments? (yes)	119 (85.6)	68 (64.8)	**<0.001**
How far do you travel for medical appointments?			
0–25 km	18 (15.3)	6 (8.8)	**<0.001**
26–75 km	46 (39.0)	9 (13.2)	
76–200 km	44 (37.3)	46 (67.6)	
200 + km	10 (8.5)	7 (10.3)	
How many times per month do you travel for medical appointments?			
1	26 (25.2)	32 (55.2)	0.02
2	15 (14.6)	6 (10.3)	
3	13 (12.6)	5 (8.6)	
4	15 (14.6)	4 (6.9)	
5	6 (5.8)	2 (3.4)	
6+	28 (27.2)	9 (15.5)	
How do you primarily go to your medical appointment? (Drives)	115 (91.3)	95 (92.2)	0.79
Do you stay the night before for your medical appointment? (yes)	25 (18.0)	22 (21.0)	0.56
Have you not gone to a medical appointment because of the:			
Lack of transportation (yes)	6 (25.0)	5 (71.4)	0.07
Cost of transportation (yes)	7 (5.0)	8 (7.6)	0.43

Note. ***p*-value** = statistically significant with Bonferroni's correction $p < .0125$ (p of 0.05 Ã· 4 based on 2 rows × 2 columns).

Associations between Health, Transportation, and healthcare service use in older adults living in rural and small population centers

As shown in Table 2, the variable "healthcare service use" consisted of three subgroups: "none," "family doctors," and "medical specialists." The "none" subgroup included 129 participants who did not use any healthcare services plus six who did not use family doctor or medical specialist services (i.e., 129 + 6 = 135 or 55.3%). The "family doctor" subgroup included 55 participants who used family doctor services along with other healthcare services (i.e., 18.2% allied health, 16.4% community health centers, 9.1% hospital emergency rooms, 5.5% walk-in clinics) except for medical specialists. The "medical specialist" subgroup included 54 participants who used medical specialist services, along with other healthcare services (i.e., 90.7% family doctors, 22.2% community health centers, 11.1% hospital emergency rooms, 5.6% hospital outpatient clinics, 5.6% allied health services, and 3.7% walk-in clinics).

Participants using family doctor services were significantly more likely than those not using healthcare services to live in rural vs small population centers (70.9% vs 47.4%, p <.008). Participants using medical specialist services were significantly more likely than those not using healthcare services to live in rural vs small population centers (66.7% vs 47.4%, p <.008), live in a retirement or senior's complex (9.3% vs 1.5%, p <.008), perceive their health to be poor (9.3% vs 1.5%, p <.008), have a diagnosis of diabetes (29.6% vs 10.4%, p <.008), receive rides from others (44.4% vs 20.0%, p <.008), and travel to larger towns or cities for medical appointments (92.6% vs 70.4%, p <.008).

Comparisons by rural and small population center

As shown in Table 3, participants in rural areas, compared to small population centers, were significantly more likely to live on a farm (18.0% vs 1.9%, p <.0125) and to travel to larger towns or cities for medical appointments (85.6% vs 64.8%, p <.0125); though they traveled for significantly shorter distances (i.e., 26–75 km, 39.0% vs 13.2% and 76–200 km, 37.2% vs 67.6%, p <.0125). However, participants in rural areas, compared to small population centers, were significantly less likely to report that taxis (7.7% vs 39.4%, p <.0125), shuttle services (0.8% vs 13.5%, p <.0125), handi-vans/buses (3.1% vs 21.2%, p <.0125), and private services (1.5% vs 11.5%, p <.0125) were available to them. Rides from friends, family, or volunteer driving programs were provided more significantly in residents living in rural compared to small population centers (69.2% vs 52.9%, p <.0125).

Predictors of older adult healthcare service use

The characteristics that were significantly associated with healthcare service use (see Table 2) were considered as candidate predictor variables: rural vs small population center, living in a retirement or senior's complex, perceived health, diagnosis of diabetes, receiving rides from others, and traveling to larger towns or cities or medical appointments. Living in a retirement or senior's complex (χ 2 = 17.2, p <.001) and having a diagnosis of diabetes (χ 2 = 19.6, p <.001) were excluded because they were both significantly associated with perceived health. Table 4 shows the multinomial regression model predicting healthcare service use (i.e., family doctors or medical specialists) relative to not using healthcare services (i.e., reference category) (Nagelkerke R2 = 0.23). Living in a rural community was a significant predictor of using family doctors, relative to no healthcare services. Living in a rural environment, not perceiving health as excellent or good, receiving rides from others, and traveling to larger centers for medical were significant predictors of using medical specialists, relative to no healthcare services.

Discussion

Our study shows that both health status and transportation impact access to medical specialist services in older adults living in rural vs small communities. Specifically, perceiving health as poor, receiving rides, and traveling to larger towns or cities predict using medical specialist services in older adults living in rural communities. The associations between poor perceived health, chronic disease (e.g., diabetes), and living in a retirement or seniors' complex suggest that older adults living in rural vs small communities have poorer health and complex medical conditions (Canadian Institute for Health Information, 2021b) that need healthcare services beyond routine or annual physician checkups. Data shows there are few medical specialists practicing in rural communities; about 0.4% of medical specialists are available in rural areas of Saskatchewan (Canadian Institute for Health Information, 2021c), requiring older adults to travel far distances to urban settings for specialized care (Dassah et al., 2018; Karunanayake et al., 2015; Mattson, 2011; Moin et al., 2021; Morgan et al., 2015; Rasmussen et al., 2021; Zhao et al., 2019). Overall, findings in the current study partially support the hypothesis that older adults living in rural communities have poorer health, access to transportation, and access to healthcare than small population centers. While older adults living in rural vs small population centers have poor health and chronic disease, they access medical specialists more often than those in small population centers.

Table 4
Multinomial Logistic Regression Model of Healthcare Service Use.

Family Doctor	*B*	*SE*	*OR*	*95% CI*		*p*
				upper	*lower*	
Population center (rural vs small)	−1.1	0.4	0.3	0.2	0.7	**0.003**
Perceived health						
Excellent	−1.6	1.1	0.2	0.02	1.9	0.16
Good	−0.5	1.1	0.6	0.1	4.8	0.58
Fair	−1.3	1.2	0.3	0.03	2.7	0.28
Receives rides from others (yes vs no)	−0.5	0.4	0.6	0.3	1.4	0.24
Travels to larger cities for medical appointments (yes vs no)	−0.1	0.4	0.9	0.4	1.9	0.73
Medical Specialist	*B*	*SE*	*OR*	*95% CI*		*p*
				upper	*lower*	
Population center (rural vs small)	−0.7	0.4	0.5	0.2	0.9	**0.045**
Perceived health						
Excellent	−3.0	1.0	0.05	0.007	0.4	**0.004**
Good	−2.1	1.0	0.1	0.02	0.9	**0.037**
Fair	−1.8	1.0	0.2	0.02	1.3	0.09
Receives rides from others (yes vs no)	−1.1	0.4	0.3	0.2	0.7	**0.003**
Travels to larger cities for medical appointments (yes vs no)	−1.9	0.6	0.1	0.04	0.5	**0.002**

Note. The reference category is none in healthcare service use. N = 242; *Nagelkerke* R^2 = 0.23. *B* = beta; *SE* = standard error; *OR* = odds ratio; and *CI* = confidence interval for odds ratio. ***p*-value** = statistically significant with p <.05.

Most older adults in our study (91.7%) reported that they drove themselves to medical appointments. However, older adults accessing medical specialists in rural communities, compared to small communities, were more likely to receive rides to travel to larger towns or cities for appointments. Most who received rides had a valid driver's license but relied on rides from others to access specialized care, which may be due to the effects of undergoing various procedures such as pupil dilation, anesthesia, or surgery that can affect the ability to drive safely.

Our study found that older adults in rural areas of Saskatchewan access healthcare frequently (63.4% accessed services 2-6x per month) which is comparable to a large cohort study of older adults (Clark et al., 2021) but less than other studies (Mattson, 2011; MacLeod et al., 2015). Although the primary reason for accessing healthcare was a regular checkup or bloodwork, this does not explain the high volume of healthcare visits. It is possible participants had more severe conditions that we did not capture. For example, MacLeod and colleagues (2015) found that 70% of all trips in rural dwelling older adults were related to dialysis.

Prior studies show that poor health and mobility are directly related to restricted driving practices, including driving fewer kilometers, less long-distance trips, and greater avoidance of challenging driving situations such as rain and snow (Crizzle et al., 2013; Karunanayake et al., 2015; Jouk et al., 2016; Tuokko et al., 2016). Furthermore, older adults who are anxious, not comfortable, or not confident with driving for long distances rely on others to drive them to major cities (Crizzle et al., 2013; Jouk et al., 2016; Tuokko et al., 2016). Our findings show that family and friends, when available, provide invaluable support to older adults who need help accessing healthcare —especially since most reported that few transportation alternatives to driving exist, which is consistently reported in studies (Council of Canadian Academies, 2017; Lamanna et al., 2020; Larijani et al., 2019).

Approximately 10.6% of older adults reported cancelling medical appointments from not having alternative transportation (beyond driving themselves) or from the cost of using alternative transportation (e.g., taxi). In Saskatchewan, there are almost 100,000 older adults that live in rural areas (based on older adults comprising 22% of the 35.6% of the population living in rural areas) (Saskatchewan Bureau of Statistics, 2017a, 2017b). While the 10.6% cancellation rate may seem low, this amounts to more than 10,000 older adults missing medical appointments in Saskatchewan. Our findings are consistent with prior studies. For example, in Saskatchewan, one study reported that 11.6% of missed doctor's appointments were due to transportation challenges (Shahab & Meili, 2019). Other studies have also found that between 10 and 15% miss medical appointments from challenges accessing transportation (Alhassan et al., 2021; MacLeod et al., 2015; Parsons et al., 2021; Statistics Canada, 2021). In addition, our findings also show that the older adults missing medical appointments are those in poorer health, similar to other studies (MacLeod et al., 2015), and consequently, may not be receiving the care they need in a timely manner (Mowbray et al., 2020). As a result of missing medical appointments and a loss of continuity to care, the effects of various medical conditions may worsen over time, leading to increased emergency visits (Carrillo-Balam et al., 2020; Clark et al., 2021; Costa et al., 2014; Gray et al., 2013; Provencher et al., 2015). Challenges with transportation restrict access to preventative care, which can worsen the trajectory of various health conditions in older adults, as well as overburden hospital emergency rooms and prolong care to others also in need of emergency care (Syed et al., 2013).

Implications for policy

While rural communities have a transportation disadvantage to accessing healthcare, solutions to resolve these challenges are not well established (Brundisini et al., 2013; Henning-Smith et al., 2017). Initiatives should involve collaborations with rural and other communities, public health officials, policymakers, the government, healthcare sector and other key stakeholders to identify strategies for challenges on transportation infrastructure (e.g., availability of vehicles and personnel), geography (e.g., long distances traveled), funding (e.g., lack of public and private investments), accessibility (e.g., transportation for individuals with mobility issues), political support and public awareness (e.g., awareness of available transportation options and challenges), and socio-demographics (e.g., carless, older adults, individuals with disabilities, low-income, minorities) (Henning-Smith et al., 2017). For example, developing communication channels between rural and small communities with government may confirm that the government will invest in transportation infrastructure to provide funding to support transportation services and maintain and expand rural highway roadways; and to develop a plan to optimize routes across geographical areas that connects to outlets on the outskirts of larger urban cities. Transportation services must be accessible, available, and reliable, and should be done in a time efficient manner. Safety and access to key amenities at the outskirts (security, shelters, help available) are also important.

Another strategy that allows older adults to access healthcare in their home or community is through virtual care (e.g., telehealth, telemedicine, virtual conference, remote monitoring devices) (Goodridge & Marciniuk, 2016; Syed et al., 2013). Several studies show that virtual care can improve the accessibility (e.g., enhances timeliness, reduces emergency room visits), continuity (e.g., visits from same healthcare providers), and cost effectiveness (e.g., reduced health system usage) of primary and specialist care, while minimizing the need of transportation and travel in northern, rural, and remote regions (Buyting et al., 2021; Gray et al., 2021; Jong et al., 2019; Li et al., 2020; Liddy et al., 2021; Rush et al., 2021). Prior studies have reported that virtual care can improve health status, medication adherence, and self-management of chronic diseases, as well as reduced complications, hospitalization and readmissions, and mortality rates in patients, including those with chronic disease and older adults (Buyting et al., 2021; Gray et al., 2021; Jong et al., 2019; Li et al., 2020; Liddy et al., 2021; Rush et al., 2021). However, only 12.0% in our study reported using telehealth, as not everyone can afford telephone or internet services, and many rural and remote areas have limited to no access to internet, reducing the effectiveness of telehealth to regions further away from larger cities (Gray et al., 2021; Li et al., 2020; Rosaasen & Mansell, 2020). Future coordinated efforts to install or enhance both power and internet to rural regions may reduce the dependency on transportation and allow older adults to age-in-place.

Implications for Future research

The findings in the current study provide further evidence of the importance of transportation for accessing specialized care and managing the health of older adults in rural and small communities; and provides further support to Andersen's behavioral model of health showing the multiplicity of factors associated with accessing healthcare services (Andersen & Newman, 1973; Lederle, Tempes, & Bitzer, 2021). Findings show that enabling resources (e.g., receiving rides), perceived/actual need (e.g., health status, diagnoses), health behaviors (e.g., use of personal health services), and outcomes (e.g., missing medical appointments) contribute to accessing healthcare in older adults living in rural vs small communities. However, contrary to other studies, a lower income (Choi et al., 2019; Clark et al., 2021; Douthit et al., 2015; Jang et al., 2020; Wolfe et al., 2020), poorer education (Clark et al., 2021), gender (i.e., women) (Choi et al., 2019; MacLeod et al., 2015), and race (e.g., African American) (MacLeod et al., 2015) did not contribute to accessing healthcare services. Since these prior studies did not focus exclusively on older adults or on rural (e.g., less than 1,000 per population) vs small population centers (e.g., less than 10,000 per population), further research may consider their impact on healthcare service use and access.

With many of the younger population moving from rural to larger cities, there is often few family members and friends to help support aging parents in rural communities (Moazzami, 2015). While there are some community and volunteer driver programs in Saskatchewan, over half of the rural and small communities do not have inter-community travel services and private services are not financially viable (e.g., taxi) (Larijani et al., 2019). Further research on transportation routes to healthcare services (e.g., origin, destination, frequency, reasons for trips) may identify communities best suited to implement inter-city transportation services. Volunteer driving programs (e.g., Gravelbourg Cares Shuttle Service, Kennebec Valley Communication Action Program) (Antonio, 2019; Martin et al., 2020) have shown to provide older adults with transportation to access healthcare services at an affordable cost (Martin et al., 2020; Larijani et al., 2019). Such programs improve social inclusion and mental health (Hagan, 2019; Tomita & Bhattacharjya, 2021). However, whether they improve health outcomes and reduce hospital emergency visits is not well known. Developing transportation services in these communities and evaluating their implementation, operation, and sustainability, as well as their impact on health indicators, may help obtain government funding to make costs more affordable, promote health, and support aging in place. Furthermore, longitudinal datasets such as the Canadian Longitudinal Study on Aging (Raina et al., 2019) or the Survey of Health, Aging, and Retirement in Europe (SHARE) (https://share-eric.eu) can be used to answer such questions and can examine how health and transportation impact access to healthcare and determine if technology can alleviate such issues for older adults living in rural areas.

Limitations

A limitation of the study was the cross-sectional design and recruitment strategies which may have resulted in a younger sample (e.g., 65–74 years: 70.2% of sample vs 57% of population) with more males (e.g., 50.4% of sample vs 45.3% of population) than females when compared to census data pertaining to older adults in Saskatchewan (Saskatchewan Bureau of Statistics, 2017a). However, health characteristics including fair/poor health (e.g., 20.9% of sample vs 19.8% of population) and high blood pressure (e.g., 48.4% of sample vs 47.1% of population) were comparable (Statistics Canada, 2022). While this study examined older adults living in rural and small population centers, there is substantial variation in population size within small communities (e.g., populations between 1,000 and 29,999 individuals) (Statistics Canada, 2017). It is likely that the health, transportation use, and access to healthcare of older adults are different in areas with smaller versus larger population sizes. Furthermore, while we included various types of healthcare services (e.g., family doctor, medical specialist, community health center), we did not include pharmacy services although twelve participants reported that their primary reasons for visits were to refill or renew prescriptions. We also do not know how serious the reported medical conditions were and how much healthcare was required. Other limitations with survey data are the possibility of recall and social desirability bias. Lastly, while the study was initiated prior to COVID-19, 82% of data collection occurred during the pandemic, when there was reduced access to transportation services, as well as access to certain healthcare services (Chen et al., 2021; D'Souza et al., 2021; Jesus et al., 2021). However, with increased virtual care efforts in Saskatchewan, it is also possible that participants did not need to travel to access healthcare.

Conclusion

The findings show that almost half of the sample accessed healthcare. This access was influenced by both health and transportation. Older adults in poor health often reported not driving and relied on family and friends for rides, especially when traveling far distances to larger urban centers for medical appointments. In the absence of family and friends, older adults missed medical appointments, which can further contribute to declining health over time. Coordinated efforts of government and rural municipalities are needed to develop cost-effective transportation options for those living in rural areas.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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