Transit Committee

Agenda

Thursday, May 26, 2016
8:30 a.m. – 11:30 a.m.
La Cite Francophone – Hall Jean-Louis Dentinger
8627 rue-Marie-Gaboury (91 Street), Edmonton

Agenda Items

1. **Call to Order** – **Councillor Wes Brodhead, Chair**

2. **Chair Opening Remarks**

3. **Approval of Agenda** – **Councillor Wes Brodhead, Chair**

4. **Approval of Minutes of March 24, 2016** – **Councillor Wes Brodhead, Chair**

5. **Transit Governance** – **Councillor Wes Brodhead, Chair**
   5.1 Joint Edmonton/St. Albert Transit Discussions – Guy Boston, St. Albert & Marc Lachance, City of Edmonton
   5.2 Onboarding Component of the Intermunicipal Commuter Entity Discussion (90 minutes) – facilitated by Pieter de Vos, Alberta Culture
   5.3 Intermunicipal Transit Governance Study Status – Neal Sarnecki, Project Manager

   **Recommended Motion:** That the Transit Committee receive the Intermunicipal Transit Governance Study Status update for information.

6. **Transit Advocacy** – **Councillor Wes Brodhead, Chair**
   6.1 Provincial Transit Engagement Update – Ashley Bhatia, Alberta Transportation

7. **Project Updates** – **Councillor Wes Brodhead, Chair**
   7.1 Capital Region 2016 Specialized Transportation Needs Assessment – Dr. Bonnie Dobbs, U of A

   **Recommended Motion:** That the Transit Committee recommend the Capital Region Board receive the Capital Region 2016 Specialized Transportation Needs Assessment Report for information.

   7.2 HOV/Transit Priority Study – Stephen Schijns, AECOM

   **Recommended Motion:** That the Transit Committee receive the HOV/Transit Priority Study update for information.
7.3 Regional Household Travel Survey (verbal) – Neal Sarnecki, Project Manager

**Recommended Motion:** That the Transit Committee receive the Regional Household Travel Survey update for information.

8. **Past Project Updates** – Councillor Wes Brodhead, Chair

8.1 Regional Fare Strategy/Smart Card Technology Update – Ken Koropeski, ETS

9. **Growth Plan Update 2.0** – Councillor Wes Brodhead, Chair

9.1 Task Force Update – Sharon Shuya, Project Manager

**Recommended Motion:** That the Transit Committee receive the Growth Plan Update 2.0 update for information.

10. **Adjournment** – Councillor Wes Brodhead, Chair
Transit Committee

Thursday, March 24, 2016
9:00 a.m. – 11:30 a.m.
La Cite Francophone – Hall Jean-Louis Dentinger
8627 rue Marie-Anne-Gaboury (91 Street), Edmonton

Members:
Wes Brodhead, City of St. Albert (Chair)
Michael Walters, City of Edmonton (Vice Chair)
Brian Botterill, Strathcona County (alternate)
Susan Evans, Sturgeon County
Gale Katchur, City of Fort Saskatchewan
Dana Smith, City of Leduc
Searle Turton, City of Spruce Grove

Provincial Liaison:
Ashley Bhatia, Alberta Transportation

Regrets:

CRB Staff & Consultants:
Malcolm Bruce, CEO
Neal Sarnecki, Project Manager
Sharon Shuya, Project Manager
Stephanie Chai, Project Manager
Loreen Lennon, Communications Manager
Leslie Chivers, Operations Manager
Lisa Saskiw, Administrative Assistant

Guests:
Nolan Crouse, Board Chair
Kevin Bamber, St. Albert Transit
Gibby Davis, City of Edmonton
Troy Fleming, City of Fort Saskatchewan
Richard Gagnon, City of Fort Saskatchewan
Ron Glen, City of Edmonton
Andrew Knack, City of Edmonton
Ken Koropeski, City of Edmonton
Judy Koschade, Town of Bruderheim
Marc Lachance, City of Edmonton
Michael Laveck, Town of Devon
Kathy Lewin, Town of Beaumont
Kasey Machin, City of Edmonton
Craig Mahovsky, Strurgeon County
Pamela Steppan, Strathcona County
Glenn Tompolski, City of St. Albert
Mike Vivian, City of Edmonton
Tim Vrooman, Town of Morinville
Kevin Wenzel, City of Leduc
Forest Yang, Strathcona County

1. Call to Order

Chair, Wes Brodhead called the meeting to order at 9:00 a.m.
2. Chair Opening Remarks

3. Approval of Agenda

   It was approved by unanimous consensus that the Transit Committee agenda of March 24, 2016 be approved.

4. Approval of Minutes, January 28, 2016

   **Motion:** That the Transit Committee minutes of January 28, 2016 be approved.
   **Moved by:** Mayor Gale Katchur, *City of Fort Saskatchewan*
   **Decision:** Carried unanimously

5. Priorities & Progress regarding Growth Plan

6. Capital Region Transit Priorities

   6.1 Draft 2016 Transit Priorities Project List

   **Motion:** That the Transit Committee receive the Draft 2016 Capital Region Transit Priorities Project List for information.
   **Moved by:** Councillor Dana Smith, *City of Leduc*
   **Decision:** Carried unanimously

   6.2 Provincial Transit Engagement

   It was approved by unanimous consensus that CRB administration be directed to complete the Provincial Transit Engagement workbooks on behalf of the Committee. CRB administration will distribute the completed workbooks to Committee members for comment prior to submitting to the Province by April 29, 2016.

7. Transit Governance

   7.1 Joint Edmonton/St. Albert Transit Discussions

   **Motion:** That the Transit Committee direct CRB administration to engage a facilitator for the next meeting to assist the committee in discussing the Regional onboarding component of the intermunicipal commuter entity/service provider being discussed by Edmonton and St. Albert.
   **Moved by:** Councillor Michael Walters, *City of Edmonton*
   **Decision:** Carried unanimously
8. Transit Committee Terms of Reference

8.1 Revised Terms of Reference: Biennial Chair/Vice Chair Review

Motion: That the Transit Committee approve the amendment to the Transit Committee Terms of Reference to include a biennial review of the Chair/Vice Chair.
Moved by: Councillor Susan Evans, Sturgeon County
Decision: Carried unanimously

9. Transit Policy

9.1 Draft Transit Policy

Motion: That the Transit Committee postpone this item to the next Transit Committee meeting – May 26, 2016.
Moved by: Councillor Michael Walters, City of Edmonton
Decision: Carried unanimously

10. Project Updates

10.1 Specialized Transit Needs Assessments
10.2 HOV/Transit Priority Study
10.3 Household Travel Survey

Motion: That the Transit Committee receive the Transit Committee project updates for information.
Moved by: Mayor Gale Katchur, City of Fort Saskatchewan
Decision: Carried unanimously

11. Growth Plan Update 2.0

11.1 Task Force Update/Transportation Working Paper

Motion: That the Transit Committee receive the Growth Plan Update 2.0 update for information.
Moved by: Councillor Michael Walters, City of Edmonton
Decision: Carried unanimously

12. Adjournment

It was agreed by unanimous consensus that the Transit Committee meeting be adjourned.
Meeting adjourned at 11:05 a.m.

**Next Meeting:** May 26, 2016 at 9:00 a.m., La Cite Francophone – Hall Jean-Louis Dentinger

Committee Chair, Councillor Wes Brodhead
Attachment 1 provides a high level examination of the five potential models that were considered by the project steering committee. Models were assessed for the feasibility of implementation and an acceptable balance between maintaining local service autonomy and enhancing regional mobility.

### Figure 1: The Five Models on a Continuum of Service

1. **Current State;**
2. **Single Contractor/Operator;**
3. **Common Capital Program;**
4. **Regional Commuter Service;** and
5. **Independent Transit Authority.**

### 1. Current State

While the goal of the project is to examine the possibility of greater levels of integration for regional transit services, it is important to note that the Edmonton Metro Region already has a high level of collaboration between the different service providers. Further enhancements are in development that will facilitate regional mobility. Examples of this include contracts in place to allow suburban municipalities to enter the region’s core and use ETS facilities, a number of subcontracted services between providers, and approval and funding for the implementation of a regional Smart Fare System.

#### Benefits

Local autonomy remains intact, and the transit service providers across the region will continue to explore possible opportunities to enhance regional collaboration as they become available. The status quo avoids concerns related to autonomy over service levels, revenues (as commuter routes are primary revenue sources), and governance structures.

#### Risks

The associated risk of maintaining the status quo is a continuation on the path towards eight or more separate transit services in the region. While the region would still have the ability to collaborate through various initiatives, this approach could trail behind the other models in terms of overall regional mobility options, regional coordination and planning of services, and capital investments supporting regional priorities.

#### Funding Considerations

Funding for the Current State would remain status quo with costs described in current municipal operational business plans.

### 2. Single Contractor/Operator Model

This model proposes a regional provider of transit services that contracts service with each municipality.
“ETS/St. Albert Regional Transit - Progress Report”

Benefits
The Single Contractor/Operator Model maintains local autonomy over service levels and route selection, as the level of service or funding directed towards transit services remains the purview of each separate municipality. The Edmonton Metro Region would take advantage of the scope and expertise of a centralized administration. This would produce consistency across the region related to the reliability of service and the assets delivering the service. The single brand for the region would increase awareness of inter-municipal commuter transit service, with the potential to create a better customer experience through streamlined communication and information systems.

Risks
Administrative efficiency in this model would be limited as each municipality would have to maintain a planning relationship with the operating contractor. The share of administrative costs would increase for smaller providers because of the broader scope of activities and functions. Overall system costs are expected to increase primarily due to projected wage rate increases.

It is unlikely that there would be significant change in regional investment or prioritization. The Single Contractor/Operator Model does not address the coordination of planning or regional prioritization of capital investments. There could be a perception of loss in local autonomy over service and some loss of cost control.

Funding Considerations
The Single Contractor/Operator would negotiate directly with each municipality, creating minimal fiscal change from current expenditures. Municipalities would have autonomy to select service and funding levels, with some loss of control over costs. The projected increase from ‘leveling’ of labour rates would increase overall system/service costs.

3. Regional Capital Priorities Model
The Regional Capital Priorities Model would coordinate and prioritize capital investment in Transit Services across the Metro Edmonton Region. A regional board, committee or commission would be accountable for prioritizing program/grant investments in infrastructure such as LRT, rolling stock and park and ride facilities. Operational service delivery would remain unchanged.

Municipalities would forego a level of autonomy as investment decisions would be made with a focus on regional mobility. Local operations would be indirectly impacted through this model, as services would be adjusted to respond to the infrastructure investments being made.

Benefits
Similar to how projects are advanced through the River Valley Alliance, this approach would prioritize infrastructure investment based on transit and mobility needs for the Edmonton Metro Region. Regional mobility would be enhanced through system design that better-supports inter-municipal travel patterns and facilitates partnering by multiple municipalities on select projects.

Risks
Municipal autonomy could be reduced as control over capital expenditures is transferred. The governance structure would be replacing a one-on-one relationship with other orders of government with an indirect relationship through a 3rd party mechanism.
Funding Considerations

Infrastructure decisions made through this model would impact local operations, both related to how service is delivered (i.e., adjusting service for a new park and ride facility) and maintenance costs due to the age/state of rolling stock.

4. Regional Commuter Service Model

In a Regional Commuter Service Model, municipalities retain responsibility for the provision of public transit services within their municipal boundaries while inter-municipal transit would be operated by a separate organization. The regional service provider will be responsible for assessing inter-municipal travel needs of commuters and designing specific routes to serve commuter demand. Municipal transit authorities would continue to focus on the needs for network service within their communities.

Benefits

A regional commuter service would be able to provide service to more communities, and more origins and destinations could be connected with express service. Customers will experience more convenient service across municipal boundaries through seamless transfers between express regional routes and local network routes. This approach to regional integration has proven successful in other jurisdictions, is fairly straightforward to implement and can easily expand to partnering communities in the Edmonton Metro Region.

In the longer term, the regional commuter transit authority could be tasked to manage capital investments in transit such as BRT or LRT right of way acquisition and roadway/railway construction. This would improve regional transportation planning and facilitate investment in transit by the Federal and Provincial governments. This approach could serve as a precursor to future phases of integration for transit in the Edmonton Metro Region.

Risks

There are challenges of integrating services of a new commission with existing services, such as planning and communication. The reduction in local autonomy over commuter services creates some risk to current services, such that passengers could be inconvenienced by having to transfer more frequently.

Commuter services are significant fare-revenue leaders for the smaller municipalities throughout the region. Effectively managing the transition to this model is critical as to not jeopardize inter-municipal transit service throughout the entire region.

Funding Considerations

The creation of a new regional service will require seed funding from partner municipalities, and may require ongoing partner funding supported by long term commitments or other predictable revenue sources. Fare allocation, revenue sharing, and debt allocation will all need to be considered and negotiated within the funding arrangement between the participating municipalities.

Regional commuter services are key transit activities that accounts for or generates the greatest operating revenue for suburban municipalities. A move to a separate operator for commuter services could significantly impact recoveries from fares for local services.
5. Regional Transit Authority

A regional transit authority could be established to consolidate and operate all transit services by defining service levels and an operating plan, making capital decisions, and relieving all participating municipalities of their responsibilities for transit. The authority would require establishment of a corporate model; operations could be managed internally by participating municipalities or through a contracted service.

Benefits

This model would address service planning and coordination across the Edmonton Metro Region, which could enable improved regional coordination and delivery of transit. The transit authority would provide a consistent approach to route planning and assets used with the goal of maximizing mobility throughout the Edmonton Metro Region.

Administrative functions could be improved and streamlined, including efficiencies in procurement of rolling stock. Such a model facilitates the implementation of broader regional transit initiatives. Residents would be able to conveniently access service across municipal boundaries, and have a better customer experience through combined municipal strengths and technologies.

Risks

This model is the most complex of those considered in this report. It would result in a significant loss of local autonomy related to transit services for all municipalities in the region. Each municipality would have representation on the board of the transit authority, but would have limited authority.

Transit planning would be separated from municipal and regional planning occurring in different forums. This creates a risk that authorities from each municipality would not have any formal mechanism to manage or resolve differing perspectives. Preliminary assessments suggest that amalgamation of transit services could increase costs of service overall and the funding and governance requirements would be complex.

As local governments change, the local representation appointed to the board by various municipalities may have different priorities which could negatively impact long-term planning and stability.

Funding Considerations

Ongoing funding of this model would need to be designed to support a separate corporate infrastructure with board and administrative costs, in addition to the base level of service for the region, with mechanisms to support system growth and capital needs. A steady, predictable funding model would need to be in place to ensure that an acceptable level of service could be provided on an ongoing basis. This model could allow for individual municipal partners to opt-up (pay additional amounts) for a higher level of service.
Intermunicipal Transit Governance Study Status

Recommended Motion

That the Transit Committee receive the Intermunicipal Transit Governance Study Status update for information.

Background & Update:

- On April 24, 2014, the Transit Task Force unanimously approved a motion to receive the Regional Transit Commission: Business Case Development & Assessment report, presented by AECOM, and requested Transit Committee member municipalities provide comments in writing by June 30, 2014. The deadline was further extended to July 15, 2014.

- On August 28, 2014, CRB Administration provided a summary of Transit Committee member comments. The Transit Committee approved the following motion:

  “That the Transit Committee receive Intermunicipal Transit Governance Study Municipal Feedback – Administrative Report for information and request CRB Administration refer the Municipal Feedback to the Consultant, AECOM, to provide a contextual response to the questions and incorporate responses into the final report.”

- On September 19, 2014 the Transit Committee further discussed engaging the Consultant to prepare responses to the comments given new information that St. Albert Council had approved a motion to work with Edmonton to explore a partnership for public transit. The Transit Committee then approved the following motion:

  “That the Transit Committee accept the update on the Intermunicipal Transit Governance Study and that the CRB Administration work with the Transit providers to frame the political/operational questions for the Transit Committee’s consideration.”

- On September 24, 2014 CRB Administration requested responses to the following questions from the Transit Providers:
  1. What are the operational barriers to moving forward in exploring a regional transit commission?
  2. What are the list of political questions that need to be answered to inform the future discussions about forming a regional transit commission?

- The consensus from the Transit Providers was to present the responses to the above questions as information and recommend that the Transit Committee monitor the outcomes of the discussions between St. Albert and Edmonton to inform further work on regional transit governance.

- On October 16, 2014, the Transit Committee approved the motion to accept the Intermunicipal Transit Governance Study Follow Up Report (summarizing the input from the four aforementioned municipalities) as information.
- On March 23, 2015, CRB Administration provided a verbal update to the Transit Committee on the discussions between St. Albert and Edmonton advising that the discussions were still in the preliminary stages and that there was nothing to report at the time.

- On April 27, 2015 and June 10, 2015, St. Albert and Edmonton Councils, respectively, approved the proposed work plan/terms of reference entitled “Moving Integrated Transit Forward” which outlined the opportunities and challenges around closer integration of Edmonton’s Transit System and St. Albert Transit. In the first phase of the work plan both Administrations would work together to develop transit integrated options for presentation to their respective Councils by September of 2016. An update on the progress of the work plan is scheduled for March 2016.

- On November 26, 2015, CRB Administration provided an Intermunicipal Transit Governance Study Status Update. The Transit Committee approved the following motion:

  “That the Transit Committee direct CRB administration to work with the City of Edmonton and the City of St. Albert to develop on-boarding options for additional willing municipalities into the reporting for their ongoing intermunicipal transit discussions.”

- On March 24, 2016, CRB Administration provided the Transit Committee with copies of the progress report provided by ETS and St. Albert Transit to their respective Councils earlier in the week. The Transit Committee approved the following motion:

  “That the Transit Committee direct CRB administration to engage a facilitator for the next meeting to assist the committee in discussing the Regional onboarding component of the intermunicipal commuter entity/service provider being discussed by Edmonton and St. Albert.”
Capital Region 2016 Specialized Transportation Needs Assessment Report

Recommended Motion

*That the Transit Committee recommend the Capital Region Board receive the Capital Region 2016 Specialized Transportation Needs Assessment Report for information.*

Background

- On June 20, 2014, Dr. Bonnie Dobbs, Professor, Department of Family Medicine, and Director, Medically At-Risk Driver Centre at the University of Alberta gave a presentation to the Transit Committee – “Exploring the Need for Alternate Transportation for Seniors in the Capital Region” – to create awareness of the issue of transportation services for rural and urban municipalities.

- On September 19, 2014, the Transit Committee approved the following motion:

  “That the Transit Committee approve the proposal for conducting a Needs Assessment Pilot for Specialized Transit for implementation in 2015, subject to budget approval.”

  The objectives of the Pilot were to assess the need for 1) specialized transportation services for seniors; 2) specialized transit services for persons with disabilities; and 3) the need for intermunicipal transit services to major centres in the Capital Region.

- On February 12, 2015, the Capital Region Board approved the 2015-2016 Budget which included funding to expand the Specialized Transit Needs Assessment Study to include the remainder of the Capital Region.

- On June 11, 2015, Dr. Dobbs presented the Pilot CRB Transportation Need Assessment Report to the Capital Region Board for information as recommended by the Transit Committee. The Board approved the motion to receive the Report for information.

- On September 3, 2015, the Transit Committee was advised that the Regional Specialized Transportation Needs Assessment Study would be commencing early that fall. Updates on the Study’s progress were provided at the January 28, 2016, and March 24, 2016 Committee meetings, noting that the project was on schedule to be completed on time for presentation at the May 26, 2016 Committee meeting.
Rationale

- As required by the CRB Regulation the Capital Region Board prepared an Intermunicipal Transit Network Plan for the Capital Region that included provisions for the delivery of regional intermunicipal transit services and specialized transit services for persons with disabilities. A key goal of the specialized transit services is one of integration to ensure that seniors and persons with disabilities can use public transportation intermunicipally without encountering unnecessary barriers. The following guiding principles were established in advancing long term intermunicipal specialized transit provisions and transport services for seniors and persons with disabilities:
  o Universal access including the provision of a level of transport service comparable to that afforded the general population and with an accessible infrastructure;
  o Flexible mobility options with a cost-effective mix of accessible shared-ride, public transportation services; and,
  o Maximize the utility and investment in accessible conventional transit (mobility management strategies) to encourage a shift from specialized to conventional public transit.

The guiding principles provide a framework for service attributes that describe the regional delivery of specialized intermunicipal transit services. This recognizes:
  o Travel needs of residents in the urbanized and rural areas of the Region;
  o Different functional disabilities and unique travel requirements of these diverse market segments;
  o Efficiencies gained through the standardization of eligibility/certification processes, operating policies and procedures, etc.;
  o The extent that accessible conventional transit may meet the mobility needs of seniors and persons with disabilities at the present time and in the future;
  o A level of service comparable to that afforded the general population in terms of days of week, hours of day, area of service, etc.;
  o Incentives and policies to address demand or mobility management opportunities; and,
  o Fiscal responsibility and accountability (and the need to be cost effective).

The Capital Region Transportation Needs Assessment Report is the first step in evaluating the needs of residents for specialized transportation services in the Capital Region. Based on the information presented in the Report the CRB can begin exploring the range of possible service options that provide a level of intermunicipal specialized transit service that satisfies community requirements and expectations in a cost effective manner.

Attachments:
Capital Region Transportation Needs Assessment of Seniors and Persons with Disability

2016 Final Report
Capital Region Transportation Needs Assessment of Seniors and Persons with Disability

Prepared for the Capital Region Board

May 2016

Bonnie M. Dobbs, PhD

Tara Pidborochynski, MSc

University of Alberta
ACKNOWLEDGEMENTS

Funding for the two studies was provided by the Capital Region Board (CRB). The authors wish to acknowledge and thank Wes Brodhead (Chair – CRB Transit Committee), Nolan Crouse (Chair – CRB), Malcolm Bruce (CEO – CRB), and Neal Samecki (Manager, Regional Projects – CRB) for their ongoing support. We also wish to acknowledge and thank Donna Fong (Research Administrator), Dave Odynak (Demographic Research Analyst), Tracy Kennedy (Research Coordinator), and Dr. Herb Northcott (Executive Director [Acting]) from the University of Alberta’s Population Research Laboratory. Their expertise and efforts throughout the development of the surveys, during the data collection process, and in the delivery of the data are much appreciated. We also wish to acknowledge and thank Dr. Don Schopflocher for his insights and expertise in data analyses. And, with deep appreciation, we acknowledge and thank all of the individuals who participated in these studies.

AVAILABILITY

An electronic copy of this report is available from www.mard.ualberta.ca or from www.capitalregionboard.ab.ca

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Executive Summary

The Capital Region Board, established in 2008, is represented by 24 municipalities in and around Alberta’s provincial capital. The Capital Region Board’s (CRB’s) 4 identified priority areas are Land Use, Intermunicipal Transit Services, Non-Market and Market-Affordable Housing, and Geographical Information Systems. A key element of the Regional Transit Plan is the improvement of regional delivery of specialized intermunicipal transit services for seniors and persons with disabilities (PWD).

Two Transportation Needs Assessments of Seniors and PWD were conducted by MARD – the first needs assessment was conducted in 2015 in a sub-region of the Capital Region (Lamont County and the town of Redwater) and the second needs assessment was conducted in 2016 in the remaining sub-regions of the Capital Region. The overall objectives of the needs assessment were to: 1) identify factors associated with unmet transportation needs of seniors (65 years and older) and PWD (aged 18 years and older); 2) identify attributes that make ATS and specialized transportation for seniors and PWD more ‘user-friendly’; and 3) assess the need for intermunicipal transportation services within the Capital Region. Data were collected through phone interviews with seniors and PWD. The samples were generated through Random Digit Dialing and purposive sampling of PWD. The overall sample consisted of 2296 individuals in the general population aged 45 years and older (adult children, senior drivers, and non-drivers) and PWD aged 18 years and older.

There currently is a broad range of transportation services available in the Capital Region, including Light Rail Transit, public transit (bus) services, taxi services, specialized transit services for PWD, as well as a number of for-profit and non-profit service providers providing transportation services to seniors and/or to PWD. Yet, despite the availability of transportation services in the Capital Region, many seniors and PWD have unmet transportation needs.

The research reported herein is unique in its assessment of the effects of predisposing, enabling, and need factors on different types of transportation needs (e.g., medical, essential, social, etc.), across different segments of the population (seniors and PWD), and across different settings (urban and rural). The research also is unique in that it provides information not only on the factors affecting the transportation mobility of seniors and PWD in urban and rural settings, but also assesses, with the same sample, the attributes needed to make alternate transportation service [ATS] for seniors and specialized transit [ST] service for PWD more user-friendly. We also asked about the importance of the availability of
intermunicipal transit (IMT) and regional medical transit (RMT) services in communities in the Capital Region, as well as the importance of municipal funding for these services.

We have presented the results in this report as 3 studies, with the 3 studies aligned with the 3 objectives. For Study 1, the focus is on the results related to the identification of factors associated with unmet transportation needs of seniors (65 years and older) and PWD (aged 18 years and older). For Study 2, the focus is on the results related identification of attributes that make ATS and specialized transportation for seniors and PWD more ‘user-friendly’. For Study 3, the focus is on the results related to assessment of the need for intermunicipal transportation services within the Capital Region. A summary of the results for each of the studies is presented below.

Study 1
A number of factors have been identified as affecting the mobility of seniors and PWD across a handful of studies completed elsewhere. For seniors and PWD, those factors have included age, sex, marital status, living arrangements, income, place of residency, the availability of transportation services outside of the private vehicle, health status, and disability. Results from this current study indicated that increasing age and being female increased the odds of being transportation disadvantaged in the senior population. However, the results also indicated that becoming transportation disadvantaged is not due to age alone. Rather, the presence of illness and/or disability were found to be more important predictors of unmet transportation needs in the senior population than age and gender alone or combined. Of interest, in our initial analyses of unmet transportation needs of PWD, only sex was a significant predictor of unmet transportation needs for PWD, \( p < 0.049 \), with females having greater unmet transportation needs than their males counterparts. However, in an examination of the relationship between predisposing, need, and enabling factors and unmet transportation needs for PWD, none of the factors were predictive of unmet transportation needs in PWD. These results are most likely due to the small sample size of PWD.

Not surprisingly, senior drivers have fewer unmet transportation needs than senior non-drivers and PWD. What is surprising is the degree of difference in unmet transportation needs among these three segments of the population. Results from interviews with more than 1000 senior drivers, senior non-drivers, and PWD indicate that non-driving seniors have more than a 4.5 fold increase in unmet transportation needs as compared to senior drivers, and PWD have more than double the number of unmet transportation needs as compared to senior non-drivers.
Study 2
In addition to examining the factors associated with unmet transportation needs of seniors and PWD in urban and rural settings, we also asked adults 45–64 years of age, senior drivers, senior non-drivers, and PWD about the availability of alternate transportation for seniors (ATS) services and specialized transit (ST) service for PWD. Although close to two-thirds of adults aged 45–64, senior drivers, and senior non-drivers and about one-third (37%) of PWD indicated that there was some type of ATS and/or ST service in the community (e.g., community buses and/or vans for seniors, handivan services, Driving Miss Daisy/Corinne’s Companions, DATS for PWD), more than one-third of senior non-drivers and PWD relied either on family members and/or friends for transportation one or more times per week to ‘get to where they wanted to go’. When asked about the features needed to make transportation services for these two segments of the population more user-friendly, the vast majority of adults aged 45–64, senior drivers, senior non-drivers, and PWD identified all 5 A’s of user-friendly transportation (Availability, Acceptability, Accessibility, Adaptability, and Affordability) as being important to service provision.

Study 3
The importance of the availability of Intermunicipal Transit (IMT) and Regional Medical Transit (RMT) services within the Capital Region also was assessed, with the vast majority (85%–99%) of participants indicating that the availability of IMT service in their community was ‘somewhat/very important’. A similar pattern of findings was evident for RMT services, with 95% of participants indicating that having RMT services available in their communities was ‘somewhat/very important’. The need for intermunicipal funding for these services was evident, with 96% of all participants rating the availability of municipal funding for both these services as ‘somewhat/very important’. In terms of use, more than half (56%) of all participants indicated that they would ‘somewhat/very likely’ to use IMT service if it was available.

Summary and Conclusion
The results from the combined 2015 and 2016 Capital Region Transportation Needs Assessments presented in this report indicated that older individuals and PWD in communities throughout the Capital Region do have unmet transportation needs. The results are informative in that although PWD have, on average, greater unmet transportation needs than seniors, the societal economic burden of having unmet transportation needs is far greater for seniors given the difference in prevalence of these two segments of the population in our communities. These findings have important implications for assessing the need for
transportation services for seniors and PWD at local, regional, municipal, and provincial levels. First, the high unmet transportation needs of PWD in all regions of the Capital Region indicate that greater availability of these types of services is needed throughout the Capital Region. The results from this study also indicate that planning and policy decisions related to the transportation service provision for seniors will be inadequate if those decisions are based simply on prevalence statistics of seniors in the population in the target area. Rather, population statistics on health and disability, and, if available, the percentage of seniors in the community who do not drive, can facilitate planning and policy decisions that can, in turn, facilitate transportation mobility for this growing segment of the population. The results also provide an important step toward understanding which features of transportation services for seniors and PWD are deemed to be most relevant. All 5 A’s of user-friendly transportation services were rated as being important by adults 45-64 years of age, senior drivers, senior non-drivers, and PWD children. To the best of our knowledge, no one has estimated the costs of unmet transportation needs of seniors and PWD. However, it is reasonable to assume that the lack of responsive transportation for both seniors and PWD is costly at both a societal and individual level. Finally, the results also indicated that the availability of both intermunicipal and regionalized medical transportation services in communities in the Capital Region were seen as important as was the provision of municipal funding for these services. Of interest, the majority of participants indicated that funding for ATS and ST services was important. Overall, the advancements in knowledge gained from these studies can be used by service providers, community organizations, and local, regional, and municipal leaders to inform on policy and planning initiatives and funding requests related to the delivery of responsive transportation services for seniors and PWD in the Capital Region.
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1.0 Introduction

1.1 Overview of the Capital Region and Its Priority Areas

The Capital Region Board, which was established in 2008 by the Government of Alberta, is represented by 24 municipalities in and around Alberta’s provincial capital. The Capital Region consists of 5 cities (Edmonton, Fort Saskatchewan, Leduc, St. Albert, and Spruce Grove), one specialized municipality (Strathcona County), 4 municipal districts (Lamont County, Leduc County, Parkland County, and Sturgeon County), 11 towns (Beaumont, Bon Accord, Bruderheim, Calmar, Devon, Gibbons, Lamont, Legal, Morinville, Red Water, and Stony Plain), and 3 villages (Thorsby, Wabamum, and Warburg) (see Figure 1). The Capital Region’s one specialized municipality and the 4 municipal districts include a total of 39 communities that are recognized as hamlets by Alberta Municipal Affairs (1).

Figure 1. Map of the Capital Region (Source: http://www.makingtracks2015.ca/about.php).

1 Sherwood Park is one of two hamlets in Alberta designated an urban service area.
The Capital Region Board (CRB), which was created to prepare and implement an integrated Capital Region Growth Plan, identified Land Use, Intermunicipal Transit Services, Non-Market and Market-Affordable Housing, and Geographical Information Systems as its Key Priority Areas. In terms of Intermunicipal Transit Services, regional bus services, commuter services, Park and Ride facilities, Light Rail Transit (LRT) services, and transportation for persons with disabilities (PWD) were identified as key elements of the Regional Transit Plan (2). In this same report, the authors also recognized the need to improve the regional delivery of specialized intermunicipal transit services for seniors and PWD (2). Since that time, the CRB Transit Committee has continued its recognition of the importance of transportation service provision to these two segments of the population. In 2015, the CRB funded a pilot Transportation Needs Assessment of Seniors and Persons with Disabilities in a sub-region of the Capital Region (3), followed by funding for a similar Transportation Needs Assessment in the remaining Capital Region sub-regions (4). The combined results of those two CRB Transportation Needs Assessments are the focus of this report.

In this report, we present and discuss the factors that are predictive of the unmet transportation needs of seniors and PWD, with the data analyzed by geographic area in the Capital Region. We also present results on which features of alternate transportation for seniors (ATS) service and specialized transportation (ST) service for PWD are deemed most important to seniors and PWD. An important backdrop to understanding and interpreting the presented results is knowledge of existing transportation services within the Capital Region. As such, a profile of the current transportation services (LRT and commuter bus service), as well as of ATS and ST services for PWD within the Capital Region. It is anticipated that the results reported herein can and will be used to support ongoing policy decision-making and implementation processes related to transportation services for seniors, for PWD, and other target populations within the Capital Region.
1.2 Profile of Current Transportation Services within the Capital Region

There currently is a broad range of transportation services available within the Capital Region. Those services, which include Light Rail Transit (LRT), public transit (bus) service, specialized transit services for PWD, and ATS services are integral to making communities within the Capital Region more livable by providing access to goods and services. The City of Edmonton is the hub of LRT service with a mix of scheduled and commuter bus service connecting people from surrounding municipalities to the metropolitan core (5). The LRT network consists of two major lines (the Metro Line and the Capital Line), with 18 LRT stations, 4 of which have a Park and Ride). In addition to the LRT, there are 15 transit centres in Edmonton which accommodate several buses at one time. There presently are 6 other municipalities in the Capital Region providing transit service – the City of Leduc and Leduc County, the City of Fort Saskatchewan, Strathcona County, Sturgeon County, the City of St. Albert, and the City of Spruce Grove.

An overview of the transit services in each of these municipalities is provided in Table 1.

In addition to public transit services, there presently are 6 municipally funded service providers in the Capital Region providing specialized transit services for PWD. The 6 municipally funded specialized transit service providers for PWD are shown in Table 1, with more detailed information on these services provided in Table 2. As shown, the primary areas of service are the City of Edmonton and the immediate surrounding areas.

There also are a number of for-profit and non-profit service providers in the Capital Region providing transportation services to seniors and/or to PWD. Based on an environmental scan of the cities, towns, villages, and hamlets in the Capital Region, there currently are 10 communities with bus services, 22 communities have access to public and/or private disabled transit services, 12 communities have taxi services in their community, 27 communities have access to non-profit and/or community-run ATS services, and 13 communities have access to for-profit alternate transportation services.
Table 1. Public Transit (Bus) Service (Local and Commuter) and Disabled Transit Services within the Capital Region 2016.

<table>
<thead>
<tr>
<th>Location</th>
<th>Service Provider</th>
<th>Transit Services/Disabled Transit Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Edmonton</td>
<td>City of Edmonton Transit</td>
<td>• LRT (Metro and Capital Lines)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Public transit (bus) service</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o 300 fixed routes within the City of Edmonton</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o One route to EIA&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Disabled Adult Transit Services (DATS)</td>
</tr>
<tr>
<td>City of Leduc and Leduc County</td>
<td>Leduc Transit</td>
<td>• Public transit [bus] service (local and commuter routes)</td>
</tr>
<tr>
<td></td>
<td>(inter-municipal partnership between the City of Leduc and Leduc County)</td>
<td>o 2 local routes within the City of Leduc</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o One route between Leduc and Nisku areas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o EIA&lt;sup&gt;2&lt;/sup&gt; stop</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o 1 route to City of Edmonton Century Park LRT station (south) stop</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Leduc Assisted Transportation Service (LATS)</td>
</tr>
<tr>
<td>City of Fort Saskatchewan</td>
<td>Fort Saskatchewan Transit</td>
<td>• Public transit [bus] service (local and commuter routes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o 2 local routes providing service throughout the community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o 1 commuter route to the City of Edmonton’s Clareview LRT station&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Specialized Transportation Services&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Strathcona County</td>
<td>Strathcona County Transit</td>
<td>• Public transit [bus] service (local and commuter routes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o 16 fixed routes within Strathcona County&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o 7 commuter routes between the urban service areas of Sherwood Park and the City of Edmonton&lt;sup&gt;5&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Specialized transit services (Transit Mobility Bus)</td>
</tr>
<tr>
<td>City of St. Albert</td>
<td>St. Albert Transit</td>
<td>• Public transit [bus] service (local and commuter routes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o 15 fixed routes providing service within the City of St. Albert</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o 7 commuter routes to the City of Edmonton&lt;sup&gt;6&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• St. Albert Transit Handibus</td>
</tr>
<tr>
<td>City of Spruce Grove</td>
<td>City of Edmonton Transit</td>
<td>• Public [bus] transit service (limited local and commuter routes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o 1 commuter route to the City of Edmonton&lt;sup&gt;2,7&lt;/sup&gt; with limited local service within Spruce Grove</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Spruce Grove Specialized Transit Service</td>
</tr>
<tr>
<td>Sturgeon County</td>
<td>City of Edmonton Transit</td>
<td>• Public transit [bus] service (commuter route)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o 1 commuter route to the City of Edmonton&lt;sup&gt;8&lt;/sup&gt;</td>
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<sup>1</sup> EIA – Edmonton International Airport

<sup>2</sup> Provided by the City of Edmonton Transit (ETS)

<sup>3</sup> Provided under the auspices of the Specialized Transportation Services Society

<sup>4</sup> 11 routes operating all day with 5 routes operating during peak periods

<sup>5</sup> Current commuter routes to University of Alberta, Edmonton City Centre, City of Edmonton Government Centre, and NAIT

<sup>6</sup> Current commuter routes to Kingsway LRT Station and Royal Alexandra/Glenrose Rehabilitation Hospitals (with all day access to NAIT and the hospitals); Express service to and from the eastern portion of downtown Edmonton including City Hall, Law Courts, Canada Place, Scotia Place, City Centre Mall and Epcor

<sup>7</sup> Current commuter routes to NAIT, MacEwan University, downtown Edmonton; with a new route between NAIT and Westmont Transit Centres to Acheson Industrial Area

<sup>8</sup> Current commuter route is from Sturgeon Road to City of Edmonton Eaux Claires Transit Centre (97 St & 157 Ave)
Table 2. Specialized Transportation Service for Persons with Disabilities in the Capital Region 2016.

<table>
<thead>
<tr>
<th>Location</th>
<th>Service Provider</th>
<th>Minivan/Handivan Services</th>
<th>Service Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Edmonton</td>
<td>City of Edmonton</td>
<td>DATS</td>
<td>City of Edmonton</td>
</tr>
<tr>
<td>City of Leduc</td>
<td>City of Leduc</td>
<td>LATS&lt;sup&gt;1&lt;/sup&gt;</td>
<td>City of Leduc</td>
</tr>
<tr>
<td>Fort Saskatchewan</td>
<td>City of Fort Saskatchewan</td>
<td>Fort Saskatchewan Minivan and Handivan Services</td>
<td>Primarily within Fort Saskatchewan</td>
</tr>
<tr>
<td>Spruce Grove</td>
<td>City of Spruce Grove</td>
<td>Spruce Grove Specialized Transit Service</td>
<td>Sturgeon County and defined limits of Parkland County</td>
</tr>
<tr>
<td>St. Albert</td>
<td>City of St. Albert Transit</td>
<td>St. Albert Handibus&lt;sup&gt;2&lt;/sup&gt;</td>
<td>St. Albert and Edmonton (13 locations in Edmonton)</td>
</tr>
<tr>
<td>Stony Plain</td>
<td>Town of Stony Plain</td>
<td>Stony Plain Handibus&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Stony Plain, Spruce Grove, Edmonton, and Devon</td>
</tr>
<tr>
<td>Strathcona County</td>
<td>Strathcona County</td>
<td>Transit Mobility Bus&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Sherwood Park and Edmonton (Specified regions and locations in Edmonton)</td>
</tr>
</tbody>
</table>

<sup>1</sup> LATS (Leduc Assisted Transportation Service) – Service to Medicine Shoppe, Second Glance, City Centre Mall, Leduc Co-op Grocery, Leduc Co-op Hardware, Craig’s No Frills, Safeway Grocery

<sup>2</sup> Service to clients in St. Albert. Door to door service to 13 locations in Edmonton including Alberta Retina Consultants, Chrysalis, Cross Cancer Institute, Edmonton City Centre, First Edmonton Place, Glenrose Rehabilitation Hospital, HYS Medical Clinic, Kaye Edmonton Clinic, Royal Alexandra Hospital, University of Alberta Hospital, University of Alberta – Steadward Centre, Kingsway Mall, and University Transit Centre

<sup>3</sup> Available for use by residents of Spruce Grove, Parkland Village, and defined limits of Parkland County

<sup>4</sup> Service to clients in Sherwood Park and rural areas of Strathcona County (replaces SCAT service). Provides transportation to Royal Alexandra Hospital, Glenrose Rehabilitation Hospital, HYS Medical Centre, Grey Nuns Community Hospital, Cross Cancer Institute, Edmonton General Hospital, and Fort Saskatchewan Community Hospital (from rural areas north of Hwy 16 only)
1.3 The Need for ATS services and Specialized Transit in the Capital Region

The availability of transportation services for seniors outside of 'public transit' is important given the aging of the population and the associated increases in dependency on alternate forms of transportation service with age (6). The number of individuals 65 years of age and older within Canada is projected to double, from approximately 6 million in 2015 to more than 10 million by 2035. A similar change in demographics is occurring within the Capital Region. Based on Alberta Treasury Board data, the population 65 years of age and older is projected to increase from 11% in 2014 to 19% by 2041 (7).

Factors affecting transportation mobility

A number of factors have been identified as affecting the transportation of seniors in a handful of studies conducted elsewhere. Those factors include driving status, age, sex, marital status, living arrangements, income, place of residency, the availability of transportation services outside of the private vehicle, as well as health status and disability. Within the senior population, driver licensing rates decline with age with the percentage of seniors holding a valid driver's license decreasing from 80% for those 65 to 74 years of age to less than 20% for those aged 90 and older (6). Sex is an important factor in terms of transportation mobility with older females more likely to be transportation dependent than are their same-aged male counterparts (6,8,9). Marital status also affects transportation mobility, particularly for older women in that they are more likely to be widowed than their same-aged male counterparts, with many older women relying on their spouses for transportation (6,9,10). Older individuals who live alone and those with lower household incomes have been shown to be transportation disadvantaged (11). Place of residency affects transportation mobility in general, with individuals in rural areas being more transportation dependent than their urban counterparts (12,13). Place of residency particularly affects senior's transportation mobility as the majority of seniors live in areas with few alternatives to car travel (6). Health status and disability also are important factors influencing transportation mobility, with poor health status and the presence of a disability associated with transportation dependency (14,15,16).

Transportation mobility has long been recognized as an important issue for PWD. In fact, disability has been identified as “the most important individual characteristic influencing travel behavior, mobility, and problems with transportation” (p. 3) (15). Research also has shown that PWD “fare far worse than their non-disabled counterparts across a broad range of health indicators” (p. S201) (17), including delays in or failure to receive health care as well as access to other needed services (17). Finally, survey data indicate
that PWD are less likely to drive, are more likely to say that transportation is a limiting factor for trip making ability, and are less likely to indicate that there are adequate transportation options available in the community (15). Based on a 2006 report, 16% of adult Albertans have a disability, with a significant percentage of this population 65 years of age and older (18).

The rapid aging of the senior population and the need for specialized transportation for many disabled persons have widespread implications in many areas of service delivery, including the need for access to responsive forms of transportation for both of these segments of the population. Within Alberta’s Capital Region, the 2009 Intermunicipal Network Plan has identified the provision of “specialized public transit services to seniors and persons with disabilities” (p. 58)(1) as one of its mandates. In this same report, the authors note the need to improve the regional delivery of specialized intermunicipal transit services, with guiding principles and service attributes articulated to assist in meeting the mobility needs of seniors and PWD at the present time and in the future (p. 60)(1). The results from the 2015 and 2016 Transportation Needs Assessments will assist the CRB in achieving those goals.

Using data from the combined needs assessments, our primary objectives were to:

1) identify factors associated with unmet transportation needs of seniors (65 years and older) and PWD (aged 18 years and older);

2) identify attributes that make ATS and specialized transportation for seniors and PWD more ‘user-friendly’; and

3) assess the need for intermunicipal transportation services within the Capital Region.
2.0 Study Overview and Target Populations

Two Transportation Needs Assessments of Seniors and PWD were conducted by MARD – the first, a pilot study, which was conducted in 2015 in a sub-region of the Capital Region (Lamont County and the town of Redwater) and a second study which was conducted in 2016 in the remaining sub-regions for the Capital Region (The City of Edmonton, Leduc County, Parkland County, Strathcona County, and Sturgeon County) (See Figure 2) (see Appendix A1 for a list of the CRB member communities represented in the survey).

Figure 2. Map of the Capital Region depicting the six sub-regions studied (2015 & 2016).

The target populations in both the 2015 and 2016 CRB Transportation Needs Assessments consisted of individuals in the general population aged 45 years and older (adult children aged 45 to 64 and seniors over 65) and PWD aged 18 years and older. Random digit dialing (RDD) using telephone landlines (derived from a databank with the last two digits randomly generated by computer)\(^2\) for those residing in the 6 sub-regions was used to generate the sampling frame. The study involved interviewing residents by telephone using the Computer Assisted Telephone Interviewing system at the University of Alberta’s Population Research Laboratory (PRL). Two survey instruments, which were used in both studies, were developed by MARD researchers with input from the PRL and CRB personnel. The first survey instrument was used in interviewing adults aged 45 to 64 and seniors aged 65 and older, with the second survey

\(^2\) A sample of 1000 cell phone numbers also was used to generate the sampling frame in the 2016 CRB Study.
instrument used in interviewing PWD aged 18 years and older. Data were collected by the PRL under contract to MARD, with data from Lamont County and Redwater collected between January 29 and February 25, 2015, with data from the remaining sub-regions collected between January 14 and March 9, 2016. The research received ethics approval from the University of Alberta’s Health Research Ethics Board. The overall sample size was 2296 (413 participants interviewed in 2015 and 1883 participants interviewed in 2016). The overall response rate for the 2015 study was 36% and 21% for the 2016 study. These response rates are similar to or exceed recently reported response rates to telephone surveys (19).

Recall that there were 3 primary objectives to this research. The results related to Objective 1 are presented in Section 3.0 and entitled Study 1. Results related to Objective 2 are presented in Section 4.0 and entitled Study 2. Results related to Objective 3 are presented in Sections 5.0 and 6.0 and entitled Study 3.
3.0 Study 1: Assessing the Factors Associated with Unmet Transportation Needs of Seniors and PWD

3.1 Assessing the Factors Associated with Unmet Transportation Needs of Seniors

3.1.1 Methodology

Conceptual Framework

As noted above, one of the primary objectives was to identify factors associated with unmet transportation needs of seniors (65 years and older), and PWD (aged 18 years and older). The conceptual framework for our examination of factors associated with unmet transportation needs of seniors and PWD is shown in Figure 3. This conceptual framework is based on a model of health care utilization initially developed by Andersen in 1968 (20) and subsequently refined by Andersen and Newman in 1973 (21) and by Andersen in 1995 (22). The model was initially developed to assist in the understanding of use of health care services, to define and measure equitable access to those services, and to assist in developing policies to promote equitable access to those services (20). Given its adaptability to other contexts, including assessment of need for services and service utilization, Anderson’s behavioural model frequently is used in research other than health care utilization. The benefit in our adopting this conceptual framework is that organizing the analyses and discussion of our findings in terms of these 3 factors facilitates our understanding of the needs and routes to solutions for existing unmet transportation needs of seniors and PWD. As shown in Figure 3, the use of and/or need for services can be explained by 3 factors: Predisposing factors, enabling factors, and need factors. In terms of operational definitions, predisposing factors are factors that affect the propensity to use services, enabling factors are factors that facilitate or impede access to services, with need factors consisting of both perceived and actual need for services.
**Predictor Variables**

- Predisposing Factors
- Enabling Factors
- Need Factors

**Outcome Variable**

- Unmet Transportation Needs

*Figure 3.* Conceptual model to assess factors associated with the unmet transportation needs of seniors 65+ and PWD 18+.

**Measures**

*M easures of Predisposing, Enabling, and Need Factors*

Based on previous research, the measures used to assess unmet transportation needs of seniors and PWD in the current study were: age and sex (Predisposing factors); income, marital status\(^3\), driving status\(^4\), and place of residence (geographic distance to major services) (Enabling factors); and Health status and disability (Need factors).

*Measures of Unmet Transportation Needs*

To determine unmet transportation needs, seniors 65 and older (drivers and non-drivers) and PWD were asked “In the last 6 months, how often have you not gone to/been unable to … because you did not have a ride”, with the following places/activities identified: Gone to a medical appointment in your community; gone to a medical appointment outside your community; been unable to shop for groceries; been unable to get together with family; been unable to attend social functions; been unable to attend religious activities. They were asked to choose one of four categories for their responses: never, sometimes, often, or not applicable.

\(^3\) See page 15 for a description of the re-coding of this variable  
\(^4\) Driving status was not used in the analyses of PWD as all PWD’s were non-drivers
Measure of Geographic Distance from Major Services

Area of residency affects transportation mobility, with alternatives to the car virtually non-existent outside of Census Metropolitan Areas (CMA) and Census Agglomerations (CA) (6). Currently, the Capital Region consists of a large rural area surrounding a concentration of urban areas (5). In terms of service delivery, there are regionally-significant services and amenities such as major health care facilities, educational institutes, retail outlets, and sporting and cultural activities available in the dense metropolitan (central) core of the region (City of Edmonton). Lower levels of service are available at the edges of this metropolitan area, with these services primarily developed to service local and surrounding communities. The rural areas of the Capital Region consist of primarily agricultural areas and smaller rural scale service centres including towns, villages, and hamlets (5). For analytic purposes, we stratified the Capital Region into four geographic areas (City of Edmonton and three ‘outer’ rings) with geographic areas based on distance from major services. Note that this conceptualization is similar to that portrayed in the CRB 2009 report (p. 35) (2). In our data analyses, the responses on unmet transportation needs were similar from participants residing in locations in the third and fourth rings (see Figure 4). As such, we combined the responses from respondents residing in the third and fourth rings for our data analyses for Study 1. Thus, our geographic areas of analyses became City Of Edmonton, Sherwood Park/St. Albert (Geographic Area 1), and the remaining areas (Geographic Areas 2 and 3).
Figure 4. Map of the Capital Region with rings depicting the four geographic areas (City of Edmonton and three outer rings) with geographic areas based on distance from major services.

The City of Edmonton is the metropolitan (central) core. The first geographic area (Geographic Area 1) outside the central core includes the hamlet of Sherwood Park and the City of St. Albert. The second geographic area (Geographic Area 2) outside the central core includes the City of Fort Saskatchewan, Strathcona County (not including Sherwood Park), Town of Beaumont, Town of Devon, City of Leduc, City of Spruce Grove, and Town of Stony Plain. The third geographic area (Geographic Area 3) outside the central core includes the Town of Bon Accord, Town of Bruderheim, Town of Calmar, Town of Gibbons, Lamont County, Town of Lamont, Leduc County, Town of Legal, Town of Morinville, Parkland County, Town of Redwater, Sturgeon County, Village of Thorsby, Village of Wabamun, and Village of Warburg.

3.1.2 Data Analyses

Using data from the 2015 and 2016 Capital Region Transportation Needs Assessments, we examined the prevalence of self-reported unmet transportation needs and the factors that were predictive of unmet transportation needs in seniors aged 65 and older (drivers and non-drivers) and PWD 18 years and older. Descriptive statistics (e.g., means, standard deviations, percentages) were used to describe the overall sample, sub-samples, and main variables. Regression analyses were used to identify factors that were
predictive of unmet transportation needs. The variables used to predict unmet transportation needs were age (years), sex (coded as 0 = males; 1 = females; 3 = PWD), total income (coded as 0 = $85,000; 1 = $50,000 - $84,999; 2 = $20,000 - $49,999; 3 = <$20,000 ), driving status (coded as 0 = senior driver; 1 = senior non-driver); Geographic area (coded as 0 = City of Edmonton; Geographic Area 1; Geographic Areas 2 and 3 (see Figure 5 for areas associated with coded areas), current physical health (coded as 1 = Poor; 2 = Fair; 3 = Good; 4 = Excellent), and disability (coded as 0 = no disability; 1 = disability). With respect to marital status and living arrangements, because of the strong relationship between the two variables, we created a new variable representing a combination of the two and labelled this variable as ‘domestic situation’ (coded as 0 = married/common-law and lives with family/friends; 1 = single and lives with family/friends; and 2 = single and lives alone). The outcome measure for unmet transportation needs was the total score of the ratings on the 6 types of transportation needs, with this total score calculated by summing the scores across the 6 types of needs (coded as 0 = never, 1 = sometimes/often). As such, the total score for unmet transportation needs could range from 0 to 6.

3.1.3 Results
An overview of the results of participant characteristics for each of the 3 sub-samples (Senior Drivers, Senior Non-Drivers, and PWD) is provided in the sections below. In the following sections, we first describe the demographics of Senior Drivers and Senior Non-Drivers. Next, we describe predictors of unmet transportation needs for these two segments of our sample. Finally, in Section 3.2, we describe the demographics of PWD and a summary of the results related to predictors of unmet transportation needs for PWD.

Senior Drivers/Senior Non-Drivers

Demographics
As can be seen in Table A.1 (see Appendix A), 884 senior drivers and 203 senior non-drivers participated in the survey. Results related to age, sex, marital status, living arrangements, employment status, household income, current ratings of physical health, use of mobility aids, the degree to which physical health affected everyday activities, disability status, driving status, place of residence, and number of participants by geographic area also are provided in Table A.1. A comparison of senior drivers vs. senior non-drivers indicated that senior non-drivers were significantly older, more likely to be female; more likely to be widowed, less likely to be living with a spouse, more likely to be retired, and more likely to have a total

5 Demographics related to all of the 4 sub-samples (adult children, senior drivers, senior non-drivers, and PWD) are provided in Appendix A.
household income < $20,000 as compared to senior drivers (all p values < 0.05). Senior non-drivers were more likely to rate their current physical health as poor or fair; were more likely to use one or more mobility aids; were more likely to say that their current physical health interfered with their ability to carry out everyday activities; and were more likely to indicate that they had a disability than were senior drivers (all p values < 0.05). In terms of place of residence (city, town, etc.), the trend was for a greater percentage of senior non-drivers to live in cities or towns within the Capital Region (78.9%) as compared to senior drivers (59.8%). With respect to area of residence within the geographic areas, the pattern was that approximately the same percentage of senior drivers (40.5%) and senior non-drivers (46.3%) lived either in the City of Edmonton, Sherwood Park, or St. Albert, with the remaining living in the outlying areas.

Unmet Transportation Needs

All participants were asked about unmet transportation needs. The average unmet transportation needs for senior non-drivers were almost 4.5 times higher (Mean = 1.69; SD = 2.54) than those of senior drivers (Mean = .38; SD = 1.20) (p < .001). In order to determine if all of the 6 types of transportation needs (e.g., medical transportation needs within the community; medical transportation needs outside the community; transportation for essential needs; etc.) could be combined into a single outcome measure, we first performed a principal component analysis. If the measures are related, this type of analysis can be used to reduce a large number of these related variables to a smaller set while still maintaining most of the information present in the larger set. In our analysis, we found that all of the 6 outcome measures could be combined into a single outcome measure with minimal loss of information (see Appendix A, Table A.2 for the results of principal component analysis).

As shown in Figure 5, the percentage of senior non-drivers with unmet transportation needs (48%) was significantly greater than those of senior drivers (14%) (p < .001). Of note, a number of senior non-drivers responded Not Applicable when asked about their need for transportation services across the 6 trip types. Further exploration of the data indicated that these questions were rated as Not Applicable because the respondent did not have a need for this type of transportation (e.g., no medical appointments during the time frame specified; someone other than themselves doing the grocery shopping; did not attend religious activities; etc.).
Factors Associated with Unmet Transportation Needs

We next examined the relationship between predisposing, need, and enabling factors (e.g., age, sex, income, domestic situation, income, place of residence, current physical health, disability) and unmet transportation needs (total score) for senior drivers and senior non-drivers using regression analyses. Regression analysis is one of the most basic and commonly used analyses to explain the relationship between predictor variables (in our case, the predisposing, enabling, and need factors) and the outcome variable (unmet transportation needs).

In the first regression analysis, we examined the relationship between age and sex and unmet transportation needs in our sample of senior drivers and senior non-drivers. As shown in Table 3, both age and sex were significant predictors of unmet transportation needs (both $p$ values were statistically significant at $p \leq .001$). What these results indicate is that individuals who are older and who are female have more unmet transportation needs as compared to individuals who are younger and who are male. In terms of interpreting the numerical value of the unstandardized coefficient, the coefficient of 0.029 for age means that with each increasing 10 years of age, there will be an increase of approximately 1/3 extra unmet transportation needs. The coefficient of 0.318 for sex means that females have 3 times the unmet transportation needs than their same-aged male counterparts.
Table 3. Relationship between the Predictor Variables of Age and Sex and Unmet Transportation Needs of Senior Drivers and Senior Non-Drivers.

<table>
<thead>
<tr>
<th>Type of Factor (Predictor)</th>
<th>Factors (Predictors)</th>
<th>Unstandardized Co-efficient*</th>
<th>Unmet Transportation Needs (p value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predisposing</td>
<td>Age (Years)</td>
<td>.029</td>
<td>.001*</td>
</tr>
<tr>
<td></td>
<td>Sex (Female/Male)</td>
<td>.318</td>
<td>.009*</td>
</tr>
</tbody>
</table>

*Unstandardized coefficients are used to assess which of the predictor measures have a greater effect on the dependent variable (unmet transportation needs) in a regression analysis when the variables are measured in different units of measurement (e.g., age measured in years and sex measured as female or male).

Next, we examined the relationship between all of the predisposing, need, and enabling factor variables and unmet transportation needs for senior drivers and senior non-drivers, with the goal of determining which, if any of the variables, are related. Our rationale was that many of the need and enabling factors are related to the predisposing factors of age and sex (e.g., health status changes with age as does the presence of disabilities; older females are more likely to be economically disadvantaged; to have more chronic health conditions than their same-aged male counterparts; etc.). As such, we hypothesized that a number of the need and enabling factors would be strongly associated with age and sex, and as such, would end up being more powerful predictors of unmet transportation needs than age and sex alone. The results from the combined analyses are presented in Table 4.

As shown in Table 4, age and sex, which were significant predictors of unmet transportation needs when used alone as predictors of unmet transportation needs (see Table 3) now are no longer predictive (that is, the p values for both age and sex are now > .05). Income and domestic status also are not predictive of unmet transportation needs (both p values > .05). In contrast, driving status, place of residence, current physical health, and disability all are significant predictors of unmet transportation needs (all p values < .05). What this means is that seniors who are non-drivers have greater unmet transportation needs than senior drivers, seniors who live in areas of the Capital Region outside the City of Edmonton have greater unmet transportation needs than seniors living within the City of Edmonton, seniors in poorer health have greater unmet transportation needs than seniors who are in good health, and seniors with a disability have greater unmet transportation needs than seniors not having a disability.
In looking at the unstandardized coefficients in Table 4, we can see that these values range from .004 to .761. Loosely speaking, these numerical values represent the percentage increase in unmet transportation needs of seniors with the ‘condition’ as compared to seniors ‘without the condition’ (e.g., driving, no physical health problems, etc.). As can be seen, driving status is a significant predictor of unmet transportation needs, with seniors who do not drive experiencing about a 68% increase in unmet transportation needs as compared to seniors who drive. Seniors who live in areas of the Capital Region outside the City of Edmonton have about a 16% increase in unmet transportation needs as compared to seniors living within the City of Edmonton. Seniors in poor health experience about a 34% increase in the number of unmet transportation needs due to health as compared to seniors in good/excellent health, and seniors with a disability have a 76% increase in unmet transportation needs due to their disability as compared to seniors without a disability.
Table 4. Relationship between the Predisposing, Enabling, and Need Variables and Unmet Transportation Needs of Senior Drivers and Senior Non-Drivers (Bolded entries represent statistically significance).

<table>
<thead>
<tr>
<th>Type of Factor (Predictor)</th>
<th>Factors (Predictors)</th>
<th>Unstandardized Co-efficient*</th>
<th>Unmet Transportation Needs (p value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predisposing</td>
<td>Age$^1$</td>
<td>.004</td>
<td>.638</td>
</tr>
<tr>
<td></td>
<td>Sex$^2$</td>
<td>.179</td>
<td>.131</td>
</tr>
<tr>
<td>Enabling</td>
<td>Income$^3$</td>
<td>.081</td>
<td>.244</td>
</tr>
<tr>
<td></td>
<td>Domestic status$^4$</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single, living alone</td>
<td>.043</td>
<td>.748</td>
</tr>
<tr>
<td></td>
<td>Single, living with others</td>
<td>.230</td>
<td>.290</td>
</tr>
<tr>
<td></td>
<td>Driving Status$^5$</td>
<td>.675</td>
<td>.000*</td>
</tr>
<tr>
<td></td>
<td>Geographic area</td>
<td>.160</td>
<td>.029*</td>
</tr>
<tr>
<td>Need</td>
<td>Current Physical Health$^7$</td>
<td>-.336**</td>
<td>.000*</td>
</tr>
<tr>
<td></td>
<td>Disability$^8$</td>
<td>.761</td>
<td>.000*</td>
</tr>
</tbody>
</table>

+  See Table 3 for a description of unstandardized coefficients
++ Note that this negative value is based on coding of the variable and should be interpreted the same way as the positive values
$^1$ Age – Years; $^2$ Sex – Female/Male; $^3$ Income – <$20,000/> $20,000; $^4$ Domestic situation – Single, living alone/Single, living with others/Married living with others; $^5$ Driving Status – Driver/Non-driver; geographic area – City of Edmonton, Geographic Area 1, Geographic Areas 2 & 3; $^7$Current Physical Health – Poor/Good to Excellence; $^8$ Disability – Disability/No disability

Effect of Area of Residency on Unmet Transportation Needs

As discussed in the previous section, geographic area was found to be a significant predictor of unmet transportation needs ($p = .03$). In our final analyses, we compared the unmet transportation needs of senior drivers and senior non-drivers across each of the geographic areas. As can be seen in Figure 6, overall, the average number of unmet transportation needs is higher for senior non-drivers than for senior drivers irrespective of geographic area (e.g., City of Edmonton, Geographic Area 1 [Sherwood Park/St. Albert], and Geographic Areas 2 & 3 [all remaining CRB locations]) with this difference statistically significant ($p = .009$).

In terms of senior drivers, although the unmet transportation needs increase across the 3 geographic areas in the Capital Region (City of Edmonton, Geographic Area 1, and Geographic Areas 2 & 3), these differences are not statistically significant ($p$’s > .05). It also can be seen that the unmet transportation needs for senior non-drivers increase across the 3 geographic areas (City of Edmonton, Geographic Area 1, and Geographic Areas 2 & 3), with approximately a two-fold increase in unmet transportation needs for
senior non-drivers living in Geographic Areas 2 and 3 as compared to senior non-drivers living in the City of Edmonton. This difference approached, but did not reach, statistical significance ($p > .05$). The difference in unmet transportation needs of senior drivers in the City of Edmonton and Geographic Area 1 were similar ($p > .05$).

Figure 6. Mean unmet transportation needs of senior drivers and senior non-drivers by geographic area in the Capital Region (City of Edmonton; Geographic Area 1 = Sherwood Park/St. Albert; Geographic Areas 2 & 3).
3.2 Assessing the Unmet Transportation Needs of PWD

3.2.1 Methodology
The methodology (e.g., Conceptual Framework, measures) was the same for PWD as they were for seniors (see Section 3.1.1).

3.2.2 Data Analyses
The data analyses were the same for PWD as it was for seniors (see Section 3.1.2).

3.2.3 Results
Demographics
Seventy-eight PWD participated in the survey. Results related to age, sex, marital status, living arrangements, employment status, household income, current ratings of physical health, use of mobility aids, the degree to which physical health interfered with everyday activities, disability status, driving status, place of residence, and number of participants by place of residence are provided in Table A.1 (Appendix A). Briefly, the mean age of PWD was 46.9 years, 58% were female, 39.7% were married or living common-law, with the majority (79.5%) living either with family/friends, in a group setting, or other (e.g., with a caregiver). Forty-one percent indicated that they were on long-term disability and 20.5% indicated that they were unemployed. The majority (76.3%) indicated that the total household income was > $20,000. In terms of health status, almost two-thirds (63.7%) rated their current physical health as poor or fair; with almost one-half (48.7%) indicating that they used one or more mobility aids. The vast majority (88.5%) indicated that their current physical health interfered with their ability to carry our everyday activities. By definition, all indicated that they had a disability and none of the participants drove. Almost two-thirds (61.5%) of PWD resided in a city or town. Forty-one percent lived either in the City of Edmonton, Sherwood Park, or St. Albert, with the remaining PWD living in towns, villages, hamlets or on farms or acreages within the Capital Region (see Figure 5).
Unmet Transportation Needs

In terms of unmet transportation needs, the majority (77.6%) of PWD indicated that they had one or more unmet transportation needs, with an overall average of 3.60 (SD = 3.35) unmet transportation needs. That is, on average, PWD had unmet transportation needs for almost 4 of the 6 different types of transportation needs (e.g., accessing medical services in and outside the community; for travel for essential services such as grocery shopping; for visits with family; and for attending social or religious activities). For those PWD who indicated that they did not have unmet transportation needs (~1/3 of the sample of PWD), the vast majority indicated that they lived with family (parents, siblings, or children). It is assumed that the presence of family members within the same household and who were available to provide transportation was responsible for these findings.

Factors Associated with Unmet Transportation Needs

In an examination of the relationship between predisposing, need, and enabling factors and unmet transportation needs (total score) for PWD, in the initial analyses of age and sex, only sex emerged as a significant predictor of unmet transportation needs for PWD ($p < 0.049$), with females having greater unmet transportation needs than their males counterparts (see Table 5).

Table 5. Relationship between the Predictor Variables of Age and Sex and Unmet Transportation Needs of PWD.

<table>
<thead>
<tr>
<th>Type of Factor (Predictor)</th>
<th>Factors (Predictors)</th>
<th>Unstandardized Co-efficient*</th>
<th>Unmet Transportation Needs (p value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predisposing</td>
<td>Age (Years)</td>
<td>.004</td>
<td>.905</td>
</tr>
<tr>
<td></td>
<td>Sex (Female/Male)</td>
<td>1.887</td>
<td>.049*</td>
</tr>
</tbody>
</table>

* See Table 3 for a description of unstandardized coefficients
* Statistically significant

Next, we examined the relationship between all of the predisposing, need, and enabling variables and unmet transportation needs for PWD. The results are presented in Table 6. As shown, none of the variables were statistically significant. The absence of significant results is most likely due to the small sample size of PWD.
Table 6. Relationship between the Predisposing, Enabling, and Need Variables and Unmet Transportation Needs of PWD.

<table>
<thead>
<tr>
<th>Type of Factor (Predictor)</th>
<th>Factors (Predictors)</th>
<th>Unstandardized Co-efficient+</th>
<th>Unmet Transportation Needs (p value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predisposing</td>
<td>Age†</td>
<td>-.034**</td>
<td>.444</td>
</tr>
<tr>
<td></td>
<td>Sex‡</td>
<td>1.385</td>
<td>.161</td>
</tr>
<tr>
<td>Enabling</td>
<td>Income§</td>
<td>.301</td>
<td>.562</td>
</tr>
<tr>
<td></td>
<td>Domestic Status¶</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single, living alone</td>
<td>1.298</td>
<td>.413</td>
</tr>
<tr>
<td></td>
<td>Single, living with</td>
<td>-.641</td>
<td>.647</td>
</tr>
<tr>
<td></td>
<td>others</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Driving Status°</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Geographic Area</td>
<td>.261</td>
<td>.647</td>
</tr>
<tr>
<td>Need</td>
<td>Current Physical Health¶</td>
<td>-.843**</td>
<td>.090</td>
</tr>
<tr>
<td></td>
<td>Disability⁄</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

+ See Table 3 for a description of unstandardized coefficients
† ‡ Note that the negative values are based on coding of the variable and should be interpreted the same way as the positive values

1 Age – Years; 2 Sex – Female/Male; 3 Income – <$20,000/> $20,000; 4 Domestic Situation – Single, living alone/Single, living with others/Married living with others; 5 Driving Status – Not Applicable; 6 Place of Residence – City of Edmonton, Geographic Area 1, Geographic Areas 2 & 3; 7 Current Physical Health – Poor/Good to Excellence; 8 Disability – Not Applicable

Effect of Area of Residency on Unmet Transportation Needs

As with senior drivers and senior non-drivers, we examined the relationship between residency in the geographic areas of the Capital Region (Geographic Area) and unmet transportation needs for PWD. As can be seen in Figure 7 (focusing on the PWD), the pattern of findings is such that the mean unmet transportation needs are higher for PWD living within the City of Edmonton than for PWD living in the remaining geographic areas of the Capital Region. The mean unmet transportation needs also are higher for PWD living in Geographic Areas 2 and 3 versus those PWD living in Geographic Area 1. However, none of these differences were statistically significant (all p"s > .05). We hypothesize that the higher unmet transportation needs of PWD in the City of Edmonton and in Sherwood Park and St. Albert may be due to a greater severity of disability. That is, PWD who are more severely disabled are most likely in need of more specialized medical services and/or in need of more frequent treatment for their disabilities. As such, it
would be more efficient and less costly to live closer to those services. The trend for greater unmet transportation needs of PWD in Geographic Areas 2 and 3 as compared to the other two geographic areas are most likely due to an absence or paucity of ST services in the more rural areas.

Finally, in examining the unmet transportation needs of PWD and senior drivers and senior non-drivers, we find that, irrespective of geographic area (e.g., City of Edmonton, Sherwood Park/St. Albert [Geographic Areas 1], and all remaining CRB locations [Geographic Areas 2 & 3]), the mean unmet transportation needs for PWD are greater than for Senior drivers and Senior non-drivers. However, none of these differences were statistically significant (all $p's > .05$).

![Figure 7. Mean Unmet Transportation Needs of PWD (with Senior Drivers and Senior Non-Drivers included for comparison) by Area of Residency in the Capital Region (City of Edmonton; Geographic Area 1 = Sherwood Park and St. Albert; Geographic Areas 2 & 3 = All remaining CRB locations).]
In the early 2000s, The Beverly Foundation identified 5 features of service provision as being important to transportation services for seniors and PWD (23, 24). Collectively, these factors came to be known as the 5 A’s of senior-friendly transportation. Since that time, these features have been used as criteria for assessing the usability of transportation options by older adult passengers and PWD (25, 26, 27). Definitions of each of these 5 A’s of senior friendly-transportation are provided in Appendix A.4. The results related to each of these 5 A’s of transportation services in seniors and PWD are presented in the Sections 4.1 through 4.5.

### 4.1 Availability

**Getting Around**

All participants were asked how they ‘get around’ in a typical week. Adults aged 45–64 indicated that, on average, they drove 5.4 days per week ‘to get to where they wanted to go’ whereas Senior Drivers indicated that, on average, they drove 4.5 days per week ‘to get to where they wanted to go’, with this difference being statistically significant ($p < .001$). When participants were asked about the number of days that they relied on *family members* to ‘get to where they wanted to go’, not surprisingly, less than 25% of Adults 45–64 and Senior Drivers indicated that they relied on family members for transportation one or more times per week. In comparison, 73% of Senior Non-Drivers and 77% of PWD indicated that they relied on family members for transportation one or more times per week. In terms of reliance on family for transportation, the difference among the groups was statistically significant ($p < .001$).

Similarly, when asked about the number of days that they relied on *friends* to ‘get to where they wanted to go’, 10% of Adults 45–64 and 15% of Senior Drivers indicated that they relied on friends for transportation one or more times per week. In comparison, 38% of Senior Non-Drivers and 30% of PWD participants indicated that they relied on friends for transportation one or more times per week. Again, the difference among the groups in terms of amount of reliance on family and friends for transportation was statistically significant with Senior Non-Drivers and PWD more likely to rely on family and friends for transportation ($p < .001$).
Importance of ATS and ST Services in the Community

When asked about the importance of having ATS services available for seniors in their community, the vast majority of Adults 45–64 and Senior Drivers (99% and 98%, respectively) indicated that it was ‘somewhat/very important’. Similarly, the vast majority (91%) of Senior Non-Drivers indicated that having ATS services available for them to use was ‘somewhat/very important’ (Figure 8). In terms of ST services, 97% of PWD participants indicated that it was ‘somewhat/very important’ to have this type of transportation service available in their community (see Figure 8).

![Figure 8. Importance of availability of ATS/ST services in the community.](image)

When asked about how important ATS services were to the quality of life of seniors, the vast majority of Adults 45–64, Senior Drivers, and Senior Non-Drivers indicated that ATS services were ‘somewhat/very important’ for quality of life (99%, 98%, and 82%, respectively) (see Figure 9). Ninety-five percent of PWD indicated that ST services were ‘somewhat/very important’ to their quality of life (see Figure 9).
Availability and Use of ATS and ST Services in the Community

All participants completing the ATS services survey (Adults 45–64, Senior Drivers, and Senior Non-Drivers) were asked if there were ATS services available in their community and whether seniors in their community or they themselves used those services. **ATS service** was defined as modes of transportation that exist outside of public transportation programs and include both for-profit and not-for-profit transportation by a service provider (e.g., private vehicles, buses, handivans, minivans) (28). PWD participants were asked if there were ST services available in their community and whether they used this type of transportation service. **ST Services** were defined as transportation services that are designed to accommodate individuals with mobility restrictions that make it difficult or impossible to take conventional transit service; this type of service is typically equipped to accommodate PWD (2).

When asked if there were any ATS services provided in the participant’s community, close to two-thirds of Adults 45–64, Senior Drivers, and Senior Non-Drivers said ‘yes’ (data not presented in a graph). Some of the ATS services identified included community buses and/or vans for seniors, volunteer drivers, handivan services, Driving Miss Daisy, and services offered by community organizations such as the Lion’s Club and Pioneer Club. In terms of PWD, less than half (37%) indicated that there were ST services available in their community. Some of the ST services identified were Edmonton Transit’s Disabled Adult Transit Service, Strathcona Transit’s Mobility Bus, as well as for-profit service providers (e.g., Driving Miss Daisy, and handicap taxi service) and handivans.
For Adults 45–64 and Senior Drivers who indicated that there were ATS services available in their community, the vast majority (93% and 91%, respectively) indicated that they thought seniors in their community used the services whereas just over half (53%) of Senior Non-Drivers indicated that they did indeed use the ATS services that were available. The difference among the groups was statistically significant ($p's < .001$). For PWD participants who indicated that there were ST services available in their community, less than half (46%) indicated that they used these services.

When asked about the *likelihood of use of ATS services by seniors in their community* if those services were available, 98% of Adults 45–64 and 97% of Senior Drivers thought that the seniors in their community would be ‘somewhat/very likely’ to use ATS services if they were available. Similarly, the majority (83%) of Senior Non-Drivers indicated that they would be ‘somewhat/very likely’ to use ATS services if they were available in the community. For PWD participants, 91% indicated that they would be ‘somewhat/very likely’ to use ST services if they were available in their community.

**Times Most Likely to Use ATS and ST Services**

This section of the survey pertained to *times when seniors and PWD in the community would be most likely* to use ATS and ST services if those services were available. As can be seen in Figure 10, the pattern of responses indicates that the majority of participants responded that the *most likely* time periods for use of ATS or ST services if those services were available would be Weekday mornings (95%, 90%, 78%, and 92%: Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD, respectively) and Weekday afternoons (85%, 83%, 84%, and 86%: Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD, respectively). Fewer participants indicated that ATS or ST services would be used on the weekend, with Weekend mornings (60%, 53%, 43%, and 49%; Adults 45–64 years of age, Senior Drivers, Senior Non-Drivers, and PWD, respectively) and Weekend afternoons (59%, 56%, 47%, and 43%: Adults 45–64Senior Drivers, Senior Non-Drivers, and PWD, respectively) as the time periods that seniors and PWD would be *most likely* to use these services. A lower percentage of participants indicated that ATS or ST services would be used on Weekday and Weekend evenings with less than 40% of all participants indicating use of services Weekend evenings (see Figure 10).
4.2 Acceptability

Importance of Different Features of ATS Service Provision – Booking Rides and Knowledgeable Drivers

In this section of the survey, participants were asked to rate the importance of different features of ATS and ST services if those services were available in their community. Specifically, participants were asked to provide input on booking rides and the importance of having drivers who are knowledgeable on health issues such as dementia or physical disabilities.

Booking Rides

As can be seen in Figure 11, across the four samples, booking ATS and ST services 24 hours in advance was indicated to be most reasonable by the majority of Adults 45–64 (94%), Senior Drivers (91%), Senior Non-Drivers (87%), and PWD (91%). Not having to book rides in advance (69%, 68%, 77%, and 71%; Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD, respectively) was the second most preferred choice for each of the sub-samples. Having to book ATS and ST services more than 48 hours in advance was deemed to be the least reasonable by all 4 sub-samples.
Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD participants also were asked how likely they thought seniors or PWD in their community would be to book their trips with service providers online. As shown in Figure 12, close to two-thirds of Adults 45–64 and Senior Drivers (60% and 64%, respectively) indicated that they thought seniors in their community would be ‘somewhat/very likely’ to book rides with service providers online. However, only about half (51%) of Senior Non-Drivers indicated that they would be ‘somewhat/very likely’ to book trips with ATS service providers online. In terms of PWD participants, close to two-thirds (65%) indicated that they would be ‘somewhat/very likely’ to book rides with ST service providers online.
Knowledgeable Drivers

All participants also were asked about how important it was that ATS or ST services have drivers who were knowledgeable about health issues (e.g., disabilities, illnesses that affect mental functioning such as dementia). The vast majority of Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD (95%, 94%, 94%, and 90%, respectively) indicated that having drivers who were knowledgeable on these issues was a ‘somewhat/very important’ feature of ATS and ST services provision (Figure 13).
4.3 Accessibility

Importance of ATS and ST Services for Different Types of Transportation Needs

Participants next were asked about the importance of ATS and ST services for different types of transportation needs (e.g., health-related trips such as medical appointments, essential services, visiting with family and friends, social activities, and for religious activities). All types of transportation needs were rated as being important, with a trend for higher ratings for health-related and essential trips. As can be seen in Figure 14, the vast majority of participants indicated that having transportation (ATS or ST) services that provide rides for health-related services (99%, 99%, 99%, and 96%; Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD respectively) and essential services (e.g., grocery shopping, banking) (97%, 95%, 93%, and 94%; Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD, respectively) was ‘somewhat/very important’.

Figure 14. Importance of ATS/ST services for different appointments/activities.

4.4 Adaptability

Importance of ATS and ST Services that can Accommodate Multiple Stops and Wheelchairs

Importance of ATS and ST Services that can Accommodate Multiple Stops

Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD were asked about how important it was to
have ATS or ST services that allow for multiple stops (trip chaining) during the trip (e.g., stopping at the bank and then the grocery store on the way home from doctor’s office). They also were asked about the importance of having transportation (ATS or ST) services that could accommodate wheelchairs. The majority of Adults 45–64, Senior Drivers, and Senior Non-Drivers (90%, 84%, and 80%, respectively) who answered the ATS survey questions indicated that it was ‘somewhat/very important’ to have a transportation service that would allow for multiple stops during the trip. Similarly, the vast majority (90%) of PWD participants indicated that having ST services that could accommodate trip chaining was ‘somewhat/very important’ (See Figure 15).

**Importance of ATS and ST Services that can Accommodate Wheelchairs**

When asked about the importance of having transportation services that could accommodate wheelchairs, the majority of Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD indicated that this was a ‘somewhat/very important’ feature of transportation service provision (99%, 99%, 91%, and 82%, respectively) (Data not shown in a graph).

![Figure 15. Importance of multiple stops for ATS/ST services.](image-url)
4.5 Affordability

Paying for Services, Finding out about Transportation Services, and Importance of Municipal Funding

Paying for ATS and ST services
Adults 45–64 years of age and Senior Drivers were asked how much they thought seniors in their community could afford to pay and how much seniors in the community were willing to pay for a one-way ride of approximately 10 km. In comparison, Senior Non-Drivers and PWD were asked how much they could afford to pay and how much they were willing to pay for a ride of approximately 10 km. As can be seen in Table 7, the results on responses for afford to pay were similar across the 4 sub-samples, with $7.44 as the average response. A similar pattern was evident on responses for willing to pay with PWD participants indicating that they were willing to pay a slightly higher amount for a ride of approximately 10 km. However, this difference among the 4 sub-samples was not statistically significant ($p = .580$). The average amount that respondents were willing to pay was $7.04. Of interest, the amount that PWD participants could afford to pay was larger than for the other 3 sub-samples. However, this difference was not statistically significant ($p > .05$).

Table 7. Payment of ATS/ST Services

<table>
<thead>
<tr>
<th>Sub-Samples</th>
<th>Afford to Pay (Mean and SD)</th>
<th>Willing to Pay (Mean and SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults 45–64 years</td>
<td>$7.48 ($5.92)</td>
<td>$6.80 ($5.76)</td>
</tr>
<tr>
<td>Senior Drivers</td>
<td>$7.25 ($5.58)</td>
<td>$7.02 ($5.62)</td>
</tr>
<tr>
<td>Senior Non-Drivers</td>
<td>$7.92 ($6.12)</td>
<td>$7.81 ($6.27)</td>
</tr>
<tr>
<td>PWD</td>
<td>$7.84 ($6.21)</td>
<td>$9.03 ($6.93)</td>
</tr>
</tbody>
</table>

In terms of method of payment, the top choices selected among all 4 sub-samples were: ‘pay per ride’ (32%, 41%, 41%, and 25%; Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD, respectively) and ‘purchase a book of passes in advance’ (42%, 38%, 39%, and 42%, Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD, respectively). Fewer participants across the 4 sub-samples indicated that they would prefer to ‘be invoiced’ (3%, 3%, 2%, and 9%; Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD, respectively) or ‘set up an account with the provider so that the payment for each ride gets automatically deducted from an account’ (23%, 17%, 19%, and 24%; Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD, respectively) (See Figure 16).
Finding out About Transportation Services

All participants also were asked how they would prefer to find out about transportation services in their community. The top two preferences in which to find out about transportation services in their community among Adults 45–64 and Senior Drivers was by internet (32% and 19%, respectively) and by community newspaper (42% and 50%, Adults 45–64, Senior Drivers, respectively). Among Senior Non-Drivers, the top two preferences for finding out about transportation services in their community were by community newspaper (41%) and through the senior’s centre (15%). Similar to Adults 45–64 years and Senior Drivers, PWD participants indicated that they would prefer to find out about transportation services in their community by community newspaper (33%) and by internet (30%).
5.0 Study 3: Assessing The Need For Intermunicipal and Regional Medical Transit Services

5.1 Importance of Intermunicipal Transit (IMT) and Regional Medical Transit (RMT) Services

All 2296 participants were asked questions about the importance of having IMT and RMT services available in their community. **IMT service** was defined as a transit service that operates between municipalities or across municipal boundaries (e.g., transit service between the participant's community to a major centre such as Edmonton) (2). **RMT service** was defined as a transit service that operates between municipalities or across municipal boundaries (e.g., service available between respondent’s town to Edmonton) with its purpose to provide transportation for medical appointments outside of ambulance services.

**Importance of IMT Service and RMT Services**

Overall, 91% of the Sample as a Whole indicated that having IMT service available in the Capital Region was 'somewhat/very important'. The results in Figure 17 are presented for each of the sub-samples (Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD). The majority of participants indicated that having IMT service available in the community was 'somewhat/very important' (92%, 91%, 85%, and 99%; Adults 45-64, Senior Drivers, Senior Non-Drivers, and PWD, respectively).

Similarly, overall, 95% of the Sample as a Whole indicated that having RMT services available in the Capital Region was 'somewhat/very important'. The results in Figure 18 are presented for Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD. The vast majority of participants (96%, 94%, 93%, and 99%; Adults 45-64, Senior Drivers, Senior Non-Drivers, and P WD, respectively) indicated that it was ‘somewhat/very important’ to have RMT services available within the Capital Region.
5.2 Likelihood and Times of Use of Intermunicipal Transit (IMT) Service

Likelihood of Use of IMT Service

Participants also were asked about their likelihood of using IMT service if that service was in place in their community. More than half (56%) of the Sample as a Whole indicated that they would ‘somewhat/very likely’ use IMT service if it was available. When looking at the samples, over half of Adults 45–64 and Senior Drivers (52% and 55%, respectively) indicated that they would be ‘somewhat/likely’ to use IMT service if it was available in the community. Not surprisingly, a greater percentage of Senior Non-Drivers
(75%) and PWD (87%) indicated that they would be ‘somewhat/very likely’ to use IMT service if it was available, with these differences being statistically significant (all \( p \) values < .001) (see Figure 19).

![Figure 19. Likelihood of IMT service use.](image)

**Times Most Likely to Use IMT Service**

The final question in this section pertained to participants’ feedback on *times* when they would be *most likely* to use IMT service if that service was available in the community. As can be seen in Figure 20, the pattern of responses shows that a majority of participants across the 4 sub-samples indicated that the *most likely* time periods of use for IMT service if this service was available would be Weekday mornings (86%, 85%, 80%, and 89%; Adults 45-64, Senior Drivers, Senior Non-Drivers, and PWD, respectively) and Weekday afternoons (76%, 76%, 85%, and 82%; Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD, respectively). Participants were not asked about the likelihood of use of RMT and Times of Use given the nature of this service.

Fewer participants in each of the sub-samples indicated that they would be likely to use IMT service on the weekend, with Weekend mornings (47%, 44%, 37%, and 53%; Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD, respectively) and Weekend afternoons (50%, 47%, 45%, and 50%; Adults 45–64, Senior Drivers, Senior Non-Drivers, and PWD, respectively) identified as the time periods each of the sub-samples would be *most likely* to use this service. A smaller proportion of participants across all 4 sub-samples indicated that they would be likely to use IMT service on both Weekday and Weekend evenings.
6.0 Importance of Municipal Funding for Services

6.1 Importance of Municipal Funding for ATS/ST Services

All participants were asked about how important it was to have municipal funding available for ATS or ST services in their community. Overall, the vast majority of participants interviewed (97% of the sample as a whole) indicated that having municipal funding available for IMT was ‘somewhat/very important’. The vast majority of Adults 45–64, Senior Drivers, and Senior Non-Drivers (97%, 98%, and 98%, respectively) indicated that it was ‘somewhat/very important’ to have this type of funding available to offset the cost of providing ATS services in the community. All PWD participants (100%) indicated that it was ‘somewhat/very important’ to have municipal funding made available to offset the cost of providing ST services in the community (See Figure 21)
6.2 Importance of Municipal Funding for IMT and RMT Services

All participants were asked about how important it was to have municipal funding available for IMT service in their community. Overall, the vast majority of participants interviewed (96% of the sample as a whole) indicated that having municipal funding available for IMT was ‘somewhat/very important’. As shown in Figure 22, the vast majority of Adults 45–64 years of age, Senior Drivers, Senior Non-Driver, and PWD (95%, 96%, 95%, and 97%, respectively) indicated that it was ‘somewhat/very important’ to have municipal funding made available to allow for IMT service provision in the community.
All participants were asked about how important it was to have municipal funding available for RMT services in the Capital Region. Overall, the vast majority of participants interviewed (96% of the sample as a whole) indicated that having municipal funding available for RMT services was ‘somewhat/very important’. As shown in Figure 23, across the 4 sub-samples, the vast majority of Adults 45–64 years of age, Senior Drivers, Senior Non-Drivers, and PWD (96%, 96%, 97%, and 100%, respectively) indicated that having municipal funding made available for RMT services in the Capital Region was ‘somewhat/very important’.

Figure 22. Importance of municipal funding for IMT service.
Figure 23. Importance of municipal funding for RMT services.
7.0 SUMMARY AND GOING FORWARD

Overall, the results from the combined 2015 and 2016 Capital Region Transportation Needs Assessments provided an important step toward understanding the unmet transportation needs of senior drivers, non-drivers, and PWD, as well as the adequacy and needs of relevant transportation services for seniors and PWD. First, the results presented in this report indicate that older individuals and PWD in communities throughout the Capital Region do have unmet transportation needs. Not surprisingly, senior drivers have fewer unmet transportation needs than senior non-drivers and PWD. What is surprising is the degree of difference in unmet transportation needs among these three segments of the population. That is, results from interviews with more than 1000 senior drivers, senior non-drivers, and PWD indicate that non-driving seniors have more than a 4.5-fold increase in unmet transportation needs as compared to senior drivers, and PWD have more than double the number of unmet transportation needs as compared to senior non-drivers.

An important area of investigation in this study was the identification of factors affecting transportation mobility. The pattern of findings from our analyses of the unmet transportation needs of seniors indicate that older individuals in our communities do have unmet transportation needs, with increasing age and being female increasing the odds of becoming transportation disadvantaged. The finding that older females are more transportation disadvantaged than are older males also is notable in that females tend to outlive their male counterparts. For policy makers at local, regional, municipal, and provincial levels, these findings are particularly relevant for assessing and/or forecasting unmet transportation needs of this important and growing segment of the population.

Importantly, the results from this research indicate that becoming transportation disadvantaged is not due to age alone but rather due to strong associations between age, illness, and disability. That is, when physical health and disability are taken into consideration when assessing unmet transportation needs, these two factors become more important predictors of unmet transportation needs in the senior population than do age and gender alone or combined. These findings have important implications for assessing the need for alternate means of transportation services for seniors at local, regional, municipal, and provincial levels. Specifically, these results indicate that planning and policy decisions related to transportation service provision for seniors will be inadequate if those decisions are based simply on prevalence statistics of seniors in the population in the target area. Rather, population statistics on health and disability, and, if
available, the percentage of seniors in the community who do not drive, will facilitate planning and policy decisions that will, in turn, facilitate transportation mobility for this growing segment of the population.

Despite the availability of many specialized transit services for PWD in the Capital Region, results from interviews with 77 PWD indicate that more than half (54%) of those interviewed said that they had unmet transportation needs. The degree of the unmet transportation needs of PWD also is remarkable, with PWD reporting an average of 3.6 unmet transportation needs. This means that, on average, PWD who participated in the research had unmet transportation needs for almost 4 of the 6 different types of transportation (e.g., accessing medical services in and outside the community; for travel for essential services such as grocery shopping; for visits with family; and for attending social or religious activities). Results from this Transportation Needs Assessment also are informative in that although PWD have, on average, greater unmet transportation needs than seniors, the economic burden of the unmet transportation needs of seniors is far greater given the differences in prevalence of these two segments of the population in our communities. To our knowledge, no one has estimated the costs of unmet transportation needs of seniors and PWD. However, it is reasonable to assume that the lack of responsive transportation for both seniors and PWD is costly from both a societal and individual perspective.

The primary objective of Study 2 was to obtain feedback on features of specialized transportation service delivery for seniors and PWD if those services were to be made available in communities in the Capital Region. The features of ATS services and specialized transportation for PWD examined in this study fall under the umbrella of what has come to be known as the 5 A’s of user-friendly transportation (Availability, Acceptability, Accessibility, Adaptability, and Affordability) (5,6,7). That is, to be considered as ‘user friendly’, the transportation service must be available when needed (e.g., days, evenings; weekdays, weekends), be acceptable (e.g., acceptable scheduling times, drivers that are knowledgeable on senior’s issues), be accessible (e.g., provide rides to essential and non-essential services), be adaptable (e.g., accommodate multiple stops), and be affordable (e.g., options for payment methods; fares that are acceptable to seniors).

The results indicated that all 5 features of transportation services for seniors and PWD (Availability, Acceptability, Accessibility, Adaptability, and Affordability) were rated as being important by the Adults 45–64 years of age, Senior Drivers, Senior Non-Drivers, and PWD. These results are consistent with previous findings (4,8). For example, in the current study, the majority of participants indicated that ‘Weekday
mornings’ and ‘Weekday afternoons’ were the times that seniors and PWD would be most likely to use the identified transportation services (e.g., ATS services and ST services) if those services were available in the communities (Availability). With respect to Acceptability, the majority of participants across the 4 sub-samples indicated that having to book rides at least 48 hours or less in advance was more reasonable, with having to book more than 48 hours in advance less reasonable. Participants also were asked about the importance of multiple stops during the trip (e.g., stopping at the grocery store and bank on the way home from doctor’s office) and this feature of service provision (Adaptability) also was rated as ‘somewhat/very important’ by the majority of participants across the four sub-samples.

One of the features of transportation service for seniors and PWD that is consistently rated as being very high in importance to both seniors and PWD is having drivers who are knowledgeable about health issues (e.g., disabilities, illnesses that affect mental health functioning such as dementia). Yet, based on our work with transportation service providers, few organizations formally train their drivers on these and related issues. Given the aging of the population and the anticipated increases in the number of seniors and PWD in need of transportation services outside of the public transportation system, broad-based community efforts are needed to make these types of transportation services more available and acceptable to both seniors and PWD. This can only be accomplished through the implementation of standardized training programs with regular refresher training. Thus, there are opportunities for collaboration between individuals with expertise in this area, service organizations, and transportation services providers, with the goal of developing standardized training materials and creating the infrastructure for delivering the training materials to the appropriate stakeholders on a regular basis.

In terms of Affordability, few participants (adult children, seniors who drive, seniors who do not drive, and PWD) in this survey had the expectation that these types of services should be ‘free’. Rather, the vast majority of participants across the 4 sub-samples indicated that they thought that seniors and PWD could afford and would be willing to pay for the services, with respondents indicating that about $7.50 was what seniors and PWD could afford to pay for a ride of approximately 10 km, with approximately $7 identified as the amount that seniors and PWD would be willing to pay for a ride over this same distance. These results are consistent with the results from our previous provincial Transportation Needs Assessment (8) indicating that, in general, there is support for charging a modest price for the services. The findings have important implications for the design and delivery of transportation services for seniors in that, often, the prevailing
belief is that these transportation services should be available at no charge. Importantly, having users pay at least some of the cost of these transportation services facilitates both the availability and sustainability of transportation services for seniors and PWD in the community.

The primary objective of Study 3 was to assess the need for Intermunicipal Transit and Regional Medical Transit services within the Capital Region. The importance of the availability of Intermunicipal Transit (IMT) and Regional Medical Transit (RMT) services within the Capital Region also was assessed, with the findings striking. The vast majority of respondents (95%) indicated that having both IMT and RMT services available in the Capital Region was ‘somewhat/very important’. The need for both RMT and IMT services also was evident, with 96% of all participants rating the availability of this municipal funding for IMT and RMT services as ‘somewhat/very important’. In terms of use, more than half (56%) of all participants indicated that they would ‘somewhat/very likely’ use IMT service if it was available.

To our knowledge, this research is unique in its assessment of the effects of predisposing, enabling, and need factors on different types of transportation needs (e.g., medical, essential, social, etc.), across different segments of the population (seniors and PWD), and across different settings (urban and rural). The research also is unique in that it provides information not only on the factors affecting the transportation mobility of seniors and PWD in urban and rural settings, but also assesses the attributes needed to make transportation services (alternate transportation for seniors and specialized transit for PWD) more user-friendly. We also assessed the importance of intermunicipal and regionalized medical transportation services as well as funding for the different types of transportation services. Not surprisingly, given the identified needs, the vast majority of participants rated all types of service as well as funding for these services as somewhat/very important.

Overall, the results from the combined 2015 and 2016 Capital Region Transportation Needs Assessments provide an important step toward understanding the unmet transportation needs of seniors and PWD, as well as the features of transportation service delivery that would make these types of services attractive and responsive to both seniors and PWD. The advancements in knowledge gained from these studies can be used by service providers, community organizations, and local, regional, and municipal leaders to inform on policy and planning initiatives related to the delivery of responsive transportation services for seniors and PWD in the Capital Region.
8.0 References


Appendix A.

Appendix A.1  Capital Region Board Member Municipalities

Table A1. Capital Region Board Member Municipalities

<table>
<thead>
<tr>
<th>Capital Region Board Member Municipalities</th>
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</thead>
<tbody>
<tr>
<td>Town of Beaumont</td>
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<tr>
<td>Town of Bon Accord</td>
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<tr>
<td>Town of Bruderheim</td>
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<td>Town of Calmar</td>
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<td>Town of Devon</td>
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<td>City of Edmonton</td>
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<td>City of Fort Saskatchewan</td>
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<td>Town of Gibbons</td>
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<td>City of Leduc</td>
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<td>Parkland County</td>
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<td>Town of Redwater</td>
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<td>City of St. Albert</td>
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<td>Town of Stony Plain</td>
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<td>Strathcona County</td>
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<td>Sturgeon County</td>
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<tr>
<td>Village of Thorsby</td>
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<tr>
<td>Village of Wabamun</td>
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<tr>
<td>Village of Warburg</td>
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## Appendix A.2  Demographics of Sample

### Table A1. Demographics of the Adults 45-64, Senior Drivers, Senior Non-Drivers, and PWD.

<table>
<thead>
<tr>
<th></th>
<th>Senior Drivers (n = 884)</th>
<th>Senior Non-Drivers (n = 203)</th>
<th>PWD (n = 78)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>72.5 (5.9)</td>
<td>77.2 (7.7)</td>
<td>46.9 (14.1)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>338 (38.2)</td>
<td>47 (23.2)</td>
<td>33 (42.3)</td>
</tr>
<tr>
<td>Female</td>
<td>546 (61.8)</td>
<td>156 (76.8)</td>
<td>45 (57.7)</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
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</tr>
<tr>
<td>Married/Common Law</td>
<td>555 (63.2)</td>
<td>84 (41.4)</td>
<td>31 (39.7)</td>
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<td>Separated/Divorced</td>
<td>85 (9.7)</td>
<td>26 (12.8)</td>
<td>10 (12.8)</td>
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<tr>
<td>Widowed</td>
<td>210 (23.9)</td>
<td>81 (39.9)</td>
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<td>Never Married</td>
<td>28 (3.2)</td>
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<td>33 (42.3)</td>
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<td><strong>Living Arrangements</strong></td>
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<tr>
<td>Lives Alone</td>
<td>281 (32.0)</td>
<td>82 (40.6)</td>
<td>16 (20.5)</td>
</tr>
<tr>
<td>Lives with Family/Friends</td>
<td>587 (66.8)</td>
<td>103 (51.0)</td>
<td>57 (73.1)</td>
</tr>
<tr>
<td>Lives in Group Setting</td>
<td>11 (1.3)</td>
<td>17 (8.4)</td>
<td>4 (5.1)</td>
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<td>Other</td>
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<tr>
<td><strong>Employment Status</strong></td>
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<tr>
<td>Retired</td>
<td>718 (81.8)</td>
<td>189 (93.1)</td>
<td>7 (9.0)</td>
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<td>Employed Full Time</td>
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<td>Self-Employed</td>
<td>8 (0.9)</td>
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<td>Homemaker</td>
<td>9 (1.0)</td>
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<td>Long-term Disability</td>
<td>2 (0.2)</td>
<td>3 (1.5)</td>
<td>32 (41.0)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>6 (0.7)</td>
<td>1 (0.5)</td>
<td>16 (20.5)</td>
</tr>
<tr>
<td>Other</td>
<td>10 (1.1)</td>
<td>--</td>
<td>3 (3.8)</td>
</tr>
<tr>
<td><strong>Household Income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; $20,000</td>
<td>58 (8.7)</td>
<td>25 (18.2)</td>
<td>14 (23.7)</td>
</tr>
<tr>
<td>≥ $20,000</td>
<td>610 (91.3)</td>
<td>112 (81.8)</td>
<td>45 (76.3)</td>
</tr>
<tr>
<td><strong>Current Rating of Physical Health</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>31 (3.5)</td>
<td>26 (12.9)</td>
<td>22 (28.6)</td>
</tr>
<tr>
<td>Fair</td>
<td>180 (20.4)</td>
<td>70 (34.7)</td>
<td>27 (35.1)</td>
</tr>
<tr>
<td>Good</td>
<td>432 (49.0)</td>
<td>85 (42.1)</td>
<td>22 (28.6)</td>
</tr>
<tr>
<td>Excellent</td>
<td>239 (27.1)</td>
<td>21 (10.4)</td>
<td>6 (7.8)</td>
</tr>
<tr>
<td><strong>Use of Mobility Aids</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Mobility Aids</td>
<td>708 (80.1)</td>
<td>82 (40.4)</td>
<td>40 (51.3)</td>
</tr>
<tr>
<td>One or More Mobility Aids</td>
<td>176 (19.9)</td>
<td>121 (59.6)</td>
<td>38 (48.7)</td>
</tr>
<tr>
<td><strong>Physical Health Interferes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>475 (53.8)</td>
<td>52 (26.0)</td>
<td>9 (11.5)</td>
</tr>
<tr>
<td>Sometimes</td>
<td>345 (39.1)</td>
<td>96 (48.0)</td>
<td>25 (32.1)</td>
</tr>
<tr>
<td>Often</td>
<td>63 (7.1)</td>
<td>52 (26.0)</td>
<td>44 (56.4)</td>
</tr>
<tr>
<td><strong>Disability Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>779 (88.1)</td>
<td>63 (31.0)</td>
<td>--</td>
</tr>
<tr>
<td>Yes</td>
<td>105 (11.9)</td>
<td>140 (69.0)</td>
<td>78 (100)</td>
</tr>
<tr>
<td><strong>Driving Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>884 (100)</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>No/Never Drove</td>
<td>--</td>
<td>203 (100)</td>
<td>78 (100)</td>
</tr>
<tr>
<td><strong>Place of Residence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>344 (38.9)</td>
<td>114 (56.2)</td>
<td>28 (35.9)</td>
</tr>
<tr>
<td>Town</td>
<td>185 (20.9)</td>
<td>46 (22.7)</td>
<td>20 (25.6)</td>
</tr>
<tr>
<td>Village</td>
<td>33 (12.1)</td>
<td>6 (3.0)</td>
<td>3 (3.8)</td>
</tr>
<tr>
<td>Hamlet</td>
<td>107 (12.1)</td>
<td>21 (10.3)</td>
<td>12 (15.4)</td>
</tr>
<tr>
<td>Acreage</td>
<td>92 (10.4)</td>
<td>8 (3.9)</td>
<td>8 (10.3)</td>
</tr>
<tr>
<td>Farm</td>
<td>93 (10.5)</td>
<td>6 (3.0)</td>
<td>3 (3.8)</td>
</tr>
<tr>
<td>Rural Municipal District</td>
<td>30 (3.4)</td>
<td>2 (1.0)</td>
<td>4 (5.1)</td>
</tr>
<tr>
<td><strong>Concentric Rings</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edmonton</td>
<td>130 (14.7)</td>
<td>57 (28.1)</td>
<td>20 (25.6)</td>
</tr>
<tr>
<td>1st Ring</td>
<td>228 (25.8)</td>
<td>37 (18.2)</td>
<td>12 (15.4)</td>
</tr>
<tr>
<td>2nd Ring</td>
<td>246 (27.8)</td>
<td>69 (34.0)</td>
<td>26 (33.3)</td>
</tr>
<tr>
<td>3rd Ring</td>
<td>280 (31.7)</td>
<td>40 (19.7)</td>
<td>20 (25.6)</td>
</tr>
</tbody>
</table>


**Appendix A.3 Results of Principal Components Analyses**

*Table A.2. Results of Principal Components Analysis on the 6 outcome variables*

(Unmet transportation needs)

<table>
<thead>
<tr>
<th>Item</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In the last six months, how often have you not gone to a <em>medical appointment in your community</em> because you did not have a ride?</td>
<td>.633</td>
</tr>
<tr>
<td>2. In the last six months, how often have you not gone to a <em>medical appointment outside of your community</em> because you did not have a ride?</td>
<td>.581</td>
</tr>
<tr>
<td>3. In the last six months, how often have you been unable to <em>shop for groceries</em> because you did not have a ride</td>
<td>.701</td>
</tr>
<tr>
<td>4. In the last six months, how often have you been unable to <em>get together with family</em> because you did not have a ride</td>
<td>.705</td>
</tr>
<tr>
<td>5. In the last six months, how often have you been unable to <em>attend social functions</em> because you did not have a ride</td>
<td>.738</td>
</tr>
<tr>
<td>6. In the last six months, how often have you been unable to <em>go to religious activities</em> because you did not have a ride</td>
<td>.535</td>
</tr>
</tbody>
</table>
### Appendix A.4  The 5 A’s of Senior Friendly Transportation

Table A.4. The 5 A’s of Senior Friendly Transportation

| **AVAILABILITY** | refers to transportation services that are provided and those services are available when needed (e.g., days, evenings; weekdays, weekends). |
| **ACCEPTABILITY** | refers to transportation in which service quality is acceptable in terms of advance scheduling; vehicles are clean and well-maintained; service providers provide driver ‘sensitivity to seniors’ training. |
| **ACCESSIBILITY** | refers to transportation in which the service provider provides ‘door-to-door’ and ‘door-through-door’ transportation; provides transportation to essential and non-essential activities. |
| **ADAPTABILITY** | refers to transportation that can accommodate riders wanting to make multiple stops (trip chaining); service providers allow for different types of routes (fixed vs. user response) and passenger service (single vs. group); service providers can accommodate wheelchairs and walkers; escorts can be provided. |
| **AFFORDABILITY** | relates to the cost of transportation and transportation that is affordable (e.g., uses volunteer drivers to reduce costs, vouchers, or coupons available, etc.). |
Capital Region Board:
HOV / Transit Priority Study.

Transit Committee Briefing

Study Scope

The CRB’s HOV / Transit Priority Study is scheduled to take 8 months. It began in March and will continue to October.

The purpose of the study is to propose a set of recommendations for HOV and Transit Priority Measures on six corridors in the Edmonton area, and identify one of those corridors for a pilot project. For that to happen, the study will need to:

- Define HOV and Transit Priority Measures (TPMs) and identify cities in North America in which they’ve been successfully applied.
- Create a “menu” of HOV and TPM strategies and types that could be applied in the Capital Region.
- Establish a framework for evaluating HOV and TPMs on six corridors in the study area.
- Engage stakeholders and elected officials in greater Edmonton, to expand the knowledge base and interest in HOV and Transit Priority, and solicit input about ways in which these techniques can best be applied.
- Apply the evaluation criteria to the Capital Region corridors and identify new candidate corridors for study.
- Prepare recommendations that factor in the feasibility and merits of HOV and TPMs in the Capital Region.

The study follows the Capital Region Growth Plan (CGRP) and the Intermunicipal Transit Network Plan (ITNP), in which TPMs were identified as useful, cost-effective ways to optimize bus operations in the region. The ITNP suggested a number of methods that would give priority to transit vehicles:

- HOV Lanes
- Bus-Only Lanes
- Bus-on-Shoulder Operations
- Dedicated Bus Ramps to and from Highways
- Transit Priority Signals
- Queue Jump Lanes
- Bus Priority Access to and from Park & Ride Lots
- Transit Exchanges

The 2011 Integrated Regional Transportation Master Plan (IRTMP) identified six priority corridors to be examined first for HOV and Transit Priority consideration. These six corridors are the focus of this study:

- QE2 Highway between Downtown Edmonton and Leduc, serving Nisku and Edmonton International Airport.
- Baseline Road and 98 Avenue between Downtown Edmonton and Sherwood Park.
- Wye Road and Sherwood Park Freeway, also between Downtown Edmonton and Sherwood Park.
- Highway 15 between northeastern Edmonton and Fort Saskatchewan.
- Highway 16 (Yellowhead Trail) and 16A, crosstown between Spruce Grove and eastern Edmonton.
- Highway 28 and 97 Street between CFB Edmonton and Downtown Edmonton.

Study Tasks

There are five main tasks for the HOV / Transit Priority Study:

1. Define HOV and TPMs. Provide an overview of HOV and TPMs, and identify locations and examples in North America of how these measures have been implemented with success in the past.
2. Environmental Scan. Review HOV and TPMs in four North American regions similar in size to greater Edmonton; describe implemented measures and detail lessons learned.
3. Stakeholder Outreach. Conduct interviews with staff from transportation agencies in the region, host a workshop to collect input about opportunities and constraints for HOV and TPMs, and document comments received.
4. Evaluation. A three-step process that seeks to understand the region’s needs, uncover opportunities that relate to those needs, and assess opportunities by evaluating their performance based on a set of criteria.
5. Recommendations. Make conclusions about the feasibility of HOV and TPMs on the study’s six corridors.

As of May 18, Tasks 1 and 2 are nearing completion, while Task 3 is underway and ongoing.

Examples of HOV and TPMs practices have been cited in a draft technical memorandum. The environmental scan takes Task 1 a step further by examining implemented HOV and TPMs in the regions of Vancouver, Ottawa/Gatineau, Seattle/Tacoma, and San Jose/Santa Clara. These four areas provide a rich source of information on how these measures work and how they might be deployed in the context of the Edmonton region. The draft Environmental Scan is close to being complete and ready for review.

Many of the stakeholder outreach tasks have been performed. A two-page fact sheet / study primer was created to introduce stakeholders to the study. About 25 stakeholders and elected officials have been interviewed by phone, and their comments and questions have been documented and summarized. And a stakeholder workshop is planned for May 26, which will give participants an additional opportunity to learn about the study and offer their feedback on HOV, TPMs, and how they may work for the region.
Initial Observations

The following is a brief summary of information collected about each of the corridors about existing traffic conditions, current transit service, planned road work, and stakeholder comments.

- **Highway 2 (QE II): Leduc – Century Park LRT.** The highway to the airport has grown and become more congested in recent years. Traffic can be heavy at interchanges. A fourth southbound lane is to be added between 41 Avenue and Hwy 19 in the next 2 to 3 years. Only two transit routes run in the corridor, with low frequency.

- **Baseline Road / 98 Ave: 50 St in Downtown Edmonton – Highway 21 in Sherwood Park.** Congestion has worsened in recent years; heavy traffic is common on weekday peaks at intersections in the corridor. No road changes are planned other than modifications to the interchange at Anthony Henday Drive. This is a future LRT corridor. Transit is relatively robust, with local and express services and reasonable frequencies.

- **Wye Road / Sherwood Park Freeway: Downtown Edmonton – Highway 21 in Sherwood Park.** Traffic on Sherwood Park Freeway has gotten heavier, although improvements were recently made to the road. Back-ups are common at intersections in weekday peaks. Local and express transit services run all day with reasonably good frequencies.

- **Highway 15 (Manning Drive): Northeastern Edmonton – Fort Saskatchewan.** Little congestion compared to other corridors, although back-ups are common around the intersection with Hwy 37 and at the bridge just west of Ft. Saskatchewan. Only one lane each direction in a portion of the corridor. Preliminary plans are to widen and signalize portions of the road. Hwy 15 is often used for reverse commuting. Limited transit service; fewer than 10 buses per day, excluding the NW Redwater facility’s private shuttle service.

- **Highway 16 (Yellowhead Trail) and 16A: Spruce Grove – Highway 21 in eastern Edmonton.** Congestion is common in key segments any time of day. Heavy truck traffic, especially around Acheson. Only two lanes each direction in portions of the corridor. Plans are to upgrade to a full limited-access highway, but no timeline for funding or construction yet. Commuter bus service between Spruce Grove and Downtown, with plans to add more frequency.

- **Highway 28 / 97 Street: CFB Edmonton – 118 Ave near Downtown.** Weekday congestion in some segments in both peaks, often near intersections. More traffic within Edmonton city limits. 15 bus routes on all or part of this corridor, with varying frequencies.

Future Steps

Work during the summer of 2016 will focus on evaluating the six corridors in the study and documenting their suitability for HOV and TPMs. The study will culminate in a final report that proposes a set of recommendations.

Conceptual alternatives will be developed for each of the six corridors, and a set of criteria will be applied during the evaluation of the alternatives. The criteria for judging HOV and TPMs on the corridors include:

- **Cost-effectiveness**
- **HOV annual travel time savings and reliability**
- **Impacts to parking, businesses, property, and streetscaping**
- **The ability of buses to effectively use HOV lanes and TPMs**
- **The impact of HOV and TPMs on general traffic level of service and turning movements**
- **Safety impacts to pedestrians and cyclists**
- **Enforceability**
- **Integration of HOV and TPMs into the transportation network (other corridors, Park & Ride lots, etc.)**
- **Person throughput, or the ratio of people in HOV/bus lanes versus the adjacent general lane**

The individual criteria will be weighted to ensure that the most important factors are given more significance in the evaluation process. The exact weighting is still to be determined.

Recommendations will take into consideration the perspectives of stakeholders, a menu of potential HOV and TPMs to be implemented, and a list of pilot project options. The Draft Final Report for the study is expected to be completed and distributed for review in September, with the Final Report submitted to the Capital Region Board in October.