

Evaluating the Efficiency and Effectiveness of Custom Transit Systems

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Executive Summary

Public transit is increasingly being recognized as an integral aspect of vibrant communities, as it promotes social inclusion, sustainability, and access to community services. Public transit service providers have a responsibility to provide an efficient and effective service for their communities, and this responsibility necessitates that these organizations regularly monitor and evaluate the service they are providing to ensure it is meeting the needs and expectations of customers.

The term “public transit” is a general term for many different forms of transportation within communities. When it comes to bus service, conventional transit serves the general population and offers scheduled service that operates on fixed routes, while custom transit is provided on a door-to-door basis to people whose disability prevents them from using the conventional fixed-route service.

BC Transit provides both conventional and custom transit service in over 130 communities across BC in collaboration with 59 local government partners. The custom transit service makes use of BC Transit vehicles, taxis, and Taxi Supplement and Taxi Saver (discounted coupon) programs (BC Transit, n.d. a, para. 6). BC Transit now refers to the suite of custom transit services it provides as a “family of services” (2015, RFP 16.01, p. 11) available for those people who are unable to use the conventional transit system, some or all of the time, due to a permanent or temporary disability.

While BC Transit has dedicated tremendous resources and efforts to closely monitoring and evaluating the performance of conventional transit systems, analysis of the efficiency and effectiveness of custom transit service has been far less comprehensive. Presently, it is widely accepted that evaluating and analyzing the success of custom transit systems is vital, but it is less clear how this is best achieved.

As the population of seniors continues to increase and the percentage of the population living with disabilities rises, the demand for custom transit service will also continue to grow at an accelerating pace. If and when more resources are put into this specialized service, it is critical that these resources are used as efficiently and effectively as possible; ultimately, this requires having an understanding of which service delivery methods are preferred from both a quality and cost perspective, and also possessing the tools to monitor the success of the service moving forward.

This report seeks to answer the question: “How should BC Transit evaluate the efficiency and effectiveness of its custom transit systems?” In addition, it sets out to answer the following secondary research questions:

- What does an efficient and effective custom transit system look like?

- What are the key characteristics of a custom transit system from a quality (customer) perspective?
- What is the optimal balance of qualitative and quantitative information, when evaluating a custom transit system?
- What are optimal service delivery methods for BC Transit’s custom transit service?
- What is the future of this industry, and what does this mean for BC Transit?

Through the use of focus groups and interviews with key custom transit stakeholders, and an extensive review of existing literature on custom transit service, key findings are presented, and their implications for BC Transit are discussed.

Ultimately, a framework for monitoring and evaluating the efficiency and effectiveness of custom transit systems is designed and presented, and the various measures and metrics presented in the framework are discussed. In addition, this report highlights key industry trends, which should be monitored and possibly considered for implementation by BC Transit. The concept of “sharing economies” (Economist, 2013), which has received tremendous attention over the past five or so years, holds huge potential for custom transit. Multiple custom transit systems in the United States are trialing Uber or Lyft-type models, wherein Uber or Lyft cars are used to provide transit service to customers, through a partnership with the transit agency (Lazo, 2016, para. 1). Many transit agencies are also looking at how they can encourage ride-sharing through taxi or Uber service, as it is clear that ride-sharing is key in efficient service delivery.

Finally, this report sets forth recommendations for increasing the efficiency and effectiveness of BC Transit’s custom transit systems. Consistently using the framework presented in this report to monitor and evaluate transit system performance, and working towards a service delivery model wherein every ride delivered via a dedicated custom transit vehicle is a shared ride, are two key recommendations.

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Evaluating the Efficiency and Effectiveness of Custom Transit Systems

1.0 Introduction

1.1 Defining the Problem

Every day, more than 50,000 people in Canada use custom transit services for their daily transportation needs (Canadian Urban Transit Association, CUTA, 2016, p. 4). This specialized service is essential for quality of life for those who need it, as it provides eligible customers with mobility and access within their community, and opens up opportunities for social and economic inclusion. As with any publicly provided service, it is prudent and necessary on the part of the organization providing the transit service to ensure it is both efficient and effective.

The term “public transit” is an umbrella term for many different forms of community transportation. When it comes to bus service, conventional transit serves the general population and offers scheduled service that operates on fixed routes, while custom transit (known as paratransit or demand-responsive transit in the United States) is provided on a door-to-door basis to people whose disability prevents them from using the conventional fixed-route service. Under the umbrella of custom transit are multiple service delivery methods including on-demand door-to-door handyDART¹ service, which utilizes dedicated BC Transit vehicles and is supplemented with taxicabs, and the Taxi Saver program, under which registered customers have access to subsidized taxi fares. From the perspective of the rider, regardless of the type of public transit they are using, “they just want to get from the origin to the destination in the fastest, cheapest and most comfortable way” (Sarkozi & Horvath, 2016, p. 4).

Monitoring and evaluating a fixed-route conventional transit system is relatively straightforward and well-practiced. Key performance indicators (KPIs), such as number of passenger rides per hour, are monitored, feedback may be obtained via public engagement sessions or surveys, and service experience evaluations, which make use of secret riders from within the transit agency, may be utilized. Most of these traditional methods, however, do not directly lend themselves well to custom transit for multiple reasons, including the fact that many custom transit users are faced with cognitive and/or physical challenges that prevent them from providing qualitative feedback via paper surveys or open houses; in addition, many of the KPIs used to monitor and

¹ BC Transit spells “handyDART” with a lower-case h, while TransLink spells it with an upper-case H.

evaluate a conventional transit system are not relevant to custom transit, as the two services follow very different service delivery models. In terms of conducting any type of on-board performance evaluation, it is nearly impossible for employees of the transit organization to inconspicuously ride on board a custom transit vehicle without being noticed by both operators and passengers, as is commonly done on conventional transit, so other creative solutions must be sought. Ultimately, many of the tools and processes that are used to monitor and evaluate conventional transit systems require modifications in order to work for custom transit.

While BC Transit has traditionally used monitoring methods and measures developed for conventional transit for custom transit as well, the use of custom transit-specific methods and measures has been less comprehensive.

Moving forward, as the population of seniors continues to increase, the demand for custom transit service will also grow. The number of seniors in Canada is forecasted to more than double from 4 million in 2006 to between 9.9 and 10.9 million in 2036 (see Table 1) (Seider, 2013, p. 5). The Office of the Seniors Advocate (OSA), the independent body responsible for monitoring and analyzing seniors’ services and issues in BC, states that 73 per cent of handyDART users are 65 years of age or older (OSA, 2016, p. 1). If and when more resources are put into this specialized service, it is critical that these resources are used as efficiently and effectively as possible; ultimately, this requires having an understanding of which service delivery methods are preferred from both a quality and cost perspective, and also possessing the tools to monitor the success of the service moving forward.

TABLE 1: NATIONAL POPULATION ESTIMATES FOR 2006 AND 2036

POPULATION (IN MILLIONS)	2006	2036
Number of people in Canada	30.9	43.8
Number of people with disabilities ¹	4.4	7.7-8.7
Number of seniors, 65 years and older	4.0	9.9-10.9
Number of seniors with disabilities	1.8	4.6-5.1

¹ Note: These figures represent the entire disabled population, not solely the mobility restricted portion.

Source: Seider, 2013, p. 5

1.2 Project Client

The client for this research project is Brian Anderson, BC Transit’s Vice President of Operations and Chief Operating Officer. Assuming his role in March 2014, Mr. Anderson is responsible for strategic oversight of the expansion and deployment of public transit services across the 130 communities served by the organization (BC Transit, n.d.c, para. 5).

This project is important and relevant to BC Transit and to the transit industry in general as the demand for custom transit continues to grow, and as this happens, the costs associated with this

specialized service simultaneously increase. From a cost perspective, custom transit service is a very expensive service, especially when compared to conventional transit. In 2012, CUTA reported that the average cost per passenger for custom transit service was \$25.75, while the cost per passenger on conventional transit was \$3.31 (Seider, 2013, p. 8). In order to ensure that taxpayer dollars are being used as prudently and effectively as possible, it is important to ensure that the performance of custom transit systems is being monitored, from both an efficiency and effectiveness perspective.

The Operations team, including Transit Planners, Regional Transit Managers and the COO, at BC Transit will benefit from this research.

1.3 Project Objectives and Research Questions

The purpose of this project is to create a framework for monitoring the efficiency and effectiveness of BC Transit's custom transit systems. Ultimately, this report will answer the question: "How should BC Transit evaluate the efficiency and effectiveness of its custom transit systems?" In order to answer this question, both "efficient" and "effective" must be defined in terms of what they mean for custom transit service. For the purpose of this research, "efficient" will be defined as "the quantity of the output generated as a function of the inputs to the system" (Fu, Yang & Casello, 2007, p. 115). In other words, efficiency is the number of custom transit trips provided as a function of the resources (costs) being put into the transit system. Throughout this report, "effective" will be defined as "the degree to which the outputs produced by the system meet the requirements of the users" (Fu, Yang & Casello, 2007, p. 115). In simpler terms, effective means the degree to which custom transit users are satisfied with the service provided.

The most valuable and useful KPIs for monitoring and evaluating the success of a custom transit system will be discussed, and industry benchmarks will be provided. There are many different options for delivering custom transit service, some of which BC Transit is currently using, and some of which they are not. These service delivery options will be explored, and their potential efficiency and effectiveness will be evaluated.

This report will also seek to answer the following secondary research questions:

- What does an efficient and effective custom transit system look like?
- What are the key characteristics of a custom transit system from a quality (customer) perspective?
- What is the optimal balance of qualitative and quantitative information, when evaluating a custom transit system?
- What are optimal service delivery methods for BC Transit's custom transit service?
- What is the future of this industry, and what does this mean for BC Transit?

To ensure that a holistic, long-term approach is taken in developing this framework, the framework set forth in this report will utilize a Balanced Scorecard approach. Through using Robert Kaplan and Peter Norton's Balanced Scorecard method, the following four perspectives will be thoroughly analyzed: the financial perspective, customer perspective, the internal perspective and the learning and growth perspective (Harvard Business Review, 2014). The use of this framework ensures that both qualitative and quantitative data are used when monitoring and evaluating a custom transit service, as it is clear that both types of information are critical.

1.4 Organization of Report

The remaining sections of this report will provide:

- additional background on BC Transit and custom transit services;
- an overview of the existing literature on the topic of evaluating and monitoring custom transit systems, as well as service delivery models and trends;
- a Conceptual Framework, which graphically depicts the goals of the research;
- a section outlining the methodology used to conduct the research;
- a brief overview of the limitations of the research;
- a Findings section, which presents the results of the primary research;
- a Discussion section, which provides an overview of what the Findings mean for BC Transit's custom transit service; and
- recommendations for evaluating the efficiency and effectiveness of BC Transit's custom transit systems, along with recommendations surrounding service delivery strategies and the provision of an efficient and effective service.

2.0 Background

BC Transit is the provincial crown agency responsible for providing public transportation services throughout the province of BC, outside of Greater Vancouver. The organization provides both conventional and custom transit service in over 130 communities across BC in collaboration with 59 local government partners, including the Victoria Regional Transit Commission and regional hospital districts (BC Transit, n.d.b, para. 5). Over the past 30 years, BC Transit has made large-scale changes and enhancements to the way custom transit services are delivered, and to the overall accessibility of its transit systems (2015, RFP 16.01, p. 11). In addition to most conventional buses now being low-floor and accessible for people using mobility aids, the custom transit service makes use of vans, minibuses and taxis for dial-a-ride and door-to-door handyDART service, complemented by contracted Taxi Supplement and Taxi Saver (discounted coupon) programs (BC Transit, n.d.a, para. 6). BC Transit now refers to the suite of custom transit services it provides as a “family of services” (2015, RFP 16.01, p. 11) available for those people who are unable to use the conventional transit system, some or all of the time, due to a permanent or temporary disability.

In most communities throughout the province, transit is provided through a partnership between BC Transit, the local government and a contracted operating company. The contracted operating company is selected through a public Request for Proposal (RFP) process (BC Transit, n.d.e, para. 11). In collaboration with local government staff, BC Transit evaluates each proposal, considering factors such as the company’s plan for operations, asset maintenance, facilities, staff management, environmental protection, and customer service (BC Transit, n.d.e, para 12). When evaluating proposals, costs are also considered, with the goal of selecting the proposal that presents the best value for money (BC Transit, n.d.e, para 12).

Under BC Transit’s legislated funding formula, the Province of BC funds 66.69% of custom transit service, while the local government partner funds the remaining 33.31% (BC Transit, n.d.e, para. 4). As it is the contracted operating company that is directly providing the service, it is imperative that BC Transit monitor the efficiency and effectiveness of the service being provided by the contractor; furthermore, from a contract management perspective, it is critical that there are documented performance reviews, especially when it comes time for contract renewals or extensions.

Under the *British Columbia Transit Act*, BC Transit is designated to provide public transit services. It states:

The purposes and objects of the authority are:

(a) to plan, acquire, construct or cause to be constructed public passenger transportation systems and rail transit systems that support regional growth strategies, official community plans and the economic development of the transit service areas,

(b) to provide for the maintenance and operation of those systems, and
(c) with the approval of the minister, to pursue commercial opportunities and undertake or enter into commercial ventures in respect of those systems and the authority's assets and resources (British Columbia Transit Act, 1996, sec. 3).

Section 11 of the British Columbia Transit Regulation sets forth who is eligible for custom transit, stating:

The following persons are designated as eligible for custom transit service:

- (a) persons with disabilities as defined under the *Disability Benefit Programs Act*;
- (b) persons who have a disability, either permanent or temporary, confirmed by a medical practitioner, that is sufficiently severe that the person is physically unable without assistance to use conventional transit service (2015).

BC Transit presently provides handyDART service in over 20 communities throughout BC. Under the handyDART program, customers can book either subscription trips, which are scheduled once a week or more at the same location and time for an extended period, or reservation trips which are one time or occasional trips scheduled on a first-to-call basis (BC Transit, n.d.d, para. 3).

Since the 1970's, many transit agencies, including BC Transit have been partnering with taxi companies to supplement their custom transit service with subsidized taxi rides (Transportation Research Board [TRB], 2012, p. 2). In addition to handyDART, BC Transit makes use of taxis for custom transit service via two programs: The Taxi Supplement program is used for service delivery by the custom transit contractor. Under this program, the customer service agent dispatches a taxi to provide the trip when a custom transit van or bus is not available, and the customer pays a standard custom transit fare. BC Transit's Taxi Saver program is also available to all permanently registered custom transit users, within all communities that offer this program. The Taxi Saver program makes use of vouchers that provide a 50% subsidy towards the cost of the taxi ride (BC Transit, n.d., para. 1), and users are responsible for booking their own taxi rides. From strictly an efficiency/cost standpoint, the use of the Taxi Saver program is preferable to BC Transit, as the Taxi Saver program offers a 50% cost recovery, while a customer pays a standard handyDART fare (usually approximately \$2) when the transit agency dispatches them a cab via the Taxi Supplement program. For this reason, users may prefer the Taxi Supplement program.

3.0 Literature Review

3.1 Introduction

Richard Race recommends that a “number of reviews of different aspects of literature have to take place before a coherent research project can begin” (2008, p. 488). There are few scholarly sources that focus specifically on monitoring and evaluating the efficiency and effectiveness of custom transit systems; however, when a broad scan is conducted, as Race recommends, many different sources of information emerge. In addition to some literature on innovative service delivery methods being used in Europe, there is a significant amount of literature on American paratransit service, although much of it is outdated (a lot coming from the 1970’s, 1980’s and 1990s). Since 1989, much of the literature has surrounded the evolution of paratransit since the introduction of the *Americans with Disabilities Act (ADA)*, officially introduced in 1990. A few Canadian transit organizations, namely CUTA, provide Canadian perspectives and research on custom transit; however, there is a gap in the literature when it comes to providing any kind of framework for monitoring and evaluating the efficiency and effectiveness of these systems, using both qualitative and quantitative data. The literature included in the following sections was chosen as it all supports answering the primary and secondary research questions.

3.2 Custom Transit and Disability Legislation

The ADA is the Act that most Canadian transit service providers turn to for standards and “promising practices” (Leseure, Joachim, Birdi, Neely & Denyer, 2004, p. 170). The public transit divisions of this Act “call for mandatory accessible fixed-route systems and comparable complementary [custom transit] services for individuals with disabilities who cannot use accessible fixed-route services” (TRB, 1998, p. 3). While the ADA has been overwhelmingly successful in ensuring people with disabilities have equitable access to public transit services, it has also been problematic for the public transit industry in the USA, and anywhere else that turns to it for guidance, as implementation of ADA paratransit provisions have increased administrative and operational expenses (TRB, 1998, p. 3), while the ADA did not provide funding for these increases. Simultaneously, the demand for custom transit service continues to grow (TRB, 1998, p. 3). Numerous reports highlight the fact that ADA compliance has increased pressures to control costs while meeting the increasing service demand, and that many transit agencies are evaluating and reconsidering their service delivery methods, given their constrained abilities to raise revenues (TRB, 1998, p. 8; Min, 2009, p. 1; Lave & Mathias, p. 1). These articles are valuable to the research as they present ways in which transit agencies are attempting to find efficiencies to slow cost growth, while still maintaining effectiveness.

3.3 Custom Transit in Canada

Similar to the ADA, the *Access for Ontarians with a Disability Act (AODA)* is Ontario’s provincial disability legislation, and it is a Canadian source of custom transit promising practices

(AODA, 2014). Currently, a non-partisan organization called “Barrier-Free BC” is advocating for the enactment of a British Columbians with Disabilities Act, which would set forth regulations surrounding people with disabilities and public transportation in BC (Barrier-Free BC, 2016, para. 1). This movement is critical for the future of custom transit in BC, as provincial disability legislation would alter the way in which transit agencies deliver and evaluate their service. Some KPIs would likely alter from being “monitoring tools” to “legal requirements.”

Individual transit organizations and CUTA provide a large number of reports annually. CUTA refers to custom transit as “specialized transit” (Seider, 2013, glossary), and it is most often discussed under the wider umbrella of “accessible transit” (Seider, 2013, Glossary). In recognition of the rapidly growing seniors’ population in Canada, CUTA published an in-depth report in 2013 highlighting the range of economic and social benefits of making transit accessible (2013). This CUTA report is fundamental to the research as it highlights the increasing focus on providing efficient and effective custom transit services, and the most common service delivery methods in Canada. While it is a rapidly growing service, with rapidly increasing demand, the literature on evaluating the efficiency and effectiveness of custom transit systems in Canada has not kept up. In April 2013, CUTA also released an Issue Paper which outlines the current fundamental challenges to accessibility, and the opportunities to improve transit service for people with disabilities (CUTA, 2013, pp. 1-2). While this CUTA paper emphasizes the “effectiveness” elements of custom transit service, this must also be balanced with efficiency, as emphasized throughout this report.

In February 2017, the OSA released a report entitled “Moving in the Right Direction” that summarizes the results of a province-wide survey that was sent to all handyDART registrants in BC (which captures both BC Transit and TransLink handyDART customers) (OSA, 2017). This survey looked at handyDART service aspects such as the booking process, ride availability, cost, rider familiarity with services and ride experience (OSA, 2017, p. iii). Ultimately, this survey found that a high proportion of respondents are satisfied with the overall quality of handyDART services but the report also highlights key areas for improvement (OSA, 2017, p. 4).

The most resounding message from this report for BC Transit and TransLink is the customer’s perception that taxicabs generally do not deliver the same level of customer service and safety as dedicated custom transit vehicles do (TRB, 2012, p. 24). Furthermore, when it comes to Taxi Supplement, the report highlights that often a custom transit customer is not aware that a taxi (rather than a BC Transit vehicle) has been dispatched to provide their ride (OSA, 2017, pp. 28-29). Finally, another key complaint noted by survey respondents is that many custom transit riders do not know exactly when their ride is coming, so can be left waiting for long periods of time (OSA, 2017, p. 6).

3.4 Custom Transit Monitoring and Evaluation

Specific to the scope of this project, the ADA emphasizes the importance of close performance monitoring, especially when the service is being provided by private operating companies (Disability Rights Education and Defense Fund, 2010, p. 14). As highlighted in the Disability Rights Topic Guides on ADA Transportation, “careful, thorough monitoring of [custom transit] service is critical” and “monitoring should go well beyond reliance on contractor reports” (Disability Rights Education and Defense Fund, 2010, p. 14).

To add a Canadian perspective, Transport Canada released a 2012 report entitled *Improving Bus Service*. Within this report, there is a section on project monitoring and evaluation (Transport Canada, 2012, pp. 57-61). While the section focuses on monitoring and evaluating transit projects, rather than transit systems as a whole, the framework and tips lend themselves well to the objectives of this report. Monitoring is defined as “a continuous and ongoing process of observing and collecting information, using indicators to gauge [success] and compare it with expected performance. Regular monitoring assesses progress and allows the timely identification of successes or failures” (Transport Canada, 2012, p. 58). Ultimately, monitoring should support planning, improve decision making, enable benchmarking, ensure accountability for actions and results, and provide a basis for corrective action (2012, p. 58). While this literature discusses monitoring and developing benchmarks, which is done primarily in transit systems that are growing, it does not address how best to monitor the performance of a mature system using industry benchmarks; however, monitoring performance against established benchmarks is discussed in a 2016 CUTA report, as outlined below.

Transport Canada compares monitoring to evaluation, and explains that evaluation, “uses information from monitoring to analyze the process, programs and projects to determine if there are opportunities for changes and improvements” (Transport Canada, 2012, p. 58). In the evaluation stage, it is determined whether or not actions are meeting strategic objectives efficiently and effectively (Transport Canada, 2012, p. 58). Ultimately, evaluation should generate “lessons learned”, it should foster policy change, ensure accountability, provide information to funders and stakeholders and it should improve strategic planning (Transport Canada, 2012, p. 58). This report sets out to provide a robust monitoring framework for evaluating the efficiency and effectiveness of custom transit systems. As highlighted by Transport Canada, a monitoring framework should incorporate and combine quantitative measures with more qualitative techniques (2012, p. 59).

In a 2016 report entitled “Specialized Transit: Services Industry Practices Review”, CUTA sets forth 15 key operational topics specific to custom transit (CUTA, 2016, p. 5). For each of these topics, industry benchmarks are provided, where appropriate. These benchmarks are fundamental to this research, as they provide a standard that transit agencies can measure themselves against when monitoring and evaluating the service they are providing. In addition, these benchmarks are specific to the Canadian custom transit industry.

A report, specific to the USA, was released in 2000 entitled “State of the Art Paratransit” (Lave & Mathias, 2000). This study explores the ways in which [custom transit] services are evolving, in order to be more cost effective and meet the ADA requirements (Lave & Mathias, 2000). Looking at numerous aspects of custom transit service, including service delivery methods, scheduling and dispatching practices, management options, technology, vehicles and coordination among providers, the report holds that “as [custom transit] budgets continue to consume a larger share of public transit funds, policy boards and managers will feel a greater urgency to know how much better [custom transit] could perform. This need will eventually lead to the comprehensive research necessary to develop standards in the [custom transit] industry” (Lave & Mathias, 2000, p. 6).

In 2006, the City of Santa Rosa hired the transportation consultants at Nelson\Nygaard to conduct a review of their custom transit operations. In particular, they asked them to “Advise the City concerning better methods to monitor the performance and compliance of its paratransit system” (Nelson\Nygaard, 2006, p. 1). The transit contract required the contractor to supply all custom transit vehicles with customer comment forms, and to submit these daily to the City; in addition, the contract required that the City’s Customer Comment Line phone number be displayed prominently inside all vehicles (Nelson\Nygaard, 2006, p. 5). The consultants at Nelson\Nygaard noted that on the City of Santa Rosa’s custom transit vehicles, the phone number was usually too small for seniors or anyone with vision impairments to see from a distance; furthermore, they noted that requiring the customer to hand in a comment form to the driver, who would see the comments, would likely discourage a customer from taking this action (Nelson\Nygaard, 2006, p. 5). Ultimately, Nelson\Nygaard recommended that “the process of filing comments should be as easy as possible, and should not require interaction with provider staff. The comment phone number should be posted inside every vehicle in numbers clearly visible from the back of the vehicle. Comment cards should always be available in every vehicle and should be placed where customers can reach them without assistance from driver. The cards should be pre-addressed and postage-paid for mailing to the City, and customers should be encouraged to send them to the City directly. Operating a vehicle without this signage or a supply of comments cards should be considered a contract violation” (Nelson\Nygaard, 2006, p. 11).

3.5 Custom Transit Service Delivery Methods and Trends

The idea of being more innovative with custom transit service delivery trends was first explored in-depth in 1974 in the book, “Para-Transit: Neglected Options for Urban Mobility” (Kirby, Bhatt, Kemp, McGillivray & Wohl, 1974). Through cases studies, these authors discussed ways to make the service, for which demand was quickly increasing, more efficient (Kirby, Bhatt, Kemp, McGillivray & Wohl, 1974). This book is significant to the research as it was the first to look critically at service delivery methods and consider how service delivery could be improved from both an efficiency and effectiveness standpoint.

In 2010, Nelson\Nygaard was hired to conduct a review, and subsequently produce a report, on 25 of BC Transit's paratransit and custom transit systems (Weiner, 2010, p. 1). While this information is somewhat dated, it is still useful background information for this report, and many of the recommendations contained in the report are still valid today. In specific, it found that many of BC Transit's custom transit systems are operating at extremely high percentages of subscription trips, (recurring trips) (Weiner, 2010, p. 1). Ultimately, this means that it can be very difficult in some systems for people to get occasional reservation (one-time) trips for appointments, shopping or whatever else they need to do. While subscription trips increase efficiency, they can reduce effectiveness of the service.

In 1998, a study by the TRB reviewed the different contracting strategies and service delivery methods being used within the USA (TRB, 1998). Of the 28 transit agencies reviewed in the report, almost all contract out some or all of their custom transit service to private sector organizations (TRB, 1998, p. 1). The report also found that "rising demand has increased the use of multiple private operators, while there is a decreased use of [not-for-profit] providers in the communities surveyed" (TRB, 1998, p. 1). While there is a tendency to use private sector contractors, the survey revealed that "there is a growing tendency to bring some of the program responsibilities in-house" and "an increased number of transit agencies are handling their own reservation and scheduling to control demand, and have implemented performance standards, incentives, penalties and monitoring practices to control quality" (TRB, 1998, p. 1). Among the transit agencies that responded to the TRB study, exclusive in-house operation was the least preferred service delivery method, with only 14 per cent operating in this manner (TRB, 1998, p. 10). In addition, in order to deliver a cost-effective service, some public organizations and private companies have reached agreements with their transit unions to create separate positions for custom transit drivers that allow for lower wages for this type of transit service (TRB, 1998, p. 9).

The TRB report holds that whenever contractors are being used to provide custom transit service, it is essential that their performance be monitored on an on-going and frequent basis to ensure a quality service is being provided, and that contract terms are being adhered to (TRB, 1998, p. 18). According to the results of the TRB's 1998 survey, the "level of [contractor] monitoring appears to increase with transit agency size" (TRB, 1998, p. 18). Table 2 demonstrates the number of transit agencies that used each method to ensure compliance with contract terms.

TABLE 2: METHODS TO ENSURE CONTRACTOR COMPLIANCE WITH CONTRACT TERMS

Method	Number of Small/Small-Urban Transit Agencies Responding (N=9)	Number of Medium-Size Transit Agencies Responding (N=6)	Number of Large Transit Agencies Responding (N=8)
Audits	2	5	8
Customer Surveys	3	4	5
DOT Section 15 Data	2	4	6
Monthly Management Performance Reports	8	5	8
Random Phone Calls	2	4	4
Unannounced Visits	-	4	8
Undercover Rides	-	-	2
Vehicle-Maintenance Records	-	4	5

Source: TRB, 1998, p. 18

All transit agencies that responded to the TRB’s survey noted that they require monthly performance reports and periodic reviews of vehicle maintenance records, while others require weekly reporting (TRB, 1998, p. 18). In larger transit agencies, staff may make periodic unannounced field visits and ride along with drivers to observe quality and performance (TRB, 1998, p. 18). Almost all transit agencies randomly call passengers or disseminate questionnaires (TRB, 1998, p. 18).

Similar to the contracting strategies, the innovative ways that transit agencies are finding to deliver custom transit service efficiently and effectively via taxicab partnerships holds valuable insights for the future of custom transit service delivery.

TransLink, the transit agency responsible for providing transit service in Metro Vancouver, conducted a pilot program in 2013, which explored the viability of expanding the use of taxis within their custom transit system (TransLink, 2014, p. 1). While the agency found that it was an effective way to deliver service, the report also emphasizes that diligent training, rigorous contracts and policy communication are key to ensuring the service delivered meets the customer’s needs and expectations (TransLink, 2014, pp. 4-5).

The TRB also highlights the prevalence of “user-side subsidy programs” under which eligible passengers buy scripts or vouchers at a reduced rate from the transit agency to pay for a form of custom transit service, such as a taxi ride (1998, p. 7). User-side subsidy programs are most often used to supplement other custom transit services, and they are most effective for trips that are not easily grouped, and/or for trips in rural areas (TRB, 1998, p. 7). To eliminate the use of paper vouchers as well as to make the process more user-friendly and less resource-intensive, some transit organizations have moved towards using “Smart Card” systems (TRB, 2012, p. 29). As an example, the Cityride program in Los Angeles replaced their previous coupon system with a Smart Card system in 2010 (Ibid). Now, participants can purchase up to \$42 worth of credit each quarter for \$21 (TRB, 2012, p. 29). The Cityride customer is then required to hand the card to the

driver immediately when they get into the taxi, along with government-issued ID (LA Dot Transit, n.d., para. 5). The driver swipes the card at the beginning of the trip, to verify the amount on the card, and then swipes it again at the end of the journey, at that point charging the card (Ibid). The customer receives a receipt showing the value left on the card, and the funds on the card cannot be used as a tip (LA Dot Transit, n.d., para. 5).

In addition to using taxis to deliver some or all of the custom transit rides, some transit agencies (primarily in the USA) are currently trying out Uber-type models. As this is still in early stages, literature on this topic is primarily in the form of news articles. In September 2016, the Washington Post published an article about a partnership between Uber, Lyft and the Massachusetts Bay Transportation Authority (Lazo, 2016, para. 1). There, the Massachusetts Bay Transit Authority is partnering with Uber, providing a \$13 subsidy towards an Uber trip for all eligible custom transit riders (Shared Use Mobility Centre, 2017, slide 65).

According to Paige Tsai, Transportation and Research Policy Associate with Uber, “Uber and transit are doing together what neither could have done alone” (Shared Use Mobility Centre, 2017, slide 48). Uber is currently partnering with transit agencies across the USA in many different shapes and forms, and in all of these cities, it is complementing the existing transit service by extending the reach of public transit, increasing mobility options in underserved communities, and further reducing congestion and pollution (Shared Use Mobility Centre, 2017, slide 48).

Uber recognizes that public transit, including custom transit, is most efficiently delivered via a shared ride model. In response to this, Uber has launched “UberPool” in numerous cities around the world (Shared Use Mobility Centre, 2017, slide, 52). Via smartphone GPS technology, UberPool groups trips together based on pick-up and drop-off locations, and the passengers in the vehicle share the cost of the ride, while only adding a few minutes on to their total trip time (Shared Use Mobility Centre, 2017, slide, 52). The UberPool functionality and model holds large implications for the future of custom transit service, as efficiently and effectively delivering shared rides is the key to providing this specialized transit service, and this is exactly what Uber is setting out to do.

As Uber uses personal vehicles to deliver rides, concerns are regularly being raised over the safety of Uber and Uber-like services. In 2016, a UK study revealed that “Uber drivers were accused of 32 rapes and sex attacks on London passengers over the past year” (Samuels, 2016, para. 1). The article also reports that, within the USA, “a succession of sexual assault claims against Uber drivers has damaged the company’s reputation of being ‘the safest ride on the road’” (Samuels, 2016, para. 5).

In response to the on-going safety concerns, Uber is constantly taking steps to attempt to improve the safety of its customers (Shared Ride Mobility Centre, 2017, slide 56), including facial matching technology that confirms that the driver using the app matches the account on

file, and confirming the license plate of the car arriving, so that people know they are getting in the correct vehicle.

Within Canada, Uber is available in both Ontario and Alberta, and both of these provinces have approved insurance policies specific to Uber drivers (Owram, 2016b, para. 1). This coverage applies from the moment a driver accepts a ride request to the time the passenger exits the vehicle (Owram, 2016b, para. 3). In the absence of ridesharing insurance policies, Uber drivers face dangerous gaps in insurance coverage when delivering service. As the literature highlights, Uber is currently trying to encourage provinces to work together and agree to standard rules and regulations to prevent a “patchwork of municipal regulations that could raise costs for the company and its drivers” (Owram, 2016a, para. 1).

Although not yet a threat in BC, a 2016 Transportation Research Board report highlights the fact that many custom transit agencies in the United States are feeling the effects of app-based ride services, such as Uber or Lyft, in that the arrival of these services in a community is impacting existing taxicab markets by luring away taxi drivers (Ellis, 2016, p. 3). Ultimately, if taxicabs have been used to provide custom transit service, Uber and Lyft are negatively impacting the supply of taxis available for this service.

The driver qualification requirements differ between provinces as well, and currently, Uber in Toronto requires a background screening, consisting of a criminal record check and a review of driving records (Uber, 2016b). In Edmonton, the driver qualification screening is more in-depth and in order to drive for Uber, a class 4 license is required. In order to obtain this kind of license, a medical exam, road test and knowledge test are required (Uber, 2017a).

Multiple studies have looked at sources of efficiency of custom transit systems. Advances in technology, including automatic vehicle location (AVL), digital telecommunication and computers have been considered to provide custom transit systems with opportunities to improve the productivity and reliability of the service, ultimately improving overall efficiency (Fu, 2002, p. 1). In 2002, Fu conducted a simulation study to investigate the differences in operational performance between a custom transit system using AVL and one not using AVL, with the assumption that a system with AVL has increased flexibility in dynamic scheduling, where dynamic scheduling means that a vehicle is able to be diverted enroute by a dispatcher to a new, more efficient, location (Fu, 2002, pp. 301-303). Ultimately, the study revealed that “the AVL benefit due to increased flexibility in dynamic scheduling is highly case-dependent. The observed productivity gain ranged from -2.5 per cent to +8.8 per cent, with an average productivity increase of 2-4 per cent” (Fu, 2002, p. 306).

In 2007, Fu, along with two other researchers, published a report which evaluates the efficiency levels of individual [custom transit] systems in Canada, with the objective of identifying the most efficient transit agencies, and pinpointing where this efficiency comes from (Fu, Yang & Casello, 2007, p. 1).

In 2006, Helsinki, Finland adopted an innovative custom transit scheduling software, known as Ecolane Demand Response Transportation (DRT), which virtually eliminates the need for schedulers and dispatchers, and schedules all trips in real time (Larsen & Poykko, 2007, p. 1). The DRT system is ground-breaking in that it provides reservations, dispatching and scheduling for the transit system, and it was specifically chosen as it automates many of the processes usually done by humans (Larsen & Poykko, 2007, p. 1). The City of Helsinki offers custom transit 24 hours a day, 7 days a week, 365 days a year via its 60 dedicated fleet vehicles, and a reserve fleet of taxis. Customers call into a call centre, where their phone number is automatically recognized and their profile is brought up; with this information readily available to the agent, the customer requests a pick-up time (2007, p. 2). Via the scheduling technology, the trip is scheduled in real-time, and the entire booking process is usually complete in 30 seconds or less (2007, p. 2). All of the sixty custom transit vehicles, as well as the dedicated taxis, are equipped with Mobile Data Terminals (MDTs), which continuously report back information to the scheduling server (2007, p. 2). As outlined by Larsen and Poykko, several processes occur when a trip is booked:

- 1) The scheduling algorithm is constantly looking for the most efficient and effective schedule
- 2) The trip is sent to the vehicle MDT for acceptance
- 3) The driver must respond within a specified time
- 4) Once the first vehicle either rejects the trip or does not respond, it is sent to another vehicle (2007, p. 2).

Ultimately, the scheduling of trips is continuous and happens in real-time, eliminating the need for the creation of manifests (2007, p. 3). Only supervisory staff are able to make scheduling changes manually (2007, p. 4).

This innovative use of technology represents a very different service model than is commonly being used in North America, as it has eliminated the roles of dispatchers and schedulers; furthermore, nearly 100% of the trips are scheduled less than 16 hours in advance (2007, p. 3).

There are multiple trends and innovations which are beginning to have an impact on custom transit operations around the world, especially in larger cities. As these trends become mainstream and more findings are available to prove their value, it is likely that their use will expand to more transit systems in all different sizes of communities.

3.6 Literature Review Conclusion

The existing literature on custom transit performance monitoring and evaluation is limited, especially when searching for anything specific to Canada; however, as this type of specialized transit is becoming a growing focus of transit agencies, organizations such as CUTA and the Transportation Research Board are producing more literature that looks specifically at this area. Since the 1990's, the introduction of the ADA has been the key driver of literature that looks at

different custom transit service delivery methods, and possible ways to increase service delivery quality and efficiency.

When it comes to monitoring and evaluating custom transit service, and ensuring that an efficient and effective service is being provided, industry cooperation and the use of industry benchmarks will become increasingly important, as will finding effective methods of gathering feedback from stakeholders.

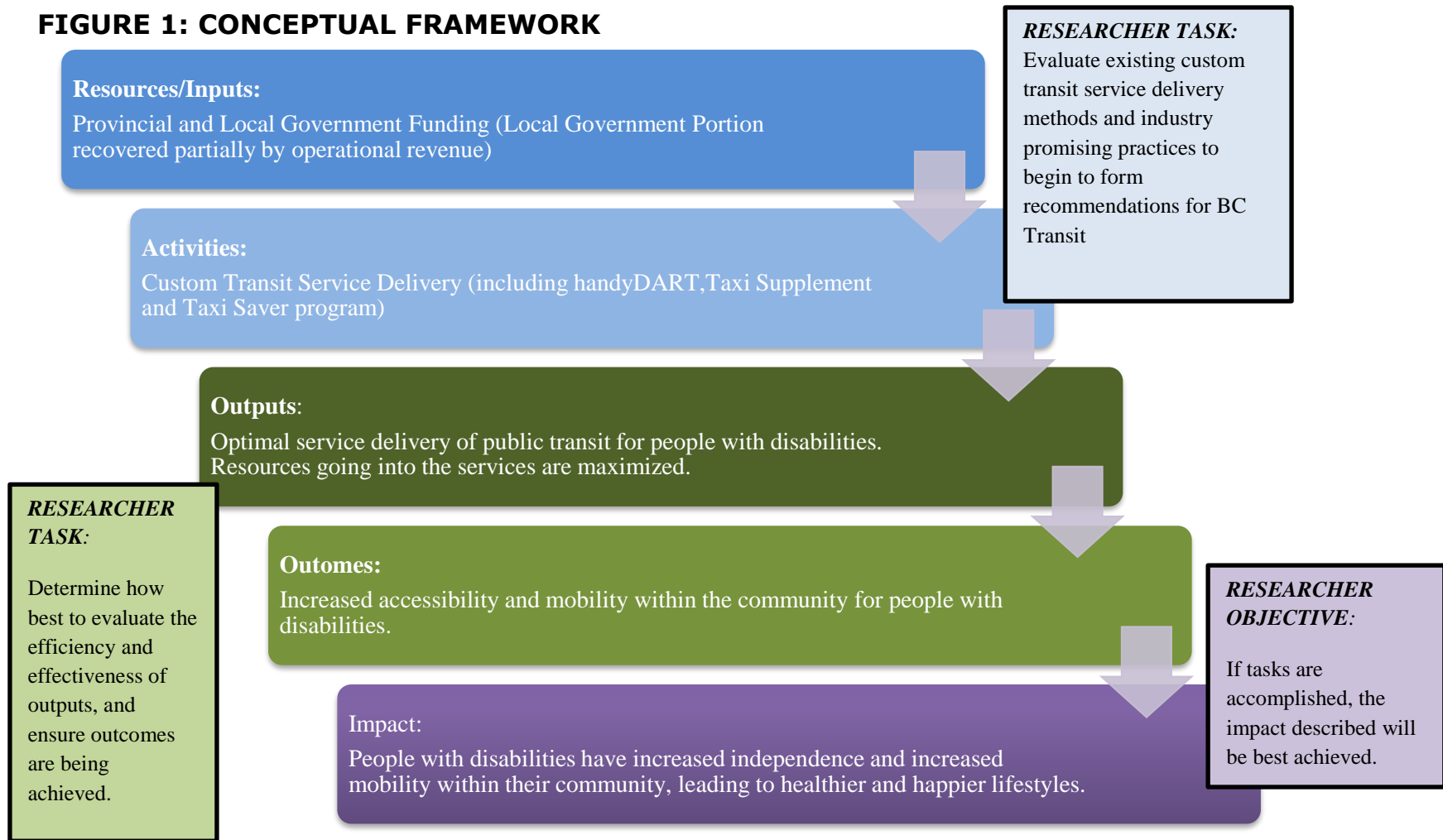
To increase efficiency, taxicabs have been used to supplement existing custom transit service; however, as highlighted in the literature, this practice comes with safety concerns, as many taxi drivers do not provide the same level of specialized service as would be provided in a custom transit vehicle. Moving forward, it seems likely that the practice of using taxicabs to supplement custom transit will continue, but methods of ensuring proper driving training and policy compliance, such as ensuring robust contracts are in place, will become increasingly necessary.

More recently, the introduction of app-based transportation services such as Uber and Lyft have revitalized custom transit service delivery innovation, and a few larger transit agencies are trialing custom transit specific partnerships with Uber, embracing the boom of sharing economies. Ridesharing services come with many challenges, such as insurance and driver qualification issues; however, as it seems as though these innovative transportation services are here to stay and they offer tremendous efficiencies for the custom transit industry, the transit industry will likely continue to seek creative solutions to make this a workable service delivery option for custom transit option.

4.0 Conceptual Framework

The W.K. Kellogg Foundation recommends the use of a Logic Model to ensure that program evaluation is done effectively (W.K. Kellogg Foundation, 2004, p. 1). A Logic Model is described as a “way to present and share your understanding of the relationship among the resources you have to operate your program, the activities you plan and the changes or results you hope to achieve” (W.K. Kellogg Foundation, 2004, p. 1). While this report is not precisely evaluating a specific program, it is focusing on how to best to monitor and evaluate an existing program, and it will look at what method(s) of program operation best supports an efficient and effective service. The Kellogg Foundation’s Logic Model can be adapted, as shown in Figure 1, to describe the existing sequence of activities and the research being conducted, and how these will lead to answering the research question at hand.

FIGURE 1: CONCEPTUAL FRAMEWORK



5.0 Methodology

This project analyzes qualitative information obtained through interviews and focus group sessions with key stakeholders. The use of focus groups and interviews allowed the researcher to obtain invaluable first-hand information from the following stakeholder groups:

- Existing custom transit users
- Custom transit funding bodies (local and provincial governments)
- Transit agencies
- Subject matter experts

The use of focus groups was chosen as they generally work well for this type of social research, allowing the researcher to “obtain detailed information about attitudes, opinions, and preferences of selected groups of participants” (Trochim & Donnelly, 2008, p. 148). Ultimately, as this research argues that qualitative data is essential in evaluating a custom transit system, it was necessary for the researcher to obtain input from the users of the service. As explained by Anita Gibbs of the University of Surrey, “the main purpose of focus group research is to draw upon respondents’ attitudes, feelings, beliefs, experiences and reactions in a way in which would not be feasible using other methods” (1997, para. 3).

The results of the interviews and focus group sessions ultimately informed the creation of the monitoring and evaluation framework set forth in this paper. The framework is based on a Balanced Scorecard approach, which balances traditional quantitative measures of performance with qualitative methods and KPIs (Balanced Scorecard Institute, 2017, para. 1).

5.1 Ethics

Prior to beginning this project, an application outlining all of the details of the research was submitted to the University of Victoria Human Research Ethics Board (HREB). This application included details on recruitment methods for research participants, data collection methods, incentives and reimbursements offered to potential participants, how consent would be obtained, how anonymity and confidentiality would be guaranteed and how data would be used and disposed of. The HREB approved the research on January 26, 2017. A copy of the Certificate of Approval can be found in Appendix 1.

5.2 Focus Groups

Three focus group sessions were held with the Accessible Transportation Advisory Committee in Victoria, with BC Transit staff, and with the Kelowna Accessible Transit Advisory Group. Both the Kelowna Accessible Transit Advisory Group and the Accessible Transportation Advisory Committee in Victoria are made up of existing custom transit customers and advocates from the disabilities community. The focus group session which was held with BC Transit staff consisted of employees whose work involves custom transit service delivery.

In order to recruit members of the Victoria Accessible Transportation Advisory Committee and the Kelowna Accessible Transit Advisory Group for the focus groups sessions, emails were sent to the Chair of the Committee, informing them of research project, using a standard recruitment script (Appendix 2). The Committee Chair then asked committee members if they would be willing to participate in a focus group session, and they disseminated consent forms (Appendix 3) to all potential participants. Prospective participants were given adequate time to assimilate the information provided, pose questions to the researcher, and discuss and consider whether or not they would be willing to participate. If they decided to participate, they signed the consent form and returned it to the Committee Chair, who passed it back to the researcher. A meeting date, time and place for the focus group session was then set. Prior to the focus group session, the researcher ensured consent forms had been submitted for all participants. Initially, 24 people were contacted from the Victoria Accessible Transportation Advisory Committee, and 6 participated in the focus group session, while 9 people from the Kelowna Accessible Transit Advisory Group were contacted, and 4 people participated in the research via a focus group.

For recruiting employees of BC Transit to participate in the focus group session, the same process as above was followed, except for the fact that it was the researcher that communicated with prospective participants, directly sending them the recruitment script and consent form. A total of 10 people were invited to participate in the BC Transit focus group, and 7 people ended up attending the session.

Focus group questions are in Appendix 4.

5.3 Interviews

To inform the research, a total of six interviews were conducted. (Seven people were contacted for interviews, and six agreed to participate.) Two interviews were conducted with employees of other Canadian transit agencies, two interviews were conducted with local and provincial government representatives, and two interviews were held with industry experts who work as consultants. Participants were chosen as they expressed interest in participating in the research, because the agencies they currently or previously worked for have similar service delivery models to BC Transit, and because the participants hold particular expertise in the custom transit industry. For the purpose of this research, it was critical that both provincial and local government staff were interviewed, as they are the funding partners of custom transit service under BC Transit's model, and they also routinely receive feedback on the service from the public.

Interview participants were offered the option of remaining anonymous or having their contributions recognized by name, with proper citations. The following interview participants gave permission for their names to be used within the report:

- Richard Weiner, Principal, Nelson\Nygaard Consulting
- Mike Zbasrky, Manager of Transit and Sustainability, Comox Valley Regional District

- Peter Murray, Research Officer, Ministry of Transportation and Infrastructure
- Lorna Stewart, Director, Trestle Consulting

In addition to those named above, an interview was conducted with a representative from one of BC Transit’s larger handyDART offices (a contracted operating company of BC Transit). This representative will be referred to as Interview Subject 1. An interview was also held with a representative from another Canadian transit agency, and this person will be referred to as Interview Subject 2.

In order to recruit interview participants, potential participants were contacted, via telephone or email, by the researcher and informed about research project, via the recruitment script. If interested, the potential participant was given a consent form to read and consider. They were given adequate time to assimilate the information provided, pose questions to the researcher, and discuss and consider whether or not they would be willing to participate. If they decided to participate, they signed the consent form and returned it to the researcher via email. From there, an interview date and time was set, as agreed to by both parties. The researcher ensured consent forms had been received before the interview began.

Interview questions are in Appendix 4.

5.4 Balanced Scorecard Approach

The Balanced Scorecard approach was used as a basis for the monitoring and evaluation framework described in the Discussion section. The Balanced Scorecard combines “strategic non-financial performance measures [with] traditional financial metrics to give managers and executives a more 'balanced' view of organizational performance” (Balanced Scorecard Institute, 2017, para. 1). This approach, and the literature review, guided the creation of focus group and interview questions (Appendix 4).

The use of focus groups and interviews was conducive to the Balanced Scorecard approach, as involving all of the groups listed above allowed the researcher to obtain insight into each of the four perspectives of a Balanced Scorecard. The four quadrants of the Balanced Scorecard can be described as follows:

- **Learning and Growth Perspective:** This perspective includes employee training and cultural attitudes related to both individual and corporate self-improvement (Balanced Scorecard Institute, 2017, para. 7). For the purpose of this research, this perspective primarily focuses on gathering and using data that transit agencies can use to effectively improve their operations.
 - Ultimately, this is the perspective of BC Transit. As the Authority responsible for the transit service, constant improvement is their obligation.

- **Internal Business Perspective:** The information contained in this perspective should allow the managers to know how well their business is running, and whether its services conform to customer requirements (Balanced Scorecard Institute, 2017, para. 8).
 - This is the perspective of the contracted operating company. It is their responsibility to ensure their internal business processes and measures are conducive to a high-functioning transit service.
- **Customer Perspective:** Meeting the needs of custom transit customers is key, and must be an everyday goal of the transit agency. This perspective reflects the “increasing realization of the importance of customer focus and customer satisfaction” (Balanced Scorecard Institute, 2017, para. 9). Focus group participants were vital in shaping the KPIs related to the customer perspective.
 - This quadrant of the framework represents the perspective of custom transit customers, as well as potential customers.

Financial Perspective: When looking at any organization, the traditional need for financial data cannot be overlooked (Balanced Scorecard Institute, 2017, para. 10). For custom transit funding partners, financial KPIs are fundamental.

- This quadrant represents the perspective of BC Transit’s key funding partners (the Province of BC and local governments).

6.0 Limitations

Due to the use of interviews and focus groups for the purpose of this research, there are some inherent threats to its validity. In both focus group sessions and interviews, the following threats exist:

- Interpretation validity: “The primary threat to valid interpretation is imposing one’s own meaning, instead of understanding the viewpoint of the individuals studied and the meanings they attach to their words, phrases and actions” (Universal Teacher, n.d., para. 3). The researcher made every effort to ensure that the viewpoint of the individuals studied was clearly understood; however, this threat cannot be completely eliminated in qualitative research.
- Researcher bias: It is well-recognized that “each and every [researcher] will have some kind of bias” (Universal Teacher, n.d. para. 3). Since the researcher works in the custom transit field, there is an even greater chance that pre-existing biases or ideas exist with regards to the research; however, the researcher made every effort to approach the research completely objectively and without any bias.
- Descriptive validity: “Researchers should record interviews accurately and completely” to ensure that all of “what happened” is accurately captured (Universal Teacher, n.d., para. 2). While the researcher used audio recordings to minimize this threat, there may still be things that were not captured by the audio, or were difficult to decipher due to multiple people talking at once during focus group sessions.
- Reactivity: This is potentially the greatest limitation of this research. Reactivity is the irremovable reality that the researcher “can impact both the environment and the people being observed” (Universal Teacher, n.d., para. 6). All research participants were aware that the researcher is an employee of BC Transit, and for this reason or others, they may “mislead [the researcher] to make themselves seem more valuable, less important, or tougher” (Universal Teacher, n.d. para. 6). The researcher was aware of this threat, and tried to ensure that it was minimized as much as possible, through measures such as trying to make the atmosphere as neutral and open as possible.

Another inherent limitation of this research is that it is simply a snapshot in time. Custom transit service delivery methods will continue to evolve, and innovations, such as Uber and Lyft, will likely alter the industry in significant ways. It should be noted that there are insurance and liability issues which will have to be considered and overcome before these services can become established methods of custom transit service delivery.

In addition, the increased use of technologies will continue to have large impacts on the industry. It is important that BC Transit, or any custom transit service provider, continues to conduct their own evaluations of emerging service delivery trends, rather than strictly accepting the recommendations in this report. It is also important to highlight that if BC is to adopt disability legislation, as Barrier-Free BC is currently advocating, (Barrier-Free BC, 2016), some of the

measures and metrics presented in the framework may need to be monitored from a legal perspective, rather than strictly from an evaluation and service improvement perspective. Ultimately, as the industry evolves, the framework presented at the end of the report will need to be updated to reflect the changes.

A second limitation of this research is that the framework for monitoring and evaluating the efficiency and effectiveness of custom transit systems and the recommendations for service delivery methods presented in this report are general in nature. When applied practically, this framework and the specifics of service delivery should be adapted to best fit the specific transit system, as the size of the system, the funding available, and other characteristics make each unique. In other words, this report is not a panacea, but is a basic framework to be adapted for each individual transit system. Different forms of analysis and different types of custom transit service delivery may be more suitable to different transit systems. The numerical standards and benchmarks identified are also general in nature and the unique operating environment and context of each transit system must be considered during any type of evaluation.

7.0 Findings

7.1 Introduction

To answer the primary and secondary research questions, focus group sessions and interviews were conducted with custom transit users, disability advocates, transit agency staff, funding agency staff and industry experts. The results of these sessions are detailed below.

7.2 Findings: Focus Groups

7.2.1 KELOWNA ACCESSIBLE TRANSIT ADVISORY COMMITTEE & VICTORIA ACCESSIBLE TRANSIT ADVISORY COMMITTEE FOCUS GROUPS

As this report looks at evaluating the efficiency and effectiveness of custom transit systems, the first question that all three focus groups were asked was how they would define efficiency and effectiveness for custom transit. The responses that were given corroborate the definitions originally put forth in this report, although the definitions stemming from the primary research are more transit-specific. One focus group participant from the Kelowna Accessible Transit Advisory Group succinctly stated that an efficient system would “get the most people to where they want to go, by the time they want to get there.”

When evaluating the effectiveness of a custom transit system, it is integral to ask the current users of the system what is important to them in terms of their overall experience with the service. For the purpose of this research, customers were asked this question in targeted focus group sessions. The responses of the Kelowna Accessible Transit Advisory Group and the Victoria Accessible Transportation Advisory Committee participants were all fairly similar, with dependability of service, timeliness of service, safety of service and the service-orientation of the driver being key themes. One focus group member in Victoria summarized the group’s service delivery expectations by stating “an effective service is one in which a person that needs the service is able to get it, and get from A to B safely and timely.”

It was pointed out that for the customers of this specialized service, the quality of their interaction with the driver influences the customer’s entire day, and thus this aspect is paramount for many people.

The Victoria Accessible Transportation Advisory Committee also highlighted the importance of custom transit vehicles looking like the conventional fixed-route buses, emphasizing that it is all part of the public transit system. Members of the focus group session, particularly in Victoria, expressed frustration with the booking process, and that they would like to see bookings available via a Smart Phone app.

In Victoria, customers receive an automated phone call the day prior to their booking, reminding them of their custom transit booking. The focus group stated their appreciation for this reminder,

highlighting that it is very helpful. The Victoria focus group also suggested that BC Transit should promote off-peak travel times on its website, so that people are aware of the days of the week and specific times that they are most likely to get a booking, so that customers can plan appointments and social outings accordingly.

The focus groups were all asked about the best method of collecting feedback from custom transit customers. Both the Victoria and Kelowna focus groups stated that options must be available for providing “instant feedback” and these options cannot be limited to online channels only. While many transit agencies use annual surveys, the focus groups emphasized that data collections methods cannot be a “one size fits all” approach, and the methods have to change to fit the specific audience. In order to ensure a wide cross-section of customers have the opportunity to provide input, one focus group emphasized the importance of regular visits to centres commonly served by custom transit service for a targeted “open house”. As it can be challenging for custom transit users (particularly those in extended care facilities) to respond to a survey or attend an open house in the community, it is recommended that transit agencies visit seniors’ facilities where high numbers of custom transit users reside or visit. It must also be recognized that many people, specifically those with cognitive or visual impairments, will need support in providing feedback. Members of the Kelowna and Victoria focus groups strongly emphasized that users of the service are nervous about giving honest, potentially negative, feedback, because they are worried that it may come back on them personally, and some worry about losing their access to the service. Finally, the Victoria focus group emphasized that people giving feedback need to see that it is being valued, considered, and ultimately used to guide the strategy of the transit system. If they do not see it being used, they will likely stop giving feedback.

The focus groups emphasized their appreciation for multiple service delivery methods of custom transit service. Specifically, they expressed appreciation for BC Transit’s Taxi Saver program, and their ability to use this service during hours when handyDART is not available. One participant suggested that, as many people strictly use the Taxi Saver program, it may be worth contacting these people to find out why they are not using the handyDART service in their community. Finally, focus group participants acknowledged that, in most cases, taxicab drivers do not provide the same level of customer service that a custom transit driver would, commenting that “many drivers are very nice, but they do not provide door-to-door service.” However, focus group participants said that they are willing to compromise on factors such as door-to-door service for the convenience of a taxi ride and the guarantee that their trip will be direct.

7.2.2 BC TRANSIT FOCUS GROUP

The BC Transit staff focus group highlighted that for custom transit to be effective, it needs to be part of a community with diverse transit options. This was corroborated by a statement made by a member of the Kelowna Accessible Transit Advisory Committee who said “there should be reminders that handyDART is part of a spectrum of community accessible transit.” A BC Transit

focus group member emphasized that “land use planning is key. When high activity centres are outside the core, we see a decrease in efficiency.” Also from an efficiency standpoint, the group pointed out that there is a point at which rides per hour is so low it makes more sense to deliver the trips with a taxi.

One member of the BC Transit focus group emphasized the importance of vehicle type and on board equipment, as they routinely hear feedback on these aspects of the service from customers. The focus group member stated that, according to the input they receive from users of the system, the dedicated custom transit vehicle should be lift-equipped, have the capacity to carry at least four mobility aids, and have comfortable suspension.

7.3 Findings: Interviews

As had been asked during focus group sessions, interview participants were also asked how they would define efficiency and effectiveness in terms of what they mean for public transit. Interview Subject 2 clearly stated that, for them, effectiveness is “good use of taxpayer dollars” and “a service with a great customer experience wherein customers are retained.”

When monitoring and evaluating a public transit system of any type, it is essential that both efficiency and effectiveness be assessed. Given that these two elements are often in conflict, it is important to contemplate the balance and extent to which both efficiency and effectiveness should be considered when monitoring and evaluating a custom transit system. Via interviews, key custom transit stakeholders were asked “To what extent should qualitative data (such as survey feedback) be used, and to what extent should quantitative data (such as rides per hour) be used evaluating a custom transit service?” The responses were fairly unanimous, stating that both must be considered; however, representatives from transit organizations and local governments felt that quantitative data should be given more weight. As pointed out by Mike Zbarsky of the Comox Valley Regional District, qualitative data has a tendency to be overly negative, as those with complaints are often more likely to take the time to provide feedback. Peter Murray, Research Officer with the Ministry of Transportation and Infrastructure notes “You have to use both. I tend to have a bias towards the numbers, but you also need qualitative data. I lean a bit more on the quantitative side, but you also need to talk to people about what they actually need.” Similarly, Interview Subject 2 emphasized that “Quantitative data is still key as we’re stewards of taxpayer dollars”; however, they also highlighted that “in the past we’ve always looked at [evaluating custom transit service] from a financial perspective. Today, we’re looking at it more from a customer’s perspective, because we’re hearing people aren’t using it because it doesn’t meet their needs.”

In the face of rising demand and the associated increasing costs for the provision of custom transit, service providers and funding agencies are increasingly recognizing the importance of closely monitoring the financial KPIs. In particular, cost per trip and passenger rides per hour are two of the most commonly used metrics, and both were commonly cited as key to service

monitoring by BC Transit's funding partners. In addition, in response to rising demand, agencies have simultaneously been recognizing the importance of demand management strategies to slow cost growth, while ensuring that the service is available and being used by those who truly need it. Due to this interest in ensuring that only those eligible are using custom transit service, a representative from a transit agency explained that "registrants per capita" and "trips per capita" are becoming increasingly popular and valuable metrics. By contrast, if these numbers are too low, it indicates latent demand. For Mike Zbarsky, Manager of Transit and Sustainability with the Comox Valley Regional District, an efficient and effective custom transit system is one in which the "right people" (those are who are eligible for custom transit as per the definition set forth in the BC Transit Regulation of the BC Transit Act) are using the system.

When asked what he hears most frequently as being important to local custom transit riders, Michael Zbarsky lists the availability and flexibility of bookings, the service hours, the scheduling interaction, and the customer service orientation of drivers and dispatchers. Confirming these informed opinions, Peter Murray explained that the two largest sources of complaints which reach BC's Ministry of Transportation and Infrastructure are those surrounding service hours, specifically service on Sundays, and service availability.

In order to monitor the service being provided, Richard Weiner of Nelson\Nygaard Consulting stated that it has been his experience that many transit agencies, particularly in the United States, make use of volunteer "secret riders." The secret riders are current custom transit customers who have been contacted by the transit agency. If they are willing to participate, they are provided with a list of criteria, which they fill out during the regular trips and later return to the transit agency. In addition, the Victoria handyDART system makes use of operators, who are off work due to an injury, who ride the service conducting short one-on-one interviews with willing passengers.

Interview participants were unified in asserting that regularly collecting feedback from custom transit users is essential. At both TransLink and Edmonton Transit, annual telephone surveys are conducted with users of the custom transit service. In addition, at Edmonton Transit, Lorna Stewart explains that when she was the Director of the Disabled Adult Transit Service (DATS) service, she held monthly staff input sessions to chat with the front-line employees about what was working and what needed improving. Out of these sessions came "tremendous ideas and information about what was going on in our transit system."

Lorna Stewart emphasized that customer no shows and late cancellations (defined as cancelling less than two hours before a scheduled pick-up time) must be monitored, as high percentages of these metrics indicates an inefficient service. Just as custom transit users have expectations of the service, Lorna Stewart points out the importance of having expectations of the customers as well, in order to run an efficient service. Specifically, she emphasizes that organizations must be firm about their No Show and Late Cancellation policies, in order to ensure the delivery of an efficient and effective service.

When a custom transit vehicle arrives at a pick-up location, it is common practice to set a maximum time that vehicle operator is required to wait for the client. Lorna Stewart noted that one of the best enhancements she made while at DATS was the implementation of software that let the customer know, via telephone, when their ride was five to ten minutes away. In addition to making a significant improvement to the overall customer experience, from an efficiency perspective, this change also reduced average dwell time (meaning the time the custom transit vehicle spends sitting at a location, at each pick-up site) by approximately 40 per cent. The Victoria handyDART system has implemented a similar system; however, Interview Subject 1 emphasized that it can be challenging to contact people in residential care facilities to let them know their ride is coming, so the reduced dwell times in Victoria have primarily been seen for people who are living independently; in addition, due to the technical limitations, this phone call can sometimes be made too late to be helpful.

Interview Subject 2 highlighted that many transit agencies that make use of contractors are now looking at bringing some of the services they provide back in-house, to allow for greater control and oversight. The transit agency that Interview Subject 2 works for has historically contracted out all aspects of its handyDART operations, and is currently planning to bring the customer service feedback channels (telephone and email) back in-house; in addition, the organization is considering also bring the dispatch and scheduling functions in-house, in order to have tighter control over the customer experience.

When asked about innovations in the custom transit industry, Lorna Stewart referenced software that automates the scheduling of trips. The introduction of scheduling software was a transition that Lorna Stewart led while at DATS, and she stated that some work was required to convince dispatchers to let the scheduling algorithm do the work, as they were used to doing it themselves; once they did this, they began to see efficiency improvements. She added, “We used the scheduling software to monitor and forecast whether a trip would be on time. This gave the dispatchers the ability to focus on the trips forecasted to be late.”

There was unanimity among interview participants that using taxicabs to supplement custom transit service is key to delivering an efficient service in communities where this option is available; however, concerns surrounding driver qualifications and safety were raised. In particular, Interview Subject 1 stated that he has repeatedly suspended taxi companies from providing custom transit service due to safety and custom service infractions, but this measure does not seem to be fixing the problem.

From an efficiency perspective, a key theme that arose during multiple interviews was land use planning, as had also been raised by one focus group. Through BC Transit’s Planning team, and specifically through BC Transit’s 25 Year Transit Future Plans, the focus groups and interview participants expressed their desire for the organization to continue to work with local government partners to encourage and promote land use planning that supports efficient and effective transit systems. As stated by Mike Zbarsky: “We need to be able to get people living

closer together, and have people go to destinations that are closer together. We all know that complete and compact communities are better for service, both custom and conventional, but we need to provide education around that.” Dense communities with transit-oriented land use would not only generate more positive quantitative KPIs (namely rides per hour and trip length), but it would also positively impact service quality in terms of on-time performance, trip availability and user satisfaction, as the time spent on the bus would be shorter, and there would be less chance for the bus to fall behind schedule during long commutes. Taking this one step further, it was stated in multiple interviews that BC Transit could work with community services and seniors’ facilities to run programs at off-peak times; in addition, off-peak times should be promoted to the customer as desirable times to book, as this practice would increase the likelihood that the trip could be accommodated at the requested time.

8.0 Discussion

8.1 Introduction

This section presents a monitoring and evaluation framework based on the integration of the literature review and research findings. Use of this framework should ultimately generate strategies which increase efficiency and effectiveness of custom transit services. In addition, this section will look at the future of the industry and what this means for BC Transit.

8.2 Monitoring and Evaluation Framework

The grid below (Figure 4) outlines a framework that BC Transit, or any other agency providing custom transit service, can use to monitor and evaluate the efficiency and effectiveness of its custom transit systems. As outlined in the Methods section, the Balanced Scorecard approach was used as a basis for the framework. While each of the four quadrants should be given relatively equal weight when monitoring service, it must also be noted that the KPIs in the Financial Perspective quadrant will probably be of utmost importance to the agencies and bodies funding transit, such as local and provincial governments. Similarly, the customer perspective indicators may be more important to service users.

The consistent use of the framework below will allow for custom transit systems of similar size to be compared to each other in a consistent and valuable manner. Frequently, custom transit systems are compared to conventional transit systems, as access and availability of data on a conventional system is simpler and greater, especially if it is operated by the same transit agency that is running the custom system; however, this comparison is not always valuable, as the two service types follow very different service delivery models.

Under BC Transit's model, data surrounding operations and service delivery is collected from contractors, which necessitates consistent and clear definitions of the metrics. All of key qualitative aspects, highlighted by custom transit users and contained in the framework, should be monitored via the methods highlighted in the Learning and Growth section, such as surveys and on-board audits. While the qualitative aspects of the Customer Perspective quadrant are more difficult and expensive to monitor; it is imperative, from a quality perspective, that this be done.

Each KPI used in the framework is defined below, and where appropriate, an industry benchmark is provided. The cited benchmarks from CUTA (2016) are noted as "best practices" by CUTA unless otherwise stated.

Financial Perspective (Funding Partner Perspective)

Cost per trip: The direct cost of providing specialized transit service to one passenger from a passenger's point of origin to destination (a one-way trip). Cost per trip is commonly represented

as the average operating and maintenance cost of the service as a ratio to the total ridership of the service (CUTA, 2016, p. 23). It is calculated as total net operating and maintenance costs divided by total ridership (CUTA, 2016 b, p. 26).

- Industry best practice standard: <\$25 (CUTA, 2016, p. 23)

Trips per capita: The total number of passenger trips provided per service area population (Nelson\Nygaard, 2017, p. 11). A lower number suggests that there is latent demand in the service area, and that people with disabilities are finding other methods of transportation in the community (Nelson\Nygaard, 2017, p. 11).

- Industry best practice: >0.95% (Nelson\Nygaard, 2017, p. 11.)
Note: This best practice was found in a 2017 report published by Nelson\Nygaard Consulting.

Registrants per capita: The total number of people registered within the service area population (CUTA, 2010, p. 8). This number is indicative of how “open” or “controlled” the eligibility process is (Nelson\Nygaard, 2017, p. 9). If this number is too high, it could mean that the eligibility process is too “loose” and that some people using the service could potentially be using the fixed-route system. By contrast, if the number is too low, there may be many people eligible for the service who are not using it.²

- Industry best practice: 0.7% (Nelson\Nygaard, 2017, p. 9)
Note: This best practice was taken from a 2017 report by Nelson\Nygaard Consulting.

Passenger trips per hour: The average number of trips that are provided per vehicle hour of service. Trips per hour are determined by the total number of one-way trips completed over a specific time period and the total hours of vehicle service over the same time period.

- Industry best practice: 2.5-5 (CUTA, 2016, p. 36)
Note: It is likely that a transit system that covers a more sparsely populated area will have lower passenger trips per hour (closer to 2.5) while transit systems in more densely populated areas will have a higher passengers per hour (closer to 5). Context must be considered when monitoring this KPI.

Accident rates: Accident rates capture the number of preventable accidents, defined as “one in which the driver failed to exercise every reasonable precaution to prevent the accident” (Miami Valley Risk Management Association, n.d., para 1). The rate is represented as a ratio between the number of preventable accidents over the total number of kilometers traveled (CUTA, 2016 b, p.

² The total number of registrants in a transit system can be much larger than the number of “active users.” This depends on how frequently the transit agency cleans up their database, as the lists quickly become outdated due to people passing away, or reaching a stage that they can no longer use the service. Ultimately, all of the registrants who are no longer active may drag down the trips per registrant.

27). The feedback received for this area must be categorized into the type of vehicle being used for custom transit service (such as a dedicated handyDART vehicle or taxicab). While the best practice benchmark below uses a combined total of all accidents, it is also useful to divide the different types of accidents into categories, so that “problem areas” can be addressed effectively and improved.

- Industry best practice: <1/100,000 km (CUTA, 2016, p. 27)

Customer Perspective: Quantitative

Complaints and compliments: Complaints are defined as passengers reporting negative feedback, discontent, specific issues or poor service to the agency. Compliments are defined as passengers reporting positive feedback to the agency, acknowledging exceptional service or an exceptional agency employee (CUTA, 2016, p. 18).

- Industry best practice - Complaints:
 - Large Operation: <1 complaint per 1,000 trips
 - Medium Operation: <.5 complaints per 1,000 trips
 - Small Operation: <.25 complaints per 1,000 trips
- Industry best practice - Compliments:
 - Large, Medium and Small Operation: >1 compliment per 1,000 trips

Source: CUTA, 2016, p. 18

Unmet trips: Trip denial is the inability for an agency to provide a trip within the agency’s pick-up window when a request is made within the agency’s booking window. For BC Transit, an unmet trip is defined as “any trip that could not be met one hour before or one hour after the requested pick-up time, due to vehicles booked to capacity.” BC Transit also notes that “when the customer has a latest arrival time (such as a scheduled appointment), a one hour scheduling window should only be used on the early side to ensure the customer gets to the appointment on time. When there is an earliest departure time (such as the time someone's program ends), the scheduling window should be from that time to one hour after.”

Unmet trips, also called “denials” are determined by the difference between the number of one-time trips requested and the number of trips actually provided³ (CUTA, 2016, p. 31). It is interesting to note that under the ADA, unmet trips are not legally permitted. If British Columbia were to adopt its own disability legislation, this metric might become a legal requirement rather than a performance metric.

- Industry best practice: 0% (CUTA, 2016, p. 31)

³ In general, all subscription trips are provided and do not contribute to “unmet trips”.

On-time Performance: On-time performance is the percentage of trips arriving on-time (defined as arriving within the transit agency’s pick-up window, explained below) for pickup at both the origin and destination points within the allowed tolerance or window for pickups (CUTA, 2016, p. 43).

- Industry best practice: 90% or higher

CUTA noted (2016, p. 43) a range of 90-99% as best practice, but logically 100% should also be included.

Trip duration: The trip length is the duration of a trip provided by custom transit in minutes or hours. Trip length is represented by the average duration of one trip, determined by vehicle hours and the total number of trips (CUTA, 2016, p. 39).

- Industry best practice:
Dense Populations:
 - Large operation: <75 minutes
 - Medium operation: <60 minutes
 - Small operation:<45 minutesSparse Populations:
 - Large operation: <90 minutes
 - Medium operation: <75 minutes
 - Small operation: <60 minutes

(CUTA, 2016 b, p. 39)

Customer Perspective: Qualitative

Customer service experience: The customer experience is the user’s level of satisfaction with the custom transit service delivered. A key aspect that influences the customer service experience is driver behaviour, including ensuring client safety, respectfulness, and provision of assistance (OSA, 2017, p. 5).

Booking process: The process of reserving a trip, and the ease with which this can be done, is a crucial step from the customer’s perspective.

Application process: The customer’s perception of the application process for custom transit service. Specifically, this area should look at the user-friendliness of the process, and the availability of application forms.

Availability/accessibility of information: The perceived availability of information about custom transit service, and the ease with which this information can be accessed.

Trip availability: The perceived ability to book trips in advance or book same-day trips.

Safety: The customer's perception of their personal safety while using custom transit service. A key factor here is whether or not a client feels their mobility aid has been secured properly. The feedback received for this area must be categorized into the type of custom transit service being used (such as handyDART, Taxi Supplement or Taxi Saver)

Comfort and cleanliness of vehicle: The customer's perception of the comfort and cleanliness of the vehicle, including loading/unloading processes and vehicle suspension.

Affordability: The customer's perception of the affordability of the service.

Fare payment options: The quality of the fare payment options, including number of fare vendors available and the accessibility of the vendor locations.

Learning and Growth Perspective (Transit Agency Perspective)

Timely and accurate performance reporting: Where contractors are used, it is vital that the transit agency receives timely and accurate reporting (namely of the quantitative metrics defined in the framework).

Effective channels for customer feedback: Numerous channels for the provision of feedback should be available to customers, and the transit agency should continuously monitor their availability.

Regular surveying of customers: Primarily for the qualitative aspects of the Customer Perspective quadrant, it is critical that feedback is regularly solicited by the transit agency from customers of the custom transit service.

Regular visits to centres commonly served by custom transit service to obtain user feedback: As it can be challenging for custom transit users (particularly those in extended care facilities) to fill out a survey or attend an open house, it is recommended that transit agencies visit seniors' facilities where high numbers of custom transit users reside or visit.

Internal Business Perspective (Service Provider/Contractor Perspective)

No Shows and Late Cancellations: No shows describe when a passenger does not appear to be picked up at the schedule time and location. A late cancellation is when a passenger does not call to cancel a scheduled pickup within the required time period (two hours for BC Transit) to cancel a trip (CUTA, 2016 b, p. 47). An efficiently run operation minimizes the instances of this by enforcing a No Show and Late Cancellation policy.

- Industry best practice: <1% (CUTA, 2016 b, p. 47)

Pick-up Window: The agency-defined time range before and after the requested pick-up time within which clients are required to be ready for pick-up. The pick-up window is commonly used to measure on-time performance. The pick-up window is designated as acceptable and

reasonable for picking up an accessible service passenger (CUTA, 2016 b, p. 59). A narrower pick-up window indicates that the transit provider is running an efficient and effective service.

- Industry best practice: 20-30 minutes (CUTA, 2016 b, p. 59)

Booking Window: The allowable time for registered users to book trips with the transit agency for a particular day. The booking window is usually defined by a number of days before and a cut-off day/time after which clients are not able to book trips for the day (CUTA, 2016 b, p. 36). A transit provider should aim to have a booking window that allows for bookings well in advance of the requested trip, and up to a time that is close to the requested trip time. A booking window that allows for higher degrees of booking flexibility, through allowing bookings further in advance to right up until a time near to the time requested, indicates that the service is being run efficiently by the service provider. In many cases, it means that they are using their scheduling software effectively.

- Industry best practice: allow bookings 7 days prior and up to 2 hours before requested trip time (Nelson\Nygaard, 2017, p. 13).

Wait times: The maximum time that vehicle operators are required to wait for clients after they have arrived at the pickup location, as it is expected that the customer is at the door waiting for their ride, possibly for the full duration of the pick-up window (which should be a 30 minute maximum, as per the pick-up window industry best practice). If the vehicle arrives before the start of the pick-up window, then the wait time is counted from the start of the pickup window. If the vehicle arrives close to the end of the pick-up window, the driver is required to complete the full wait time. The wait time is traditionally established by the accessible service program usually from 5 to 15 minutes (CUTA, 2016 b, p. 52).

This measure is important, as a long wait time indicates an inefficient service, but an overly short wait time generally leads to poor perceptions of quality, as people may be left behind. It is important that the service provider clearly communicates expectations surrounding being ready for a ride. Optimally, the transit agency should have an automated solution which will alert the customer when their ride is nearby, so that the person can be ready.

- Industry best practice: 5 minutes (CUTA, 2016 b, p. 52)

Ratio of subscription versus reservation trips: A key indicator of the degree to which a system's capacity is constrained is the percentage of trips that are assigned to subscription service (recurring trips) versus the percentage of trips available for on-demand reservation trips (one time or occasional trips scheduled on a first-to-call basis).

- Industry best practice: Approximately a 50/50 split between reservation trips and subscription trips (Weiner, 2010, p. 3).

TABLE 3: MONITORING AND EVALUATION FRAMEWORK

Financial Perspective	Customer Perspective
<p><u>Quantitative</u></p> <ul style="list-style-type: none"> • Cost per trip • Trips per capita • Registrants per capita • Passengers trips per hour • Accident rates 	<p><u>Quantitative</u></p> <ul style="list-style-type: none"> • Complaints & compliments per thousand trips • Unmet trips • On-time performance • Average trip length <p><u>Qualitative</u></p> <ul style="list-style-type: none"> • Customer service experience • Booking process • Application process • Availability/accessibility of information • Trip availability • Safety • Comfort and cleanliness of vehicles • Fare payment options
Learning and Growth Perspective	Internal Business Perspective
<p><u>Qualitative</u></p> <ul style="list-style-type: none"> • Timely and accurate performance reporting from contracted operating companies • Effective channels for customer feedback • Regular surveying of customers • Regular visits to centres commonly served by custom transit service to obtain user feedback 	<p><u>Quantitative</u></p> <ul style="list-style-type: none"> • No shows/Late Cancellations • Pick-up Window • Booking window • Wait times • Ratio of subscription versus reservation trips

8.3 Monitoring and Evaluating Efficiency and Effectiveness

The use of the framework presented in this report will help to ensure that both service quality and efficiency are being monitored and evaluated in all of BC Transit’s custom transit systems. In addition, the use of this framework should allow for greater comparability of data between systems of similar size. Through evaluating data from all four quadrants of the framework, BC Transit can develop strategies to increase the efficiency and effectiveness of custom transit service, through policy changes, dispatch recommendations and changes to service delivery models. As highlighted by Fu, Yang and Casello, efficiency and service quality (effectiveness)

are often “competing objectives” (2007, p. 116), so the use of qualitative and quantitative data must be balanced when creating strategies and making changes to service delivery to improve either service quality or cost-effectiveness. Not surprisingly, through the focus group sessions and interviews, it was apparent that the custom transit users wanted to see effectiveness improvements to the service, while transit agencies and funding partners prioritized efficiency enhancements.

Currently, the transit agency receives monthly performance reports from each of its systems via self-reporting from contractors, and these reports contain information on some of the KPIs in the framework; however, this information is used and evaluated infrequently, and only on an ad hoc basis. In addition, the information may lack accuracy for multiple reasons including the fast-paced nature of dispatch or a misunderstanding of definitions, rather than intentional misreporting. For this reason, it is important that the precision of reporting be routinely verified. This may involve someone from the transit agency going and sitting with the contractor staff who are entering data (such as members of dispatch entering unmet trips), and ensuring that what is being reported seems to match what is being heard from customers.

When it comes to the qualitative aspects of the service, BC Transit does not regularly survey custom transit riders, and the opportunities for customers to report feedback is limited to calling or emailing a custom transit office (run by a contractor), contacting the BC Transit head office in Victoria, or submitting a Customer Service Report via the BC Transit website. The Customer Service Report section of the website is the same channel through which feedback on the conventional transit system can be reported, and the overwhelming majority of feedback received via the website is regarding fixed-route transit. In the 2017 report on BC Transit’s handyDART service from the OSA, it was noted that 25% of BC Transit’s clients do not know how to provide feedback around services (OSA, 2017, p. 5), and the focus groups confirmed that more channels for providing feedback would be beneficial.

For the conventional transit service, BC Transit regularly sends out staff to conduct performance evaluations of the service, through inconspicuously riding the bus. Since it is nearly impossible for an employee to go unnoticed on custom transit, an approach such as the one described by Richard Weiner, which makes use of volunteer secret riders, may be preferable.

8.4 SERVICE DELIVERY STRATEGIES & OPTIMAL METHODS FOR BC TRANSIT

The framework above, and all of its measures and methods, can be used to determine optimal service delivery methods, likely consisting of a combination of dedicated custom transit vehicles and taxicabs, either dispatched by the transit agency (or its contractor) or by the customer. The framework can also be used to guide the contracting strategy of the transit agency, as strategy is fundamental to efficiency and effectiveness.

8.4.1 CONTRACTING STRATEGY

As outlined in the literature review, many transit agencies, including BC Transit, enter into service contracts with private and not-for-profit companies to deliver custom transit service (TRB, 1998, p. 6). BC Transit's structure and shared service model is fairly unique, and centred on efficiency. Supporting the value of BC Transit's model, the research of the TRB suggests an average savings of 30 per cent cost savings when private contractors are used (TRB, 1998, p. 6). Under BC Transit's structure, as with any single contract model, the incentive to keep costs low and service quality high comes from the prospect of losing the contract the next time it goes to competition (TRB, 1998, p. 6). As BC Transit generally enters into lengthy contracts, and some contractors know that there is limited competition in their small communities, this incentive is often not as strong as may be desirable.

When custom transit demand is significantly higher than supply, some larger transit agencies use contracts with multiple providers. The TRB holds that the "competition of multiple operators has been credited with helping to keep service quality high and costs down" (1998, pp. 6-7). Some transit agencies also use a brokerage model, under which a contracted broker receives the transit request, matches the trip with an appropriate carrier, and schedules the trip, which is provided by a separate contractor or contractors (TRB, 1998, p. 7). The use of contractors to provide transit service is central to BC Transit's shared services model; as such, this report presents some innovative contracting strategies, which may be of interest to BC Transit now and in the future. In particular, as communities continue to grow and the demand for custom transit service increases, BC Transit may consider using multiple contractors to deliver the service within a single large community, providing for competition on both efficiency and effectiveness. In this way, contractors would be motivated, via competition, to maximize their rides per hour, while also delivering a high quality service, in order to ensure that they are the contractor of choice when it comes to awarding work.

Under BC Transit's current contracting model, the organization, along with staff from the local government of the transit system up for RFP, evaluates proposals from proponents to operate the transit system. One of the key considerations when evaluating the proposals is cost, as ultimately, BC Transit has a responsibility to deliver the best value for taxpayer money. The evaluation team also considers many operational factors that indicate the organization's ability to run the system effectively (BC Transit, n.d.e, para 12). A large component of the costs presented in the proposals are labour costs, and BC Transit receives bids from organizations that use both unionized and non-unionized drivers and maintenance staff. These labour costs are large considerations when evaluating proposals, and despite the potential for unionized staff to increase costs, it has been BC Transit's experience that making use of contractors in this way is

much more cost-effective than delivering the service in-house.⁴ This experience aligns with the TRB finding, which states that exclusive in-house service delivery is the least preferred service delivery method of the transit agencies that participated in their study (TRB, 1998, p. 10). In addition, while some smaller organizations (such as not-for-profits and societies) may use non-unionized drivers, which could keep costs down, their service delivery may not be as efficient and effective as larger organizations that specialize in transit, as the smaller organizations do not have the same economies of scale and expertise. In addition, in order to find further efficiencies and promote competition, BC Transit is moving towards grouping larger regions of BC into a single RFP.

From an efficiency perspective, the prospect of a centralized dispatch system, as is being done in Helsinki (Larsen & Poykko, 2007, p. 1) is an interesting concept for BC Transit, as currently the individual contractor is responsible for the dispatching for each custom transit system, and the incentives to dispatch efficiently are minimal. There is a very large range of dispatching processes or software being used throughout BC Transit's systems, ranging from high-end expensive dispatching software to the use of Excel or a Microsoft Outlook calendar. In many cases, the efficiency of the schedule comes down to how much risk an individual dispatcher is willing to take on, or how closely they feel they must stick to the manifest developed the previous night. The use of a centralized dispatch would bring consistency and effectiveness to the booking process, as stated to be desirable by the focus groups, and it would allow BC Transit to control the efficiency of dispatch; however, there are key challenges to this approach, including the fact that custom transit users struggle with change, and a model such as the one being used in Helsinki would require a tremendous investment, as dynamic dispatching requires the vehicles to have real-time information, via MDTs.

Another option that transit agencies, such as TransLink, are moving towards is bringing their customer service in-house. Due to recent criticism from the public, TransLink is taking its customer service function, which was previously done by the contractor, back in-house for quality control reasons, and to ensure that they are directly receiving feedback from customers. This option holds great potential for BC Transit, as the organization has been subject to much of the same criticisms as TransLink; however, due to the regionalized model, it would be very difficult for a customer service agent to have the level of location-knowledge of each custom transit system that callers may expect.

8.4.2 USE OF TAXICABS FOR CUSTOM TRANSIT SERVICE DELIVERY

From both an efficiency and effectiveness standpoint, taxicabs play an integral role in many of BC Transit's custom transit systems. Focus group participants emphasized that they appreciate the option of the Taxi Saver program, for reasons such as flexibility, directness of route, and the

⁴ BC Transit's experience has shown that contracting with private operators generally results in lower overall costs and equivalent service quality for smaller regional transit services. To test this premise, BC Transit regularly develops in-house benchmarks prior to proceeding with public procurements. To date, private contractors have demonstrated same or better value overall.

personalized nature of the service (since it is not shared ride). The comments of the focus groups of this study are corroborated by the findings of a study done by the Easter Seals Project Action, which reported that taxicab users “like the exclusive ride nature of the taxi trip, which provides a faster trip than shared ride service” and that. “Users like the personal nature of a taxi trip, which provides more ‘dignity’” (Ellis, 2016, p. 11).

From the perspective of the transit agency, taxicabs are an efficient option in many cases, including providing trips throughout the day that do not fit on the schedules of dedicated vehicles (Ellis, 2016, p. 2) and to provide trips at times that the custom transit service does not operate. As affirmed through interviews with transit agencies, trips per hour on dedicated vehicles are highest when taking groups of people to a single location, such as adult day programs. Taking groups (2 or more people) from a similar pick-up location to a similar drop-off location is the key to efficiency in a custom transit system. Ultimately, the use of taxis makes sense when, due to the nature of the trip, the person will be the only person in the custom transit vehicle. It should also be noted that many transit agencies are working towards making their taxi services shared rides, and this represents another opportunity to further increase efficiency; however, feedback from customers would need to be considered, as a shared ride taxi may decrease their perception of quality.

BC Transit’s Taxi Saver program is resource and time-intensive for both BC Transit as well as the user, and it involves a user having to pay monthly, via mailed-in cheque or in-person to purchase vouchers. The adoption of Smart Cards for the program may be a valuable investment for BC Transit, as the TRB highlights that the swipe technology offers many advantages to both the transit agency and riders (Ellis, 2016, p. 2); however, it is also noted that implementation takes significant time, as does training of both taxicab drivers and the customers (Ellis, 2012, p. 2).

While taxis can be an integral part of a service delivery model, one key limitation is the fact that many small communities (including some communities that BC Transit serves) have a limited number of taxis, do not have an accessible taxi, or do not have any taxis at all. While there is increasing demand for wheelchair accessible taxis, there are many reasons why a taxi company or taxi contractor may prefer to have or operate a standard taxi (TRB, 2012, pp. 32-33). These reasons include the fact that wheelchair taxis are typically more expensive than conventional cabs and they have higher insurance rates; in addition, wheelchair taxis generally use more fuel than conventional cabs, and the additional time that it takes to serve wheelchair passengers makes these trips less productive (TRB, 2012, pp. 32-33). In response to all of these factors, a combination of regulations, incentives and direct involvement is required to establish and ensure wheelchair accessible taxi service is available, whenever possible (TRB, 2012, p. 6). In some cities, it is required that a certain percentage of each company’s fleet be wheelchair accessible, while in other cities, the local government has provided financial assistance in the purchasing of accessible taxis (TRB, 2012, p. 32). BC Transit may need to work with its local government

partner(s) to ensure that there are accessible taxis available, in order to ensure this option is available for their custom transit service.

Although not yet a threat to BC Transit's use of taxis, custom transit service may be affected by ride-sharing services, if and when they come to BC, as the arrival of Uber or Lyft may lure drivers away from the taxi industry (Ellis, 2016, p. 3). At that point, in order to maintain the efficiencies found through delivering custom transit service via taxis, BC Transit may need to consider partnerships with the ridesharing company, although many significant challenges would need to be overcome, as has been discussed.

Perhaps the most consistent finding of this study was the concerns surrounding custom transit service delivery with taxicabs. Interview and focus group responses, as well as findings in the literature review, all revealed that taxicabs generally do not deliver the same level of customer service and safety as dedicated custom transit vehicles do (TRB, 2012, p. 24; TransLink, 2014, p. 4; OSA, 2017, p. 28.). In order to address this problem, there are many steps that the transit agency can take to ensure that the custom transit service being delivered via taxicab meets the needs and expectations of users. These steps include:

- Clearly defining the service that the taxi company is to operate for both Taxi Saver and Taxi Supplement;
- Ensuring every driver is trained and fully aware of the expectations put on them when delivering custom transit service;
- Ensuring clear contracts are in place with the taxi companies, outlining service expectations, training requirements, and possibly penalties for infractions
 - This contract should also ensure that taxi drivers have had Criminal Record and Vulnerable Sector checks
- Being clear about reporting requirements;
- Ensuring there is a clear path of communication to all drivers for when a new policy or message needs to be communicated; and,
- Ensuring riders understand what to expect with taxi service, specifically when using the Taxi Saver program, as BC Transit has less control over this program than Taxi Supplement.
- Providing easy, simple methods for service users to report poor service, or policy violations.

In addition, when options are available, the transit agency should find a taxi company or companies that are interested in building a relationship with the transit agency, and ideally, find drivers who are comfortable working with adults with disabilities (Ellis, 2016, p. 3).

8.5 The Future of Custom Transit and Service Delivery Trends

As noted in the literature review, Uber and Uber-like models hold large potential for the future of custom transit; however, partnerships with these organizations are currently not possible, as Uber is not yet available in BC.

The benefits of partnering with an app-based shared ride service like Uber are numerous, and many of the benefits align with the efficiency and service qualities named as important by stakeholders. From an effectiveness perspective, app-based ride services are timely, flexible and available at all hours of the day. From an efficiency perspective, partnering with a company like Uber holds huge potential for providing trips that do not fit efficiently into the custom transit schedule. Ultimately, this type of strategic partnership holds the potential to improve quantitative key performance indicators, such as cost per trip and rides per hour, as providing trips with Uber rather than a taxicab may be more cost-effective. In addition, it can improve many of the measures found in the Customer perspective quadrant, including trip availability, comfort (in some cases), and reliability.

There are many challenges to using an Uber-like model for custom transit service delivery, with many of these issues being along the same lines as those currently being experienced through taxicab service delivery. Specifically, most Uber vehicles are not wheelchair accessible, the customer service orientation and level of service provided by the driver is difficult to manage, and there are insurance and liability issues to be considered. If BC Transit is to ever consider a partnership with Uber, safety must be a key consideration, especially as rides are being delivered to a vulnerable sector of the public.

Another limitation of an app-based technology such as Uber is that many custom transit users are not yet comfortable with booking trips via their SmartPhone.

While a partnership with Uber or Lyft may not be a service delivery option for BC Transit in the immediate future, the underlying concept of UberPool, which is ride-sharing through matching similar pick-up and drop-off locations, holds enormous potential, especially for the use of taxis in custom transit service.

9.0 Conclusion and Recommendations

9.1 Conclusion

As revealed through the findings of the 2017 OSA report and through focus group sessions with customers, BC Transit's custom transit systems are, for the most part, meeting the needs of customers; however, as it is well-recognized that the demand for the service will continue to rise in the coming years, it is important to ensure that the efficiency and effectiveness of these transit systems are being monitored and evaluated consistently and on an on-going basis.

This paper has presented an evaluation framework for custom transit using the Balanced Scorecard approach. Comparison of BC Transit's current evaluation approaches with the framework reveals some areas for improvement, and recommendations for BC Transit are presented here. Consistently using the framework and conducting on-going monitoring will ensure that the performance of individual contractors can be fairly evaluated. Through considering and collecting qualitative and quantitative information, based on the framework provided in this report, BC Transit can ultimately improve reporting to funding partners, make better-informed contracting decisions, and develop more effective strategies for improving the service, from both efficiency and effectiveness perspectives.

9.2 Recommendations

9.2.1 Short-term actions (0-6 months)

- BC Transit should adopt the framework presented in section 8.1 as an outline for monitoring and evaluating the efficiency and effectiveness of all of its custom transit systems. Using this framework consistently will allow for accurate comparisons between systems of similar size.
- Use quantitative data to conduct peer comparisons between similarly sized custom transit systems (both within BC Transit as well as others within Canada) and make service delivery adjustments or policy changes accordingly.
- BC Transit should ensure robust contracts are in place with all taxi companies that are being used to provide custom transit service. These contracts must clearly require taxicab driver training, and set forth clear expectations of the driver. This must be made a priority as it constitutes an immediate risk to the organization.
- To ensure service excellence, BC Transit's No Show and Late Cancellation policy should be re-communicated to all custom transit systems, for them to pass on to their customers.

9.2.2 Medium-term actions (6 months-2 years)

- BC Transit should roll-out technology to all of its larger custom transit systems (Kelowna, Kamloops, Nanaimo, and Central Fraser Valley at minimum) which alerts the

rider when their vehicle is five to ten minutes away. Ultimately, it would be beneficial to let the customer know what type of vehicle they should be expecting, and potentially even provide a license plate number if a cab has been dispatched, as Uber currently does.

- Throughout BC, a lack of accessible taxicabs is consistently an issue, particularly in smaller communities. BC Transit should work with its provincial and local government partners to encourage regulations, incentives and direct involvement to establish wheelchair accessible taxi service in all communities that have custom transit service.
- If Uber or Lyft is to come to BC, BC Transit should consider a strategic partnership in some cities to efficiently deliver trips that are not easily grouped. Uber and Lyft can also be used to deliver people in rural areas to places where they can get on the conventional bus.
- BC Transit should move towards the use of Smart Cards for the Taxi Saver program. This change would improve the user-friendliness of the system, and would also reduce administrative costs in the long run.
- BC Transit should work towards achieving a balanced ratio of subscription and reservation trips in all of its custom transit systems.
- Improve the perception of safety through monitoring accident rates, and dividing “accidents” into more specific categories, such as preventable, non-preventable, passenger falls, and so forth. Through monitoring each specific category year over year, problem areas can be identified and targeted.
- BC Transit should work towards ensuring that every custom transit ride provided on a handyDART vehicle is a shared ride. If it is not, then a taxi or an Uber/Lyft vehicle is most likely more appropriate, where available. This will require working with contractors to ensure that efficiencies are being maximized through dispatching. BC Transit should utilize a wide array of methods for obtaining feedback from custom transit customers, including visiting residential care facilities to talk with clients, or requiring that pre-postaged customer comment forms be left on board all custom transit vehicles.

9.2.3 Long-term actions (2-5 years)

- For larger custom transit systems, BC Transit should evaluate the use of multiple contractors, which can create an incentive to provide excellent service.
- BC Transit should create a Customer Charter of Expectations, outlining expectations surrounding late cancellations and no shows, as has been created for the Region of Peel, Ontario (Appendix 5).
- BC Transit should continue to work with local government partners to promote transit-oriented land use planning, and the development of complete and compact communities.
- BC Transit should invest in technologies such as AVL or the Ecolane Demand Response Transportation being used in Helsinki for the larger custom transit systems.

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Appendices

Appendix 1 – Human Research Ethics Board Certificate of Approval

		Office of Research Services Human Research Ethics Board Administrative Services Building, Box 8150, PO Box 1800 STN CSC, Victoria BC, V8W 2Y2 Canada T: 250-472-4545 F: 250-721-8948 www.uvic.ca/research ethics@uvic.ca	
<h3>Certificate of Approval</h3>			
PRINCIPAL INVESTIGATOR: Chelsea Mossey		ETHICS PROTOCOL NUMBER: 17-002 <small>Minimal Risk Review - Biological</small>	
UVIC STATUS: Master's Student		ORIGINAL APPROVAL DATE: 26-Jan-17	
UVIC DEPARTMENT: PADM		APPROVED ON: 26-Jan-17	
SUPERVISOR: Rebecca Warburton		APPROVAL EXPIRY DATE: 25-Jan-18	
PROJECT TITLE: Evaluating the efficiency and effectiveness of custom transit systems			
RESEARCH TEAM MEMBER: None			
DECLARED PROJECT FUNDING: None			
CONDITIONS OF APPROVAL			
<p>This Certificate of Approval is valid for the above term provided there is no change in the protocol.</p> <p>Modifications To make any changes to the approved research procedures in your study, please submit a "Request for Modification" form. You must receive ethics approval before proceeding with your modified protocol.</p> <p>Renewals Your ethics approval must be current for the period during which you are recruiting participants or collecting data. To renew your protocol, please submit a "Request for Renewal" form before the expiry date on your certificate. You will be sent an emailed reminder prompting you to renew your protocol about six weeks before your expiry date.</p> <p>Project Closures When you have completed all data collection activities and will have no further contact with participants, please notify the Human Research Ethics Board by submitting a "Notice of Project Completion" form.</p>			
Certification			
<p>This certifies that the UVic Human Research Ethics Board has examined this research protocol and concluded that, in all respects, the proposed research meets the appropriate standards of ethics as outlined by the University of Victoria Research Regulations Involving Human Participants.</p>  <p>Dr. Rachael Scarth Associate Vice-President Research Operations</p>			
Certificate Issued On: 26-Jan-17			



Appendix 2 – Focus Group and Interview Recruitment Scripts

Recruitment Script for Researcher *(one-on-one interviews)*

Hello, my name is Chelsea Mossey. I am a Graduate Student in the department of Public Administration at the University of Victoria. As a Graduate student, I am required to conduct research as part of the requirements for a degree in Public Administration. To fulfill this requirement, and because I believe it is an important area of study, I am currently conducting a study entitled “Evaluating the efficiency and effectiveness of custom transit systems.” Participation is completely voluntary. You have been identified as having particular expertise and knowledge that would contribute to the research, either as an industry expert, or a custom transit user or stakeholder, and I am requesting your participation in this research project.

To give you a bit more background, the purpose of this research project is to create a framework for evaluating the efficiency and effectiveness of BC Transit’s 28 custom transit systems. Ultimately, this report will answer the question: “How does BC Transit best evaluate the efficiency and effectiveness of its custom transit systems?” In addition, there are many different options for delivering custom transit service. These service delivery options will be explored, and their potential efficiency and effectiveness will be evaluated. I believe that research of this type is important because it is widely accepted that evaluating and analyzing the success of custom transit systems is vital, but it is less clear how this is best achieved.

If this sounds like something you may be interested in participating in, I will provide you with the consent form to review. If, after reviewing the consent form, you would like to proceed with participating, please let me know. We can then set up a time for a one-on-one interview. Prior to the interview, I will need a signed copy of the consent form.

If you have further questions, please email me at chelseafitz@zoho.com, or call me at 250-686-9307.

Thank you for your time,

Chelsea Mossey

Email Recruitment Script for Third Party Recruiter
(focus group sessions)

Hello, my name is Chelsea Mossey. I am a Graduate Student in the department of Public Administration at the University of Victoria. As a Graduate student, I am required to conduct research as part of the requirements for a degree in Public Administration. To fulfill this requirement, and because I believe it is an important area of study, I am currently conducting a study entitled "Evaluating the efficiency and effectiveness of custom transit systems." Participation is completely voluntary.

To give you a bit more background, the purpose of this research project is to create a framework for evaluating the efficiency and effectiveness of BC Transit's 28 custom transit systems. Ultimately, this report will answer the question: "How does BC Transit best evaluate the efficiency and effectiveness of its custom transit systems?" In addition, there are many different options for delivering custom transit service. These service delivery options will be explored, and their potential efficiency and effectiveness will be evaluated.

I believe that research of this type is important because it is widely accepted that evaluating and analyzing the success of custom transit systems is vital, but it is less clear how this is best achieved.

Your Committee has been identified as having particular expertise and knowledge that would contribute to the research, as important stakeholders of the custom transit industry in B.C.

As such, I am hoping to hold a focus group session with your committee, which should take no more than one hour. If this sounds like something your Committee would be interested in participating in, I will provide you with the consent form to review. If, after reviewing the consent form, you and your fellow committee members would like to proceed with participating, please return signed copies of the attached consent form to me via email, at your earliest convenience.

If you have further questions, please email me at chelseafitz@zoho.com, or call me at 250-686-9307.

Thank you for your time,

Chelsea Mossey

Appendix 3 – Consent Forms

University of Victoria
School of Public Administration

Participant Consent Form - Interviews

You are invited to participate in a study entitled “Evaluating the efficiency and effectiveness of custom transit systems⁵”. I am conducting this research both as an employee of BC Transit and as a Graduate Student in the School of Public Administration at the University of Victoria. My name is Chelsea Mossey, and you may contact me if you have further questions by emailing me at chelseafitz@zoho.com, or calling 250-686-9307. The client for this research is BC Transit’s Vice President of Operations and Chief Operating Officer, Brian Anderson. This research is required as part of the requirements for my degree in Public Administration. It is being conducted under the supervision of Dr. Rebecca Warburton, and you may contact her at rnwarbur@uvic.ca or 250-598-5865.

Purpose and Objectives

The purpose of this research project is to create a framework for evaluating the efficiency and effectiveness of BC Transit’s 28 custom transit systems. Ultimately, this report will answer the question: “How should BC Transit evaluate the efficiency and effectiveness of its custom transit systems?” In addition, there are many different options for delivering custom transit service. These service delivery options will be explored, and their potential efficiency and effectiveness will be evaluated.

Importance of this Research

Research of this type is important because it is widely accepted that evaluating and analyzing the success of custom transit systems is vital, but it is less clear how this is best achieved.

Participants Selection

You are being asked to participate in this study because you are a key custom transit stakeholder, and due to your specialized knowledge, your input would be an asset to this research.

What is Involved

If you consent to voluntarily participate in this research, your participation will include an interview, by telephone if possible, or in person if you prefer. The interview will require 45 minutes to 1 hour.

Interviews will be audio recorded, and notes will be taken.

Inconvenience

Participation in this study may cause some inconvenience to you, primarily the time required, or the time needed for travel if you prefer to attend an in-person interview. Reimbursement will be offered for any expenses incurred through participation, including travel costs, childcare costs, or parking costs, even if you withdraw from an interview before it concludes. (Note, the option of travelling to an interview will only be offered to Victoria participants.)

⁵ Custom transit is provided on a door-to-door basis to people whose disability prevents them from using the conventional fixed-route service.

Risks

There are no known or anticipated risks to you by participating in this research.

Benefits

The potential benefits of your participation in this research include benefits to society and benefits to the existing state of knowledge. All of the participants in this study are custom transit stakeholders. Ultimately, this research could potentially improve custom transit service in B.C., through increasing BC Transit's ability to monitor and evaluate the efficiency and effectiveness of the service. Custom transit service is intended to improve the quality of life for people with disabilities, through providing them with access to their community. Increasing the efficiency and effectiveness of the service would be a benefit to society at large. The current state of knowledge in the area of evaluating a custom transit service is very limited. This research is intended to improve the current state, and ideally set forth a robust framework that can be used across B.C. and beyond.

Voluntary Participation

Your participation in this research must be completely voluntary and you are under no obligation to participate. If you do decide to participate, you may withdraw at any time without any consequences or any explanation. If you withdraw from the interview, or decide to withdraw your participation after the interview has concluded, your data will be used only if you give permission; otherwise it will be destroyed. If you wish to cancel a scheduled interview, please contact Chelsea Mossey by phone or email (see contact information on page 1 of this form).

Anonymity

Your anonymity will be fully protected in reports, unless as a subject matter expert you would prefer to be quoted or cited, with proper attribution. (This clause to be customized, depending on the recipient.) Numbers or pseudonyms will be assigned to interview and focus group participants to ensure confidentiality.

Confidentiality

Your confidentiality and the confidentiality of the data will be protected by ensuring the data is stored only on the researcher's computer, which is password-protected. The files will be encrypted with a password so that only the researcher can access them. No files will be stored online or in the cloud. All paper notes will be kept in a locked drawer at the researcher's personal desk.

Dissemination of Results

It is anticipated that the results of this study will be shared with others in the following ways: In the researcher's final Master's Project, which will be defended in front of an academic committee and subsequently published on the University of Victoria's library website. The results of this study will also be shared with the researcher's client organization, BC Transit, and specifically with the project client, BC Transit's Vice President of Operations and Chief Operating Officer, in the form of a report.

Disposal of Data

Data from this study will be disposed of at the conclusion of the report and oral defense (expected in September 2017). Electronic data will be erased and paper copies will be shredded.

Contacts

Individuals that may be contacted regarding this study include Chelsea Mossey, or Dr. Rebecca Warburton. Contact information is available on page 1 of this form.

In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

PLEASE CIRCLE THE OPTION YOU PREFER, AND INITIAL:

I DO / DO NOT consent to be identified by name / credited in the results of the study:

initials)

(Participant

I DO / DO NOT consent to have my responses attributed to me by name in the results:

initials)

(Participant

Your signature below indicates that you understand the above conditions of participation in this study, that you have had the opportunity to have your questions answered by the researchers, and that you consent to participate in this research project.

Name of Participant

Signature

Date

A copy of this consent will be left with you, and a copy will be taken by the researcher.

Participant Consent Form – Focus Groups

You are invited to participate in a study entitled “Evaluating the efficiency and effectiveness of custom transit systems⁶”. I am conducting this research both as an employee of BC Transit and as a Graduate Student in the School of Public Administration at the University of Victoria. My name is Chelsea Mossey, and you may contact me if you have further questions by emailing me at chelseafitz@zoho.com, or calling 250-686-9307. The client for this research is BC Transit’s Vice President of Operations and Chief Operating Officer, Brian Anderson. This research is required as part of the requirements for my degree in Public Administration. It is being conducted under the supervision of Dr. Rebecca Warburton, and you may contact her at rnwarbur@uvic.ca or 250-598-5865.

Purpose and Objectives

The purpose of this research project is to create a framework for evaluating the efficiency and effectiveness of BC Transit’s 28 custom transit systems. Ultimately, this report will answer the question: “How can BC Transit best evaluate the efficiency and effectiveness of its custom transit systems?” In addition, there are many different options for delivering custom transit service. These service delivery options will be explored, and their potential efficiency and effectiveness will be evaluated.

Importance of this Research

Research of this type is important because it is widely accepted that evaluating and analyzing the success of custom transit systems is vital, but it is less clear how this is best achieved.

Participants Selection

You are being asked to participate in this study because you are a key custom transit stakeholder, and due to your specialized knowledge, your input would be an asset to this research.

What is Involved

If you consent to voluntarily participate in this research, your participation will include a focus group session lasting at most one and a half hours (90 minutes), plus local travel to and from the session.

Focus group sessions will be audio recorded, and notes will be taken.

Inconvenience

Participation in this study may cause some inconvenience to you, including time taken or short-distance travel to and from the focus group location. Reimbursement will be offered for any expenses incurred through participation, including travel costs, childcare costs, or parking costs, even if you withdraw from a focus group before it concludes.

Risks

There are no known or anticipated risks to you by participating in this research, other than the ordinary risks of short-distance travel.

⁶ Custom transit is provided on a door-to-door basis to people whose disability prevents them from using the conventional fixed-route service.

Benefits

The potential benefits of your participation in this research include benefits to society and benefits to the existing state of knowledge. All of the participants in this study are custom transit stakeholders. Ultimately, this research could potentially improve custom transit service in B.C., through increasing BC Transit's ability to monitor and evaluate the efficiency and effectiveness of the service. Custom transit service is intended to improve the quality of life for people with disabilities, through providing them with access to their community. Increasing the efficiency and effectiveness of the service would be a benefit to society at large. The current state of knowledge in the area of evaluating a custom transit service is very limited. This research is intended to improve the current state, and ideally set forth a robust framework that can be used across B.C. and beyond.

Voluntary Participation

Your participation in this research must be completely voluntary and you are under no obligation to participate. Your employment standing will not be affected in any way by whether or not you choose to participate. The client will not be informed of who has chosen to participate and who has not. If you do decide to participate, you may withdraw at any time without any consequences or any explanation. If you withdraw from a focus group, your data to that point will be used but your identity will not be revealed in focus group reports. If you wish to cancel your participation in a scheduled focus group, please contact Chelsea Mossey by phone or email (see contact information on page 1 of this form).

Anonymity

Your anonymity will be fully protected in reports. Numbers or pseudonyms will be assigned to interview and focus group participants to ensure confidentiality.

Confidentiality

As focus group participants will be drawn from an existing group and recruitment will take place in a group setting, there are limits to protecting your confidentiality. In addition, the inherent nature of focus groups places limits on confidentiality. The researcher will make every effort to guarantee confidentiality, and the confidentiality of the data will be protected by ensuring the data is stored only on the researcher's computer, which is password-protected. The files will be encrypted with a password so that only the researcher can access them. No files will be stored online or in the cloud. All paper notes will be kept in a locked drawer at the researcher's personal desk.

Dissemination of Results

It is anticipated that the results of this study will be shared with others in the following ways: In the researcher's final Master's Project, which will be defended in front of an academic committee and subsequently published on the University of Victoria's library website. The results of this study will also be shared with the researcher's client organization, BC Transit, and specifically with the project client, BC Transit's Vice President of Operations and Chief Operating Officer, in the form of a report.

Disposal of Data

Data from this study will be disposed of at the conclusion of the report and oral defense (expected in September 2017). Electronic data will be erased and paper copies will be shredded.

Contacts

Individuals that may be contacted regarding this study include Chelsea Mossey, or Dr. Rebecca Warburton. Contact information is available on page 1 of this form.

In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

Your signature below indicates that you understand the above conditions of participation in this study, that you have had the opportunity to have your questions answered by the researchers, and that you consent to participate in this research project.

<i>Name of Participant</i>	<i>Signature</i>	<i>Date</i>
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A copy of this consent will be left with you, and a copy

Appendix 4 – Focus Group and Interview Questions

Interview Questions (One-on-One Interviews)

1. Tell me about your existing role at _____, and how custom transit plays into your day-to-day work.
2. How would you define the word “effective” in terms of what it means for custom transit? What would an “effective” system look like?
3. How would you define the word “efficient” in terms of what it means for custom transit? What would an “efficient” system look like?
4. What elements of a custom transit system do you hear as being most important to customers? (prompt: e.g. Service hours available, wait time “window”, customer service orientation of drivers, ease of booking a trip)
5. What are optimal service delivery methods for BC Transit’ custom transit service? Do you have any ideas for future service delivery methods?
6. Do you have any ideas on how BC Transit could be evaluating the efficiency and effectiveness of its custom transit systems?
7. To what extent should qualitative data (such as survey feedback) be used, and to what extent should quantitative data (such as rides per hour) be used evaluating a custom transit service or “family of services”?
8. Do you have any insight into industry best practices or promising practices that are being used to evaluate custom transit systems?
9. When reading a report on custom transit, what Key Performance Indicators do you find most useful or helpful for determining the success of the system?
10. What are some specific characteristics or features of a custom transit system that make it especially effective or valuable for customers?
11. Do you have any other comments about custom transit, or evaluating custom transit?

Focus Group Questions

1. How would you define the word “effective” in terms of what it means for custom transit? What would an “effective” system look like? Do you think the current system is effective? Why, or why not?
2. How would you define the word “efficient” in terms of what it means for custom transit? What would an “efficient” system look like? Do you think the current system is efficient? Why, or why not?
3. What elements of a custom transit system are most important to you? (prompt: e.g. Service hours available, wait time “window”, customer

service orientation of drivers, ease of booking a trip) Are there other elements that you think are very important to some users, but are less important for you personally?

4. What form of custom transit service do you prefer? (prompt: i.e. taxi saver or handyDART) Why?
5. Do you have any other comments about custom transit?

Passenger Charter

As a Passenger, you can expect to:

- Be transported in a safe manner and travel in a clean and well-maintained vehicle by an operator who practices appropriate personal hygiene
- Be treated with courtesy and respect
- Have your calls answered promptly and courteously
- Be picked up on time within the pick-up time window
- Be transported to a safe place if delivery to your original destination is not possible
- Be taken to the first accessible door of your final destination, but not inside
- Expect that the Region of Peel will investigate and address your concerns or complaints
- Expect service that is compliant with the Accessibility for Ontarians with Disabilities Act (AODA)

The responsibilities of a Passenger are to:

- Pay the appropriate fare for the service provided and maintain a positive account balance
- Follow the User Guide and policies
- Wear a seatbelt at all times
- Be courteous and considerate of other passengers, drivers, and customer service agents
- Practice appropriate personal hygiene
- Be ready during your pick-up window
- Use paratransit responsibly to ensure that the service is available to all
- Use conventional transportation when available and accessible