DILLON CONSULTING

LONDON TRANSIT COMMISSION

Industrial Service Industry Review

Draft Report

April 2018 – 18-7254

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1.0 Introduction

Dillon Consulting Limited was retained by the London Transit Commission (LTC) to conduct a peer review of various industrial park transit services provided by other transit systems in North America. The peer review is also intended to gather information about how transit can serve other low density areas. The purpose of this report is to document the findings of the study, which are intended to be used by LTC to develop an Industry Park Transit Service Strategy for its own industrial areas.

The assignment involved two phases. Phase 1 involved a short survey hosted on SurveyMonkey to gather preliminary information on industrial route service and/or other on-demand models that could be applicable to industrial park areas that are currently provided by transit systems across Canada. Phase 2 involved a more detailed review of seven properties to better understand the operational details and implementation issues of the industrial service and/or on-demand service models. Each of these phases is documented in the sections below, following a general discussion of service delivery options.

2.0 Service Delivery Options

2.1 Common Industrial Area Service Delivery Models

Servicing an industrial area is a common requirement of a local transit agency but is sometimes treated differently from the regular service offered to other parts of the municipality. In Phase 1 of this study municipalities were asked via SurveyMonkey which of the following models they used to service their industrial parks, recognizing that more than one model could be used by a single transit agency.

1. Fixed-route service

The standard fixed-route approach is a regular route that operates on a fixed schedule and serves the industrial area(s). A fixed-route service to an industrial area is a traditional, standard transit service approach. An industrial area fixed-route often only operates during peak periods on weekdays but can also include weekend, midday, and overnight service.

2. Trippers

The tripper model is an extension of the general fixed-route service. Additional buses – or “trippers” – are sent out to supplement the fixed-route service during short-term peak demand periods (such as same shift start or end times for multiple employees) to protect against overcrowding. Sufficient demand must warrant an operation of a tripper before it is added to the schedule. Adding a tripper bus increases the frequency of service for the critical demand time. For industrial area service, trippers would generally be focused on employee shift times.

3. Branch routes

Branch routes are a variant of a fixed-route service. Branch routes are a pattern of a regular route that deviates from the main route serving a different area and/or terminal point. These branch routes often have less frequent service than the main route and are more suitable to lower demand destinations, such as industrial park areas.

4. Employment/Industrial Shuttles

Employment or industrial shuttles are alternatives to a fixed-route service. This model is usually adopted in partnership with the employers, who will request pick-up and drop-off transit service for their workers during peak shift periods. The shuttles would service only employees of the partnering employers, picking them up at either pre-determined "stops" or at their homes, and dropping them off at the entrance to their place of employment (with the reverse trip being complete at the end of a shift). Employment or industrial shuttles do not run outside of the shift start and end-times and do not typically serve the general public.

5. On-Demand Service

Unlike a fixed route or shuttle service, on-demand service is transit service that adapts specifically to the needs of each individual employee. It does not follow a fixed routing nor does it adhere to a fixed schedule. There are multiple models of on-demand service, which are discussed in more detail in the following **Section 2.2**. Some examples of on-demand service for industrial areas could include the use of specialized vehicles or TransCabs, and/or mobile app integration.

6. Transportation Demand Management Strategies

Transportation Demand Management (TDM) strategies are partnerships with employers to help shape demand. They can come in a variety of formats, and include (but are not limited to) providing employees with transit fare credits, an emergency ride home program, and opportunities to minimize peak travel demands (flex work hours, telework).

2.2 On-Demand Service Delivery Models

On-demand transit, also referred to as microtransit or demand-responsive transit, is a traditional form of mobility that is experiencing a resurgence with the help of technology. Dynamic transit is the larger umbrella term encompassing several different service models, and is generally characterized by four components that differentiate it from conventional fixed-route transit:

1. Flexible routing and/or scheduling designed to suit customer demand;
2. Newly-emerged "mobility brokers" who use mobile apps to connect supply and demand;
3. Use of smaller, more flexible vehicles; and
4. Integration of multiple transportation services to complete a trip (using a mobile app).

Dynamic transit can be differentiated from conventional transit in the way that it caters to individual needs. In a dynamic transit model, the transit service adapts to its customers, while in conventional transit service models, transit customers must adapt to the service offered. In many cases, this provides greater convenience and customization – moving towards some of the favourable characteristics of private automobile travel. As illustrated in **Figure 1**, dynamic transit (referred to as "On-demand Microtransit" in the figure) offers a level of flexibility, convenience, and individualism somewhere between regular fixed route transit ("public collective transport") and private individual transport.

Dynamic transit can be used to provide a wide array of service delivery models, each with a specific goal.

There is currently a variety of dynamic transit service options that are utilized by public transit agencies around the world. The SurveyMonkey poll (discussed in more detail in **Section 3.0**) asked Canadian respondents to check off any of the following on-demand models that they were using for their industrial areas or within any other parts of their service area.

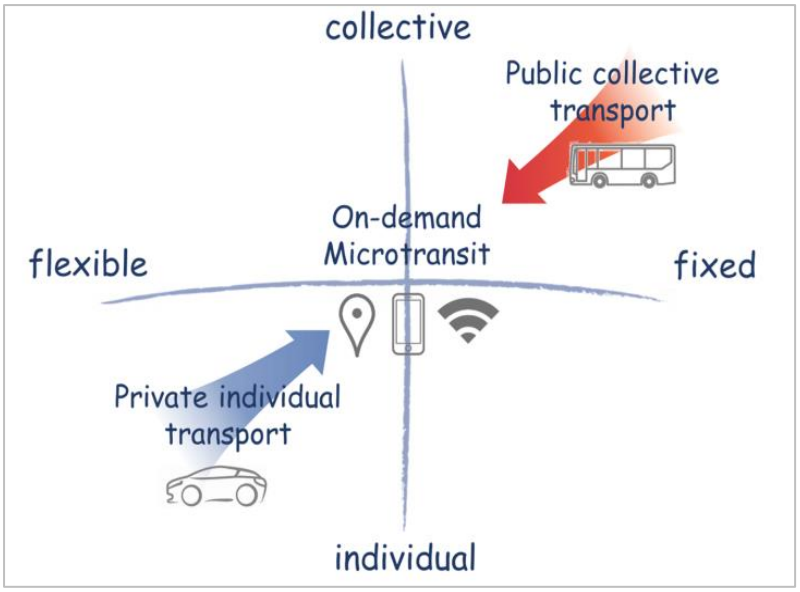


Figure 1: Attributes of Dynamic Transit

Source: http://www.smart-circle.org/blog/microtransit/

It should be noted while seven service delivery models are noted, overlap does exist and often a dynamic transit solution will fit into more than one of the models described below:

1. First Mile / Last Mile

The first mile / last mile service delivery model uses dynamic transit to provide transit to customers in lower demand areas with connectivity to/from major destinations such as rapid transit stations, the downtown core or Central Business District, post-secondary institutions, etc. Dynamic transit complements existing public transit services by providing access to/from higher demand transit routes (e.g. rapid transit stations) or provides an alternative mobility option when it is not cost effective for the public agency to operate fixed-route buses to deliver the service. Service is delivered with dynamic and flexible routing and scheduling based on customer travel needs. It can either be delivered by the public transit agency or contracted out to a third-party provider (e.g. taxi company, ridesharing service, etc.). Dynamic routes are created to satisfy the needs of more than one customer at once (where applicable), however, can involve a single person in a vehicle when demand is low. Customers generally request trips

using a smartphone app, although call-in arrangements are often provided for those without smartphones. If the service is delivered by a third-party provider there is often no cost associated with the service if a trip is not requested and delivered.

2. Microtransit

Microtransit is generally defined as a privately operated transit system, generally operating in the same space or along similar routes as public transit. Some examples of Mircotransit include Bridj (Australia), and Chariot (USA). Microtransit operators can provide greater operational flexibility since they do not face the same regulatory or funding constraints as public transit agencies. Services are generally more tailored to match both short-term and long-term changes in customer demand. Services provided are typically selective, based on financial performance, connecting residential areas with the financial district or major rapid transit stations. Services generally provide more customer amenities such as Wi-Fi, USB outlets and food for purchase. Microtransit also utilizes big data to tailor service to connect major origins and destinations. This can either be pre-planned when creating a fixed route (e.g. Chariot uses crowdsourcing to create a route), or is more dynamic, with the route and schedule changing daily based on on-demand service requests using a smartphone app.

3. Flex-Route

Flexible routing is a simple form of dynamic transit which is typically implemented in low-demand areas and allows transit agencies to provide additional coverage using a limited resource. Flex routes operate on a fixed route and fixed schedule for certain portions of the route. At the request of a passenger, the driver has the ability to 'flex' off the route to pre-designated areas to pick up or drop off a passenger. The benefit of flex routes is that it allows the resource to provide coverage to a larger area that may have limited demand without the need to invest in additional service.

4. Specialized Transit Integration

Specialized transit (paratransit) integration is a variation of First Mile / Last Mile dynamic transit. Specialized Transit is a very common form of dynamic transit, as routes and schedules are dynamically assigned based on customer needs. Registered specialized transit passengers must request trips ahead of time through a customer call centre, website, or mobile app. The transit agency then chooses a vehicle and designs a route which best accommodates the customer (and others if there is potential to combine trips within the timeframe).

There are a number of examples of transit agencies who are integrating specialized transit services with conventional transit services. Instead of limiting the use of specialized transit vehicles to a specific demographic (i.e. persons with disabilities), the service model is used to deliver services for all customers in low demand areas. This eliminates the need to have two separate buses in areas where demand is low. A specialized transit vehicle is used to pick up both conventional transit passengers and registered specialized transit passengers. Conventional passengers are taken to the nearest fixed-route to complete their trip, while specialized transit passengers may stay on the specialized vehicle to

complete their trip if their disability prevents them from traveling on the transit agency's conventional buses.

5. Guaranteed Ride Home

Dynamic transit can be used as a "guaranteed ride home" in an effort to encourage commuters to leave their cars at home. Many commuters are hesitant to take transit in case an unexpected event occurs which would require immediate transportation to a specific location. Such events rarely occur, but the potential to be left stranded acts as a barrier to those who might otherwise take transit. Guaranteed ride home programs are often funded by employers (e.g., warehouse, factory) to encourage their employees to take alternative modes to the private automobile or to support employees who do not have access to one.

6. Trip Planning Integration

Perhaps the simplest form of dynamic transit, customer trip planning integration simply makes customers aware of the options which exist for their trip during the trip planning phase. This can arise through integration of several types of dynamic transit options into an agency's trip planning app. A customer may be offered several options for one portion of their journey, which could include microtransit, ridesharing, commuter shuttles, or a first mile / last mile service. In many cases, there is no fare integration between the different services. Customers are simply provided travel options using one source.

2.3 Service Delivery Responsibilities

Each of the industrial and on-demand service delivery models identified above may also be delivered in one of three different ways. The following are three possibilities of the potential involvement of the public and private sectors in service delivery:

1. Municipal

Under a municipal service delivery model, the transit service is provided by the municipality (transit agency). A third party may be involved to provide the technology platform, but the municipality remains the sole provider of the actual service.

2. Private

In private service delivery models, private transportation network companies (such as Uber, Lyft, or taxi companies) are responsible for planning and delivering the service. Often, these companies provide and manage the technology platforms as well as the service.

3. Partnership

Service delivery through a partnership involves a municipality/transit agency and private organization partnering to manage different parts of the service delivery process (common in first mile / last mile services).

3.0 Preliminary Industry Scan

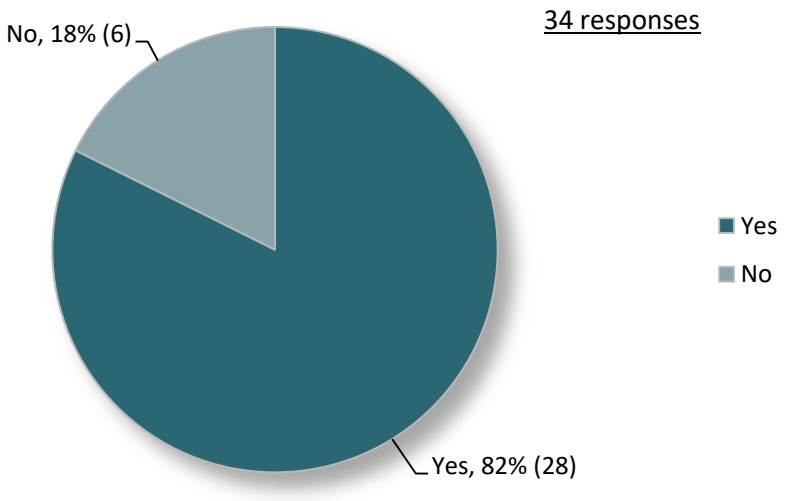
For the first phase of the project, a brief survey hosted on SurveyMonkey was sent out to all English-speaking Canadian Urban Transit Association (CUTA) member agencies as well as 10 Ontario Public Transit Association (OPTA) member agencies. In total, 34 responses to this survey were received, from agencies including:

- Airdrie Transit
- Barrie Transit
- Calgary Transit
- City of Stratford
- Grand Prairie Transit
- Greater Sudbury Transit
- Kingston Transit
- Leduc Transit
- Medicine Hat - Municipal Government - City Bus Transit System
- Saint John Transit Commission
- Sault Ste Marie Transit
- St Albert Transit
- Wasaga Beach Transit
- Waterloo Region - Grand River Transit
- Welland Transit
- Halifax Transit
- Thunder Bay Transit
- Brampton Transit
- Winnipeg Transit
- Sarnia Transit
- GO Transit (Metrolinx)
- MiWay Transit (Mississauga)
- Durham Region Transit
- BC Transit
- Regina Transit
- Red Deer Transit
- OC Transpo
- Fort Erie Transit
- CK Transit, Municipality of Chatham-Kent
- Orillia Transit
- Bancroft Community Transit
- Lindsay Transit
- Brockville Transit
- Quinte Access Transportation/Quinte West, Brighton and Prince Edward County

The responses were reviewed to identify seven agencies with unique service models that could be applicable to the development of and/or have valuable insights to help develop LTC's industrial area service model.

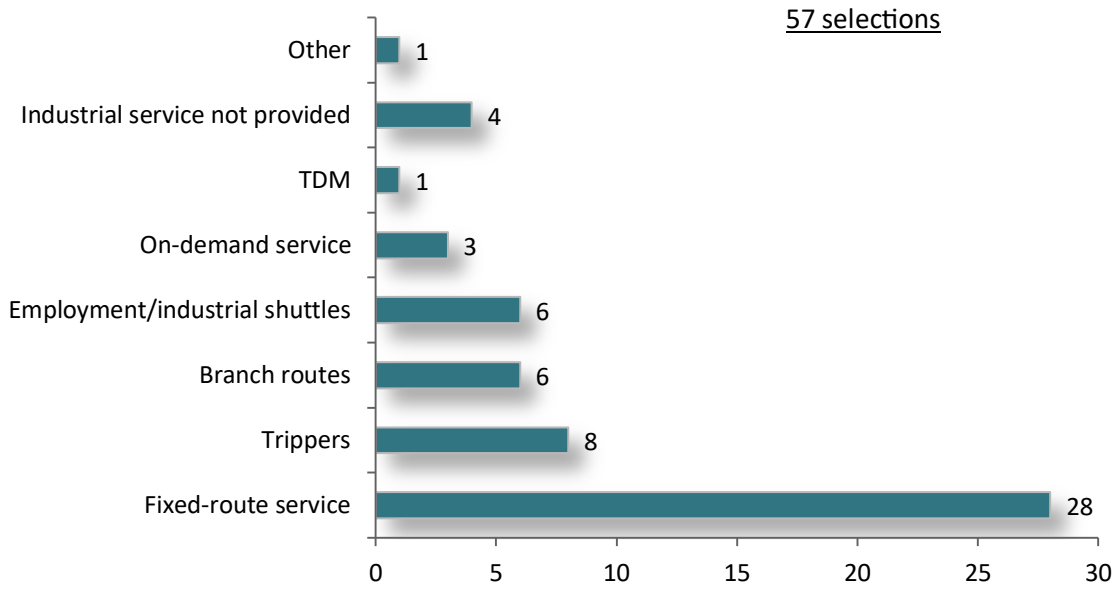
The following sections summarize the responses to the SurveyMonkey survey, organized by subsequent survey question. Detailed responses to the survey questionnaire are include in Appendix A. Note that the first question asked the respondent to identify which transit agency they represented.

Q2: Do you currently operate transit service to an Industrial Park Area?



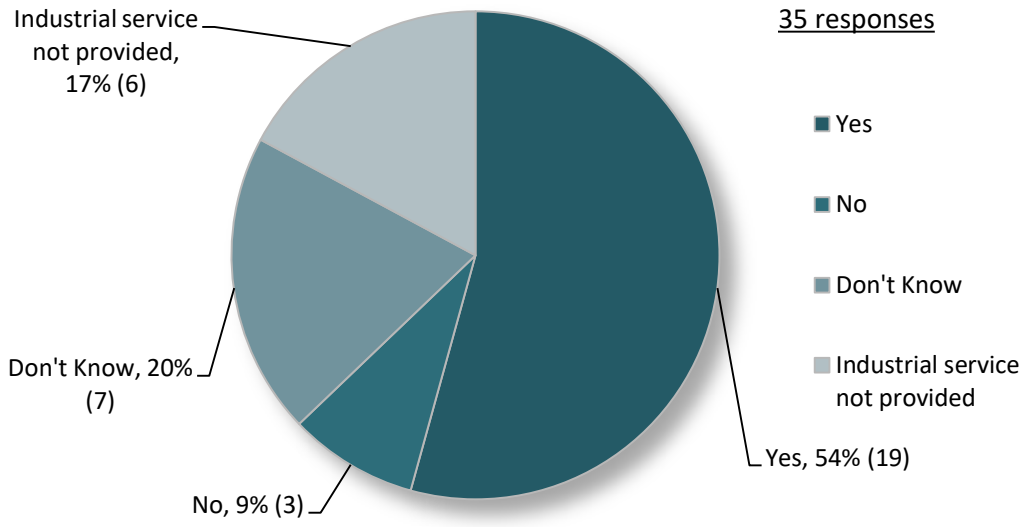
Of the respondents, 28 agencies stated that they provide some form of industrial transit service.

Q3: If yes, what type of service do you provide? (select all that apply)



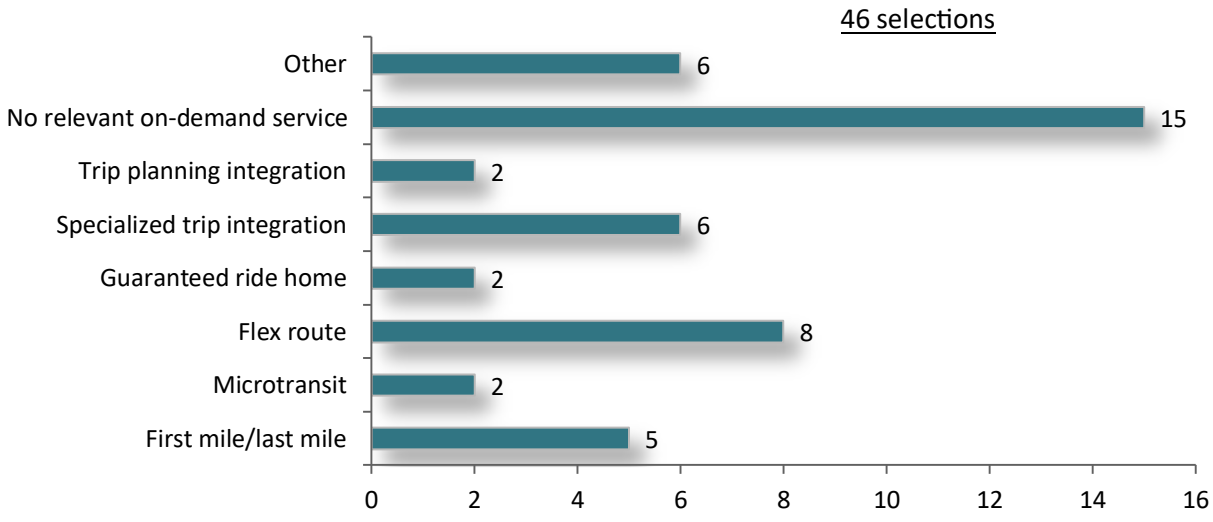
For the respondent who checked off "Other," the comment stated that the municipality had no industrial areas to service.

Q4: Is your industrial service strategy working for you?



A little over half of the respondents stated that their industrial service strategy was effective but over 35% stated that their strategy was either ineffective or they did not know whether it was effective.

Q5: Do you operate any alternative service delivery models that may be applicable in a low-density area such as an Industrial Park? (select all that apply)



For the option "Other," the following responses were collected:

- "Currently working on a strategy to incorporate these delivery models"
- "Specialized Services clients who qualify for integrated services are eligible to coordinate their trip on both Fixed route and specialized service"
- "Schedule time table integration at GO stations"
- "Alternative service strategy to be developed in 2018-19"
- "Not now, but we are considering to replace the service to low density area with on demand service"
- "Community Bus option similar to microtransit"

Q6: If you are willing to participate in a short interview to elaborate on the service, please list the name, phone number, and email address of an individual we can contact for further information below:

In total, 19 transit agencies responded to the final optional question, indicating willingness to be further contacted as part of the more detailed telephone survey.

4.0 Telephone Survey Case Studies

This section includes a detailed description of the seven transit agencies that had models considered to be of interest to LTC's industrial service strategy. The case studies were selected for this targeted in-depth review with the goal of examining a variety of service delivery models as well as noting both successes and failures of the aforementioned models. The selected case studies are as follows:

1. Bancroft Community Transit
2. Brampton Transit
3. Lindsay Transit
4. Winnipeg Transit
5. York Region Transit
6. *Quinte Access Transportation - Still to Come*
7. *Grand River Transit - Still to Come*

Information presented in this section was derived from phone interviews with each of the respective transit agencies. Dillon conducted these interviews in April 2018. A detailed log of interview questions and agency responses are included in Appendix B.

4.1 Bancroft Community Transit (BCT)

Service Region	Bancroft, Ontario (primarily – see below)
Industrial Service Delivery Model	n/a
On-Demand Service Delivery Model	Specialized Transit Integration
On-Demand Service Delivery Responsibility	Municipal

4.1.1 Industrial Service Model

BCT does not have an industrial area to service and thus does not have an industrial service model.

4.1.2 On-Demand Service Model – Specialized Transit Integration

Since 2017, BCT has been providing both specialized and public transit service to residents of the Town of Bancroft as well as other municipalities within a 50km radius of Bancroft. Public transit service is provided with a fixed route in the downtown Bancroft core area as well as dynamic transit for the remainder of the service area.

The downtown Bancroft fixed route service (with a fare of $2 per trip) is operated by a contractor (RNL Bus Lines). The service runs from 8:30 am to 4:30 pm on Tuesdays and Fridays, and from 8:30 am to

12:30 pm on Sundays. The downtown service sees ridership of 30 to 40 rides per day on Tuesdays and Fridays, as well as 20 to 30 rides per day on Sundays. The service was initiated last year and the service is well received. Riders have requested increased fixed-route service and possible expansion to 5 days a week. Since the model is quite new, ridership remains the key indicator of interest for BCT.

Dynamic transit is also provided to the community on Tuesdays, Fridays, and Sundays, with return trip fares ranging from $5 to $7.50 (depending on the municipality of origin or destination). The trips will pick up the rider from a pickup point of their choice and drop them off at the front door of a community agency (such as the Health Unit, Ontario Works, Children's Aid Society, etc.). These trips must be booked at least 24 hours in advance using an online form or by calling the BCT dispatch service. The trips are made using BCT's fleet – 3 minivans (one of which is wheelchair accessible).

In addition to the public transit service, BCT also operates specialized service 6 days a week for Bancroft and Belleville, operated by 50 volunteer drivers from both towns. This service brings riders to medical appointments in Kingston and/or the GTAH. The specialized service uses the same fleet as the public service and averages about 20,000 rides per year. The specialized service must also be pre-booked in advance and provides door-to-door service for eligible users.

Booking for both services are completed using manual dispatch and the routes are communicated to the drivers prior to the start of their trip.

4.2 Brampton Transit

Service Region	Brampton, Ontario
Industrial Service Delivery Model	Fixed-route, Trippers & Branch Route
Industrial Service Delivery Responsibility	Municipal
On-Demand Service Delivery Model	n/a

4.2.1 Industrial Service Model I – Fixed-Route

Brampton Transit operates standard fixed-route routes to service industrial land uses around the Bramalea GO station in the eastern portion of Brampton. These routes operate with 30-minute service headways during the AM peak, PM peak, and midday periods. Trippers are added to supplement the routes if passenger volume warrants are triggered in order to prevent overcrowding. The routes are not customized in partnership with employers in the area, though Brampton Transit has reached out to employers in the past and did not receive much effort or enthusiasm from the employers.

4.2.2 Industrial Service Model II – Branch Route

In the beginning of 2018, Brampton Transit started operating a branch of Route 11, which runs along the Steeles Ave W corridor, alongside the Züm BRT Route 511, terminating at the Lisgar GO Station in the

southwestern portion of Brampton. Rather than an industrial service only model, this model is more of an extension to the existing fixed-route service that is developed to accommodate major employers in Brampton.

Both variations of Route 11 (as well as Route 511) serve the Amazon Fulfillment Center on Steeles Ave W. The branch route, "11d," takes a detour along the route to loop to a "Maple Lodge Farm" processing plant before rejoining the main route and ending the trip at the same terminus. The routes are still a fixed-service but operate to accommodate shift start and end times throughout the day and are supplemented with trippers as necessary.

Routes 11 and 511 were worked out in partnership with the major employers such as Amazon and other employers along the corridor and Route 11d was developed at the request of Maple Lodge Farms. Though the employers do not financially contribute to the routes' operation, they pay for sidewalks, stop pads, and shelters on their property (with Brampton Transit providing stop and shelter standards, as required). The employers also agree to make modifications on the driveway to their property to accommodate buses and potential bus turn-arounds. The schedules along the main route and branch route are developed through consultations with employers to ensure that all major peaks are being served (i.e.: shift start and end times, with accommodation for prep or clean up, respectively).

4.2.3 On-Demand Service Model

Brampton Transit does not utilize any other on-demand service models that could be applicable to LTC's industrial service strategy. They have indicated that an alternative service strategy is to be developed in 2018-2019.

4.3 Lindsay Transit

Service Region	Lindsay, Ontario
Industrial Service Delivery Model	Fixed-route
Industrial Service Delivery Responsibility	Municipal
On-Demand Service Delivery Model	Specialized Transit

4.3.1 Industrial Service Model – Fixed-Route using Specialized Transit Vehicles

Lindsay Transit runs three fixed-routes within its service area. Despite having three of the major employers end operations in Lindsay in the 1990s, the northeastern part of the city remains the industrial park and is serviced by one of the three routes. The industrial route operates once an hour on weekdays from 7am to 7pm. All stops along the industrial route have accessible bus shelters and complete sidewalks to meet Accessibility for Ontarians with Disabilities Act (AODA) requirements.

The conventional routes (including the route servicing the industrial park area) use specialized transit vehicles.

4.3.2 On-Demand Service Model

Lindsay Transit's on-demand specialized transit service model is used only to service riders with disabilities.

4.4 Winnipeg Transit

Service Region	Winnipeg, Manitoba
Industrial Service Delivery Model	Fixed-route
Industrial Service Delivery Responsibility	Municipal
On-Demand Service Delivery Model	First mile/last mile
On-Demand Service Delivery Responsibility	Municipal

4.4.1 Industrial Service Model – Fixed-Route

A weekday peak period fixed-route service is provided in the three industrial parks, typically at intervals of approximately every 30 minutes. Standard bus stops are provided and, where warranted by boarding volumes, shelters are installed at the busiest stops. The ridership varies with the type of employment (e.g. call centres generate more ridership than agricultural implement manufacturers).

If a request is made by an industrial business for additional service during non-peak periods to accommodate a shift change or during peak periods for more frequent service, then a partnership arrangement is worked out. Winnipeg Transit will operate the additional service, keep track of average daily boardings per trip from the automated passenger counter (APC) or driver counts, and, at the end of each month, invoice the employer for the difference between the variable operational costs of the additional service and the fare revenue collected on the additional service (passengers pay regular transit fares). The fare revenue is calculated as number of boardings x average adult fare. If the fare revenue exceeds the variable operational costs, then Transit keeps the excess revenue.

This approach results in the variable cost of operation of the additional service being shared between the passengers (though their fares) and the employer (through the monthly subsidy payment, if required) with no net impact on the transit budget. Such services can only be implemented at the start of a booking and must be operated throughout the booking. This allows the additional service to be incorporated into the regular bus operator work assignments for the booking, rather than being operated off the spareboard. This keeps the operating costs of the requested service as low as possible. The service can be cancelled for subsequent bookings at the discretion of the employer. If fare revenues consistently exceed variable operating costs over a period of several months, then Winnipeg Transit will consider incorporating the additional service into the regular schedule.

4.4.2 On-Demand Service Model

In the 1990's, Winnipeg Transit implemented several Dial-a-Ride (DART) services in low-density residential areas during periods of low demand. This replaced fixed-route service operated by 40-foot

buses with a flexible service operated by 30-foot buses. Six DART services were implemented, of which four still operate today. Three of the four operate weekday evenings and weekends, the other operates weekday middays and Saturday days.

DART services are based at the end terminal of a mainline route and have scheduled departures shortly following the arrival of a bus on the mainline route. When passengers board the DART bus (mostly transfers from the mainline route), they tell the bus operator their destinations and pay a regular transit fare, the operator determines the routing to accommodate all requests, and the DART bus then operates through the defined service area, servicing all drop-offs and pick-ups to arrive back at the mainline terminal to meet the next mainline bus arriving from downtown. The DART operator is equipped with a cell phone and persons living or working in the DART service area can call to reserve a pick-up to travel within the service area or to transfer to the next bus on the mainline route. Passengers need to call about 30 minutes in advance of the time they want to be picked up. In general, the DART bus needs about an hour after leaving the terminal to service all drop-offs and pick-ups and to return to the terminal in time to meet the next mainline bus. The service works reasonably well for passenger volumes up to 10 boardings per bus hour. The early evening trips on one of the services had to be converted back to fixed route because the passenger volumes were too high for the demand responsive approach.

In general, users of DART have very short walking distances but less frequency. Users of the fixed route services in these areas had better frequency, but longer walking distances, prior to the implementation of DART.

The operating costs of the two service approaches are about the same, so there is no cost advantage to the demand responsive service. In two of the six areas, DART did not provide much, if any, reduction in walking distances as the previous fixed route provided good coverage. Residents of those areas preferred the fixed route service, as the schedule and routing are fixed and no trip reservations are required, making it less complicated to use than DART.

4.5 York Region Transit (YRT)

Service Region	Region of York, Ontario
Industrial Service Delivery Model	Fixed-route
Industrial Service Delivery Responsibility	Municipal
On-Demand Service Delivery Model	First mile/last mile
On-Demand Service Delivery Responsibility	Municipal

4.5.1 Industrial Service Model – Fixed-Route

YRT operates an extensive fixed route network with routes that serve major employment and industrial areas. Routes are generally connected to VIVA BRT corridors on Yonge Street, Highway 7, and Davis Drive.

4.5.2 On-Demand Service Model

YRT operates the Dial-a-Ride (DAR) model in low-density residential areas, which allows customers to get service in locations within the Region where conventional fixed-route transit service is limited. To use DAR, customers call in advance to book a trip (YRT recommends at least 60 minutes in advance of anticipated pick-up time but will do its best to accommodate shorter booking timeframes). Customers then have to make it to a pre-determine pick-up point within 5 minutes of the DAR bus's arrival. Once customers are picked up, the DAR continues along its route (which is determined by the number of bookings and waiting customers during that time period within the particular DAR's defined service area).

Currently, calling the DAR number is the only way to book the service and scheduling is done manually (though each DAR route is integrated with the base route). Future plans include app integration of this service. YRT is also considering operating this service in partnership with a company like Uber. The partnership would add additional vehicles to YRT's current fleet that is used for this service, thus increasing transit capacity. It would also give customers the choice to pick their method of travel and make personal trade-offs between cost, travelling time, and more.

For the DAR model, York Region has been subdivided in 19 urban and rural zones. The zone divisions are done to ensure that each zone is within a certain distance of a major arterial, which is serviced by a base route. The base routes operate at least every 30 minutes throughout the day from Monday to Friday (though their exact span of service depends on the route and its location). Customers ordering DAR are transported to the nearest base route stop. Currently, booking a DAR trip differs slightly by zone (i.e. based on advance request notice required, etc.).

5.0 Summary

The industry scan of industrial area transit service suggests that there are a variety of models that are currently being used across Canada, including variations of fixed route services as well as other dynamic transit models. The majority of properties operate fixed route services with limited service frequency generally focused during peak periods, and/or periods that coincide with employee shifts.

Properties that serve low demand areas with dynamic transit services have been able to take advantage of numerous benefits:

- flexible routing and on-demand scheduling;
- use of smaller, “right-sized” vehicles;
- complementarity and integration with higher forms of transit;
- partnerships with new mobility actors and software developers; and
- leveraging smartphone-based applications to deliver, monitor, evaluate service.

There is a growing interest among transit agencies in North America to include the dynamic transit service model as part of their family of services.

Appendix A

SurveyMonkey Responses Summary

London Transit: Industrial Area Strategy
Responses from Online Survey

Date Received	*1. What Transit Agency do you represent?*	*2. Do you currently operate transit service to an Industrial Park Area?*	*3. If yes, what type of service do you provide? (select all that apply)*	*4. Is your industrial service strategy working for you?*	*5. Do you operate any alternative service delivery models that may be applicable in a low-density area such as an Industrial Park? (select all that apply)*	*6. If you are willing to participate in a short interview to elaborate on the service, please list the name, phone number, and email address of an individual we can contact for further information below:*
26-Mar-18	Airdrie Transit	Y	Fixed route On-demand	Y	First mile/last mile Flex route	Chris MacIsaac 403-948-8875 chris.macisaac@airdrie.ca
26-Mar-18	Barrie Transit	Y	Fixed route	Y	n/a	Jason Zimmerman 705-739-4220 ext. 4305 jason.zimmerman@barrie.ca
26-Mar-18	Calgary Transit	Y	Fixed route Trippers	Y	Trip planning integration	
26-Mar-18	City of Stratford	Y	Fixed route Trippers	Y	Specialized Transit Integration	
26-Mar-18	Grand Prairie Transit	Y	Fixed route	Don't Know	N	Michael Daudlin 780-357-7492 mdaudlin@cityofgp.com
26-Mar-18	Greater Sudbury Transit	Y	Fixed route service Trippers	Y	N	Andrew Poeta 705-674-4455 x3039 andrew.poeta@greatersudbury.ca
26-Mar-18	Kingston Transit	Y	Fixed route	Y	N	
26-Mar-18	Leduc Transit	Y	Fixed route	Don't Know	Specialized Transit Integration	
26-Mar-18	Medicine Hat - Municipal Government - City Bus Transit System	Y	Fixed route	Don't Know	n/a	Simon Amos 403-529-8370 simamo@medicinehat.ca
26-Mar-18	Saint John Transit Commission	N	n/a	n/a	First mile/last mile	Charles Freake 506-658-4706 charles.freake@saintjohn.ca
26-Mar-18	Sault Ste Marie Transit	Y	Fixed route	Y	Other: "Community Bus option similar to microtransit"	
26-Mar-18	St Albert Transit	Y	Employment/Industrial shuttles	Don't Know	Flex route	
26-Mar-18	Wasaga Beach Transit	N	n/a	n/a	n/a	
26-Mar-18	Waterloo Region - Grand River Transit	Y	Fixed route Trippers Transportation Demand Management	Y	Flex route Guaranteed ride home	Julie Belanger 519-585-7597 ext. 7373 JBelanger@regionofwaterloo.ca
26-Mar-18	Welland Transit *	N	n/a	n/a	n/a	Dave Stuart 905-735-1700 x3034 dave.stuart@welland.ca
27-Mar-18	Halifax Transit	Y	Fixed route Trippers Branch Routes	Don't Know	n/a	
27-Mar-18	Thunder Bay Transit	Y	Fixed route	N	Other: "Not now, but we are considering to replace the service to low density area with on demand service"	Shahrzad Borjian 807-472-7703 sborjian@thunderbay.ca
28-Mar-18	Brampton Transit	Y	Fixed route Trippers Branch Routes Employment/industrial shuttles	Don't Know	Other: "Alternative service strategy to be developed in 2018-19"	David Stowe 905-874-2750 ext.62378 david.stowe@brampton.ca
28-Mar-18	Winnipeg Transit	Y	Fixed route Employment/industrial shuttles	Y	Microtransit	Xiaoyu Li 204-986-5742 xli@winnipeg.ca
29-Mar-18	Sarnia Transit	Y	Employment/Industrial shuttles	N	Flex route	David Jackson 519-332-0527 ext. 3279 david.jackson@sarnia.ca

London Transit: Industrial Area Strategy
Responses from Online Survey

Date Received	*1. What Transit Agency do you represent?*	*2. Do you currently operate transit service to an Industrial Park Area?*	*3. If yes, what type of service do you provide? (select all that apply)*	*4. Is your industrial service strategy working for you?*	*5. Do you operate any alternative service delivery models that may be applicable in a low-density area such as an Industrial Park? (select all that apply)*	*6. If you are willing to participate in a short interview to elaborate on the service, please list the name, phone number, and email address of an individual we can contact for further information below:*
2-Apr-18	GO Transit (Metrolinx)	Y	Fixed route Branch routes	Y	N	Sherwin Gumbs 416-202-5971 sherwin.gumbs@metrolinx.com
2-Apr-18	MiWay Transit (Mississauga)	Y	Fixed route Branch routes	Y	Other: "Schedule time table integration at GO Stations"	Mirela-Liana Aparaschivei 905-615-3200 ext. 3816 mirelaliana.aparaschivei@mississauga.ca
3-Apr-18	Durham Region Transit	Y	Fixed route	Y	Specialized transit integration Other: "Specialized Services clients who qualifiy for integrated services are eligible to coordinate their trip on both Fixed route and specialized service"	
3-Apr-18	Halifax Transit	Y	Fixed route	Y	N	Erin Blay 902-490-4292 blayer@halifax.ca
3-Apr-18	BC Transit	Y	Fixed route Trippers Branch routes	Y	Flex route	
3-Apr-18	Regina Transit	Y	Fixed route	Y	N	Grant Yablonski 306-570-2212 GYablons@regina.ca
5-Apr-18	Red Deer Transit	Y	Fixed route Employment/industrial shuttles	Y	Specialized transit integration	
6-Apr-18	OC Transpo	Y	y	Y	N	
6-Apr-18	Fort Erie Transit	Y	Fixed route	Don't Know	N	
6-Apr-18	CKTransit, Municipality of Chatham-Kent	Y	Fixed route	Y	N	Jan Metcalfe 519-360-1998 ext 3301 janm@chatham-kent.ca
6-Apr-18	Orillia Transit	N	n/a	n/a	N	
6-Apr-18	Bancroft Community Transit	N	n/a	n/a	First mile/last mile Microtransit Flex route Guaranteed ride home Specialized transit integration	Gwen Coish 613-334-8309 gwenc@bancroftcommunitytransit.com
6-Apr-18	Lindsay Transit	Y	Fixed route On-demand	Y	Flex route	Todd Bryant 705-324-3401 tbryant@kawarthalakes.ca
11-Apr-18	Brockville Transit	N	n/a	n/a	n/a	
12-Apr-18	Quinte Access Transportation/Quinte West, Brighton and Prince Edward County	Y	Fixed route On-demand	N	Trip planning integration Specialized transit integration Flex route Other: "Currently working on a strategy to incorporate these delivery models"	Shelly Ackers 613-242-3169 sackers@bellnet.ca

* Responded by email, not SurveyMonkey

Appendix B

Phone Interview Response Summary

London Transit: Industrial Area Strategy
Phone Interview Responses

Transit Agency	Lindsay Transit	Bancroft Community Transit	Brampton Transit
Name of Contact	Todd Bryant	Gwen Coish	David Stowe
Date of Phone Call	10-Apr-18	11-Apr-18	12-Apr-18
INTRODUCTION			
Which Industrial area do you currently serve?	Northeast area of Lindsay	No industrial area to service	Two distinct Industrial Areas a) Around the Bramelea Go station area and Airport Road b) Steels West and Lisgar Go station area
What is your current industrial and/or on-demand service?	Have 6 routes in total. 3 are conventional routes, 3 are specialized "on demand" routes for riders with disabilities. Industrial uses specialized transit buses and agency gives non-disabled registrants "temporary accommodation" under AODA to use it. The industrial route (one of the 3 conventional routes) operates once an hour on weekdays, 7am to 7pm.	n/a	a) A fixed route service b) A customized "branch" route of bus 11 (11d) that branches to service major employers on west side of Brampton but which ends at the same terminus as regular 11.
What type of buses do you use for your industrial and/or on-demand service areas and how many?	25' and 27' buses used only. 11 buses total - 3 used for conventional routes, 3 for specialized routes, 4 spare (2 usually in repair, 1 is for charter trips, and 1 is a true spare)	BCT owns 3 vans - 2 regular minivans, 1 wheelchair accessible	
AGENCY SERVES INDUSTRIAL AREAS			
1. When was your current Industrial Area Service implemented? FOLLOW-UP: Is the current model a change from a previous service model? If so, what was the reason for the change?	Current service implemented in 2004. Up to late 1990s, used to have frequent industrial service (15 min frequency in AM peak, 20 min frequency in PM peak). But 3 factories (major employers for town) closed in late 1990s.	n/a	a) legacy route, has existed "forever" b) 2 months ago (route not on transit network yet)
2. What are your typical ridership levels for your industrial area service?	Annual ridership for all 6 routes in ~150,000.	n/a	
3. Daily ridership/revenue service hour?		n/a	
4. Typical vehicle occupancy?	Throughout day, average is 7 people/hr on system but on industrial route ~5 people/hr. During Peak PM (2pm to 4pm), about 10 passengers per vehicle (double the average)	n/a	
5. What infrastructure is provided along the routes? (e.g. shelters, sidewalks, other amenities?) FOLLOW-UP: If infrastructure is present, what is the accessibility to this infrastructure?	All stops have accessible bus shelters and complete sidewalks to ends of block or which are adjoined to sidewalk.	n/a	Standard shelter and pad transit service warrant for the standard routes as well as stop along (b). b) Employers pay for and create their own sidewalks, shelters (though Brampton Transit provides standards for construction), and driveway infrastructure (such as loops for buses to turn around, especially when in rural areas) on their property.
6. Is fare structure different along your industrial route(s) or is it the same as for regular transit service. If different, how?	It's not. Fare is $2.25	n/a	It's not different for either model.
7. Were employers involved in planning the service? And if so, how and what feedback did you receive from them?	No. They also were not involved in 1990s. However, there is a Transit Advisory Board (which used to exist under a different name prior to 2000), which has individuals participating in decision making.	n/a	a) No but transit tried to reach to some of the employers along route to see if there was interest in increasing transit service, changing frequency or service times, etc. and employers did not seem very interested. b) Yes. Employer involved by requesting branch route and service times are developed based on employer shift schedules.
8. Do employers contribute financially to the service?	n/a	n/a	No for either service
9. In your experience, what are the factors for success for this service (e.g. what needs to be in place to make this work)?	Every year, the goal is to increase ridership. Community has many riders of lower socio-economic standing using system.	n/a	a) n/a b) Discussion with employer.
10. What KPIs do you use to monitor the success of the service model?	Annual ridership increase is the only measure of success use. Council doesn't even look at the finances, only asks for ridership.	n/a	Ridership. For (b), ridership of the overall main route.
11. Is the model expandable to other areas of the City?	Typical route so n/a	n/a	a) n/a b) Not really - need a large employer to drive
12. How easy is it to adjust the service model within the Industrial Park (e.g. if there is a change in employers, shift times, etc.)?	n/a	n/a	a) typical fixed-route b) so far, not a problem. Have added trippers as needed and plan to customize to suit employer. Goal is to cater to the major employers
13. What are the main advantages of this service model?	Good coverage	n/a	a) n/a b) Doesn't impact regular bus 11 service but also
14. In your experience, what is the general public opinion on the route(s) (approval/disapproval/etc.)?	Clients want more service (increased frequency), and more direct service (door to door). Generally riders think service coverage is good.	n/a	a) Public complains about service b) Great feedback from public
15. What are some challenges that you have experienced with this service model? FOLLOW-UP: Have you experienced any issues from a driver/union perspective with this service model?	Funding is always a challenge. Council won't commit to 10-year operational funding plan so routes may get cancelled every year.	n/a	b) None yet (very new). For driver/union perspective, no issues (BT takes lots of due diligence to make sure service is reasonable to drivers/union)

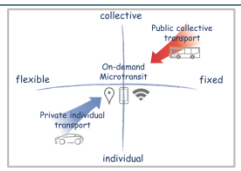
London Transit: Industrial Area Strategy
Phone Interview Responses

Transit Agency	Winnipeg Transit	York Region Transit
Name of Contact	Xiaoyu Li	Steven Baldo
Date of Phone Call	13-Apr-18	16-Apr-18
INTRODUCTION		
Which Industrial area do you currently serve?	Three industrial parks - Fort Garry, Omand's Creek , and St. Boniface	contact mostly knowledgable re On-Demand Transit
What is your current industrial and/or on-demand service?	Fixed route service for all three industrial park routes -Fort Garry (180), Omand's Creek (28), and St. Boniface (49). All routes are weekday only.	Dial-a-Ride service is used for low-density residential areas
What type of buses do you use for your industrial and/or on-demand service areas and how many?	Fixed route - 40 ft, articulated Dial-a-Ride (DART) - 30 ft buses	DAR - fleet is provided by contractor
AGENCY SERVES INDUSTRIAL AREAS		
1. When was your current Industrial Area Service implemented? FOLLOW-UP: Is the current model a change from a previous service model? If so, what was the reason for the change?	Legacy routes (have existed for a while)	
2. What are your typical ridership levels for your industrial area service?	Route 180 - average daily ridership = 629, average am peak ridership = 320, average pm peak ridership = 309 Route 49 - average daily ridership = 288, average am peak ridership = 148, average pm peak ridership = 140 Route 28 - average daily ridership = 694, average am peak ridership = 393, average pm peak ridership = 301	
3. Daily ridership/revenue service hour?		
4. Typical vehicle occupancy?		
5. What infrastructure is provided along the routes? (e.g. shelters, sidewalks, other amenities?) FOLLOW-UP: If infrastructure is present, what is the accessibility to this infrastructure?	Shelters, where warranted for high boarding volumes	
6. Is fare structure different along your industrial route(s) or is it the same as for regular transit service. If different, how?	It's not different - regular fare ($2.95)	
7. Were employers involved in planning the service? And if so, how and what feedback did you receive from them?	Sometimes, employers will request additional service to accommodate a shift change or more frequent service. In such cases, a partnership is worked out.	
8. Do employers contribute financially to the service?	For case described above, WT will operate additional service and invoice employer for difference between variable operational costs and fare revenue collected on additional service (WT will keep track of daily average boardings per trip). If fare revenue exceeds variable op costs, WT keeps the excess.	
9. In your experience, what are the factors for success for this service (e.g. what needs to be in place to make this work)?	Good relationship with employers	
10. What KPIs do you use to monitor the success of the service model?	Boardings, cost recovery	
11. Is the model expandable to other areas of the City?	Typical route so n/a	
12. How easy is it to adjust the service model within the Industrial Park (e.g. if there is a change in employers, shift times, etc.)?	n/a	
13. What are the main advantages of this service model?	No net impact on transit budget	
14. In your experience, what is the general public opinion on the route(s) (approval/disapproval/etc.)?		
15. What are some challenges that you have experienced with this service model? FOLLOW-UP: Have you experienced any issues from a driver/union perspective with this service model?		

Transit Agency	Lindsay Transit	Bancroft Community Transit	Brampton Transit
Name of Contact	Todd Bryant	Gwen Coish	David Stowe
Date of Phone Call	10-Apr-18	11-Apr-18	12-Apr-18
AGENCY OPERATES ON-DEMAND SERVICE			
What is the on-demand service model you use?	n/a	Specialized transit integration. Specialized buses used for public transit service. Buses carry passengers from door of community agency (i.e. Health Unit, Ontario Works, Children's Aid Society, etc.) door and/or returns them, within the service area. Users have to book the service at least 24 hrs in advance. Downtown Bancroft service also exists and is operated by a contractor.	n/a
1. What types of areas does this model serve (Residential, Rural, etc.)?	n/a	Both rural and residential - services Town of Bancroft and 3 municipalities within a 50km range - Highlands East, Wollaston, and Hastings Highlands	n/a
2. How long ago was this model implemented? FOLLOW-UP: Is the current model a change from a previous service model? If so, what was the reason for the change?	n/a	The "under 55 specialized service" has existed since 2001. The Public transit service has been in place since 2011 and after the transit organization dissolved in 2017, BCT has been both specialized and public service.	n/a
3. What are your typical ridership levels for your on-demand area service? - Daily ridership/revenue service hour? - Typical vehicle occupancy?	n/a	30-40 rides/day on downtown service Tues and Fri, 20-30 rides/day on Sundays Out-of-town service is usually 10-15 rides/day	n/a
4. Is fare structure different along for this service or is it the same as for regular transit service. If different, how? FOLLOW-UP: How do users of this model pay for the service (is it a subsidized price, do they get reimbursements after trip, etc.)?	n/a	Downtown service is $2/ride Other service ranges from $5 to $7.50 per return trip, depending on municipality's distance from Bancroft (these prices are subsidized)	n/a
5. In your experience, what are the factors for success for this service (e.g. what needs to be in place to make this work)?	n/a	Public consultation with general public, partner agencies	n/a
6. What KPIs do you use to monitor the success of the service model?	n/a	Ridership is main KPI since service relatively new	n/a
7. What are the main advantages of this service model?	n/a	Services elderly, disabled, and poor population very well Relatively cost effective - $30/hr for operation (including dispatch, etc.) and $475/day for the downtown bus service	n/a
8. In your experience, what is the general public opinion of this service (approval/disapproval/etc.)?	n/a	Really successful, residents want fixed route and 5 day/week service.	n/a
9. What are some challenges that you have experienced with this service model? FOLLOW-UP: Have you experienced any issues from a driver/union perspective with this service model?	n/a	Need more drivers due to exploding popularity of service; still need to work on marketing because many residents don't know that this service exists	n/a
10. Is this model replicable in an industrial area?	n/a	Possibly	n/a

Transit Agency	Winnipeg Transit	York Region Transit
Name of Contact	Xiaoyu Li	Steven Baldo
Date of Phone Call	13-Apr-18	16-Apr-18
AGENCY OPERATES ON-DEMAND SERVICE		
What is the on-demand service model you use?	Demand responsive transit - DART (Dial-a-Ride) Users of base routes in select low-density residential neighbourhoods without good service coverage have this off-peak first mile/last mile service. Users phone the DART service in advance to book it from a certain base route stop. The DART bus is integrated with the base route (and starts its route right after the base route). Customers are picked up from their stop by the DART bus, which connects them to neighbourhood location without transit coverage.	Demand responsive transit - DAR (Dial-a-Ride). System is very similar to Winnipeg but there are plans for future mobile app integration and expansion of current bus fleet service to a private ride-sharing program such as Uber (which would give users the option between a more expensive but more convenient Uber-type service and a less expensive but less convenient bus option).
1. What types of areas does this model serve (Residential, Rural, etc.)?	Low-density residential	19 low-density urban and rural zones around the Region of York. Focus so far has been residential areas but plan to include industrial zones in the future as well.
2. How long ago was this model implemented? FOLLOW-UP: Is the current model a change from a previous service model? If so, what was the reason for the change?	1990s (used to be 6 routes; 4 of those remain today)	2017
3. What are your typical ridership levels for your on-demand area service? - Daily ridership/revenue service hour? - Typical vehicle occupancy?	Average daily ridership: Dart 101 0 Dart 102 4 Dart 109 30 Dart 110 0 Note that there are talks about reducing the service or cancelling routes altogether due to low ridership.	2-4 passengers/hour (this is same as when routes were fixed but has about a 40% savings on the hourly rate
4. Is fare structure different along for this service or is it the same as for regular transit service. If different, how? FOLLOW-UP: How do users of this model pay for the service (is it a subsidized price, do they get reimbursements after trip, etc.)?	Regular transit fare ($2.95)	Same as regular transit
5. In your experience, what are the factors for success for this service (e.g. what needs to be in place to make this work)?	Demand, need area of not-so-great regular route coverage (since if fixed route coverage is good, no point in DART)	Local politicians, local transportation management group (if one exists), businesses (esp. small ones with 20 employees or less as those are the most likely users of this service), and public all have to provide input and be on-board. The latest technology must also be present for convenience and accessibility (i.e.: one common dialling number for all zones, mobile app integration)
6. What KPIs do you use to monitor the success of the service model?	Ridership	Passenger trips per service hour, cost per service hour, average cost per kilometre, operating cost per passenger trip, and average trip length Targets for these can all be found in the public on-demand strategy document: https://www.yrt.ca/en/about-us/resources/OnDemand_Report_web.pdf
7. What are the main advantages of this service model?	Provides users with very short last mile walking distances	Convenient, since uses all the same technology and takes the same fare system (i.e. Presto), More spontaneous than the base route service, Tailor made to specific individuals and zones
8. In your experience, what is the general public opinion of this service (approval/disapproval/etc.)?		Service is relatively new and no surveying has been done yet. Unknown.
9. What are some challenges that you have experienced with this service model? FOLLOW-UP: Have you experienced any issues from a driver/union perspective with this service model?	Process is somewhat complex - have to reserve DART bus about 30 min in advance of getting picked up	No major challenges encountered so far. Contracts for drivers (both for long- and short-hour shifts) guarantee vehicles being out there (a dedicated fleet) to make sure drivers are getting paid.
10. Is this model replicable in an industrial area?	Yes	Yes

Figure References

Figure	Source
	Smart Circle. (September 11, 2015). *The rise of the Microtransit movement.* Retrieved from http://www.smart-circle.org/blog/microtransit/