

Commingled Transit Service Jurisdictional Scan Summary

Executive Summary

A jurisdictional scan reviewed 12 public transit agencies in North America that have implemented a commingled paratransit and on demand transit service in the past five years. Primary research was used to understand the drivers and experiences of other transit agencies. Some of the key highlights and considerations from the jurisdictional scan are outlined below:

- Most of the transit agencies that have commingled their paratransit and on demand transit service are smaller than Edmonton and have smaller fleet size than ETS in these areas.
- Most transit agencies commingled their paratransit and on demand transit services when ridership volumes were low due to the COVID-19 pandemic. The purpose of commingling was to reduce costs during the pandemic to respond to lower ridership volumes by improving fleet utilization and merge the two services into one technology solution for dispatching and trip booking. It is unclear how they will respond to ridership recovery and growth. One transit agency identified that post-pandemic, there were no quantifiable cost savings achieved directly linked to commingling.
- In some transit agencies, differences in service policies, operating hours and service delivery models between paratransit and on demand transit services led to a certain degree of harmonization to improve the integration of riders onto the new commingled service. The harmonization costs were offset by service level cost reductions associated with lower ridership during COVID-19. This cannot be achieved in Edmonton due to bigger differences in service standards between the two services and high levels of ridership demand for both.
- In most cases, transit agencies were able to increase the number of passengers per hour due to merging paratransit and on demand transit rider trips into one vehicle.
- While the overall impact of commingling on riders was neutral, all transit agencies experienced an initial adjustment phase among riders which required communications and outreach efforts to educate and support paratransit and on demand riders with the new service dynamics.

The table below outlines the 12 public transit agencies that were included in the online research component as well as the five agencies that were interviewed.

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Transit agencies identified in the jurisdictional scan were generally smaller than Edmonton and served populations of less than 600,000. York Region Transit, Durham Region Transit, and King County Metro's Via To Transit¹ (on demand) service were larger transit services that had implemented a commingled transit service model. However, Durham Region Transit and York Region Transit have lower ridership demand for their on demand and paratransit services than Edmonton. With the exception of two agencies, most transit agencies identified in the jurisdictional scan also operate relatively smaller on demand transit and paratransit fleets of less than 50 vehicles, compared to Edmonton's On Demand Transit service which has a fleet of 60 vehicles, and Dedicated Accessible Transit Service (DATS), which has a fleet of 104 vehicles.

City	Transit agency	City population	Approximate geographic size ² (square miles)	Service delivery / workforce composition at time of research		Start of commingling	Interview
				Paratransit	On Demand		
Durham, ON	Durham Region Transit	Same as Edmonton (600K - 1,000K)	970	Contracted	Contracted	2022 (Commingled trips)	Yes
York, ON	York Region Transit	Larger than Edmonton (1,000K+)	686	Contracted	Contracted	2016 (commingled fleet); Expected 2024 (commingled trips)	Yes
Milton, ON	Milton Transit	Smaller than Edmonton (<600K)	171	Contracted and inhouse	Contracted and inhouse	2021 (Commingled trips)	Yes
Bakersfield, CA	Golden Empire Transit	Smaller than Edmonton (<600K)	160	Inhouse	Inhouse	2019 (Commingled trips)	Yes
Cheyenne, WY	City of Cheyenne Transit Program (CTP)	Smaller than Edmonton (<600K)	25	Inhouse	Inhouse	2020 (Commingled trips)	Yes

¹ The research conducted focused on King County Metro's Via to Transit service, however as of March 2023, King County Metro rebranded its on demand services under the name "Metro Flex". The service underwent some changes in 2023.

² Census area

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Green Bay, WI	Green Bay Metro	Smaller than Edmonton (<600K)	1,870	Contracted	Contracted	2020 (commingled fleets)	No
Summit County, UT	High Valley Transit	Smaller than Edmonton (<600K)	22	Inhouse	Inhouse	2021 (commingled operator shifts)	No
Lincoln, NE	StarTran	Smaller than Edmonton (<600K)	100	Inhouse	Inhouse	2020 (Commingled trips)	No
St. Thomas, ON	Railway City Transit (RCT)	Smaller than Edmonton (<600K)	14	Inhouse	Inhouse	2021 (Commingled trips)	No
Lubbock, TX	Citibus	Smaller than Edmonton (<600K)	136	Inhouse	Inhouse	2020 (Commingled trips)	No
Flagstaff, AZ	Mountain Line Transit Authority	Smaller than Edmonton (<600K)	64	Contracted and inhouse	Contracted and inhouse	2021 (Commingled trips)	No
Seattle, WA	King County Metro - Via To Transit ¹ / Metro Flex (as of March 2023)	Same as Edmonton (600K - 1,000K)	2,116	Contracted and inhouse	Contracted	2021 (Commingled fleet)	No

Most transit agencies adopted an on demand transit service in response to sharp reductions in transit ridership following the onset of the COVID-19 pandemic to serve neighbourhoods with lower fixed-route demand with more efficient demand-responsive service. Under these circumstances, transit agencies found that their paratransit and on demand transit services were operating in similar service areas with similar vehicle types, and realized there may be efficiencies to be gained in combining the two services using technology. Commingling was mainly pursued in response to low demand for both paratransit and on demand transit services as a strategy to better utilize vehicles - especially outside of peak travel times, in these other jurisdictions.

Some agencies in the jurisdictional scan adopted a commingled fleet/operator shift model (such as Green Bay Metro), however most had implemented a fully commingled trips model. York Region Transit adopted a commingled fleet model in 2016 after a pilot program which used extra capacity paratransit vehicles to provide on demand transit service, however the agency indicated that it plans to transition

to commingled paratransit and on demand transit trips through a new technology system for commingling later in 2024.

Implementation Process

Approaches for commingled service implementation were varied across the transit agencies. Some transit agencies immediately transitioned to a commingled trips model as an urgent response mechanism to address the sudden drop in ridership during COVID-19 pandemic.

Across all agencies, the implementation process included: acquiring the dispatching and trip planning software; staff training; and promoting public awareness and education. Because most transit agencies interviewed were small or medium-sized, their implementation timelines were relatively short with the commingled transit service being launched within six months of project initiation. Durham Region Transit had the longest implementation period of approximately one year, as the agency was conducting contract revisions with transportation and technology vendors at the same time. Additionally, some agencies had rebranded their fleets for the launch of commingled transit service as part of their public awareness efforts.

Overall, the transit agencies reported that the process was streamlined once the dispatching software was acquired and technology partners were able to support the agencies to overcome challenges with system integration. This was mainly due to a higher degree of automation with the new technology systems compared to previous systems that were used.

Service Models and Standards

In developing a commingled transit service, some transit agencies reviewed and adjusted service standards for paratransit and on demand transit services to facilitate integration. This process involved making policy decisions regarding the level of service provided.

The level of service provided to riders with regard to pick-up and drop-off locations varied between transit agencies. Traditionally, paratransit service has focused on offering door-to-door service, while on demand service can encompass options such as door-to-door, curb-to-curb, bus stop to bus stop or any combination of these options. As an example, Edmonton's DATS service offers door-to-door service while On Demand Transit service operates on a bus stop to transit hub model, where riders board at a dedicated On Demand Transit bus stop and are transported to a transit centre or LRT station to connect to the conventional transit network. Most agencies allowed both parameters to continue on their commingled service -

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paratransit riders continued to receive door-to-door service and on demand riders continued to receive stop-to-stop service.

Upon launching a commingled transit service, some transit agencies such as Durham Region Transit, Cheyenne Transit in Wyoming and Golden Empire Transit in Bakersfield, California harmonized some of the service standards between their paratransit and on demand transit services. These changes could have budget impacts and increase costs. The changes included the following:

- Service area - the service area of a commingled transit fleet has a direct impact on the level of service provided. In discussions with Golden Empire Transit in Bakersfield, California, they noted confusion among riders because their paratransit service covered a larger service area compared to their on demand service. To address this issue, the on demand service area was expanded to match the paratransit area. In Edmonton, paratransit service provides service across the entire city, whereas On Demand Transit serves specific zones and complements fixed route conventional transit service by bringing riders to transit hubs. This type of change would be an enhanced service level and may result in increased costs.
- Service hours - refers to the hours of operation of the service and whether they are aligned between the paratransit and on demand transit. Currently, the service hours of Edmonton's DATS and On Demand Transit vary, as follows:
 - On weekdays, DATS operates from 6 a.m. to 11:00 p.m. and On Demand Transit operates from 6:00 a.m. to 10:00 p.m.
 - On weekends, DATS operates from 6:30 a.m. to 12:00 a.m. on Saturday and 6:00 a.m. to 11:00 p.m. on Sunday. On Demand Transit operates from 9:00 a.m. to 7:00 p.m. on both Saturday and Sunday.
 - Changes to align the span of service would increase the service level and could increase costs.
- Booking window - the minimum and maximum amount of time in advance of a trip that a rider is able to reserve their trip. Currently, the vast majority of trips on DATS are booked multiple days in advance, while On Demand Transit trips are all booked on the same day, up to 60 minutes prior to the requested trip time. Pre-booking trips with On Demand Transit service leads to less efficiencies in trip scheduling which may result in increased costs.
- Pick-up window - the earliest and latest times that a rider is informed when a vehicle will arrive to pick them up for their trip. DATS and On Demand Transit provide different pickup windows, and also differ in the length of time the vehicle will wait for riders if they are not at the pick-up location.

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- Fleet size and peak service capacity - the number of vehicles in service during peak and non-peak times. More vehicles in service at any given time enables higher rates of trip accommodation. Trip accommodation is an important metric for both paratransit and on demand transit service as it measures the ability to accommodate trip requests. Additional service from third-party transportation providers (e.g. taxis) can also expand capacity. Currently, Edmonton's DATS and On Demand Transit service often operate at or near capacity during peak hours which means that potential efficiencies from a commingled service may be limited.
- Transit faring - some transit agencies have different faring structures for their paratransit and on demand services. Upon commingling, some agencies considered harmonizing fares or increasing awareness on the rationale for the differences in fare structures between the two services. In Edmonton, paratransit riders pay their fare or show proof of fare upon boarding the DATS vehicles, while On Demand Transit riders pay their fare at transit hubs when transferring to conventional transit service.

Impact on Performance

Benefits of commingling paratransit and on demand transit service were realized across most transit agencies, but the level of improvement varied between the agencies. Some key changes that transit agencies reported after commingling their paratransit and on demand transit services are outlined below:

- Primarily due to lower ridership for both services, agencies achieved some cost savings through commingling. This was also due to economies of scale from combining resources and technology platforms, as well as reduced staff time spent on dispatching and scheduling. In Edmonton, it is unlikely that similar cost reductions would be realized as DATS and On Demand Transit are currently optimized to operate as efficiently as possible and are designed differently.
- Commingling transit modes offered transit agencies more flexibility to improve their fleet utilization. The number of paratransit and on demand passengers per vehicle hour, in the review, ranged from 2.5 to 4. Prior to commingling, passengers per vehicle hour ranged from 1 to 2. This context is different in Edmonton, where the average fleet utilization for each service is above this average.
- Agencies experienced increases in paratransit and on demand transit ridership due to a combination of an enhanced rider experience due to launching new trip booking tools and technologies as well as ridership recovery as most of the

transit agencies in the jurisdictional scan had implemented commingled transit service during the COVID-19 pandemic.

Other Performance Impacts

Small transit agencies attributed some of the improvements in performance to the new dispatching software used for the commingled transit service. For example, Metro Transit in Green Bay, Wisconsin and Citibus in Lubbock, Texas reported increases in on-time performance as a result of higher automation in trip scheduling and design. However, other agencies experienced a decline in certain performance indicators after commingling paratransit and on demand transit service. Another agency witnessed a slight decrease in on-time performance and an increase in average travel times after commingling paratransit and on demand transit, however it was unclear if this was as a result of commingling and a higher number of passengers per hour or changes in contracted services that happened during the same time as commingling.

In the context of Edmonton, On Demand Transit trip scheduling and design is automated, and recent improvements to the DATS scheduling software implemented a degree of automation. While further research is needed to fully understand the benefits and implications of implementing commingled service on performance, the current level of automation of DATS and On Demand Transit trip scheduling may reduce the opportunity to gain further performance efficiencies.

Rider Perceptions

After commingling transit services, some transit agencies reported a slight increase in the number of complaints and inquiries as paratransit riders and on demand transit riders adjusted to the new service. During this period, concerns were raised by on demand transit riders on the differences in the door-to-door service offered to paratransit riders versus stop-to-stop service offered to on demand transit riders. Additionally, when there were changes in service performance, some riders attributed this to the commingled transit service model. For example, Durham Region Transit experienced a slight decline in on-time performance which riders associated with the new commingled transit service.

To address initial concerns from paratransit and on demand transit riders, transit agencies launched additional public communications and provided training to operators on communicating with riders about commingled transit service. These communications focused on educating riders about service adjustments, rider etiquette and future changes to the commingled transit services.