

**Appendix B** Low-Density Service Assessment



Final

**Omaha Metro Transit** 

Prepared by:



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# Introduction

Metro is studying ways to serve parts of the Omaha metropolitan area unsuited for fixed route bus service. This memo summarizes the results of research into three service alternatives: deviated fixed route, demand response service, and vanpool. The research consisted of interviews with agencies operating these services as well as previously published reports.

In summary:

- Deviated fixed route is not recommended for Omaha
- Demand response (microtransit) is recommended for pilot projects in West and South Omaha
- Vanpool is recommended to serve large employment centers

# **Deviated Fixed Route**

Deviated fixed routes are common in transit systems with coverage-based service. Typically, such a route follows a specific path and deviates on request to locations within a certain distance of the path. Extra time is built into the schedule to allow for deviations on each run.

The Federal Transit Administration considers deviated fixed route a form of demand response service. As long as it meets the accessibility criteria set out in 49 CFR Part 37, it does not require complementary paratransit provision.<sup>1</sup>

Among the interviewees, two agencies had recently discontinued their deviated fixed route service. Dallas Area Rapid Transit (DART) had used a software it found lacking. Moreover, services were scheduled too tightly to allow for many deviations. The outcome was that passengers found it difficult to request a deviation, most stopped requesting deviations, and ultimately the deviated service was dropped in favor of fixed routes or demand response.

Des Moines Area Regional Transit Authority (also known as DART) also found that its passengers rarely used the service, although not for the same reason. To the contrary – the schedule built in so much time for deviations that the agency began to see it as wasteful. One of the deviated routes has now been replaced with a regular fixed route with the same scheduled run time and a fixed alignment twice as long. The other two have been replaced by demand response.

It is still possible that the right software, schedule, and choice of service area could produce a deviated fixed route service popular with customers. However, this does not appear to be trending in the industry. Instead, the sophisticated algorithms developed by vendors like TransLoc, Via, and Spare Labs are being deployed for fully demand response services.

<sup>&</sup>lt;sup>1</sup> 49 CFR Appendix D to Part 37, <u>https://www.ecfr.gov/current/title-49/subtitle-A/part-37/appendix-Appendix%20D%20to%20Part%2037</u>

As is the case with deviated fixed route service, demand response service for the general public is also common as a lifeline in low-density areas. Traditionally, these services have relied on phone-in bookings taken by reservationists at least a day in advance, with drivers given a paper manifest showing their assignments for the day. Terms for this service include "dial-a-ride" and "on-call."

However, in the last decade, agencies have used new technology to make these services more responsive, and thereby better serve demand.<sup>2</sup> The new technologies include automated dynamic routing software, smartphone apps for booking rides, and tablets that can provide drivers with continuously updated routing assignments. The result is that it is now possible for a customer to book trips that arrive in minutes rather than hours or days.

These newer services tend to be marketed under new names such as "microtransit" or "mobility on demand." In the remainder of this memo, demand response services studied and recommended for Omaha will be referred to as "microtransit" in order to reflect the critical technology element. If Omaha is to introduce a new service, it will find the greatest effect in services that use the most advanced technology available.

# **Agency Interviews**

In order to understand how microtransit is used by other agencies, five in-depth interviews were conducted with planners at Sacramento Regional Transit District, King County Metro, Dallas Area Rapid Transit, Des Moines Area Regional Transit Authority, and SouthWest Transit. The interviews are summarized in more detail in the exhibit at the end of this document. Collectively they yielded the following high-level insights:

- The COVID-19 pandemic has made it difficult to set realistic performance goals, let alone achieve them.
- Agencies take unique approaches to success metrics. Not every agency has set firm goals for its microtransit service, choosing instead to take a try-and-see approach. At other agencies, preferred performance metrics include operating statistics such as average wait time and cost statistics such as subsidy per passenger.
- For a microtransit service, assume a maximum of five boardings per vehicle per revenue hour. More than that would indicate fixed route potential.
- Although microtransit service can co-exist with and feed fixed route, the service design should be careful not to allow it to compete with fixed route.

<sup>&</sup>lt;sup>2</sup> For a brief overview of this phenomenon, see the 2018 Eno Center for Transportation report UpRouted: Exploring Microtransit in the United States. <u>https://www.enotrans.org/wp-content/uploads/2018/01/UpRouted-18.pdf</u>

- Microtransit is typically developed independently of paratransit. Although agencies may use the same fleet and driver pool for both services, the two rider pools are usually treated as separate.<sup>3</sup> Some agencies that designed their microtransit pilots separately from paratransit are now considering how the two might be commingled in the future.
- Zones are defined more by ridership potential, natural boundaries, and political considerations than by size, which varies widely.
- It is typical to assign more than one vehicle to a zone, and vehicles can be shared across zones. Contiguous zones could potentially make this more efficient, although there was not consistency across all agencies on this point.
- Agencies are reporting costs per revenue hour between \$60 and \$140. There is no consensus on acceptable cost per hour. Agencies are reporting subsidies per passenger between \$8 and \$11.
- Labor is a large percentage of cost. Strategies that lower the cost include using independent contractors as drivers and negotiating a lower wage class with the union.
- Two vendors appear to be beating out their competition: Via as an operator and/or software provider, and Spare Labs as a software provider. The common characteristic they share is that they were able to meet specific needs from agencies, such as flexibility in routing algorithms and generous data sharing.
- Ride booking and payment technologies are a critical element of the service, and care should be taken to involve all stakeholders in the choice of a technology vendor/solution.
- Continuous and personal marketing appears to be key to the success of microtransit services. As a new service type, microtransit needs to be fully explained when agencies are gathering input in the development phase and during implementation.
- Building flexibility into the pilot is more important than selecting the perfect service design at the outset.

Additional research included previously published reports and case studies. The most helpful resource was *TCRP Synthesis 141: Microtransit or General Public Demand-Response Transit Services: State of the Practice.*<sup>4</sup>

Based on this research, microtransit is recommended as a pilot alternative for serving areas of Omaha unsuitable for fixed route transit, based on the Transit Suitability Index (TSI) score of an area.

# **Evaluation Criteria**

Outcomes and practices at other agencies were used as a guide to develop evaluation criteria for areas in Omaha (Table 1). Each criterion is described in more detail below. However, it should be

<sup>&</sup>lt;sup>3</sup> Two exceptions include Citibus in Lubbock, Texas, and StarTran in Lincoln, NE, both of which recently launched commingled services using Spare Labs software. King County Metro is considering commingling service in the future.
<sup>4</sup> Volinski, Joel. (2019) https://www.trb.org/Publications/Blurbs/178931.aspx

Low-Density Service Alternatives

noted that at this time there truly are no rules, limits, or reliable predictors of success when it comes to creating microtransit services.

Criterion	Indicator	Data Source				
Necessary Criteria						
3-7 square mile zone	N/A	GIS				
Low-moderate transit suitability	Composite TSI Score	MAPA				
Fixed-route connection	System map	Metro				
Mixed residential/employment densities	HH Density, Emp Density	MAPA				
Preferred Criteria						
At least one major trip generator	N/A	Google Maps, community knowledge				
Rapid transit connection	System map	Metro				
Equity populations	Low-Income Population, Minority Population	MAPA estimates based on US Census				

#### Table 1. Microtransit Evaluation Criteria

#### **Necessary Criteria**

#### **Zone Size**

Microtransit zones as currently operated by other agencies range from one square mile to 30 miles or more. For a pilot project within the city of Omaha, a range of three to seven square miles is a reasonable target to set. It is large enough to encourage within-zone trips for shopping and shorter commutes; it would provide first mile/last mile connections to fixed route; and it is small enough to cover with one or two vehicles, depending on demand.

#### **Transit Suitability**

A large proportion of the microtransit zone should contain areas already identified by Metro as having low or moderate transit suitability. Highly suitable areas should be contained to discrete points connecting to the rest of the system.

#### **Fixed Route Connections**

Within-zone travel is an important benefit to microtransit, but it cannot be relied upon to generate ridership. Microtransit zones will be of greatest value to passengers, and maximize productivity, if they are able to connect to fixed route service.

#### Density

Microtransit is understood to suit low-density areas, but there is not necessarily an agreed window of minimum and maximum density. King County Metro considers an appropriate residential density to be four to 18 persons per acre. Denver's Regional Transportation District found that demand response service performs better than fixed route in suburban areas with combined residential and employment density of three to 12 persons and jobs per acre. On the other hand, 2017 data from RTD show that the community of Evergreen, Colorado, with a combined density of only 1.3, still managed 3.3 boardings per hour.

For this reason, the evaluation for zones has not been set at a specific job or household density. Instead, it seems appropriate to provide for service to the lowest-density areas of Omaha within a zone, while also providing within-zone access to denser areas. The proposed evaluation criterion here is that density be divided into three quantiles and that each zone contain hexagons in each of the three quantiles.

#### **Preferred Criteria**

#### **Trip Generators**

Although not every agency has estimated the proportion of its microtransit trips that serve work or school commutes, those that have note that the proportion is large -70 percent in one case. Other pilots have often targeted locations such as major employment centers, universities, or other transit trip generators.

#### **Rapid Transit Connection**

Rapid transit stations are also a kind of trip generator. Westroads Transit Center presents clear opportunities, as it sits on the border between several core routes (4, 5, 14, and ORBT) and the unserved neighborhoods west of I-680. As a high-frequency service operating in Omaha, ORBT has unique potential to provide convenient, even spontaneous trips using the combination of both BRT and microtransit. Launching a new service from ORBT would also piggyback off the marketing that has already been done to encourage ORBT ridership.

#### **Equity Populations**

In order to distribute the benefits of microtransit equitably, neighborhoods with relatively large lowincome populations and racial and ethnic minorities should be considered for pilot zones. This may not result in their selection, as MAPA's Transit Suitability Index suggests that most such neighborhoods exist in or near areas of high fixed route suitability. However, it is important to use equity metrics as a screening tool and to preview the outcomes of future Title VI analyses.

#### **Microtransit Implementation**

Figure 1 illustrates several potential microtransit zones within Omaha city limits. They were developed using a combination of community input, discussion with Metro, and the criteria outlined in Table 1, particularly the 3-7 square mile zone size guideline. The results of applying these criteria are shown in Table 2. Supporting maps are shown in the Exhibit at the end of this document.

Research suggests that piloting multiple zones at once is a strong start to a microtransit experiment. It offers more opportunities for success and allows different zones to be compared and contrasted to understand what does and does not work in the local context. If a coverage-based scenario is chosen as Metro Transit's future strategy, there would ideally be three separate zones representing different operating environments and preferred criteria.



Figure 1. Potential Microtransit Zones

#### Table 2. Microtransit Zones for Consideration

Name	Square Miles	% Low- Moderate TSI	Fixed- Route Connection	Mixed Densities	Trip Generators	Rapid Transit Connection	Minority <sup>5</sup> Population	Low- Income <sup>6</sup> Population	Comments
Florence	6.01	82	Frequent	Household	Metropolitan Community College – Fort Campus	-	9,757	4.684	Target destination is Florence Business Park
South Omaha	3.23	62	Frequent	Household	Metropolitan Community College – South Campus, Stephen Center, Supermercado Nuestra Familia	-	4,917	2,642	Consider extending east to the river
Westroads NW	7.18	96	Frequent	Household, Employment	Westroads Mall, Hy-Vee	ORBT	5,508	1,618	Includes a portion east of 680 along 108 <sup>th</sup>
Far West	6.00	100	Express	Household, Employment	Millard North HS, CHI Health Lakeside, Children's Hospital, Target, Hy-Vee, Baker's, Metropolitan Community College – Elkhorn, Village Pointe, DMV	-	1,851	704	Consider for second phase, after enhancements to fixed route service in West Omaha
West Dodge Half Mile	6.83	97	Frequent	Household, Employment	Westroads Mall, Village Pointe, DMV, Baker's, Boys Town, Burke HS, Jewish Community Center of Omaha	ORBT	3,409	1,051	Half mile north-south from Dodge – More rectangular, allows for more trips in same direction
Westroads SW	7.13	100	Frequent	Household, Employment	Westroads Mall, Burke HS, Jewish Community Center of Omaha, Wal-Mart, Buildertrend, Baker's, YMCA	ORBT	3,499	1,464	Designed to include downtown Millard
Millard	7.65	100	Infrequent	Household	Hy-Vee, Millard South High School, Wal-Mart	-	3,606	1,238	Oversized; may need frequency improvements to Routes 34 and 55

<sup>&</sup>lt;sup>5</sup> All residents except those reporting white, non-Hispanic are considered racial or ethnic minorities. Rough estimate based on 2019 ACS. <sup>6</sup> Population whose households reported total annual income under the federal poverty limit. Rough estimate based on 2019 ACS.

# Vanpool

In locations where service has been requested by one or two large employers, a vanpool program may be a more effective way to support commutes than adding new transit service. Like a private carpool, it is fundamentally a volunteer effort organized by coworkers on a basis of mutual trust; however, public agencies can use their resources to encourage vanpool formation.

Vanpool programs tend to operate separately from public transit. In many locations they are sponsored by a regional or state government rather than the local transit agency. Agencies that do have their own programs manage them separately from other services.

For example, the RideShare vanpool program operated by DART in Des Moines is entirely selffunding, using member fees to maintain a fleet of vans available to groups of five to 12 commuters. Vanpool members pay a refundable deposit plus monthly fare based on the size of their group and the mileage driven. The driver is a member of the group who receives personal use of the van in exchange for maintaining it and keeping the vanpool running smoothly. RideShare is intended to serve trips outside DART's service area.

### **Go NEWhere**

The Nebraska Department of Transportation (NDOT) runs a vanpool program that covers the entire state, including Omaha. NDOT's program, branded as Go NEWhere, uses a partnership with Enterprise to provide fully insured rental vehicles to groups of six to 15 people. Through the current program, the NDOT provides a monthly subsidy of \$400 per vanpool and the typical monthly operating cost for vanpool ranges from \$1,000 to \$1,200 per month (2022 estimates). Presently, the statewide vanpool program is administered through Commute with Enterprise, an arm of Enterprise Car Rental. Listed below are select elements of the program:

- Commute with Enterprise provides a van or SUV appropriate for the trip length and number of vanpool participants.
- The estimated month cost list above covers the cost of vehicle leasing, fuel, insurance and vehicle maintenance.
- The driver must have had a valid US driver's license for five years
- Participant costs for the vanpool must be administered through an employee wage deduction by an employer. While employers do not need to participate in the program financially, they will be asked to administer the employee payroll deduction program and many employers do participate in subsidizing monthly costs.

In the five years it has existed, the program has primarily attracted residents commuting to smaller town manufacturing and food processing plants. The few existing urban vanpools in Omaha and

Lincoln ended when the COVID-19 pandemic prompted many urban workplaces to allow telecommuting.

The NDOT program offers an opportunity for Omaha Metro Transit test the vanpool concept as the program through the NDOT is essentially turnkey in its operation. Of particular interest to Metro Transit in partnering in a program are:

- The ability to incorporate Metro branding into the service.
- Allowing Metro to count the rides and mileage in their NTD reporting.

Through cursory discussion with Commute with Enterprise, the following responses to these two areas were provided:

- The NDOT transit manager and the Enterprise contract specialist have indicated they are amenable to a co-marketing agreement that preserves the Go NEWhere branding.
- Associating vanpool ridership and miles traveled to count toward Metro's annual ridership reports to the National Transit Database is likely feasible.

In this scenario, NDOT would likely continue to be the public sector sponsor in the contract with Enterprise and would have a separate cost sharing agreement with Metro.

Vanpool programs may be a solution for destinations whose remoteness or lack of development has them suited neither for fixed route nor microtransit. For example, the Florence microtransit area was drafted in response to repeated requests for service from manufacturers in a 0.13 square mile business park in Florence; however, it is far from other transit destinations and may be better served by a vanpool program. Eppley Airfield may be another employer best served by vanpool.

# Exhibit

### **Microtransit Interviews Summary**

#### **Process**

This report is a summary of five different microtransit case studies from agencies in California, Washington, Texas, Iowa, and Minnesota. Research for these case studies included background reading and interviews with planners at each agency.

### **Key Takeaways**

The interviews when taken together offer the following high-level takeaways about microtransit as it is currently practiced at these agencies:

- The pandemic has made it difficult to set realistic performance goals, let alone achieve them.
- Agencies take unique approaches to success metrics. Not every agency has set firm goals for its microtransit service, choosing instead to take a try-and-see approach. At other agencies, preferred performance metrics include operating statistics such as average wait time and cost statistics such as subsidy per passenger.
- For a microtransit service, assume a maximum five boardings per revenue hour. More than that would indicate fixed route potential.
- Although microtransit service can co-exist with and feed fixed route, the service design should be careful not to allow it to compete with fixed route.
- Zones are defined more by ridership potential, natural boundaries, and political considerations than by size, which varies widely.
- It is typical to assign more than one vehicle to a zone, and vehicles can be shared across zones. Contiguous zones could potentially make this more efficient, although there was not consistency across all agencies on this point.
- Agencies are reporting costs per revenue hour between \$60 and \$140. There is no consensus on acceptable cost per hour. Agencies are reporting subsidies per passenger between \$8 and \$11.
- Labor is a large percentage of cost. Strategies that lower the cost include using independent contractors as drivers and negotiating a lower wage class with the union.
- Two vendors appear to be beating out their competition: Via as an operator and/or software provider, and Spare Labs as a software provider. The common characteristic they share is that they were able to meet specific needs from agencies, such as flexibility in routing algorithms and generous data sharing.
- Ride booking and payment technologies are a critical element of the service, and care should be taken to involve all stakeholders in the choice of a technology vendor/solution.
- Continuous and personal marketing appears to be key to the success of microtransit services. As a new service type, microtransit needs to be fully explained when agencies are gathering input in the development phase and during implementation.
- Building flexibility into the pilot is more important than selecting the perfect service design at the outset.

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### **Defining Terms**

Demand response has a long history in public transit, and in its fundamentals the new technologymediated service piloted/operated by transit agencies today is little different from older dial-a-ride services.

However, in other ways the new generation of demand response service is distinctly different. In order to create efficient routings for their drivers, dispatchers in traditional dial-a-ride systems need bookings at least a day in advance. This places limitations on customer flexibility and makes dial-a-ride service an option of last resort in many eyes.

Inspired by transportation network companies (TNCs) such as Uber and Lyft, transit agencies are now finding that software advances make it possible to give drivers more or less real-time routing updates. When services are designed with this in mind, customers can use demand response with the same, or even more, spontaneity that they board fixed route buses.

In order to maintain this practical distinction, the word "microtransit" will be used in this report to describe demand response service that uses modern technology, including cell phone apps, to offer trips an hour or less after booking. The word "dial-a-ride" will be used to describe older demand response services that rely on advance bookings and predetermined daily manifests.

# **Microtransit Case Studies**

#### **Service Characteristics Overview**

Table 1 shows an overview of the service characteristics collected from different agency interviews. Not every statistic is monitored and/or shared by every agency.

Service	Zone Size (mi²)	Average Trip Length (mi)	Average Trip Duration (min)	Average Wait Time (min)	Boardings per Service Hour	Boardings per Day	Service Hours
SmaRT	10-15	2-3		30	2.2*	600	Mon-Fri; hours vary by zone, as early as 6 am and as late as 10 pm
Via to Transit	2-20*	1.57*	7.49*	8.77*	N/A	N/A	Varies by zone; longest span is 5 am to 1 am Mon- Sat, shortest 8 am to 6 pm Mon-Sun
GoLink	Up to 23 (ideally, 6)	N/A	N/A	10-15	N/A	N/A	5-8 pm; Mon-Fri or Mo-Sa depending on zone
Flex Connect	5	N/A	N/A	N/A	N/A	N/A	5:30 am to 6:30 pm, Mon-Fri
Dart On Demand	4-6*	N/A	13	10	N/A	N/A	6 am to 6:30 pm; Mon-Fri
SW Prime	Very large	5	9.4	18.6	2.29	378	5:30 am to 7 pm Mon-Fri; 6 am to 5:30 pm Sat

 Table 1. Microtransit Service Design and Performance Characteristics

Source: Agency interviews or (where asterisked) previously published reports

### **SmaRT (Sacramento Regional Transit District)**

#### Source

A planner at the Sacramento Regional Transit District (SacRT) was interviewed for this report. Additional information was obtained from TCRP Synthesis 141 which included a case study of SmaRT, the ride-share service of SacRT.

#### **History and Goals**

The pilot was opportunistic. A sales tax ordinance included a small purpose-restricted pot for a "neighborhood shuttle" service. Over time the unspent amount built up to \$12 million. SacRT proposed to use the fund for a microtransit pilot and found buy-in from elected officials and the general public.

Additionally, the agency was looking to update its image. In a recent public poll, the transit agency was viewed more positively than the city or county. SmaRT was one of two popular moves, the other being the free rides for students introduced in late 2019. A simultaneous route restructure in 2019 was unpopular with the general public.

The first pilot zone replaced a general public dial-a-ride service in the city of Citrus Heights (population about 86,000). SacRT's operating goal was to see the new microtransit service carry more passengers than the dial-a-ride, and this goal was achieved. The agency has since expanded to 10 more zones.

#### **Service Design**

SacRT distinguishes between curb-to-curb service (provided in its original Citrus Heights zone) and corner-to-corner service, provided in all other zones, in which customers are asked to walk to a "virtual bus stop" close to their location. Corner-to-corner service allows for more efficient routing. Trips must start and end within the same zone. The SacRT planner believes that this helps to avoid competition with fixed route service. Within zones, the average trip length is two to three miles, significantly shorter than the average paratransit trip length of eight miles. The total size of each zone ranges from 10 to 15 square miles, putting Sacramento at the upper end of the microtransit size range.

The service operates on weekdays during the same timeframe as fixed route, which can be as early as 6 am and as late as 10 pm (the exact hours depend on the zone). The agency does not yet have data to show the extent to which microtransit trips are connecting to fixed routes. The SacRT planner remarked that he thought it would be better to run when fixed route service ends.

There is quite a bit of variation in wait times. In the early days of the pilot, wait times could be up to 45 minutes; that frustrated riders and resulted in no-shows/cancellations. SacRT ended up instructing the system to decline bookings if it could not guarantee 45 minutes or less. Wait times are shorter in the downtown Sacramento zone – but there the microtransit service is competing with a more productive fixed route.

#### **Labor and Contracting**

SacRT operates its own service using internal employees and an agency fleet of cutaway buses. There are 30 operators and one superintendent to oversees all the smaller services at SacRT. Four to five supervisors do radio control, and one director – officially covering all non-fixed transit – spends 75 percent of his time on SmaRT.

The drivers are unionized; however, the agency did create a lower-pay job classification that made hiring 30 more drivers more affordable, after negotiations with the union. The SacRT planner observed there was another tradeoff: the agency loses economies of scale when it has a job classification with a small pool. There are 500 fixed route operators, and their marginal benefits are more cost-effective to provide.

Customer service agents take trip bookings by phone and enter them into the app. In September 2021, 3,400 of all trips were booked by an agent, and 7,800 were booked through the app. The app is absolutely essential to getting all booking needs met. At times, the limiting factor on service availability is not operator count but reservationist time. The agency considers it important to offer this option, however, as many senior citizens use the service.

#### **Fares**

The fare was, and continues to be, set at the same level as fixed route, chiefly for simplicity's sake, although that removes incentives for individuals to take fixed route services.

#### **Data and Technology**

The booking app and backend software for SmaRT is provided by a technology vendor offering software-as-a-service. SacRT has contracted with two different vendors in the course of its microtransit pilot. Its first contract was with TransLoc. When the pilot was expanded, the decision was made to conduct an open bidding process, which was won by Via.

#### **Ridership Outcomes**

The Citrus Heights dial-a-ride service had carried about 30 passengers a day, with two boardings per revenue hour. The new pilot counted up to four boardings per revenue hour. The SacRT planner does not know how much of that is thanks to the software and how much of that is thanks to the enlarged budget. Many changes took place over time: SacRT went from serving that area with one bus, to two, to three, to four, adding up to 60 revenue hours per day. The size of the zone tripled. The routing algorithm probably did help with productivity; on the other hand, the agency received complaints about circuitous routing for productivity's sake.

There are currently about 600 boardings a day across all eleven zones. It seems to suit occasional users best. The median number of boardings for an individual rider is five per month, amounting to once or twice every other week. The SacRT planner thinks that offering this service in more suburban settings is likely introducing new riders to transit.

#### Cost

In terms of cost per revenue hour, operating SmaRT costs about 85 percent of fixed route service, which is \$120 (direct) and \$150 (fully allocated). Operator overhead for microtransit is lower than the contracted services in SmaRt's portfolio.

The SacRT planner said that the service spirals over budget quite a bit, and the agency has had difficulty balancing the desire to expand service to meet demand with the need to stay on a budget.

The pilot is funded by the sales tax mentioned earlier. However, with household incomes affected by the pandemic, the public is not voting for sales taxes, so the future of this pilot is in question.

#### **Lessons Learned and Advice for Omaha**

When asked for advice, the SacRT planner suggested thinking about how the agency wants to manage advance booking and subscription trips. He recommended querying technology providers directly about their capabilities in this regard. SmaRT is not set up to book in advance, and that has generated some complaints.

He also said that new technology does not change the underlying use case. Microtransit as a fad is making agencies temporarily forget the fundamentals. And, he warned, once an agency introduces this service, it is hard to get rid of if it is popular. That could be a problem if it is competing with fixed routes.

#### Via to Transit (King County Metro and Sound Transit)

#### Source

A planner at King County Metro was interviewed for this report. In addition, the FTA Sandbox report was used for background and statistics.

#### **History and Goals**

The Puget Sound region contains an extensive multimodal, multi-agency transit network. The Via to Transit project was created to offer first mile/last mile service connected to light rail stations in underserved neighborhoods. Two agencies, King County Metro and Sound Transit, partnered with Los Angeles Metro to apply for an FTA Sandbox grant that funded a good portion of the pilot work in both regions.

The Puget Sound pilot had two goals: To find out whether partnering with TNCs could be done at all, and to offer first mile/last mile service to disadvantaged communities. Broadly speaking, it succeeded in both those goals, with the caveat that Via proved to be the only TNC able to meet agency requirements.

#### **Service Design**

The Puget Sound agencies looked to serve equity priority areas – those with a high percentage of people with low incomes, people of color, people with low English proficiency, people with disabilities, immigrants, and refugees. From those areas, they identified zones with densities of four to 18 residents per acre and transit hubs with a high number of trips. Previous efforts to feed into low-frequency transit stops had not been successful.

There was not a rule of thumb on the size of a particular zone. Natural boundaries, such as water, and budget helped define the service areas. The King County Metro planner remarked that contiguous service areas seemed to promote efficiency by allowing the same vehicles to circulate across service areas.

Service is entirely curb-to-curb.

#### **Labor and Contracting**

Vehicles are owned and operated by Via and double-branded with Via's logo and King County Metro logo. The pilot tested two different labor models:

- Independent contractors
- Drivers are King County Metro employees

In both cases, offering a living wage was paramount. With contracted drivers, the agencies worked with Via to look at what hourly expenses are for drivers and then added those expenses on to the minimum wage. Via drivers are responsible for paying for their vehicle rental, fuel, self-employment taxes, etc.

The independent contractor model is still cheaper than an employee model. The hourly rate is lower, and Via can more finely tune its supply to meet demand. Rather than designated shifts that are difficult to change, drivers sign up for shifts on a weekly basis.

Via claims that it attracts drivers who like the flexibility of this labor model, which was not independently verified. This model also requires careful consideration of issues such as the payment of deadhead time. Anecdotally, the planner said that she had heard drivers prefer this to Uber/Lyft because they are paid an hourly rate. She has also heard that they prefer it to getting a commercial driving license and operating large buses.

#### **Fares**

Via to Transit charges the same fare as fixed route bus service. The payment options include electronic fare media and credit/debit cards, but not cash. This is more limited than fixed route buses, which do offer cash as an option. Electronic fare cards can be loaded with cash off-board.

#### **Data and Technology**

Data access was critically important to the Puget Sound agencies. They have been able to get access to all the data they need. For example, they were able to see from Via-provided data that the ratio of passenger miles traveled to vehicle miles traveled was very low. That led them both to make small changes to improve the ratio and to prioritize low-emission vehicles as mitigation.

#### **Public Outreach**

The King County Metro planner said that continued marketing is important. They have seen direct correlations between marketing efforts and ridership. It also takes extra time and effort to reach priority populations.

#### **Environmental Justice and Equity**

Equity was a top priority in every aspect of service design. This includes the original choice of zones, but it also includes a change to the nature of the service provided. Originally Via to Transit was intended to be purely first mile/last mile service. However, in response to feedback from the public, new zones were recently added that allowed non-transit destinations considered to be important community hubs.

#### **Ridership Outcomes**

Pre-pandemic, the most productive zone carried six to seven riders per hour. However, the planner said that this level of efficiency was seen in higher-density areas, which is not necessarily where microtransit services belong.

The only data available on ridership demographics comes from a survey conducted eight months into the pilot, which the planner considers very early. This survey indicated that thus far, the service had been disproportionately used by people who were not in the priority populations, highlighting the need to have continued marketing and community engagement.

When asked about the data showing youth are using the service at higher rates, the planner said she thought it was because the technology is familiar to them and the social media marketing reaches them easily.

#### Cost

The Puget Sound agencies are currently working on developing systematic ways of measuring cost per hour, trying to do it as closely in line with fixed route transit as possible. The planner suggested that an appropriate hourly operating cost might be \$65 for the independent contractor model and \$80 for the employee model (excluding in-house staff time).

The planner said she has not been able to find information on what an appropriate cost per ride would be. She thinks that, especially in equity areas, a relatively high cost per ride can be tolerated. If the cost becomes too low, that is a sign that the service is operating in a high-density area that might be better served by buses. She does not believe that a single goal regardless of service area would be useful. She said that she has heard some agencies target a lower cost per ride than paratransit, and she does not think that is low enough.

#### **Lessons Learned and Advice for Omaha**

When asked for advice, the planner said: "We're one of the agencies that have done the most in this space and we're still trying to learn more about when these are successful, what success means, to what extent we should be deploying more of these." She also said that she had yet to hear of an agency saving money by introducing microtransit.

### **GoLink (Dallas Area Rapid Transit)**

#### Source

A planner at DART was interviewed for this report. A Mobility on Demand Sandbox Demonstration report<sup>7</sup> was also reviewed.

#### **History and Goals**

DART has had general public demand response since 2000. It was originally structured as a service of last resort in areas that could not support fixed-route service.

The GoLink program is both an expansion and an improvement on the original demand response. It originally sought to improve transit in areas that do not support fixed route and to add first mile/last mile options. The public response has been largely positive so far.

GoLink is about to be expanded from 17 zones to 30, concurrent with a complete redesign of the fixed route network. GoLink will fill in both pre-existing gaps and new gaps left by the streamlining of fixed route service. The overarching goal is to provide ridership-based service rather than coverage-based.

#### Service Design

The first zone was a very limited test case – midday service only from Toyota headquarters in Plano to a nearby shopping and dining neighborhood in the Legacy West area. Some factors in this choice were the density of the employee base, the lack of existing fixed route service, and convenient freeway access. The reason it was so limited is that they had no idea whether it would be overwhelmed by demand or completely unused. As it turned out, the bigger problem was the technology: there were hiccups with the routing algorithm and tablet hardware.

With initial kinks worked out, DART added a zone that served all of Legacy West, replaced a more limited demand response service in North Central Plano, and (a few months later) added a zone in far north Plano, a high-income, low-density area with no prior bus service. The goal with this expansion was to get commuters to rail stations and park-and-rides.

Now, GoLink serves three different markets: suburban low-density residential; suburban commercial industrial; and high-income areas in the inner city where most transit trips are commutes by domestic and retail workers. Travel is restricted to within-zone or to an anchor point (usually rail, sometimes bus station). Most anchor points have fixed route frequencies of 15 minutes peak, 20 base, 21 hours a day. The anchor point is not necessarily adjacent to the zone. Service is entirely curb-to-curb.

<sup>&</sup>lt;sup>7</sup> https://www.transit.dot.gov/sites/fta.dot.gov/files/2021-06/FTA0195-Research-Report-Summary.pdf

The target zone size is six square miles, according to the planner interviewed. Some zones are as much as 23 square miles, but he does not recommend this, as it leads to very long trips that eat up resources.

Unlike the King County Metro Planner, he does not believe that contiguous zones provide more productivity than islands. In DART's experience, the individual characteristics of each zone determine ridership, not their connectivity to each other. Vehicles can be shared across zones, and the number of vehicles circulating in a given zone is up to three, depending on demand.

The target wait time is less than 15 minutes, and this has been achieved. Actual wait times are under 15 minutes and all but the largest zones are averaging 10 minutes.

#### **Labor and Contracting**

GoLink uses a hybrid delivery model. Directly operated vehicles are contracted out using a broker, MV Transportation. Multiple subcontractors operate the vehicles. The same brokerage model is used for paratransit. Reservationists are outsourced as well.

In order to meet surging demand, DART also soon began to subsidize rides taken on UberPool within its zones. The advantage of using UberPool is its lower cost per ride. The subsidy per rider for UberPool was \$5 versus \$18 for directly operated vehicles. DART therefore seeks to maximize the proportion of rides using this service; before the pandemic, which was about a third of all rides. (Uber suspended its pooling service during the pandemic and only recently re-introduced it.)

The disadvantage of UberPool is its lack of drug and alcohol testing. Therefore, offering directly operated service as an option keeps GoLink compliant with FTA requirements.

In addition to operations and dispatch, significant administrative work went into GoLink over the years. Service development was led by a working group of 25 people representing every department at the agency. (To give a sense of scale, DART as an agency has approximately 3,200 employees, not including contractors.) The working group met weekly for about two years. By now, GoLink has been integrated into administrative work and requires only occasional dedicated meetings.

#### **Fares**

The original demand response service used to charge a premium over the fixed-route fare. The DART planner believes this was a mistake because it generated resistance to proposals that would have changed an area from fixed route to demand response.

Now, DART charges one universal fare for light rail, bus, and GoLink. It is a time-based fare: one purchase means a customer can use any service with any number of transfers in any direction for a designated time period. The planner emphasized that GoLink is a core part of the network, not something special.

Fare payment has been affected by the pandemic. DART chose to transition, likely permanently, to contactless fare payments only, using the smartphone app or TapCards. TapCards can be obtained and reloaded at about 800 outlets.

#### **Data and Technology**

GoLink's scheduling software is provided by Spare Labs. DART started with a different vendor, but that service did not work as well. The vehicle operators were consulted to make sure the technology was working for them, and their feedback was one of the reasons for the switch to Spare Labs as a tech vendor.

DART is unusual in developing its own mobile app, GoPass, which manages fare payment, scheduling, and customer information. DART owns all of the data for directly operated trips. About two-thirds of users use the GoPass app.

Contracting with Uber presents some complications. Uber provides more basic reports than the app (although sufficient for DART's purposes so far). Currently, the GoPass app cannot book UberPool rides; it can only pass the customer over to the Uber app to schedule a trip. Uber's system is programmed with GoLink zones and rates so that any trip within a GoLink zone has the GoLink fare applied and is counted toward ridership. DART is working on adding Uber booking functionality to GoPass next year.

#### **Public Outreach**

Marketing efforts with the initial pilot and now with the network redesign were/are very heavy. For commercial and employment zones, DART approached large employers and TMAs did outreach through them. In residential zones, they put people on buses to talk to customers and explain how GoLink would work.

The planner said one-on-one interaction is a critical part of being able to successfully transition. DART used a combination of staff and contracted help to do this.

Feedback has been largely supportive; however, one major issue is the mismatch in operating hours between GoLink and fixed route. DART has yet to decide whether to expand GoLink hours.

#### **Environmental Justice and Equity**

DART made sure to include GoLink zones in higher minority and lower income neighborhoods as it expanded from the initial pilot. The old on-call service had somewhat neglected these neighborhoods.

Equity concerns have been raised about the switch to contactless fare payment. The planner thinks it is likely that DART will respond to this by tinkering with its contactless payment options rather than returning to cash payments.

#### **Ridership Outcomes**

The previous dial-a-ride service rarely averaged above 2.5 passengers per hour, although it did reach as high as six to seven passengers per hour. For budget reasons, it was limited to one or two vehicles per zone. High demand led to high wait times.

In the early years of microtransit, riders per hour averaged 2.5 with directly operated GoLink vehicles. In 2019 the Legacy West zone saw 131 passengers on an average weekday, compared to 42

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on the discontinued fixed route in that area. In the North Central Plano zone, where GoLink replaced dial-a-ride, the average weekday ridership went from 71 to 118. The third zone, where no service had existed, averaged 43.

In the early months of the first three GoLink zones, ridership was initially manageable but became problematic, with wait times beyond agency standards. DART's response was to contract with UberPool. UberPool averaged seven riders per hour. Introducing UberPool increased the average weekday ridership in those zones to 142, 146, and 71, respectively.

The planner thinks that three riders per hour is an appropriate estimate for the current service, but the mix of directly operated and UberPool vehicles makes it hard to measure. As a metric, he prefers subsidy per passenger.

#### Cost

Subsidy per passenger averaged \$18 on GoLink vehicles and \$5 in UberPool (pre-pandemic). The pre-pandemic goal was to get average overall subsidy down to \$11-12. The pandemic has made that unrealistic. A new, realistic long-term goal has not been set.

#### **Lessons Learned and Advice for Omaha**

The planner advised understanding the complexity agencies will have to deal with to make this work. It is not simply a matter of contracting with a provider, it has to be an integrated effort by the entire agency and all its contractors.

# Flex Connect and DART On Demand (Des Moines Area Regional Transit Authority)

#### **History and Goals**

DART has piloted two different services. The first, a single-zone TNC partnership, launched in 2019 under the name "Flex Connect." The second, a single-zone service operated in-house, launched in November 2021 as "DART On Demand."

The goal of each pilot was to test a potentially more effective replacement for existing suburban service. Flex Connect replaced a low-performing deviated fixed route in Urbandale, and DART On Demand replaced the existing dial-a-ride service in Ankeny.

In general terms, the services are considered successful if riders find the new service more convenient than the old. Flex Connect launched pre-pandemic and achieved an increase in ridership in the first six months of operation. DART on Demand launched well into the pandemic and its early weeks saw average ridership about three times higher than the service it replaced.

However, since the pandemic changed ridership patterns drastically, DART no longer has specific trip goals for either service. The services will be maintained until a "new normal" is established, and then they will be re-evaluated.

#### **Service Design**

Flex Connect operates in a single zone, five miles square, serving the same suburban neighborhood previously served by Route 73. It offers the customer's choice of a fully subsidized ride on Uber, Yellow Cab, or a DART vehicle. To qualify for the subsidy, trips must start or end at one of three bus stops located at a mall, an ice arena, and a church. The service operates from 5:30 a.m. to 6:30 p.m. Monday through Friday.

DART chose its On Demand service areas by identifying fixed routes with productivity of fewer than five passengers an hour, as its research had established that as the high end of the range for demand-response. In its first few weeks of operation, average wait times were about 10 minutes, and average ride durations were about 13 minutes.

The vehicles used for DART On Demand are 29-foot, 18-passenger vans left over from discontinued deviated fixed route services. Each van has three spaces for a mobility device. The vehicles have a unique sign code but are not otherwise branded.

The planner said that he would be interested to see if there are rules of thumb to be applied in selecting the boundaries and resources for microtransit districts. He said the next step for DART is to think about all of its services and decide what warrants going up a level to fixed route or down a level to microtransit.

#### **Labor and Contracting**

Flex Connect has a contract with Uber and Yellow Cab in which DART fully subsidizes the cost of trips taken. Directly operated trips on Flex Connect and DART On Demand are provided by the employees who also drive paratransit and dial-a-ride vehicles. Finding enough drivers has been a challenge, and a great deal of work is done to maintain enough operators to run the demand response services. This workforce is currently transitioning out of union representation, so many aspects of labor are likely to change in the near future.

Adding on-demand service has led to a need for more dedicated operator time. In the dial-a-ride areas, drivers whose days are planned ahead of time can be assigned both paratransit and general public trips. With the need to have microtransit resourced all day, this is no longer possible.

DART is working with a consultant to reevaluate and restructure its service portfolio. The agency has numerous services, including fixed route, paratransit, contracted trips for the county, and more. The restructuring will likely create a dedicated group for demand response service products.

#### **Fares**

Both the TNC partnership and the new DART On Demand are zero-fare services. In the case of the TNC partnership, this is due to the difficulty of collecting fare payments via a third party.

In the case of DART On Demand, the challenge is policy-related rather than technical. Internal conversations at the agency have not yet determined whether the service should be in line with the fixed route it replaced, or whether it should charge a premium because it costs more to operate. Questions about equity and community willingness to pay also come into play.

#### **Public Outreach**

DART staff visited the main stop of the existing service starting a week or two before each pilot went live. They gave the operator information to share with customers; helped people through software steps and answered questions. Facebook and search engine ads also ran during the launch.

The DART planner recommends thoroughly explaining microtransit to customers. He believed that if the public had had a better understanding of the new service, they could have offered more helpful feedback.

#### **Environmental Justice and Equity**

The planner commented that there have been conversations with the FTA about applying its equity guidance, which is designed for fixed route service, to the new microtransit offerings. He said that DART will need some time to work through equity evaluations.

#### **Ridership Outcomes**

In the first six months of Flex Connect, an average 46 trips per week were taken, almost all of them on Uber. Narrower metrics such as riders per hour are difficult to quantify using the available data. There has been an uptick in the number of refugees using the service, as many are housed in the service area.

Ridership statistics are not yet available from DART On Demand.

#### Cost

The average cost of Flex Connect trips was \$7.78. Cost figures for DART On Demand are not yet available. Both microtransit pilots were funded using non-dedicated resources. The only new purchase required for DART On Demand was a pair of iPads for drivers.

The planner noted that DART is less concerned with efficiency or cost than in making sure that its participating communities see value in the service provided.

#### **Lessons Learned and Advice for Omaha**

The planner commented that identifying a suburb as unsuited to fixed route transit can become a self-fulfilling prophecy. He also remarked that there are opportunities to examine land use in suburbs that are assumed to consist of 50-year-old tract homes, when in fact they have apartment buildings as well.

#### SW Prime (SouthWest Transit)

#### Source

Sources for this report included an interview with a SouthWest Transit planner and a conference presentation on microtransit.

#### **History and Goals**

For about a decade starting in the late nineties, SouthWest Transit experienced major growth in its express route markets. In response to the growth, it tried out a circulator and deviated fixed route but those did not work. In 2014-2015, it introduced demand response in Eden Prairie. The plan was to trial in Eden Prairie and expand when the details had been worked out. The service has since been expanded to a larger area and some outside connection points.

#### **Service Design**

The choice of service area was political. SouthWest Transit chose a dense city (Eden Prairie) and introduced service within months of starting the conversation.

SW Prime started with five vehicles for seven square miles. This may not be necessary with the right software; Spare Labs has a way of balancing vehicles automatically. The service area has now been expanded to Chanhassen, Chaska, Carver, and Victoria, with additional origin/destination options in Shakopee, the Minneapolis-St. Paul Airport, and the Mall of America. Currently, at peak hours, there are 14 cutaway buses in circulation. To keep them balanced, there is a forced transfer point in the middle of the service area. Service is entirely curb-to-curb.

SW Transit monitors the number of passengers per service hour and the mean wait time. Its target is more than two passengers per service hour and mean wait times of no more than 20 minutes.

The planner believes that the large service area contributes to SW Prime's success. With more area comes more ridership potential. He has heard from other agencies that their service areas were too narrow and specific, and their pilots did not perform as hoped as a result.

Service hours are daytime only, partly in order to capture peak ridership and partly because there are not resources or desire for a third driver shift. The span of service is Monday-Friday 5:30 AM to 7 PM and Saturday 6 AM to 5:30 PM.

Pre-scheduled rides are not allowed within the service area, but encouraged for longer trips, e.g., to the Mall of America and airport. These newer destinations along I-494 are under consideration for fixed route service in the long term.

The guidelines used were to consider on-demand service for outlying, suburban areas, and industrial parks, as well as transit routes below 15 passengers per hour. If service demand reaches 6-7 passengers per hour, consider reinstating fixed route.

SouthWest Transit considers wait times a good measure of success. If they go up, the system is operating beyond capacity. The average wait time after requesting a ride for SW Prime is 18.6 minutes.

#### **Labor and Contracting**

SW Prime uses the same contractor that operates express routes, First Transit. SouthWest Transit owns the vehicles and First Transit operates them on a contract basis. They started with one dispatcher. When rides reached more than 300 a day, they added a peak-hour reservationist.

#### **Fares**

Fares were set by comparing with demand-response in the region. A regular adult base fare started at \$4 and increased to \$5. Long distance trips and out of service area trips that remove vehicles from being available in the primary service for an extended period have higher fares.

Ride booking and payment are currently independent of fixed route. Riders transferring to fixed route can flash the electronic fare card used on fixed route (GoTo) and then pay later on the express bus, but there is not a mechanism for deducting GoTo value on SW Prime.

#### **Data and Technology**

SouthWest Transit switched to Spare Labs two years ago. The main difference was algorithm flexibility: Ridecell automatically assigns trips, and Spare Labs' software allows dispatchers to assign vehicles. The flexibility allows SW Transit to prioritize the rider experience by minimizing batching and wait times. When the pandemic hit, they were able to instantly provide only one-to-one rides.

The Spare Labs system also does better at balancing scheduled and on-demand rides. With SW Transit's original software provided (since discontinued), they had to stop offering scheduled rides because on-demand bookings would supersede the scheduled rides and make them late.

#### **Public Outreach**

The planner said that marketing is an "endless loop." There is a dedicated staff member whose entire job is public outreach.

#### **Environmental Justice and Equity**

Equity concerns that the agency monitors include parity between wait times for lift-equipped vehicles and non-lift-equipped. The planner said that the fare payment service was designed for equity. Multiple fare payment options allow the unbanked to use the service. There are cash fareboxes on the vehicle.

#### **Ridership Outcomes**

Pre-pandemic, the service was running 378 daily rides. The majority of customers live within the SW Prime service area. Commutes into Eden Prairie are a small percentage of ridership. This has always been the case for express routes as well.

#### Cost

Subsidy per passenger is \$8.63 on average. The planner said that if passenger counts and wait time targets are met, the subsidy per passenger falls into an acceptable range of \$8 to \$11.

Vehicles were initially repurposed cutaways already in possession; then used grant dollars to purchase additional vehicles as the service grew. The fleet is currently a mix of cutaways, vans, and SUVs.

#### **Lessons Learned and Advice for Omaha**

The planner advised, "Be willing to fail." He also advised that agencies be willing to make changes rapidly and often. Vehicle assignments, scheduling, batching, and wait times can all be adjusted. Most of the changes are internal trial and error, and being willing to take a trial and error approach has paid off more than it has not.

# **Microtransit Zone Maps**



Figure 2. Transit Suitability Scoring of Potential Microtransit Zones

Figure 3. Household Density of Potential Microtransit Zones





Figure 4. Employment Density of Potential Microtransit Zones



Figure 5. Minority Population of Potential Microtransit Zones



