

## **Spare Labs Summary of Study & Recommendations**

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### Introduction

The McKinney Urban Transit District (MUTD) and the Denton County Transportation Authority (DCTA) provide Collin County Transit (CCT), an on-demand bus and subsidized taxi voucher program service. Participating cities include Celina, Lowry Crossing, McKinney, Melissa, Princeton and Prosper (insert map). Target demographic for this service are residents who are 65 years of age or older, residents with disabilities, and/or residents with low-income.

Under the new proposed fare structure, trips would start and end anywhere in the six participant cities for a set fare (\$3 for trips starting and ending within the six cities, and \$5 for trips ending in the wider county. Trips must originate within the MUTD cities. We asked Spare to also consider trips that start or end at the Parker Road Light Rail Station in the City of Plano, to improve connection with the greater Dallas-Fort Worth region via the Dallas Area Rapid Transit (DART) system.

### Background/Problem

For a person living in McKinney or the surrounding areas of the MUTD, getting around without a car or on short notice can be difficult. The CCT system is only available to certain groups of residents, leaving unqualified residents looking to private companies to fulfill their transit needs. CCT riders use an outdated system, where they must call a hotline number to schedule a ride preferably a day but minimum two hours in advance. CCT riders are limited by service hours and cannot access the service after 6PM on

weekdays or weekends. Riders with disabilities have minimal options for wheelchair accessible vehicles, and the rides for these vehicles must be placed well in advance to ensure access to an accessible vehicle. The variable pricing system confuses riders and deters residents who on a fixed income. The scheduling system is also administratively outdated. The dial-a-ride scheduling system is antiquated and limits staff's ability to aggregate transit data.

Due to the suburban nature of Collin County, the CCT system tends to be inefficient and expensive. The lack of data makes it difficult to conduct long-term transit planning. What can CCT do to increase efficiency and accessibility while innovating for the future? We had Spare Labs review the service and provide their recommendations for moving CCT forward.

### Solution

As part of their simulations, Spare predicted the new \$3 flat fare would result in 270 weekly trips (45 trips on average assuming a 6-day-a-week service), which represents an increase of roughly 30% compared with the previous variable-fare service.

Spare reviewed CCT data and determined there is high potential for micro-transit service in the zone with the integration of a software and data aggregation platform. The Spare team then provided a few considerations for the board to grow CCT long term:

- 1) Considerations for pooling in higher density areas with populations more open to public transit,
- 2) considerations for extending hours of service,
- 3) and considerations for right-sizing CCT's vehicle fleet.

In addition to these considerations, Spare created a four-phase path for CCT success where the service could take on pooling, move to multiple operators on a mixed supply model, and eventually commingle service with NEMT, para-transit, and potentially even school operators.

CCT is seeking to maintain the same service area and coverage while improving the efficiency of the system and reducing costs. This is most easily achieved by running the system on a sophisticated trip matching and dispatching on-demand platform. Though Spare Labs provided this report and provides this software product there are a multitude of other companies that offer this service. When investing in any routing software, Spare platform or otherwise, it is necessary to look for administrative data collection and end-user app capability. This would give staff more data to better aggregate and plan for the future of transit in the McKinney Urbanized Area. This platform would also have end-user capability, giving riders the freedom to place and track their ride from an app. Both DCTA and DART are already contracted with Spare Labs for different projects in their respective regions.

Pooling, the concept of riders going to different destinations in the same vehicle, is akin to traditional cab services but optimizes trips based on pickup and destination locations. The cost benefit in pooling on a software platform comes from the decrease in vehicle hours, deadhead vehicle hours, and administrative staff hours. Pooling transit riders is possible in the MUTD, even though the area population is not particularly dense. Spare estimated a range between 48% and 64% of rides could realistically be pooled under the existing door-to-door model. CCT would likely see higher pooling ratios in higher density areas.

Spare simulated low, medium, and high demand with low, medium, and high number of vehicles on a door to door and a stop to stop service. Spare also simulated those situations under the current service window, 6a-6p, and an extended service window, from 6a-12p. They found that low average waiting times

and high efficiency are achievable with relatively few vehicles under the current service window, at a low-cost option that varies from \$520,000 to \$870,000 per year depending on actual demand. They found that these same metrics are achieved under an extended service window with a variable cost of \$780,000 to \$1,300,000 per year based on actual demand.

Spare found that a door-to-door service would offer the best increase in performance per additional dollar spent. A stop-to-stop model would reduce waiting times by an average of nine minutes in a pooled micro-transit system, but riders would need to walk in an area that is not particularly “walkable” and wait in the often extreme Texas heat. The Spare team found that although a stop-to-stop service may not be feasible based on area density and temperature/landscape, it would offer the best value for money.

Spare recognized that non-dedicated vehicles cost CCT more to operate than dedicated vehicles. (p22) Annual and per-trip costs would ultimately decrease if CCT were to run the entire service solely using dedicated vehicles. This is because running a dedicated vehicle at a cost of \$50 per hour is cheaper than employing a taxi to serve long (10–15 mile) trips at \$2.40 per mile.

One of the easiest recommendations from the Spare team that CCT can implement ASAP is to invest in right-size dedicated vehicles for the area. Once CCT dedicated vehicles are purchased, CCT could invest in additional dedicated operators for those additional dedicated vehicles and only use third party taxi operators as overflow. These changes can help lower operational costs, resulting in significant cost savings over the existing sub-contractor model. using a dedicated fleet to meet the majority of demand could result in savings of \$7 per trip and \$140,000 annually under a medium-demand, low-cost scenario.

Case Studies: Where has micro-transit software been able to overhaul systems and be helpful in regions similar to ours?

**EMT Palma, Mallorca, Spain, Spare Labs:**

EMT Palma, a mid-size transit agency, overhauled their transit system within 48 hours and deployed the Spare software for on-demand service. Because of Mallorca's bustling tourist economy, the fixed route bus service was not adequately used for most of the year. To combat this, Mallorca deployed the Spare platform and replaced existing fixed-route services that have experienced low-ridership in recent months due to the COVID-19 pandemic with three new, connected on-demand zones. In this mixed supply on-demand model, made possible by Spare's innovative technology Spare Fleets, EMT deploys its own dedicated vehicles and drivers and complements them with non-dedicated taxis. By involving the local taxi driver network, EMT seeks to ensure an efficient and timely response for all transit users who have requested a trip from a mobile app or a telephone call.

**Belleville Transit, Belleville, Ontario, Pantonium:**

In September 2018, Belleville launched a new service in partnership with Toronto-based technology company Pantonium. The service was designed to let riders order buses, on-demand, to take them to and from any bus stop. The transit staff in Belleville found that automation enables cheaper service scaling; rather than hiring more and more dispatchers the system only needs more computational power to grow. Since implementation, ridership has increased by 300% and per-vehicle mileage has decreased by 30%. The routing software helped them innovate, implementing a on demand software platform over their existing operating framework and further optimizing the network for riders.

**STAR Transit, Kaufman County, Texas, Spare Labs:**

STAR Transit is a public bus transportation service offering bus transportation in Kaufman County, Rockwall County, Mesquite, Balch Springs, Seagoville, Hutchins and DeSoto. Anyone residing in the Service Area may ride one of STAR Transit's 65 vehicles. In November 2019, the agency partnered with Spare Labs and launched STARNow App—a micro-transit service in Mesquite & Terrell. Riders of the service can book trips on-demand and a STARNow vehicle will be dispatched using Spare's advanced algorithms to pick them up in real time. STARNow will then pool other passengers going in a similar direction to maximize the efficiency of the service, while providing an exceptional rider experience for all people onboard. Using the service, riders receive a quick and efficient shared ride to their destination of choice, without any lengthy detour or an inconvenient schedule.

**Arlington On-Demand, Arlington, Texas, VIA:**

In September 2017, Arlington City Council opted to replace a low-volume fixed-route bus, the Metro Arlington Xpress (MAX), with Via's comprehensive micro-transit solution. Prompted by the University of Texas at Arlington, Dallas Area Rapid Transit (DART) launched MAX service in August 2013. The City was committed to improving mobility in Arlington but had no dedicated vehicles or operators, a limited budget, and required an end-to-end service. In December 2017, Via launched Arlington On-Demand using a fleet of 10 custom-branded Mercedes Metris vans. Customers book rides using a localized app or by phone, and can pay with a credit or debit card, or a prepaid card for unbanked users. Through an integration with the city paratransit system, Handitran, Arlington On-Demand is accessible to riders of all physical abilities. Customers pay a flat \$3 fare per person per trip to travel anywhere within the broad service zone, which includes the University of Texas at Arlington, AT&T Stadium, and the downtown and entertainment districts. The service also provides a convenient first/last mile option, which accounts for 2/3 of the trips. The zone includes CentrePort Station, connecting riders to DFW airport and employment centers in the Dallas-Fort Worth area via the Trinity Railway Express. Customers also have the option to

purchase a ViaPass for \$15 per week, which covers up to four trips per day. The service operates from 6am to 9pm Monday through Friday, and from 9am to 9pm on Saturday. Arlington has emerged as the first city to run solely on micro-transit, delivering over 120,000 rides with an approval rate of over 97 percent. As a testament to the success of the project, the City Council renewed and expanded Via's contract in December 2018, which includes a significantly larger zone and eight more vehicles.

### **CapMetro, Austin, Texas, VIA:**

After years of experimentation, Austin's demand-response service, Pickup, is proving to be a winning horse in the race. What started as a small paratransit-focused pilot in April 2017 is now a vast network of six operational zones across the Austin metro area, providing flexible on-demand public transportation in urban, suburban, and rural neighborhoods. Pickup ridership has already bounced back to 50% of what it was pre-COVID, a rate of return much higher than the city's traditional fixed-route transit. Using the Pickup app (iOS and Android), passengers can hail an on-demand ride anywhere within each service zone, with service addressing three use cases depending on the region: 1. First-and-last mile connections to popular rail stations and bus stops. 2. Eliminating transit deserts by offering Pickup where traditional forms of public transportation aren't available. 3. Replacing fixed-route bus routes that weren't performing.

### **Conclusion**

The system as presently designed is inefficient but can be optimized starting with a few reasonable changes. Implementing a software that allows for in-app trip planning for the rider and administrative scheduling and data collection for the service provider is critical to the long-term health and success of CCT. Purchasing additional fleet vehicles and reducing the level of reliance on third party contractors like Irving Holdings is key to saving money while maintaining a high level of service in the region. Extended hours of service could benefit riders and increase accessibility of service-- of course, the MUTD Board will

need to assess if the additional cost warrants the expansion of service hours. Pooling service could increase efficiency of rides and save CCT money in the long term. Implementing a stop-to-stop service in this region would result in significant average time savings of up to nine minutes, and would significantly improve pooling ratios, at no extra cost to CCT. Considerations regarding feasibility in the region is discussed above, so it is unlikely that CCT diverges from the door-to-door model that is currently employed.