THE LTD CONNECTOR

Evaluating the Effectiveness of Mobility-On-Demand in Cottage Grove, Oregon

Description

This report analyzes and evaluates Lane Transit District's (LTD) microtransit pilot program the LTD Connector in Cottage Grove, Oregon. It seeks to determine how effective the service is, the impacts it has on the community, and LTD's existing fix route transit service. Overall performance measures are evaluated against existing projects and traditional demand responsive transportation measures.

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Introduction

The goal of any public transit agency is to increase ridership and productivity in the most efficient and cost-effective way possible. Transit agencies rely on federal, state, or local funds to maintain operation. Because of this, agencies work to ensure that they are using public dollars wisely and putting them to work in the most efficient ways possible. Transit agencies are recognizing that current service models may not be sufficient to provide the most efficient service model and some, like Lane Transit District (LTD) are researching ways to redesign or redeploy their service to become more efficient by balancing transit ridership with coverage service and testing a new form of service, Microtransit or Mobility on Demand (MOD).

A transit agency cannot use a dollar twice; the decision is whether an agency makes use of that dollar to provide more frequent service in fewer highly productive corridors (ridership), or less frequent service to many more less productive corridors or neighborhoods (coverage), reducing productivity and ridership. A common assumption used throughout the industry is that people are willing to walk father to get to more frequent service. This tradeoff is important for transit agencies to consider given the limited amount of dollars they have available to deploy service. Particularly, in LTD's case, in the less dense rural communities receiving only lifeline commute driven service.

The ridership and coverage concept is an important facet to the microtransit discussion. If an agency chooses to move toward a ridership network, people who once had service in a higher coverage network may lose it. In some cases, particularly in less dense urban areas and rural areas, this can have a significant impact on transit users. Transit agencies are turning to a variety of programs including microtransit pilots to try to fill these service gaps that are created with removal, reduction, or changes to fixed route service networks.

Given this tension, this report will evaluate LTD's effort to utilize a new type of service to serve the rural community of Cottage Grove, Oregon. I first review the existing research and literature on microtransit and Demand Response Transportation (DRT). This is followed by a description of my research questions, methods, and data used for evaluation, and then provide an overview of the pilot. I then review the general performance of the pilot, a comparative analysis of the pilot to national DRT measures and also to similar surveyed microtransit programs around North America. Finally, I explore the impacts that this type of service has had on existing transit services and the qualitative impact this service is having on the community.

For this project I am serving two different roles; an employee of LTD and as a Master's student. My role with LTD as an Associate Service Planner is primarily focused on fixed route service although I have assisted with data processing of the Connector service in Cottage Grove. My role as a student in researching this topic is intended to help to partially fill the tremendous gap in research available on these evolving services by attempting to create a basis for evaluation. Development and analysis of the surveys and research on DRT and different evaluation measures are over and above my duties as a service planner.

Existing Research

Demand Response Transportation and Microtransit

Microtransit is generally defined as a "privately owned and operated shared transportation system that can have fixed routes and schedules, as well as flexible routes and on-demand scheduling.[1]" The Federal Transportations Administrations (FTA) defines microtransit as, "IT-enabled private multi-passenger transportation services, such as Bridj, Chariot, Split, and Via, that serve passengers using dynamically generated routes, and may expect passengers to make their way to and from common pick-up or drop-off points. Vehicles can range from large SUVs to vans to shuttle buses.[2]"

MOD, one subset of microtransit, is defined by the FTA as "a multimodal, integrated, automated, accessible, and connected transportation system in which personalized mobility is a key feature. MOD allows for the use of on-demand information, real-time data, and predictive analysis to provide travelers with transportation choices that best serve their needs and circumstances. MOD leverages technologies that allow for a traveler-centric approach that provides better mobility options for everyone[3]." This description was developed with the creation of the FTA Mobility on Demand Sandbox Program to help fund projects that increased individual mobility, improved efficiency and effectiveness of transportation, and enhance customer experience.

In the last several years many public transit agencies have been embracing this transportation "disrupter" and have started implementing a variety of microtransit pilots and programs. A web search in early 2019 found as many as 26 different pilot programs provided by public transit agencies throughout the United States and Canada. Federal funding opportunities, cost of service, and a general decline in transit ridership have spurred public transportation providers to look at innovative programs to increase ridership on their systems, address the first/last mile challenges of mass transit, and retain current ridership in a quickly changing mobility environment.

Because Microtransit programs and the LTD pilot program reflect many of the characteristics of DRT, a review of this research will help to define the current state of practice and provide a basis for many of the evaluation measures to be discussed in further sections. The Transit Cooperative Research Program (TCRP) has produced a variety of research synthesis reports on Demand Response Transit and are one of the main sources of information on DRT. Academic literature on microtransit programs is limited but available sources will be reviewed. Some of the literature reviewed were:

- TCRP Report 124: Guidebook for Measuring, Assessing, and Improving Performance of Demand-Response Transportation[4]

[1] Shaheen, Susan, Nelson Chan, Apaar Bansal, and Adam Cohen. 2015. "Definitions, Industry Developments, and Early Understanding." Berkeley, CA: University of California Berkeley Transportation Sustainability Research Center. http://innovativemobility.org/wp-content/uploads/2015/11/SharedMobility_WhitePaper_FINAL.pdf.
[2] National Academies of Sciences, Engineering, and Medicine 2016. Shared Mobility and the Transformation of Public Transit. Washington, DC: The National Academies Press. https://doi.org/10.17226/23578.
[3] https://www.transit.dot.gov/research-innovation/mobility-demand-mod-sandbox-program
[4] National Academies of Sciences, Engineering, and Medicine 2008. Guidebook for Measuring, Assessing, and Improving Performance of Demand-Response Transportation. Washington, DC: The National Academies Press. https://doi.org/10.17226/23112.

- TCRP Report 136: Guidebook for Rural Demand-Response Transportation: Measuring, Assessing, and Improving Performance[5]
- TCRP Report 141: Microtransit or General Public Demand Response Transit Services: State of the Practice[6]
- White Papers and Lesson Learned Documents from other agencies
- Online articles and government presentations defining microtransit programs.

The FTA defines Demand Response as, "any non-fixed route system of transporting individuals that requires advanced scheduling by the customer, including services provided by public entities, nonprofits, and private providers." A 1988 grant circular expanded the definition to include, a system in which a vehicle does not operate on a fixed-route or fixed schedule and "one where passenger trips are generated by calls from passengers or their agents to the transit operator, who then dispatches a vehicle to pick the passengers up and transport them to their destinations.[7]" It provides a technical typology for DRT systems that are subject to mandatory reporting for the National Transit Database (NTD) Program, a national transit reporting database to house information and statistics on transit in the United States:

1. Many origins to many destinations: The typical operation described above.
2. Many origins to one destination: For example, a pre-arranged handicapped or senior citizen operation which picks up the passengers at their homes and takes them to a shopping or recreation center.
3. One origin to many destinations: For example, a vehicle meets a commuter train, picks up the passengers, and drives them to their homes.
4. One origin to one destination: For example, a group of senior citizens is transported from a nursing home to a recreation center and returned.

In rural areas this is often the most likely form of public transportation available. In urban areas, this type of service is generally associated with the Americans with Disabilities Act (ADA). The ADA is a civil rights law that prohibits discrimination against people who are experiencing disabilities. Part of the legislation requires public transportation providers provide comparable transportation service to those who are unable to use fixed route services. DRT service, also known as dial-a-ride, flex-route, or demand responsive transport.

TCRP Reports 124 and 136 are reports generated from TCRP Project B-31: Guidebook for Measuring, Assessing, and Improving Performance of Demand-Response Transportation. Both reports provide definitions of DRT systems, but each focuses on urban and rural areas, respectively. Each provide an overview of National Transit Database (NTD) evaluation measures. Both guidebooks go further in defining non-NTD related measures and provide extensive literature on other factors effecting the performance of DRT systems such as rate of use by seniors or those with disabilities. These guidebooks describe in some

[5] National Academies of Sciences, Engineering, and Medicine 2009. Guidebook for Rural Demand-Response Transportation: Measuring, Assessing, and Improving Performance. Washington, DC: The National Academies Press. https://doi.org/10.17226/14330.

[6] National Academies of Sciences, Engineering, and Medicine 2019. Microtransit or General Public Demand Response Transit Services: State of the Practice. Washington, DC: The National Academies Press. https://doi.org/10.17226/25414.

[7] U.S. Department of Transportation. (1988). Sampling Procedures for Obtaining Demand Responsive Bus System Operating Data Required Under the Section 15 Reporting System. Circular UMTA A 2710.2A

detail other external factors that impact the performance of DRT systems. These factors can be critical in making peer comparisons with other systems or trend analysis over time.

TCRP Report 141 is the most recent analysis released about DRT and Microtransit programs. This report provides data generated by a survey of Transit systems that provide a General Public Demand-Response/Microtransit service. The majority of the 22 participating agencies reported starting these programs to service areas of low demand. Rather than defining performance metrics for improved data, this report focuses on the program typology of the surveyed which included fleet size, vehicle types, lessons learned, and barriers to service implementation. Case study details as well as lessons learned and their application to LTD's microtransit service will be covered in the analysis section.

A report by Becker and Teal[8] focuses on Denver's Regional Transportation District's approach to providing transit service to primarily suburban areas that have lower productivity, unconnected street patterns, higher income, or higher access to vehicles. They point out that low productivity areas present different markets of riders. Denver RTD identified 3 separate markets in low density areas; local focused service, those who are traveling primarily to local locations; local decentralized, areas with several trip generators; and line haul access, those that need access to some type of fixed route transit service. They present that argument that DRT should be approached as part of a "family of services" by asking 3 main questions:

1. What are the markets or demand for the service area?
2. Should a specific market be served?
3. If so, how much and what type of service should be provided.

These questions in particular serve as the foundation for the evaluation of LTD's microtransit pilot, the LTD Connector. The nature of LTD's rural service as infrequent, commute-driven, lifeline service, presents difficulties for transit users in outlying communities. These services generally do not serve mobility needs *within* the community. The one-way loop structure of these routes in all of the rural areas ignores the potential mobility markets within the community.

R.F. Teal, A.J. Becker. Business strategies and technology for access by transit in lower density environments. Res. Transp. Bus. Manage., 2 (2011), pp. 57-64

Research Questions, Methods, and Data

Research Questions

The primary purpose of this evaluation is to determine the effectiveness of LTD's microtransit program in Cottage Grove, Oregon. This will help LTD make a decision on continuing or ending the MOD pilot in Cottage Grove, and to provide a framework by which LTD and other agencies can evaluate their MOD programs as part of an entire network of public transit and mobility. It will also help to provide a basis for comparison against similar programs and exploring how transit agencies are measuring microtransit or mobility-on-demand projects. Given the availability of research on Demand Response Transport (DRT) and recent limited research on microtransit, this report will focus primarily on one primary research question:

- Is LTD's microtransit service, the LTD Connector, providing better service than LTD's existing fixed route service in Cottage Grove, Oregon?

To help answer this question, several secondary research questions were identified:

- What is the impact on LTD's fixed route transit service in Cottage Grove?
- What is the impact of this service on the community and existing local transit services?
- How does this service's performance compare to other Microtransit or Mobility-on-Demand services in North America?

This report does not focus on federally mandated Americans with Disabilities Act (ADA) paratransit service, transportation network company partnerships like Uber or Lyft, or types of technologies available for microtransit programs.

Methods and Data

Evaluation of the Connector will be primarily made using four sources of data: Transloc's reporting software and exports, LTD's onboard automatic passenger counters, a survey to gather data on other MOD programs, and two separate qualitative surveys developed and distributed by LTD staff.

Transloc is the software provider of the on-demand ride sharing software platform currently being used for LTD's microtransit program as well as many other pilot programs. In addition to standard NTD reporting metrics, Transloc provides additional metrics in their customer facing reports in an online reporting dashboard as part of the service that allows users to look at trends in data at the individual ride level. These reports provide some basic insights into service but do not include cost reporting or detailed analysis. Detailed analysis can be done from a generated ride report that can be exported into excel or similar programs. In addition, they provide ridership and efficiency reports that are produced outside the administrative portal. The ridership report provides the number of unique users, users through time, and top trip locations. The unique users feature is intended to show the total number of people requesting rides. The efficiency report provides basic information such as number of boardings per vehicle hour, rides over time, and wait time distributions.

LTD has detailed boarding and alighting data at the stop level as far back as 2007 and will used to measure impacts to existing service of the fixed route service in Cottage Grove.

Early in the pilot program, LTD recognized the difficulty in attempting to directly compare the Connector productivity and financial metrics against the fixed route service. I began reaching out to other agencies and to find any available data to make some initial comparisons. It became apparent that there was very

little information publicly available for a variety of reasons. Like other agencies, LTD found itself on the "bleeding edge" of an old type of service, DRT, and new booking technology that has only recently been developed and deployed in the transit industry. This, coupled with the service being developed and deployed by private technology companies, makes getting data difficult.

Beginning in early 2019, with the assistance of other LTD staff, I developed a data request survey to help identify similar programs, identify key performance indicators, and to gather data for comparisons. It was sent electronically to agencies identified through transit associations such and The American Bus Benchmarking Group (ABBG) forums, Northwest Transit Exchange participants, Transloc client lists, and internet searches for terms such as Microtransit and Mobility-On-Demand. This survey instrument changed slightly from its original in fall 2019 in response to feedback. Overall, the survey was sent to 204 individuals at over 65 agencies. Over a period of several months, I received survey responses from 14 agencies with information on 38 Microtransit or DRT programs. Colorado's Regional Transportation District (RTD) provided the bulk of the received responses (21 service areas).

In order minimize variances in the data, surveyed agencies were placed into three general categories based on the type of service their agency operated. Even within the categories, differences remain that prevent direct comparisons; however, these provide a good foundation of similar service for general comparison.

1. **On-Demand** – programs which operate primarily on-demand, curb-to-curb service from any origin to any destination within the service area.
2. **Deviated Fixed Route** – programs that have a mix of operating parameters but mainly operate a stop-to-stop system, deviate short distances from established stops, or have timed meets at specific locations such as trip generators or transit stops/stations in addition to on-demand services.
3. **First Mile-Last Mile** – programs that primarily serve transit customers; shuttling customers to or from transit stops or stations either though timed meets or designated origins or destinations.

On Demand	Deviated Fixed Route	First Mile/Last Mile
CAP Metro Austin	AC Transit	RTA Chicago (TNC Partnership)
City of Lone Tree	GoTriangle	RTA Chicago (TNC Partnership)
ECCTA (Tri Delta)	RTD Denver - Golden	RTD Denver - Arapahoe
Golden Empire	RTD Denver - Green Mountain	RTD Denver - Belleview
Gwinnett County	RTD Denver - Meridian	RTD Denver - Broomfield
MetroLink (Illinois)	RTD Denver - N. Inverness	RTD Denver - Dry Creek
Minnesota Valley Transit	RTD Denver - S. Inverness	RTD Denver - Federal Heights
Norwalk Transit	RTD Denver - S. Jefferson	RTD Denver - Interlocken
Plymouth Metrolink		RTD Denver - Lone Tree
RTD Denver - Brighton		RTD Denver - Louisville
RTD Denver - Evergreen		RTD Denver - Orchard
RTD Denver - Longmont		RTD Denver - Superior
RTD Denver - Parker		RTD Denver - Thornton
		Translink

Table 1: Surveyed Agencies by Type.

There are some major challenges that exist when attempting to analyze this type of service. Mobility on demand (MOD) in its current form in Cottage Grove is essentially a general public demand response service but the efficiency is much greater due to the technology that is being deployed to dispatch vehicles and riders. The differences in the structures of MOD programs throughout North America make it extremely difficult to make an apples to apples comparison about the performance of MOD.

LTD performed qualitative surveys on the Connector service and route 98 in July and October of 2019. The July survey attempted to gauge both the effect of LTD's marketing outreach as well as to determine rider behavior and satisfaction with the service. The October survey was designed to determine how well the connector service model was meeting the goals of the pilot.

The initial July 2019 survey was sent to 5200 Cottage Grove households with their utility bills through a third party and handed out by the operator of the service onboard the vehicle. The survey received a total of 150 partial and completed surveys (137 household, 13 Connector users) resulting in a 3% response rate for household surveys. The operator did not track the number of surveys handed out and a response rate is not available. It was determined after the survey period ended that tenants in some low-income multi-family housing properties who would be more likely to use the Connector did not receive a utility bill, resulting in some possible missed responses. Survey results were entered into Constant Contact survey tools to tabulate results and generate reports.

In October 2019, an email and text-based electronic survey was sent to 777 Transloc app users resulting in 65 responses for a response rate of 8%. Additionally, other LTD staff and I spent 5 days riding both the route 98 and Connector to distribute paper surveys. Riders were asked to fill out the survey during their trip and return them to the surveyor before their trip ended. This resulted in an additional 86 paper surveys responses resulting in a total of 151 surveys and an overall response rate of 17%. Both the electronic and paper surveys were entered into PublicInput.com survey tools to tabulate results and generate reports. Raw responses were also exported into Microsoft Excel. After the survey period ended, it was determined that the electronic survey was missing the questions regarding age of respondents. This is problematic for analyzing the Connector population because it is more likely that the electronic survey respondents are younger than those who filled out a paper form on the Connector service. Additionally, since nearly half of all rides are booked via telephone to a dispatcher, LTD is missing a key data point.

Because both surveys include the same questions regarding usage and satisfaction, I grouped the survey responses of Connector users together for a total of 151 total partial and completed surveys. It's possible that some riders took the electronic survey and also filled out a paper survey. The exact number cannot be determined because surveys were anonymous but is likely very small. The ridership of the 98 route was not surveyed prior to the start of the pilot so no evaluation of the 98 ridership could be completed beyond passenger counts.

The Pilot: The LTD Connector

Overview

Lane Transit District was established in 1970 and began metro public transportation services in the Eugene/Springfield Metro area and in 1972, obtained a grant from Lane County to begin rural transportation service. Currently LTD services 17 rural incorporated and unincorporated communities within its 522 square mile service area with a service area population of 298,300[9]. The Eugene and Springfield metro area has a population of 215,588[10], leaving a rural service population of 82,712. LTD does not conduct a separate detailed analysis of rural ridership and refers to rural service as "lifeline service," meeting basic service requirements based on current ridership demand and metro area commuting demand.

South Lane Wheels (SLW) has provided local transit service in Cottage Grove since 1983. SLW operated a General Public DRT door-to-door service, metro shuttle to Eugene-Springfield, Medicaid funded Transportation Service, and deviated fixed route called the Route Around Town. In September 1999 the residents of Cottage Grove passed a ballot measure asking the city council approve annexation of the city into LTD's service boundary which was formally requested in October. Service to Cottage Grove began in January 2000 and has operated continuously since.

In 2018, unexpected budgetary constraints forced LTD to make service reductions in order to stay within the service budget. Part of that decision-making process involved a productivity analysis of the entire system from a route and trip level basis to determine where to make service cuts. The budget constraints combined with the information gained from the productivity analysis, the awarding of additional grant funding from Keep Oregon Moving (HB 2017), MOD simulation results showing probable success, and a willing operator, Cottage Grove was selected for a pilot MOD service. LTD removed a portion of the Cottage Grove route on 5 trips on weekdays as part of the pilot to reduce costs.

Before beginning the pilot LTD developed broad-based goals to determine whether the Connector is successful. These were identified as:

- Gain experience with the MOD service model, bringing shared public transit to the people, rather than people being required to go to transit;
- Connect the community both to fixed-route service on Route 98 and create access within community; and
- Increase the diversity of people accessing public transit.

Broadly, the primary goal is to determine whether the mobility-on-demand service model could be applied in other areas of the District. The pilot was an opportunity for LTD to measure its effectiveness for possible changes that were being developed through their network redesign, Transit Tomorrow. The remaining goals were developed by feedback they had received through conversation with the partner agencies:

- "What we've heard from residents is that as a one-way service it isn't convenient, and they'd like more frequency.
- What we've heard from the business community over the years is an interest to see more access within the community. Shop Local Stay Local.

[9] Long Range Transit Plan, Lane Transit District. 2014

[10] Quickfacts, US Census. 2010. Retrieved October 22, 2019 from https://www.census.gov/quickfacts

- What we've heard from the city of Cottage Grove is an interest to expand diversity of people who use public transportation.[11]"

Prior to the start of the Connector pilot, LTD fixed route 98 served the City of Cottage Grove seven days a week. Weekday service was composed of nine trips originating in the Eugene/Springfield metro area (four A.M. and five P.M. trips) that are designed primarily for commute riders and students who need access to the metro area. Limited weekend service is composed of three trips (one A.M. and two P.M.) and Sunday with two trips (one A.M., one P.M.) designed to be lifeline service. Ridership and level of service have remained consistent since the route began. Increased demand over time, primarily caused by high Lane Community College ridership has led service planners to introduce articulated 60' busses to the route for the last several years.

MOD Pilot Structure

The LTD Connector pilot is operated by South Lane Wheels and its own drivers under an intergovernmental agreement with the City of Cottage Grove. It is structured as an origin to destination, on demand rideshare service and a pilot period was initially set for 12 months from January 14, 2019 to January 14, 2020 (an extension until August 2020 was adopted by the Board in October 2019). During the first two weeks of the pilot, both the pilot and route 98 operated concurrently. The full launch of the service started on February 4, 2019, with LTD eliminating in town routing of the 98 Cottage Grove on trips between the hours of 7:00 a.m. and 7:00 p.m. (Figure 1). This resulted in five weekday trips essentially serving one stop at a Park & Ride; weekend fixed route was not impacted. At the same time, South Lane Wheels discontinued its deviated fixed "Route Around Town".

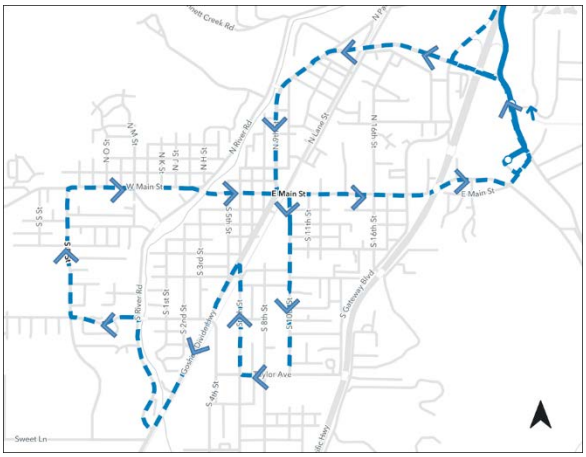


Figure 3 - Portion of fixed route eliminated on five trips for the first year of the pilot.

The service area (Figure 2) is limited to the Cottage Grove city limits and is geofenced with the Transloc software which prevents trips from occurring outside the service area. Trips on the Connector can be booked via the Transloc application on a smartphone, via website, by phone through the South Lane Wheels dispatcher, or as a walk-up rider with the driver of the vehicle. Passengers cannot pre-book a trip on the service and must request a ride when they need the ride. Pre-booked trips on

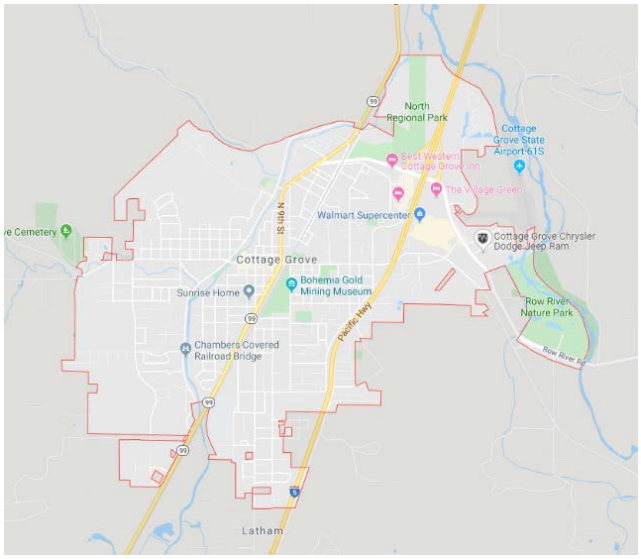


Figure 4 - Cottage Grove, Oregon city limits and the LTD Connector service area.

[11] Cosette Rees, KNND Talking Points. February 3, 2019.

the Connector service were determined to be outside the scope of the service model and were already being offered with SLW's general public DRT. LTD expected average wait times not to exceed 30 minutes. The service operates Monday-Friday from 7:00 am to 7:00 pm and costs $1.00 per trip one way, or the use of any LTD fare instruments. Connector operators carry LTD day passes and passengers booking a trip to connect with LTD's fixed route 98 can purchase a day pass onboard to prevent paying for both trips separately. LTD project staff and SLW determined that due to the price difference, funding constraints, and fare structure, no cross-service fare sharing agreement was put into place for the Connector and SLW's DRT service.

Initially LTD planned for the service to operate one vehicle but planned a second vehicle to operate in the morning for the first 6 weeks only. The second vehicle was intended to help handle any high frequency demand driven by regular fixed route ridership who were losing the interior loop for the 7:40 and 10:40 service.

Pilot Performance

Ride Requests by Source

Connector rides can be generated in one of four ways; the Microtransit App, a web-based app, called in to a dispatcher, or walk-up requests (flag stops). This gives LTD insights into how people are booking rides. From the outset, LTD recognized that there were a large population of elderly or low-income customers who may not be comfortable utilizing new technology or smart phones and needed a call-in option to have someone book the ride for them. Figure 3 below shows that this assumption proved correct as the number of call-in ride requests make up more than half of all ride requests in Cottage Grove. The number of walk-up rides was driven primarily by trips generated by fixed-route transit riders returning from the metro area.

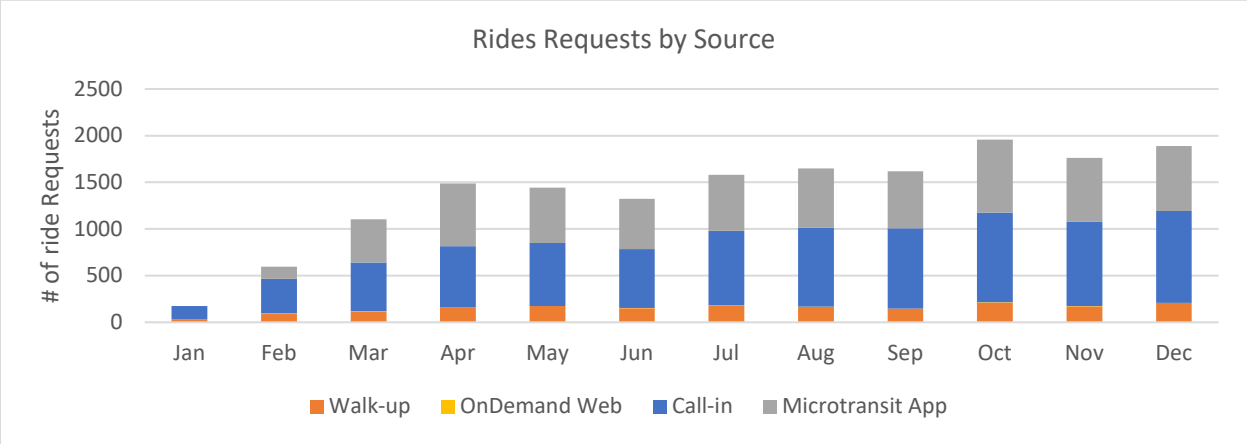


Figure 3 - Ride requests by source.

Rides by Status

As shown in Figure 4 below, the number of rides on the Connector has steadily grown over time. The Connector averaged 63.5 rides per day over the entire 2019 period and up to 80.7 daily rides in October to December. Rides requests on the Connector are categorized by complete, canceled, or no show and are only an indicator of requests and not the same as boardings which is tracked by capacity.

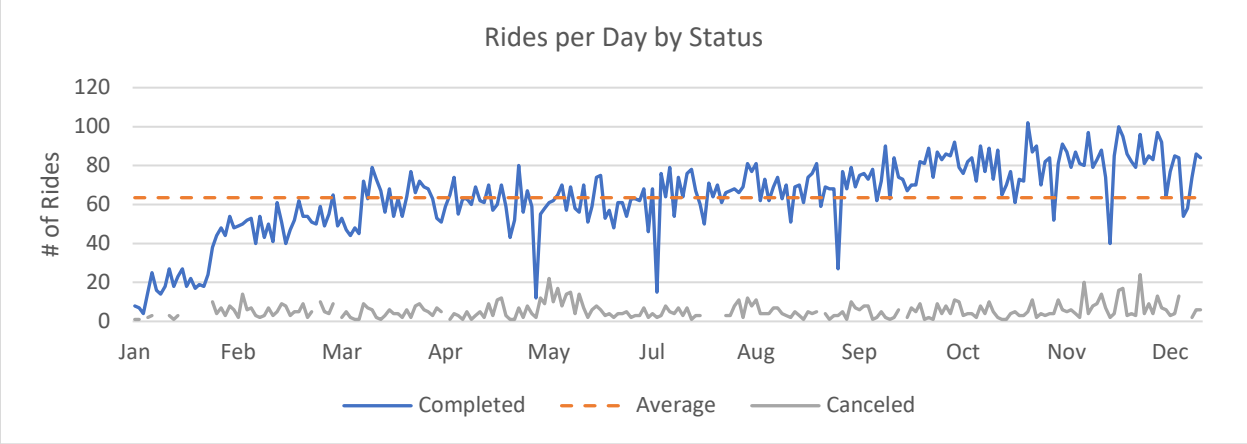


Figure 4 - Completed and canceled rides over 2019.

Staff determined that the number of cancellations were driven by long estimated wait times as people requested and cancelled rides until they reached a desired wait time (Figure 5). Peaks in ride cancellations closely follow increases in median wait time.

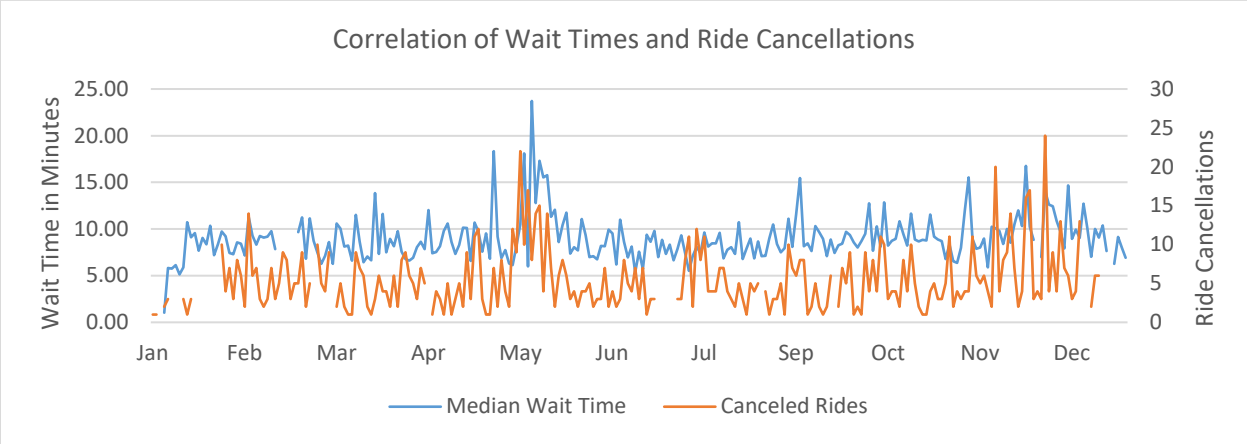


Figure 5 - Correlation of wait times and ride cancelations by users.

Ride Wait Time and Duration

Wait times are frequently cited as a metric used by many MOD projects and ride-hailing apps like Uber and Lyft. Connector wait times average approximately 15 minutes with a 90th percentile between 25-30 minutes (Figure 6). Wait times varied from as low as zero minutes for walk-ons, and the longest wait times over an hour. The longest extreme wait times were generally the result of operator error and not showing someone as picked up. The longest wait times occur in the morning due to demand from the large number transit riders trying to make connections to fixed route.

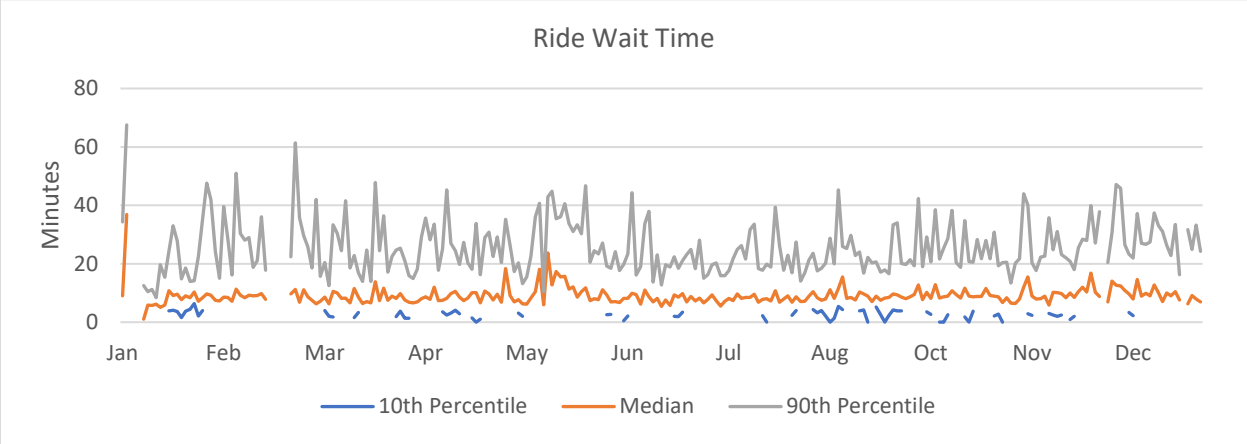


Figure 6 - 10 percentile, median, and 90th percentile wait times over 2019.

Ride Duration for the Connector averages under 10 minutes with a 90th percentile range of 10-20 minutes (Figure 7). Rides time vary greatly as the algorithm makes constant adjustments. There are occasional

outliers with excessive wait time but those are generally due to human error resulting from an operator of dispatcher failing to mark a ride as complete.

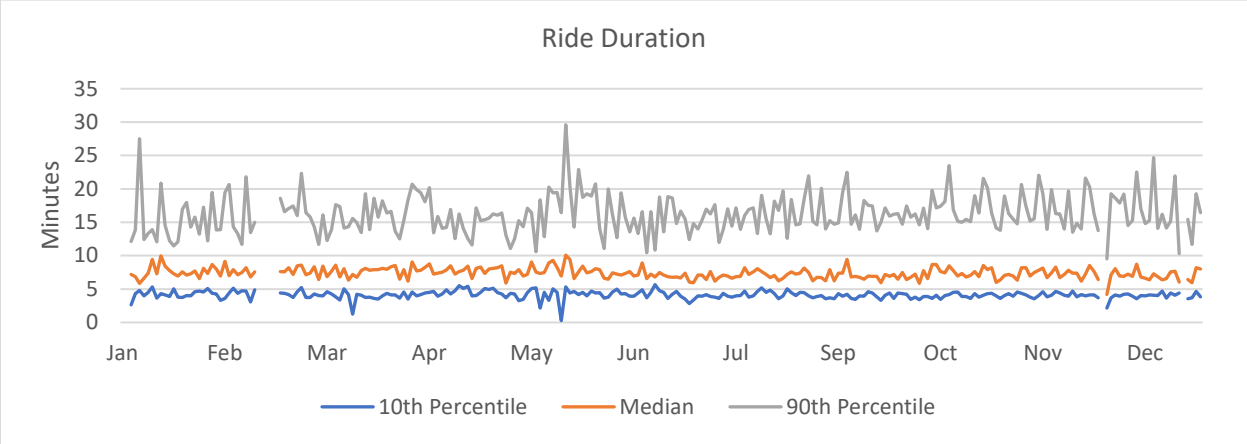


Figure 7 – 10th percentile, median, and 90th percentile ride durations.

Productivity

LTD tracks the productivity of the Connector service using several different measures including boardings over time, vehicle and revenue miles, wait time, ride duration, peak boardings, and others to understand the service being provided. These metrics also help identify rider behaviors guide adjustments to the existing service, including the identification of peak ridership periods and the permanent addition of a second vehicle.

Boardings

Boardings have continually trended upward over the past year peaking in November 2019 at 97 average daily boardings (Figure 8); the highest number of total boardings in one day was 141. Of interest with this upward trend is that wait times remained steady over time even with increased boardings. This is result of some adjustments to the software and diligent work by the dispatchers who manually adjusted pick-ups and drop-offs at peak times. Boarding per hour continued to increase as well, from as low as 2.45 up to a peak of 6.49 in November 2019 (Figure 9).

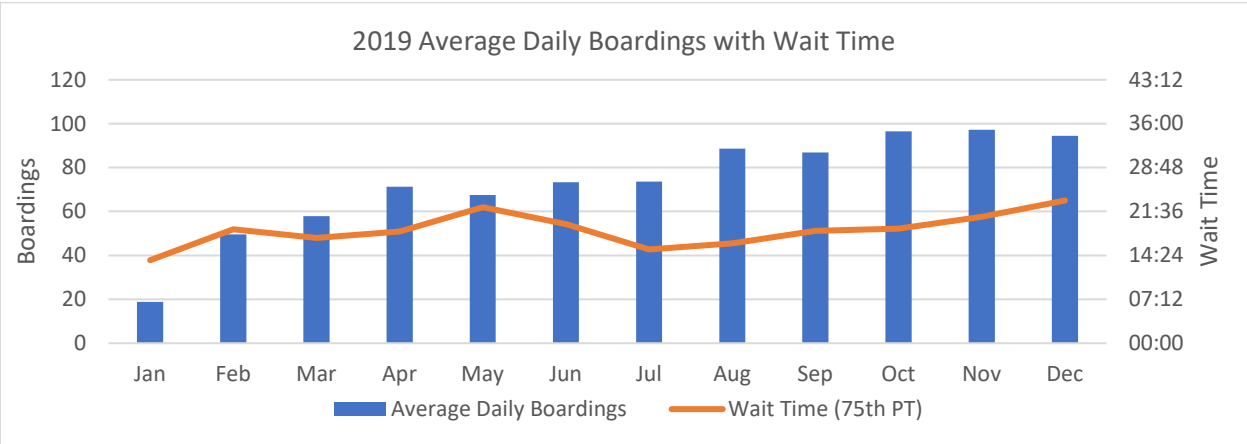


Figure 8 - 2019 average daily boardings and 75th percentile wait times.

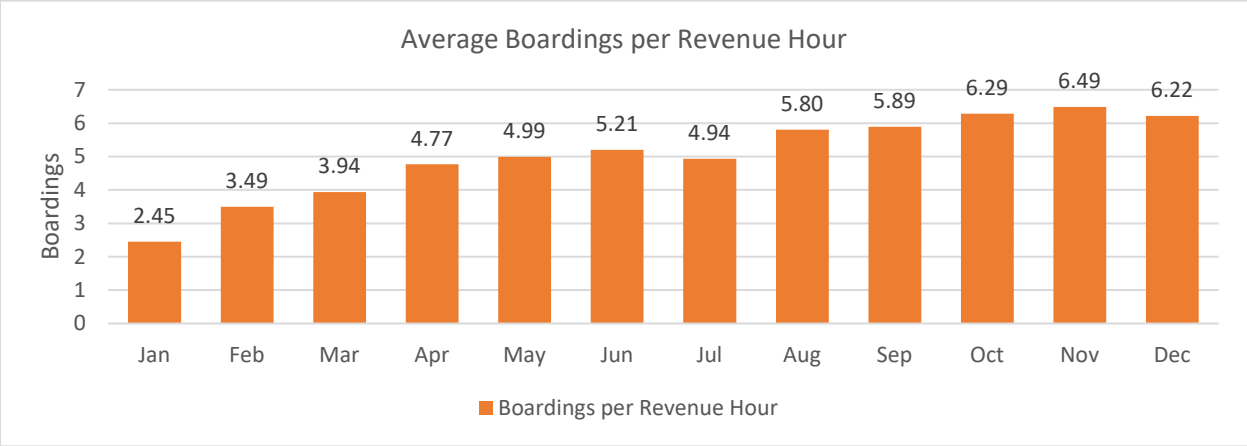


Figure 9 - 2019 average boarding per revenue hour.

Shared Rides

Transloc was able to perform analysis to show that on a weighted average, 63% of all rides on the Connector were shared, with a max of 84% on a single day. The dashed line in Figure 10 represents the average percentage of shared rides over the entire 2019 period. This analysis calculated when two booked rides, regardless of the number of passengers, shared a portion of the ride.

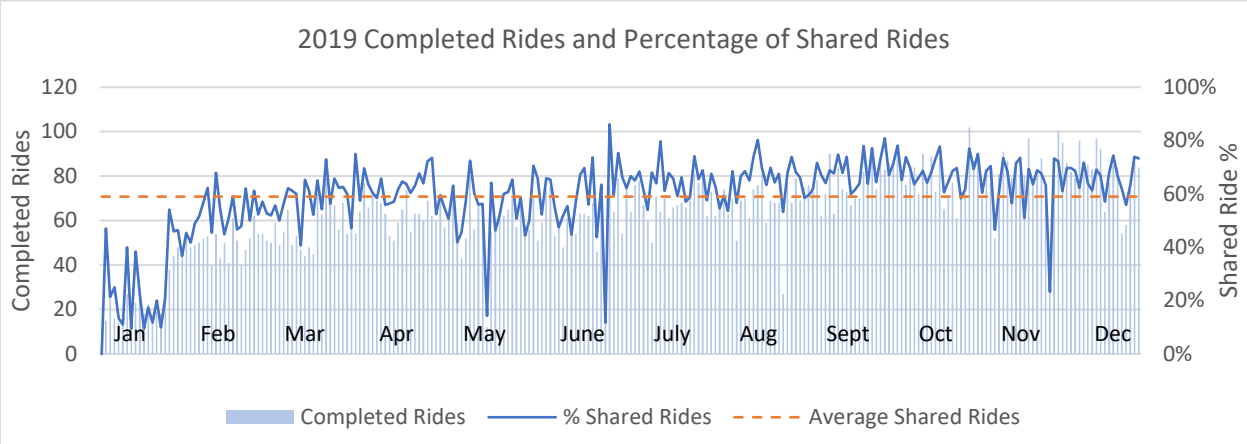


Figure 10 - Percentage of shared rides in 2019.

Efficiency (Cost)

The ability of LTD and its contractor to track, analyze, and adjust efficiency or cost of the Connector service will be one of the key factors in the LTD Board's future decision-making to continue the service or end the pilot and continue with regular fixed route in Cottage Grove. LTD is tracking costs with a variety of fixed-route and DRT metrics. However, the ability to analyze these numbers is dependent on having some basis for comparison aside from regular fixed route or ADA Demand Response services. This service is more expensive to operate that the rest of LTD's fixed route network on a cost per boardings basis.

Table 2 below summarizes available measures for comparison and makes it clear that in most regards, The Connector Service outperforms the existing SLW wheels service by most measures. Because DRT and

fixed route utilize different standards to measure performance, financial metrics are not directly comparable.

	LTD Route 98	LTD Connector	SLW General Public DRT	SLW Route Around Town
Time Period Covered	**FY 17-18**	**2019**	**FY 17-18**	**FY 17-18**
Total Operating Cost	$ 736,500	$176,703	$116,707	$73,189
Cost per Rev Hour	$156.29	$49.89	$38.85	$48.83
Cost per Rev Mile	$12.33	$5.18	$8.44	$6.01
Cost per Passenger	$5.07	$9.55	$42.64	$19.41
Cost per Passenger Mile	$1.29**	$5.26	Data Unavailable	Data Unavailable
Unlinked Passenger Trips (Boardings)	81301***	12010	5123	3771
Passenger Trips (Boardings) per Revenue Hour	11	5	2	3

*Calculations for the LTD Connector based on YTD costs.
** Costs per boarding on LTD fixed route.
***Represents weekday revenue hours and boardings only. Weekend service data is insignificant.

Table 2 - Cost comparisons of current and past services in Cottage Grove.

A cost per boarding comparison to LTD's fixed route 98 shows that it is more expensive than the route as a whole, however, since the cost per boarding in each segment of the 98, in particular the Cottage Grove segment isn't possible to calculate accurately, this is the most apt comparison. An analysis completed by LTD Staff found that the cost per boarding on the route 98 in FY18 came to approximately $11.60[12] (Table 3).

FY18 NTD Data Cost/Boarding Calculation					
	Fixed Route	**EmX**	**All LTD**	**Route 98**	**Connector**
COST	$36,638,901	$10,054,773	$46,693,674	$732,778*	$176,703
BOARDINGS	6,650,100	3,496,291	10,146,391	63,176**	12010
COST/BOARDING	$5.51	$2.88	$4.60	$11.60	$9.55

*2018 Weekday Scheduled Service Proportion Rt. 98 = 2%
**2018 Weekday Boardings proportion Rt. 98 = 0.95%

Table 3 - Cost per boardings

As Figure 11 shows, cost per boarding drops significantly as more boardings occur and the service becomes more efficient. Unexpected costs stemming from hiring and training drivers and initial marketing costs not captured early in the pilot caused a small spike in cost per boarding in July but has remained steady in the last five months of 2019.

[12] Migdal, Hart. Communication with Author. July 17, 2019

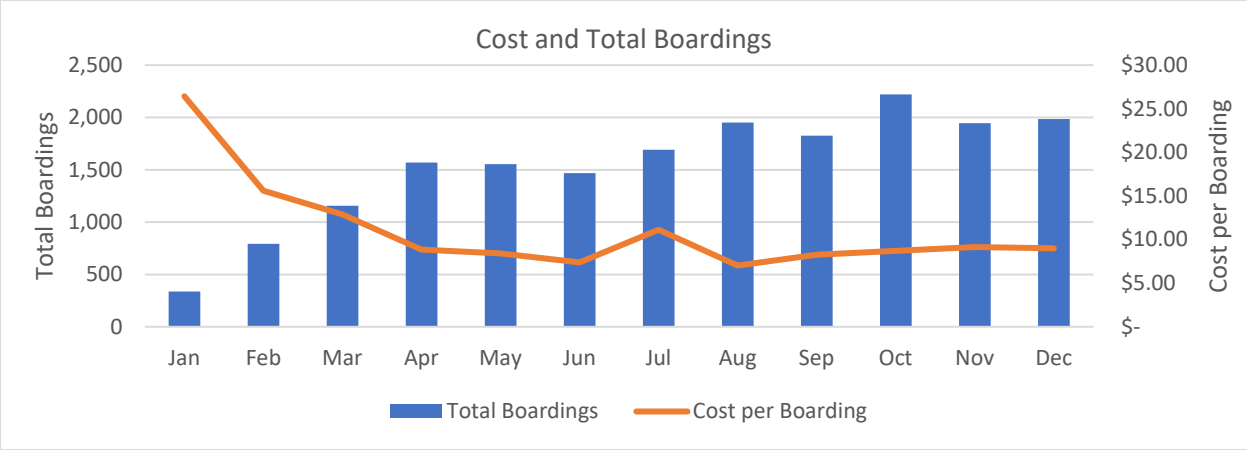


Figure 11 - Total Boardings and Cost per Boarding in 2019.

Overall, costs remain lower on the Connector due primarily to the low cost of labor for the contractor operating the service and would be even lower with the elimination of the second vehicle for peak periods. However, the removal of the second vehicle would likely increase wait times and present capacity issues during peak periods. With the reinstatement of the 98 routing through town in February 2020, it is expected that those peak trips would lower, making the removal of the second vehicle possible and in turn lower costs.

Comparative Performance Analysis

Comparison to National DRT Data

The Connector shares many traits of general public DRT. TCRP 136 - Guidebook for Rural Demand-Response Transportation compiled National Transit Database (NTD) data from 2007 from municipal DRT programs and surveyed agencies for four main performance measures: Passengers per Vehicle Hour (productivity), Cost per Vehicle Hour, Cost per Vehicle Mile, and Operating Cost per Passenger Trip (efficiency). Figures 12-15 below represent a range of data compiled from DRT programs that serve primarily a municipality and makes a more similar comparison than those from counties, districts, or regional programs as well as the data survey responses. Each chart is meant to show the range of those agencies, the error bars reflect the minimum and maximum values, the upper box represents the third quartile, and the lower the first quartile. The LTD Connector service is represented by the blue dot. Costs in the figures below have been adjusted to 2019 dollars.

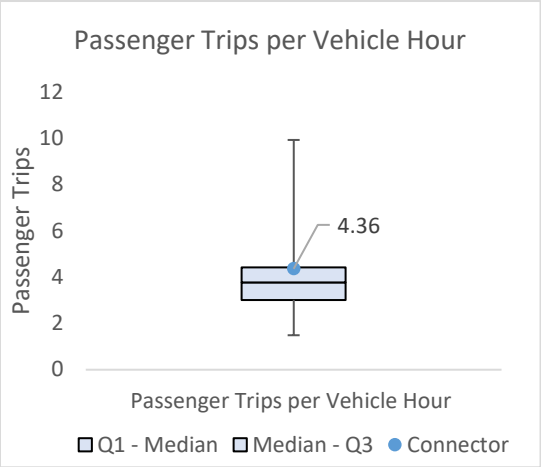


Figure 12 – Passenger Trips per Vehicle Hour versus Representative Municipal DRT Services. Costs adjusted to 2019 dollars. (TCRP 136, 2009)

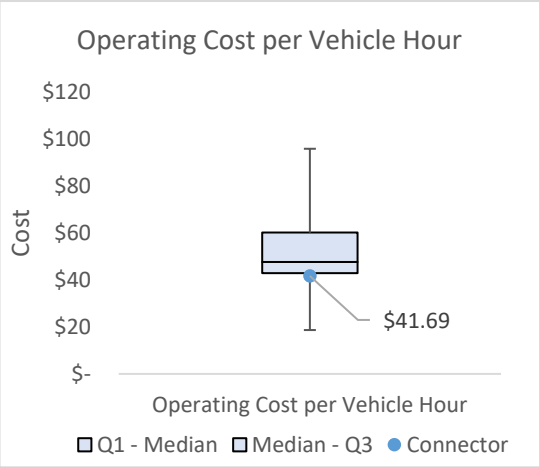


Figure 13 – Operating Cost per Vehicle Hour versus Representative Municipal DRT Services. Costs adjusted to 2019 dollars. (TCRP 136, 2009)

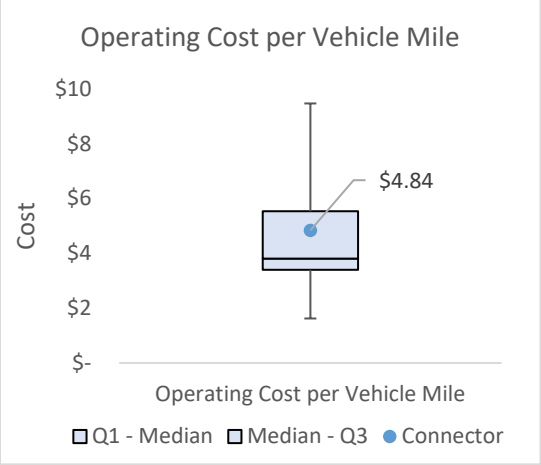


Figure 14 - Operating Cost per Vehicle Mile versus Representative Municipal DRT Services. Costs adjusted to 2019 dollars. (TCRP 136, 2009)

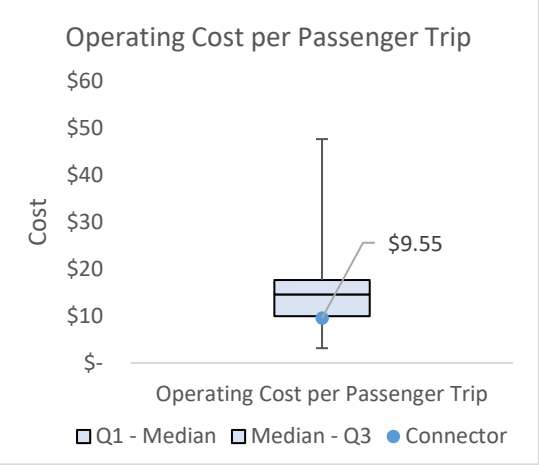


Figure 15 - Operating Cost per Passenger Trip versus Representative Municipal DRT Services. Costs adjusted to 2019 dollars. (TCRP 136, 2009)

- Compared to the 2007 average for municipalities, in 2019 the LTD Connector carried 4.36 passengers per vehicle hour, just under the 2007 NTD average but higher than most of the systems selected for the analysis.
- The Connector is averaging 4.36 passenger trips per vehicle hour, outperforming most of the evaluated services.
- The Connector is operating at a lower cost per vehicle hour, $41.69, than other municipal systems selected by TCRP 136. Likewise, cost per passenger trip is lower than most of the selected municipal systems at $9.55. The cost per vehicle mile comes in just above average for NTD and selected agencies.

It's important to note that DRT and Microtransit systems programs vary greatly. There are many factors that significantly impact both the productivity and efficiency including density, service area, type of service, hours and days of operation, who is operating the service, etc. For a more complete list and in-depth discussion of these factors, see TCRP Report 136.

Comparisons to Other Microtransit and DRT Programs

Utilizing the same metrics from TCRP 136, tables 16-19 show the distribution of values for each metric measured by service type. Due to the small sample size and the multitude of factors affecting productivity and efficiency of each program these graphs give a cursory comparison to similar MOD programs. It's important to note that some programs have been in service for multiple years and some for only a few months. All the data represented by the surveyed agencies is self-reported and not all agencies provided data for each metric. The comparative graphs below display only those agencies which responded to the corresponding metric request

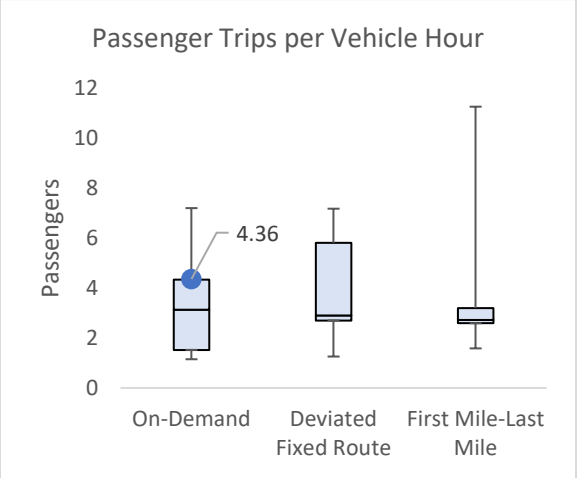


Figure 16 - Passenger Trips per Vehicle Hour comparison against surveyed agencies.

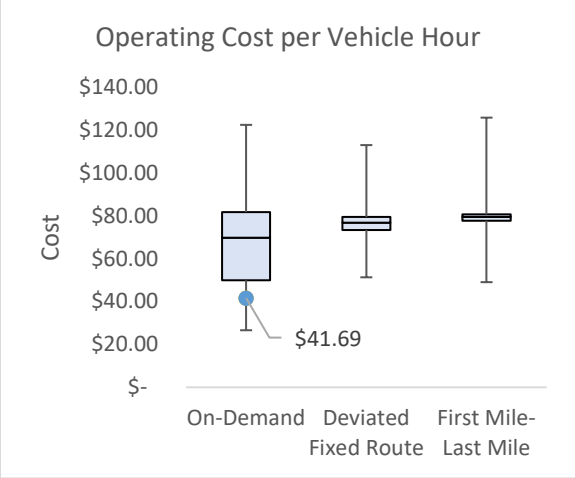


Figure 17 - Operating Costs per Vehicle Hour comparison against surveyed agencies.

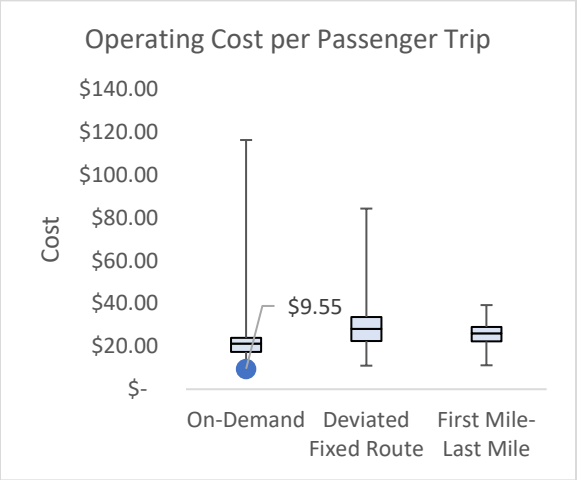


Figure 18 - Operating Costs per Passenger Trip comparison against surveyed agencies.

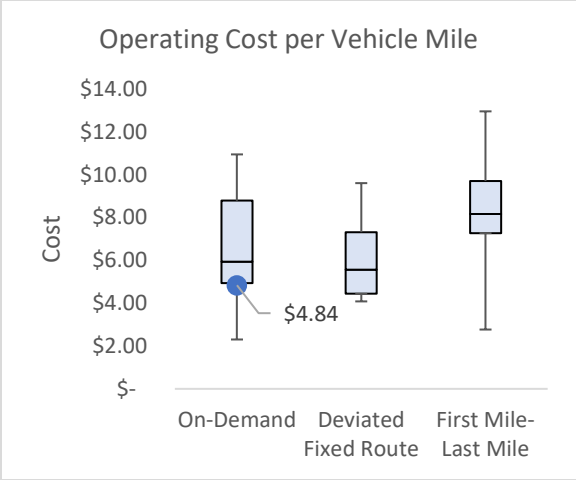


Figure 19 - Operating Costs per Vehicle Mile comparison against surveyed agencies.

Among the responding On-Demand agencies surveyed by LTD, the Connector is outperforming the majority of programs in terms of boardings per hour. Not all agencies reported total vehicle hours. The Connector service is also outperforming nearly all of the other On-Demand programs in the efficiency measures.[13]

Other Performance Measures

In addition to common DRT metrics described above, several other metrics were identified by LTD and other agencies. Primarily used for evaluating fixed route, these metrics are being used by other agencies to measure their programs performance.

Subsidy per Passenger

Defined as (Total Cost of Service – Fare Revenue)/Total Boardings, subsidy per passenger measures the cost to an agency per boarding and is another measure to gauge efficiency of a program. Fares on MOD pilot programs are generally low or free, increasing the overall subsidy. Again, there are many factors affecting the total costs. The Connector service has a lower subsidy then most other programs of any type but this is primarily due to the low cost of operation, small service area, and higher number of boardings (Figure 20).

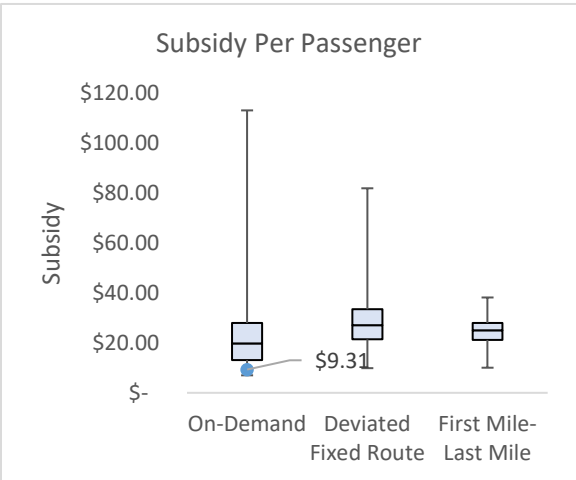


Figure 20 – Subsidy per Passenger comparison against surveyed agencies.

[13] This is primarily due to several factors which include reduced software costs and lower labor costs of the contracted service provider, South Lane Wheels. The pilot is being funded by LTD and the service is being contracted through the city of Cottage Grove. If LTD was operating this service with unionized labor from their current fixed route service, pilot costs would likely triple.

Cost per Revenue Hour

The Connector is doing better than most of the surveyed systems in cost per revenue hour (Figure 21). Traditionally used for measuring fixed route productivity, cost per revenue hour measures the cost per service hour that a vehicle is in revenue service when the vehicle is available to the public and does not include deadhead time. Unlike traditional DRT systems, the Connector and other more recent MOD programs can define these hours more accurately through the dispatching/ride-hailing software. In LTD's case, Transloc provides a National Transit Database report which separates vehicle hours from revenue hours and provides a more accurate basis to determine costs associated with revenue.

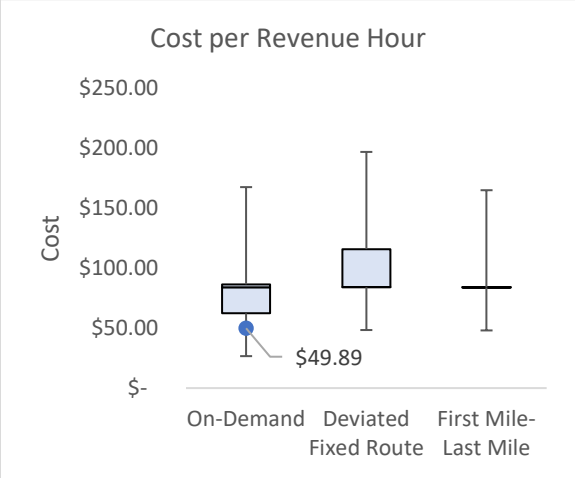


Figure 21 – Cost per Revenue Hour comparison against surveyed agencies.

Average Daily Boardings and Passengers per Revenue Hour

For 2019 (Jan 14-Dec 31), the Connector service averaged 73 daily boardings and 5.22 passengers per revenue hour (Figures 22 & 23). For the period March 2019 – December 2019, these numbers increase to 82 and 5.58. In November 2019, these numbers peaked at 97 average daily boardings and 6.49 boardings per revenue hour. The Connector is performing about average for similar On-demand programs in average daily boardings. It is outperforming all other On-Demand programs in terms of passengers per revenue hour due primarily to the small service area and increased demand due to the removal of fixed route service through Cottage Grove. LTD staff expects this number to decrease slightly throughout the rest of the pilot period when fixed route service resumes in early 2020.

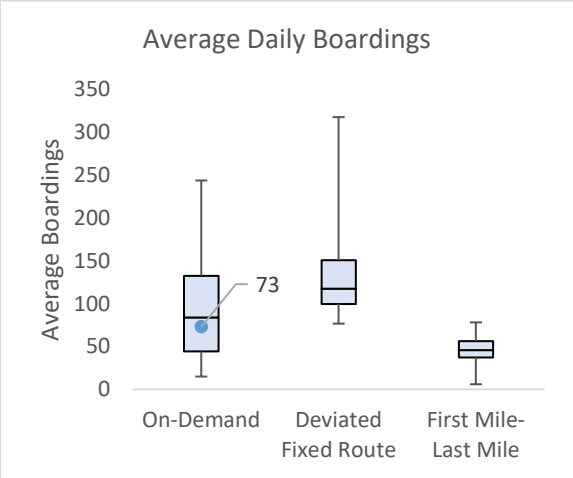


Figure 22 - Average Daily Boardings comparison against surveyed agencies.

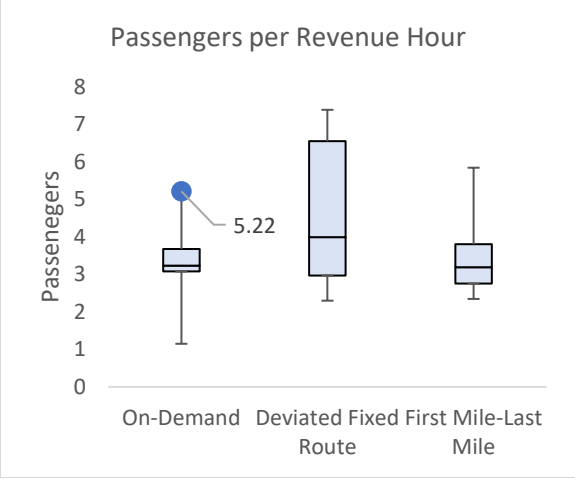


Figure 23 – Passengers per Revenue Hour comparison against surveyed agencies.

Impact to Existing Services

LTD operates route 98 serving the City of Cottage Grove seven days a week. Weekday service is composed of nine trips originating in the Eugene/Springfield metro area (four A.M. and five P.M. trips) that are designed primarily for commute riders who need access to the metro area.

The route serves Cottage Grove in a one-way loop (Figure 24) designed to serve some key trip generators within the community and is also limited by existing infrastructure. Key trip generators include the Cottage Grove LCC campus, High School, the Downtown and Commercial Districts, Multi-family housing, and the Walmart Park and Ride. The current route structure has limited ability to promote community connections for daily shopping, social, or medical trips. Given the challenges of the one-way loop in town, the usefulness of the fixed route for trips within the community are severely limited.

Figure 24 - Route 98 Cottage Grove routing.

Fixed Route Impacts

The impact on the total daily passenger boardings on Route 98 has been substantial. With the start of the pilot project, LTD eliminated the in-town routing on five trips from 7:00 a.m. to 7:00p.m during the time the Connector was in operation. As Figure 25 shows, ridership remained steady over the last two years until January-February 2019 when the pilot began. There has been some slight recovery consistent with normal ridership patterns but overall ridership has not recovered. This decrease represents a -12% change in Cottage Grove ridership and -11% in route level ridership overall.

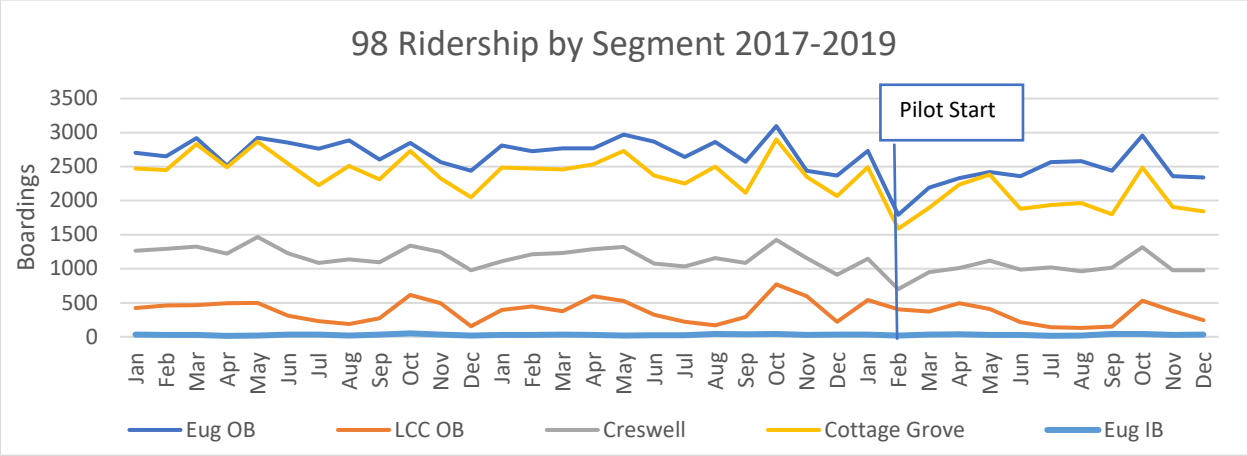


Figure 25 - Route 98 Ridership by segment, 2017-2019.

Table 4 shows a trip level analysis and an even steeper decline when analyzing Cottage Grove ridership only. Overall there has been a -17% decrease in ridership year over year. Trips no longer served by the in-town routing are shaded in blue.

Percent Change in Cottage Grove Ridership by Trip 2018 and 2019			
Trip Start	**2018**	**2019**	**Change**
5:28	2147	2559	19%
6:00	3965	3842	-3%
7:00	4910	3263	-34%
10:00	6592	5673	-14%
14:35	3735	2762	-26%
15:35	2390	1738	-27%
16:35	2103	1374	-35%
17:35	1565	1050	-33%
19:45	1608	1883	17%
Total	29015	24144	-17%

Table 4 - 98 Ridership Comparison. (LTD APCs, 2019)

Table 5 shows that route 98 lost 20 daily boardings on average since the beginning of the pilot period (representing the same -17% change). It should be noted that while the loss of 20 boardings could be considered significant, the connector service is providing an average of 53 non-fixed route transit boardings within the Cottage Grove community. This measure in particular points to the differing transit markets in this community and the ways in which they are served. Because the Connector only serves destinations within the city, and fixed route serves the metro area, the additional boardings cannot be considered a net increase.

	Average Weekday Boardings Walmart Park & Ride			Average Weekday Boardings Cottage Grove		
Trip	**2018**	**2019**	**% Change**	**2018**	**2019**	**% Change**
5:28	3	3	-1%	9	10	8%
6:00	7	7	-1%	16	15	-2%
7:00	6	11	93%	19	12	-38%
10:00	8	21	172%	26	22	-14%
14:35	8	10	35%	15	11	-27%
15:35	6	8	35%	9	8	-16%
16:35	4	5	17%	8	5	-35%
17:35	4	4	0%	6	4	-33%
19:45	4	5	33%	6	8	19%
Total	**49**	**75**	**52%**	**116**	**96**	**-17%**

Table 5 - 98 Average Weekday Boardings Comparison. (LTD APCs, 2019)

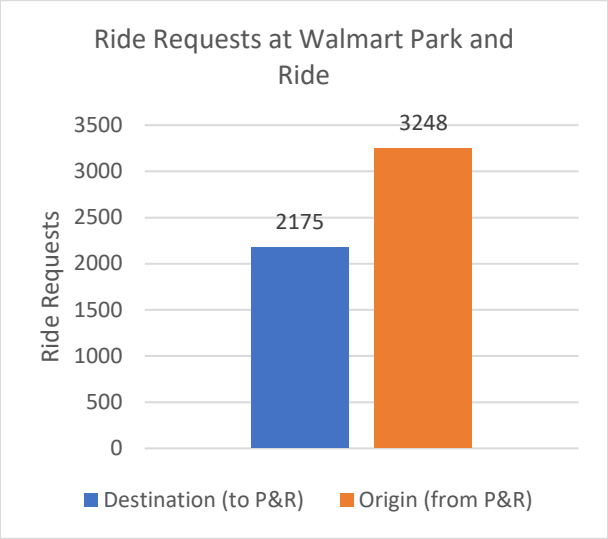


Figure 26 – Number or rides to (destination) and from (origin) the Walmart Park & Ride.

The structure of the Connector pilot does not allow passengers to pre-schedule rides or guarantee a timed connection to its fixed route. This policy has affected LTD passenger's use of the Connector as well. As Figure 26 shows, route 98 riders who use the Connector service are much more likely to request a trip from the park and ride after they arrive in Cottage Grove than traveling to the park and ride to catch fixed route service.

South Lane Wheels

Impacts to South Lane Wheels (SLW) existing services has been minimal. Table 6 shows inn a year over year comparison, there has been increases in their General Public and Demand-Response service totaling 13%. This is likely due to the fact that these services can be pre-scheduled, and riders can set an arrival time for their trip. Origin and destination data for South lane wheels was not readily available so direct impacts on trips to SLW providing first /last mile service to LTD's fixed route at Walmart Park & Ride via their existing demand-response service cannot be determined.

South Lane Wheels Boardings by Service Jan-Sept 2018/2019			
Service	**2018**	**2019**	**Change**
General Public	1554	1624	5%
Demand-Response	2510	2951	18%
Total	**4064**	**4575**	**13%**

Table 6 - South Lane Wheels Service Comparison. (SLW Monthly Reports, 2019)

It apparent that the operation of MOD has had an impact on SLW by adding a significant number of rides to their operation with the Connector service (Figure 27). South Lane Wheels uses a different software system for their reporting and utilize operator count sheets to measure boardings on the vehicles. As such, due to factors like operators missing a count, or manipulating the dispatching platform, the number they report may differ from the numbers the software reports.

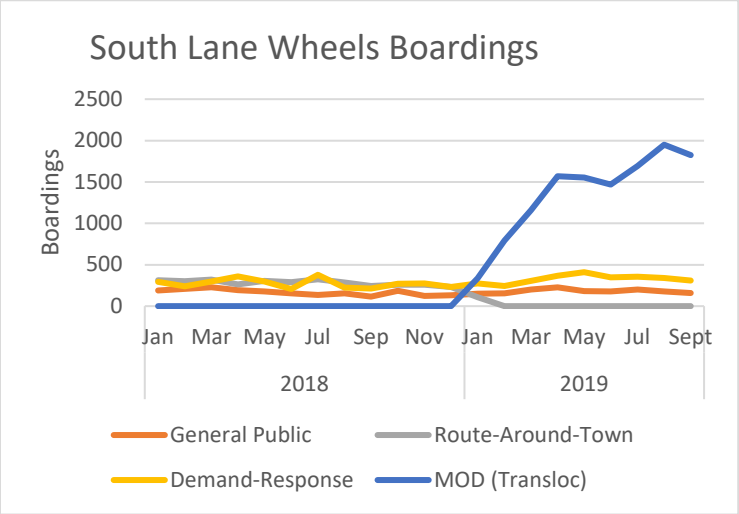


Figure 27 - South Lane Wheels Boardings, 2019.

Transit's Impact on the LTD Connector

Figure 28 shows the total number of boardings by hour of day categorized byIntra-Community trips and rides beginning or ending at the Park and Ride to make fixed route connections. There is consistent demand for service throughout the day and distinct peaks when the fixed route arrives or departs. This helps to explain how fixed route ridership utilizing the Connector drives up demand at times. In addition to the second vehicle to ensure these customers are making the transit connections and keep up with demand, it has increased wait and ride times for Connector passengers. The peak demand is driven primarily by fixed route riders.

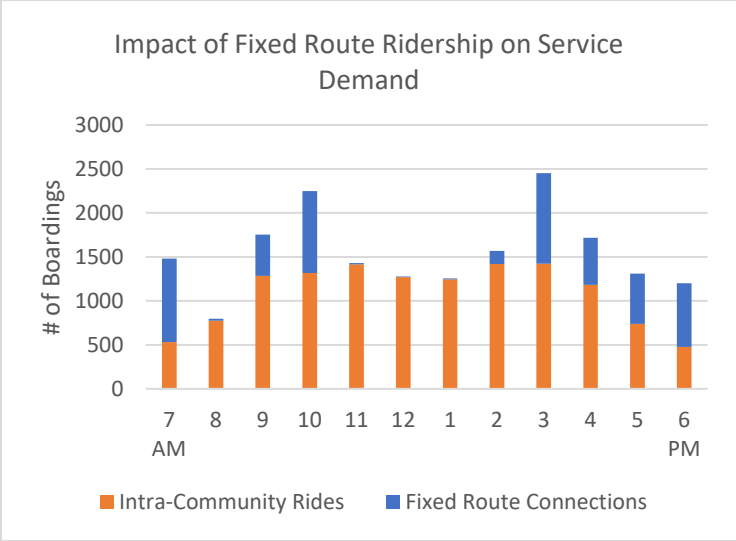


Figure 28 - Impacts Park and Ride trips on the Connector Service, 2019.

Figure 29 indicates the average wait times and the times that the second vehicle is in service (boxes in red). Morning wait times nearly double with the increased transit demand. The afternoon sees little or no increase due to the fact that the majority of the demand is generated at the Park and Ride when the bus arrives at a single point in time, allowing one vehicle to serve all of the fixed route transit riders while the second can respond to other community requests.

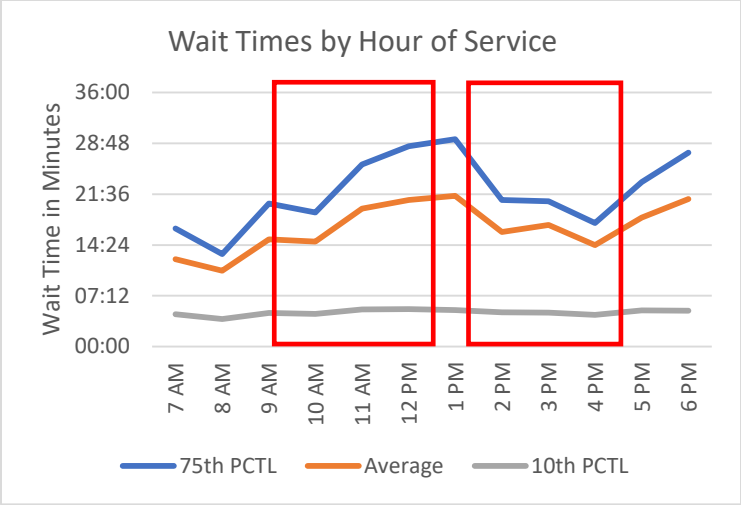


Figure 29 - Wait Times During Peak Periods (Transloc, 2019)

Beginning in February 2019, LTD reinstated the full 98 routing for all trips as part of the pilot project. The intent is to better understand the impact of MOD on the Community and to determine the viability of removing the second vehicle from the pilot to reduce overall costs. It is expected that peak ridership on the MOD will level out to match ride demand for service not including the Walmart Park and Ride.

Qualitative Analysis

Using data from two surveys distributed by LTD in July and October 2019, I performed an analysis of the responses to determine the qualitative impacts of the connector on its users. The surveys asked a variety of questions to understand the Connector ridership and population and were focused on some key areas:

- Basic Demographic information (age, income, access to a vehicle)
- Customer Satisfaction across multiple categories
- Trip Purpose
- Trip Choice
- Rider Behavior Change
- Reasons for non-use

Demographics

Survey results for age (Figure 30) distributions of Connector users were surprising. Transloc and LTD Staff anticipated that riders on the Connector service would trend older based on initial ridership and the existing ridership from South Lane Wheels Route Around Town users. Younger riders made up a significant portion of the surveyed riders. Unfortunately, since the electronic survey did not include and age question, determining how the rides requests were made would have provided some insight into how to market the service to younger customers.

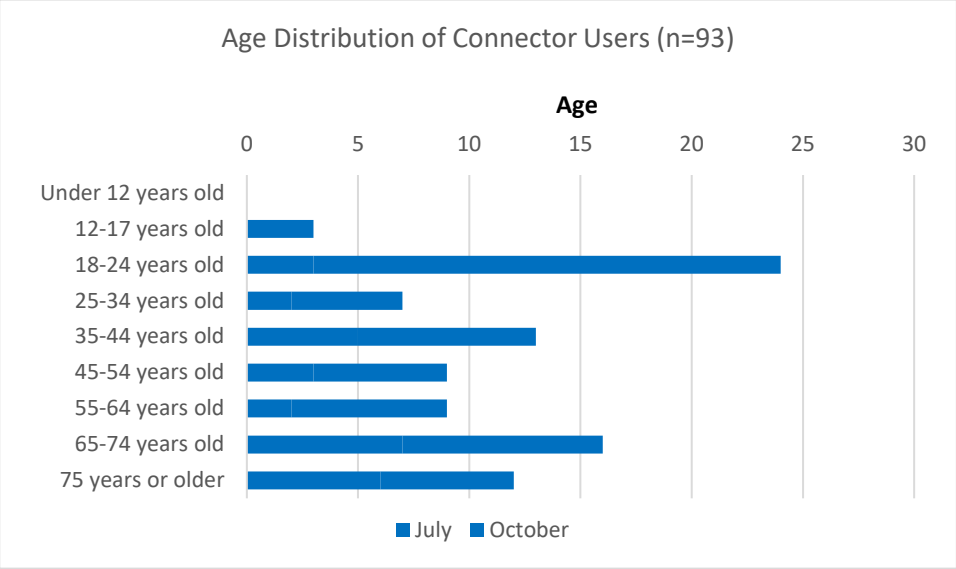


Figure 30 - Age Distribution of Connector Users

As expected, Connector ridership tends be higher among those with lower incomes and is closely associated with not having a vehicle available (Figures 31 and 32). Of those who identified as having incomes lower than $25,000 (n=84), 85% (n=71) said they did not have access to a vehicle.

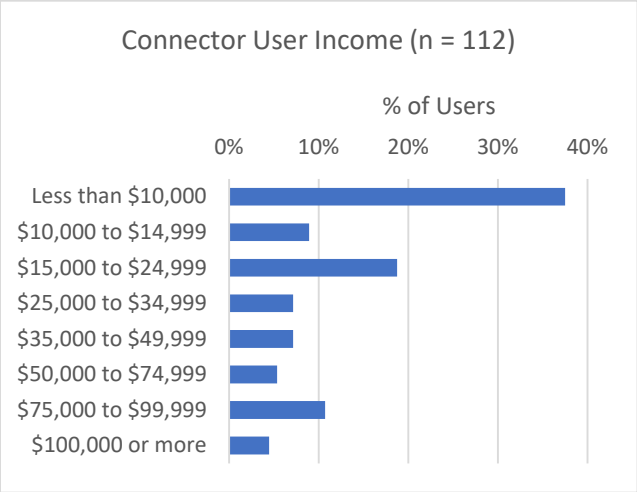


Figure 31 - Income Distributions

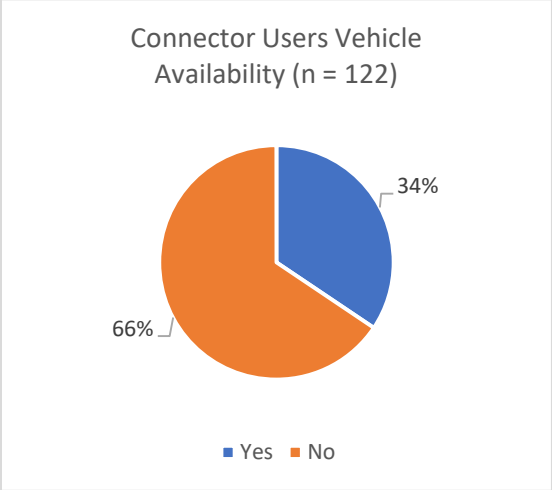


Figure 32 - Vehicle Availability for Connector Users

These two data points reflect the high trip rate of surveyed users in Figure 33, with 69% of making more than two trips per week and is closely related to trip purpose, trip choice and changes in ride behavior.

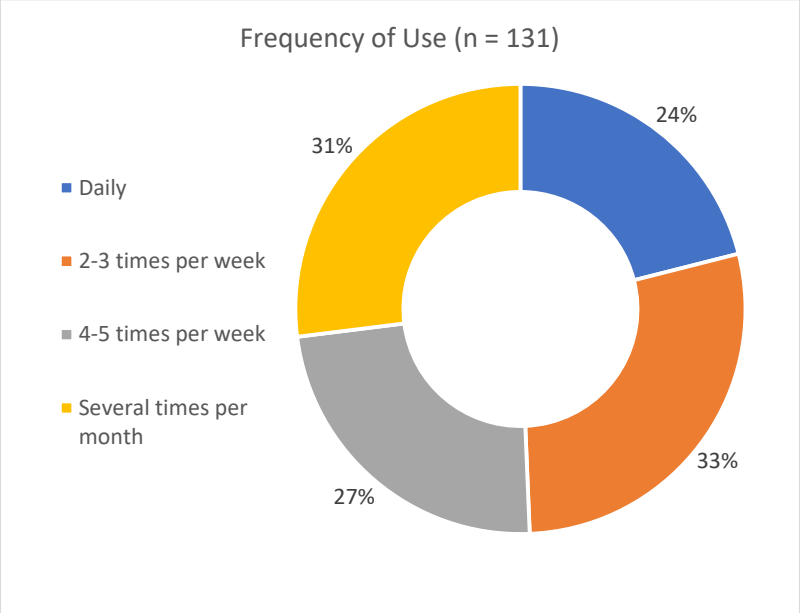


Figure 33 - Frequency of Connector Use

Trip Purpose

Riders were asked what purpose they utilized the Connector service and were asked to check all trip purposes that apply. Half of those surveyed used the service to connect with route 98 to access areas outside Cottage Grove, with shopping and medical appointments following closely (Figure 34).

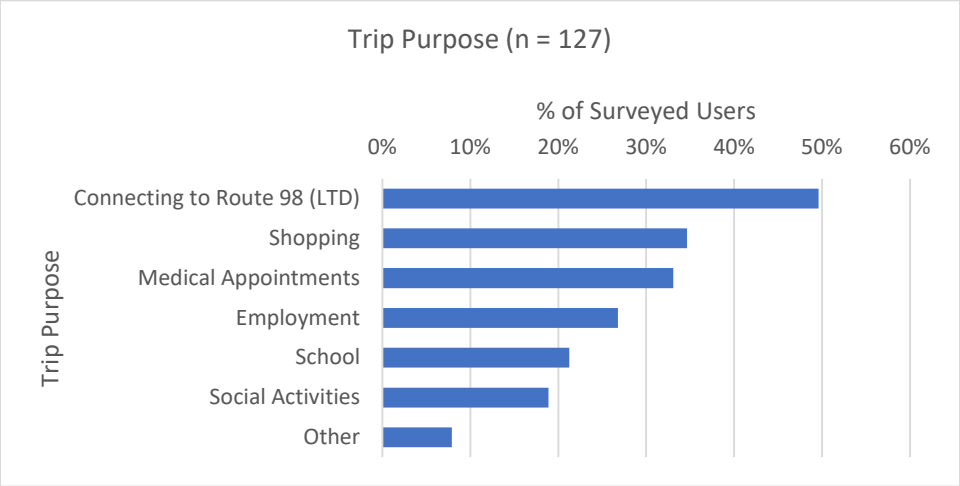


Figure 34 - Trip Purpose by Surveyed Users

An analysis of trip purpose was determined by analyzing destination data for all rides (Figure 35). In order to protect privacy of riders, categories were developed by grouping ride destinations by rounding destination latitude and longitude pairs to three digits, creating areas roughly the size of 111 meters. Contrary to survey data, the Walmart Park and Ride accounted for just 16% (2172) of all rides among destinations with over 100 rides. By category, it's apparent that majority of the trips taken on the Connector provide access to the local community and not to connect to the metro area.

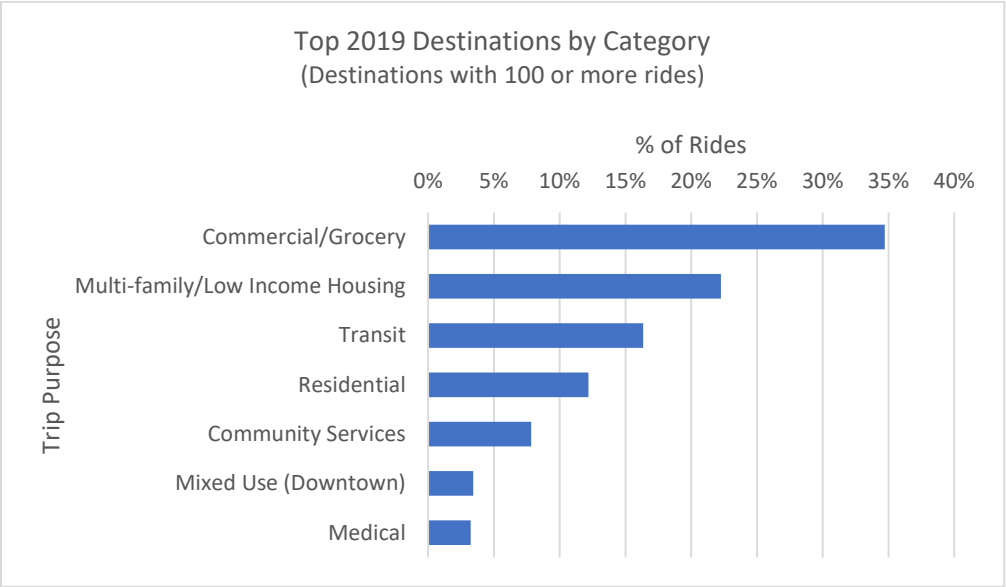


Figure 35 - Top Destinations in 2019 with 100 or more rides

Trip Method and Travel Changes

In order to help determine previous travel habits and if the Connector was filling a community need, riders were asked “If you didn't have the Connector service, how would you get around?” Given the low rate of access to a vehicle for surveyed riders, the high rates of walking and getting a ride were not surprising, however, 35% (n=39) of surveyed riders would not have made the trip at all (Figure 36).

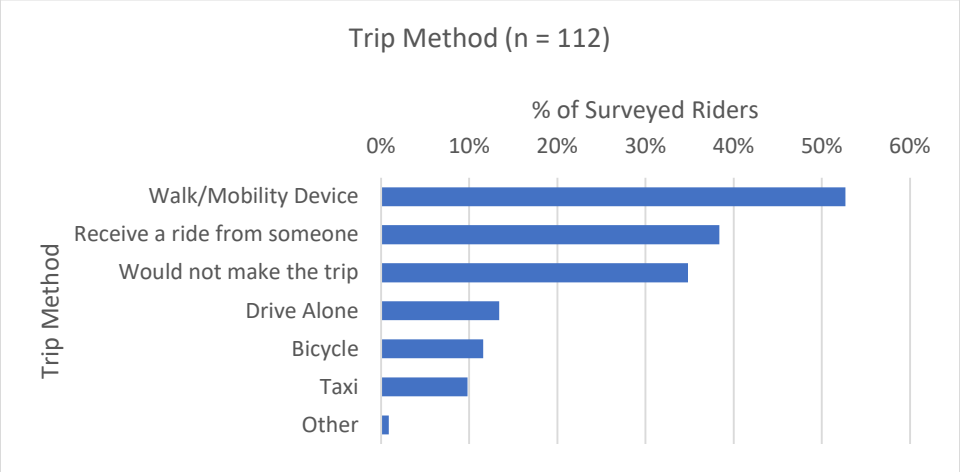


Figure 36 - Trip Method if Connector were unavailable.

Riders were also asked how the Connector service had changed their transportation habits regarding accessing the community, riding route 98, and the amount of driving they do (Figure 37). 50% (n=57) of those who responded said that they accessed the community more and 38% (n=34) were driving less than they did before the Connector Service. Unfortunately, there is no basis by which to measure the impacts of riders driving less on the community due to the lack of pre-service surveys and existing data.

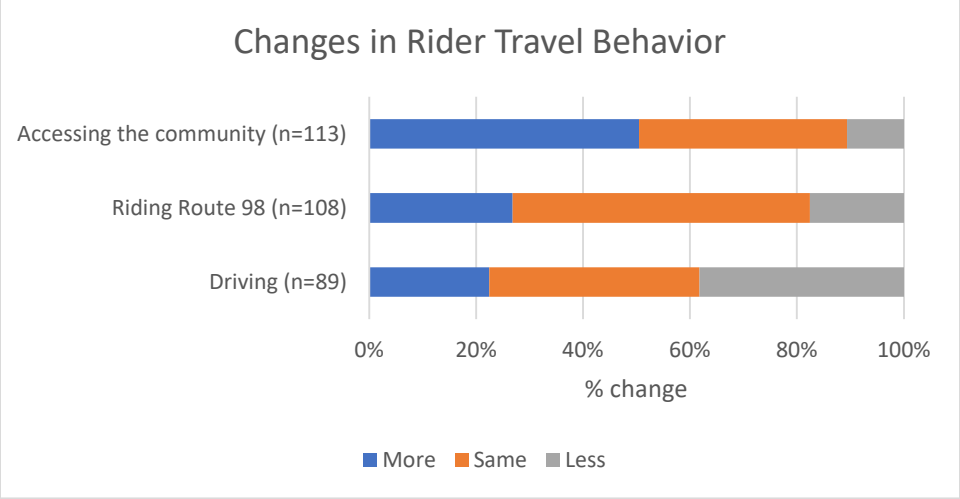


Figure 37 - Change in rider travel behavior.

Customer Satisfaction

Customers were asked to rate their experience on seven different aspects of the service as well as overall experience (Figure 38). Half of all surveyed users rated their experience in all categories as satisfied or highly satisfied. Wait times were the lowest rated aspect of their ride although average wait times rarely exceeded 15 minutes. Hours of operation trailed closely and corresponds to comments received asking for more service weekends and the addition of weekend service.

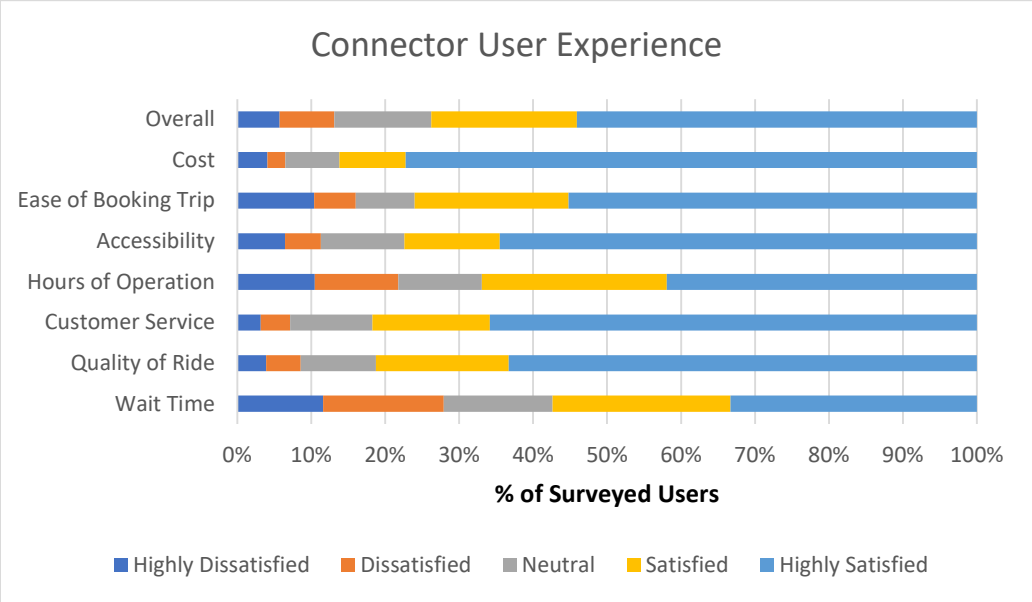


Figure 38 - Connector user experience of surveyed users.

Customer Feedback

LTD compiled a list of customer feedback starting with the implementation of the pilot program. Customers provided feedback in the form of survey comments, phone calls, customer suggestion forms, LTD's Facebook page, general email box, US mail, and in person responses. In order to maintain distance from the customer service issues managed by the contractor, LTD only responded to complaints or comments that pertained to the "why" of the pilot project. There were 67 logged comments regarding the Connector Service and 56 collected from Connector users from the October Survey. Of those comments 22 were positive, 63 negative, 9 requested more service and the remaining were categorized as "other" and covered a range of issues such as app problems or survey tool complaints. The majority of negative comments surrounded the lack of guaranteed connection to fixed route and wait time. Since the fixed route in town routing will be resuming in Feb 2019, and wait times were generally higher due to demand from fixed route ridership, it is likely that the number of complaints will drop significantly for the remainder of the pilot period.

Positive comments from users primarily praised the service and how it has increased their quality of life. These comments provide LTD the story behind the need that the Connector is filling and the importance of the mobility ad access it is providing. Some examples of positive and negative comments from Connector users include:

“As a blind man, with all of the expected issues in getting from point A to point B, this service is--quite literally--a life-and-death necessity for me. I utilize it very nearly daily to facilitate twice weekly grocery shopping, frequent trips to the Post Office (where I pick up most of what I purchase online), medical appointments and anywhere else in town where I find I must make a physical appearance in order to keep my life running smoothly.”

“I hope the LTD Connector service continues beyond the trial period. It will be difficult to remain independent without it.”

“It is a wonderful service. I would hardly have a way around. My mom drives but I don’t. The Connecter bus has been life changing for me. Now I can go where I need to go without paying alot of money to get there. Please keep this service in Cottage Grove I think this is the best transportation this town has needed for a very long time.”

“Love the Connecter bus. It has changed my life altogether. I can now get around town without paying alot of money for the taxi. I have spent a little over 20 dollars for the taxi for two rides where as with this new service I don’t have to pay that much money in town. I would be lost without it. Please, please keep this service available. Love the drivers as well.”

“I hope you continue this service because it enables me to be able to shop more often and I am able to participate in more social activities.”

"With the planned service change [to route 98] in Cottage Grove, I will be unable to both get my children ready for school and make it to work. This change is affecting me and my community in a profoundly negative way."

"Just wanted you to know how very disappointed I am that you are cutting routes in Cottage Grove. This is a big inconvenience to me as a U of O student. It means I have no choice in the morning as to when I leave for classes. Pretty much the crack of dawn- people taking afternoon classes seem to be out of luck....right? Is there something I've missed here? Please restore routes soon. This have to affect LCC students, too!"

“Please reinstate the regular LTD bus service with each bus that comes to Cottage Grove. I waited just over 30 minutes for the connector to get to Walmart. Then on it drove two other people home before it took me home so I got home 45 to 50 minutes after the LTD bus would have arrived at my regular stop (with the bus route through town). To walk to the Walmart stop takes me 35 minutes. This is unreasonable.”

"Please restore across town routing. Connector is not a transfer, only dial-a-ride which too often is not at Walmart. Have had to hike into town from there at least eight times this year and last week when the shuttle did show up, it took almost an hour to get down town for a trip that took only 20 minutes on the original LTD route. Please restore the original LTD routing through Cottage Grove. Nobody requested a transfer much less dial-a-ride"

Conclusion

After analysis of one year of data, survey data, and customer feedback, it's clear the Connector service is providing a valuable service and filling critical mobility needs in Cottage Grove. However, the primary question asked was if the Connector service is better or worse than LTD's fixed route service in Cottage Grove. The answer is, it's complicated. In order to fully answer the question it was necessary to determine the impacts on of LTD's fixed route, determine the impacts of the Connector service on the community, and evaluate it performance against other similar services to ensure its meeting financial and productivity goals.

The Connector's impact and decision eliminate a portion of the fixed route in Cottage Grove has substantial impacts on ridership and access. The structure of the pilot provides a very different service model than fixed route does, primarily in the very different markets that are served. The fixed route service serves primarily ridership that needs access to the Eugene/Springfield metro area and its educational opportunities, employment centers, medical services, and other social services. Its one-way, very limited service structure provided a much less useful service to community members who would like to access services and locations within the community. In stark contrast to the 98 which provides 60 minute and often less frequent service, the Connector essentially provides 15 minutes service to every person in the service area (based on average wait times) with opportunities to access any location with two-way access, between 7am-7pm. In terms of servicing the fixed route ridership, the data is clear that the structure of the pilot with no guarantee of connection to fixed route and the inability to preschedule rides clearly had a negative impact on those customers. This was evident by the drop in ridership on what seemed to be choice riders, and fixed route customer feedback. Clearly, the replacement of fixed route with MOD (in this case) did not result in positive outcomes for fixed route users. Conversely, for passengers who were not utilizing the service for fixed route connections, the improved mobility and ability to access the local community increased significantly while also reducing the amount of driving by surveyed users.

I argue that the Connector service is providing the same type of lifeline service delivered by LTD's rural fixed route to riders *within* the community of Cottage Grove. Clearly, the Connector is serving a very different intra-community transit market than LTD's commute and education driven metro-rural fixed route service. This service is providing a valuable mobility service to low-income and elderly community members, giving them the ability to access services, social events, and local businesses they might not have otherwise had access to. By separating these two different transit markets, it will provide a much clearer picture of how this service is impacting the community.

To that end, because of the differences in service models, costs, and results, I would argue that a transit district's willingness to provide a service depends very much on its values and the services it already provides to its community, in addition to funding, political, and other implications. RTD Denver has provided these types of service to many of its outlying communities at a heavy cost because it values the needs of the customers. LTD has provided service to outlying communities for many years in an effort to provide "lifeline" service to help increase the mobility of rural population for work and education without a clear goals such as boardings per hour, cost per boarding, etc., providing a valuable customer service. The question of whether LTD continues to fund the service, or partners with other community resources to assist in its provision is at the heart of the Board of Directors decision-making process as the pilot comes to an end in August 2020. There will be challenges in determining funding sources and

also operation of the service by a private contractor and whether the collective bargaining unit of LTD operators will demand to operate the service.

As a microtransit service, the Connector is doing as good, or better, than other microtransit programs based on the analysis of this report. It's clear that the service is more expensive than fixed route but measuring against fixed route may not be the most appropriate comparison. One challenge in analyzing performance of the service was the lack of establishing clear and measurable goals for the Connector before implementation. Understandably, as a new technology and service model not just to LTD but to the transit industry at large, there is lack of consensus on how to effectively measure these types of service. Ongoing analysis should continue to look at the measures evaluated in this report, especially considering the reintroduction of the fixed route service through town and removing that secondary market for the Connector's ridership for metro trips. In the short term, costs will likely rise with a drop in ridership, but further analysis of those impacts remain to be seen.

Technological and data sharing challenges exist in attempting to analyze these types of service. The technology and algorithms that are used in the efficiency of these programs are primarily private business start-ups that closely guard their data and analysis tools. Due to the lack of an application programming interface, allowing LTD database systems to communicate directly with Tranloc's datasets, the ride reports generated by Transloc had to be manipulated to extract the information needed into a usable format available to LTD Staff in order to make the analysis for this report possible. These lessons learned will be critical if LTD continues the program as they move forward with possibly selecting a new vendor or system by addressing the limitations of the current software. Opportunity also exists in ensuring the ability to reach customers on an ongoing basis, either through the application at the time of request, or once a ride has been completed to determine metrics like trip purpose, experience, or other qualitative metrics.

It will be essential for LTD to continue to monitor this service particularly after the in town routing of the fixed route service has been back in operation to determine how ridership changes on the Connector and if savings can be achieved to make the service both more efficient and productive. In addition, further surveying work will need to be done to measure qualitative changes and to continue to get feedback from users.

Further Research

As with any new service or technology, the need for further research is needed to fully understand the full impacts and implications. MOD is still an emerging technology platform. There are several areas that were identified through this analysis that should be researched to better understand how these service work.

- Continued analysis of the Connector service with the reinstatement of fixed route service through the city.
- The typology of MOD programs vary widely. While the technology companies involved in these on-demand services continue to develop modeling software to sell their products to current and potential clients, there is a strong need for academic analysis on the typology of MOD programs and characteristics of these programs on a global scale to create new modeling for transportation agencies.

- In depth origin and destination studies for these services are possible thanks to the amount of data available from the technology used in the vehicle dispatching software. This research would give agencies and cities alike the ability to see how people are moving around the community.
- Qualitative research on rider behavior, trips choice, and typology would be incredibly beneficial and contribute to the research surrounding these topics and micro-mobility projects.
- Development of a cost model based on the typology of these types of service and programs to provide a stronger basis for evaluation and comparison.
- Development of standard metrics and KPIs for MOD programs at a national level are needed to allow transit agencies to better understand how their services are working. The FTA's MOD Sandbox Program has only just scratched the surface for these types of analysis but are not focused specifically on on-demand transit options.
- Impact of microtransit on community and regional Climate Change and Sustainability Goals.

Appendix A: Agency Microtransit Data Request Forms

Survey Instrument One

In an effort to evaluate our ongoing Microtransit Pilot in Cottage Gove, Oregon, Lane Transit District (LTD) is seeking information about Microtransit pilot programs that your agency has conducted, is currently operating, or plans to implement. Any information that you can provide is helpful in evaluating our service. Completed forms can be sent directly to jeramy.card@ltd.org. If you have any questions regarding this form feel free to contact Jeramy Card at jeramy.card@ltd.org or 541-682-6148. Thank you in advance for taking the time to provide us with this information.

Name of Microtransit project/pilot (MTP):

Type of MTP (True On-Demand, Door-to-Door, Stop-to-Stop, Deviated Fixed Route, etc.):

Goal(s) of your agency's MTP:

Service/Software Provider:

Operated by (Contracted, Union):

Service Area Size (sq mi):

Service Area Population:

Number of Vehicles (Normal/Peak/Average):

Days of Operation:

Hours of Operation:

Fare:

Time period for data provided:

Fare Structure:

Financial Metrics

Total Cost of Pilot/Program:

Cost per Revenue Hour:

Cost per Vehicle Hour:

Cost per Trip:

Cost per Revenue Mile:

Cost per Vehicle Mile:

Cost per Passenger:

Subsidy per Ride:

Farebox Recovery:

Passenger Metrics

Unlinked Passenger Trips:

Avg Daily Boardings:

Boarding per Revenue hour:

Percent of Shared Rides:

Avg Rides per Vehicle hour:

Avg Ride Requests per Hour:

Wait Times: Min: 10th: Median: 90th: Max:

Ride Times Min: 10th: Median: 90th: Max:

Mobile App/Website Utilization:

Percent of Rides Generated by: App: Phone: Web: Walk-up:

Percent of Rides Completed: Canceled: No Show:

Vehicle Metrics

Vehicle Hours:

Vehicle Miles:

Revenue Miles:

Revenue Hours:

Safety Events/Types (NTD):

Security Events/Types (NTD):

Personal Security Events/Types (NTD):

Customer Service

Did you complete a rider survey?

Would you be willing to share those results?

Survey Instrument Two

Name of Microtransit project/pilot (MTP):

Type of Service (Curb-to-curb-, stop-to-stop, FMLM to transit):

Period Covered: Number of Service days:

Service Area size: Service Area Population:

Financial Metrics

Total Cost of Pilot/Program: Cost per Revenue Hour:

Cost per Vehicle Hour: Cost per Revenue Mile:

Subsidy per Ride: Cost per Vehicle Mile:

Cost per Passenger/Boarding: Farebox Recovery (%):

Passenger Metrics

Unlinked Passenger Trips: Passengers per trip:

Passenger Miles Traveled: Avg Passenger Miles:

Avg Daily Boardings: Boarding per Revenue hour:

Avg Rides per Vehicle hour: Avg Ride Requests per Hour:

Avg Wait Time: Avg Ride Time:

Percent (or total) of Rides Generated by App: Phone: Web: Walk-up:

Percent (or total) of Rides Completed: Canceled: No Show: Denied:

Vehicle Metrics

Peak Number of Vehicles:

Total Vehicle Hours: Avg Daily Vehicle Hours:

Total Vehicle Miles: Avg Daily Vehicle Miles:

Total Revenue Miles: Avg Daily Revenue Miles:

Total Revenue Hours: Avg Daily Revenue Hours:

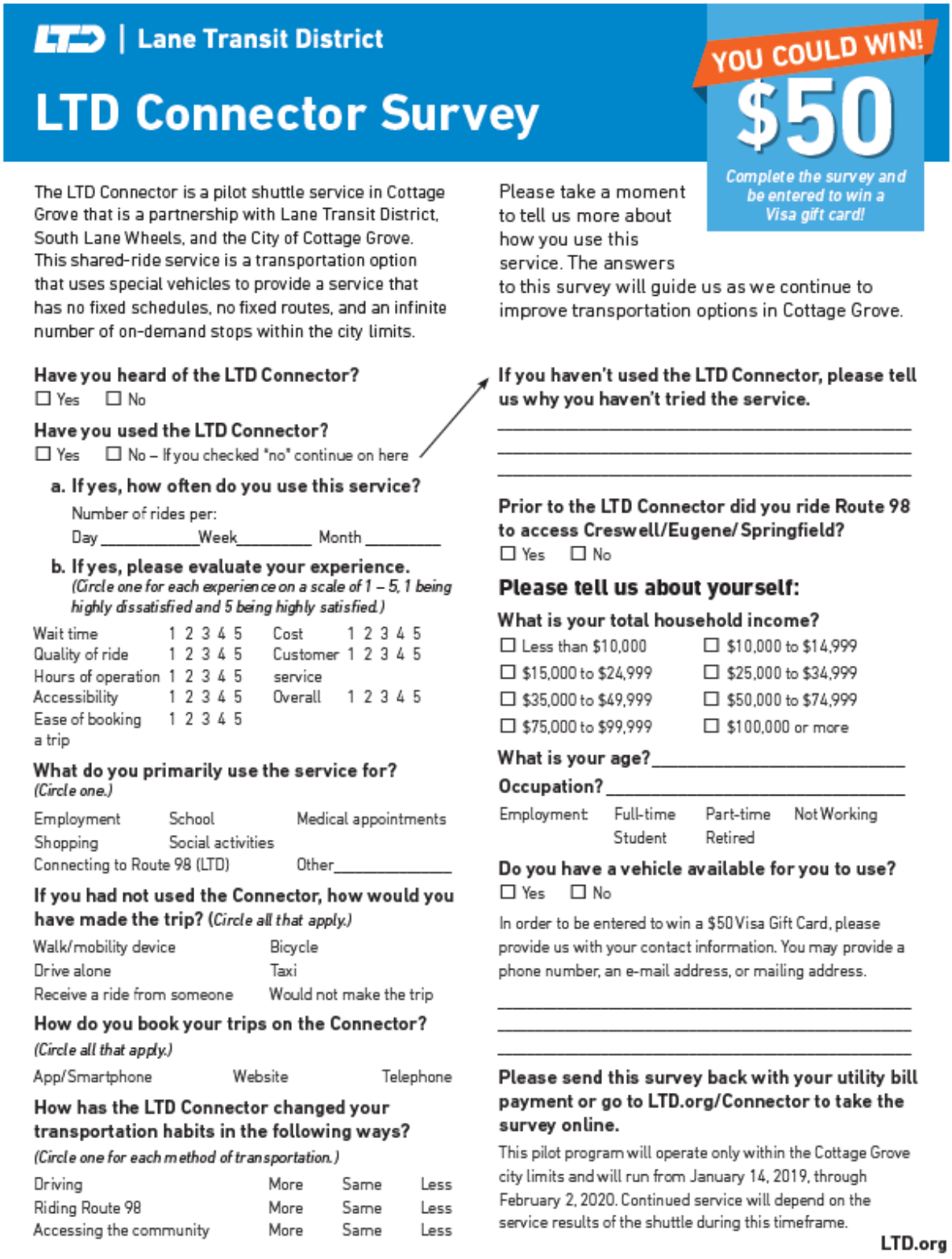
Qualitative:

1. How is your agency defining success or failure or your program?
2. What are the key metrics that your agency has determined are critical in evaluation in your service?
3. Have the goals of your pilot changed since it has started?
4. Do you have any insights regarding this type of service that you would like to share?
5. Do you plan on continuing this service? Why or why not?

If you have completed a survey and are willing to share the results, please send them to Jeramy Card at jeramy.card@ltd.org.

Appendix B: LTD Customer Survey and Results

July 2019 Survey Instrument



LTD | Lane Transit District

LTD Connector Survey

YOU COULD WIN! $50

Complete the survey and be entered to win a Visa gift card!

The LTD Connector is a pilot shuttle service in Cottage Grove that is a partnership with Lane Transit District, South Lane Wheels, and the City of Cottage Grove. This shared-ride service is a transportation option that uses special vehicles to provide a service that has no fixed schedules, no fixed routes, and an infinite number of on-demand stops within the city limits.

Please take a moment to tell us more about how you use this service. The answers to this survey will guide us as we continue to improve transportation options in Cottage Grove.

Have you heard of the LTD Connector?
☐ Yes ☐ No

Have you used the LTD Connector?
☐ Yes ☐ No – If you checked "no" continue on here

a. If yes, how often do you use this service?
Number of rides per:
Day _____ Week _____ Month _____

b. If yes, please evaluate your experience.
(Circle one for each experience on a scale of 1 – 5, 1 being highly dissatisfied and 5 being highly satisfied.)

Wait time	1 2 3 4 5	Cost	1 2 3 4 5
Quality of ride	1 2 3 4 5	Customer service	1 2 3 4 5
Hours of operation	1 2 3 4 5		
Accessibility	1 2 3 4 5	Overall	1 2 3 4 5
Ease of booking a trip	1 2 3 4 5		

What do you primarily use the service for?
(Circle one.)

Employment School Medical appointments
Shopping Social activities
Connecting to Route 98 (LTD) Other_____

If you had not used the Connector, how would you have made the trip? *(Circle all that apply.)*

Walk/mobility device Bicycle
Drive alone Taxi
Receive a ride from someone Would not make the trip

How do you book your trips on the Connector?
(Circle all that apply.)

App/Smartphone Website Telephone

How has the LTD Connector changed your transportation habits in the following ways?
(Circle one for each method of transportation.)

Driving	More	Same	Less
Riding Route 98	More	Same	Less
Accessing the community	More	Same	Less

If you haven't used the LTD Connector, please tell us why you haven't tried the service.
_____
_____
_____

Prior to the LTD Connector did you ride Route 98 to access Creswell/Eugene/Springfield?
☐ Yes ☐ No

Please tell us about yourself:

What is your total household income?
☐ Less than $10,000 ☐ $10,000 to $14,999
☐ $15,000 to $24,999 ☐ $25,000 to $34,999
☐ $35,000 to $49,999 ☐ $50,000 to $74,999
☐ $75,000 to $99,999 ☐ $100,000 or more

What is your age?_____

Occupation? _____

Employment: Full-time Part-time Not Working
Student Retired

Do you have a vehicle available for you to use?
☐ Yes ☐ No

In order to be entered to win a $50 Visa Gift Card, please provide us with your contact information. You may provide a phone number, an e-mail address, or mailing address.

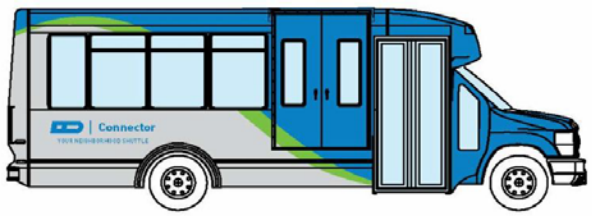
_____
_____
_____

Please send this survey back with your utility bill payment or go to LTD.org/Connector to take the survey online.

This pilot program will operate only within the Cottage Grove city limits and will run from January 14, 2019, through February 2, 2020. Continued service will depend on the service results of the shuttle during this timeframe.

LTD.org

July 2019 Survey Results



Constant Contact Survey Results

Survey Name: LTD Connector Survey

Response Status: Partial & Completed

Filter: None

3/10/2020 1:26 PM PDT

TextBlock:

Complete the survey to be entered
to win a $50 Visa Gift Card!

TextBlock:

The LTD
Connector is a pilot shuttle service in Cottage Grove that is a partnership with Lane Transit District, South Lane Wheels, and the City of Cottage Grove. This shared-ride service is a transportation option that uses special vehicles to provide a service that has no fixed schedules, no fixed routes, and an infinite number of on-demand stops within the city limits. Please take a moment to tell us more about how you use this service. The answers to this survey will guide us as we continue to improve transportation options in Cottage Grove.

Have you
heard of the LTD Connector?

Answer	0% 100%	Number of Response(s)	Response Ratio
Yes		92	61.3 %
No		46	30.6 %
No Response(s)		12	8.0 %
	Totals	150	100%

Have you used the LTD Connector?

Answer	0% 100%	Number of Response(s)	Response Ratio
Yes		30	20.0 %
No		102	68.0 %
No Response(s)		18	12.0 %
	Totals	150	100%

How often do you use the LTD Connector?

Answer	0% 100%	Number of Response(s)	Response Ratio
Daily		7	4.6 %
Weekly		8	5.3 %
Monthly		3	2.0 %
No Response(s)		132	88.0 %
	Totals	150	100%

How many daily trips do you make on the LTD Connector?

Answer	0% 100%	Number of Response(s)	Response Ratio
1 - 2 trips		14	9.3 %
3 - 4 trips		2	1.3 %
5 - 6 trips		0	0.0 %
More		3	2.0 %
No Response(s)		131	87.3 %
	Totals	150	100%

How many weekly trips do you make on the LTD Connector?

Answer	0% 100%	Number of Response(s)	Response Ratio
1 - 3 trips		10	6.6 %
4 - 7 trips		5	3.3 %
8 - 11 trips		3	2.0 %
12 - 15 trips		1	<1 %
More		1	<1 %
No Response(s)		130	86.6 %
	Totals	150	100%

How many monthly trips do you make on the LTD Connector?

Answer	0% 100%	Number of Response(s)	Response Ratio
1 - 5 trips		7	4.6 %
6 - 10 trips		1	<1 %
11 - 15 trips		1	<1 %
16 - 20 trips		2	1.3 %
More		4	2.6 %
No Response(s)		135	90.0 %
	Totals	150	100%

Please evaluate your experience on a scale of 1 - 5 on the following (1 being highly dissatisfied and 5 being highly satisfied):

1 = Highly Dissatisfied, 2 = Dissatisfied, 3 = Neutral, 4 = Satisfied, 5 = Highly Satisfied

Answer	1 2 3 4 5	Number of Response(s)	Rating Score*
Wait Time		29	3.0
Quality of Ride		28	4.3
Hours of Operation		28	3.8
Accessibility		28	4.1
Cost		27	4.4
Customer Service		27	4.1
Ease of Booking Trip		28	3.8
Overall		26	3.7

*The Rating Score is the weighted average calculated by dividing the sum of all weighted ratings by the number of total responses.

What do you primarily use the LTD Connector for?

Answer	0% 100%	Number of Response(s)	Response Ratio
Employment		2	1.3 %
School		2	1.3 %
Medical Appointments		7	4.6 %
Shopping		2	1.3 %
Connecting to LTD's Route 98		14	9.3 %
Social Activities		0	0.0 %
Other		3	2.0 %
No Response(s)		120	80.0 %
	Totals	150	100%

If the Connector weren't available, how would you make your trips? (Check all that apply)

Answer	0% 100%	Number of Response(s)	Response Ratio
Walk/Mobility Device		14	43.7 %
Bicycle		2	6.2 %
Drive Alone		5	15.6 %
Receive a ride from someone		16	50.0 %
Taxi		2	6.2 %
Would not make the trip		12	37.5 %
Other		1	3.1 %
	Totals	32	100%

How do you book your trips on the LTD Connector?

Answer	0% 100%	Number of Response(s)	Response Ratio
App/Smartphone		14	9.3 %
Website		0	0.0 %
Phone		15	10.0 %
No Response(s)		121	80.6 %
	Totals	150	100%

Please tell us if using the LTD Connector has changed your transportation habits in the following methods:
1 = More, 2 = Same, 3 = Less

Answer	1 2 3	Number of Response(s)	Rating Score*
Driving		24	2.2
Riding Route 98		26	2.2
Accessing the community		26	1.8

*The Rating Score is the weighted average calculated by dividing the sum of all weighted ratings by the number of total responses.

If you answered no, please tell us why you haven't tried the LTD Connector service.

115 Response(s)

Prior to the LTD Connector service implementation, did you ride LTD's Route 98 to access Creswell/Eugene/Springfield?

Answer	0%	100%	Number of Response(s)	Response Ratio
Yes			51	34.0 %
No			72	48.0 %
No Response(s)			27	18.0 %
		Totals	150	100%

TextBlock:

Please tell us about yourself.

What is your total household income?

Answer	0%	100%	Number of Response(s)	Response Ratio
Less than $10,000			21	14.0 %
$10,000 to $14,999			7	4.6 %
$15,000 to $24,999			15	10.0 %
$25,000 to $34,999			18	12.0 %
$35,000 to $49,999			22	14.6 %
$50,000 to $74,999			16	10.6 %
$75,000 to $99,999			9	6.0 %
$100,000 or more			5	3.3 %
No Response(s)			37	24.6 %
		Totals	150	100%

What is your age?

128 Response(s)

Occupation?

Answer	0% 100%	Number of Response(s)	Response Ratio
Employed Full time		30	20.0 %
Employed Part-time		7	4.6 %
Not Working		18	12.0 %
Student		3	2.0 %
Retired		68	45.3 %
No Response(s)		24	16.0 %
	Totals	150	100%

Do you have a vehicle available for you to use?

Answer	0% 100%	Number of Response(s)	Response Ratio
Yes		109	72.6 %
No		27	18.0 %
No Response(s)		14	9.3 %
	Totals	150	100%

In order to be entered to win a $50 Visa Gift Card, please provide us with your contact information. Can be a phone number, an e-mail address, or your mailing address.

110 Response(s)

TextBlock:

This pilot program will
operate only within the Cottage Grove city limits and will run from January 14, 2019, through February 2, 2020. Continued service will depend on the service results of the shuttle during this timeframe.

October 2019 Survey Instrument

Lane Transit District

LTD Connector Survey

Please take a moment to share more about how you can use the LTD Connector service. Answers provided from the survey will be used as a guide to continue to improve transportation options in Cottage Grove.

Have you used the LTD Connector?

☐ Yes ☐ No - If no, continue here. →

If you haven't used the LTD Connector, please tell us why you haven't tried the service.

_____
_____
_____
_____
_____
_____

a. If yes, how often do you use this service?

☐ Daily ☐ 2-3 times/week ☐ 4-5 times/week
☐ Several times/month

b. If yes, please evaluate your experience.

(Circle one for each experience.)

	Highly Dissatisfied				Highly Satisfied
Wait time	1	2	3	4	5
Customer service	1	2	3	4	5
Quality of ride	1	2	3	4	5
Hours of operation	1	2	3	4	5
Accessibility	1	2	3	4	5
Ease of booking a trip	1	2	3	4	5
Cost	1	2	3	4	5
Overall	1	2	3	4	5

What do you use the service for?

(Circle all that apply.)

Employment School Medical appointments
Shopping Social activities
Connecting to Route 98 (LTD) Other_____

If you had not used the Connector, how would you have made the trip? *(Circle all that apply.)*

Walk/mobility device Bicycle
Drive alone Taxi
Receive a ride from someone Would not make the trip

How has the LTD Connector changed your transportation habits in the following ways?

(Circle one for each method of transportation.)

Driving	More	Same	Less
Riding Route 98	More	Same	Less
Accessing the community	More	Same	Less

Prior to the LTD Connector did you ride Route 98 to access Creswell/Eugene/Springfield?

☐ Yes ☐ No

Please tell us about yourself:

What is your total household income?

☐ Less than $10,000 ☐ $10,000 to $14,999
☐ $15,000 to $24,999 ☐ $25,000 to $34,999
☐ $35,000 to $49,999 ☐ $50,000 to $74,999
☐ $75,000 to $99,999 ☐ $100,000 or more

What is your age? _____

Do you have a vehicle available for you to use?

☐ Yes ☐ No

Comments:

_____
_____
_____
_____
_____
_____
_____

For surveyor use only

Time _____

Date _____

Route 98 _____ LTD Connector _____

Inbound _____ Outbound _____

connectorsurvey.rev10.28.19

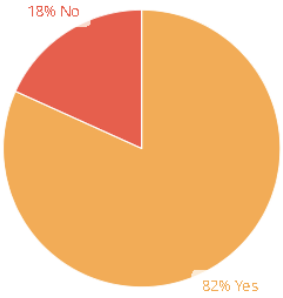
October 2019 Results

LTD Connector Rider Survey

Project Engagement

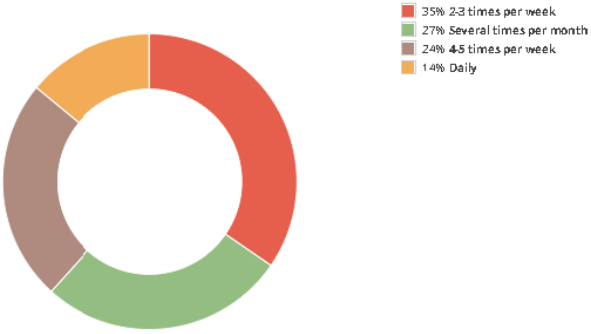
VIEWS	PARTICIPANTS	RESPONSES	COMMENTS	SUBSCRIBERS
361	151	2,075	179	767

Have you used the LTD Connector?



148 respondents

If yes, how often do you use this service?



107 respondents

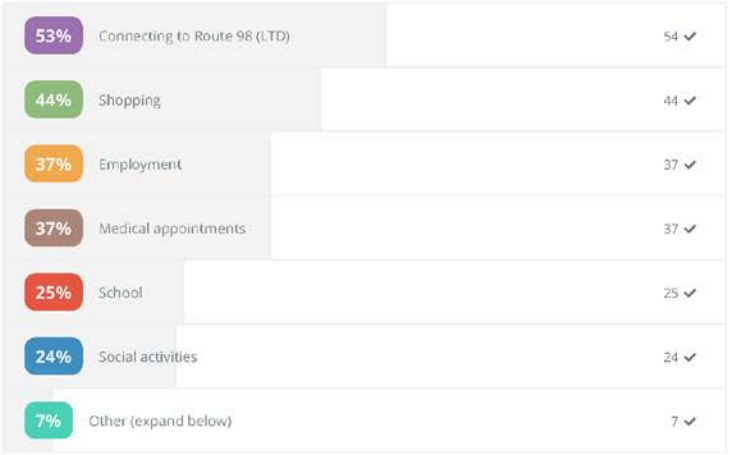
If yes, please rate your experience. (1 being highly dissatisfied, 5 being highly satisfied)

	1	2	3	4	5
Wait time	11% 1	16% 2	13% 3	23% 4	38% 5
Quality of ride	5% 1	5% 2	11% 3	17% 4	63% 5
Customer service	3% 1	4% 2	9% 3	18% 4	67% 5
Hours of operation	9% 1	11% 2	13% 3	27% 4	40% 5
Accessibility	8% 1	5% 2	10% 3	13% 4	65% 5
Ease of booking a trip	10% 1	7% 2	8% 3	16% 4	59% 5
Cost	4% 1	2% 2	10% 3	10% 4	74% 5
Overall	5% 1	9% 2	11% 3	17% 4	58% 5

109 respondents

If you haven't used the LTD Connector, tell us why you haven't tried the service.

What do you use the service for? Select all that apply.



If you didn't have the Connector service, how would you get around?

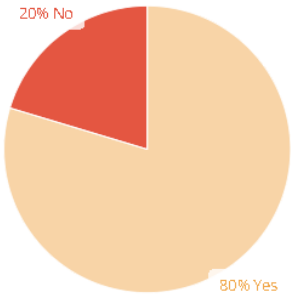
54%	Walk/mobility device	49 ✓
34%	Receive a ride from someone else	31 ✓
31%	Wouldn't make the trip	28 ✓
12%	Drive alone	11 ✓
12%	Bicycle	11 ✓
11%	Taxi	10 ✓
2%	Other (expand below)	2 ✓

How has the LTD Connector changed your transportation habits? Circle one for each method of transportation.

	More	Same	Less
Driving	20% More	45% Same	35% Less
Riding Route 98	31% More	53% Same	16% Less
Access the community	51% More	38% Same	11% Less

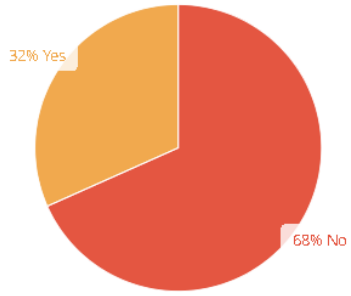
94 respondents

Prior to the LTD Connector, did you ride Route 98 to access Creswell/Eugene/Springfield?



113 respondents

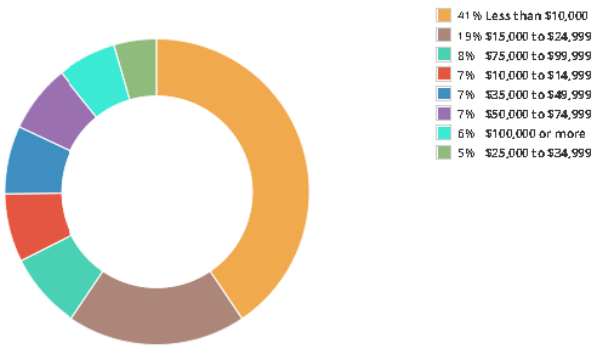
Do you have a vehicle available for you to use?



120 respondents

What is your age?

What is your total household income?



111 respondents

Thank you for taking the survey. It will help guide us as we continue to improve transportation options in Cottage Grove. Please share any additional feedback below.

Appendix C: Mobility On Demand Intergovernmental Agreement Statement of Work

EXHIBIT A
STATEMENT OF WORK

Mobility on Demand Pilot Project – City of Cottage Grove

A. Duration of Pilot Project: January 14, 2019 – February 1, 2020

B. Scope of Work. The City shall oversee and coordinate transportation services provided by their subcontractor, South Lane Wheels (SLW), for older adults, individuals with disabilities, and the general public in this Mobility on Demand (MOD) Pilot Program for LTD. A broad description of the tasks required to complete the project are defined below:

(1) **Operations and Dispatch**

(a) Provide labor required for operations and dispatch of mobility-on-demand service.

(b) Provide customer and operator support through dispatch.

(c) Consistently operate the LTD Connector Shuttle in Cottage Grove.

(d) Perform all tasks related to the managing and provision of operations of MOD services identified below:

1. Monday-Friday, 7 a.m. to 7:30 p.m. – vehicle operations
2. Monday-Friday, 7 a.m. to 7 p.m. – reservations taken
3. Limited schedule (8 hours) from 8:30 a.m. to 5:00 p.m. on Memorial Day, Independence Day, Labor Day, day after Thanksgiving, and New Year's Day
4. Does not operate Christmas Day and Thanksgiving Day

(e) Perform assigned work with a high level of customer service and passenger awareness.

(f) Troubleshoot software issues with TransLoc directly. If not able to resolve within four (4) hours, escalate to LTD for follow-up.

(g) Collect fares and record fare types upon passenger boarding.

(h) Operation requires training, reporting, and oversight consistent with local, State of Oregon, and federal regulations.

C. The City's Responsibilities

(1) The City agrees to select a qualified provider(s) and manage resources in coordination with grants awarded from the FTA Section 5311: Small City and Rural Area Transit Assistance Program as per program requirements.

(2) Attend meetings with LTD to assess service and troubleshoot issues, as needed.

(3) Store vehicles securely.

(4) Store tablets in a secured location.

(5) Ensure preventative maintenance is performed according to warranty and provide asset management reports.

(6) Ensure pre-trip and post-trip vehicle assessments are performed.

(7) Ensure adherence to all regular requirements of vehicle use.

(8) Immediately report any service disruptions, passenger inquiries, liability issues, or TransLoc software to the Contract Manager.

(9) Adhere to reimbursement submittal deadlines.

(10) Provide Contract Data Requirement List (CDRL).

(a) Produce monthly reports detailing passenger counts, farebox revenue, fuel, vehicle maintenance costs, etc., in accordance with the Vehicle Lease and Preventive Maintenance Agreement between South Lane Wheels and LTD (Contract No. 2011-36). Contractor shall also be responsible for providing reports as required by ODOT and the National Transit Database (NTD).

D. LTD's Responsibilities

(1) LTD will install all equipment on the vehicles required for operation. The use of LTD tablets and mounts are covered in the Vehicle Lease and Preventive Maintenance Agreement between South Lane Wheels and LTD (Contract No. 2011-36).

(2) LTD will provide a data plan for tablets to interface with the web.

(3) LTD will promote the LTD Connector to target audiences throughout the pilot program and conduct an evaluation survey.

(4) LTD staff will assist with security and enforcement of LTD Ordinance 36 – "Regulations Governing Conduct on District Property," as appropriate.

EXHIBIT B
COMPENSATION AND METHOD OF PAYMENT FOR SERVICES

I. **Total Compensation.** It is understood by both Parties that the Maximum Compensation under this Agreement shall not exceed **One Hundred Forty-Six Thousand Seven Hundred Sixty and no/100 US Dollars ($146,760.00)** of designated resources for the provision of services for the Mobility on Demand (MOD) Pilot Program as defined in Exhibit A to this Agreement. In no event will Contractor exceed the authorized "not-to-exceed" amount of the Agreement without the express written consent of LTD. The Maximum Compensation may only be modified as specified in paragraph 5 of this Agreement.

II. **Invoicing and Payment**. LTD will pay Contractor for completion of the Services pursuant to the Agreement, assuming all duties, responsibilities, and obligations under the Agreement have been met. The City shall send an invoice package to LTD on a monthly basis in the format provided below:

a. **Support Services Expense Reimbursement.** Please utilize the below format to report monthly support services:

Labor Category	Hours Worked	Burdened Labor Rate	Amount Invoiced
		$	$
		$	$
		$	$
TOTAL AMOUNT FOR SERVICES			$
Less fares collected			
TOTAL AMOUNT INVOICED			$

b. **Fuel Expense Reimbursement.** Fuel expenses will be reimbursed at cost and will require accompanying receipts for reimbursement.

Fuel Used for LTD-Owned Vehicles – MOD	Amount Invoiced
MOD Vehicle #1	$
MOD Vehicle #2	$
TOTAL AMOUNT INVOICED	$

c. Invoices should be sent electronically in PDF format to ap@ltd.org. Reimbursable expenses must be documented by copies of receipts, and the hours worked and hourly rates or a payroll report that covers the period being billed.

d. LTD prefers to make payments electronically via EFT/ACH. An ACH Authorization Agreement will be provided upon request.

e. Payment terms are 2% Net 10 calendar days following receipt of a correct and audit-worthy invoice by LTD. A correct and audit-worthy invoice shall include the following:

i. Applicable purchase order number and LTD contract number

ii. Invoice billing period

iii. Description of the Services performed during the invoice billing period (including completed Deliverables)

iv. Any other information that LTD may reasonably require. (See Exhibit A to the Agreement.)