Demand response service in Las Cruces is in high demand. This chapter details the analysis of the current demand response service, showing which parts of the demand response system are working efficiently and which parts could be improved.
DEMAND-RESPONSE OVERVIEW

RoadRUNNER Transit provides an origin to destination demand-response for individuals with disabilities (as defined by the Americans with Disabilities Act) and senior citizens age 60 or older within Las Cruces city limits. A qualitative and quantitative analysis of RoadRUNNER Transit’s current demand-response service concluded the following:

- **Senior and ADA ridership show significantly different demand patterns.** Senior ridership is heavily concentrated between 9am – 12pm and primarily includes trips to or from day centers (e.g., Munson Senior Center, Frank O’Brien Papen Center, Eastside Community Center, Benavidez Community Center), while ADA ridership is more evenly distributed across Las Cruces and throughout the service day.
- **Seniors compose of two-thirds of total monthly ridership on average.** Seniors are the primary customers of RoadRUNNER Transit’s demand-response service with the remaining passengers eligible for a trip under ADA guidelines.
- **The service is most efficient between 9am and 12pm and shows signs of potential oversupply in the afternoon.** As senior ridership substantially decreases in the afternoon, a significant number of vehicles remain on the road, perhaps indicating that there is an opportunity to better adjust vehicle supply to match demand.
- **When compared to peer transit agencies, RoadRUNNER Transit has a relatively low operating cost per vehicle hour, but it could improve service efficiency relative to its peers.** RoadRUNNER Transit benefits from relatively low direct operating costs, but it lags two-thirds of peers in the number of trips served per vehicle revenue hour.
- **RoadRUNNER Transit has comparatively high annual trips per 1,000 people in the service area, likely reflecting senior eligibility.** Among demand-response services of peer agencies, RoadRUNNER Transit’s relative trip volume is high, which may reflect how all seniors age 60 and over are eligible for service as compared to peer agencies that may have more restrictive eligibility requirements.

Service Description

RoadRUNNER Transit provides an origin to destination demand-response for individuals with disabilities (as defined by the Americans with Disabilities Act) and senior citizens age 60 or older within Las Cruces city limits. ADA customers must apply in order to become eligible for the service, while senior citizens must be registered with the Dial-A-Ride program. For all passengers, the fare is $1 for a one-way trip.¹ Prior to the COVID-19 pandemic, the service operated from 6:30am - 10:30 pm Monday through Friday, and 9:00am to 6:00pm on Saturday (hours have been temporarily shortened due to the decrease in ridership resulting from COVID-19).

ADA customers are able to book a trip up to 24 hours in advance, while seniors must book at least 14 days in advance to secure a scheduled trip; otherwise, senior bookings will be accepted on a standby basis and passengers must call the day before their scheduled trip for confirmation. Same-day service is not provided except in an emergency situation. When a customer books their trip, the scheduler can negotiate the actual scheduled trip time +/- 1 hour from the requested time. Further, the driver is allowed

¹ Due to the COVID-19 pandemic, transit users can temporarily ride fare-free.
a pickup window of +/- 15 minutes from the scheduled time for the trip to be considered an on-time pickup.²

DATA
Demand-response ridership data were provided by RoadRUNNER Transit. Detailed trip level data were provided for two typical weeks of travel (1/27/2020 - 2/8/2020). Aggregate data were provided on a monthly basis for the 2019 calendar year. 2020 ridership data were not used for this project due to the impact of the COVID-19 pandemic, which significantly reduced ridership. It is expected that ridership will return to pre-COVID levels once the pandemic has ended.

Travel Patterns
This section of the report examines the ridership patterns of demand-response public transit.

TIME OF DAY
The graph below shows the average number of weekday trips per hour based on departure times. Peak hour travel is from 12 - 1 PM, with approximately 35 passengers. A smaller peak occurs between 9 - 11 AM. Both peaks correspond with the times that many seniors travel to and from group meals and other social activities. These peaks are largely driven by senior trips, with ADA demand more evenly distributed across the day.

Figure 2-1: Ridership by Hour

![Ridership by Hour](image)

Source: RoadRUNNER Transit

DAY OF WEEK
The graph below shows ridership per day for the two weeks of data provided. The average weekday ridership is approximately 200 passengers per day and the average Saturday ridership is approximately 25 passengers per day (there is no service on Sunday). Low Saturday ridership is in part due to senior

² For medical appointments, the allowed on-time window is 30 minutes before drop off. For trips to/from work, the allowed negotiated trip time adjusts to ensure customers do not arrive late or get picked up before the workday has ended.
ridership primarily being driven by recurring weekday activities. Ridership is relatively stable across the weekdays, with Wednesdays having slightly higher ridership than other days.

Figure 2-2: Daily Ridership

![Daily Ridership Graph](Image)

Source: RoadRUNNER

MONTHLY RIDERSHIP

The graph below shows the monthly ridership of approximately 4,500 trips. Ridership during October 2019 was higher than other months, which is likely due to an increased number of major events in Las Cruces during this month. Seniors compose about two-thirds of monthly ridership.

Figure 2-3: Monthly Ridership

![Monthly Ridership Graph](Image)

Source: RoadRUNNER Transit
TRIP DISTANCE
The average trip distance is 3.3 miles. The average ADA trip is roughly one mile longer than the average senior trip.

Figure 2-4: Trip Distance

TRIPS BY LOCATION
The maps on the following pages show the demand-response origin and destination pairs. The size of the circle represents the number of origins or destinations associated with a unique address. Most trips are to or from central and west Las Cruces, including key locations such as Munson Senior Center, Eastside Community Center, Benavidez Community Center, and Fresenius Kidney Care. Trip volume at these key locations is primarily attributed to senior ridership. For ADA customers, demand is more dispersed throughout the city, and there is also noticeable trip volume at Doña Ana Community College’s East Mesa Campus in north Las Cruces.
Figure 2-5: All Origin-Destination Pairs 1/27/20 - 2/8/20

Figure 2-6: All Origin-Destination Pairs 2/6/20
Figure 2-9: Top Origin Destination Pairs 1/27/20 - 2/8/20
Vehicles and Efficiency

This section of the report examines supply, efficiency, and comparative cost metrics for demand-response public transit. All metrics are included in Table 1: RoadRUNNER Transit Benchmarking.

AVERAGE VEHICLES BY TIME OF DAY

The graph below illustrates the average number of vehicles in operation each hour on weekdays. On average, the service uses 13 vehicles at peak times, while using a maximum number of 14 vehicles on certain days. Average trips per hour are shown by the red line (right vertical axis). This chart suggests that the service is most efficient at 12:00pm by achieving over 3 passengers per vehicle hour, while showing signs of potential oversupply in the mid-afternoon hours, when the number of vehicles is relatively high compared to ridership at about 1.5 passengers per vehicle hour.

Figure 2-10: Vehicles per Hour and Trips per Vehicle Hour

TOTAL VEHICLE HOURS AND MILES

The service averages 2,100 revenue hours and 17,400 revenue miles per month. There are modest seasonal peaks in April/May and October due to the university schedule and more activities occurring in the city, respectively.
**Figure 2-11: Vehicle Revenue Hours and Miles**

<table>
<thead>
<tr>
<th>Month</th>
<th>Vehicle Revenue Hours</th>
<th>Vehicle Revenue Miles</th>
</tr>
</thead>
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<td>25,000.00</td>
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<tr>
<td>Feb-19</td>
<td>2,000.00</td>
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</tr>
<tr>
<td>Dec-19</td>
<td>3,000.00</td>
<td>30,000.00</td>
</tr>
</tbody>
</table>

*Source: RoadRUNNER Transit*

**BENCHMARKING VS PEER TRANSIT AGENCIES**

In the following section, we compare RoadRUNNER Transit’s demand-response service with similar demand-response services based on geography, population, and annual trips. While Las Cruces benefits from a comparatively low cost per vehicle hour, service efficiency (passengers per vehicle hour) is lower relative than the peer average. Additionally, annual trips per 1,000 people in the service area are comparatively high, which likely reflects RoadRUNNER Transit’s decision to allow all seniors age 60 and over to request trips, while many peer agencies have more restrictive eligibility requirements.

**COST PER VEHICLE REVENUE HOUR**

RoadRUNNER Transit has a comparatively low cost per vehicle hour at $55 and directly operates its demand-response service. The average cost per vehicle revenue hour includes items such as driver wages, vehicle maintenance, fuel, dispatch labor, and overhead.
Figure 2-12: Cost per Vehicle Revenue Hour

Cost per Vehicle Revenue Hour

- Flagstaff, AZ
- Billings, MT
- Santa Fe, NM
- Logan, UT
- Waterloo, IA
- Merced, CA
- Columbia, MO
- Missoula, MT
- Grand Junction, CO
- Urbana, IL
- Las Cruces, NM
- Panama City, FL
- Pueblo, CO
- Greenville, NC

Source: National Transit Database 2019
PASSENGERS PER VEHICLE REVENUE HOUR

RoadRUNNER Transit completes an average of 2.25 passenger trips per vehicle revenue hour in 2019. This is an important metric for service efficiency and is affected by how efficient trips are aggregated and scheduled. Increasing the number of passengers transported per vehicle hour results in fewer vehicle revenue hours to serve the same number of trips, therefore reducing the average cost of each trip.

Figure 2-13: Passengers per Vehicle Revenue Hour

Source: National Transit Database 2019
CITY OF LAS CRUCES

COST PER PASSENGER
RoadRUNNER Transit has a lower cost per passenger than two-thirds of peer agencies, primarily due to its comparatively low cost per vehicle revenue hour. Cost per passenger is derived from the cost of a vehicle revenue hour, and how many passengers an operator can transport per vehicle revenue hour, both of which are discussed in the “Cost per Vehicle Revenue Hour” and “Passengers per Vehicle Revenue Hour” sections.

Figure 2-14: Cost per Passenger

Cost per Passenger

Santa Fe, NM
Flagstaff, AZ
Merced, CA
Waterloo, IA
Logan, UT
Billings, MT
Missoula, MT
Columbia, MO
Las Cruces, NM
Grand Junction, CO
Urbana, IL
Pueblo, CO
Greenville, NC
Panama City, FL

Source: National Transit Database 2019
TRIPS PER 1,000 SERVICE POPULATION

RoadRUNNER Transit’s comparatively high trip volume relative to its service population may reflect the fact all seniors are eligible to use the demand-response service. Some agencies tend to be more restrictive in demand-response eligibility requirements, limiting the number of potential customers that can use the service and identifying transit alternatives to traditional demand-response.

Figure 2-15: Trips per 1,000 Service Population

![Trips per 1,000 Service Population Chart]

Source: National Transit Database 2019
Table 2-1: RoadRUNNER Transit Benchmarking

<table>
<thead>
<tr>
<th>Location</th>
<th>Total Passenger Trips</th>
<th>Primary UZA Population</th>
<th>Service Area Population</th>
<th>Service Area Square Miles</th>
<th>Service Area Density (population per square mile)</th>
<th>Cost per Vehicle Revenue Hour</th>
<th>Passengers per Vehicle Revenue Hour</th>
<th>Cost per Passenger</th>
<th>Total Demand Response Operating Expenses</th>
<th>Total Vehicle Revenue Hours</th>
<th>Trips per 1,000 population</th>
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<tr>
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Source: National Transit Database 2019