SIMPO AND RIDES MASS TRANSIT DISTRICT

MICROTRANSIT STUDY

2020

SOUTHERN ILLINOIS METROPOLITAN PLANNING ORGANIZATION
3000 WEST DEYOUNG ST SUITE 800B-3 MARION, IL 62959

SIMPO

Rides MTD Microtransit Pilot

TransLoc

2020 Project Summary

Project background: The goal was to explore potential microtransit scenarios for a pilot project in Marion and Herrin. This report shows the results for the **Marion Herrin** service area from May 1, 2020 through Dec. 31, 2020 for Monday-Friday between the hours of 7 p.m. and 11 p.m.

Location: In this program, riders could request a ride between any address in the service area, with an emphasis on specific addresses popular with the current service as well as additional locations highlighted by RMTD. Primary trip types included requests between the park & ride and area residences and between residences and local destinations such as shopping, employment, and healthcare.

Planning a new service offering involves many layers of uncertainty. TransLoc had developed a simulation process that reduces this uncertainty by demonstrating how a microtransit service would run under a variety of possible demand and service scenarios. The simulator runs the same scheduling algorithm that is used in the TransLoc OnDemand production system. Based on the results of simulation, performance metrics such as wait time and cost per trip are calculated for a range of scenarios. This allows a transit agency to understand whether microtransit will meet their needs, and if so, how best to design a service and mitigate risk.
There are two parts to the simulation process: 1) simulating inputs (demand and service parameters and 2) simulating OnDemand service (pickup and dropoff times and vehicle assignments).

Simulating inputs

Ride requests are simulated based on the best information available about where and when riders will need transit. In the absence of specific information, this can be based on population density using census data. The number of ride requests can cover the range of possible demand. More sophisticated demand models are available for specific service scenarios. A list of individual rides with request time, origin location, and destination location is one input to the simulator.

Service parameters such as vehicle number, hours of service, and vehicle capacity are the other input to the simulator. These can be set to a range of values to understand the performance impact of various service designs.

Simulating OnDemand service

TransLoc's OnDemand system takes ride requests and service parameters and dynamically assigns rides to vehicles based on algorithmic optimization. The output of the algorithm is a schedule of pickups and dropoffs for each vehicle and ride. From this schedule, we can calculate a variety of performance metrics. Since the schedule generation is a complex process that depends on many factors, there is no substitute for actually running the algorithm on realistic demand scenarios customized for each agency and proposed service.

Why simulation matters

The opportunity to simulate demand and service *in silico* while considering a microtransit service offering gives an agency an unprecedented ability to answer with confidence questions such as:

- What will the rider experience be with this service?
- How many rides can we serve with a given number of vehicles?
- If the demand is twice what we anticipate, what would that mean in terms of rider experience? How many vehicles would we have to add to serve twice the demand while maintaining service quality? Would that increase our cost per trip?
- What is the relationship between service quality and service cost?

Conclusions

The COVID-19 pandemic had impacted ridership levels across the RMTD service area and these impacts were seen in the microtransit pilot program with RMTD's partnership with the Southern Illinois Metropolitan Planning Organization. This microtransit pilot program was impacted due to shelter in place orders and businesses in the area with impacted hours. However, there was still noted benefits. Passengers who work later in the evenings were able to schedule and request rides from their mobile devices even at hours when there are no dispatchers present. The ride requests also give passengers estimated arrival times.

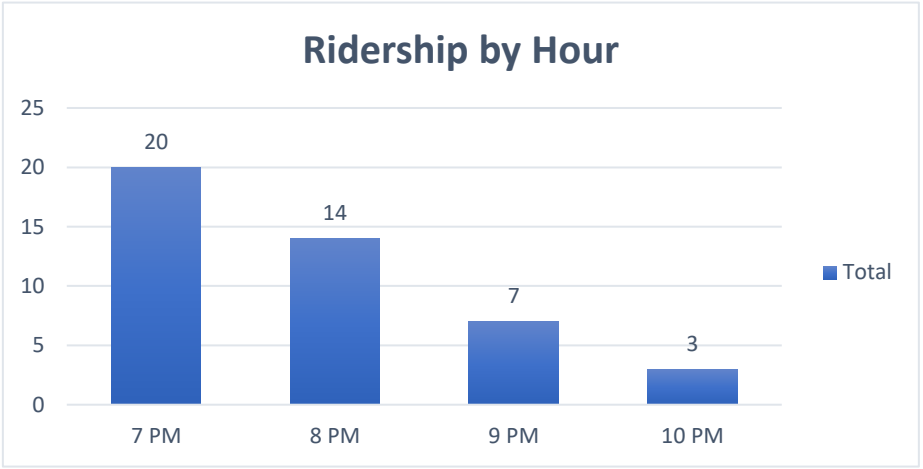
RMTD estimates that approximately 30 percent of incoming customer calls during regularly dispatched hours stem from customers asking about the status and location of their ride. The company plans to continue to utilize the OnDemand microtransit platform to increase service reliability, increase service options for passengers while giving passengers the chance to view real-time bus status information. The system also integrates with current mobile ticketing applications as well as the SIU Carbondale Night Safety Transit program software applications.

MICROTRANSIT BENEFITS IN MARION/HERRIN AREA

- EMPLOYMENT ACCESS AT OFF PEAK TIMES FOR AREA WORKERS
- REAL-TIME BUS INFORMATION AND ESTIMATED PICKUP TIMES
- CALL FLOW IMPROVEMENT
- MOBILE TICKETING / CONTACTLESS FARE INTEGRATION
- OPTIMUM UTILIZATION OF TRANSIT RESOURCES

Ridership

Hour of Day	Total Rides
7 PM	20
8 PM	14
9 PM	7
10 PM	3
Grand Total	**44**



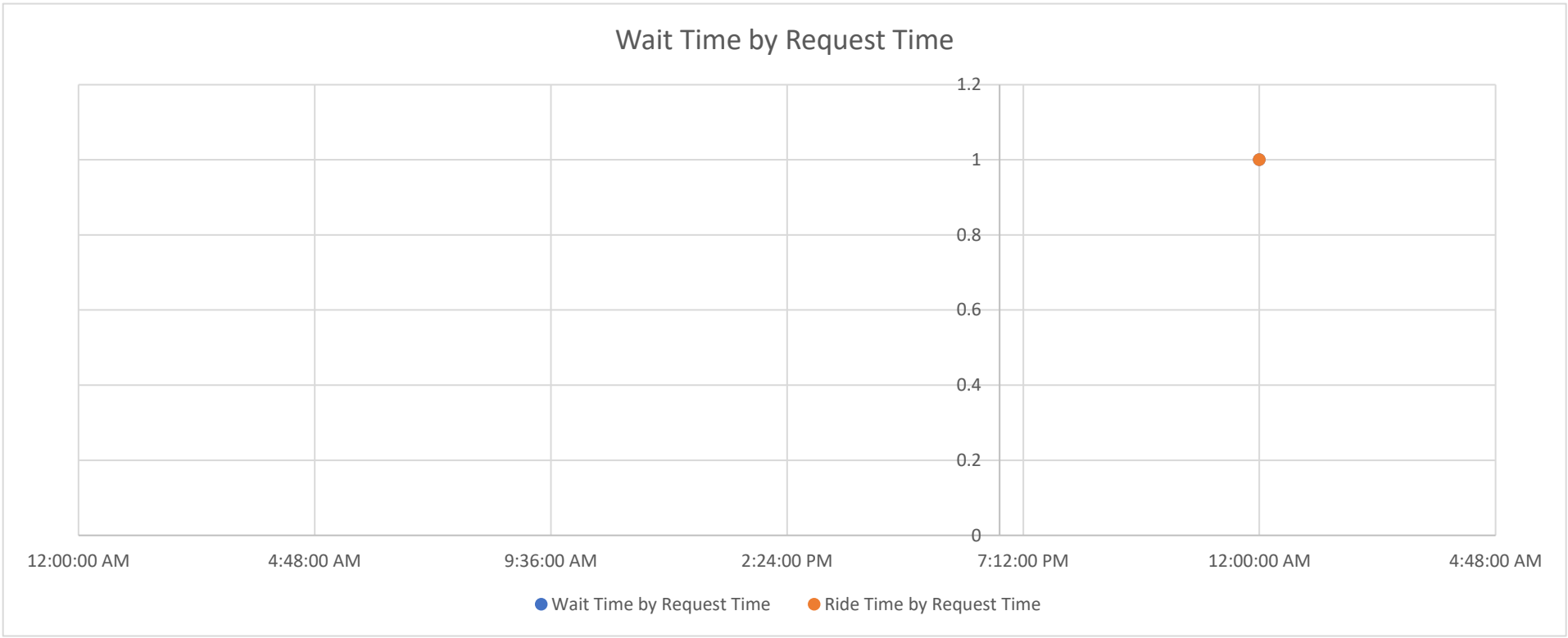
Vehicle Operations

Average Vehicle Mileage	25.115942
Average Boardings per Hour	1
Average Service Hours	4.5

Ride Quality

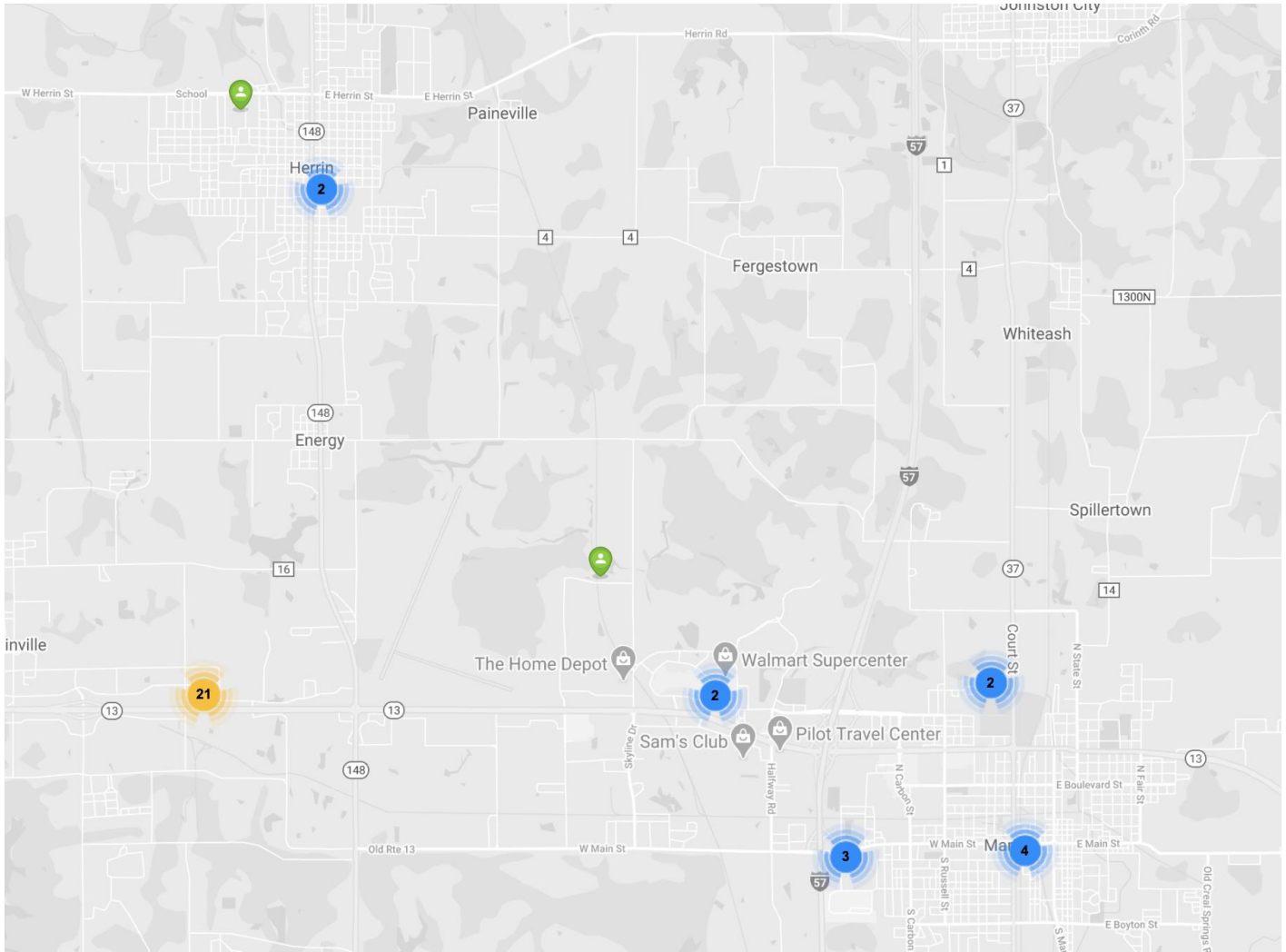
Total Rides	Avg Active Vehicles	Avg Wait Time	90% Wait	Avg Ride Time
36	1	0:11:27	0:13:52	0:12:11

% of Rides under 15 minutes 0.777777778

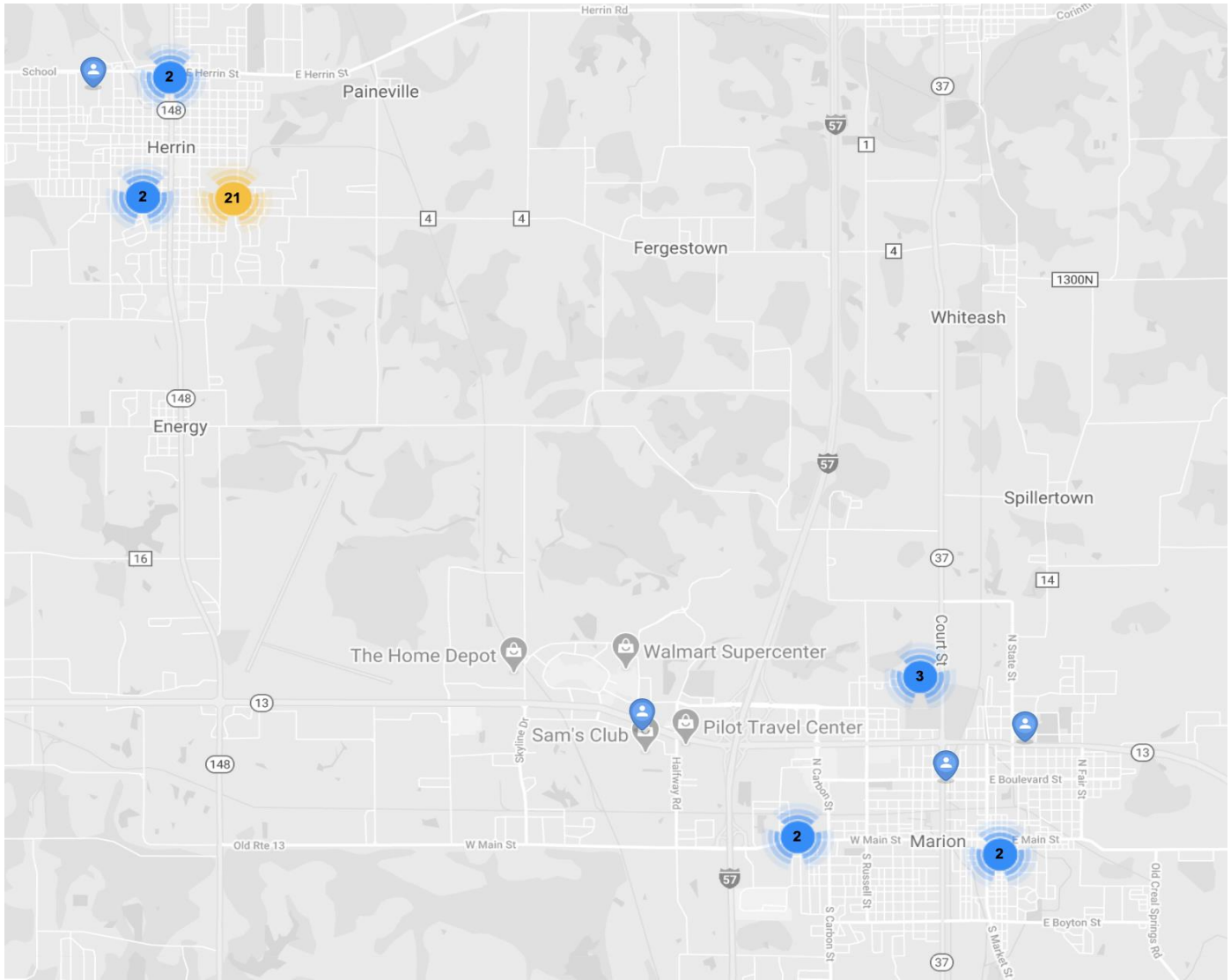


Ride Heatmap

Ride Origins



Ride Destinations



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Total	**29**	**33**	**75**	**521**	**124**	**1**	**6**	**76**	**3466**
AVERAGES	29	33	12.5	24.8095238	124	1	2	25.3333333	25.115942

Vehicle Mileage