



# Insights Into On-Demand Transit: A Case Study of Houston METRO's curb2curb Service

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# Introduction

- On-Demand Transit (ODT): Flexible shared mobility model
- Bridges service gaps in low-density areas

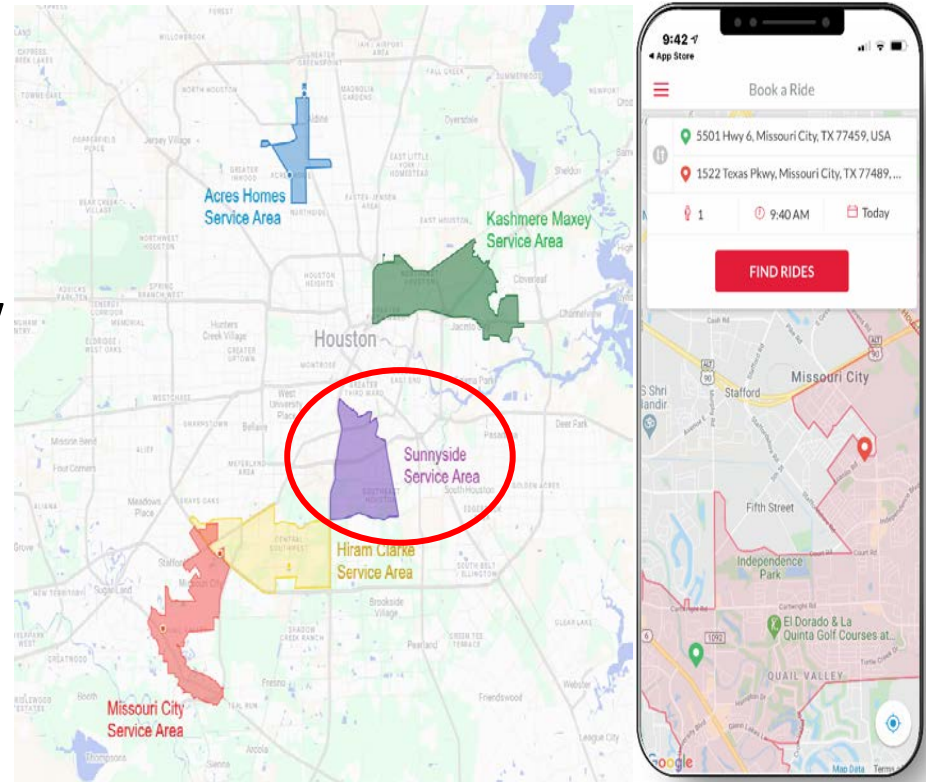
## Key Benefits

- Reduces transit deserts
- Enhances access to goods, services and employment
- Complements traditional transit modes



# Houston METRO's curb2curb Program

- Started as Community Connector services.
- Four service zones across Houston: Sunnyside as a new addition.
- Mobile app-based booking via RideCo.
- ADA-compliant minivans and minibuses.



# Focus on Missouri City Zone

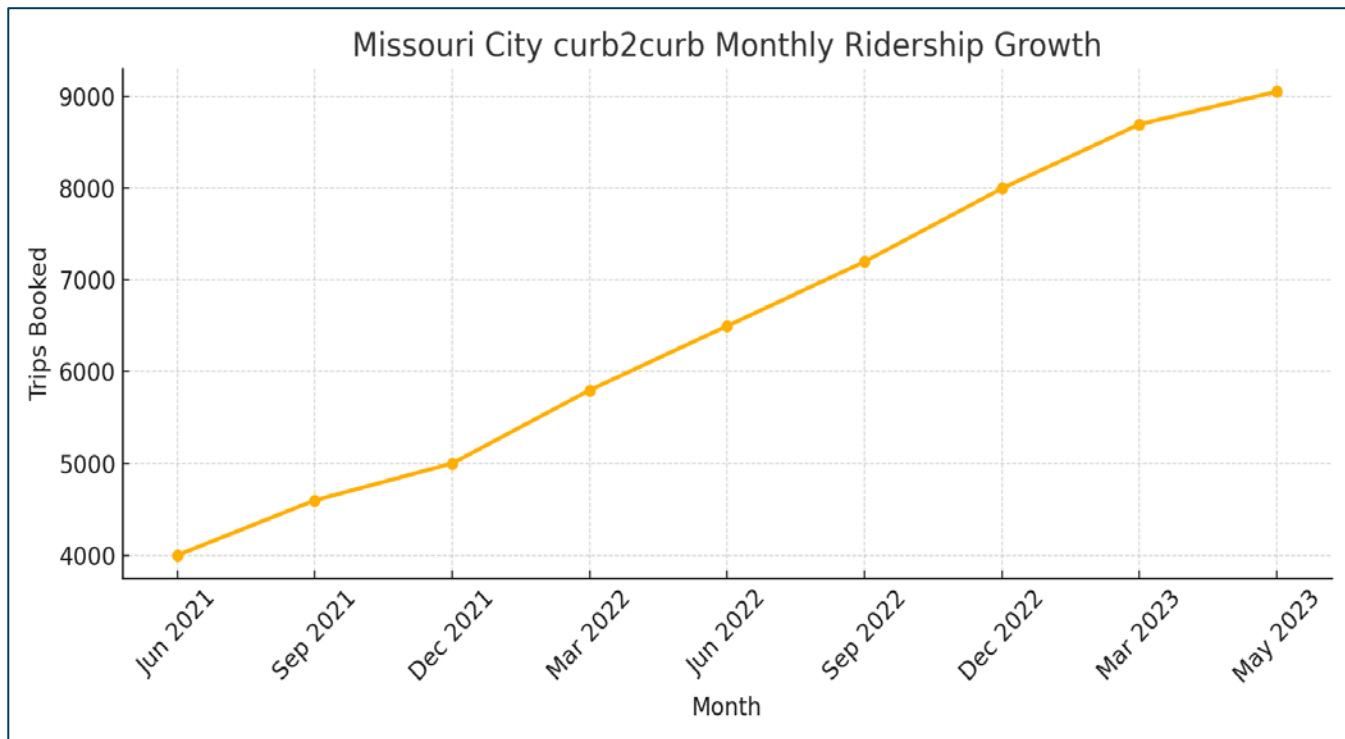
- Largest zone with highest ridership
- No existing fixed-route service
- Two Anchor Points: Walmart & Park & Ride
- 124% ridership growth over 2 years



Image Credits: J. Sam Lott

# Ridership Growth (Missouri City)

- Continuous growth in ridership from 2021 to 2023.



# Research Methodology

## NREL Research Independently Booked Rides and Collected Data

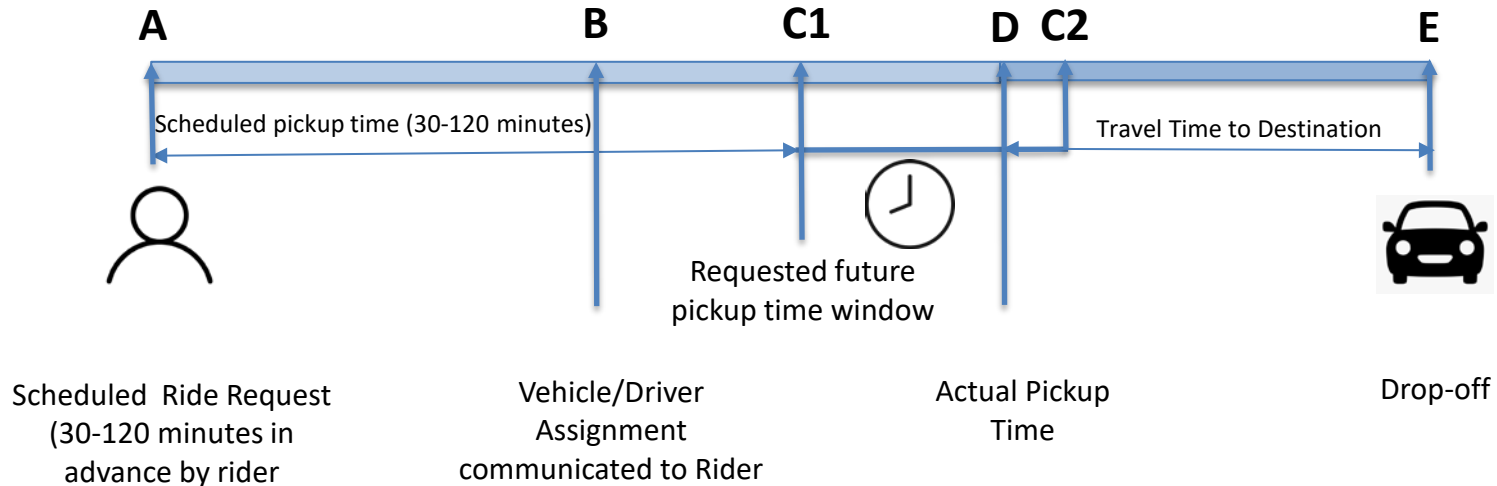
- 50 total rides observed (Mar–Apr 2023)
- 34 scheduled rides
- 9 real-time bookings
- 7 anchor point boardings
- Data collected: wait time, travel time, booking type, rider feedback



# Passenger Journey: Scheduled Ride

- Timely, predictable experience when booked in advance.

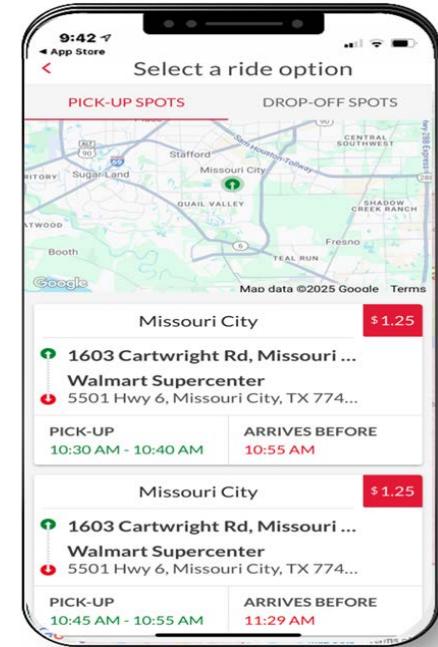
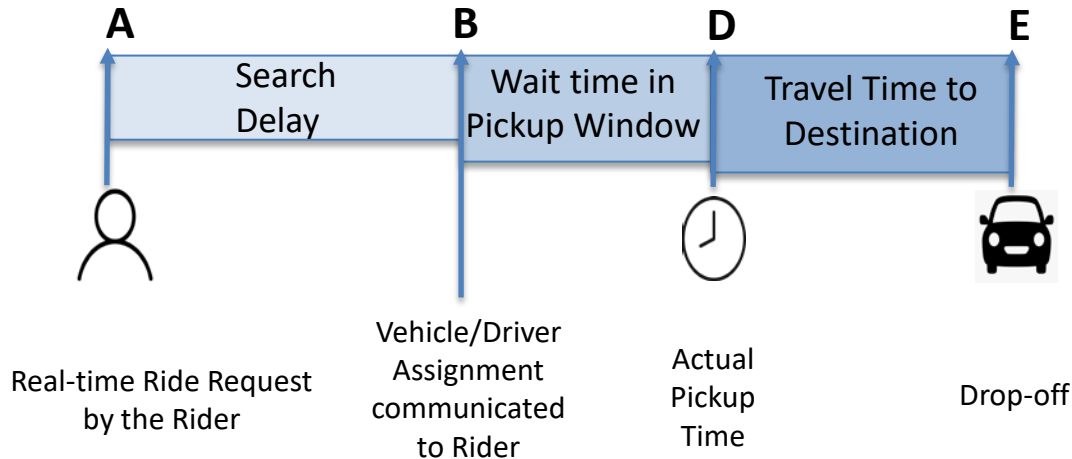
## Scheduled Ride Request Graphical Timeline



# Passenger Journey: Real-Time Ride

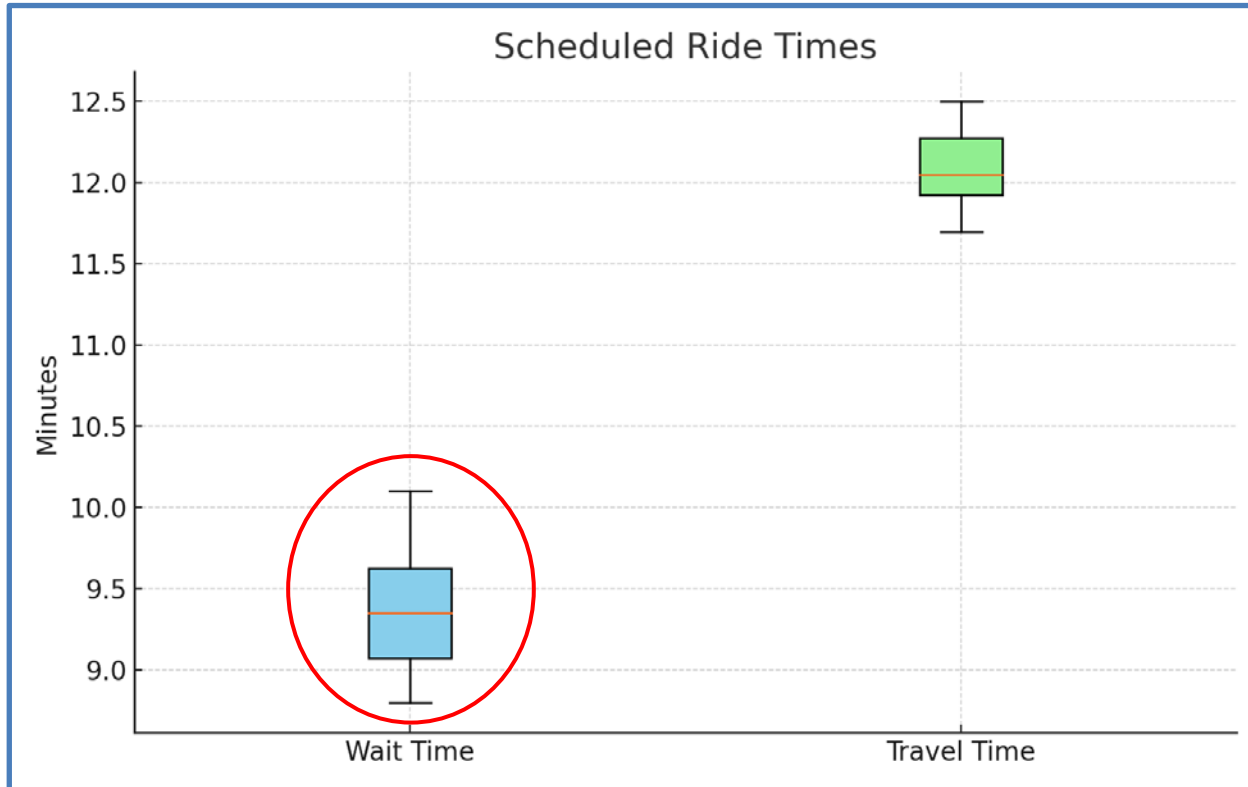
- Less predictable, with higher chances of delay

## Real-time Ride Request Graphical Timeline



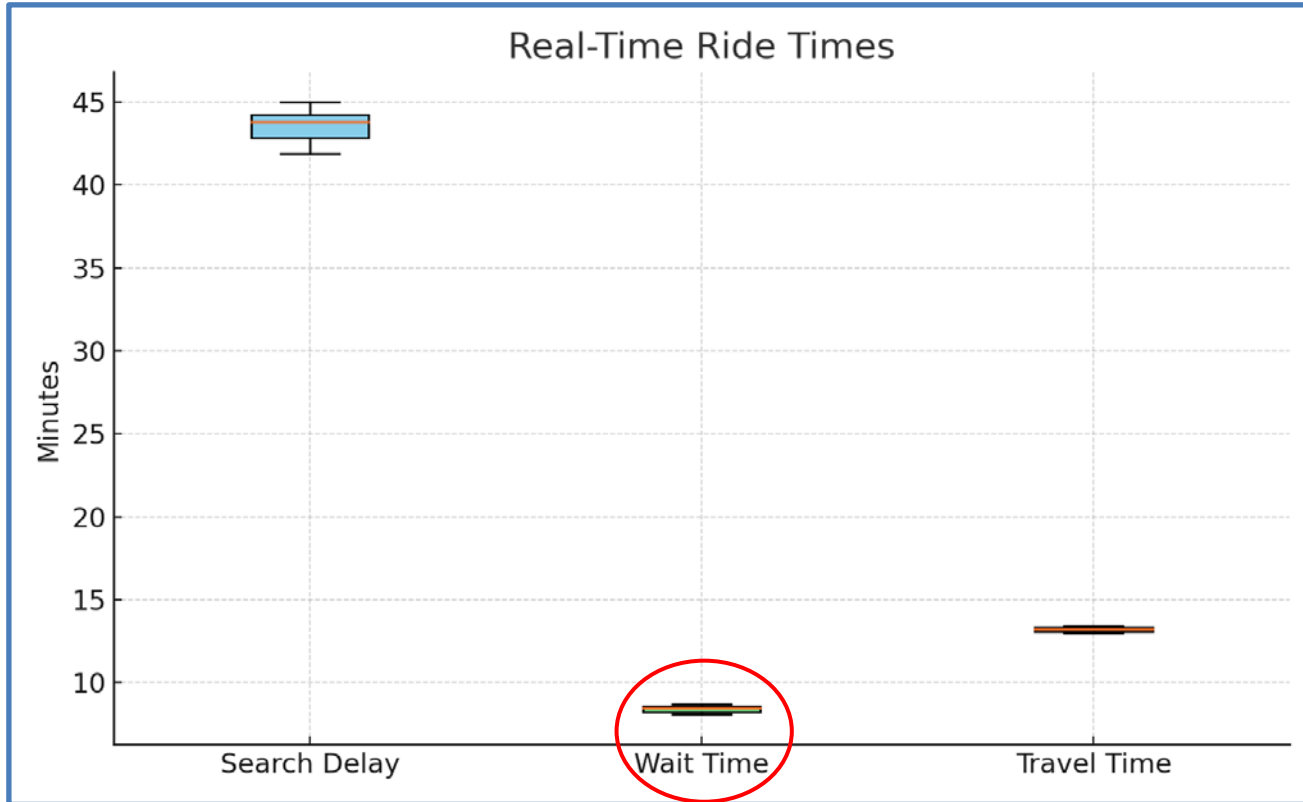
# Scheduled Ride Insights

- Wait Time: ~9.4 min | Travel Time: ~12 min



# Real-Time Ride Insights

- Search Delay: ~43.6 min | Wait Time: ~8.4 min



# Rider Feedbacks

*\*Average rating is 4.7*



“Professional Always. Metro is a needed service. I truly appreciate Metro Missouri City. Thank you for the service and the drivers.”



“This driver was prompt, courteous, and knew her way around. I’m glad to have been transported by her”



“very friendly and helpful this was a great ride.”



“Thank you for a safe ride home with my son. I truly appreciate your great driving with such precious cargo!”



# Automation – Watching Austin

- Waymo provided a case study for the Austin region.
- Integrated with uber and provided an option for AV.
- Provides around the clock (24/7) service



# Implications for Automation

- **Pre-positioning AVs to meet peak demand**
  - AVs can be placed and held for an extended period without concerns of driver productivity & management
- **Critical need to improve vehicle-passenger rendezvous**
  - Driver is highly involved in locating passengers, requires additional tools in the AV space (passenger has to find the vehicle though the app or other means)
- **Reduction in human error related accidents, contributing to safer streets**



# Key Takeaways & Next Phase

- Missouri City curb2curb: proven model of successful micro-transit
- Scheduled bookings increase service reliability
- Current implementation of ODT caters to high demand
- Next phase is to explore the adoption of autonomous vehicle into the curb2curb service



# Acknowledgments

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- Houston METRO team
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# Questions

[www.nrel.gov](http://www.nrel.gov)

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