MICROTRANSIT IN PENNSYLVANIA:

Case Studies, Experiences, and Early Lessons

AUGUST 2024

Overview

- Overview and Key Takeaways
- Pennsylvania Microtransit Case Studies
- Microtransit Zone Characteristics
- Microtransit Performance
- Other Lessons Learned
- Supplemental Details

Overview

Microtransit services of six Pennsylvania transit agencies were analyzed to:

1. Characterize microtransit services and the communities they serve
2. Identify common themes associated with successful service
3. Identify lessons learned by early adopters of microtransit

What is Microtransit?

ON-DEMAND

TECHNOLOGY-ENABLED

FLEXIBLE

ZONE OR DESIGNATED STOPS

SHARED VEHICLE

Study Process

Data Collection

- Collect service data
- Service characteristics for PA
- Summary review of VA, NC, TX

MICROTRANSIT SUMMARY SHEETS

Microtransit Analysis

- Agency interviews
- Analyze impacts
- Performance statistics
- Success factors
- Future considerations

TECHNICAL MEMORANDUM

Key Takeaways

1. Microtransit is a flexible tool but not a universal solution; it can be a supplement or alternative to traditional transit but should address specific goals and needs
2. Clear goals, key performance metrics, and service-level expectations should be set early in the planning process
3. Microtransit service has a productivity ceiling and can become costly and difficult to scale effectively during periods of high demand
4. Microtransit is often less expensive per revenue vehicle hour but more expensive per passenger trip than fixed-route service
5. Measuring the success of providing first- and last-mile connections is challenging

Key Takeaways

6. Most microtransit zones in PA are 5 to 15 square miles, contain a mix of trip generators and land uses, and are located in lower-density small-town or suburban settings

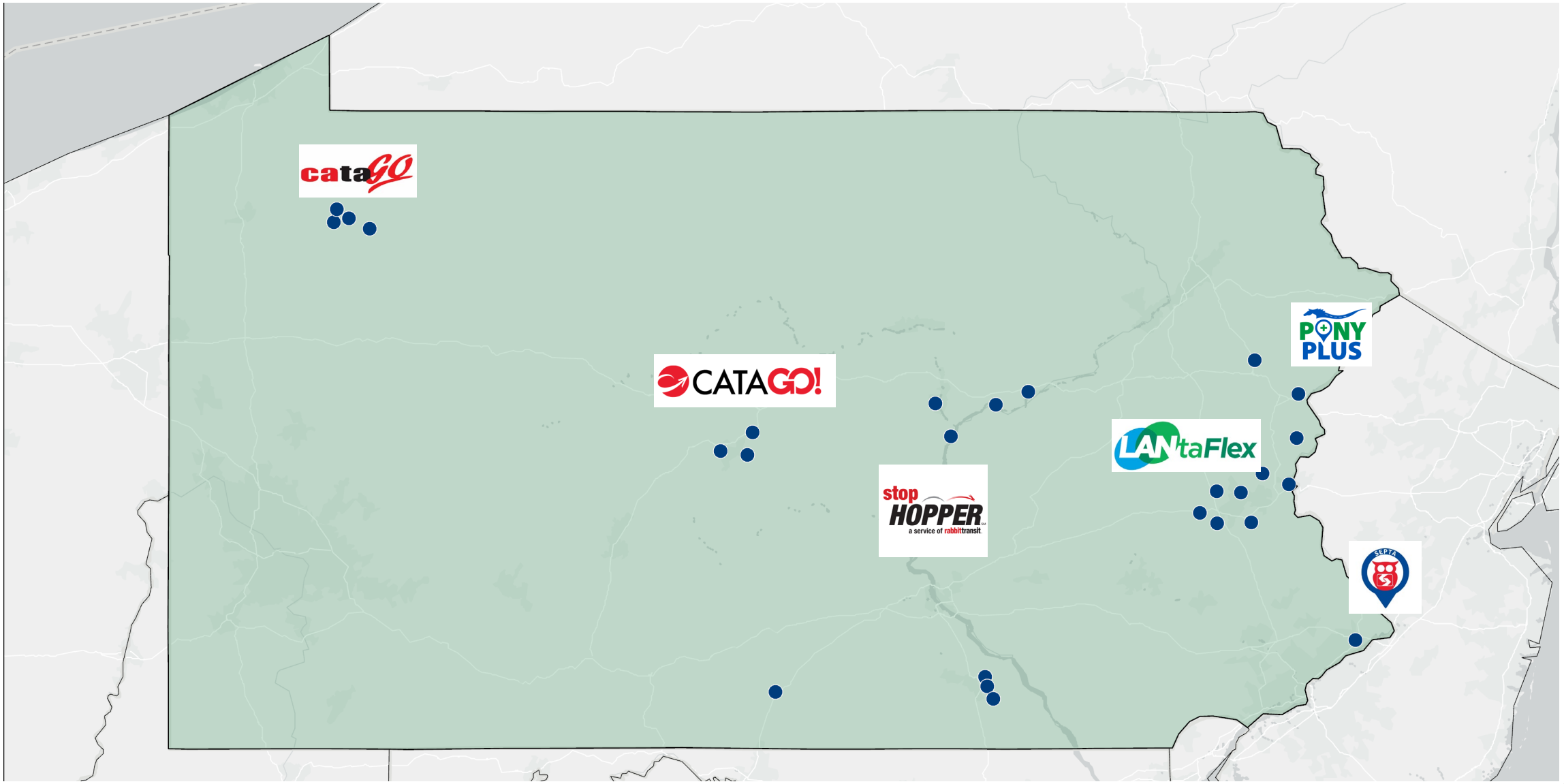
7. Communication with peer agencies is important when designing or altering microtransit service

8. Marketing and advertising are key for building ridership, while continuous monitoring and operational flexibility drive success

9. The choice of software impacts the agency and user experience in microtransit service

10. Agencies have considered the efficiency benefits of co-mingling shared-ride and microtransit trips, but software integration and clear reporting guidance are needed

PA Microtransit Case Studies



Microtransit Service History

Agency/Service	Initial Deployment	Progression
LANTA / LaNTaFlex	August 2011 with 1 zone	• Added 1 zone in August 2015 • Added 1 zone in June 2016 • Added 1 zone in September 2016 • Added 1 zone in July 2018 • Added 2 zones in August 2019 • Added 1 zone in June 2022 • Multiple service hour adjustments based on performance
rabbittransit /Stop Hopper	August 2018 with 2 zones	• Changed technology provider in October 2020 • Added 1 zone in December 2021 • Added 2 zones in March 2022 • Added 1 zone in August 2022 • Added 1 zone in April 2024

Microtransit Service History

Agency/Service	Initial Deployment	Progression
CATA (Centre) / CATAGO!	January 2020 with 1 zone	• Added a 1 zone in August 2021 • Added 2 zones in August 2022 • Merged 2 zones in August 2023 • Changed technology provider in December 2023 • Reduced service in 1 zone and added 1 zone in July 2024 • Multiple zone boundary and service hour adjustments based on performance
SEPTA / Owl Link	May 2021 with 1 zone	• Pilot ended in February 2022 • Planned 6 microtransit zones as part of the Bus Revolution project, with initial zones anticipated in 2025 (tentative)
MCTA / Pony Plus	August 2022 with 2 zones	• Changed technology provider in September 2023
CATA (Crawford) / CATA GO	July 2023	• Extended weekday service hours and added Saturday service based on performance

Main Service Objectives

Expand transit connections and mobility options

Create first/last mile connections to fixed-route service

Partially replace inefficient and infrequent fixed-route service with more responsive service

Investigate ridership potential in new areas

Takeaways:

Microtransit is a flexible tool but not a universal solution; it can be a supplement or alternative to traditional transit but should address specific goals and needs

Clear goals, key performance metrics, and service-level expectations should be set early in the planning process

PA Microtransit—Common Characteristics

Booking Methods: App, Call

Stop Locations: Curb-to-curb and/or designated stop

Fare: Often matches fixed-route service

Vehicle Type: ADA-accessible transit vans (4 to 8 passengers)

Vehicles in Service: Varies on demand and area, but typically 1 per zone with an additional 1+ during peak

Fixed Route Connections: Typically, yes

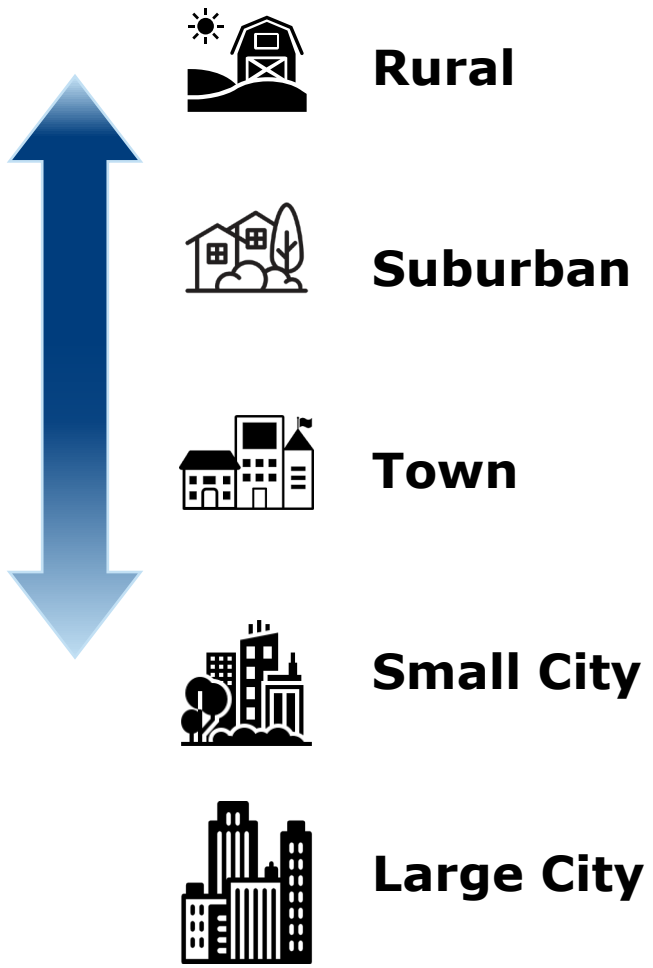
Target Wait Time: 10 to < 45 minutes

People Served by Microtransit in PA

Total Served with Microtransit (Present or Past)		
Population Served	**446,500**	
Households Served	**174,300**	
Population Age <18	88,900	20%
Population Age between 18-64	274,700	62%
Population Age 65+	83,000	19%
Non-White Population	78,500	18%
Population with a Disability	59,700	13%
Limited-English-Proficiency Households	4,700	3%
Zero-Car Households	12,200	7%
Population Below Poverty Line	43,700	10%

Source: U.S. Census Bureau's 2022 American Community Survey. Microtransit service zones as of January 2024, but SEPTA zone reflects Owl Link pilot that was discontinued in 2022

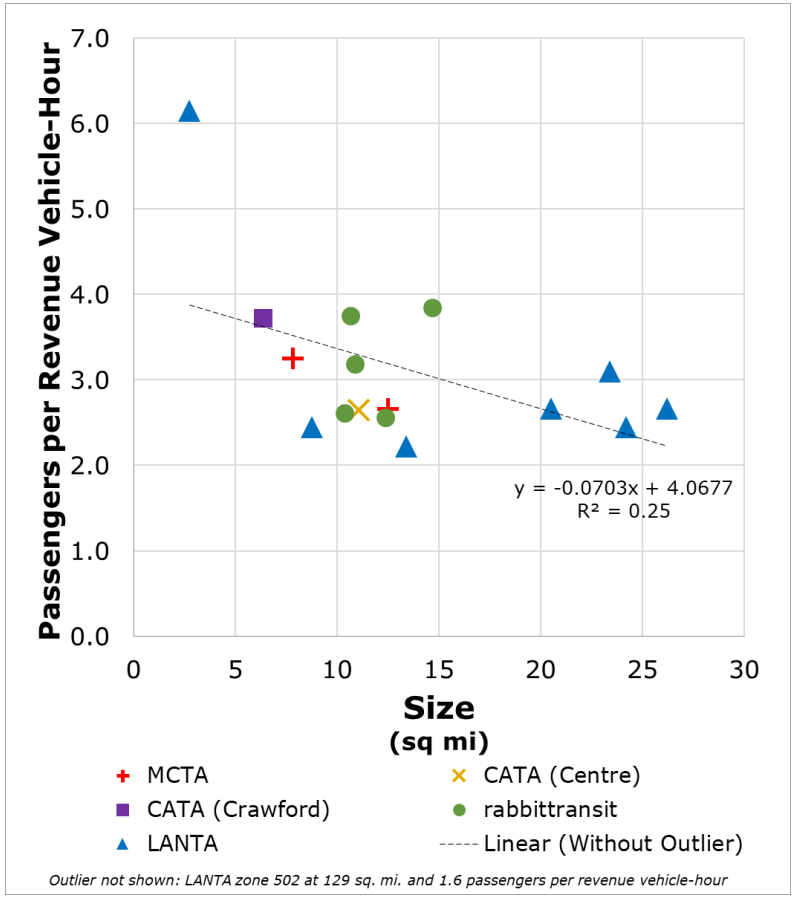
Zone Characteristics



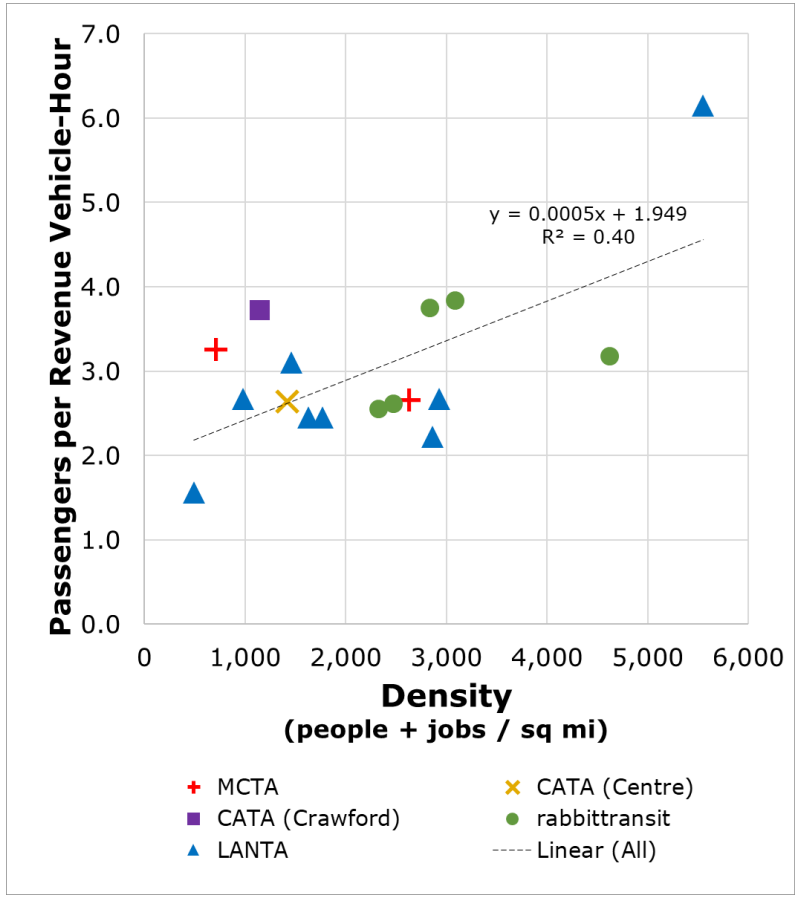
Source: U.S. Census Bureau's 2022 American Community Survey and the 2021 Longitudinal Employer-Household Dynamics datasets.

Zone Characteristics

The size of a zone is negatively correlated with productivity



The density of a zone is positively correlated with productivity



Source: U.S. Census Bureau's 2022 American Community Survey and the 2021 Longitudinal Employer-Household Dynamics datasets.

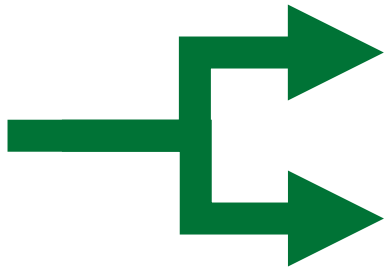
Zone Characteristics

- Often located at the lower-density peripheries of higher-density areas
- Zones less than 15 square miles tend to be more productive
- Agencies recommended including a mix of activity generators to balance demand throughout the day and noted it can be effective in areas with dispersed trip origins and destinations

Takeaway: Most microtransit zones in Pennsylvania are 5 to 15 square miles, contain a mix of trip generators and land uses, and are located in lower-density small-town or suburban settings

PA Case Studies and Performance

Pennsylvanian microtransit cases consist of two categories:



SUPPLEMENT

Support the surrounding fixed-route system by expanding into an area with transit ridership potential that would be difficult to serve with fixed-route

REPLACEMENT

Replace an underperforming, inefficient, or expensive fixed-route service

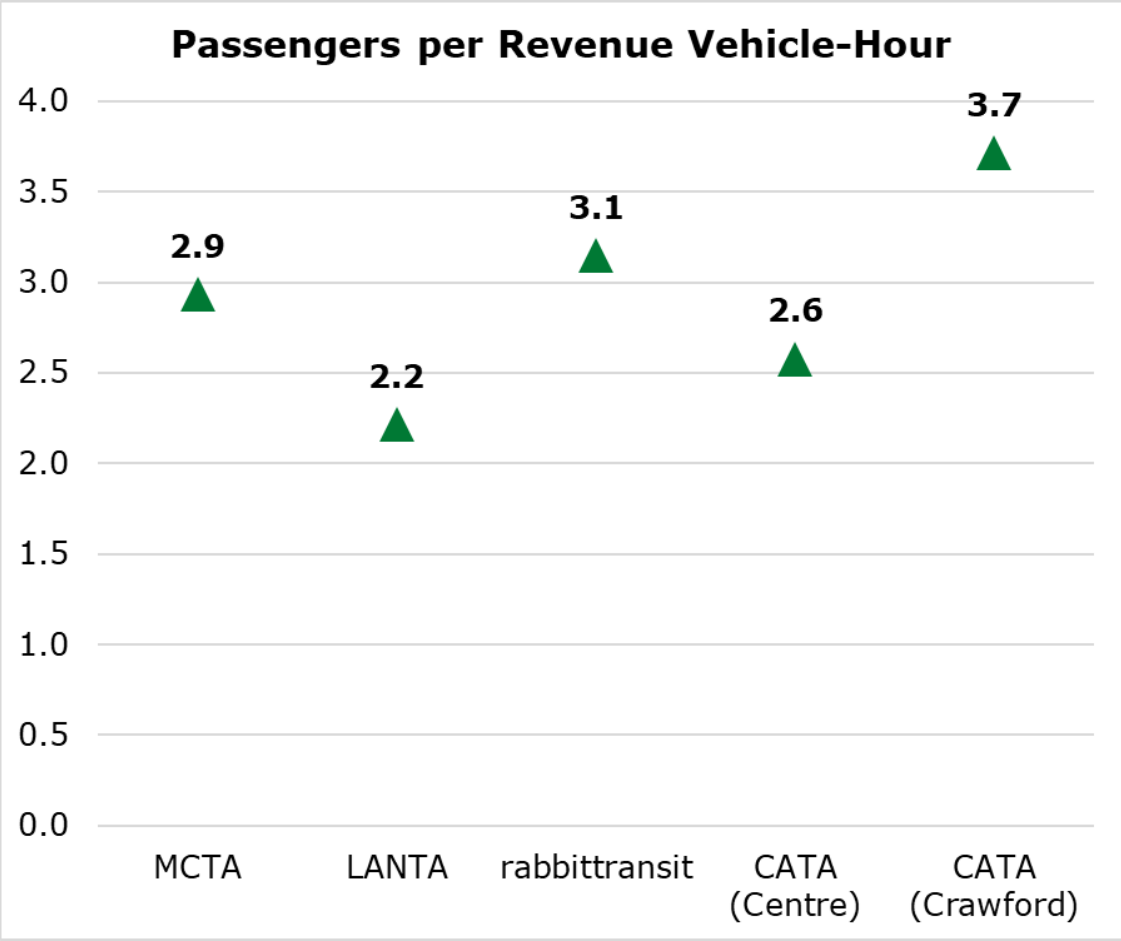
Comparison Between Systems

Pennsylvanian microtransit cases were compared using the following metrics:

Passengers per Revenue Vehicle-Hour

Wait Time

Passengers per Revenue Vehicle-Hour

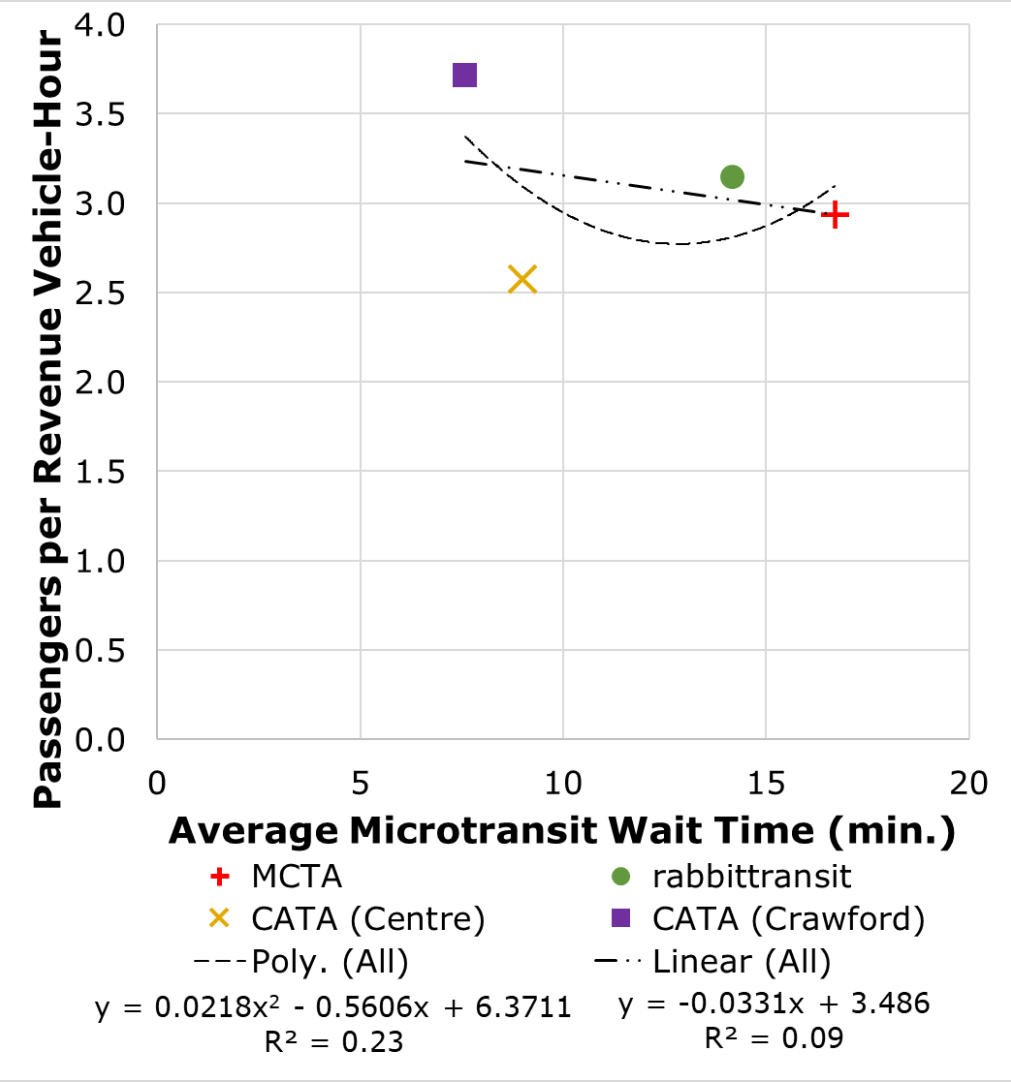


Source: Data provided from agencies. Service data is from July 2022 to June 2023 except CATA (Crawford) microtransit, which is from July 2023 to December 2023.

- Most microtransit zones analyzed served two to four passengers per revenue vehicle-hour
- When productivity reaches the expected limit, another vehicle/driver would need to be added to maintain a similar customer wait time

Takeaway: Microtransit service has a productivity ceiling and can become costly and difficult to scale effectively during periods of high demand

Wait Time



Source: Data provided from agencies. Service data is from July 2022 to June 2023 except CATA (Crawford) microtransit, which is from July 2023 to December 2023.

Agency	Average Microtransit Wait Time (minutes)	Typical Fixed-Route Headway (minutes)
MCTA	**17**	75
LANTA	**Requires scheduling 2+ hours in advance**	60 to 120
rabbittransit	**14**	30 to 60
CATA (Centre)	**9**	30 to 40
CATA (Crawford)	**8**	60

- As wait time increases, productivity can decrease
- Microtransit service can provide greater service availability within the microtransit zone than fixed-route

Opportunities to Improve Data and Analysis

1. Standardize the collection and reporting of operational metrics across all agencies
2. Investigate the benefits and implications of comingling shared-ride and microtransit trips, and provide clear reporting guidelines
3. Align state and federal reporting methodology where possible
4. Provide guidance on equity and Title VI implications of fixed-route replacement

Takeaway: Agencies have considered the efficiency benefits of co-mingling shared-ride and microtransit trips, but software integration and clear reporting guidance are needed

Other Lessons Learned From Agency Interviews

Takeaways:

Measuring the success of providing first- and last-mile connections is challenging

Communication with peer agencies is important when designing or altering microtransit service

Marketing and advertising are key for building ridership, while continuous monitoring and operational flexibility drive success

The choice of software impacts the agency and user experience in microtransit service

Supplemental Details

The following are available in the Technical Memorandum:

- Microtransit summary sheets for PA case studies
- Summary of activity occurring in 3 other states (VA, NC, TX)
- Additional performance analysis for each PA case study