Microtransit in the Monadnock Region: Factors of Feasibility

December 2021

SWRPC | Southwest Region Planning Commission

Z:\Transportation\UPWP 2022-2023\600_5305e\Research\Microtransit\Technical Memo\Microtransit Technical Memo - FINAL.docx

Introduction

Could microtransit offer an effective approach to improving and expanding public transportation in the Monadnock Region? This question lies at the root of SWRPC's current study examining microtransit feasibility. To effectively investigate that question, however, and to help key stakeholders understand what a full, nuanced exploration of that question entails, some context is necessary. First, what is microtransit? What are key aspects of microtransit service design? How have other places—especially rural areas—used microtransit to meet specific transportation needs?

This technical paper aims to respond to these questions and others in order to help project stakeholders critically engage with the microtransit feasibility analysis conducted later in the study. That analysis, to be completed in partnership with a project consultant, will model what a microtransit service could look like: the geographic area it serves, the number of vehicles in its fleet, expected passenger wait times, anticipated ridership, and more. For this model to serve as an effective tool for assessing microtransit feasibility, it's important for project stakeholders to have the background information necessary to interpret its results and to understand its limitations. The goal of this technical paper is to equip project stakeholders with a broad understanding of microtransit so that they can probe the feasibility analysis with well-informed questions and evaluate how it might relate to microtransit service in practice. It also aims to highlight aspects of microtransit feasibility that may not be directly addressed by model-based analysis but that would be important to consider when designing and implementing a pilot microtransit service.

History and Context

Defining Microtransit

The term "microtransit" has been used to describe a variety of transportation services with a range of characteristics. While the precise meaning of the term might shift somewhat depending on context, in general and for purposes of this study, microtransit is understood to have the following properties:

1. It is "demand responsive" in nature, with trip routes generated dynamically in response to the origin and destination of each passenger.
2. It enables passengers to schedule rides through a smartphone-based app. Many microtransit services also offer a phone-based reservation system. Ride reservations can often occur with minimal or no advanced notice.
3. Trip aggregation (grouping riders with one another) is optimized via an algorithmic process.

4. It typically relies on a fleet of smaller vehicles, such as vans or cutaway buses.
5. It serves the general public.

In practice, these characteristics combine to make a service that exists somewhere between Uber or Lyft on one end and traditional public transit (e.g., fixed-route bus) on the other. Microtransit has been referred to as the "tweener" of public transportation:

> [It is] less expensive per trip than traditional paratransit services but considerably more expensive per trip than fixed route service. It is less efficient than fixed route service in dense areas but more efficient than fixed route service in areas of lower density or demand. From a broader mobility point of view, it is more demand-driven than fixed route transit but generally not as responsive to individual requests or expensive as transportation network company (TNC) services [such as Uber or Lyft].[1]

Given that microtransit is purported to be less expensive than other forms of demand-responsive transportation and that in lower density settings it may be more cost-effective than fixed-route service, it's attracting increasing interest as a potential public transportation solution in rural or suburban communities.

Microtransit is sometimes referenced using alternative terms, including "General Public Demand Responsive Transit" or General Public DRT.[2] Flex service, on-demand service, on call, or dial-a-ride are other terms that may apply to different flavors of microtransit service.

A Brief History

Although the term "microtransit" was coined relatively recently in 2014, its underlying premise—on-demand, flexible public transportation—is not a new one.[3] For example, the "El Cajon Express" provided taxi-based demand responsive transportation to the general public in the San Diego metro area as early as the 1970s and through the 1990s. Passengers scheduled rides in advance via telephone.[4] Also, in many areas of the country, traditional paratransit has provided flexible public transportation for decades, albeit for limited segments of the population such as older adults or individuals with disabilities.

---

[1] Joel Volinski, *Microtransit or General Public Demand–Response Transit Services: State of the Practice*, (TCRP Synthesis of Transit Practice Project J-7, Topic SB-30, 2019), 1.
[2] Ibid., 1.
[3] Ibid., 1.
[4] Joseph Chow et al., *Spectrum of Public transit Operations: From Fixed Route to Microtransit,* (Transportation Research Board, 2020), 56.

In the early 21st century, the growing prevalence of GPS-enabled smartphones paved the way for novel forms of on-demand, flexible transportation. Ride-hailing services, also known as "transportation network companies" (TNCs), arrived on the scene with the launch of Uber in 2009.[5] TNCs allow passengers to request a ride via a smartphone app. The TNCs technology platform then dynamically matches the ride request with the closest available vehicle in service. TNC drivers typically work as independent contractors and operate personally owned vehicles. The platform handles other aspects of the service such as payment, trip routing, and customer feedback. The result is a streamlined taxi-like service with widespread ridership in urban areas. In major U.S. cities, about 30% of adults use TNCs.[6]

In 2014, several private companies launched services that extended the original concept of TNCs. Instead of scheduling and routing trips independently, these services experimented with how to dynamically pool riders traveling along similar route segments and transport them using a shared vehicle, typically a passenger van. Bridj and Chariot, which both piloted service in select U.S. cities, are early examples of private microtransit providers. Both are now defunct. The failure of these pioneer microtransit services has been attributed to several reasons, including competition with other transportation services, including TNCs, and a lack of coordination with public transit agencies.[7] [8]

Around the same time, Uber launched UberPool and Lyft, a competitor TNC, launched Lyft Line. Both allowed passengers traveling in similar directions to carpool with one another. While neither service actively promoted itself as microtransit, instead using alternative terms such as shared ride-hailing, the fundamental idea was the same: flexible and on-demand transportation with grouped passengers. UberPool, after experiencing disruption due to the coronavirus pandemic, has relaunched as UberX Share.[9] Lyft also ceased to operate its shared ride option during the pandemic, but has since rebooted Lyft Line in select markets.[10]

While private sector microtransit firms may be credited with initiating media buzz about the concept, the public sector was first to launch a pilot service. In 2000, The Denver Regional Transportation District (RTD) announced that a circulator bus it operated in the City of Brighton would need to be discontinued due to poor performance (about 15

[5] Regina Clelow, *Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States,* (Institute of Transportation Studies: University of California Davis, 2017), 1.
[6] Ibid., 1.
[7] https://www.bloomberg.com/news/articles/2017-05-03/microtransit-isn-t-dead-even-if-bridj-is
[8] https://www.theverge.com/2019/1/10/18177378/chariot-out-of-business-shuttle-microtransit-ford
[9] https://www.uber.com/us/en/ride/uberx-share/
[10] https://www.cnn.com/2021/07/15/tech/lyft-uber-shared-rides-pandemic/index.html

passengers per day.) In 2004, the bus was replaced by a Call-n-Ride service where passengers could schedule a ride by calling the driver directly, resulting in a 4-fold increase in ridership over the former fixed route circulator. Success of the pilot led to the transition from fixed-route to Call-n-Ride service in other communities within DRT's service area as well as the deployment of Call-n-Ride transportation in communities with no previous fixed-route service. In 2005, a comprehensive technology platform (MobilityDR) was prototyped to allow for fully automated scheduling and vehicle management. By 2010, the platform was in use across all 20 zones within DRT's service area.[11] The service, operating under the name FlexRide, is still in operation today.[12]

Other public transportation providers have since entered the microtransit arena. A 2019 survey found three agencies which had piloted a microtransit service that was subsequently discontinued, 14 that had launched and continued to operate some form of microtransit, and 5 that were planning to launch a microtransit service. Survey respondents primarily consisted of transit agencies operating in urban and suburban areas.[13] More recently, rural transportation providers have started to explore microtransit as a potential alternative to fixed-route service or more traditional paratransit services. Several case studies are examined later.

A Microtransit Typology

Microtransit can be structured and operated in a number of different ways. Each of these microtransit paradigms have strengths and weaknesses. The most appropriate service type will depend on the context in which it's deployed, customer needs, and the goals of the implementing agency. The following list outlines some basic categories into which different types of microtransit services could be organized. The categories need not be mutually exclusive. Transportation providers sometimes mix and match microtransit modalities, either geographically across their service area or chronologically over the course of their operating schedule.

1. On-demand zone-based service. Under this paradigm, service has no fixed routes or schedule. Stop locations and times are generated dynamically in response to trip requests. The service area is defined by a pre-established perimeter. Service can be door-to-door, or passengers can be asked to walk to a pick-up location within a certain distance. This type of service is typically deployed in settings where trips are "many to many" in origin and destination and demand is low in density.

[11] Volinski, *Microtransit or General Public Demand–Response Transit Services,* 48.
[12] https://www.rtd-denver.com/services/flexride
[13] Volinski, *Microtransit or General Public Demand–Response Transit Services,* 14.

2. Last-mile/first-mile feeder to fixed-route service. Some transportation providers use microtransit as a way to connect riders with more efficient modes such as fixed-route bus or light rail. In this application, microtransit vehicles stop at predetermined transfer points at times of day that are coordinated with other services in the network.
3. Point deviation. In cases where significant trip generators (e.g., schools, hospitals) exist within a service area, microtransit can be structured so that vehicles stop at certain checkpoints at pre-scheduled times of day. The rest of the vehicle's itinerary is generated dynamically according to trip requests.
4. Flex route. Vehicles operate on a fixed route with either scheduled or on-demand checkpoints. Riders can also request stops dynamically within a prescribed distance of the route.

These various service paradigms can be differentiated by the varying levels of structure they impose. On-demand, zone-based service is relatively free-form, with no fixed route or schedule. A flex route, meanwhile, takes a fixed route as its basis while introducing some flexibility to accommodate other stops on the fly. In areas with higher demand, more loosely structured service will typically be less efficient in terms of passengers per vehicle hour. In areas with sparse, widely distributed demand, however, more flexible paradigms may be equally or more productive.

Factors to Consider When Evaluating Microtransit Feasibility

There is a wide array of factors that transportation providers should consider when assessing whether microtransit is a good fit for their agency and community. The following recommendations are intended to help guide project stakeholders as they evaluate microtransit feasibility during later stages of the project and beyond.

Service goals and intended customer base should be clearly articulated before designing or piloting a microtransit service.

Public transit agencies have explored and implemented microtransit with a variety of goals in mind. Clear goal setting is critical for evaluating the costs and benefits of a new service and creates the conceptual framework for assessing feasibility. Answering the following questions might assist in clarifying goals:

- Would a principal objective of a new microtransit service be to reduce operating costs when compared with existing public transportation? Would stable or additional costs be acceptable if they supported improved or expanded service?

- Are there specific segments of the population whose preferences and needs should be prioritized when designing and piloting the service? If so, how should those preferences and needs be incorporated into service design and operation?
- Is it most important to retain current transit riders or to attract new ones? Or are the two groups seen as equally important?
- Do drivers and transit agency staff have certain preferences and needs from an operations standpoint?
- Are there environmental objectives that should be considered when designing a potential microtransit service?

A customer-first approach (as opposed to a technology-first approach) is critical for service success.

The technological novelty of microtransit has generated substantial interest among transit agencies and transportation planning professionals. In some cases, this interest has led microtransit pilot projects to focus on the technology first and rider needs second, leading to less-than-optimal outcomes. Whether a service is low-tech or cutting edge, it is unlikely to be well-utilized if it does not meet customer needs.[14]

As is the case when developing any type of transportation service, the customer's needs and priorities should act as the primary driver of microtransit design and implementation. To the extent possible, microtransit technology should be tailored to meet rider needs. For example, for riders that are unable or uncomfortable scheduling rides via an app-based interface, an option to make ride reservations via phone should be provided. In cases where rider adaptation is necessary for improving service, educational supports like travel trainings can be critical for helping customers shift to a microtransit paradigm and take full advantage of the benefits it may offer.

In practice, a customer-first approach could entail a range of different activities. Incorporating rider perspectives during the goal-setting process could be an important step for highlighting key challenges experienced while using existing public transportation. A spatial analysis of demographic and ridership data could help build understanding about priority origins and destination. A pre-pilot survey and/or focus groups could be critical for assessing how well a potential service might address the transportation needs of different users. Beta-testing the service platform with key customer groups could help identify barriers to scheduling rides and other aspects of service utilization.

[14] Westervelt et al., *Uprouted: Exploring Microtransit in the United States,* (Eno Center for Transportation, 2018), 1.

Service education and promotion are key.

The rider experience when interacting with microtransit would be quite different than the experience offered by public transportation options that currently exist in the region. Consequently, a robust promotion and education effort would be critical for ensuring that prospective passengers fully understand and are comfortable using a microtransit service. It's also important to note that microtransit is typically less visible to the public than other forms of public transportation. The vehicles are smaller and tend to blend in more with other traffic. Also, there are usually no stops or stations with signage to remind the public that the service exists.

In past microtransit projects that have failed, inadequate marketing has been cited as a conspicuous shortcoming.[15] With that historical precedent in mind, careful consideration should be given to developing a marketing budget that supports strong, sustained outreach as part of a microtransit pilot.

Considering that microtransit would be a new concept for most riders in the Monadnock Region, educational efforts would be key for setting realistic expectations. Although microtransit in some cases shares characteristics with taxis or TNCs, it rarely if ever can match the same level of responsiveness or convenience that those services offer. Denver Regional Transportation District, an early pioneer of public microtransit and one of the most successful examples of public sector implementation, "strongly discourages that their services replicate taxi or TNC services."[16]

Considering that many prospective microtransit riders will be unfamiliar with how such a service operates, outreach will likely need to extend beyond basic marketing to more intensive forms of education. Travel training offering varying levels of support can help ensure that different customers receive the help they need to fully avail themselves of a microtransit system. A simple form of travel training could consist of tutorial videos or a website-based walkthrough. In cases where more sustained assistance is needed, trip navigators could work one-on-one with prospective riders, helping them make a reservation and potentially even riding along with them until they feel comfortable until they feel comfortable using it on their own. Trip navigators could include both paid staff as well as volunteers within different user groups (e.g., older adults, college students.)

Access to operational data is critical for understanding and improving service.

Public microtransit often involves contracting with a third-party vendor, who either provides the software on which the service operates or, in some cases, a full-service package, complete with software, vehicles, and drivers. Under either scenario, it's

[15] Ibid., 18.
[16] Volinski, *Microtransit or General Public Demand–Response Transit Services,* 44.

critical that agreements with third-party vendors include full access to service operations data.

Full data access is critical for several reasons. A distinct advantage that microtransit offers over more traditional public transportation options (e.g., fixed-route bus) is the wealth of fine-grained data it can provide on rider travel behavior. For example, depending on available profile information and analytics tracked by the platform, it becomes possible to evaluate which origins and destinations are commonly paired with one another, at what times during the day or week, and whether there are particular user groups traveling between those origin-destination pairings. This information can be used not only to improve microtransit service, but also to determine whether fixed-route service is justified along certain corridors.[17]

Microtransit can be more cost-effective than traditional ADA paratransit service but is usually more expensive than fixed-route bus service in areas of high or moderate demand.

According to a 2010 report by the U.S. Government Accountability Office, the average cost to provide an ADA paratransit trip was $29.30 while the average fixed route bus trip cost $8.15 to provide.[18] The cost per trip for microtransit can be variable and depends on a number of factors including population density, the size of the fleet, target response time, the ride reservation system, and vehicle type. A 2019 survey of 13 microtransit systems found an average cost per passenger trip of $23.56.[19] It should be noted, however, that this survey included primarily urban transit agencies. Less data exists for rural systems, but at least one case study described below (Wilson, NC) demonstrates that rural microtransit isn't always more expensive than metropolitan systems. In that small city (population 49,000), early data shows that it costs about $11 per passenger trip to operate the service. Also, while fixed-route service is typically more cost effective in areas with sufficient demand, microtransit can be much more price competitive in situations where demand is low or widely distributed. The transit agency in Dayton, OH found that serving certain sections of its catchment area with fixed-route bus cost about $133 per passenger trip whereas serving the same sections with microtransit cost only $13 per trip.[20]

[17] Jerome Mayaud, Francesca Ward, and Josh Andrews, *Microtransit Has the Potential to Flip Transit on its Head,* (Transportation Research Record 1:12, 2021), 2.
[18] https://www.gao.gov/assets/gao-13-17.pdf
[19] Volinski, *Microtransit or General Public Demand–Response Transit Services,* 37.
[20] Ibid., 38.

An introductory fare structure may be important for building ridership.

In order to attract riders to a new microtransit service, it may be useful to offer a reduced, promotional fare for a limited period of time after pilot launch. Some new microtransit pilots have offered free service, including MyRide in Montpelier, VT (discussed further on p. 17). Although not all microtransit pilots offer introductory fares, due consideration should be given to the utility of doing so and built into a pilot budget accordingly.

Determining early on how to measure success is important for assessing microtransit feasibility.

Clearly articulated goals help establish a strategic direction for microtransit service design and implementation. An equally clear performance measurement framework is critical for setting targets that can be quantified and help confirm that goals are being realized. Targets, in turn, help clarify needed resources, budget, and timeline of a pilot microtransit service. Also, it is common for funders to request a performance measurement framework as part of a grant proposal. Demonstrating project success is also critical when seeking ongoing support for the service beyond the pilot phase.

Ideally, performance metrics would focus on indicators where baseline information exists. Below are some potential performance metrics, at least some of which have been used to measure the success of other microtransit systems.

- Ridership. Total service ridership provides a basic but important metric that can be compared against legacy or complementary transportation services.
- Vehicle miles traveled (VMT). Tracking VMT can help shed light on how adjustments to microtransit service can impact certain operational costs such as fuel and vehicle depreciation. Although less important in rural areas, measuring VMT can help program managers evaluate service impact on congestion.
- Service utilization (passengers per vehicle hour). Service utilization is a basic measure of system efficiency. Looking at overall service utilization can be helpful for assessing general system efficiency while examining utilization during certain portions of the operating schedule can be useful in identifying periods where demand is high or low relative to in-service vehicles.
- Occupancy (passenger miles / vehicle miles). Occupancy serves as another indicator of system efficiency that is based on the distance driven by in-service vehicles rather than hours in service.
- Deadhead mileage. Measuring deadhead mileage, or the VMT with no onboard passengers, can provide a window into whether there are portions of the service

area or periods of the operating schedule with low demand or trip aggregation activity.

- Geographic area served. A purported advantage of microtransit is its ability to expand public transportation beyond urbanized, densely populated areas. Assessing the success of a microtransit pilot, then, could involve comparing the size of its coverage area (and the population included therein) against any predecessor services.
- Cost: $/mile, $/trip, $/month. Tracking operational costs of a new microtransit service is important for several reasons. It helps system administrators evaluate whether microtransit constitutes a cost-effective substitute or complement to other public transportation services such as fixed route bus. It could also help structure fares so that they correspond to the cost of delivering service in certain geographic areas or periods of the operating schedule.
- Greenhouse gas emissions. Tracking and promoting the system's positive climate impact could be an effective marketing tool with certain customer segments.
- Customer satisfaction. Microtransit apps typically provide a mechanism for riders to rate their experience after each trip. It may be worth considering other techniques for tracking customer satisfaction, such as a passenger survey administered before and after the launch of a microtransit pilot. Such a survey could help compare the satisfaction of passengers using microtransit versus the legacy system.
- Average passenger wait time. Tracking the average passenger wait time for on-demand trip requests can be helpful for assessing service convenience and its ability to convert auto owners into transit users.
- Reliability (on-time vs. late). Are microtransit vehicles consistently arriving at pick-up locations within the scheduled timeframe? Are they dependably dropping riders off at their destination within the projected window? Tracking the reliability of a microtransit service can point to operational inefficiencies or the need to expand the timeframe within which passengers can expect to be picked up or dropped off.
- Unmet trip requests. At times of high demand, it's possible that a microtransit system can't respond to every on-demand trip request. In these instances, passengers may receive a "no vehicle available" notification. Microtransit platforms typically track the number of trip requests that result in such a notification. It may be inaccurate, however, to conflate this type of notification

with an unmet trip request. For example, if a rider is initially informed that there aren't any vehicles available but is able to schedule a ride 30 minutes later, then is it accurate to consider that request "unmet?" Microtransit providers interested in track unmet trip requests will need to develop a clear definition.

- Mode of reservation request (app vs. phone). One of the marketed advantages of microtransit is its ability to streamline and automate trip reservations via an online platform. If most reservations, however, continue to occur over the phone, then gains in efficiency will be limited. Tracking the percentage of reservations made by app or by phone will help highlight whether additional rider training and education are needed.
- Demographic and socioeconomic diversity of service ridership. If a microtransit provider is interested in ensuring equitable access to a range of demographic and socioeconomic groups, then some mechanism, such as a user profile, would be necessary for collecting that information. Onboard passenger surveys could offer an alternative.

A microtransit pilot benefits from a coalition of groups and organizations working in tandem to support its success.

There are a variety of interest groups whose priorities intersect at the issue of convenient, efficient public transportation. A microtransit pilot will stand a better chance of success if these various groups are actively engaged as project partners. For example, a critical driving force behind a microtransit pilot in Montpelier, VT was an environmental non-profit organization—the Sustainable Montpelier Coalition (SMC)—interested in reducing parking demand in the city's downtown. SMC has played a lead role in marketing the service and providing rider education. In addition to the regional transit agency (Green Mountain Transit), and the Vermont Agency of Transportation, other key partners have included the downtown business association, a disability rights advocacy group, and others.

Mobile data and cell service gaps in rural areas should be considered when planning a microtransit service and selecting a technology platform.

One potential advantage of microtransit is its ability to automate and maintain frequent communication with riders. For example, a microtransit technology platform typically has the capability to send a notification, either via an app or text message, to riders the day before their scheduled trip, informing them of their anticipated departure time. They are sent an additional notification as the vehicle is approaching and a final notification when the vehicle arrives at the pickup location. These regular information updates help

passengers plan their trips effectively, take the guesswork out of when a vehicle will arrive, and help improve system efficiency by reducing no-shows.

In urban areas, where mobile data and cell service coverage is nearly ubiquitous, it's highly unlikely that passengers will fail to receive trip updates due to gaps in connectivity. In rural areas, however, this point can't be overlooked. There are still many parts of the Monadnock Region—especially outside of population centers—that lack reliable cell coverage.

Elements of Microtransit Service Design

Designing and piloting a microtransit service requires navigating an array of decision points that can affect how well the service meets agency goals and customer needs. Some elements of microtransit service design can be explored through simulation-based methods while others will depend on professional judgement, rider input, and referencing precedent examples. What follows is a (non-exhaustive) summary of some of these service design building blocks. These elements and others will be explored in further detail over the course of the study.

Reservation System

Although a touted advantage of microtransit is a streamlined, app-based reservation system, most microtransit services offer the ability to schedule a ride with a dispatcher over the phone. Preserving the ability to book a ride over the phone is important for making the service accessible to individuals who might not own the necessary technology or who aren't comfortable using the app-based interface. Training and education may help increase the number of riders booking rides via the app, thereby reducing overall dispatching needs, but certain riders will continue to prefer or need a phone-based option.

A key consideration when choosing or designing a reservation system is how it will match riders with the various funding sources that may be supporting the service. Certain funding sources, such as Medicaid and Federal Transit Administration Section 5310 funding, place restrictions on the types of riders and trips that are eligible for support.

Service Area

A key aspect of microtransit planning is determining the service area—its size, coverage, and whether it's partitioned into different zones. Microtransit service areas can vary significantly in size. The services areas of the case studies examined below (starting on p. 17) range from 9 square miles (Montpelier, VT) to about 2,000 square miles (Baldwin County, AL). In cases where microtransit covers a large region with sparsely populated

areas, it may be necessary to create different service zones with varying fares and/or booking requirements. On-demand reservations are unlikely to be financially or operationally feasible in remote, sparsely populated zones. In some cases, advanced booking might prove a viable alternative.

Vehicle Selection

Microtransit typically relies on vehicles smaller than those used for fixed route bus service. A 2019 survey of public microtransit providers—predominately from urban areas—found that vehicle capacity ranged from 4 to 26 passengers. Wheelchair capacity ranged from 0 to 5 spaces.[21]

Smaller vehicles offer several advantages. If they carry under 16 passengers, the driver does not need to maintain a commercial driver's license, expanding the potential labor pool and reducing training requirements.[22] They can be easier to navigate along narrow streets and driveways. Depending on model selection, they potentially have a more efficient fuel economy. There are already several hybrid wheelchair-accessible vans on the market with fully electric models on the way.[23]

As discussed in the case studies (starting on p. 17), it can take some time for transit providers to transition from a vehicle fleet optimized for fixed-route bus to one well-suited for microtransit. This can be due to either to budget constraints that prevent investment in new vehicles or procurement-related barriers.

Pick-up and Drop-off Locations

One of the value propositions of microtransit over more conventional forms of demand-responsive transportation (e.g., taxis, paratransit) is its ability to aggregate riders taking similar trips. Trip aggregation can be enhanced through picking up and dropping off multiple passengers at the same time. Some microtransit services predetermine pick-up and drop-off locations while others generate them dynamically, depending on trip requests. Still others offer curb-to-curb service.

In certain areas, consideration may need to be given to the safety of pick-up/drop-off locations. In Montpelier, VT (discussed beginning on page 17), microtransit stops in the city's downtown core were limited to a set list of specific locations due to traffic safety concerns.

---

[21] Volinski, *Microtransit or General Public Demand–Response Transit Services,* 30.
[22] https://www.dmv.nh.gov/drivers-licensenon-driver-ids/commercial-driver-licenses
[23] The Toyota Sienna Hybrid is one example of a hybrid wheelchair-accessible van: https://www.youtube.com/watch?v=PA4_f1fVj5Y&t=184s. The Ford Transit, a passenger van commonly outfitted for wheelchair accessibility, will be available in electric models starting in 2022: https://shorturl.at/lxGH0.

Considering that microtransit often serves as a replacement for more traditional paratransit and/or non-emergency medical transportation, any trip aggregation method would need to take into account the mobility needs of different customer segments, e.g., older adults, wheelchair users, individuals with visual impairments. Some users may find it more difficult to walk to an aggregated pick-up location.

In cases where microtransit services have identified checkpoints where vehicles stop at scheduled times, it's possible to allow for walk-on passengers that haven't made a reservation. The Denver Regional Transit District offers a "QuickBoard" feature at certain checkpoints where passengers can simply board the vehicle and tell the driver where they want to go.[24]

Contract Model

Some microtransit services operate under a software-as-a-service model (SaaS) while others take a transportation-as-a-service (TaaS) approach. Under a SaaS framework, a third-party technology vendor provides the software on which the service operates while other aspects of the service (e.g., drivers, vehicles) are overseen by a local transportation agency. Under the TaaS model, a private vendor provides drivers and vehicles in addition to the technology platform. It's been argued by microtransit vendors that the TaaS model can achieve lower costs per vehicle hour than services operated by public agencies. Microtransit services with fleets less than six vehicles, however, may be too small to achieve the economy of scale necessary for the TaaS model to be financially feasible.[25]

Relationships Between Microtransit and other Transport Modes

Although it's possible for microtransit to operate as a standalone public transportation system, it often exists within a network that includes other modes, such a fixed-route bus and volunteer driver programs. A key aspect of studying microtransit feasibility is understanding how it relates to these other options—where it can build on existing strengths and fill in gaps. Below is a brief exploration of how microtransit might interact with public transportation options that currently exist in the Monadnock Region.

Fixed-route Bus Service

As described earlier within the typology on page 4, microtransit can serve as a first mile/last-mile service operated in tandem with fixed route bus. Such an arrangement allows the fixed route bus to operate at maximum frequency along corridors of high demand with microtransit serving to connect bus stops with more distributed origins

[24] Volinski, *Microtransit or General Public Demand–Response Transit Services*, 48.
[25] Via, Vermont Agency of Transportation Montpelier Microtransit Feasibility Study, (2019), 20.

and destinations in the surrounding area. Applying this concept to the Keene area, it will be worth examining how microtransit could replace lower performing parts of the City Express system, allowing for increased frequency of fixed route service in areas with the highest demand.

A seamless integration of fixed route bus and microtransit will require a technology platform well suited to the scheduling, trip planning, and routing requirements of both modes. From the case studies examined as part of this paper, it's unclear whether any of the available microtransit platforms fully incorporate all of these features. For example, the transit agency in Baldwin County, Alabama has found that they need to operate their fixed route service outside of the platform that they use to run their microtransit system. The platform vendor has indicated that they will soon support fixed route operations, but the timeline is currently unclear.

Volunteer Driver Programs

In many parts of the Monadnock Region, volunteer driver programs (VDPs) offer the only alternative to personal automobiles. At this time, it's unclear whether a microtransit service with professional drivers could cover the whole region while maintaining economic feasibility. This potential limitation raises some important questions. For example, could volunteer drivers be incorporated into a microtransit fleet? Alternatively, how might a microtransit service effectively coordinate with existing VDPs?

Regarding utilization of volunteer drivers within a microtransit fleet, research for this paper did not uncover an example of this type of integration. Microtransit with a volunteer driver component may be possible, but it would require alignment of microtransit and VDP operating models. For example, VDP service in the Monadnock Region currently operates under a paradigm where volunteer drivers *choose* the trip requests to which they are willing to respond. Microtransit drivers, meanwhile, work for a set shift and are automatically assigned to ride requests during that period. Incorporating volunteer drivers into a microtransit service would need to address this discrepancy. Shifting volunteer drivers to a system where they commit to a set schedule might offer one form of resolution. If the microtransit system offers or requires pre-scheduled rides in certain portions of its service area, then perhaps the underlying technology platform could be customized to afford volunteer drivers some choice in which requests they respond to.

It's also important to note that volunteer drivers have different motivations than paid microtransit drivers. They participate as drivers because they're interested in serving those with especially significant transportation challenges, including older adults and

individuals with disabilities. They also develop relationships with particular passengers, and sometimes prefer to respond to requests by those individuals.

Any microtransit service that incorporates volunteer drivers would also need to navigate issues around fares and how to maintain the necessary incentives to induce volunteer participation. For example, would certain geographic areas be limited to volunteer service, or would access to volunteer service be determined by the customer's income level? Also, how would such a service effectively communicate to volunteer drivers why their participation is still essential, even if they might be operating alongside paid professional drivers? A microtransit service that integrates volunteer drivers would also need a platform that clearly distinguishes which funding sources are supporting which trips, since the federal programs that support VDPs in the region place restrictions on rider eligibility.

Even if VDPs aren't rolled into a microtransit system but instead remain distinct programs, questions remain on how to best coordinate these two types of services. In Montpelier, VT, where the regional transit agency operates both a microtransit service and a VDP, dispatchers can easily match ride requests with the most appropriate service. If the origin and destination are within the microtransit service area, the dispatcher schedules the ride through the microtransit platform. If a longer distance journey is necessary, a ride request is placed on the VDP system. The microtransit and VDP platforms are not integrated.

Matching riders with the most appropriate service becomes more difficult and potentially less efficient if the microtransit system and the VDP(s) are administered by different entities. In that scenario, an overarching system may be required to effectively match riders with the best service. Technology platforms that facilitate integrated trip planning, fare collection, customer communication, etc. are known as "mobility as a service" solutions.

In addition to recognizing the potential synergy between microtransit and VDPs, it's worth noting that microtransit may be of interest to a variety of other transportation partners. For instance, perhaps microtransit could offer a more coordinated, cost-effective alternative to the assortment of Medicaid transportation services that exist within the region. School districts could be interested in working with a microtransit service to meet a variety of student transportation needs, e.g., supplementing/replacing yellow school bus service, providing transportation to/from extracurricular activities, and helping students access work-based learning opportunities. Social service agencies may also be interested in how microtransit could improve their clients' mobility.

Rural Case Studies

Rural microtransit is still a very new frontier in transportation innovation. The earliest pilot projects were initiated in late 2020. Consequently, most empirical data related to rural microtransit comes from an era where COVID-19 has upended business as usual for public transportation providers across the country. It's therefore difficult to say how microtransit would perform under circumstances where public health isn't such a safety concern. Nonetheless, early examples of rural microtransit provide useful lessons on how such services can be designed and operated. They also point to the potential microtransit might hold for improving rural public transportation moving forward.

Montpelier, VT: MyRide by GMT

In January of 2021, Green Mountain Transit (GMT) launched a pilot microtransit service in Montpelier, VT (pop. 8,074) and portions of neighboring communities. The service, "MyRide by GMT," is completely demand-responsive in nature, with no fixed route or schedule. It replaces three deviated fixed route bus services that, prior to discontinuation, provided in aggregate 165 trips per day on average.[26] The service area totals 9.5 square miles and includes downtown Montpelier, Central Vermont Medical Center, Berlin Mall, Shaw's, and Edward F. Knapp State Airport.[27] Current hours of operation are 7:00 a.m. – 6:00 p.m. on Monday through Friday and 8:00 – 6:00 p.m. on Saturdays. The service currently operates three 28-passenger Ford cutaway buses, the same vehicles used by the legacy fixed route system. The service utilizes a technology platform provided by the private microtransit firm Via Transportation Inc. and is an example of SaaS model described earlier.

The seeds of the project were planted by a transportation roundtable convened by the Sustainable Montpelier Coalition in the fall of 2018, which in turn led to the formation of a Microtransit Working Group later that year. The working group, convened by the Vermont Agency of Transportation (VTrans), included representatives from the City of Montpelier, Green Mountain Transit, Sustainable Montpelier coalition, Vermont Center for Independent Living, and Central Vermont Regional Planning Commission.[28]

As articulated by the Microtransit Working Group, key motivations for exploring microtransit included:

- The fact that travel behavior in the Montpelier area exhibited non-linear patterns difficult to serve by fixed route bus.

[26] Ibid., 13.
[27] See the MyRide home page for a service area map: https://ridegmt.com/myride/.
[28] VTrans Microtransit Working Group, *White Paper: Microtransit in Montpelier,* (2019), 1.

- A goal to make public transit more convenient for a broad array of customers, thereby expanding ridership.
- A goal to reduce the carbon footprint of travel within the Montpelier area.
- A goal to reduce parking demand in downtown Montpelier, thus allowing for increased infill development.

Members of the working group undertook a variety of activities to evaluate the feasibility of launching a microtransit pilot in Montpelier. VTrans contracted with Via to perform a simulation-based feasibility analysis that compared four service scenarios: one where microtransit would replace fixed-route service and three where microtransit would replace both fixed-route service and paratransit. The three latter scenarios assumed varying levels of demand, ranging from existing ridership to a 78% increase. Simulation of the first scenario predicted microtransit could accommodate existing fixed route ridership with a fleet of 3-4 vehicles, each seating at least 6 passengers. The average predicted wait time was 10-15 minutes and the average walk from request to pick up site was about 475 feet. The results from all the simulation scenarios are summarized below in Table 1.

Table 1 - Summary of Simulation Results[29]

	Scenario 1	**Scenario 2**	**Scenario 3**	**Scenario 4**	**Units**
Ridership	225	244	300	400	Trips / day
Peak Hour Ridership	25	27	35	45	Trips / hour
Fleet Size	3-4	3-5	4-5	5-6	Vehicles
Vehicle Size	6+ Seats	6+ Seats	6+ Seats	6+ Seats	Seats / vehicle
Vehicle Hours (M.-Sa.)	256	266	328	410	Veh. Hours / week
Average Wait Time	10-15	10-15	10-15	10-15	Minutes from Request to Pick up Site
Average Walk	475	425	425	445	Feet from request to pick up site

In addition to simulation-based analysis, pre-pilot work included developing a plan for conducting user research and launching a marketing campaign. The plan identified potential microtransit user groups, data needed to better understand these groups,

[29] Adapted from Via, *Vermont Agency of Transportation Montpelier Microtransit Feasibility Study*, 18.

opportunities and challenges associated with each group, potential engagement methods, and key organizations and points of contact. Examined rider segments included current fixed-route and paratransit customers, older adults, local schools, large employers, and state employees (Montpelier is the state capital of Vermont). Analysis concluded with a marketing plan proposal that focused on preparing and supporting current fixed-route and paratransit riders for the transition from existing fixed-route and paratransit service to microtransit. The period between publication of the marketing plan and the pilot launch was about 20 months.

Leading up to the pilot launch, the Sustainable Montpelier Coalition took the lead on outreach activities, which included:

- Intercept interviews with passengers riding existing fixed-route and paratransit service. Additional phone interviews with passengers were also conducted.
- Meetings and interviews with community partners.
- Regular meetings with the MyRide Community Advisory Group.
- Engagement with local businesses.
- Training and pre-registration sessions with rider segments in need of extra assistance.

Despite launching during the middle of a global pandemic, initial service performance has been promising, with total ride requests growing from 497 during the first week of service (January 4, 2021) to 766 about 2 months later (March 29, 2021). Over the same period, service utilization (rides per vehicle hour) grew from 1.8 to 2.6.[30] It's anticipated that as overall demand increases, so will service efficiency, since there will be greater opportunity for ride aggregation. Reducing the number of cancellations and no-shows, which as of March 29, 2021 accounted for just over a quarter of all ride requests, is seen as another way to improve efficiency.[31]

Passengers can request rides either via a smartphone app or by calling a GMT booking agent. Data from the first two months of service show that about 45% of rides were requested by app while 55% were requested by phone. As of December 2021, the majority of ride requests were still occurring via phone. There's recognition that additional training and education will be required to encourage higher utilization of the

[30] Steadman Hill Consulting and Green Mountain Transit, *Microtransit, the What, Where, When, How, Who and Why,* (2022).
[31] Ibid.

app-based reservation, especially among groups with digital literacy-related challenges. In the future, GMT may also consider installing call stations similar to emergency phones commonly seen on college campuses. Such call stations would allow individuals without access to a cell phone to easily reach the dispatch center and request a ride.

During the first two months of the service, just under 75% of requests were for one-time rides while just over 25% were for recurring rides. A majority of ride requests (51%) were placed on-demand, 0-3 hours in advance of the scheduled departure time. There was still significant demand, however, for pre-booked rides, with about 37% of requests occurring at least 24 hours in advance of the scheduled departure time. The reservation algorithm currently prioritizes pre-booked rides. As ridership has grown in the latter half of 2021, attempts to place on-demand reservations during peak hours have sometimes resulted in unmet requests, although this occurs infrequently (with about 4% of requests).

Considering ongoing discussion in the Monadnock Region about improving youth transportation options, it's worth noting that GMT allows children six years and older to use any of its services, including MyRide, without an accompanying adult. This policy is driven in large part by the fact that GMT provides student transportation in several communities within its service area, with, at least in some cases, students riding public bus service to and from school. MyRide analytics show that some passengers are using microtransit for transportation to/from Montpelier schools, but it's unclear to what extent those rides are being taken by staff versus students.

Although MyRide is predominately a demand responsive curb-to-curb service with no fixed stops, in April of 2021 it designated a set of "virtual bus stops" in the downtown core of Montpelier. These virtual stops were established to help ensure that passenger loading/unloading occurred at locations that didn't pose a traffic safety concern. A virtual bus stop also exists at the Berlin Mall. In addition to safety benefits, establishing a limited set of virtual bus stops at significant trip generating locations can also lead to more efficient rider aggregation. Passengers who are unable to walk to a virtual bus stop can inform the GMT booking agent or provide a note when requesting a ride via the app.

Microtransit has shortened the average trip time when compared to its fixed route predecessor and has made trip times more predictable. The average trip duration on MyRide is currently about 10 minutes, whereas trips on the legacy bus system tended to be much longer. Since the legacy system operated on a flex route basis, trip times

between the same origin and destination could vary widely depending on how many deviated stops were requested at any given time.

The service is supported by federal funds administered by VTrans (80%) and voluntary municipal match (20%). GMT receives about $570,000 of VTrans funding on annual basis to support operations—about the same level it had received in previous years to support its fixed route system. VTrans also awarded GMT about $220,000 in capital funding to support the transition from fixed route service to microtransit. The technology required to operate the service represents a small portion of the annual budget. The cost to license the software is based on the number of vehicles concurrently using the platform. For Montpelier's 3-vehicle fleet, monthly costs total about $2,500.[32]

Wilson, NC: RIDE

In September 2020 the small city of Wilson, NC (pop. 49,000) replaced its fixed-route bus system with a completely on-demand microtransit service called RIDE. By switching to microtransit, the city was aiming to address recognized shortcomings of its fixed-route system: long headways (45-60 minutes), a lack of real-time information regarding bus arrival times, and a limited service area that didn't include critical origins and destinations, larger employers in particular. At launch, the service zone was approximately 31 square miles. The service fleet began with approximately 12 vans, at least a portion of which were wheelchair accessible. Like with service in Montpelier, RIDE was developed and operated in partnership with Via Mobility, LLC, which provides the technology platform on which the service operates.[33]

RIDE has seen a steady growth in ridership over time. During the first half of 2021, the service completed about 9,000 rides per month, a 50% increase over the 2020 average on the fixed-route bus system. Prior to the COVID-19 pandemic, the predecessor fixed-route system provided about 7,000 rides per month. During the pandemic, fixed-rate ridership dropped to under 1,500 rides per month. During the same period, the service had 2,148 unique riders and service utilization rate of 3.5 - 3.9 rides per vehicle hour. About 35% of riders book five or more rides per month. Ridership growth was fueled substantially by expanding operating hours to accommodate work commuters. In

[32] Interview with Jamie Smith, Director of Marketing & Planning, Green Mountain Transit, December 7, 2021.

[33] Information for the Wilson, NC case study comes from several references: a white paper by Via Transportation (https://ridewithvia.com/wp-content/uploads/2021/02/20210330_casestudy_Wilson-US-Letter.pdf); the Wilson, NC website (https://www.wilsonnc.org/residents/all-departments/public-works/wilson-transit-ride-wilson-industrial-air-center/ride); and a presentation by Public Services Director Bill Bass on August 19, 2021 (https://vimeo.com/event/303928/videos/589580209/).

February of 2021, weekday hours were extended from 7:00 a.m.-6:00 p.m. to 5:30 a.m.-7:00 p.m. RIDE also offers Saturday service from 7:00 a.m. to 6:00 p.m.

During the first half of 2021, the average wait time was about 17-20 minutes, slightly above the city's 15-minute target. According to city staff, longer wait times were a product of increased ridership and a limited vehicle fleet. The city partners with the car rental firm Avis for vehicle provision. Since Avis did not have the capability to service the RIDE fleet locally, vehicles in need of repairs or maintenance were slow to return from the garage, leading to a reduced fleet of 9 vehicles in August of 2021. The size of the fleet was brought to 12 in September through a new maintenance arrangement that allowed Avis vehicles to be serviced locally. Later that month, the city planned to add 9 additional vehicles (Toyota Sienna minivans) through a collaboration with the startup Buggy, a vehicle provision company that specializes in renting cars to TNC drivers.

Similar to MyRide in Montpelier, RIDE allows passengers to book trips by app or over the phone. Unlike in Montpelier, however, where most rides were requested by phone, 82% of rides in Wilson were reserved by app. The disparity could be due in part to the fact that the Wilson service is slightly more mature than microtransit in Montpelier. Early figures for RIDE showed slightly lower reservation rates occurring by app, which accounted for about 75% of ride requests at the time. Other factors, however, including promotional strategies and customer preferences, however, are also likely at play.

RIDE's customer base includes a variety of groups, including transportation-disadvantaged populations such as older adults, individuals with disabilities, and low-income households. In June of 2021, the city surveyed current microtransit riders and found that 90% of respondents lack access to a personal vehicle and that 40% were making less than $25,000 per year. A previous survey showed that about 50% of respondents used the service to commute to and from work. City staff and officials have received positive feedback from constituents from different user groups, including individuals with disabilities and transportation-disadvantaged workers. In the aforementioned survey conducted in June of 2021, 90% of respondents indicated that they would be "very disappointed" if microtransit service was discontinued.

The service requires a flat fee of $1.50 per ride, with discounts available to individuals with disabilities and older adults. In addition to being able to make payments by credit card, customers can book rides with cash, an important consideration, since a substantial portion of the service's riders lack a bank account. As of September of 2021, the cost of running the service was about $11 per ride. The service is supported through a mix of federal funding, city contributions, and farebox revenue. The transition from fixed-route service to microtransit was funded in good measure by a $250,000 award

through the U.S. Federal Transit Administration's competitive Accelerating Innovative Mobility grant program.

In September of 2021, Wilson City Council voted unanimously to extend its microtransit pilot for another three years of service.

Baldwin County, AL: BRATS On-Demand

In September of 2020, the Baldwin Regional Area Transit System (BRATS) launched a new microtransit service—BRATS On-Demand—to replace its fixed route bus system and traditional dial-a-ride services. BRATS serves Baldwin County, Alabama, which is predominately rural in character, encompasses 2,027 square miles, and has a population of 232,000 people. Its population density—115 people per square mile—is roughly comparable to that of Cheshire County, which has a population density of about 104 people per square mile. BRATS On-Demand covers the entirety of Baldwin County, one of the largest catchment areas of any rural microtransit system in the country.[34]

The legacy fixed route and call-n-ride system provided very limited service in many parts of the county. In the more remote areas, call-n-ride service needed to be scheduled days in advance and offered rides only one day a week.

Like the other case studies examined, BRATS On-Demand is the result of a public-private partnership with the transportation and technology firm Via Transportation Inc., which provides a software platform on which the service operates. In 2019, BRATS and Via collaborated on the development of a proposal to the Federal Transit Administration's Integrated Mobility Innovation grant program. The proposal was awarded $260,800 to support the transition from traditional dial-a-ride to a full-fledged microtransit system.[35]

It's worth noting that the funding environment for public transportation in Alabama is comparable to that of New Hampshire. Alabama does not allocate any state funding to transit. New Hampshire has historically either dedicated no state funding to public transit or very little compared with nearby states.[36] In FY2021, Alabama received about $31 per capita in Federal Transit Administration funding, while New Hampshire received

[34] Information about the BRATS On-Demand case study comes primarily from three sources: the Baldwin County website (https://baldwincountyal.gov/departments/brats-public-bus-transportation/brats-on-demand); a 12/15/20 presentation by former BRATS Director Matthew Brown (https://baldwincountyal.legistar.com/MeetingDetail.aspx?ID=695196&GUID=5E86F4BA-0D31-49D9-B207-9A9A0F74113C&Options=info|&Search=); and a 12/9/21 interview with current BRATS director Ann Simpson.

[35] https://www.transit.dot.gov/research-innovation/integrated-mobility-innovation-imi-fiscal-year-2019-selected-projects

[36] https://www.nh.gov/dot/org/aerorailtransit/railandtransit/documents/2021_public_transport_nh.pdf

about $37 per capita.[37] In Alabama, county governments provide funding to meet FTA match requirements.

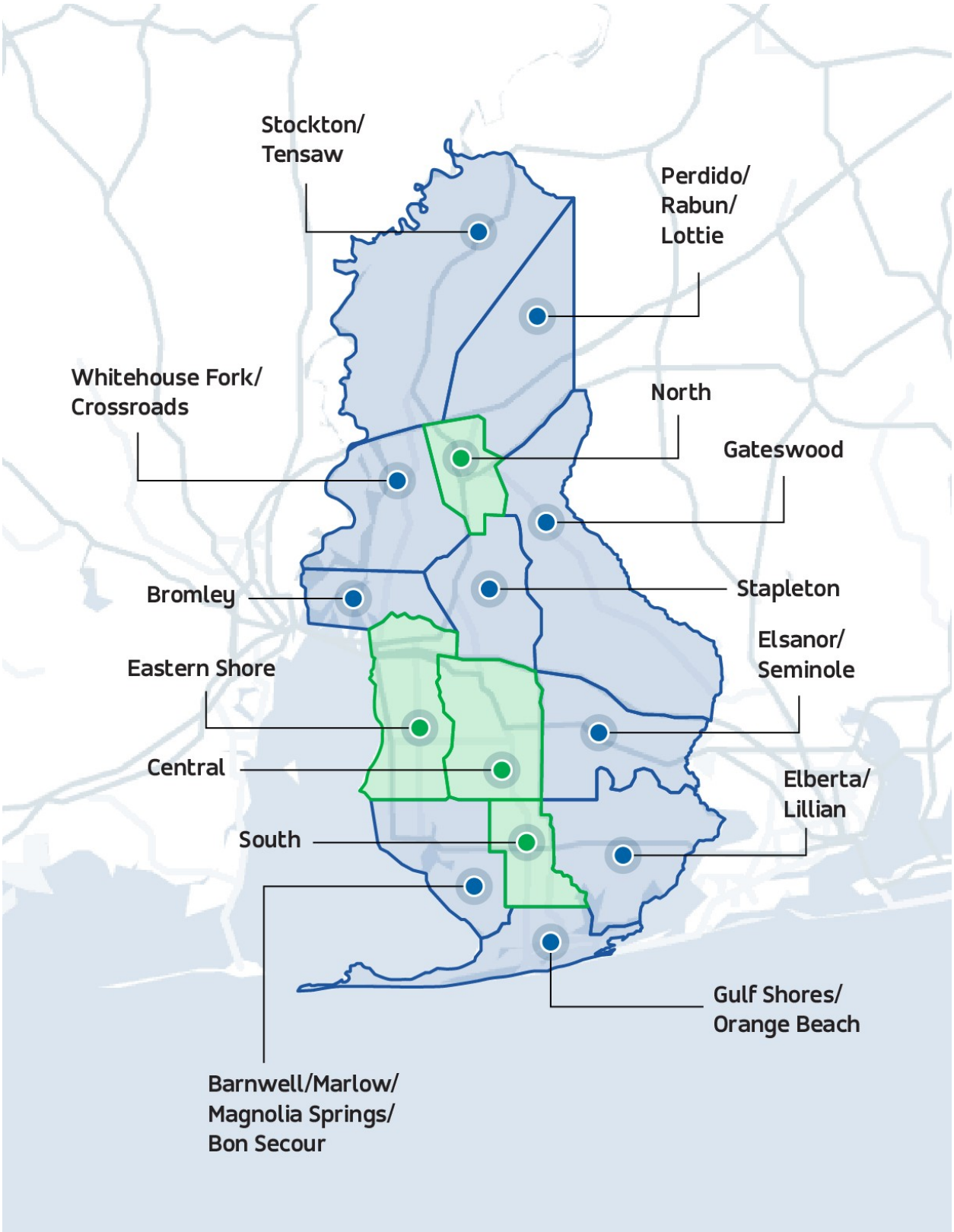
BRATS had several goals for implementing the switch from traditional dial-a-ride bus service to microtransit. One was to make the system easier to understand. With an expansive catchment area that included multiple service zones, it was quite difficult for passengers (and even agency staff) to determine whether and how a rider could get from Point A to Point B. The hard copy service booklet was over 40 pages long. Another key goal was to make the service more convenient to use. The legacy dial-a-ride service required passengers to reserve a ride at least 24 hours in advance, whereas the BRATS On-Demand enabled passengers to book rides in real-time. Passengers could monitor the location and estimated arrival time of vehicles as they approached the pick-up location, taking the guesswork out of when the vehicle would arrive. These improvements were all seen as important for both better serving existing customers—primarily transportation-disadvantaged segments of the population—as well as attracting new riders.

The coverage area for BRATS On-Demand is divided into 14 different service zones. The 4 “primary” zones include the more populous, urban parts of the county while the 10 “outer” zones cover the more rural areas. Initially, the service was designed so that the booking requirements varied depending on how a given trip moves across zone boundaries. Under the original service design, trips within primary zones could be booked in real-time, trips between primary zones required 3 hours advance notice, and trips to/from outer zones required at least 12 hours advance notice.

This zoned design largely went out the window, however, due to the timing of the launch date. Just as the pilot was getting off the ground in September 2020, Baldwin County was struck by Hurricane Sally. In response to the emergency, BRATS opened on-demand service to all zones except one. The policy remained in effect as of December 2021. Twenty-four-hour advanced reservation is required in a particularly remote zone of the service area. Service is available five days a week in all zones. Passengers are allowed to schedule rides up to 14 days in advance.

[37] https://www.transit.dot.gov/funding/apportionments/funding-state

Figure 1 - BRATS On-Demand Service Zones[38]



Ride fares depend on mileage, ranging from $2 (0-5 miles) to $6 (30-35 miles). Fares must be purchased via the app, over the phone, or in person at BRATS offices. Cash payments are not accepted on board vehicles.

Similar to MyRide in Montpelier, most BRATS On-Demand riders (60%) book rides over the phone, with just 40% using the app to make reservations. BRATS staff hope to shift more reservations to the app with educational and promotional efforts.

Since the pilot has occurred mostly during the Covid pandemic, it's difficult to gauge whether ridership numbers are better or worse than those of the legacy system. Compared against itself, however, BRATS On-Demand has seen a steady increase in ridership, posting a 48% increase in October 2021 over a year previous. The system schedule and other aspects of service operations remained largely unchanged over that time. Although BRATS has yet to conduct an on-board passenger survey, drivers report seeing more young people on the service.

BRATS On-Demand currently utilizes a fleet of 46 vehicles, all of which have wheelchair lifts. Most of the fleet was carried over from the legacy fixed-route and traditional call-n-ride system. Some of the vehicles are consequently oversized for the occupancy demands of a rural microtransit service. BRATS is currently looking at acquiring Ford Transit vans, but that effort has been stalled by the state's lack of a purchasing agreement (all public transportation vehicle procurement runs through the Alabama Department of Transportation).

According to BRATS staff, customer response to the new service has been overwhelmingly positive. Customers have appreciated the ability to schedule rides 24/7 over the app. The constant communication enabled by the platform has also been a plus. Riders receive an automatic reminder via text message the night before their ride, an updated estimate for their pick-up time as their vehicle approaches, and a final notification when their vehicle arrives. BRATS staff see little to no possibility of switching back to the legacy system.

It took some time for drivers to adjust to the new system, but after a year of operation, reviews are largely positive. Drivers especially appreciate that they are no longer responsible for handling fares.

There have been some technology-related bumps along the way. For example, vehicles were missing opportunities to aggregate rides, even those that were scheduled in advance. The was at least partially due to fact that riders can schedule rides either according to desired pick-up time or drop-off time. The scheduling algorithm was consequently missing opportunities to group rides. The problem was reduced by expanding the target pick-up window from 15 minutes to 30 minutes. Another

technology-related issue arose when Via's hosting service, Amazon Web Services, experienced several days of downtime. During this outage, customers could not book rides. BRATS staff has communicated with Via that a contingency plan needs to be put in place for similar interruptions in the future.

BRATS staff have recognized some limitations with the Via platform. For example, while BRATS services now center on microtransit, they still implement fixed bus routes to meet certain transportation needs, such as commuter service into neighboring Mobile, AL. This fixed-route commuter service requires that passengers schedule rides in advance. The Via platform does not currently accommodate trip management for fixed-route bus service. Consequently, in these circumstances, BRATS creates routes outside the Via system and drivers rely on hardcopy manifests. BRATS staff have been told that Via is actively developing a solution to address this gap in their platform, but they have not been notified of a specific timeline for that feature update.

Despite some current shortcomings, BRATS staff report general satisfaction with the Via platform and their ongoing relationship with the firm. BRATS staff still meet weekly with a Via customer account representative. Since some of Via's customer account representatives are located in Tel Aviv, the time zone difference sometimes creates a delay in responding to questions and service requests.

In September of 2021, Baldwin County extended its contract with Via for another year.[39] The contract was amended from $16,500 to $13,500 per month. The amended contract also includes a new advertising package that Via offers to help clients integrate "out-of-home" advertising with their transportation services. Out-of-home (OOH) advertising includes strategies such as naming rights sponsorships, bus shelter advertising, content for screens inside of vehicles, and vehicle wraps. In urban areas with larger transit agencies, OOH can be an important revenue generator. According to Via, their marketing package is intended to help smaller cities and rural areas take advantage of the latest advances in OOH techniques.[40]

In reflecting on rollout of the pilot, BRATS staff consider the project a great success that's dramatically improved the quality of service. To other rural areas considering microtransit, they might recommend limiting the pilot to a smaller geographic area, which may help both customers and agency staff transition smoothly to the new system.

---

[39] Baldwin County Commission meeting minutes, September 21, 2021. https://baldwincountyal.legistar.com/View.ashx?M=M&ID=695214&GUID=CDC65418-53A8-42F8-B04F-F3D4B5032932

[40] Via, 2021. https://ridewithvia.com/resources/articles/modernizing-out-of-home-advertising-with-via-media-solutions/.

Final Thoughts and Next Steps

This technical paper represents a starting point for the more in-depth investigation that will occur during later stages of the feasibility study. It's intended to highlight aspects of microtransit that may warrant closer examination during simulation-based modeling, action planning, and moving into implementation (should a pilot project move forward). Microtransit presents some exciting new capabilities in the world of on-demand public transportation, but it also raises many questions that project stakeholders need to evaluate with a critical eye. as stated at the outset, the intent of this paper is to provide the context and perspective to *begin* a process of assessing whether microtransit represents a good option for improving public transportation in the Monadnock Region.