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AAATA Fare Study

# Final Report

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Prepared by Four Nines Technologies



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# Executive Summary

The Ann Arbor Transportation Authority (AAATA), known by the public as TheRide, is regarded as an innovative and adaptive transit agency. Over recent years, though, its fare policies and technologies have evolved in an ad hoc manner. The agency commissioned this Fare Study as an opportunity to improve its fare structure, policies, and/or technologies in pursuit of the ends statements outlined by the AAATA Board, which are outlined below.

## **AAATA Board Ends Statements**

**1.0 AAATA exists to provide access to destinations throughout the Ann Arbor-Ypsilanti Area for increasing numbers of residents, workers and visitors via transportation options that contribute to the Area's social, environmental and economic vitality at a cost that demonstrates value and efficient stewardship of resources.**

### **1.1. All residents of the Area can participate fully in society without a personal vehicle.**

- 1.1.1. People with low incomes can afford to travel in the Area.
- 1.1.2. People, including those with disabilities or mobility impairments, seniors, minors, and non-English speakers, have equitable access to opportunities in the Area.
- 1.1.3. People with access to a personal car find public transit to be an attractive alternative.
- 1.1.4. Passengers are highly satisfied with public transportation services that are safe, reliable, courteous, comfortable, convenient, and fast.

### **1.2. The Area's natural environment is enhanced.**

- 1.2.1. The Area's overall transportation system minimizes energy use and pollution.
- 1.2.2. The Area's carbon footprint is reduced.
- 1.2.3. The Area's air is cleaner.
- 1.2.4. The Area's natural resources are conserved.
  - Land development can become more compact and walkable in part because of transportation options.
- 1.2.5. Agency operations make efficient use of energy, water, materials, and other natural resources; and minimize waste.

### **1.3. The Area prospers economically.**

- 1.3.1. Workers and students can access employment opportunities without need of a personal vehicle.
- 1.3.2. Employers have access to a diverse labor pool.
- 1.3.3. Visitors have access to the Area.
- 1.3.4. The Area's economy grows despite limited parking and auto congestion.
- 1.3.5. The Area is connected to the Metro Detroit region.
- 1.3.6. Local leaders are aware of the contribution public transportation makes to the community.



We began the Fare Study by developing a context for conversations about fares at TheRide by documenting the existing fare structure at the agency and comparing it to a selection of comparable peers and broader industry trends. We followed by soliciting opinions from both riders and non-riders through a community engagement plan that involved both online and in-person surveying. We evaluated the information we collected and compiled sets of strengths, weaknesses, opportunities, and challenges for TheRide.

Four Nines worked with TheRide staff to develop future options, based on our findings, for different segments of the agency's fare structure, touching on everything from policy to technology. We then conducted qualitative and quantitative analyses of these options with the support of our fare modeling tool, which we calibrated to mirror TheRide's structure and services and delivered to agency staff for continuing use. The modeling tool projects ridership and revenue at TheRide up to five years from the baseline year based on changes to fare structures, policies, and technologies. As part of the model development and handoff process, we have delivered training to TheRide staff in person and provided documentation on how to continue using the fare model into the future to allow theRide to build on the work we've done in this study.

From the quantitative modeling and qualitative industry analyses, Four Nines has laid out recommendations to help TheRide achieve its goals of being attractive, consistent, convenient, and fair, while meeting the ends statements provided by the Board. We have listed each of the recommendations resulting from this Fare Study below under the category of High Effort, Key Priority; Low Effort, Immediate Benefits; or Supporting Policies.

## High Effort, Key Priority

Each of the recommendations contained within this section would take a significant amount of time and resources to accomplish, but are key to ensuring TheRide's long-term success as a transit agency and connector of people and places within the broader Ann Arbor area.

### Establish internal indicator(s) that will be used to determine when a fare increase should happen

TheRide's last fare increase took place from 2007 to 2010 with no review of fares since. Agency staff have expressed the need for a fare increase policy that provides clear direction and justification regarding fare increases to both internal and external stakeholders. This ability to justify fare increases by pointing to specific indicators will build community faith in the agency by increasing transparency and the perception of fairness (an overarching fare policy goal). This will also provide the agency with a greater opportunity to plan for increases internally in terms of communication strategy and implementation processes. The main purpose of this recommendation though is to make sure TheRide will remain economically viable in the long-term, in accordance with ends statement 1.3.7.

This specific policy regarding fare increases provides TheRide with flexibility in choosing when to pursue a fare increase, as opposed to more rigid fare increase policies (e.g. conduct a fare increase every three years) that may call for unneeded fare increase, which could do more harm than good by negatively affecting public opinion of the service. The process of establishing internal indicators also would require TheRide staff to have an agency-wide conversation about what should necessitate a fare increase. This is an important conversation that TheRide has not had in some years as reflected in the lack of a formal fare increase policy and the fact that the last fare increase happened almost a decade ago. Additionally, during our analysis of needs, opportunities, and

challenges at TheRide, Four Nines observed that while TheRide has some service standard performance indicators, there are no metrics related to fares. This recommendation would eliminate this gap in TheRide's operations and administration and increase the agency's ability to balance its historic planning standards (such as ensuring 90% of households lie within ¼-mile of a bus stop) with its financial needs. These fare increase indicators could even be used beyond determining when fare increases should happen, potentially informing other finance and planning decisions as well.

### Procure a smart card + mobile ticketing system

TheRide should procure an integrated smart card and mobile ticketing fare collection system. Departments expressed interest in encouraging riders to pay off-board for trips, shifting away from cash handling, reducing maintenance needs on onboard fareboxes, creating a better interface for engaging with new and potential customers, and automating as much of the boarding process as possible to improve relationships with riders — all of which can be better achieved through the use of new fare technologies. Implementation of new fare technology could also improve the quality of data collection and reporting at TheRide. This improved data could enhance the agency's ability to track whole trips instead of just boardings and in turn more accurately price fares and passes based on actual trip usage patterns for both the general public and third party pass programs. Beyond financial decisions, TheRide could leverage this data in its service planning processes and decisions.

An integrated smart card and mobile ticketing system would help achieve the Board's ends of making public transit an attractive alternative for people with access to a personal vehicle, ensuring a high level of satisfaction with public transit services, and making sure TheRide is economically viable in the long-term.

### Shift enforcement to offboard

We recommend that TheRide shift enforcement for reduced fare programs off-board by determining eligibility at the time of purchase and not at the time of boarding. This policy change would address a number of issues that were identified by TheRide staff during this study and help to create a public transportation system that is safe, reliable, courteous, comfortable, convenient, and fast (end statement 1.1.4.).

This policy change would remove the burden placed on operators to memorize all the types of fare discount IDs and the looks and discount levels associated with each. Offboard enforcement would thus also reduce rider/operator conflict and shift operators to more of a customer service role, hopefully making bus service more inviting to current customers and more attractive to new riders who may be unsure of how the system works. Because of the technology improvements it requires, this policy would simplify administration of discount fares, including the deactivation of lost/stolen cards and the monitoring of suspicious discount fare use. The new technology would also enable TheRide to assign eligibility to rider accounts that expires after a certain amount of time (e.g. youth or temporary disability). Additionally, offboard enforcement policies and technologies would enable TheRide to obtain better data on discount fare usage rates and prevalence, creating a trove of information that would serve as a better resource for planning and financial analyses into the future. This would represent a significant improvement from the status quo regarding discount fare data.

To enable the technology benefits named above, offboard eligibility enforcement is best done using an account-based smart card system. The level of financial investment necessary to enable offboard enforcement would depend on the number of sites available for distribution of the reduced fare media, the details of the technology, and whether riders' photos were printed on the cards. Based on the decisions made related to each

of these considerations, the capital cost for a reduced fare media distribution network could range from a few hundred dollars to a few thousand dollars per location. Considering that TheRide currently handles almost all of its reduced fare ID distribution at AAATA Headquarters, the agency could probably function with just the central reduced fare media distribution site, which would minimize the required capital investment costs. TheRide could then explore alternative distribution locations to help accommodate high-volume application times, such as before Art Fair each July. The equipment used to set up these temporary locations could also be used during the debut of the new smart card reduced fare system to help process current reduced fare ID card holders into the new system.

A number of transit agencies have used the implementation of smart card technologies as an opportunity to shift fare enforcement offboard. The potential for offboard enforcement is even regarded within the industry as a driving factor behind agencies' decisions to implement smart card technology, and in general smart card implementation combined with the switch to offboard enforcement is strongly recognized as an industry trend.

### Expand business program (similar to go!Pass program) to other businesses in the service area located near transit service

We recommend that TheRide expand the business pass program in areas where it makes sense. Expansion of the business program could help attract new customers to TheRide and diversify the portfolio of pass programs bringing revenue into the agency, a concern that was expressed by staff specifically related to MRide pass holders accounting for approximately 40% of current local fixed route ridership.

While it may be attractive to offer a pass program everywhere, priority should be for areas that already have rich service that is not currently at capacity. For areas that do not have transit service, or areas where the buses may be at capacity, it would be necessary for businesses to contribute to the cost of transit service in addition to any pre-established pass program costs. By prioritizing in this way, TheRide can achieve economies of scale in their pass program without being hampered by additional service delivery costs.

Expanding the business program would enable workers and student to access employment opportunities without need of a personal vehicle (end statement 1.3.1.), employers have access to a diverse labor pool (end statement 1.3.2.), the Area's economy grows despite limited parking and auto congestion (end statement 1.3.4.), and TheRide will remain economically viable in the long term (end statement 1.3.7.).

### Develop a methodology for pricing new third party pass programs without pre-existing ridership data

We recommend that TheRide develop a methodology to establish third party pass programs that can be adapted to situations where ridership by employer may be difficult or impossible to assess. In the past, this lack of ridership data has made TheRide hesitant to bring in new third party pass programs because of concerns regarding the impact of new programs on agency costs and, related to this, an uncertainty regarding how to price the first year of the program. There are several ways in which peer agencies establish new third party pass programs that do not rely on pre-existing ridership data for an institution's members; TheRide could build on these examples to develop their own methodology for pricing new third party pass programs where little to no ridership data is available.

By expanding its third-party pass programs, TheRide would expand options for workers and students to access

employment opportunities without need of a personal vehicle (end statement 1.3.1.), help employers have access to a diverse labor pool by providing them with an affordable option for supplementing their employees' travel to work (end 1.3.2.), and work to increase the long-term economic viability of the agency by diversifying the portfolio of third-party pass programs and funders that support TheRide financially (end statement 1.3.7.)

## Establish a fare tariff

A fare tariff is a document that offers a comprehensive view of all customer-facing elements of fares at a transit agency. Establishing a fare tariff takes time in order to ensure that all the conceivable elements associated with fare pricing, fare payment, fare enforcement, fare structure, and other fare related procedures are included. However, at the end of the process, the agency has a document that is useful to the agency and provides a solid basis for communicating fares to the public.

The Fare Tariff should include at a minimum:

- Fare Structure (media and ticket types, fare categories, discounts, rates, etc.)
- Fare Enforcement Protocol
- Transfers/Upgrades
- Pass Programs
- Specialized Discounts and/or Promotional Fares

Fare tariffs can also contain information related to any parking or transit center operations, advertising practices, or the establishment of Charter Service, insofar as they relate to fares, fare-related procedures, or revenue-related issues. While the breadth and depth of the fare tariff can vary from agency to agency, the best fare tariffs are those that provide the most clarity to agency staff regardless of the department.

## Establish a fare policy

A fare policy can be a few paragraphs, or it can be a comprehensive compendium of all fare-related items. One thing all fare policies have in common is that they anticipate the future and provide a blueprint for getting there by establishing principles and goals to guide the agency's revenue-related decisions. While these typically include broad pronouncements such as "Increase Ridership" or "Improve Farebox Ratio," they also may include other, more specific goals related to technology, partnership opportunities, equity, and the process for evaluating the need for fare increases. While goals included in a Fare Policy may be qualitative, such as "Fares should be easy to use," the principles may be more quantitative, such as "Price a monthly pass at 38 times the base cash fare."

Because a fare policy is typically adopted by the governing board, agencies strictly adhere to the policy. The policy should be written with clarity and process in mind. This can be a double edged sword for agencies that have not considered the consequences of their proposed policies. If undertaken deliberately, the fare policy can act both as a sword and a shield in internal and external fare-related discussions by providing context and content. Issues such as fare increases, new transfer policies, pass programs, or technology changes can be directly traced to the agency's overall goals and principles, and therefore decisions made regarding these issues can be better defended.

It should be understood that a fare policy is only of benefit if the agency adheres to it. In fact, adopting a fare policy that is not followed may engender public mistrust, especially if the public was involved in drafting the

policy. However, if done with sincerity, the fare policy can provide structure and discipline to an agency by eliminating ambiguity within its fare structure and clearly stating goals and principles.

## Low Effort, Immediate Benefits

The below recommendations could be enacted by TheRide in the near-term and would have immediate, positive benefits for the agency. They do not rely on the enactment of any of the other recommendations in this study and could be instituted alongside current fare structures and technologies at TheRide.

### Eliminate change cards

Change cards create well-documented negative impacts on operations, maintenance, and occasionally customer-operator interactions due to regular issues with the TRiM units. These impacts create costs in the form of lost fare revenue, maintenance and repair costs, and time costs due to boarding delays.

Eliminating change cards would simplify TheRide's fare structure and improve operation and maintenance efficiency, supporting the Board's end of ensuring passengers are highly satisfied with public transportation services that are safe, reliable, courteous, comfortable, convenient, and fast (end statement 1.1.4.). It would also help address an identified weakness in TheRide's fixed route service, which is that change cards are being used for purposes beyond their original intent. Operators have said that riders will load the maximum \$10 into the farebox, then use the change card they are issued as a type of stored value card; since change cards are not intended for extended use, riders using them as makeshift stored value cards exacerbate issues related to change cards malfunctions at the farebox. Given this current unintended use of change cards that indicates the desire for a stored value and/or prepay option, eliminating change cards could incentivize customers to migrate to non-cash forms of fare payment. In fact, if in the future TheRide implements a new fare collection technology, such as a smart card system, riders could achieve the same benefit of a change card by loading cash value onto their smart card; their balance would then be available for future use, and riders would not have to worry about carrying exact change or overpaying.

This proposed policy change is consistent with policies at TheRide's peer agencies. Only four of the ten peers chosen for this study offer change cards; one of these peers is Grand Rapids, who has proposed eliminating change cards as part of their new electronic fare system. Many transit agencies are making the decision to move away from change cards.

### Tokens only for social services agencies; eliminate tokens for public purchase

Tokens, while of great benefit for use with social service agencies and nonprofits, add another layer of complexity to an already crowded fare media landscape at TheRide. Eliminating tokens for public purchase would simplify TheRide's fare structure, could reduce the intake of tokens and therefore the employee hours spent repackaging them (a main concern for the finance department), and could incentivize customers to migrate to electronic forms of fare prepayment for rides while still ensuring that disadvantaged communities have access to opportunities (end statements 1.1.1. and 1.1.2.).

There are few downsides to eliminating tokens for public purchase. Only 3% of Fare Study survey respondents and only 2% of 2017 onboard survey respondents indicated that they use tokens as their regular fare media. While some people may like the simplicity, the ability to pre-pay, or the ability to purchase them from Bank of

Ann Arbor locations, tokens are not the only fare medium that confers these benefits. Magstripes are easy to board with according to both operators and passengers; base fare magstripes, and possibly smart card fare media, could be sold at Bank of Ann Arbor locations to preserve retail outlet options and the ability to pre-pay.

Tokens offer social service agencies a reliable, simple way to confer transit benefits to their clients. Tokens also offer TheRide a contract fare medium that is easy to administer and cheap to distribute to these agencies. No other fare media, current or proposed, meet these criteria as well as tokens do. Limiting tokens to social service agencies and nonprofits could also provide TheRide with a better idea of how these entities' clients use TheRide's system if token use and collection are tracked.

## Eliminate 1-Day Pass

Eliminating the 1-Day Pass will simplify TheRide's fare structure and get rid of an underutilized fare product. Since 1-Day Pass holders are expected to easily migrate to another fare product, eliminating the 1-Day Pass will have little to no effect on ridership figures or the experience of riders who currently use the product. During conversations at on-site meetings, TheRide staff did not foresee any particular difficulties in communicating the financial and operational reasons for eliminating the Pass - namely, that not producing 1-Day Passes could lower fare media costs, help minimize issues with the onboard farebox TRiM units that currently print the 1-Day Passes, and simplify the current fare structure, thereby creating a better experience for riders (end statement 1.1.4.) and making better use of the agency's financial resources (end statement 1.3.7.).

Because 1-Day Passes constitute less than 0.2% of boardings according to the 2017 onboard survey, even if current 1-Day Pass riders choose to move to the less expensive base fare for their trips, TheRide will experience a very minimal loss in revenue.

## Discontinue discount fares for individuals 60-64

We recommend that TheRide eliminate discount fares for individuals ages 60-64 on its services. The current practice of offering this discount goes beyond federal standards, which only require ADA-eligible individuals and seniors ages 65 and older to receive a 50% discount on basic services during off-peak hours. This is a very small segment of riders (approximately 1% of total ridership according to the 2017 onboard survey) to target with a discount. While the small size of this rider category means that TheRide is unlikely to see any increase in revenue due to this policy change, the agency will save time and resources by not needing to distribute a third Fare Deal ID card type, and bus operators will have one less discount fare ID that they must be able to recognize (end statements 1.2.5. and 1.3.7.).

As more people work into their early 60s, removing this discount presents less of an economic burden to the individuals who would be impacted by this change. Still, to minimize backlash to the change, it is recommended that TheRide determine a cease date for accepting new applications for the 60-64 discount but then grandfather in all individuals who were already deemed eligible prior to this date. As these individuals reach age 65, the discount category will naturally phase out.

## Supporting Policies

These recommendations do not fundamentally change the culture or technologies at TheRide, unlike those in the High Effort, Key Priority section. These recommendations support and/or take advantage of these culture

and technology changes in pursuit of TheRide's goals of building a better transit system for its constituents while improving its performance in the areas of equity, environment, and economy. Implementation of the below recommendations will require coordinated efforts by TheRide staff and in some cases communication with relevant external stakeholders, so they cannot be implemented as quickly as the recommendations in the Low Effort, Immediate Benefits category.

### Transition from one-way transfers to time pass as base fare

TheRide should transition to a 2-hour pass as its base fare, thus eliminating single ride tickets. Transitioning from a single-ride fare with the option of a free transfer to a 2-hour time pass would bring a number of benefits to the agency.

First, a 2-hour pass would help address the dilemma of riders whose trips cannot be completed within the current 90-minute transfer window when headways increase during off-peak service times by giving them an extra 30 minutes to board their final vehicle (end statement 1.1.4.). Second, this policy change would allow TheRide to discontinue issuance of transfers to the general public, thereby reducing farebox maintenance issues (end statement 1.1.4.) and eliminating a wasted product since many more riders ask for a transfer than actually use one (end statement 1.2.5.). Third, customers who are new to public transit may not understand the concept of a transfer or know that they must ask to be issued one upon boarding. A 2-hour time pass, on the other hand, is easy to understand even for new riders and does not require any interaction with the driver. This change in fare structure could help TheRide achieve its stated goal of building an attractive service by facilitating more understanding of how fares work even amongst current non-riders. Fourth, transitioning to a 2-hour pass as the base fare would position TheRide well for implementing mobile ticketing since time passes are the most logical type of fare product to enable on a mobile ticketing platform.

We recommend that TheRide extend this implementation of a 2-hour pass as base fare not just to fixed route service, but also to ExpressRide. The ExpressRide 2-hour pass would be priced above the fixed route only 2-hour pass since ExpressRide is considered a premium service. For commutes into Ann Arbor, riders could use their ExpressRide 2-hour pass to transfer onto local fixed route services instead of asking to be issued a free transfer when boarding ExpressRide as they do now; this is a logical extension of the current policy that allows an ExpressRide customer to use their 30-Day ExpressRide Pass on local fixed route services. Since the travel times on Routes 91 and 92 are under an hour from first stop to last stop, a 2-hour pass would provide sufficient time for a rider to transfer from ExpressRide to fixed route. For reverse commutes, riders would be asked to pay an upcharge equal to the difference between the price of a local fixed route only 2-hour pass and an ExpressRide 2-hour pass if using a local fixed route 2-hour pass to board an ExpressRide vehicle. This is in line with current policy at TheRide.

This policy recommendation of instituting a 2-hour pass can be implemented concurrently with new fare technology or as a standalone policy change on magstripe tickets. Implementing the change alongside technology may lend itself to a more cohesive communication strategy when telling riders about the change. If new fare collection technology is not expected in the near future, however, it may be wise for TheRide to move forward with this policy on its own because riders' need for a longer period of time in which to complete a single trip with multiple boardings is unlikely to disappear.



## Enable formal transfers between FlexRide and Fixed Route service

FlexRide and fixed route services should be connected by a formal transfer policy. Formalizing transfers between the services should encourage riders to use both options together as a comprehensive system instead of viewing them as siloed operations by making these transfers more attractive and convenient (end statement 1.1.4.). Given FlexRide's current status as a pilot program that serves primarily to connect people with existing bus routes in the southeastern portion of Ypsilanti, it would be best to treat FlexRide as an extension of local fixed route service. The policy regarding transfers that TheRide chooses to enact for transferring between fixed routes should thus apply also to transfers between FlexRide and fixed route. Acknowledging the recommendation above, enacting formal transfers using the fixed route policy would mean 2-hour passes would be valid on both fixed route and FlexRide services.

Enabling these transfers will require some additional investment into the infrastructure present on FlexRide vehicles and possibly fixed route vehicles as well. Until TheRide decides which fare media technology to develop on its fixed route services (i.e. smart cards and/or mobile ticketing), it is difficult to make a final technology recommendation for these transfers. In the interim, the cheapest and easiest way to enable transfers between the services would be to enable visual validation of FlexRide media on fixed route and vice versa. Immediate implementation of visual validation would likely be accomplished through the use of paper transfers. During implementation of mobile ticketing, visual validation could be used on FlexRide for the mobile tickets. There is not a similar visual validation available for smart cards. Visual validation forgoes a rich data set from the transfers between service types, data that would be particularly valuable as TheRide designs service to increase cost effectiveness. Visual validation also carries some risk of misuse and fraud, although if it is only visual on FlexRide, and electronic validation is used on fixed route services, the risk is small.

## Lower the 30-Day Pass pricing multiple for fixed route

TheRide should lower the pricing multiple on its 30-Day Pass products to encourage more riders to migrate to the Passes. 30-Day Passes, when paid for upfront, represent a sunk cost for the rider. Thus, a 30-Day Pass holder is incentivized to use TheRide's services more often since each trip they take within those 30 days does not cost them any additional money, unlike a personal vehicle which requires gas, parking payments, etc. (end statement 1.1.3.). From the rider perspective, 30-Day Passes are also more convenient to swipe to board than loading cash into the farebox, (end statement 1.1.4.).

TheRide has an opportunity to target riders who currently use change cards as a type of stored value card with this lower multiple since their current behavior points to a desire for a multiple use product and, if the recommendation of this memo is followed, change cards will be eliminated in the future. There is also room to hopefully encourage some current cash riders to migrate to the 30-Day Pass since, according to the 2017 onboard survey, cash payments accounted for 25% of overall boardings in 2017 and for 29% of boardings by people who use TheRide six to seven days a week (and thus would already break even on a 30-Day Pass). Comparatively, only 7% of overall boardings and 11% of boardings by riders who use the system six to seven days a week were paid for using a 30-Day Pass in 2017. Encouraging these cash riders to migrate to the 30-Day Pass by lowering the barrier (cost) for entry would have a positive impact on low-income riders especially (end statement 1.1.1.).

We are not equipped at this time to tell TheRide exactly what their new pricing multiple should be. Instead, we encourage the agency to test various pricing multiples by inputting these multiples into the fare model. TheRide



can then use the model results to gauge the effect of different multiples on ridership and revenue.

### Explore fare capping as a future possibility

Fare capping would enable a rider to pay per-ride up to the price of a 30-Day Pass, after which point the rest of the rides during the pass period would be free to the rider. In this way, a rider's payment is capped at the 30-Day Pass price, a strategy meant to help cash or other riders who would benefit from a 30-Day Pass but cannot afford the cost of the fare product up front (end statement 1.1.1.). Marketing around fare capping as a best deal for riders may attract new riders to the service and/or enhance public opinion of TheRide (end statement 1.1.3. and 1.1.4.) Though fare capping shows promise according to model results, we cannot recommend fare capping at this time because TheRide does not have the necessary policies or technologies in place to implement it. Putting these policy and technology structures in place will take time, and aspects of TheRide's fare collection system will likely change between now and the time when implementation of fare capping is feasible. Instead, we recommend that TheRide use the fare model to predict the effects of fare capping when its system is at a point where fare capping would be feasible within a 5-year horizon since the model is designed to predict up to five years out from the baseline. TheRide should also consider that fare capping will lead to lower revenue. TheRide can predict the magnitude of this loss based on industry experience and 30-Day Pass data from the GFI fareboxes, but then the agency must decide whether this loss is acceptable to the agency from a financial perspective.

In the interim, TheRide can learn from the results of peer agencies who have implemented fare capping. These insights can be used to gain a better understanding of capping's effect on ridership and revenue, and these lessons could then be applied to the assumptions embedded in the fare model to create an even better prediction of the effects of capping within TheRide's system specifically. In terms of U.S. peers to watch, TriMet's capped monthly pass option began in August 2017, and DART (Dallas) plans to debut a capped fare product in August 2018.

### Do not eliminate discounts for PCAs on fixed route services at this time

TheRide staff expressed some interest in exploring the elimination of discounts for personal care attendants (PCAs) on local fixed route services because of a perception among staff and operators that riders who did not in reality serve as PCAs were committing fare evasion by claiming PCA status. TheRide requires Fare Deal ID cards to identify whether or not the card holder requires a PCA, but PCAs themselves are not required to have their own identification card since a single Fare Deal ID card holder is likely to have multiple PCAs. Instead, TheRide created a policy that states a Fare Deal card holder and their PCA must deboard at the same stop for the PCA to be eligible for the discount. However, there is still a lingering perception of fare evasion even after implementation of this policy.

Though concerns about fare evasion still remain, Four Nines does not recommend moving forward with elimination of the PCA discount at this time, especially since the PCA discount helps enable the mobility of riders who rely on public transit (end statement 1.1.2.). We instead recommend that TheRide begin to gather sufficient data to understand the possible implications of eliminating the PCA discount since anecdotal and perceived inequity is all that has been presented at this time. When later analyzing this data on rates of PCA discount use and likely rates of PCA discount abuse, TheRide should keep in mind that paratransit service costs may go up if the elimination of the PCA discount encourages disabled riders to switch from using fixed route service to using

paratransit service on which PCAs ride free. TheRide should compare these increases in paratransit costs to the lost revenue estimated to be a result of PCA discount abuse. The agency may decide that, based on these numbers, a certain level of fare evasion is acceptable to encourage riders to use fixed route as opposed to paratransit services.

### Establish consistent discounts on services using current discount rates

TheRide should extend all of its current fixed route discounts to GroceryRide and the majority of its fixed route discounts to NightRide/HolidayRide. Doing so would be a step towards TheRide's goal of bringing more consistency to its fare structure (end statement 1.1.4.) and would address staff's concerns around the difficulty of explaining to new discount fare category riders the variations in their discount eligibility depending on service type (end statement 1.1.1. And 1.1.2.).

To enable the benefits of consistency and therefore simplicity to the rider that this recommendation is designed to bring, this recommendation should be implemented in concert with raising GroceryRide's base fare from \$0.75 to the fixed route base fare of \$1.50. Because so many current GroceryRide riders fall into discount rider categories, hardly any of these riders would experience an increase in fares if consistent discounts are enacted on the service. In fact, riders who fall into the ARide or GoldRide categories would go from paying \$0.75 to riding for free, which is expected to produce a slight increase in ridership on the service.

Regarding NightRide/HolidayRide, we recommend that TheRide carry its 50% Fare Deal and student discounts over to the service in pursuit of increasing consistency. However, we do not at this time recommend that TheRide make NightRide/HolidayRide service free for ARide and GoldRide customers (or for PCAs), which would be in line with their discount on other non-paratransit services. NightRide/HolidayRide is an inherently expensive service, and making fares free for these groups is expected to induce about twice the current demand from these rider categories on the service. Thus, no decision should be made as to whether ARide and GoldRide customers should either continue receiving their current 50% discount or be raised to a 100% discount until TheRide can compare the results of their paratransit study and the likely cost per hour or rider of running ARide/GoldRide service to the results of this study and the likely cost per hour or rider of providing free NightRide/HolidayRide service. A decision regarding the level of PCA discount to offer on this service would need to be made after a decision regarding the ARide discount level. For now, we recommend that the current policy of asking PCAs to pay full fare on NightRide/HolidayRide continue.

Because of the nature of the financing behind ExpressRide's operation, we do not recommend extending discounts onto the service. Doing so could jeopardize the financial stability and viability of ExpressRide since a high farebox recovery is essential to maintaining the service.

### Establish all services' fares using a multiple of the base adult fixed route fare

TheRide should use a pricing multiple, with the local fixed route adult fare as the base, to price its other services. This policy would provide clear direction for the agency in the future on how to price new services, and could be codified in the agency's fare policy if TheRide so chooses. Looking beyond pricing, setting services at multiples of each other also lays the foundation for establishing future policies that encourage riders to use the variety of services operated by TheRide. With first/last mile solutions such as FlexRide on the horizon and fare products that would be valid across the services under consideration, laying this structural groundwork is especially important for the future success of TheRide. Even today, service multiple pricing could help foster better rider

understanding of the current umbrella of services since people tend to intuitively understand pricing multiples. All of these benefits would help make TheRide's services more attractive, consistent, and convenient, three of the goals of this study and the foundation to providing high-quality public transportation services (end statement 1.1.4.).

### Do not incorporate rider category discounts into pricing of per-ride rates for pass programs; this is not common industry practice

It is very uncommon for transit agencies to incorporate reduced fare discounts into third party payer agreements. The only exceptions to this are third party payer programs where all program participants are eligible for the same reduced fare, such as with the Exceptional Pass program. To better align itself with industry standards, to create greater consistency across third party payer contracts, and to improve the financial stability of TheRide (end statement 1.3.7.), Four Nines recommends that TheRide eliminate the reduced fare discount from all third party payer program rate calculations except Exceptional Pass and codify this change in its formal fare policy document. This means contract pricing would only incorporate a transfer rate discount, ideally specific to each third party, and a bulk purchase discount, which is currently set at 10%.

Assuming the current transfer rate discounts stay the same, this new pricing policy would increase the MRide rate from \$1.19 to \$1.22 and the go!Pass rate from \$1.03 to \$1.13. Using ridership numbers from FY2017, this would have increased the MRide contract amount from \$3,011,784 to \$3,087,711 and the go!Pass contract amount from \$2,606,838 to \$2,859,929. These are not insignificant increases in contract amounts for these entities, and TheRide may experience pushback from the University of Michigan and the Ann Arbor DDA when implementing this recommendation. It is important though to recognize that by writing this policy into formal fare policy documents that will undergo review and approval by the Board, TheRide demonstrates that this change to contract pricing is founded in forward-thinking that considers the agency's financial health, that seeks to remove any perception of arbitrary negotiation of contracts, and that thus opens future possibilities to introduce new third party pass programs. TheRide can fall back on this agency-wide consensus and the weight of having these changes codified within a formal policy if negotiations become difficult.

If TheRide decides it is not in their best interest to remove reduced fare discounts from the MRide and go!Pass contract rates, Four Nines still recommends that TheRide document this policy going forward and adhere to it in pricing any new third party payer contracts. This will remove some uncertainty around pricing new programs by letting organizations interested in a third party payer contract as well as TheRide staff know what to expect. If TheRide moves to smart cards, the data from these cards would help TheRide determine more accurate transfer rates, which would also contribute to greater certainty around contract pricing.

### The MRide data agreement does not need any modifications unless the University would like to cooperate in moving to contactless cards

The MRide agreement is a substantial source of TheRide's ridership and revenue, and the program in its current form already helps workers and students access employment opportunities without need of a personal vehicle (end statement 1.3.1.). Four Nines does not recommend any modifications to the data agreement at this time. In the future, TheRide may want to discuss moving the the MRide program to the contactless capabilities already embedded in MCards, especially if the transit agency decides to move forward with a smart card program. The move would hopefully help TheRide obtain better data on MRide usage and create more consistency across

rider experiences. If UM affiliates are familiar with the contactless card boarding experience, they may feel more confident in migrating to an agency smart card after their affiliation with UM terminates.



# 1 Introduction

The Ann Arbor Area Transportation Authority (AAATA), known locally as TheRide, provides fixed-route, paratransit, and express bus services among others that enhance the mobility of individuals in the greater Ann Arbor Area. The agency focuses on providing high-quality transportation services that increase accessibility to goods and services and help people connect to their broader community.

TheRide is known as an innovative and adaptive transit agency, but over recent years its fare policies and technologies have evolved in an ad hoc manner. The agency commissioned this Fare Study as an opportunity to improve its fare structure, policies, and/or technologies to provide the highest quality experience for current riders and to better attract potential riders. This re-evaluation of fare strategy empowered TheRide to redefine its goals as an agency and develop measures of success to evaluate progress towards those goals.

This Fare Study first developed a foundation from which to contextualize conversations about fares at TheRide by documenting and analyzing the existing fare structure at the agency and then comparing that to a selection of comparable peers and broader industry trends. Next, the study solicited opinions from both riders and non-riders through a community engagement plan that involved both online and in-person surveying methods. All of the information collected up to that point was evaluated and compiled into sets of strengths, weaknesses, opportunities, and challenges for TheRide. From these findings, Four Nines worked with TheRide staff to develop future options for different segments of the agency's fare structure, touching on everything from policy to technology. Four Nines conducted qualitative and quantitative analyses of these options with the support of its fare modeling tool, which has been calibrated to mirror TheRide's structure and services and delivered to agency staff for continuing use. From these analyses, Four Nines laid out a set of recommendations to help TheRide achieve its goals of being attractive, consistent, convenient, and fair. Each recommendation is followed by a series of next steps meant to facilitate acting on the recommendation and communicating the justification for the recommendation to both internal and external stakeholders.

This Final Report document mirrors the course of the Fare Study as described in the paragraph above, beginning with the review and analysis of TheRide's existing fare structure and ending with next steps and recommendations. The final report then concludes with a deeper exploration of the concepts of equity and Mobility as a Service (MaaS).

## 2 Review & Analysis of Existing Fare Structure

To review TheRide's existing fare structure, Four Nines conducted number of interviews with TheRide's employees. These interviews spanned executive management, maintenance, finance, marketing, mobility management, operations, and planning at the agency. Four Nines also interviewed an employee at the Regional Transit Authority (RTA) for Southeast Michigan, which is the coordinating body for TheRide, Suburban Mobility Authority for Regional Transportation (SMART), and the Detroit Department of Transportation (DDOT) and may be the organization responsible for integrating each of the three transit agencies' services in the future.

TheRide also provided the Four Nines team with extensive documentation and data resources to inform the investigation into the agency's existing fare structure. Examples of the resources provided include fare change documentation, FY2017 financial reports, GFI farebox data, third party pass program contract agreements, and agency strategic documents.

This combination of quantitative and qualitative data painted a holistic picture of TheRide's existing fare structures and fare collection system. A summary of key findings from this initial stage of the Fare Study are detailed below. If further detail on the review and analysis of TheRide's existing fare structure is desired, please consult *Technical Memos #1 and #2: Existing Fare Structure, Best Practices, & Industry Review*.

## 2.1 Current Fare Structure

### 2.1.1 Fixed Route Pricing & Policies

**Full Fares:** The current single ride fare for TheRide's local fixed route service is \$1.50, and this fare includes one free transfer to another local route upon request that is valid for 90 minutes from the time of issuance. The transfer cannot be used to complete a round trip. TheRide also offers a 1-Day Pass for \$4.50 that is valid for unlimited rides on fixed route service during the day of purchase ending at 11:59 pm and a 30-Day Pass (called Flex Pass) for \$58.00 that is valid for unlimited rides on fixed route service for 30 days from first use.

**Discount Fares:** TheRide offers discounts to a number of categories of individuals on its local fixed route services:

- ARide - ADA-eligible, 100% discount
- GoldRide - seniors 65+, 100% discount
- Children - ages 5 and under, 100% discount
- Personal Care Attendant (PCA) - assist ARide customers identified as needing a PCA, 100% discount
- Students - grades K-12 with valid student ID, 50% discount
- Senior Fare Deal - seniors ages 60-64, 50% discount
- Low Income Fare Deal - Medicaid card holders and other verified individuals, 50% discount
- Disability Fare Deal - persons with disabilities who do not qualify for ARide, 50% discount

These discounts can be applied to single trip fares and to 30-Day Passes. The 30-Day discount Pass for students is called Youth Pass, and the 30-Day discount Passes for the three Fare Deal rider categories are called Value Passes. These discounts are also applicable to FlexRide service, described below.

A complete list of the fares, fare media, eligibility requirements, and validity period of fare products for fixed route is provided in Appendix A: Fixed-Route Fare Media Chart.

### 2.1.2 ExpressRide Pricing & Policies

ExpressRide is a commuter service consisting of two separate routes that run from Chelsea to Ann Arbor and from Canton to Ann Arbor, routes 91 and 92 respectively. Pricing on the service is as follows:

- Single ride fare - \$6.25
- 10-Ride Ticket - \$62.50
- 30-Day Commuter Pass - \$125.00

There are no discounts provided by TheRide on these services. However, members of the go!Pass and MRide programs can purchase a 10-Ride Ticket or a 30-Day Commuter Pass at a 50% discount, with the Ann Arbor Downtown Development Authority (DDA) or the University of Michigan respectively subsidizing the other 50% of the fare product price.

Transfers are made available to riders of ExpressRide routes upon request. These transfers are valid on fixed

route services. TheRide customers who wish to use their transfer from a fixed route on an ExpressRide route must pay an additional \$4.75 to upgrade their transfer.

### 2.1.3 GroceryRide Pricing & Policies

GroceryRide provides weekly trips from several senior housing communities in both Ann Arbor and Ypsilanti to local grocery stores for \$0.75 each way. This service is open to the general public and is run using standard, fixed route buses from TheRide. There are no discounts available on this service.

### 2.1.4 NightRide/HolidayRide Pricing & Policies

Through its NightRide and HolidayRide programs, TheRide provides curb-to-curb services during late-night hours and on major holidays when fixed route, ExpressRide, ARide, and GoldRide services do not operate.

NightRide operates within the City of Ann Arbor and east to downtown Ypsilanti between Clark Road/East Huron River Drive on the north and Ellsworth Road/Michigan Avenue on the south. The service runs midnight to 6 am Monday through Friday, 11 pm to 7:30 am on Saturday, and 8 pm to 7:30 am on Sunday. HolidayRide operates on days when TheRide does not provide fixed route service. While advance reservations are not required, they are strongly encouraged for trips that begin or end outside of Ann Arbor. These reservations can be made by phone or email.

All fares for NightRide and HolidayRide must be paid in cash. Pricing for these services is as follows:

- Single ride - \$5
- ARide & GoldRide ID card holders - \$2.50
- go!Pass holders - \$3 (trips must end or begin within the Ann Arbor DDA area)
- Children ages five and younger - Free (limit one free fare per trip)
- Single rides beginning or ending outside Ann Arbor without advance reservation - \$7 (provided only if space is available on scheduled trips)

TheRide still receives a full fare for each go!Pass holder who uses one of these services; the DDA compensates TheRide for the \$2 difference between the go!Pass fare and the full single ride fare.

### 2.1.5 FlexRide Pricing & Policies

FlexRide is an on-demand service pilot program being implemented by TheRide in Southeastern Ypsilanti Township. FlexRide provides same-day and next-day rides to customers within the FlexRide pilot service area as well as the Route 46 stop at Paint Creek Shopping Center, the Ypsilanti District Library, the Ypsilanti Township Civic Center, and Lincoln Schools when school buses are not operating. The service is only available Monday through Friday from 9am to 5pm.

Customers must pay \$1 per trip. Those who reserve a trip over the phone must pay cash upon pick-up, while those who use the online portal or mobile app pay with a major credit card or PayPal. The same discount structure available on local fixed route service applies on FlexRide. 30-Day Flex Pass holders and 30-Day Value Pass holders ride for free on FlexRide.

### 2.1.6 Park & Ride Service Pricing & Policies

Commuters can use any of TheRide's Park & Ride lots for free, then pay the applicable fare to ride fixed route



service to their final destination. Currently, TheRide serves eight Park & Ride facilities:

- Green Road
- Miller Road
- Pioneer High School
- Plymouth Road
- State Street
- Ypsilanti Transit Center
- Meijer Carpenter Road
- Washtenaw County Service Center

### 2.1.7 Paratransit Pricing & Policies

TheRide provides ADA paratransit service in accordance with the Americans with Disabilities Act (ADA) of 1990. TheRide also provides non-ADA paratransit service to non-disabled seniors aged 65 and older, called GoldRide. ARide and GoldRide trips are provided in lift-equipped buses and sedan type vehicles. ARide same day services are available for trips originating and ending within the City of Ann Arbor. GoldRide is only available within Ann Arbor's city limits and to limited locations in Pittsfield Township. Trip requests are taken on a first-come, first-serve basis, and advance reservations are encouraged; though same-day trip reservations can be requested, these trips are subject to availability.

TheRide's paratransit services, ARide and GoldRide, have the following pricing structure for eligible individuals:

- Single trip booked in advance - \$3
- Single trip booked same day - \$4
- Adult companions to paratransit individuals - \$3 per trip
- Youth companions to paratransit individuals - \$1.50 per trip
- Companions to paratransit individuals ages five and younger - Free
- Certified personal care attendants (PCAs) - Free
- Booklet of 10 Scrip Coupons, each of which are good for a single trip - \$30 (note that purchase of a Scrip Coupon booklet does not represent a cost savings to the customer)

### 2.1.8 Third-Party Pass Program Pricing & Policies

A significant portion of TheRide's revenues and ridership are associated with third party pass programs. These pass programs are vital to the agency and are a key tool for community engagement and encouraging ridership amongst populations who otherwise might not consider public transit for their travel needs.

#### *go!Pass*

**Funder:** Ann Arbor Downtown Development Authority (DDA)

**Members:** Participating employers within the DDA boundary

**Pricing:** \$1.03 per boarding

Employers located within the DDA boundaries can choose to participate in the go!Pass program, which provides magstripe cards to employees that are valid for one year and enable the rider to board local fixed route services

for free or use NightRide and HolidayRide services at a discount. Employers are required to pay a participation fee in order to be a member of the go!Pass program. The magnitude of the participation fee depends on the employer's total size and whether or not all employees choose to participate in the go!Pass program; the maximum fee an employer would be charged is \$100 per year. Employers also pay a per pass fee of \$15 per year for each participating employee. TheRide coordinates program administration with established representatives at each participating employer, but it is the employers' responsibility to keep track of go!Pass cards and to notify TheRide of any issues that may arise.

The DDA pays for the actual usage of go!Passes at \$1.03 per boarding. This rate was arrived at using the full \$1.50 fare as the starting point, but then reducing the price to account for estimated usage by people who would otherwise be eligible for a reduced fare (those with disabilities, low-income persons, and seniors), predicted transfer rates, and a bulk fare discount of 10%. In recent years, this has amounted to the DDA paying TheRide approximately \$680,000 annually for the go!Pass program. On average, the go!Pass program has experienced 4% growth year over year.

### *MyCommuter*

**Funder:** Google

**Members:** Google employees

**Pricing:** \$1.50 per boarding

Originally a participating employer in the go!Pass program, Google then moved its office outside of the DDA boundary and became ineligible for the program. However, Google wanted to continue offering a transit benefit to their employees. Since they are a large employer and they had ridership data from their previous participation in the go!Pass program, TheRide decided to develop an individual "pilot contract" for Google called the MyCommuter program to test the potential for a multi-employer commuter program throughout the City of Ann Arbor. Google pays a flat rate of \$1.50 per swipe of a MyCommuter Card; there is no transfer discount incorporated into the per-swipe price.

Google handles all requests by employees for passes and manages their administration on-site. The program administrator at Google notifies TheRide whenever they need additional passes, but otherwise TheRide remains largely uninvolved in MyCommuter Card distribution and management.

### *MRide*

**Funder:** University of Michigan (UM)

**Members:** UM faculty, staff, and students

**Pricing:** \$1.19 per boarding

Through the MRide program, the University of Michigan (UM) and TheRide offer UM affiliates unlimited access to TheRide's fixed route services. UM affiliates simply use their MCard, a photo ID card with a magnetic stripe administered by UM, to board. UM pays TheRide \$1.19 for each boarding completed with an MCard. This rate, similar to the go!Pass program, discounts the full \$1.50 fixed route fare to account for estimated usage by people who would otherwise be eligible for a reduced fare (those with disabilities, low-income persons, and seniors), predicted transfer rates, and a bulk fare discount of 10%.

The Federal Transit Administration (FTA) makes an annual allocation of federal formula transit funds to the Ann Arbor urbanized area. A portion of the annual allocation is based on the transit service operated and funded by UM, known as their Blue Bus system. As part of the MRide Program agreement, TheRide receives the entirety of the federal funding, as well as any matching state funds. TheRide then deducts the amount of this funding attributable to UM's bus operations from the estimated cost of ridership of the MRide program, and calculates monthly payments based on the net estimated figure. Within 60 days after the end of the program year, TheRide and UM reconcile the actual payment owed with the estimated payments that have been made in order to formally complete their contract for the year.

## *EMU*

**Funder:** Eastern Michigan University (EMU)

**Members:** EMU faculty, staff, and students

**Pricing:** \$52.20 per 30-Day Pass

TheRide sells special, branded 30-Day passes to Eastern Michigan University (EMU) at a 10% bulk discount on consignment. EMU then offers these passes at an additional 20% discount, meaning EMU students, faculty, and staff can purchase a 30-Day pass for \$40.60, or 30% off the normal pass price of \$58. Passes are purchased at the EMU Cashiers Office on campus with a valid student or employee ID. EMU 30-Day pass holders must also present a valid EMU student or employee ID card when boarding the bus. While TheRide would be interested in pursuing a model with EMU that mirrors their contract with UM, this type of program is not feasible at this time.

## *WCC*

**Funder:** Washtenaw Community College (WCC)

**Members:** WCC faculty, staff, and students

**Pricing:** \$1.35 per boarding

Washtenaw Community College (WCC) students, faculty, and staff can swipe their ID to board for free at two bus stop locations on campus. These transactions can be corroborated using the geolocation data collected by the farebox. Each month, TheRide compiles these boardings and bills WCC at a value of \$1.35 per boarding, a rate that incorporates a 10% bulk purchase discount on the full \$1.50 fixed route fare. Riders who board using a WCC ID card can ask for a free transfer.

## *Exceptional Pass*

**Funder:** Ann Arbor Public Schools (AAPS)

**Members:** Participating high school students

**Pricing:** \$0.675 per boarding

Ann Arbor Public Schools (AAPS) provides a number of their high school students with Exceptional Passes, which allows these students to use TheRide's local fixed route services for free. AAPS pays TheRide \$0.675 per boarding, which was calculated using the \$0.75 fare normally paid by students using TheRide's fixed route services plus an additional 10% bulk discount.

This program started as a means of outsourcing parts of school transportation demand when AAPS was having difficulty contracting the appropriate amount of yellow bus service to serve its students. Thus, when the Exceptional Pass program debuted, passes were only to be used to get to and from school or school-related activities and along certain routes that ran by the participating high schools. Use of the Exceptional Pass seems to occur outside of these parameters, but AAPS continues to pay for the full pass usage amount. As such, this situation does not appear to constitute an issue for TheRide at this time.

### *Ypsilanti Public Schools*

**Funder:** Ypsilanti Public Schools (YPS)

**Members:** Students as identified by YPS

**Pricing:** \$29.00 per 30-Day Youth Pass

While not a contracted third party pass agreement, Ypsilanti Public Schools (YPS) does buy 30-Day Youth Passes valued at \$29.00 in sets of 100 to distribute to their students as they see fit. YPS pays TheRide for these passes at the moment of purchase.

## 2.1.9 Interoperator Agreements

### *AirRide with Michigan Flyer*

TheRide has contracted with Michigan Flyer, a private company, to offer a public transit option for travel to and from the Detroit Metropolitan Airport (DTW). Through the contract, TheRide subsidizes the airport service thus enabling passengers to pay a lower fare than what they would pay were the service completely private.

Riders are asked to purchase their tickets in advance online through the Michigan Flyer website, although riders can purchase their ride the day of depending on availability. One-way fares between Ann Arbor and DTW are available for \$12, or a customer can purchase a two-way fare for \$22. AirRide passengers do not need any proof of purchase, since AirRide drivers are equipped with tablets that contain a list of all pre-purchased passes.

AirRide customers can park in the parking structure at the corner of 4th Avenue and William Streets for \$2 per day during their trip. Parking at this specialty rate is allowed for anywhere from 2 to 14 days. Any time past that, and customers will have to pay the full day rate for the parking structure. Parking structure tickets must be validated by the AirRide motorcoach driver to be eligible for the specialty rate.

### *Community Connector with WAVE*

Western Washtenaw Value Express (WAVE) is a subrecipient of TheRide, which passes through about 50% of WAVE's operating expenses. WAVE is a rural transit operator. Part of this service includes an hourly fixed route service called the Community Connector that runs along the Jackson Road corridor on the west side of Ann Arbor. TheRide pays WAVE an annual subsidy to assist with the operating costs associated with this WAVE route. The WAVE route connects to TheRide's Route 30-Jackson at the Meijer located at the intersection of Jackson and Zeeb roads. Riders wishing to transfer between WAVE and TheRide must pay full fare, or the applicable discount fare, on each service.

## 2.2 Current Fare Collection

### 2.2.1 Onboard Fare Collection Technology

TheRide uses 115 GFI Odyssey fareboxes for all of its fixed route services, including local fixed route, ExpressRide, and GroceryRide. This type of farebox was first purchased by the agency in 2009.

#### *Farebox Media Capabilities*

The GFI Odysseys' TRiM units can issue:

- Change cards to riders who overpay loaded with the excess value that can be used on a subsequent trip
- Transfers
- 1-Day Passes

The GFI Odysseys can accept:

- Cash payments in the form of (1) bills up to \$10 and (2) all coins except pennies
- Tokens (large and small sizes)
- Magnetic stripe fare media using the magnetic stripe reader (including 1-Day Passes, 30-Day Passes, go!Pass cards, Exceptional Passes, MCards, and MyCommuter cards)
- First generation smart cards using the smart card proximity reader
- Change cards into the TRiM units

TheRide accepts all of these fare media except the first generation smart cards, which at this moment in time are rarely employed by agencies due to their limited data capabilities. Thus, this capability of the farebox is also unlikely to be used in the future. Another note to make regarding the fareboxes' acceptance capabilities is, while 1-Day Passes and 30-Day Passes are magnetic stripe fare media, upon first use they must be inserted into the TRiM unit in order to activate the rolling period pass. After this activation is when a rider begins swiping these passes at the upper right-hand corner of the farebox to board. Regarding change cards, these fare media must be inserted into the TRiM unit, as opposed to swiped, because the farebox must deduct the appropriate fare from the value on the card and then print and re-encode the new remaining balance onto the change card. The printed value provides greater transparency to the rider while also assisting TheRide in the case that a change card cannot be read by the farebox.

#### *Farebox Data Capabilities*

Farebox collection data includes route, trip, and geolocation (latitude/longitude) information along with cash collection details and a record of any buttons pushed by the driver. Configuration data includes details about card validity and fares.

TheRide goes through the following process to get this data into a format that can be analyzed and reported by the data:

1. A data probe is connected to the farebox when a bus pulls into the vaulting station. Farebox collection data since the last vaulting is uploaded and any new configuration data is downloaded. The data transfer must be completed before the vault can be pulled. All the data uploads to a garage computer and then a central server during this vaulting process.
2. The data is pulled from the GFI central server to a data mart maintained by TheRide's IT team. This data mart is used for all ridership reporting, including: (a) the creation of a monthly report that is used for reporting ridership to the NTD and the State of Michigan, (b) the establishment of billing amounts for

third-party payers, and (c) upon request, the transfer of ridership segment data to employers, the University of Michigan, or other third-party payers who wish to see ridership data on their pass program members.

The process is designed to pull data from every vehicle nightly, as every vehicle is usually vaulted nightly. Two potential issues can arise from the way this process is designed. First, if any vehicle is not vaulted for any reason, the data is held until the next time the vehicle is vaulted. While there creates a potential risk of losing data because the onboard memory fills up, this issue has not typically arisen because in general vehicles are vaulted frequently enough to prevent this from happening. Second, when there is a large amount of data to be downloaded to the farebox, it increases the time required to service each vehicle and can cause probing delays. Because large data set like fare changes or mass updates to card lists affect all buses at once, these delays add up and can cause significant issues for maintenance on a specific night.

### *Farebox Maintenance & Replacement*

The TRiM units on the vehicles seem to cause the most maintenance issues and roadcalls, especially due to the use of wet passes and change cards. While TRiM units can be replaced in the field, and often are, only certain components can be replaced in the field. Maintenance staff experience minimal issues with the bill and coin acceptors - maybe a few reports a week. There are virtually no issues with the swipe readers. Overall, costs of maintenance come primarily from deterioration of cash boxes. Otherwise, TheRide is able to maintain their current GFI Odyssey farebox units for little expense. There are no plans at this time for replacement of the fareboxes.

Under the current maintenance schedule, regular maintenance is performed on units either after 20,000 swipes or every 6 months. Maintenance staff are in the process of aligning their historic maintenance cycle schedules with newly implemented Trapeze Enterprise Asset Management (EAM) software.

### *2.2.2 Fare Media*

TheRide distributes and accepts a variety of fare media on its services.

#### *Cash*

Cash is accepted on all of TheRide's services except AirRide. TheRide processes about \$30,000 per week in their cash room, where employees bag dollars and count coins themselves. The process in total takes about 1.5 hours per week. TheRide collected approximately \$1.5 million in cash from the farebox in 2017. Additional cash is collected onboard other vehicles (e.g., paratransit, FlexRide, Holiday & Late Night Services) and placed in a zipper pouch.

#### *Change Cards*

Change cards are issued by the farebox to riders who overpay their fare by \$0.25 or more on fixed route services. These change cards cannot be redeemed for cash. Instead, they can only be used to pay for additional fixed route trips with TheRide.

## *Transfers*

Transfers are issued for free, but only upon request, to fixed route riders paying with a cash fare and to WCC students boarding using their school ID at one of their designated on-campus stops. Transfers are valid for 90 minutes from time of issuance and are printed with an expiration time; the farebox will reject an expired transfer. The farebox is also programmed to reject a transfer if someone tries to use it to complete a round trip.

## *Magnetic Stripe Passes & Cards*

TheRide's 1-Day Passes, 30-Day Passes, go!Passes, Exceptional Passes, MyCommuter cards, MCards, and WCC ID cards are all equipped with a magnetic stripe that can be swiped at the farebox. The 1-Day and 30-Day Passes must be inserted into the farebox's TRiM unit upon first boarding for activation. Each of the 30-Day Pass types - Flex Pass, the three different Fare Deal Passes, Youth Pass, EMU, ExpressRide Commuter Pass - are distinctively branded to make the specific pass type identifiable by the operator. This way, the operator knows if they need to ask for any supporting documentation, such as a Fare Deal ID card. All of these passes and cards are provided by TheRide except for MCards and WCC ID cards, which are provided the University of Michigan and Washtenaw Community College respectively.

## *Tokens*

Each year, TheRide collects about 50,000 to 75,000 tokens on its fixed route service. These tokens serve as a primary means for local social service agencies to provide transit services to their clients. Tokens come in two sizes, large and small. The larger token is equivalent to a reduced fare, and the smaller token is equivalent to a full adult fare. Full fare tokens are sold at \$15 for a package of 10. Reduced fare tokens are sold at \$75 for a package of 100.

## *Punch Cards*

ExpressRide customers can purchase 10-ride paper punch cards. These cards are punched by the driver upon each boarding to indicate the number of rides remaining on the card. The operator then must key the boarding into the farebox manually.

## *Scrip Coupon Booklets*

Scrip Coupon booklets are sold to ARide customers for \$30 each. A passenger simply hands a coupon to the paratransit vehicle operator upon boarding instead of paying cash. This fare media must be tracked manually since it is not equipped with a magnetic stripe or any other form of data-enabling technology.

## *FlexRide Online & App-based Reservations*

FlexRide reservations can be made by phone, online, or through a mobile app. If made online or on the mobile app, reservations require a rider to either login or set up a new account. To create an account, a passenger must provide their first and last names, their email address, a phone number, and a password.

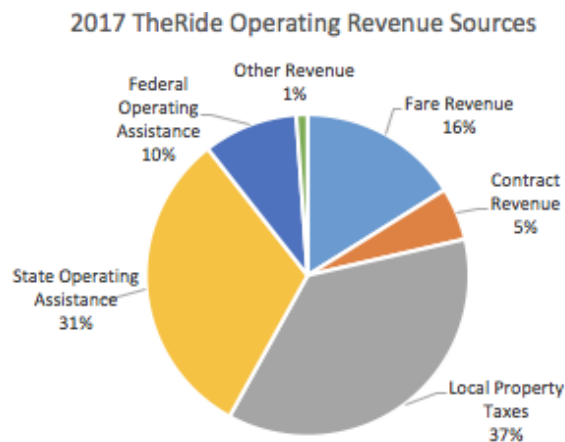
When making a reservation, a rider is asked for their pick-up and drop-off locations and the date and time of the trip. The rider completes their reservation by paying with a major credit card or PayPal if online or using the mobile app. For reservations made by phone, the rider must pay cash upon boarding.

### 2.2.3 Retail & Online Fare Product Distribution

TheRide sells fare products at its main office and at the Blake Transit Center in downtown Ann Arbor. Both of these locations sell passes, tokens, and Scrip Coupon booklets that can be purchased using cash, checks, Visa, MasterCard, or Discover card. TheRide also has a number of retail locations located within its service area; the Bank of Ann Arbor branches sell full-fare tokens and Flex Passes that can be purchased with cash or check. There are four participating branches in Ann Arbor and one in Ypsilanti. Passes, tickets, and Scrip Coupon booklets can also be purchased online at TheRide.org using a Visa, MasterCard, or Discover card. Passes and Scrip Coupon booklets can be ordered by mail using a check or money order.

## 2.3 Funding Sources

TheRide’s operating and capital costs are covered by a combination of federal and state grants, passenger fares, a local property tax millage levied by the authority, and Purchase of Service Agreements (POSA) with non-authority member communities. In 2017, the majority of TheRide’s operating revenue was from local property taxes (37%), state operating assistance (31%), passenger fares (16%), and federal operating assistance (10%).



Source: TheRide 2017 Q4 Financial Statement

In 2017 and 2016, TheRide generated approximately \$6,939,000 and \$6,187,000, respectively, in passenger fare revenue. Passenger fare revenue covered approximately 14-15% of total operating costs, or 16-17% of operating costs excluding leases and depreciation.

TheRide receives a local property tax millage from the City of Ann Arbor, the City of Ypsilanti, the Charter Township of Ypsilanti, and Scio Township, but each of these entities has approved a different millage amount over the history of their financial support of TheRide:

- The City of Ann Arbor approved a 2.5 mills property tax dedicated to public transportation in 1974 that does not expire, though the Headlee Amendment of 1978 to the State of Michigan constitution reduced this to its current 2.011 mills. In 2014, the City of Ann Arbor approved an additional 0.7 mill property tax dedicated to public transportation (reduced to 0.686 due to the Headlee Amendment) that expires after 5 years.



- The City of Ypsilanti approved a 0.9789 mil property tax in 2010 that does not expire. In 2014, the City of Ypsilanti approved an additional 0.7 mill property tax dedicated to public transportation (reduced to 0.686 due to the Headlee Amendment) that expires after 5 years.
- The Charter Township of Ypsilanti in 2014 approved a 0.7 mill property tax dedicated to public transportation (reduced to 0.686 due to the Headlee Amendment) that expires after 5 years.
- Scio Township in 2015 approved a 0.36 mill property tax dedicated to public transportation, where Scio Township will levy the property tax and purchase public transportation services from TheRide under a Purchase of Service Agreement (POSA).

Property tax revenues received for the years ending September 30, 2017 and 2016 totaled approximately \$15,515,000 and \$15,131,000, respectively. On March 15, 2018, the AAATA Board approved ballot language for a vote in August 2017 that would renew the mill property tax for the City of Ann Arbor, the City of Ypsilanti, and the Charter Township of Ypsilanti; this ballot measure, if approved, would not only renew the millage, but also restore it to the originally approved 0.7 mill amount.

Related to federal and state funding, in 2012 the passage of Michigan Public Act 387 created the Regional Transit Authority of Southeast Michigan (RTA) and added Washtenaw County to the formerly tri-county transit region comprised of Macomb, Oakland, and Wayne counties. Under this Act, AAATA/TheRide, the Suburban Mobility Authority for Regional Transportation (SMART), the Detroit Department of Transportation (DDOT), and the Detroit Transportation Corporation (the “Detroit People Mover”) are subrecipients of the RTA for federal and state operating assistance and capital grants. The State of Michigan and the Federal Transit Administration (FTA) pay funds directly to TheRide at the direction of the RTA. Each transit agency receives federal and state formula funding in amounts as if they had applied independently (i.e., formula funds “earned” by one agency’s ridership cannot be diverted to another agency). Michigan Public Act 387 does not affect the transit agencies’ receipt of local funding through millages, purchase of service agreements, or general fund allocations, and the RTA does not control locally-provided funds.

### 3 Peer & Industry Review

Peer agency information is useful primarily to understand industry practices, identify benchmarks, and learn from fare innovations implemented elsewhere— especially by those agencies that have successfully implemented new fare collection technologies, introduced new fare structures, or achieved other specific fare objectives.

The peer information that is most valuable is therefore not just the numbers, but what can be gained by understanding other agency’s fare structures and how they have evolved. The purpose of this review was to gain insights from peers that could be useful in identifying and evaluating conceptual fare policy options for TheRide as the agency explored ways to improve its fare structure and ways to better meet the needs of both the agency and its customers through new fare collection technologies.

The peer review was broken into two parts: (1) review of peer fare structures and pricing (sections 3.1 and 3.2 below) and (2) review of a broader set of peers and how they have responded to similar issues challenging TheRide as well as strategies used to achieve similar fare policy goals as TheRide is considering (sections 3.3 to 3.9 below).

For Part 1, ten peer agencies were selected by the study team, based on size and operating characteristics. The

peers were identified based on similar service characteristics (using the Urban Integrated National Transit Database peer selection process based on TCRP G-11 methodology) and geographic proximity (i.e., within Michigan). The list of peers, found below, was also narrowed down based on identifying peers that have undergone recent fare changes. This peer review balances national peers with local and regional peers.

*List of Peers*

City	Agency	Rationale
Champaign-Urbana, IL	Champaign-Urbana Mass Transit District	2015 fare changes, 2018 fare technology changes, college town
Erie, PA	Erie Metropolitan Transit Authority	2015 fare changes
Gainesville, FL	Gainesville Regional Transit System	2015 fare changes, college town
Grand Rapids, MI	Interurban Transit Partnership	2015 fare changes, 2017 fare technology changes
Hartford, CT	Greater Hartford Transit District and CTTRANSIT - Hartford Division	Fare changes in progress
Peoria, IL	Greater Peoria Mass Transit District	2015 and 2016 fare changes
Roanoke, VA	Greater Roanoke Transit Company	2017 fare changes
Shreveport, LA	Shreveport Area Transit System	2017 fare changes
South Bend, IN	South Bend Public Transportation Corporation	2015 fare changes, college town
Syracuse, NY	Central New York Regional Transportation Authority	2015 fare changes

### 3.1 Service Characteristics & Performance Indicators

Service characteristics and performance metrics were calculated using National Transit Database (NTD) data to understand the comparability of peer agencies and their fare policies to TheRide.

#### 3.1.1 Peer Service Characteristics

City	Modes	Service Area (sq miles)	Service Area Population	Population Density	Revenue Hours	Revenue Miles	Boardings	Boardings per Capita	Boardings per Revenue Hour	College Town
Ann Arbor, MI <sup>1</sup>	MB, CB, DR, DT, VP	110	224,916	2,045	459,240 <sup>2</sup>	6,168,989 <sup>2</sup>	6,653,770	29.58	14.49	Yes
Champaign-Urbana, IL	MB, DR	40	136,540	3,414	321,579	3,631,640	12,755,208	93.42	39.66	Yes
Erie, PA	MB, DR	77	189,872	2,466	255,350	2,973,072	3,220,376	16.96	12.61	No
Gainesville, FL	MB, DR	76	163,990	2,158	357,893	4,402,713	9,747,516	59.44	27.24	Yes
Grand Rapids, MI <sup>1</sup>	MB, RB, DR, VP	155	417,978	2,697	621,813	8,295,515	11,401,003	27.28	18.34	No
Hartford, CT <sup>3</sup>	MB, RB, DR	664	851,535	1,282	1,113,562	15,409,909	16,501,680	19.38	14.82	No
Peoria, IL	MB, DR	105	209,896	1,999	246,040	3,368,513	3,173,439	15.12	12.90	No
Roanoke, VA	MB, CB, DR	43	97,032	2,257	155,730	2,512,248	2,304,796	23.75	14.80	No

Shreveport, LA	MB, DR	61	275,213	4,512	188,392	3,018,203	2,691,118	9.78	14.28	No
South Bend, IN	MB, DR	68	154,346	2,270	125,122	1,700,495	1,741,129	11.28	13.92	Yes
Syracuse, NY	MB, DR	510	641,357	1,258	540,694	6,583,553	10,913,355	17.02	20.18	No

Source: 2016 National Transit Database

Notes: MB = Motor Bus, CB = Commuter Bus, RB = Rapid Bus/BRT, DR = Demand Response, DT = Demand Taxi, VP = Vanpool

<sup>1</sup> While TheRide provides vanpool service, the service characteristics shown here do not include vanpool. The only other peer that offers vanpool service is Grand Rapids, MI.

<sup>2</sup> For Demand Taxi, TheRide did not report the revenue hours or miles for 2016. The reported revenue hours or miles for 2015 were used for Demand Taxi in 2016.

<sup>3</sup> Hartford, CT is served by Greater Hartford Transit District and CTTRANSIT - Hartford Division. The service area for CTTRANSIT - Hartford Division is larger than Greater Hartford Transit District. The service area population for Greater Hartford Transit District is larger than for CTTRANSIT - Hartford Division. While revenue hours, revenue miles, and boardings reflect the combined totals, the service area size and population as well as metrics calculated are based on CTTRANSIT - Hartford Division since they operate the fixed route service.

**Key Takeaways:**

- TheRide is generally comparable to the selected peers in service area size and population density.
- TheRide provides slightly higher service levels than peers with comparable cost effectiveness (operating cost per boarding) as its peers.
- TheRide operates more modes than its selected peers. The only peer that offers vanpool service is Grand Rapids, MI. Hartford, CT is the only peer that offers demand taxi service.
- While other cities may be home to institutions of higher education, we classified three of TheRide’s peers as college towns: Champaign-Urbana, IL, Gainesville, FL, and South Bend, IN. Transit agencies in college towns regularly exhibit higher boardings per capita, as exhibited here by TheRide, Champaign-Urbana, IL, and Gainesville, FL. Established boarding agreements with those higher education institutions are discussed in more detail in Third-Party Pass Programs.

### 3.1.2 Performance Indicators

Performance indicators can help in understanding the comparability of fares. However, there are a variety of factors that influence performance indicators as well a variety of considerations that go into setting fares, and for those reasons, performance indicators and fares are not truly comparable across transit agencies. Each agency’s fares are driven by factors as varied as subsidy levels, federal/state/local mandates, reduced fare requirements, farebox recovery goals, operating costs and conditions, discounts afforded through different fare products, availability of transfer privileges, service types, modes, special fare programs, incentives to use specific services such as off-peak travel and smart cards, and so on. Those dynamics are unique to each transit agency. For example, there is no apparent correlation between fare and farebox recovery rates.

Nevertheless, performance indicators can enable comparison with peers and help in identifying opportunities for improvement. A key measure of the effectiveness of an agency’s fare policies is the farebox recovery ratio, which is the share of operating costs that is covered by fare revenues. Among ten peers, farebox recovery rates range from a low of 9.72% in Peoria to a high of 65.32% in Gainesville. The peer average is 24.13%, 5.39 points higher than TheRide’s 18.74%. To ensure consistency across agencies, the data for the farebox recovery ratios are pulled from the 2016 National Transit Database. The farebox recovery ratios are calculated by dividing total

fare revenues for all modes by total operating expenses for all modes ( $\frac{\text{fare revenue}}{\text{operating costs}}$ ), and do not include depreciation expense. Individual transit agencies may calculate their farebox recovery ratios differently.

Farebox recovery is influenced by fares and the cost to provide the service. The key performance metrics seen in the tables throughout this section were derived from FTA’s National Transit Database using the following formulas:

- Farebox Recovery:  $\frac{\text{fare revenue}}{\text{operating costs}}$ , % of operating costs recovered through fares collected
- Cost per Revenue Hour:  $\frac{\text{operating cost}}{\text{revenue service hours}}$ , an indicator of operating cost efficiency
- Cost per Boarding:  $\frac{\text{operating costs}}{\text{number of boardings}}$ , an indicator of the cost effectiveness of operations
- Average Fare per Boarding:  $\frac{\text{fare revenue}}{\text{number of boardings}}$ , average fare paid by passengers, taking into consideration reduced and discounted as well as full fares
- Subsidy per Boarding:  $\frac{\text{operating costs} - \text{fare revenue}}{\text{number of boardings}}$ , share of operating costs per boarding not covered by fares collected

These performance indicators are presented and evaluated by mode and by service type.

### Fixed Route Bus Performance Indicators

City	Local Bus Fares	Farebox Recovery	Cost per Revenue Hour	Cost per Boarding	Avg Fare per Boarding	Subsidy per Boarding
Ann Arbor, MI	\$1.50	15.88%	\$108.20	\$4.47	\$0.71	\$3.76
Champaign-Urbana, IL	\$1.00	22.92%	\$114.32	\$2.53	\$0.58	\$1.95
Erie, PA	\$1.55	19.94%	\$86.26	\$4.84	\$0.96	\$3.87
Gainesville, FL	\$1.50	65.32%	\$70.71	\$2.32	\$1.52	\$0.80
Grand Rapids, MI	\$1.75	27.19%	\$75.97	\$3.14	\$0.85	\$2.28
Hartford, CT	\$1.75	17.30%	\$119.71	\$5.76	\$1.00	\$4.76
Peoria, IL	\$1.00	9.72%	\$115.49	\$5.78	\$0.56	\$5.22
Roanoke, VA	\$1.75	26.66%	\$61.22	\$3.28	\$0.87	\$2.40
Shreveport, LA	\$1.25	18.72%	\$76.09	\$4.26	\$0.80	\$3.46
South Bend, IN	\$1.00	14.21%	\$86.33	\$5.17	\$0.73	\$4.44
Syracuse, NY	\$2.00	25.42%	\$134.30	\$5.41	\$1.37	\$4.03
<b>Peer Average</b>	<b>\$1.46</b>	<b>24.13%</b>	<b>\$101.43</b>	<b>\$4.11</b>	<b>\$0.99</b>	<b>\$3.12</b>

Source: 2016 National Transit Database (MB, CB, RB)

Note: AirRide, which is reported to NTD as CB, is excluded from the performance metrics for Ann Arbor, MI.

#### Key Takeaways:

- TheRide’s cost per revenue hour, a common measure of cost efficiency, only slightly exceeds the peer average cost across Fixed Route Bus services. TheRide’s cost per boarding, average fare per boarding, and subsidy per boarding all perform slightly worse than the peer average.
- Gainesville, FL’s farebox recovery ratio significantly outperforms that of all other peers. This is in part is

because it operates at the second-lowest cost per revenue hour of the peers.

### Motor Bus/Bus Rapid Transit Performance Indicators

City	Farebox Recovery	Cost per Revenue Hour	Cost per Boarding	Avg Fare per Boarding	Subsidy per Boarding
Ann Arbor, MI	15.61%	\$108.28	\$4.45	\$0.69	\$3.75
Champaign-Urbana, IL	22.92%	\$114.32	\$2.53	\$0.58	\$1.95
Erie, PA	19.94%	\$86.26	\$4.84	\$0.96	\$3.87
Gainesville, FL	65.32%	\$70.71	\$2.32	\$1.52	\$0.80
Grand Rapids, MI	27.19%	\$75.97	\$3.14	\$0.85	\$2.28
Hartford, CT	16.01%	\$114.71	\$5.66	\$0.91	\$4.75
Peoria, IL	9.72%	\$115.49	\$5.78	\$0.56	\$5.22
Roanoke, VA	26.91%	\$60.87	\$3.17	\$0.85	\$2.32
Shreveport, LA	18.72%	\$76.09	\$4.26	\$0.80	\$3.46
South Bend, IN	14.21%	\$86.33	\$5.17	\$0.73	\$4.44
Syracuse, NY	25.42%	\$134.30	\$5.41	\$1.37	\$4.03
<b>Peer Average</b>	<b>23.98%</b>	<b>\$99.94</b>	<b>\$4.05</b>	<b>\$0.97</b>	<b>\$3.08</b>

Source: 2016 National Transit Database (MB, Grand Rapids - MB, RB)

#### Key Takeaways:

- For many of TheRide’s peers, Motor Bus/Bus Rapid Transit encompasses the agency’s entire Fixed Route Bus service. As a result, the data in this table does not vary significantly from the Fixed Route Bus table shown above. Like TheRide, Hartford, CT, Roanoke, VA, and Shreveport, LA operate Fixed Route Bus services not categorized as Motor Bus/Bus Rapid Transit.
- Without the high farebox recovery ratio for Commuter Bus factored in, TheRide’s farebox recovery ratio for Motor Bus is the third lowest among its peers.
- TheRide’s cost efficiency is lower than its peers since its cost per revenue hour is \$12 higher than its peer average. Nonetheless, TheRide’s cost effectiveness (cost per boarding) is in line with that of its peers.
- While TheRide’s average fare per boarding is the third lowest among its peers, lower operating costs per boarding keep TheRide’s subsidy per boarding in line with the peer average.

### Commuter Bus/Express Bus Performance Indicators

City	Farebox Recovery	Cost per Revenue Hour	Cost per Boarding	Avg Fare per Boarding	Subsidy per Boarding
Ann Arbor, MI	41.89%	\$100.78	\$9.68	\$4.05	\$5.62
Hartford, CT	29.17%	\$200.28	\$6.84	\$2.00	\$4.85
Roanoke, VA	20.57%	\$70.94	\$14.96	\$3.08	\$11.88
<b>Peer Average</b>	<b>28.89%</b>	<b>\$189.25</b>	<b>\$6.97</b>	<b>\$2.01</b>	<b>\$4.95</b>

Source: 2016 National Transit Database (CB, Hartford - RB)

Note: AirRide, which is reported to NTD as CB, is excluded from the performance metrics for Ann Arbor, MI.

#### Key Takeaways:

- Commuter Bus services generally collect a higher fare than local fixed route service, as demonstrated here. TheRide’s average fare per boarding for ExpressRide is twice the peer average and almost six times TheRide’s average fare per boarding for its local fixed route service.
- The high cost per revenue per hour for Hartford, CT is likely due to the higher operating costs of its Commuter Bus services into New York City. Despite the higher cost per revenue hour, the farebox recovery for Hartford, CT is in line with Roanoke, VA.
- The differences in average fare per boarding among the peers drives TheRide to significantly outperform its two peers in farebox recovery ratio. TheRide’s higher average fare per boarding and resulting higher farebox recovery as compared to its peers is in part due to TheRide’s policy to limit the subsidization of its ExpressRide since the cities served are outside of TheRide’s fixed route service area.

### Demand Response Performance Indicators

City	Farebox Recovery	Cost per Revenue Hour	Cost per Boarding	Avg Fare per Boarding	Subsidy per Boarding
Ann Arbor, MI	7.89%	\$45.56	\$30.55	\$2.41	\$28.14
Champaign-Urbana, IL	18.34%	\$33.90	\$10.17	\$1.87	\$8.30
Erie, PA	79.54%	\$51.74	\$20.94	\$16.66	\$4.28
Gainesville, FL	9.59%	\$40.69	\$32.64	\$3.13	\$29.51
Grand Rapids, MI	13.15%	\$44.10	\$20.00	\$2.63	\$17.37
Hartford, CT	3.12%	\$46.35	\$30.49	\$0.95	\$29.54
Peoria, IL	7.83%	\$39.85	\$25.94	\$2.03	\$23.91
Roanoke, VA	10.54%	\$50.47	\$24.94	\$2.63	\$22.31
Shreveport, LA	9.88%	\$36.43	\$22.78	\$2.25	\$20.53
South Bend, IN	9.86%	\$53.27	\$20.26	\$2.00	\$18.26
Syracuse, NY	5.79%	\$80.16	\$50.83	\$2.95	\$47.89
<b>Peer Average <sup>1</sup></b>	<b>7.25%</b>	<b>\$48.38</b>	<b>\$27.12</b>	<b>\$1.97</b>	<b>\$25.15</b>

Source: 2016 National Transit Database (DR, Ann Arbor - DR, DT)

<sup>1</sup>The peer average excludes Erie, PA, which includes revenue from its Medical Assistance Transportation Program as part of its fare revenue collected, resulting in a higher farebox recovery and average fare per boarding and consequently a lower subsidy per boarding.

#### Key Takeaways:

- TheRide’s operating costs of Demand Response is in line with peers. In order to improve farebox recovery, TheRide would need to identify ways to further improve its cost efficiency (cost per revenue hour) and cost effectiveness (cost per boarding) since fare revenue for ADA paratransit service is constrained to a certain extent by the maximum fare that can be charged for ADA paratransit service. ADA mandated paratransit fares are regulated and may not be more than twice the fare that would be charged to an individual paying the full fare for a trip of similar length at a similar time of day on the entity’s fixed route system, exclusive of discounts. TheRide has a study currently underway to review its paratransit services, which may result in recommendations that may help improve TheRide’s cost efficiency and effectiveness and increase its farebox recovery.
- Larger service areas are generally less dense and harder to provide effective Demand Response services to. Hartford, CT and Syracuse, NY serve areas 4.5-6x larger than TheRide’s service area and are the least dense of all peers. They also have the lowest Demand Response farebox recovery ratio.

### 3.2 Fare Structures, Products, Pricing, & Programs

The following section focuses on the fare pricing, transfer policies, and fare products offered by the 10 identified peers. It additionally covers topics including third-party pass programs, free fare zones, and fare media (including change cards).

While understanding peer fare pricing can provide valuable insights when a transit agency is considering a fare change, there are a variety of considerations that go into setting fares and for those reasons, fares are not truly comparable across transit agencies. Each agency’s fares are driven by factors as varied as subsidy levels, federal/state/local mandates, reduced fare requirements, farebox recovery goals, operating costs and conditions, service types, modes, constraints or opportunities of fare collection technology, and so on.

#### 3.2.1 Rider Categories

City	Discount Fare							
	ADA-Eligible <sup>1</sup>	Disabled Riders	Seniors 65+	K-12 Students	College Students	Individuals 60-64	Low Income Riders	Veterans
Ann Arbor, MI	Free	50%	Free	50%	-	50%	50%	-
Champaign-Urbana, IL	Free	Free	Free	0-50%	-	-	-	Free
Erie, PA	52%	52%	Free	-	-	-	-	-
Gainesville, FL	Free	50%	50%	50%	-	-	-	50%
Grand Rapids, MI	52%	52%	52%	22%	22%	-	-	-
Hartford, CT	52%	52%	52%	20%	-	-	-	-
Peoria, IL	50%	50%	50%	50%	-	-	-	50%
Roanoke, VA	52%	52%	52%	52%	-	-	-	-
Shreveport, LA	52%	52%	52%	52%	-	-	-	-
South Bend, IN	50%	50%	50%	15%	-	-	-	-
Syracuse, NY	50%	50%	50%	-	-	-	-	-

<sup>1</sup>Inclusive of Disabled Riders

As grantees of the Federal Transit Administration (FTA), TheRide’s peers are required to offer half fare discounts on cash fares, during off-peak periods, to seniors (65+), persons with disabilities, and Medicare recipients. Like most transit agencies, peers generally offer those discounts at all times and on most fare products. At least one peer agency (Peoria) phased out time restricted discounts in their most recent fare change.

TheRide and a limited number of peers go beyond the FTA mandate to offer free fares on fixed route to ADA paratransit eligible riders and seniors 65+. Unlike TheRide’s peers, TheRide offers discounted fares to individuals 60-64 and low income riders. Like many of TheRide’s peers, TheRide offers discount fares to K-12 students.

Peer transit agencies take a variety of approaches to what forms of identification are required to receive discount fare.

- Like TheRide, four agencies (Champaign-Urbana, IL, Erie, PA, Roanoke, VA, and Shreveport, LA) require Senior/Disabled/Medicare riders to obtain an agency-issued photo ID card to receive their discount fare.

- Six agencies (Gainesville, FL, Grand Rapids, MI, Hartford, CT, Peoria, IL, South Bend, IN, and Syracuse, NY) offer an agency-issued ID but will accept other forms of ID depending on the rider category. For example, Grand Rapids, MI riders with disabilities are eligible to receive their discount fare by showing an agency-issued ID card or their Medicare card; seniors can receive their discount fare by showing their Medicare card, driver’s license, or other proof of age.

Additional information about discount fares can be found in Appendix B.

### 3.2.2 Local Fares

City	Local Bus Fare		Transfer Policies	Day Pass		Monthly/31-Day/30-Day Pass		
	Full	Discount		Full	Discount	Pass Type	Full	Discount
Ann Arbor, MI	\$1.50	\$0.75 (Fare Deal) Free (S/ADA)	Free, 90 mins, unlimited, one-way (no roundtrips)	\$4.50 (3.0x) <sup>1</sup>	n/a	30-Day	\$58 (38.7x) <sup>1</sup>	\$29 (38.7x) <sup>1</sup>
Champaign-Urbana, IL	\$1.00	Free (S/D/M)	Free, one-way (no roundtrips)	\$2.00 <sup>2</sup> (2.0x)	n/a	Monthly	\$20 (20x)	n/a
Erie, PA	\$1.55	\$0.75 (D/M) Free (S)	\$0.40 full, \$.20 M/D	\$3.10 (2.0x)	n/a	31-Day	\$49 (31.6x)	n/a
Gainesville, FL	\$1.50	\$0.75	No transfers	\$3.00 (3.0x)	n/a	Monthly	\$35 (23.3x)	\$17.50 (23.33x)
Grand Rapids, MI	\$1.75	\$0.85 (S/D/M) <sup>3</sup>	Free, 120 mins, three routes (no roundtrips)	\$3.50 (2.0x)	n/a	31-Day	\$47 (26.9x)	\$30 (S/D/M) (35.29x)
Hartford, CT	\$1.75	\$0.85 (S/D/M) \$1.40 (Y)	Free, 120 mins, unlimited	\$3.50 (2.0x)	\$1.70 (S/M/D) (2.0x) \$2.80 (Y) (2.0x)	31-Day	\$63 (36x)	\$30.60 (S/D/M) (36x)
Peoria, IL	\$1.00	\$0.50	No transfers	\$3.00 (3.0x)	n/a	30-Day	\$40 (40x)	n/a
Roanoke, VA	\$1.75	\$0.85	Free, 30 mins	\$3.50 (2.0x)	\$1.70 (2.0x)	31-Day	\$56 (32x)	\$28 (32.94x)
Shreveport, LA	\$1.25	\$0.60	\$0.25, 90 mins, two transfers	\$3.00 (2.4x)	n/a	30-Day	\$40 (32x)	\$20 (33.33x)
South Bend, IN	\$1.00	\$0.50 (S/D/M)	No transfers	\$3.00 (3.0x)	n/a	31-Day	\$35 (35x)	\$30 (Y) (30x)
Syracuse, NY	\$2.00	\$1.00	Free, one transfer, one-way (no roundtrips)	\$5.00 (2.5x)	\$2.50 (2.5x)	n/a	n/a	n/a

Notes: S = Seniors 65+, ADA = ADA-eligible rider, D = Persons with Disability, M = Medicare cardholder, Y = Youth or K-12

<sup>1</sup> Pass multiple based on the base fare

<sup>2</sup> Day passes available Saturdays and Sundays only

<sup>3</sup> Grand Rapids, MI offers discounts to Youth in the form of a 10-Ride Ticket, which costs \$10.50 as opposed to the full fare \$13.50 10-Ride Ticket. The discount 10-Ride Ticket costs 6x more than the full local bus fare.

Peers’ local adult bus cash fares range from \$1.00 to \$2.00. All of the peers offer a discount Senior/Disabled/Medicare (S/D/M) fare with discounts ranging from 50% to 100%. One agency (Erie, PA) does not offer discounted S/D/M fares during peak hours. Most peers offer discounted Youth or K-12 fares.



Transfer policies for local services are varied and specific to each agency. At least one peer agency (Peoria, IL) phased out free transfers in their most recent fare change. Half of the peers offer free transfers. Free transfers are valid for anywhere from 30 minutes to two hours on local routes and generally exclude roundtrips. Two agencies charge for transfers. One agency that charges for transfers provides discounted transfers to S/D/M customers, while the other agency has a flat price for transfers. Neither provides discount transfers for Youth.

Regardless of transfer policy, all peers offer local day passes. Day passes for adults range from \$2 to \$5 or for another means of comparison from 2.0x to 3.0x the local bus fare. One agency (Champaign-Urbana, IL) only offers a day pass on Saturdays and Sundays. Some agencies offer discounted day passes for S/D/M and Youth customers. Of the agencies offering free transfers, Ann Arbor’s day pass multiplier is the highest at 3.0x the local bus fare.

All peers but one offer monthly or rolling period (30- or 31-day) passes. Compared to TheRide’s \$58 30-day pass, peers’ Adult passes are priced between \$20 and \$63, and average \$43 across the nine peers with monthly/31-day/30-day passes. Most peers offer discounted passes for S/D/M and Youth riders. Price multipliers for Adult passes range between 20x and 40x; at 38.7, TheRide’s 30-day pass multiple is lower than only one peer (Peoria, IL).

While most peers offer both a discount fare and a monthly pass to all of their discount riders, some peers offer only select fare products to discount riders. Like TheRide, the majority of TheRide’s peers do not offer discount day passes. Peers that do not offer discount fares or monthly passes to all of their discount riders include:

- Erie, PA and Peoria, IL do not offer a discount monthly pass.
- Hartford, CT offers a discount monthly pass to S/D/M riders but does not offer a discount monthly pass to Youth.
- South Bend, IN offers a discount fare for S/D/M riders but does not offer a discount monthly pass for S/D/M riders. Conversely, South Bend does not offer a discount fare for Youth but offers a discount monthly pass for Youth.
- Syracuse, NY does not offer a full fare Adult or a discount monthly pass. Instead Syracuse, NY offers both full fare Adult and S/D/M discount 10-, 20-, and 30-Ride passes.

### 3.2.3 Commuter Bus Fares

City	Commuter Bus Fare		Transfer Policies	Day Pass		Monthly/31-Day/30-Day Pass		
	Full	Discount		Full	Discount	Pass Type	Full	Discount
Ann Arbor, MI	\$6.25	n/a	Free, 90 mins, unlimited, one-way (no roundtrips)	n/a	n/a	30-Day	\$125 (20x)	n/a
Hartford, CT								
<i>I-Bus Interstate Express</i>	\$3.20	\$1.60 (S/D/M)	Free, 120 minutes, unlimited	\$6.40 (2.0x)	n/a	31-Day	\$108.80 (34x)	n/a
<i>Express Service Zone 2</i>	\$3.20	\$1.60 (S/D/M)	Free, 120 minutes, unlimited	\$6.40 (2.0x)	\$3.20 (S/D/M) (2.0x)	31-Day	\$108.80 (34x)	n/a
<i>Express Service Zone 3</i>	\$4.10	\$2.05 (S/D/M)	Free, 120 minutes, unlimited	\$8.20 (2.0x)	\$4.10 (S/D/M)	31-Day	\$139.40 (34x)	n/a

					(2.0x)			
<i>Express Service Zone 4</i>	\$5.00	\$2.50 (S/D/M)	Free, 120 minutes, unlimited	\$10.00 (2.0x)	\$5.00 (S/D/M) (2.0x)	31-Day	\$170.00 (34x)	n/a
<i>Express Service Zone 5</i>	\$6.00	\$3.00 (S/D/M)	Free, 120 minutes, unlimited	\$12.00 (2.0x)	\$6.00 (S/D/M) (2.0x)	31-Day	\$204.00 (34x)	n/a
Roanoke, VA	\$4.00	\$2	Free, 30 mins	\$10 (2.5x)	\$5 (2.5x)	31-Day	\$120 (30x)	\$60 (30x)

Only two peers (Hartford, CT and Roanoke, VA) offer commuter bus services. The Adult fares range from \$3.20 to \$6.00. Unlike TheRide, both peers offer discount fares for S/D/M customers on these services. Roanoke, VA’s discount fare also applies to students K-12. Hartford, CT operates two different Commuter services: the I-Bus Interstate Express servicing New York, and Express Services originating in Downtown Hartford in a spoke-hub fashion.

Like TheRide, both peers offer intra-agency transfers on commuter services following the same policies as their local transfers. Both offer free transfers within a limited window.

Both peers offer day passes on commuter services; Adult day passes are priced between \$6.40 and \$12, and discount day passes are half of the Adult day pass price. Hartford’s discount commuter day pass is not available on the I-Bus Interstate Express.

Like TheRide, Hartford and Roanoke offer rolling period commuter passes. Compared to TheRide’s \$125 30-Day pass, peers’ Adult passes are priced between \$108.80 and \$204. Roanoke offers a discounted 31-Day pass, but Hartford does not. Peer pricing multiples for Adult passes range between 30x and 34x. At 20x, TheRide’s 30-Day pass multiple is lower than its peers. The lower multiple may be in part to offset the TheRide’s higher commuter bus fare than the peers. TheRide charges more for its commuter bus service, ExpressRide, since the cities (Canton and Chelsea) served by these routes do not contribute millage funding to the operations of TheRide.

### 3.2.4 Third-Party Pass Programs

TheRide’s peers offer a variety of advertised third-party pass programs for colleges and universities, employers, and other institutions:

- Students, staff, and faculty ride free with their university ID card from the University of Illinois (Champaign-Urbana, IL), University of Florida and Santa Fe College (Gainesville, FL), Grand Valley State University (Grand Rapids, MI), and University of Notre Dame and St. Mary’s (South Bend, IN). Grand Rapids, MI also offers free rides on specific routes for university affiliates at Ferris State University and Grand Rapids Community College. These programs are the result of prearranged agreements with the universities that are either priced on a per trip basis or at a fixed amount per participant.
- Grand Rapids, MI also offers discounted single ride fares to faculty, staff, and students of Aquinas College (\$0.25/ride with a Aquinas ID) and Calvin College (\$0.50/ride with a Discount Card issued by Calvin College).
- Gainesville, FL and South Bend, IN also offer discounted period passes (semester and monthly/30-Day/31-Day) for students, staff, and faculty at other local higher ed institutions.

- Peers also offer a variety of employer passes. For example, Gainesville’s Employee Bus Pass Program is open to all employers with 100 or more employees. The employer commits to purchasing passes for all employees (regardless of transit use) at a cost of \$7.50/employee/year (5x the local, one-way bus fare). Employees either use their regular employee ID to board or may have a sticker added to their regular employee ID that is visually validated by the operator upon boarding.
- Both Gainesville, FL and Shreveport, LA allow city employees to ride free with their employee ID.

### 3.2.5 Free Fare Zones

Two of TheRide’s peers offer free fare zones:

- Grand Rapids, MI: Silver Line Bus Rapid Transit includes an 8-station no fare zone in downtown Grand Rapids. The no fare zone is a partnership between the City of Grand Rapids and Downtown Grand Rapids Inc.
- Champaign-Urbana, IL: Stops called “iStops” on or near the University of Illinois campus are fare free for certain routes and are identified as such at the stops. The included stops vary by route.

In addition, Erie, PA operates the Bayliner Trolley that is free to all.

### 3.2.6 Fare Media

City	Tokens	Paper	Mag. Stripe Tickets	Smart Card	Mobile Ticketing
Ann Arbor, MI	X		X		
Champaign-Urbana, IL	X*	X			IP
Erie, PA	X		X		
Gainesville, FL			X		
Grand Rapids, MI		X	X	IP	IP
Hartford, CT		X	X	IP	
Peoria, IL			X		
Roanoke, VA		X	X		
Shreveport, LA		X		X	X
South Bend, IN			X		
Syracuse, NY			X		

Notes: \* for students only; IP = in process

TheRide’s peers offer their fixed route customers a variety of ways to pay their fares and store their day and period passes. Peers also offer a variety of fare media for their paratransit service, mostly on paper scrip coupons. These products are not discussed here.

Due to their small to mid-size and the infrastructure costs typically associated with new fare collection technology, most of TheRide’s peers rely on paper or magnetic stripe tickets for their fare media. At least one peer agency (Peoria, IL) phased out paper products including free transfers and punch passes in their most recent fare change. Only two peers use tokens, Erie, PA and Champaign-Urbana, IL. Champaign-Urbana only uses tokens to distribute discount fares to K-12 students.

Shreveport, LA is the only peer that currently has a smart card system. The smart card system is integrated with a mobile ticketing application. Shreveport has leveraged this technology to begin phasing out certain fare products on paper, including day passes and 30-Day passes, making them available only to smart card and mobile application users. Two additional peers are implementing or developing smart card systems. Grand Rapids, MI is launching an integrated smart card and mobile ticketing system in 2018. In CT, Hartford's smart card system is currently under development. The maturation of smart card technology has allowed smaller transit agencies to launch simplified smart card systems.

Many transit agencies have been introducing mobile ticketing as an alternative to smart card systems. Champaign-Urbana launched a stand-alone mobile ticketing application in April 2018.

Fare collection technology is discussed more broadly in section 3.5 below.

### 3.2.7 Change Cards

Four of TheRide's peers issue change cards: Gainesville, FL; Grand Rapids, MI; Roanoke, VA; and Syracuse, NY. Champaign-Urbana, IL does not issue change cards, but issues change up to \$5 before 7 pm. Grand Rapids, MI has proposed discontinuation of change cards as part of the fare changes associated with the introduction of their new electronic fare system.

## 3.3 Discount Fare Programs

As a grantee of the Federal Transit Administration (FTA), TheRide is required to offer half fare discounts on cash fares during off-peak periods to seniors, persons with disabilities, and Medicare recipients.

The discounts offered to eligible rider categories varies by transit agency. Most transit agencies offer these discounts at all times and on most fare products. Most transit agencies also extend discount fares to other rider categories with limited mobility, such as youth or K-12 students.

How the discounts are managed and distributed also varies by transit agency. Some transit agencies require an agency-issued ID while others accept any valid ID that proves eligibility (e.g., driver's license, student IDs, Medicare card). FTA regulations enable transit agencies to require riders to show proof eligibility in order to receive a half fare when they pay their fare. The regulations also permit transit agencies to require discount fare riders to obtain a special agency-issued ID card as the sole basis for paying the half fare. However, obtaining a special ID card must be relatively easy. For agency-issued IDs, there is no guidance on what should and should not be printed on the card. What transit agencies have chosen to print onto agency-issued IDs varies based on how fares are paid and fare enforcement needs.

### 3.3.1 Discounts Offered

#### *Seniors*

The FTA requires its grantees to offer half-fare discounts on cash fares to seniors ages 65 and older. TheRide goes beyond this requirement by offering free fixed route fares to seniors 65+ and 50% discount fares to individuals ages 60 to 64. Generally, transit agencies do not offer free fares to seniors nor any discount to those in the 60 to 64 age range, especially as individuals remain in the workforce longer and thus have a stable source

of income later into life. Those who do offer a senior discount to individuals below the age 65 threshold are looking at increasing the age threshold to the federal requirement. Only two of TheRide's peers selected for this study, Champaign-Urbana, IL and Erie, PA, offer free fares for seniors. The rest offer either a 50% or 52% discount on fixed route services. None of these peers offer a discount to individuals ages 60 to 64.

When agencies have chosen to change discount fare policies (e.g., increase the qualifying age threshold for seniors), individuals who are already receiving a discount under the current policy typically get grandfathered in and continue to pay the discount fare. In other words, individuals who currently qualify continue to be eligible for discount fares, but new individuals are not able to register or do not qualify as the eligibility age increases each year.

### *Persons with Disabilities*

Similar to seniors, the FTA requires its grantees to offer half-fare discounts on cash fares to persons with disabilities. On its fixed route services, TheRide offers free fares for ADA-Eligible riders and discount fares to persons with disabilities who are not registered or who do not qualify for ADA paratransit service.

The main premise behind offering free fares to ADA-eligible riders is to minimize ADA paratransit demand, which has a greater subsidy per boarding than fixed route. In some cases, ADA-eligible riders may be capable of using fixed route services (e.g., for specific trips or in clear weather) even if they are eligible to use paratransit. Transit agencies may choose to incentivize these riders to use lower-cost fixed route services by charging them only a nominal fare or no fare on these services, as opposed to just the half-fare discount on fixed route fares normally offered to persons with disabilities. There are trade-offs in determining whether to offer additional discounts to ADA-eligible riders or even enabling them to ride for free. Some agencies choose to charge a nominal fare instead of a free fare because charging some fare encourages greater buy-in to the service and because, in the future, it is easier to increase a fare from a nominal fare than from a free fare.

The OCTA in Orange County, CA, for example, offers a \$0.25 fixed route bus fare for ADA-eligible riders. In the Phoenix, AZ area, however, ADA-eligible riders are able to ride Valley Metro bus and light rail services at no charge. Similarly, in Los Angeles County, CA, ADA-eligible riders are able to ride all fixed route services for free. With respect to TheRide's ten peers chosen for this study, only two out of ten offer free fares to ADA-eligible riders; Champaign-Urbana, IL offers free fixed route service to all persons with disabilities, and Gainesville, FL offers free fixed route service to ADA-eligible riders. The remaining eight peers offer either 50% or 52% discounts to ADA-eligible riders and persons with disabilities on their fixed route services.

### *Personal Care Attendants*

Personal care attendants (PCAs) provide assistance to ADA-eligible riders. The FTA does not allow PCAs to be charged on ADA paratransit service. A companion (i.e., friend or family member) does not count as a PCA unless the companion is actually acting in the capacity of PCA. PCAs may be charged a fare on fixed route. While some transit agencies go beyond the minimum requirements (e.g., TheRide) and allow PCAs to ride for free, there is no requirement that they do so. Transit agencies can also require ADA-eligible riders to indicate whether they require the assistance of a PCA as part of the initial eligibility process and are permitted to make further inquiries regarding the actual need for a PCA. If the rider does not indicate the use of a PCA, then any individual accompanying him or her will be regarded simply as a companion.

It is a relatively uncommon practice to allow PCAs to ride for free on fixed route. None of the peers used for this study appear to offer benefits to PCAs on fixed-route services, though they all allow PCAs to ride for free on paratransit services in accordance with federal regulations.

Nonetheless, some transit agencies (e.g., Community Transit in Seattle, WA, Spokane Transit in Spokane, WA, Duluth Transit Authority in Duluth, MN) allow for PCAs to ride for free on fixed route. Like TheRide, the ADA-eligible riders traveling with a PCA must indicate that they require a PCA during the eligibility process. The eligibility for a PCA is then printed onto the ADA-eligible rider's ID card. Still, this discount policy is difficult to enforce because the PCA may not always be the same person, and few PCAs are explicitly identified. Like other transit agencies, TheRide has tried to tackle fare enforcement around this policy by requiring that someone designated as a PCA receiving the free fare deboard at the same stop as the ADA-eligible rider or pay the full fare. A few transit agencies have also tried to address potential fare evasion of non-PCAs receiving free fares by requiring identification of the PCAs (e.g., in Duluth, MN); however, this policy can be difficult to enforce.

### 3.3.2 Enforcement of Discount Fares

Historically, transit agencies have enforced discount fare programs by requiring eligible individuals to carry a photo ID that served as proof of eligibility and could be shown to the bus operator upon boarding. However, many transit agencies have chosen to migrate their programs to electronic enforcement with the advent of new fare technologies. Currently, this type of electronic enforcement is primarily seen in conjunction with smart card technology. There are, though, instances of electronic enforcement with mobile ticketing that have begun to emerge. With either of these technologies, electronic enforcement requires a process wherein a rider receives a special discount card or discount account information from the agency.

An ongoing challenge with using emerging technology to help with enforcement is the question of how to incorporate riders who pay with cash. Many peers allow discount riders to pay with cash, and some peers do not even require special identification when a discount cash fare is paid. In Tucson, AZ, SunTrans has tackled this challenge by requiring the rider to tag their smart card, which has a photo ID, to verify their discount eligibility before the rider can pay a discounted cash fare.

#### *Advantages of Electronic Enforcement*

There are several advantages to electronic enforcement:

- Electronic fare media can be programmed to enforce eligibility periods (e.g. temporary disability status, low income status that requires certification, youth status that an individual can age out of).
- Electronically tying an individual to a specific discount-eligible account enables deactivation if a rider's smart card is lost or stolen and then transfer of the balance to a new card.
- Electronic enforcement enhances data collection on the number of free and discounted riders taken on services since data no longer depends on manually keyed in data from the operator.
- Electronic enforcement minimizes rider-operator conflict by reducing the operator's role in fare enforcement if a smart card or a mobile ticketing account is tied to a specific individual.

Thus, this policy of electronic enforcement is emerging as an industry best practice.

The Clipper smart card system in the San Francisco Bay Area, CA is an example of how smart cards and electronic enforcement can enable innovative and flexible programs and policies. Clipper requires riders who receive a discounted fare to register and receive a special Clipper card that, based on the rider's information, determines what discounts are available to the rider. The use of a special ID card has helped also in distribution and enforcement of discount fares. For example, prior to Clipper (formerly Translink), youth were required to show student IDs upon request as proof of eligibility, and passes could be purchased at retail locations without an ID. With the rollout of the Clipper card, youth were required to obtain a special Clipper card in order to receive discounted fares (though discount riders can still pay cash at the farebox). At first, there was a fair amount of push-back from parents, because they now had to go through the process of establishing an account and reloading passes onto the card instead of simply picking up new passes each month at a retail outlet.

Most of the discount Clipper cards do not require photos. Initially, AC Transit in Oakland, CA required youth to obtain a Clipper card with a photo printed on the card. However, since each card is linked to an individual and lost or stolen cards would be deactivated when obtaining a new card, the additional administrative burden of printing and distributing cards with photos was deemed not cost effective, and now the cards no longer have photos for youth. The only Clipper photo ID is the Regional Transit Connection (RTC) card for persons with disabilities. Since some of the smaller transit agencies are still joining Clipper, printing photos, names, and expiration dates of eligibility enable transit agencies not on Clipper yet to use the card for visual verification.

Chicago, IL has taken a similar approach to the San Francisco Bay Area. As part of the launch of the Ventra smart card system in Chicago, IL, CTA leveraged the capabilities of smart cards and consolidated their various policies surrounding youth discounts into one smart card. Prior to the launch of Ventra, high school students were required to carry a permit, a student fare card for school days, and an adult fare card for weekends. Now, the smart card functions as the permit and is programmed to enable a student to ride at a discount on weekdays and at full fare on weekends. The integration of proof of eligibility and fare payment also improved enforceability of discount fare passes. Since passes are loaded onto a smart card that serves as proof of eligibility, customers cannot argue that they did not know they needed to show proof of eligibility. An advantage of this approach is that it permits other family members to purchase the fare products, while still linking eligibility and enforceability to the individual eligible to use the discounted fare products.

Overall, issuing and registering a specific card to an individual has helped in reducing bus operator/rider conflicts and has enabled bus operators to focus on other priorities such as operating the bus safely and serving as helpful resources for new riders instead of on fare enforcement.

RTD in Denver, CO is on the opposite end of the spectrum of how technology can be used to enforce discount fares in that the agency does not require riders to register their discount fare smart cards, opting to enforce discount eligibility at time of use as opposed to time of purchase. As a result, when a rider tags a discount smart card on the farebox, a light on the driver console indicates that the fare that has been paid was a discount fare. It is then on the bus operator to request proof of eligibility. Unfortunately, this creates the possibility that individuals purchase discount fares they are ineligible for, then attempt to use those fares to ride RTD's services. While this policy of enforcement at time of use instead of at time of purchase is somewhat necessary when non-electronic fare media are being used (since retailers are unlikely to verify that an individual is eligible to purchase a discount fare) it does not conform with industry best practices for smart card systems that use the

card to determine eligibility for discount fares and passes (i.e. if the cardholder is not eligible for a discount fare, then the cardholder will not be able to load a discount fare product onto the card).

## Challenges

Electronic fare enforcement does create the potential for fraud and for discount fare riders to share their card with a non-eligible rider. San Francisco Municipal Transportation Agency (SFMTA) in CA has run into this issue on their Muni services with enforcement of their Free Fares for Youth program. In the Bay Area, youth Clipper cards are branded the same as adult cards since when a youth rider ages out of receiving a discount, their cards automatically convert to charging the adult fare. Because youth cards are not immediately distinguishable from adult cards, there have been reported issues with adults using the youth cards to board services. Increasing enforcement around this issue, though, has been determined to be not cost effective, so SFMTA has taken no further action on the enforcement problem at this time.

### 3.3.3 Photos and Names on Discount Fare ID Cards

The purpose of having photos and names on discount fare ID cards is to help with enforcement by ensuring that the person using the card to purchase a discount fare is the cardholder. The challenges to photos and names, however, are that:

- (1) issuing photo IDs increases administrative costs since an agency is then required to print a specific, new card for each discount eligible rider instead of simply assigning them a discount fare card in the back office system, and
- (2) there are concerns about special identification cards with a name and photo increasing stigma for certain populations who are eligible for discount fares.

Despite these concerns, many transit agencies still choose to include names and photos on ID cards for discount-eligible individuals, especially for ID cards that are used as flash passes and are not electronically validated. Nonetheless, agencies may choose to be selective about which types of discount fare ID cards require a photo ID and/or name to be placed on them. The extent to which requirements around proving discount fare eligibility are enforced varies among agencies and operators.

- In Seattle, WA, the ORCA smart card system has integrated proof of eligibility for discount fares with their smart cards. The ID itself is on an ORCA card, and the discount fare can be paid electronically or with cash. While all smart cards function as discount IDs and as such include an individual's name, the inclusion of a photo on the ID varies by specific ID type. No photos are included on senior-eligible IDs, but there are photos on disability-eligible IDs. The photo on the disability-eligible ID is for proof of eligibility for agencies that may not be on ORCA or for when a rider requests to pay a discount fare with cash. Unlike other discount fare categories, low income ORCA LIFT riders can only pay their fares with either stored value or a pass on their assigned ORCA LIFT cards.
- SunTran in Tucson, AZ requires a photo ID and name on all of their discount ID cards. Like ORCA, SunTran has integrated proof of eligibility with their smart cards by establishing special coded and printed smart cards with a name and photo ID for their discount-eligible customers. Discount riders are required to tag their cards to confirm eligibility prior to paying the discount fare with cash.



- MBTA in Boston requires fare payment with an agency-issued discount fare smart card, regardless of whether a rider chooses to pay with their smart card or with cash. If a rider wants to use cash to pay their fare, they must first tap their discount fare smart card at the farebox, which allows them to load the cash value onto their smart card by inserting the cash into the farebox. The fare is then technically deducted from the value that was just loaded onto the smart card. All agency-issued discount fare smart cards include a name and photo ID. Customers eligible for discounted fares must go to the CharlieCard (MBTA) Store to obtain their cards and provide any necessary documentation.

There are key considerations that underlie decisions about whether or not to place names and photos on discount eligibility cards. An agency must determine what amount of information needs to be collected for fare enforcement and how eligibility is enforced (e.g., visual flash pass vs. electronic enforcement). An agency must also decide what level of integrity in enforcement of discount fares is necessary. Lastly, an agency must consider whether they prefer that enforcement occur at time of purchase or at time of use. The answers to these questions, combined with choices around fare collection technology, impact the necessity of having photos and/or names on ID cards.

### 3.3.4 Low Income Fare Programs

In recent years, there has been growing interest in providing affordable fares for low income riders, similar to TheRide's Fare Deal low income program.

There are five key elements of a low income fare program: the income threshold used, the eligibility verification process, the level of discount, funding for the program, and fare payment for program users.

#### *Income Threshold*

Different transit agencies have decided to use different income thresholds for low income pass program eligibility. King County Metro in Seattle, WA and TriMet in Portland, OR (program launching July 2018) use an income threshold of 200% of the federal poverty level for eligibility, while DART in Dallas, TX bases eligibility indirectly on income by providing discounted fares for individuals receiving Transportation Assistance for Needy Families (TANF) benefits. DART's program is structured to reduce the administrative burden on the transit agency by allowing TANF benefit recipients to simply use their EBT cards to purchase fares. For TANF, each state has discretion on the benefit levels and how to determine financial need. As Metro Transit in Minneapolis, MN launches its program, it is taking a somewhat similar approach to DART and will be using certifications provided by other programs to determine eligibility. This is similar to how TheRide currently runs its low income Fare Deal program.

#### *Eligibility Verification Process*

Many transit agencies see value in outsourcing the eligibility verification process to other government agencies or to other community institutions. DART's reliance on TANF cards precludes the need for the agency to administer its own eligibility verification process. King County Metro outsources its eligibility verification process to more than 40 separate locations across King County, including community colleges, food banks, human service providers, nonprofit organizations, and health clinics. To qualify, potential partners needed to demonstrate experience with Limited English Proficiency (LEP) populations and an ability to verify income

eligibility, manage and account for low income ORCA cards, and track and report data in the County's online databases. TriMet is still conducting research and public outreach to decide how to administer their program.

### *Discounts*

Discounts for a low income fare program depend on an agency's assessment of need in the community they serve as well as funding constraints (discussed in the following section). The DART program provides a 50% discount on monthly passes. King County Metro's ORCA LIFT program provides an all-day flat reduced fare of \$1.50 for adult riders on Metro buses, and a discounted monthly pass can also be purchased at 36 times the \$1.50 fare. This represents a 45% discount on the local base fare for King County Metro. TriMet's program will enable participants to purchase 2.5-hour passes and day passes at half-price and monthly passes at a 72% discount, similar to its youth and senior fares.

### *Funding*

When implementing a low income fare program, many agencies seek additional financial support from other levels of government. DART's program funding technically comes from the federal government in the form of TANF benefits, which can be used to buy the discounted monthly passes, with the additional 50% subsidy covered by DART. King County Metro's program is being subsidized by the agency itself. At the time of the program's debut, Metro expected to lose about \$4.75 million a year in fares by offering the reduced rate and to spend \$3 million dollars to manage the program. TriMet's program was created by the Oregon State Legislature, who included funding for the program.

Sometimes funders outside of government decide to contribute to a low income fare program. One of the most publicized instances of this is the funding structure behind Free Muni for Low Income Youth program run by the SFMTA in San Francisco, CA. Various corporate donors, including Facebook and Google, have made donations to the agency specifically to fund this program. However, this funding came in the form of one-time payments and will not necessarily be renewed.

### *Fare Payment*

The majority of new low income fare programs (e.g., King County Metro, TriMet, and Minneapolis Metro Transit) are administered using smart cards. The use of smart cards can assist in collecting data, enforcing fares, reducing fare collection costs, speeding boardings, reducing dwell and travel times, and verifying program eligibility - all important aspects of maintaining the integrity of the programs. Implementing on smart cards at launch can also minimize potential Title VI issues compared to if the program were initially implemented with cash then migrated to exclusively smart card. SunTran in Tucson, AZ, which has one of the longest running low income programs (est. 1972) in the country, has had difficulties eliminating the cash option because it could cause a Title VI issue since participating riders historically have had the option to pay with cash at the farebox.

## **3.4 Third-Party Pass Programs**

Third-party pass programs are generally designed to meet the needs of rider groups who use transit services regularly, such as employees and students. Another focus point of third-party pass program design is to encourage these groups' continued use of the transit system by facilitating access to fare products, often by providing these products at a discount to the end user.

Transit agencies' decisions on what pass programs are offered, how they are priced, and how they are administered are influenced by a variety of cost and administrative considerations:

- Administrative costs to register, invoice, and enforce a program
- Impact on operations and fare enforcement
- Increased operating costs to accommodate additional ridership during peak service and operator availability/shortage
- Current capacity of routes
- Cost of crowding, both in potentially needing to increase service and in discouraging other riders from using the service
- Additional capital costs associated with increasing service (e.g., vehicles, maintenance facilities)
- Increase in demand for additional service if a location is not well served by current transit routes
- Lost fare revenue from offering reduced or free fares
- Subsidies required to cover the costs of additional trips

TheRide has already established a number of large third-party pass programs. Staff, though, hope to develop a third-party pass program policy that will enable the continuation of current programs while also providing more structure for the implementation of future programs. Peer third-party programs may provide some insight into alternative program structures and identify opportunities to encourage third-party payers to self-manage their participation, shifting some of the administrative burden from TheRide to program participants. This shift would free up resources within TheRide so the agency can focus on expanding its pass programs instead of administering current ones.

In order to help guide TheRide staff in development of this policy, this section discusses the key considerations that must be discussed when implementing a new pass program. The section also describes numerous examples of how other transit agencies have chosen to structure their own various types of third-party pass programs.

Before any third-party program is officially implemented, an agency must consider (1) how the program will be priced, (2) how the program will be paid for, and (3) how the program will be administered.

### 3.4.1 Pass Program Pricing

There are three primary pricing models for these types of pass programs: all-in, opt-in, and capping.

#### *All-in Pricing*

In an all-in pricing structure, organizations are charged for their participation based on all individuals eligible to use the program, regardless of whether or not they actually use transit.

- These programs are designed specifically to attract riders to transit who may not otherwise choose that transportation option. This is usually accomplished by selling discounted passes to organizations who may then pass all or part of the savings through to their members or offer the passes free as a member benefit.

- The central objective is to attract non-riders to transit with the hopes of encouraging them to become regular riders.
- For smart card all-in programs, the organization is generally responsible for managing their headcount and list of participants through a special portal that enables the organization to remove someone who is no longer affiliated with the organization or to request to add a new individual. If the portal is created and managed correctly, having the organization manage its account can help minimize the administrative burden on the transit agency. Since pricing may also be based on actual ridership data, each organization has an incentive to deactivate cards as soon as possible to minimize paying for unauthorized trips.
- This pricing scheme assumes that members who already use transit will continue to do so and that some members will never use transit. But, because they are all included in the program, the price paid for non-users subsidizes the cost of providing service to existing or new users. In other words, pricing is based on the number of eligible participants and provides discounts, much like an insurance policy, relative to what it would cost if all members used transit on a regular basis.
- Pricing all-in programs is very challenging without good data on actual usage rates. While historically these programs were priced based on survey data or bus operator keys, they are increasingly priced using smart card data.
- Organizations are typically pre-billed under this model, usually paying in advance for a full year, but agencies can choose to post-bill, as in the case of TheRide's go!Pass program. Post-billing is more common with all-in programs that charge based on actual ridership as opposed to true all-in insurance programs where organizations pay per member eligible for the service regardless of their use of the system.

There are numerous examples of all-in pass program pricing models. In Denver, CO, RTD's Eco Pass program relies on historical survey or usage rates data to estimate the appropriate charges for the established contract period. This program is pre-billed, and there currently are no adjustments to the contract price to reflect actual use. With the introduction of smart cards for the Eco Pass program, RTD has considered using the data to improve their ability to "right price" the program to better reflect actual usage. In Seattle, WA, the Business Passport program is an all-in program with some special provisions. TheRide's contract with the University of Michigan is also technically an example of an all-in pricing model since all University of Michigan affiliates can use their University-issued MCard photo ID to board TheRide's fixed route services. TheRide's goPass! is also a type of modified all-in pass program.

One variation of how transit agencies have structured their all-in pass programs is dependent on whether there is cross-subsidization between participating employers. The employer programs in Seattle and Denver use either geographic zones (Seattle) or service level areas (Denver) to create a pricing matrix that accounts for transit usage in each zone/service level area. Denver also uses employer sizes to differentiate pricing. Aggregating employers together can help minimize pricing changes from year to year; however, it can lead to some employers overpaying compared to the service they use while others underpay.

Many smaller transit agencies with employer programs generally have employer-specific pricing with the exception of areas with a high concentration of jobs (e.g., downtown central business district). Generally, the

programs are priced individually since the pool of employers may not be sufficient to price the program effectively. Des Moines' DART calculates an annual payment for their Unlimited Pass program participants based on estimates of current members' ridership and/or annual bus pass purchases. Thus, each organization's contract price is individually negotiated.

When pricing the rides taken by these programs, many transit agencies use the adult full fare or adult average fare. For example, Seattle prices its all-in employer pass programs using the adult full fare while accounting for transfers. Meanwhile, VTA in San Jose, CA uses the adult average fare. VTA also differentiates its all-in insurance model pricing based on organization type (e.g., a Corporate Pass for For-Profit Organizations, including businesses, schools, residential housing, developments, or corporations organized for the purpose of earning profits, and a Not-For-Profit Pass for nonprofits, low-income housing, and government agencies).

Transit agencies that wish to use an average adult fare instead of their adult full cash fare to price their programs have come up with different ways to estimate this price. For accurate estimates of the average fare paid, substantial data is needed, especially since this average fare price must be updated on a regular basis and so program contract pricings should be as well.

### *Opt-in Pricing*

In an opt-in pricing structure, organizations purchase fare products, such as monthly or annual passes or stored value on a smart card, for members who explicitly choose to use transit and thus join the program.

- Monthly pass or stored value orders may change each month, based on individual members' needs from month-to-month, providing more flexibility to both the participating individuals and the organizations.
- Products may or may not be discounted, and organizations typically pay each month in advance when orders are placed.
- Often these programs are combined with a pre-tax transit benefit program, and only part or none of the cost is subsidized by the employer.

Seattle's Business Choice program is an opt-in program that enables employers to provide ORCA smart cards to as many or as few employees as they choose. Under this program, an employer can choose to distribute cards with either monthly passes or stored value, which works like cash but is paid using the smart card. Regular retail prices apply to the products loaded onto the passes and the products employees purchase using the cards. There are no discounts on passes, but the number of passes or amount of stored value purchased may change from month to month. RTD in Denver has taken a slightly different approach and provides discounts on its FlexPass monthly passes. FlexPass provides a discount to employers of up to 20% per monthly pass (RTD provides employers up to 10% matching discount + 5% discount if employer offers FlexPass on pre-tax basis + 5% discount if employer purchases 200+ passes/month). The average FlexPass discount provided by RTD in 2016 was 15%.

### *Capping*

In a capping pricing structure, payments for participating organizations do not exceed a set price per person. With capping, organizations may be post-billed after actual use is determined, or, if pre-billed, accounts may be adjusted to reflect actual use.

In Phoenix, AZ, the Platinum Pass program is post-billed on a per-ride basis. An employer is charged only for the actual number of riders up to a maximum of \$64 per month per rider for local bus and light rail services and up to a maximum of \$104 per month per rider for Express/RAPID Bus. Unlimited travel is permitted once the cap is reached. The \$64 cap is the price of a 31-day local/light rail pass; the \$104 cap is the price of an Express/RAPID bus pass.

### 3.4.2 Pass Program Payment

There are three payment models for third-party pass programs: direct, indirect, and partnership.

1. Direct: Participating individuals pay the whole cost of their participation, possibly through payroll deductions and possibly by taking advantage of Federal transit benefits that allow individuals to pay for transit using pre-tax dollars.
2. Indirect: Participation costs are included as an employer benefit, as part of school fees, etc. Prior to the new Tax Bill, federal transit benefits also accrued to employers, who are able to treat employee transit benefits as tax deductible expenses.
3. Partnership: Participating individuals or organizations share the cost of the program with other agencies, such as a school district or government agency.

In some instances, the different payment models may be combined such that part of the cost is passed through, and the individual pays a portion of the cost while the remainder is paid by another third-party. Although most agencies leave it to an organization's discretion whether to subsidize any of the cost, a few encourage or require organizations to subsidize all or part of the program cost. In Seattle, employers may cover the cost of the Business Passport program in full or may pass up to 50% of the cost through to their employees. Charlotte, NC and Salt Lake City, UT require employers to absorb 10%-30% of pass sales cost.

#### *Pre-Tax Benefits*

Many transit agencies work with organizations to encourage ridership and maximize use of pre-tax benefits. Many transit agency websites make an effort to quantify the financial benefits of participating in third-party pass programs for both organizations and individuals. This outlining of benefits usually includes the federal tax benefits of transit program participation, since the IRS allows commuters to use pre-tax dollars to pay for their commute (up to \$255/month for transit and up to \$260/month for qualified parking in 2017). However, these dollar amount thresholds for tax exempt commuting benefits include any organizational contribution towards the parking or transit benefits. Therefore, any contribution by a participating organization on behalf of its members reduces the amount a member can elect as a pre-tax amount for their parking or transit benefits. Additionally, while some employer transit benefits may be distributed by the transit agency via a fare product, such as an all-in pass, a monthly pass, or stored value, benefits may also be distributed by a third-party benefit program via commuter checks or a benefits credit card.

As an example of how transit agencies may broadcast these benefits to potential pass program participants, the Maryland Transit Administration's website (<http://www.commuterchoicemaryland.com>) compares the relative benefits for employers and employees of three employer pass program payment options: employer-supported, employee pre-tax salary deduction, and combination employer/employee. In Maryland, employers are also

eligible to claim a Maryland Commuter Tax Credit for 50% of the amount of the benefit given to an employee, up to a maximum credit of \$50 per employee per month.

### 3.4.3 Pass Program Administration & ID Cards

Historically, participants in third-party pass programs used photo ID cards issued by their employer, school, etc. A sticker with the current year or semester would then be affixed to the ID and shown to the bus operator. The bus operator, upon seeing a pass program ID, would key into the farebox the appropriate key for the participating organization.

As third-party pass programs have migrated to electronic fare media, including magnetic stripe tickets and smart cards, transit agency-issued ID cards typically do not have the cardholder's photo on them. This is because the agency is theoretically reimbursed for the trips made using the pass program ID card, regardless of whether or not a cardholder's use of the card conforms with the intent of the pass program. This includes situations where a student uses a school pass to make trips other than to and from school or where someone lends their pass program ID card to a friend or a family member. This type of pass program structure incentivizes the organizations participating in the third-party pass program to ensure that pass program ID cards are properly managed, meaning they are collected when members leave an organization or turned off when lost.

Despite not requiring photos, in some instances, a transit agency may require an additional photo ID upon request to prove eligibility. For example, in Oklahoma City, OK, students who receive the Haul Pass 2 are required to show a student ID upon request in addition to swiping their agency-issued magnetic stripe pass that entitles them to free fares on fixed route service.

Not adding photos or names to third-party pass program ID cards enables organizations to reuse cards for new members. However, a challenge may arise if the individual's information that the card is tied to is not updated to reflect the new ownership of the pass program ID card. In this case, difficulties may occur when an organization wants to cancel this card if it lost or stolen since there might not be a record of which card has been issued to the individual in question.

Some transit agencies have chosen to include photos on third-party pass program smart card IDs. In Denver, CO, RTD prints a photo and name on its EcoPass, Neighborhood EcoPass, and College Pass IDs. This can help address concerns about enforcement but at additional administrative burden and cost to the agency. When RTD was having challenges with its smart card system, the photos on the cards helped with enforcement of the program since the cards could not be electronically validated.

An organization may also work with the transit agency to enable its own ID card media to be used with the transit agency's fare collection system, such as the MRide cards. Integrating an organization's ID cards with the transit agency's fare collection system requires ensuring that the agency can read the media type that the ID card uses. Media types include magnetic stripe cards, HID cards (often referred to by their ISO/IEC standard, 15693) or the most commonly used standard for contactless smart cards which is called NFC or ISO/IEC 14443. Beyond the basic technology, the card must meet the agency's security requirements and specifications to enable the card to be read by the fare collection system. In some cases, in order to work as both an ID and a transit pass, cards will need to have a chip and a magnetic stripe or will need to have two separate chips. In some instances, a transit agency may give blank magnetic stripe or chip cards to an organization to print onto.



This integration requires coordination between the organization and the transit agency to ensure the cards are being managed properly.

### 3.4.4 Student Pass Programs

While some agencies, such as Santa Clara VTA in the San Francisco Bay Area, CA, include K-12 schools and/or colleges as a subset in broader third-party pass programs, other agencies choose to treat them as a unique category of pass programs. Student pass program pricing and distribution models include:

- Discounted monthly or semester passes sold by the transit agency directly to students,
- Discounted monthly or semester passes administered by the school, where the school is responsible for selling passes only to eligible students, and
- All-in programs providing free transit to all students at participating K-12 schools, colleges, and universities. Pricing is usually based on headcounts of those eligible to use the program combined with usage rates, which are estimated through user surveys, farebox data keyed in by operators, or data provided by fare media such as smart cards.

Denver's College Pass, VTA's Collegiate Pass, and Foothill Transit's Class Pass in Los Angeles County, CA are all examples of the all-in college pass program structure. Funding sources for this type of college pass program often include student activity fees, dedicated student transit fees, or other school revenue sources (often through the school transportation department's parking fees). None, however, typically cover the full costs of providing transit service, and these programs therefore usually involve some cost sharing with the transit agency. In addition, some transit agencies choose to charge colleges a lower price per boarding or trip than those assessed to employers or other individuals/organizations. For example, Foothill Transit's reimbursement rate from colleges is 50% of the adult fare, and pricing for VTA's Collegiate Pass is based on a lower average fare than the adult average fare used for their employer Smart Pass.

In addition to these college programs, there are a number of third-party pass programs implemented for students.

- TriMet in Portland, OR allows Portland Public School District students to ride for free on fixed route. The City of Portland, Portland Public School District, and TriMet each fund 1/3 of the program's cost.
- In San Francisco, CA, SFMTA's Free Muni for Youth Program provides free access to Muni services for registered low- and moderate-income youth ages 5 to 18 when using their assigned Clipper card. There is no dedicated funding source at this time, and the initial start-up costs were paid mostly by donations from corporate donors.
- In Nashville, TN, MTA's StriDe Youth Mobility Program allows students enrolled in grades 9 through 12 to ride MTA buses for free using their school ID cards; students in grades 5 through 8 who attend an out-of-zone school where they have no yellow bus service are eligible to participate with parental permission. The program is a partnership between the Mayor's Office, the Metro Council, Metro Nashville Public Schools, and Nashville MTA.
- In Seattle, WA, the Seattle mayor recently announced plans to launch a free transit pass program for all Seattle public high-school students starting in Fall 2018. The program will be funded by \$3.8 million from



the Seattle Transportation Benefit District (~80% of program cost), and the remaining ~\$1 million will be contributed by King County Metro in forgone revenue (~20% of program cost).

## 3.5 Fare Collection Technology

As fare collection technology evolves, it is important to remember that fare policy should drive the technology and not the other way around. The chief lens through which an agency should view technology options is the question of how technology can better serve the agency's fare collection goals.

Today, TheRide uses a combination of cash, tokens, magnetic stripe tickets, and flash passes as fare payment media. The industry today has evolved to make a number of new technologies available that can increase customer convenience, the data collected about fare payments and ridership, and the sophistication of fare policies, all while potentially reducing the operational cost of collecting fares.

Smart cards and mobile ticketing technologies are the two technologies currently most used by transit agencies to achieve their fare collection goals. Among larger peers, smart cards have been introduced over the last two decades to implement universal payment and fare integration goals. Today, peers are increasingly using mobile ticketing to support fare and service integration goals. Companies such as PayNearMe are also changing the retail distribution and fare collection technology landscape.

Common objectives for new fare collection technologies include:

- Accommodating and enforcing fare policies electronically, such as transfer validity rules,
- Introducing and/or enforcing special fare programs,
- Introducing new fare products, such as TriMet's trip accumulator that will replace day passes and monthly passes with fare capping,
- Obtaining improved ridership and fare payment data, and
- Attracting a new demographic of riders who see mobile ticketing or smart card technology as easier and/or more attractive than traditional fare payment technologies.

### 3.5.1 Smart Card Systems

While smart card systems have several advantages, they can be costly to implement. Smart cards provide some of the best ridership data, which can be used to understand travel patterns and transit use. Peer agencies have also used this data to better price their pass programs as well as other products, such as monthly passes. Smart cards can also help in managing eligibility for discounts.

Universal payment options are frequently achieved using smart card systems that rely on reusable cards. These cards have an embedded microchip to record fare transactions and store passes and monetary value for use on transit. Fare transactions are processed using near field communications (NFC). Smart card systems require riders to pre-purchase passes or to load stored value online, at a customer service center, or at a retail outlet; adding value on-board at fareboxes is also possible.

Very few small- and mid-size transit agencies have pursued smart card technology because of the significant costs associated with implementation and operation. Implementation of a smart card system can easily cost

tens of millions of dollars. The smart card systems that small- and mid-size transit agencies have deployed have generally been the smart card system offered with the GFI Odyssey.

A new, simpler generation of smart card systems, based in the Software as a Service (or SaaS) model and often integrated with mobile ticketing, is emerging with capital costs an order of magnitude lower.

### 3.5.2 Mobile Ticketing

Mobile ticketing is also growing in popularity due to its low cost and the ability to stand up a mobile ticketing solutions quickly. Mobile ticketing has also proven to have high adoption rates, especially within certain market segments. Additionally, mobile ticketing can be integrated with smart card systems to provide more flexibility to the rider.

Mobile ticketing technology works by giving users the ability to use an app on a smartphone or tablet to pay for transit, and then to use that device as their ticket or proof of payment when boarding. Tickets and passes can be purchased on an as-needed basis. Mobile ticketing even allows users to purchase their tickets as their bus is arriving, eliminating the need to carry cash or pre-purchase a pass.

Fare validation can be visual or electronic. Mobile ticketing with visual validation is relatively inexpensive and quick to implement. Fares can also be electronically enforced using QR codes or beacons. QR codes require scanners and communications equipment on all vehicles to read the codes, which can cost thousands of dollars per vehicle in exchange for improved data. A lower cost option is beacons. Low-powered beacons can be installed for hundreds of dollars per vehicle and provide data similar to that provided by bar codes. A small, battery powered device installed on a vehicle communicates with the phone or tablet upon boarding. The phone or tablet then operates as the communications hub that logs and validates transit users' rides. These beacons are just being deployed on transit systems in the U.S. but have been service proven in Europe. Overall, the data provided by activating a mobile ticket are better than visually inspecting a paper ticket issued by a ticket vending machine and relying on a bus operator to enter information into a farebox, but not as good as the electronic data that are available from using barcodes or beacons for validation.

The cost of mobile ticketing depends on the transit agency's choices regarding application development and validation. The first mobile ticketing applications were designed for each individual agency that procured them, with complete customization to the agency's wishes:

- The agency was able to control the design of the entire application,
- Agencies could choose to include a trip planner and/or vehicle tracker within the application itself, or use a deep link to connect to either another mobile app or a website with these capabilities, and
- Agencies could introduce customized fare products specific to the agency.

Over time, the capabilities have expanded for customized apps and now may include deep links to other apps, including trip planning, ride hailing, and car sharing apps. However, build-out of the custom application and systems connected to it can take many months and incur additional costs for an agency. Custom-built mobile applications cost, at minimum, hundreds of thousands of dollars in addition to the per-use fees commonly associated with mobile ticketing. Additionally, while several mobile ticketing vendors offer trip planners, many agencies already have their own trip planners with more capabilities than those provided by mobile ticketing vendors and so they may opt to use their own. Some transit agencies do, however, still decide to pursue a

customized mobile ticketing application. In certain cases, such as with TriMet in Portland, OR, the agency gains proprietary control over their mobile application once it is built by a developer. This establishes their right to use and control the platform and back-office systems.

Mobile ticketing startups are now offering new off-the-shelf mobile applications with financial models that include no upfront costs, providing more cost-effective options especially for small- and mid-size transit agencies. These apps are set up as software as a service (SaaS). Instead of owning the app, agencies pay fees to use the app:

- Vendors may charge a flat fee for development and use and then a fee per transaction to cover costs that depend on the number and value of transactions (e.g., bank card fees),
- Some vendors bundle fees together similar to a concession (e.g., 10% of revenue collected), and
- Depending on fee structure, vendors may have an incentive to increase market adoption.

These apps provide just the basics, but they can be fully operational within a matter of weeks and include minor customization (e.g., standard fare products, logo, and minor adjustments). Specific requirements, such as the capability of accepting prepaid debit cards, are often a distinguishing feature between vendors rather than a custom built capability. The fees associated with SaaS mobile ticketing are usually similar to those of custom built solutions, without the up-front cost.

### 3.5.3 Mobile Ticketing Deployment

In Mass Transit's "Future of Fare Collection in Transportation" report, the research showed that 87% of transport agencies either have or are planning to implement mobile ticketing. Mobile is expected to be the leading ticket retail option for passengers by 2021. Peer agencies that use mobile ticketing include The T (Fort Worth, TX), DART (Dallas, TX), OCTA (Orange County, CA), RTC (Reno, NV), RTS (Eureka, CA), Big Blue Bus (Santa Monica, CA), StarTran (Lincoln, NE), Citilink (Fort Wayne, IN), SporTran (Shreveport, LA), and HART (Tampa, FL). Additionally, MTD (Champaign-Urbana, IL), The Rapid (Grand Rapids, MI), MCT (Madison County, IL) and EMBARK (Oklahoma City, OK) all have mobile ticketing in development.

Given the speed with which mobile ticketing can be deployed, some agencies have chosen to deploy the application first and follow later with electronic validation. This means that the system will operate for some time with only data from when the tickets were activated, and not when or on which vehicle(s) they were actually used. Later, the agency can deploy electronic validation. Examples of this approach include OCTA in Orange County, CA who have had mobile ticketing for over two years and are deploying bar code readers later this year and TriMet in Portland, OR who have had mobile ticketing for several years and now are integrating it with their smart card readers.

### 3.5.4 Mobile Ticketing & Smart Card Integration

Some agencies have introduced both smart cards and mobile ticketing. Generally, these are larger transit agencies and/or regions. A few examples of integration include:

- In Portland, OR, TriMet launched mobile ticketing while developing their smart card system that just launched. The technologies both support improved fare integration, making it easier for riders to use

different modes over a single day or a single trip. TriMet is integrating its mobile ticketing and smart card backends.

- In Chicago, IL, subways and buses accept the regional Ventra card, and Metra commuter rail accepts a mobile ticket accessed via the Ventra mobile app. The Ventra backend is integrated so riders can load value onto their registered Ventra card and use the transit value through its mobile ticketing app. This provides additional flexibility for cash riders who may not have a credit or debit card to load money through the mobile ticketing app.

### 3.5.5 Electronic Cash Payment Networks

One of the ongoing challenges with smart cards and mobile ticketing is establishing a robust retail network to enable unbanked and underbanked riders to purchase passes and load stored value. Electronic cash payment networks are providing new opportunities for cash riders to load value to electronic fare media.

The leading competitor in this field is a company called PayNearMe, which partners with national retail chains as well as local stores to establish an electronic cash payment system that enables agencies to accept cash payments for services remotely. Customers use store check-out lines to pay bills or to load money into accounts by providing a special payment code that, when scanned, connects to the relevant account for deposits. Since deposits and ticket use are associated with an anonymous account, transit agencies can collect more data to learn about ridership trends and usage by these formerly cash riders.

These electronic cash payment network vendors take a set percentage of transaction value as part of any business agreement with them, then split this percentage with the retailers in its network. In Dallas, TX, DART is currently in the process of negotiating with PayNearMe to provide a means for unbanked riders to add value to their transit accounts as part of DART's implementation of GoPass smart cards and a mobile ticketing application.

Acceptance of prepaid debit cards has also proven an effective way to reach underbanked riders. In Reno, NV, one of the first agencies to accept prepaid debit cards for mobile ticketing, 56% of riders use debit cards, 31% use prepaid debit, and 13% use credit cards.

### 3.5.6 Use of Fare Collection Data for Planning

Electronic fare collection data can provide valuable information for service planning and pricing services. Currently, TheRide generates a monthly report of ridership that is used to report back to the NTD and State of Michigan. Some of this information is also passed along to employers and the University of Michigan, who many times like to see data concerning their specific ridership segments. This same data is also used to establish billing amounts for these third-party payers.

More sophisticated fare collection technology can dramatically improve the data available for planning on general fare usage and special programs. Smart cards and mobile ticketing can both provide usage data including route/run/stop/time for boardings and linked trips. Additionally they can provide patterns of use.

It is important to respect riders' privacy, TheRide's information policies, and state and local laws by not linking trips to personally identifiable information (PII). In order to do this, many agencies obfuscate their ridership data

using one way hashes and other common PII protection methods to ensure that no one can be 'tracked' using the data.

Beyond trip origin and linked trips, some fare collection vendors are starting to explore 'be-in, be-out' technology that tracks when riders disembark using the onboard beacons and their communications with riders' cell phones. This technology has not yet been commercially proven but would provide valuable information about where riders are boarding and also where they are alighting.

While transit agencies are just beginning to explore how they can use this electronic fare collection data, the analyses that agencies have been conducting so far have proven useful for service planning to understand ridership patterns (e.g., time of day, boarding/alighting locations, transfer activity, frequency of use) and ridership rider categories on certain routes (e.g., adult, senior, youth, etc.).

### 3.6 Fare Simplification

There are two types of fare structures that take into account the distance of the trips being undertaken.

- Zone-based:
  - Commonly used on both commuter bus and rail systems
  - Fare is based on the number of zones traveled
  - Generally, zone-based fares work best on commuter rail systems with a dedicated conductor to collect and enforce fares, or on services with off-board fare payment
  - In the bus environment, either the rider informs the bus operator where they plan to alight/number of zones to travel or the rider pays as they alight. This process puts the onerous on the bus operator to track riders boarding/alighting and enforce under fare payment
  - With smart cards, riders are often required to tag on/tag off to calculate the number of zones traveled based on GPS location
- Mileage-based:
  - Commonly used on rail systems with station-to-station pricing
  - Fare is determined based on the distance traveled, often using a base fare/access fee with a per mile fare
  - In Salt Lake City, UT, UTA piloted using mileage-based fare pricing using its smart card system that calculated the fare based on the GPS distance traveled on bus using tag on/tag off data. The primary objective was to make short trips more affordable and attractive

In a bus environment, distance-based fares tend to be difficult to understand and explain to customers. They can also be difficult to enforce. Distance-based fares require customers to pay the fare upfront or, if using a smart card, to tag on and tag off. While tag on and tag off smart card data can provide valuable information regarding a customer's travel patterns, many transit agencies do not view the benefit as overcoming the burden of programming the complex business rules necessary to use GPS location to define the number of zones traveled. Especially when transfers are accepted, the fare matrix used by the smart card systems can become extremely complicated. Bus operators also have difficulty enforcing that customers tag on and off. To encourage smart card customers to tag off, transit agencies will often charge customers the maximum fare upon tagging on and

then refund the difference upon tagging off. However, this can result in an increase in the number of customer complaints and requests for refunds received. In addition to customers failing to tag off, another impact of tagging off to consider is increased dwell time as customers tag off, especially if a card reader has not been installed at the rear door.

Instead of distance-based fares, transit agencies may use service-based fare structures to differentiate pricing based on the type of service. Bus transit agencies tend to be more likely to implement service-based fares since charging customers based on the distance traveled can be difficult in a bus environment, as described above. Agencies with service-based fares, such as TheRide, set fares based on the classification of the route, which is often determined by a service-based definition. There tends to be a relationship with the average passenger trip length (e.g., higher fare for longer haul routes, lower fare for circulator services), the type of vehicle, or the cost to provide the service (e.g., higher fare for services that operate during the peak only, lower fare for services with smaller vehicles). Transit agencies may also charge a higher fare on services with improved amenities (e.g., dedicated over-the-road coaches) or services that operate during the peak period that generally travel longer distances and at higher speeds. Some common service types in order of pricing from low to high include circulator/community, local/bus rapid transit, express/limited stop, and commuter/regional/park-and-ride. The use of established service standards can help in determining how service-based fares can best be delineated and priced.

With service-based fares, some agencies offer the ability to pay a lower fare for shorter distance trips. This is more common where customers use the service for local trips because other transit service is not available in that corridor or is not available at that time of day. With agencies that offer the ability for customers to pay a local fare, such as AC Transit in the San Francisco Bay Area, CA, the customer tells the bus operator upon boarding where they plan to deboard, and the bus operator adjusts the fare on their driver console accordingly.

Another type of fare structure that can be overlaid with distance-based and service-based fares is time of day or peak/off-peak pricing. Time of day pricing enables transit agencies to charge higher fares when there is higher demand and less capacity. Time of day pricing, though, can complicate fare payment. Some transit agencies determine pricing based on the trip (most common for commuter rail systems with specific train times with longer headways). Others determine pricing based on time of boarding/fare payment (most common for bus, light rail, or heavy rail systems with shorter headways).

In recent years, transit agencies have been simplifying their fare structures and flattening and/or migrating away from distance-based fares or time-of-day pricing. The simplification has been in part to make it easier to implement fare collection practices and policies as transit agencies introduce new fare collection technologies. Transit agencies have also been interested in making it easy for new riders to understand how to use transit by simplifying their fare structures, and distance-based fares and time-of-day pricing tend to cause confusion for new riders.

There has also been growing concern about the suburbanization of poverty and the impact of using distance-based pricing as lower income households are pushed to outer parts of a region. While historically lower income riders have tended to make shorter distance trips, with the suburbanization of poverty, lower income riders may need to make longer distance trips as they no longer can afford to live near city or regional centers due to rising housing costs. The implications of the suburbanization of poverty are yet to be borne out with data on the average trip length of riders, but it is an important consideration as the introduction of distance-based pricing is

being evaluated, especially in a region like TheRide’s service area where Ann Arbor’s housing prices and cost of living have been on the rise; according to Zillow, an online home value tracking service, housing prices in Ann Arbor rose 11.8% over the past year and are expected to rise an additional 7.9% within the next year.

As part of the trend towards fare simplification, transit agencies have been evaluating the use of service-based fare structures (similar to the structure currently used by Ann Arbor) instead of distance-based fares. In Denver, CO, as part of its fare simplification in 2016, RTD flattened its rail zone structure from three zones down to two zones and simplified from three service-based fares (local, express, regional) to two service-based fares (local, regional). RTD also discontinued the use of distance-based fares on buses. Prior to the fare simplification, riders traveling on longer distance services such as its regional bus routes could pay a local or an express fare based on the distance of their trip. Generally, most riders were paying the regional fare. However, by no longer enabling the rider to downgrade their fare to a local or express fare, this policy change resulted in a fare increase for some riders.

Transit agencies have also streamlined their service-based fares. Santa Clara VTA in the San Francisco Bay Area, CA eliminated its community bus as a specific fare type. VTA had established a lower fare for its community bus routes at inception for two basic reasons:

- (1) The routes were serviced by cutaway vehicles which were significantly cheaper to acquire and operate, and
- (2) Bus Operators assigned to community bus routes were paid less than Bus Operators assigned to regular routes.

These cost differentials no longer exist since VTA operates diesel hybrid transit buses on community bus routes, and bus operators are paid the same wages regardless of the route they operate. In addition, with the planned service redesign for 2019, community bus will no longer be included as a service category. As a result, as part of the 2018 fare change VTA discontinued community bus as a specific fare type.

Possibly one of the most significant fare simplifications that is currently planned is in Seattle, WA. King County Metro as part of its 2018 fare change will be eliminating its zone-based and time of day pricing, instead replacing it with flat fare pricing as shown below.

Rider Category	Current Pricing until July 1, 2018			New Pricing effective July 1, 2018
	All Zones, Off-Peak	1-Zone, Peak	2-Zone, Peak	
Adults (19-64)	\$2.50	\$2.75	\$3.25	\$2.75
Youth (6-18)	\$1.50			\$1.50
ORCA LYFT (low income)				
Senior/Disabled	\$1.00			\$1.00

In addition to fare simplification, the fare change is expected to result in a slight increase in fare revenue while reducing fares for riders who are needing to move south of the Seattle city limits in search of affordable housing. Nonetheless, Adult off-peak riders will see a \$0.25 increase. However, the majority (65%) of Metro riders will see no change in fares or a \$0.50 fare decrease. Fares for midday and late-night riders will increase \$0.25.

In Pittsburgh, PA, PAT underwent a similar flattening of its fare structure as part of its 2017 fare change. It changed its \$2.50 fare for shorter rides and \$3.75 fare for longer riders to a flat \$2.75 fare. As part of the fare change, PAT also introduced a stored value discount and charges \$2.50 for riders using its ConnectCard, effectively offsetting any fare increase on these shorter rides. Though the agency had anticipated a fare revenue loss as part of the fare change as about 26% of riders had their fare reduced, they had also expected a long-term payoff through increased ridership and a reduction in staff needed to count cash. The revenue loss experienced has been less than anticipated, and this has in part been attributed to a reduction in fare evasion due to the simplification. One reason fare evasion could be down is that when the agency switched to a flat fare, it also forced all passengers to enter at the front of the bus and pay upon boarding. Previously, PAT used a confusing system that allowed passengers to enter through any door and pay when entering or leaving depending on the time of day, so some passengers may have entered and exited rear doors without paying.

Again, like the standardization of discounts, fare structure simplification is an agency-specific consideration and depends on the characteristics of an agency's service area and service design. When considering the tradeoffs between fare simplification and differentiated pricing (e.g., distance-based or time of day pricing), it is important consider a variety of factors:

- Revenue impacts of discontinuing differentiated pricing
- System design and service standards
- Impact of increased demand on capacity during the peak
- Differences in the average trip lengths and value of service being consumed
- Implications of fare changes to offset the flattening of fares and their equity impacts
- Alternative strategies to differentiate pricing that accomplish similar outcomes (e.g., service-based fares in lieu of distance-based)

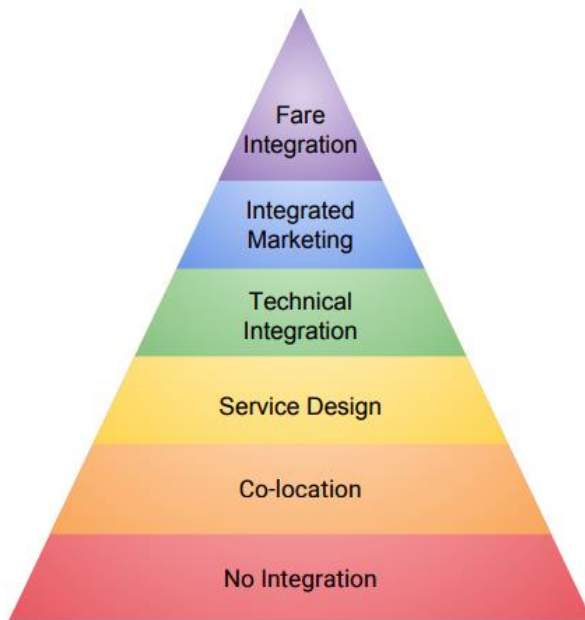
### 3.7 Multimodal Fare Integration

There has been growing interest in multimodal fare integration with the rise of mobility-as-a-service (MaaS) programs. MaaS describes a shift away from personally-owned modes of transportation and towards mobility solutions that are consumed instead as a service. MaaS is the integration of various forms of transport services into a single mobility service accessible on demand, typically including a diverse menu of transport options (transit, bikeshare, carshare, rideshare, taxis, etc.).

TheRide in Ann Arbor has the potential to integrate its services with the local Arbor Bike bikeshare program, if desired. Integration can take place at a variety of levels, from less complex to more complex, as illustrated in the graphic below:



# Types of Transit Integration



Indicators	Intervention
Bikeshare access to stored cash value on transit smart card; bikeshare/transit cost-sharing	Use transit payment infrastructure to expand bikeshare accessibility and equity
Ride credit for transit users; cross-promotion of services	Incentivize bikeshare adoption by current transit users
Single access card; open data feed	Increase discoverability, access for current transit users
Pay-as-you-go pricing; 24/7/365 availability	Design services to be intelligible to transit user
Bikeshare proximate to premium transit infrastructure	Expand bikeshare density in catchment area of freq. transit
Sparse bikeshare system; infrequent transit network	Increase frequency of mass transit

(Source: <https://nacto.org/wp-content/uploads/2018/01/NACTO-Transit-Integration-Slide-Deck.pdf>)

Any integration at the service design level or above will require the development of new policy. Any integration at the technical level or above will require the implementation of both new policy and new technology. Any of the strategies depicted above should be accompanied by public outreach and education efforts to let riders know about the integration between transit and bikeshare.

Numerous cities have chosen to integrate their transit and bikeshare services at varying levels of intensity.

- In late 2017, Pittsburgh, PA became the first city in the U.S. to offer free bikeshare access to regular transit users. Transit riders who have a ConnectCard, Pittsburgh’s RFID-based smart card, can take unlimited bikeshare trips of 15 minutes or less. This integration was enabled by the fact that both the bikeshare and the transit system use RFID cards to access their systems. According to the Executive Director of Healthy Rides (the name of Pittsburgh’s bikeshare program), the first time a ConnectCard holder wants to use the bikeshare system they must tap their smart card at a bikeshare kiosk, input their phone number, and then use the PIN number texted to their phone to verify their access to the bike. This action formally links the individual’s ConnectCard to Healthy Bikes. On all subsequent trips, the user simply has to tap their smart card on the desired bike. If someone wants to use a bike for longer than 15 minutes, they must formally register with Healthy Bikes.
- In Los Angeles, CA, Metro administers both the city’s transit and bikeshare systems. As such, Metro has moved to integrate the two systems by allowing customers to register their TAP smart card online at Metro’s website, enabling the rider to use Metro bikes in addition to Metro buses and rail with the same card.

- In Milwaukee, WI, MCTS and Bulbr Bikes bikeshare do not operate with the same fare payment technology. Thus, Milwaukee’s solution for integration of their transit and bikeshare systems consists of placing a special Bulbr Bikes sticker onto MCTS fare cards that allows for connection to both systems. Thus, while the systems are not actually connected on the back-end in any way, the rider can use the same card to access both systems. MCTS has also begun announcing onboard information about nearby Bulbr Bike stations along with their typical route and stop information announcements. This public outreach strategy builds on locational integration; 80% of Bulbr Bike stations overlap with transit routes.

## 3.8 Regional Fare Integration

For regions with more than one transit agency, regional fare integration allows riders to transfer between modes and/or agencies more seamlessly. Peers have developed programs to manage fare integration through fare payment media or fare products. Regional fare integration can enable either interagency fare policy agreements (e.g., Seattle, WA, Los Angeles, CA) or regional fare collection technology (e.g., Chicago, IL, San Francisco Bay Area, CA). Regional fare integration can also result in transparent service delivery (e.g., Phoenix, AZ, San Diego, CA). In addition to service coordination, regional fare integration can be important in providing a completely seamless experience for riders.

### 3.8.1 Interagency Fare Policy Agreements

Interagency fare policy agreements can be complex as each agency generally sets their own fare policies. There are also challenges to minimizing the revenue impact associated with revenue sharing of interagency fare product revenue. In the San Francisco Bay Area, CA, efforts to improve regional fare policy coordination and create a regional pass have failed in part due to an inability to sufficiently address agencies’ concerns about potential revenue loss. However, in regions with strong political pressure and will, regional fare policy integration has occurred.

Transit agencies in the four counties in the Seattle, WA area successfully implemented a regionally-coordinated “uniform, single-ticket fare system” among local and regional transit providers. The process began at the staff level with a working group that defined the issues facing implementation of a regional pass. They also convened meetings with local elected officials on their Boards to get agreement on acceptable provisions for a regional pass. The risk of revenue loss was a key point, and was resolved when Sound Transit agreed to provide funding for a Fare Integration Fund to keep agencies whole with respect to fare revenue. In 1999, the agencies jointly developed a regional pass program (PugetPass) that provides access for transit users to all of the region’s agencies. While each agency maintains the ability to set their own fares, the agencies all agreed to denominate their fares in \$0.25 increments and to price monthly passes at 36 times the cash fare. For example, the monthly pass valid on Metro’s 1-zone service costs \$99 ( $\$2.75 \times 36$ ) and is also valid on any other services with fares of \$2.75 or less. Riders using that pass to board Metro’s \$3.25 2-zone service must pay a \$0.50 upgrade fee, or must pay a \$1.25 upgrade to purchase Sound Transit’s \$4.00 light rail fare from downtown Seattle to SeaTac Airport. In addition to the PugetPass, the participating transit agencies allow free interagency transfers with use of ORCA, the local smart card system. A regional agreement provides for sharing revenues among the participating agencies based on the actual use of each pass sold. Prior to ORCA implementation, revenue sharing was based on results of annual rider surveys. With the introduction of ORCA, the regional pass migrated to ORCA, and ORCA data have been used for revenue allocation since 2011. The revenue sharing formula was

explicitly developed to provide free transfers across agencies, ensure fair revenue distribution, and prevent cross subsidies. By encouraging the operating agencies to work together and think through the passenger experience, one of the benefits of the program has been to build better working relationships and trust among the participating agencies. Those relationships are maintained today as the region moves toward designing fare policies and procuring the Next Generation ORCA fare system, a new account based contactless fare system that will include both smart cards and mobile devices at launch and could expand to include other media.

In Los Angeles County, CA, a similar pass program (EZ Transit Pass) has been created, but the program is generally more expensive than an agency-specific pass, so adoption is relatively low. Transit agencies also offer interagency transfers, which are more commonly used. Due to how operations funding was allocated in the region based on the base fare, transit agencies in LA County tend to charge \$0.50 for interagency transfers in order to maintain a low base fare. Since each transit agency sets its own fares and the fare including a transfer is not based on the higher of the two fares, the cost of a trip that requires multiple agencies will vary by direction of travel (e.g., a Foothill Transit to LA Metro trip costs \$1.50 + \$0.50, whereas a LA Metro to Foothill Transit trip costs \$1.75 + \$0.50).

Interagency fare policy agreements can be relatively simple and result in standardization of rider category discounts (e.g., same senior or youth age threshold) or result in transit agencies simply accepting each others' fare products. The acceptance of each others' fare products becomes complicated as transit agencies migrate to electronic fare payment methods and connecting transit agencies may not have compatible fare collection technology. For example, the magnetic stripe passes used on TheRide cannot be read by WAVE since WAVE does not have compatible Odyssey fareboxes and instead uses drop boxes.

### 3.8.2 Regional Fare Collection Technology

Transit agencies with integrated fare policy agreements and sophisticated revenue sharing, such as those in the Puget Sound region of Washington, have used fare collection technology to better enable interagency transfers and products and thus provide a more seamless experience for riders while also providing the data needed for revenue allocation. With the introduction of magstripe tickets, smart cards, and mobile ticketing, both fare collection and data collection have become easier and more accurate, making it possible to rely on data from the fare system to report ridership and to allocate fare revenues by mode and agency. Prior to the introduction of electronic fare collection, transit agencies used paper passes and transfers as well as on-board tallies at the farebox, rider surveys, passenger counts, or ticket sales data to allocate ridership and revenue to modes or agencies.

Regions without regional integrated fare policy agreements have also used technology to improve riders' experiences transferring between agencies. These regions have at times launched regional fare collection systems (e.g., Chicago, IL, San Francisco Bay Area, CA) while others have launched with technology integration between agencies in the same region (e.g., St. Louis, MO).

In 2011, Illinois Governor Quinn signed into law Public Act 97-0085, amending the Regional Transportation Authority (RTA)<sup>1</sup> Act to encourage the increased use of technology to enhance the customer experience and

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<sup>1</sup> The Regional Transportation Authority (RTA) is the financial and oversight body for the three transit agencies in northeastern Illinois.

increase transit ridership. One requirement of the legislation was for RTA to develop an enhanced interagency transfer policy by January 1, 2013. While there continues to be no comprehensive regional fare policy regarding interagency transfers and/or fare products, the three transit agencies in the region have a variety of interagency fare products, mostly between CTA, the transit provider in Chicago, and Pace, the suburban transit provider, with add-on passes for the commuter rail provider, Metra. Ongoing challenges in the region include (1) addressing potential revenue loss associated with introducing new interagency fare policies and products, and (2) technology given that Metra is an ungated rail system without card readers onboard or on the station platforms that can accept smart card fare payments. As a result, as the integrated regional fare payment system was implemented, Metra's fare collection integration has been limited to mobile ticketing using the Ventra App, which is integrated with the smart card back office.

In the San Francisco Bay Area, CA, pursuant to Metropolitan Transportation Commission (MTC)<sup>2</sup> Resolution No. 3866, MTC is mandated by Section 66516 of the California Government Code to promote the coordination of fares between transit agencies within its jurisdiction, effective 1997. Regional fare coordination has been explored in 2008 as part of the Integrated Fare Study led by SFMTA and more recently in 2013 as part of a purview of the C2 Fare Coordination Subcommittee for the next generation Clipper smart card. The 2008 study was conducted in response to Regional Measure 2 (2004), which raised the toll on State-owned bridges in the Bay Area to fund congestion relief projects, including planning for better transit connections. RM2 required the TransLink (now Clipper) Consortium to develop a plan for an integrated fare program covering regional rapid transit trips – specifically by making travel easier for transit riders “whose regular commute involves multizonal travel and may involve two or more operators.” As such, the study focused on commute trips that involved two or more operators. The study was constrained by the Consortium's requirement that any recommendations had to be revenue neutral to the transit agencies. Since they could not use fares to attract riders, and since RM2 made increasing transit ridership a goal for the study, the study concluded that investments in marketing, promotions, service, and service connectivity improvements would probably attract additional transit riders more effectively than revenue neutral fare integration. Similar obstacles emerged in the recent planning for C2. However, some gains in regional fare coordination were made with transit agencies migrating to consistent age thresholds for youth and seniors.

In the St. Louis region, there are several transit agencies. As Bi-State Development, which operates St. Louis Metro, designed and procured a new smart card system, they intentionally made it open to the region. This was accomplished by procuring the back office and the field equipment separately. The back office vendor (Indra) was required to deliver a set of Application Programming Interfaces, or APIs, that allow other vendors' field equipment to communicate with the smart card back office. In a later procurement, Bi-State engaged Scheidt and Bachmann to install fareboxes that included smart card readers on their fleet. Scheidt and Bachmann used the APIs to receive configuration data from and send transaction data to the Indra back office. This architecture allows other regional agencies to procure their own on-vehicle devices and integrate them with the Indra regional back office. Madison County Transit has done this and accepts the regional smart card on their buses.

A similar architecture is being deployed in the Puget Sound region for the next generation of their One Regional Card for All (ORCA) regional smart card. The back office vendor will provide a series of APIs for querying the

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<sup>2</sup> The Metropolitan Transportation Commission (MTC) is the transportation planning, financing and coordinating agency for the nine-county San Francisco Bay Area.

regional smart card system and posting transactions. When the system rolls out, one of the seven regional agencies will use different field equipment from the others. Going forward, if any of the agencies want to change field equipment, they will be able to do so independently.

### 3.8.3 Regional Fare Integration

In Phoenix, AZ and San Diego, CA, local/municipal transit providers have come together to develop common fare structures and pricing, but have also taken fare coordination to the next step to achieve regional fare integration. Valley Metro in Phoenix and MTS in San Diego are umbrella agencies that give transit services operated or funded by different jurisdictions the appearance to the public of a single regional operation, with common logos and vehicle paint schemes as well as fares. In both regions, fares are structured by service type, but not by operating or funding agency. In both cases, consolidated governance structures have been created to plan and deliver transit services based on the German “Verkehrsverbund” transport federation concept.

In Phoenix, the Regional Public Transportation Authority (RPTA)<sup>3</sup> was formed in 1985. Several jurisdictions are involved in the facilitation of transit services with three primary providers that contract for fixed route transit service in the Phoenix area: the RPTA, the City of Phoenix, and the City of Tempe. Jurisdictions enter into intergovernmental agreements with the transit providers for service. Transit providers buy and sell service by revenue mile in order to compensate for cross-jurisdictional issues. In 1993, the Phoenix transit agencies voted on a unifying name for transit within the region, Valley Metro. This set into motion a unification of regional transportation decision-making and coordination as well as a unification of the fare structures. The RPTA Board of Directors and the City of Phoenix City Council set and approve fare changes for the region’s transit service; the fare structure is shared throughout the region. The City of Phoenix handles all of the fare media transactions, and transit operators collect cash fares. The City of Phoenix allocates fare revenue based on boarding locations by leveraging the sophisticated fareboxes onboard the transit vehicles; these fareboxes are able to produce data that enables the correct allocation of fare revenue to the multiple sponsors of the service.

In San Diego County, further consolidation occurred in 2003 when the State Legislature, citing the “imperative need” for coordinated and comprehensive planning and implementation of transportation projects, mandated the consolidation of activities performed by SANDAG (the regional transportation planning agency), MTS, and NCTD (the agency that provides transit services in the northern part of the county and operates commuter rail service between the NCTD and MTS service areas). As a result, SANDAG was assigned responsibilities for all transportation planning, funding allocation, project development, and construction in the county. MTS and NCTD retained responsibility for service planning and delivery – and for participating in the Regional Fare Structure Working Group to review the comprehensive fare ordinance each year during the annual budget

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<sup>3</sup> The Regional Public Transportation Authority (RPTA) was formed in 1985 as the result of Proposition 300 in which Phoenix-area voters approved a one-half percent sales tax increase for expansion of the local freeway system and expansion of mass transit. In the 1980s and early 1990s, the region had a fragmented transit system, with the majority of transit service provided by the City of Phoenix (Phoenix Transit System). The cities of Mesa and Scottsdale implemented their own services starting in 1990. The jurisdictions in the county wanted more transit services for their respective cities. Many purchased transportation service from the Phoenix Transit System; however, the municipalities preferred not to use the Phoenix Transit System brand within their jurisdiction. The region’s municipalities worked with RPTA to create a regional brand. The City of Phoenix and the surrounding municipalities agreed to the regional branding of the vehicles. The Valley Metro Board member agencies include Avondale, Buckeye, Chandler, El Mirage, Gilbert, Glendale, Goodyear, Maricopa County, Mesa, Peoria, Phoenix, Scottsdale, Surprise, Tempe, Tolleson and Wickenburg.

process and to propose changes to SANDAG's Comprehensive Fare Ordinance. The Fare Ordinance is consistent with SANDAG Board Policy No. 029, Regional Fare Policy, which provides the regional framework for transit fares including a uniform fare structure, transfer policy, and agreement for revenue sharing of regional fare products. SANDAG sets annual farebox recovery targets for each service; transit agency boards review and provide input on proposed changes to the fare ordinance and solicit public input.

### 3.9 Strategies for Regular Fare Reviews & Changes

Historically, transit agencies have found it difficult to increase fares, and many have avoided fare changes as long as possible. However, as a matter of good business practice, transit agencies should review fares regularly to plan for fare changes necessary to ensure that fare revenues achieve agency objectives.

Some transit agencies have adopted policies that are intended to facilitate regular reviews of fares (e.g., Santa Clara VTA in San Francisco Bay Area, CA requires a review every two years as part of its Biennial Budget) or that are intended to establish a program of regular fare increases (e.g., UTA in Salt Lake City, UT, RTD in Denver, CO). These policies are often tied to specific goals, such as increasing the farebox recovery ratio or increasing fares to keep pace with an index such as the Consumer Price Index (CPI). UTA, for example, adjusts fares on a regular basis in response to changes in fuel prices. RTD's Strategic Business Plan assumes a 10% fare revenue increase every three years to offset operating expense increases. A growing number of transit agencies who have deferred fare increases (e.g., Foothill Transit in Los Angeles, CA, Santa Clara VTA in San Francisco Bay Area, CA) have been implementing phased fare increases to minimize the fare increase in any given year. Policies such as these help to manage customer expectations, provide a policy basis for staff review and recommendation and Board action, avoid large infrequent fare increases, and provide a more sustainable approach to financial management.

A very short list of agencies that have adopted fare review policies includes Sacramento RT in CA, Champaign-Urbana Mass Transit District in IL, Valley Metro in Phoenix, AZ, and the WETA in the San Francisco Bay Area, CA. While these agencies are diverse, they are all committed to sound and sustainable business practices. The following is an example of a policy regarding fare reviews that was developed with one of these agencies:

#### **Fare Review Policy**

**Purpose:** The purpose of the fare review policy is to ensure a fair and reasonable relationship between the cost of service provided and the fare charged for such services.

**Policy:** The agency will review transit fares annually to ensure that they reasonably reflect the cost of services provided.

**Objective:** It is the agency's objective to schedule and adopt regular fare adjustments as part of its long term financial plan. Fare changes will be targeted to achieve specific farebox recovery objectives, to ensure that the agency is able to maintain and improve the services its operates.

**Procedures:** The agency will review its fare policy annually. The following procedures will be followed in implementing the fare review policy:

- Agency management will prepare and submit a report to the Board assessing fares relative to inflation, peers, operating cost recovery, financial need, and other relevant considerations as part of the annual budget process.
- Agency management will recommend changes to, or continuance of, the existing fare structure and pricing based on their analysis. Any price change will consider standing fare pricing policies (e.g., all base fares are rounded to the nearest \$0.25; all pass prices are rounded to the nearest \$1.00), payment strategies, impact on operations, and expected impacts on ridership and fare revenue.
- No Board action shall be required unless a change to the adopted fare structure is recommended.
- If a multi-year fare change is recommended, a public hearing shall be provided as part of the initial adoption. An opportunity for public comments shall be provided prior to each fare change during the multi-year fare policy period.
- Adopted fare changes shall take effect automatically, without further Board action, unless the Board takes action to adopt an alternative change or makes a decision not to implement the previously adopted fare change.

## 4 Community Engagement

Community engagement was conducted to obtain public feedback from riders and non-riders on fares and fare technologies. Community engagement included:

- Rider intercept surveys
  - Tuesday, April 3rd 2018 from 10:30am-1:00pm at the Central Campus Transit Center
  - Wednesday, April 4th 2018 from 2:30pm-5:00pm at the Ypsilanti Transit Center
  - Thursday, April 5th 2018 from 2:30pm-5:00pm at the Blake Transit Center
- Online rider survey
- Non-rider intercept surveys
  - Tuesday, April 3rd 2018 from 10:30am-1:00pm at the Central Campus Transit Center
- Online non-rider survey

The surveys were conducted to explore both riders' and non-riders' behaviors and opinions about TheRide, TheRide's fares, and potential future fare collection technologies. The survey was distributed electronically and as a hard copy. The online survey was open for approximately 4 weeks (surveys were collected from March 26, 2018 through April 23, 2018). AAATA posted a link to the survey on its website and advertised the survey through its email and social media channels. Members of the AAATA and Four Nines' teams also canvassed AAATA's three main transit centers: Central Campus Transit Center, Blake Transit Center, and Ypsilanti Transit Center. The canvassing involved walking around with paper surveys for periods of two and a half hours each and asking people to fill out the surveys themselves or helping people go through them. In total, through online and paper surveys, 343 responses were collected including 25 non-rider responses and 318 rider responses. Copies of the surveys are included as Appendix C (rider survey) and Appendix D (non-rider survey).

Readers who would like to know more information on the sociodemographic characteristics of respondents to the Fare Study survey, including how those characteristics compare to TheRide's 2017 onboard survey



respondents, should reference *Technical Memo #3: Summary of Participants' Comments* provided to TheRide as part of this Fare Study.

## 4.1 Non-Riders

Non-rider surveys represent a small share of the overall surveys collected (7%). Of those, former riders comprise 36% of the responses.

When respondents were asked about why they did not use TheRide, common responses included:

- Preference to drive or carpool
- Schedule does not meet travel needs (too infrequent, not early/late enough)
- Service doesn't take them where they need to go
- Lack of understanding of how to use the service

When asked open ended questions about what would encourage them to ride, common responses included:

- More locations convenient to where respondent needs to go
- Knowing more about TheRide, where it goes, and how to navigate the system
- More frequent service

From the results above, it seems most individuals who do not use TheRide cite service considerations as opposed to fare considerations as their reason for not riding. It is possible that changes to the fare system could help with some of the concerns listed above though. For instance, fare structure simplification or new fare payment technologies could help people better understand TheRide's services and how to navigate them.

## 4.2 Riders

Most survey respondents are current users of TheRide; the vast majority of surveys collected (93%) were from current riders. It should be noted that the rider survey does not constitute a representative sample of TheRide's customers, though the number of respondents was relatively high. Instead, the survey results presented here should be thought of as providing anecdotal evidence of riders' behaviors and opinions as they relate to fares.

Most respondents to the rider survey use the Local Bus (73%). A sizable number of respondents also indicated that they use GroceryRide (10%) and/or NightRide (12%).

### 4.2.1 Current State of Fare Payment

#### *Fare Payment & Ridership Frequency*

The table below illustrates a breakdown of survey respondents by ridership frequency and most common form of payment:

Frequency	Cash Fare and/or Transfer	30-Day Pass	ARide or GoldRide ID	MCard	Token	Other	Overall
Less than	4%	0%	2%	4%	2%	0%	<b>12%</b>



1x/week							
1-3 days per week	9%	2%	2%	7%	0.5%	2.5%	<b>23%</b>
4-5 days per week	13%	3%	2%	17%	0%	5%	<b>40%</b>
6-7 days per week	10%	5%	2%	3%	0.5%	4.5%	<b>25%</b>
<b>Overall</b>	<b>36%</b>	<b>10%</b>	<b>8%</b>	<b>31%</b>	<b>3%</b>	<b>12%</b>	<b>100%</b>

In terms of payment type, people who pay with a cash fare and/or transfer constituted the largest percentage of respondents at 36%. MCard followed closely behind as a payment method at 31% of respondents. These response rates generally align with actual fare usage: in 2017, people who paid with a cash fare and/or transfer constituted 27% of boardings, while MCard usage constituted 39% of boardings. Both of these payment types had the highest percentage of their users as people who use TheRide’s services 4-5 days per week. Unsurprisingly, 30-Day Pass users (10% of overall responses) were most commonly people who use TheRide 6-7 days per week. ARide and GoldRide customers (8% of overall responses) were spread equally among ridership frequency categories. Tokens came in as the least frequent method of payment (3% of overall responses) that was still large enough to separate into its own category. All other forms of payment were added to the “Other” category.

*Reasons for Liking Current Fare Payment Options*

Reason for liking current fare payment	% of riders who selected option
Fares are easy to understand	31%
Use a pass from my employer, school, or college that makes it easy for me to ride	30%
Fares are reasonably priced	28%
Can board and pay quickly	28%
Can pay with cash when boarding	21%
Ride for free with ARide or GoldRide card	10%
504 reasons selected by 343 survey takers	

TheRide’s customers like a number of aspects of the current fare payment options. People seem to find the fares easy to understand and well-priced. A significant proportion of respondents use an employer, school, or college pass that they feel makes it easy to take TheRide. Other respondents also indicated that their fare media of choice allowed them to board and pay quickly. The ability to pay with cash was of slightly less importance than the other aspects mentioned above.

### Reasons for Not Liking Current Fare Payment Options

Reason for not liking current fare payment	% of riders who selected option
Don't like carrying cash	22%
Want easier way to pre-pay for trip	13%
Don't like having to ask for transfer	10%
Fares are too high	9%
Have trouble using the farebox	6%
Hard to understand how to qualify for discount fare	5%
Fares are difficult to understand	2%
230 reasons selected by 343 survey takers	

People’s most common complaint regarding the current fare payment system is the perception that they must carry cash in order to board. While pre-pay options are available that accept payment forms other than cash, these findings may indicate that those options do not provide the same flexibility or on-demand ability as paying with cash upon boarding. Hence, the rider would still feel the need to carry cash for last-minute or unexpected rides. This is further supported by the number of individuals responding that they would like an easier way to pre-pay for their trip. Some respondents do not like having to ask for a transfer or believe that fares are too high, but these are of less importance than the cash element. An even smaller number of survey respondents indicated that they have trouble using the farebox when boarding (e.g., bills aren’t accepted, change cards or transfers aren’t read), have difficulty understanding how to qualify for a discount fare, or do not understand fares generally.

### Discount Fare Eligible Individuals

Discount Fare Type	Aggregate % of respondents by discount fare type	Specific Discount Fare Category	% of respondents by specific discount fare category
Half-Fare Discount on Fixed Route	24%	FareDeal - Low Income	12%
		FareDeal - Disability non-ADA eligible	3%
		FareDeal - Individuals ages 60-64	1%
		Youth (K-12 Student)	8%
Free Fare on Fixed Route	14%	GoldRide (Senior 65+)	7%
		A-Ride (ADA paratransit eligible)	7%

Survey respondents were asked to indicate if they are eligible for any of the free or discount fares that TheRide offers to its customers. The results of that question are contained in the table above. About a quarter of the individuals who took the survey are eligible to ride on fixed route services at a 50% discount either by purchasing a reduced fare single-ride trip or a reduced fare 30-Day Pass. Another 14% of individuals who took

the survey can ride fixed route services for free with either their ARide or GoldRide pass. This brings the percentage of Fare Study survey respondents who receive a discount to 38%.

This proportion of discount fare riders differs from the 19% of riders found to use a discount card in TheRide's 2017 onboard survey, meaning the discount rider population was likely oversampled in the Fare Study survey. This oversampling should be kept in mind when interpreting the results contained within this document.

Regardless, it will be important to keep the special needs and considerations of these discount riders in mind when evaluating possible future fare payment technologies and other improvements to TheRide's fare system. More information on how to make these considerations is discussed in section 9: Equity in Transit: Processes for Evaluation.

#### 4.2.2 New Fare Payment Technologies

In addition to asking about current fare payment methods, the survey asked about people's interest in new fare payment technologies, including smartcards and mobile ticketing. When evaluating riders' responses to future fare technologies, it is important to consider not only their *willingness* to use smartcards or mobile ticketing, but also their *ability* to use these technologies. Mobile ticketing platforms usually require riders to be (1) banked so that they can purchase fares and passes online and (2) able to bring the same device with which they purchased the fare or pass onboard to show proof of payment. Smartcard system requirements, depending on the media distribution and reloading channels, can be less rigid with regards to these two requirements. Still, these rider characteristics are important to acknowledge when doing any fare collection technology planning or analysis. Thus, responses to the question of interest in future fare payment technologies categorized by access to a device with internet and access to banking services (credit/debit card, prepaid debit card, or mobile payment) are below:

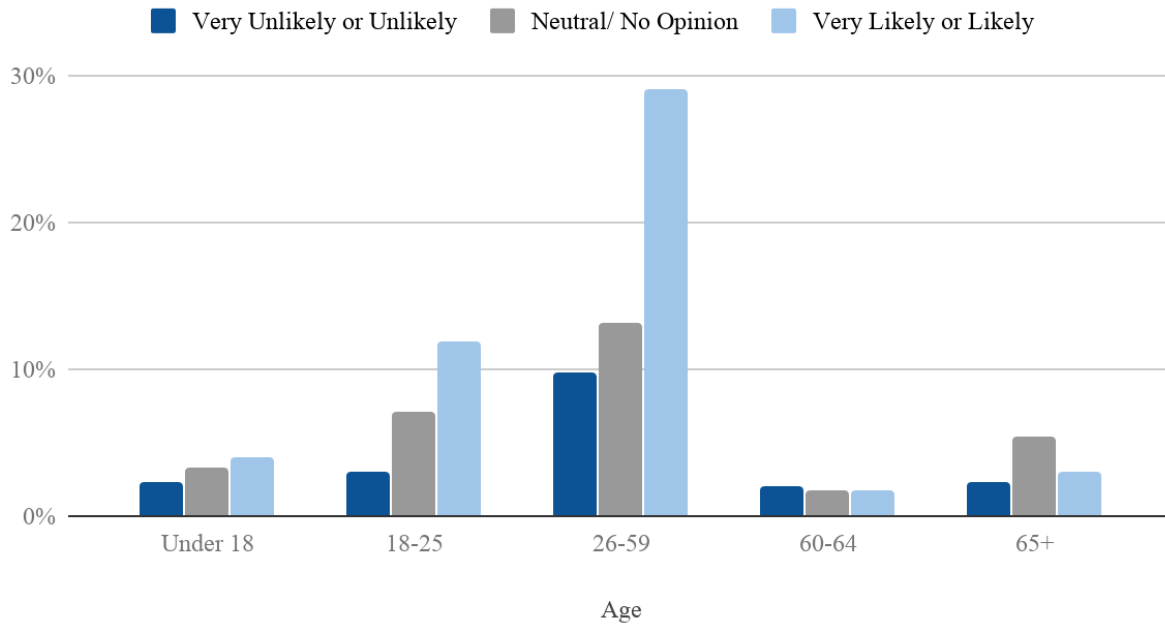
Likelihood of Using Smartcard or Mobile Ticketing	No Device w/ Internet		Yes Device w/ Internet		Totals
	No Banking	Yes Banking	No Banking	Yes Banking	
Very Unlikely or Unlikely	3%	2%	3%	12%	<b>20%</b>
Neutral/No Opinion	3%	2%	6%	16%	<b>27%</b>
Very Likely or Likely	3%	2%	7%	37%	<b>49%</b>
<b>Totals</b>	<b>9%</b>	<b>6%</b>	<b>16%</b>	<b>65%</b>	<b>100%</b>

The above table shows that the majority of rider survey respondents (65%) have access to both a mobile device with internet and banking services. The primary concern for TheRide, based on the data above, will be riders' access to banking services, not their access to a mobile device. The overwhelming majority of respondents (81%) have access to a device with internet access. A smaller majority, though, have access to banking services (71%).

The survey also showed that there is strong interest in new fare collection technologies. Almost half of riders indicated that they would either be likely or very likely to use a smartcard or mobile ticketing, while only 20% said they would be unlikely or very unlikely to do so. The remainder of survey respondents indicated that they felt neutral about the question or had no opinion.

### 4.2.3 Age & Interest in New Fare Payment Technologies

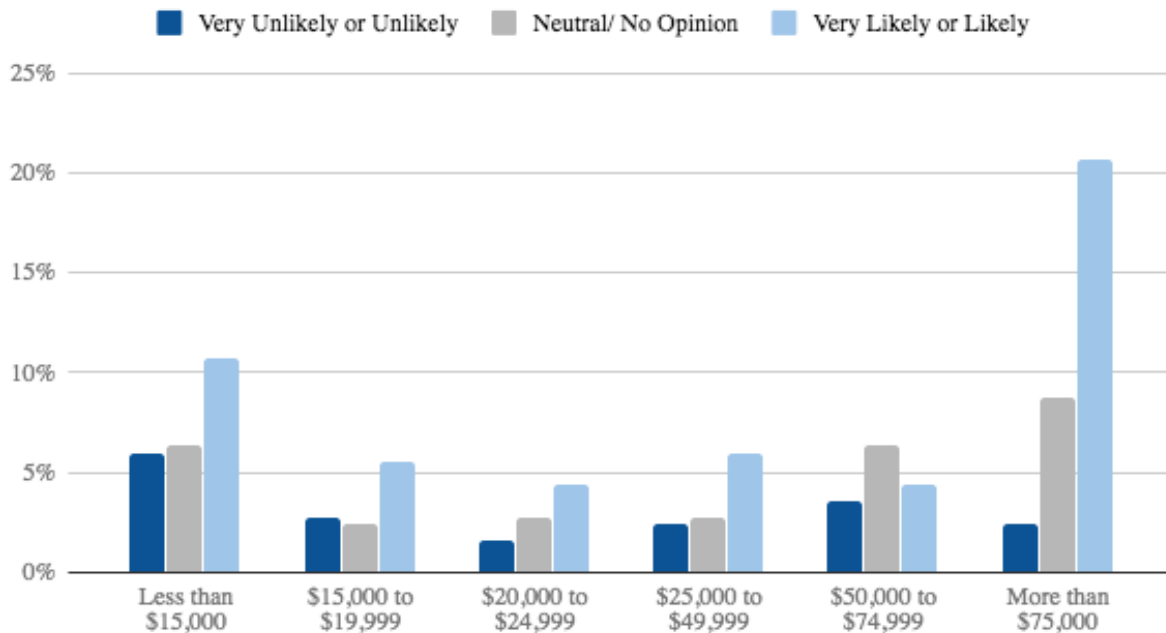
#### Likelihood of Using New Fare Collection Technologies by Age



The majority of respondents ages 18-25 and 26-59 are likely or very likely to use the new fare collection technologies presented to them in the survey. While the margins were slimmer, the number of respondents in the Under 18 and 65+ age categories who stated they would be likely or very likely to use the new technologies outweighed the number who said they would be unlikely or very unlikely to use them. Only the 60-64 age group had a higher number of respondents who indicated they would be unlikely or very unlikely versus likely or very likely to use smartcards or mobile ticketing. According to these results, the majority of ages using TheRide would be willing to consider new fare payment technologies.

#### 4.2.4 Income & Interest in New Fare Payment Technologies

### Likelihood of Using New Fare Collection Technologies by Income



All income brackets expressed a higher response rate for likely or very likely to use new fare payment technologies as compared to unlikely or very unlikely. Only the respondents in one income bracket, those whose households earn \$50,000 to \$74,999 per year, had neutral or no opinion as the most frequent answers. These findings seem to indicate that smartcards and mobile ticketing would be attractive to riders across the income spectrum.

#### 4.2.5 Mobile Ticketing versus Smartcards

Preferred new fare payment technology	% of respondents
Mobile ticketing	38%
Smartcards	62%

When asked which technology, mobile ticketing or smartcards, TheRide’s customers would choose to use, survey respondents selected smartcards almost  $\frac{2}{3}$  of the time. During survey distribution, some riders responded verbally that they would use either technology, but the way the question was structured forced respondents to choose only one technology. By forcing respondents to choose, TheRide has data on riders’ preferences that it can reference if the agency is forced to choose only one technology due to financial constraints.

### 4.2.6 Reasons for Liking New Fare Payment Technologies

Reason for liking mobile ticketing and/or smartcards	
Don't need cash	39%
Like technology	33%
Can board more easily	30%
Can reload value to account automatically	30%
Can purchase fare from anywhere	29%
Like using smartphone	24%
Saves time since don't need to go to a retailer	19%
Protected from loss & theft	18%
760 reasons selected by 343 survey takers	

Among all respondents, 760 reasons for liking new fare payment technologies were selected. The table above illustrates what percentage of survey responses chose each option. Note that since respondents were allowed to choose more than one reason, the percentage values may not sum to 100. Not needing cash was the most common reason for liking new fare payment technology options. In order of decreasing selection frequency, respondents also liked using technology generally, felt they could board more easily using the new technology, and liked that they could reload value to their account automatically.

### 4.2.7 Reasons for Not Liking New Fare Payment Technologies

Reasons for not liking mobile ticketing and/or smartcards	
Prefer cash	13%
Prefer current form of payment	10%
Don't want to share the necessary information	6%
No smartphone	6%
No credit/debit card	4%
Don't use TheRide	3%
Difficult to understand	3%
127 reasons selected by 343 survey takers	

Among all respondents, only 127 reasons for not liking new fare payment technologies were selected. This is far fewer responses than were selected as reasons riders did like the thought of using new fare payment technologies, which further supports the conclusion that riders are generally amenable to mobile ticketing and/or smartcards. As in the section above, percentages are presented as the percent of respondents who selected each reason.

By far the most common reason for not liking new fare payment technologies was a rider preferring their

current form of payment. However, it is unlikely that people would be forced to migrate to the new payment technologies immediately, and the migration would not affect all fare types. Thus, this response is less of a concern. To investigate this question further, though, the below table was constructed.

Individuals who Indicated Preference for Current Fare Payment over New Fare Payment Technologies		
Current Form of Payment	# of Respondents	% of Respondents
Mcard	19	56%
Cash fare and/or transfer	7	21%
ARide or GoldRide Card	5	15%
30-Day Pass	2	6%
Credit/debit card on FlexRide	1	3%

Only those forms of fare payment that appeared for respondents who indicated a preference for their current form of payment appear in the table. The majority of this segment of survey respondents swipe their MCard to board the bus. It makes sense that these riders would want to maintain an MCard as their form of payment because of its ease of use and the fact that the actual rider does not pay to board the bus when using this fare medium. The same type of logic follows for respondents who flash their ARide or GoldRide ID card to board for free. The main concern here would be the cash riders who prefer this payment method over new technologies. However, numbering just 7 respondents, this group of survey takers constitutes less than 2% of all individuals who responded to the Fare Study survey.

The next most common reason for not liking new payment technologies was a rider not wanting to share the necessary information to participate. This sentiment is not unexpected considering the current news stories surrounding misuse of user data and data breaches by a number of corporations and institutions. If TheRide does choose to move forward with mobile ticketing and/or smartcards, the agency will need to prove to riders that it will handle their data securely and appropriately. Given proper data management practices and technology provider sourcing, TheRide should be able to assuage riders' concerns about their data.

## 5 Strengths, Weaknesses, Opportunities, & Challenges

A first step in this task was to develop clear goals for TheRide's fares, taking into consideration TheRide's project objectives:

- The balance of ridership, revenue return, and community social, environmental, and economic benefits,
- Customer convenience, considering the ability of frontline staff to explain the fare structure and customers to understand it, and
- Direction for the use of technologies to improve fare collection or distribution.

After discussions with TheRide staff, four primary goals for this Fare Study were established:

1. Attractive
2. Consistent
3. Convenient

#### 4. Fair

Using those goals, and based on findings from Tasks 1, 2, and 3, we conducted an initial assessment of the strengths, weaknesses, opportunities, and challenges in TheRide's existing fare policies, fare structure, and fare collection technology. Because of limits on this study's funding and timeline, the Fare Study's scope from this point forward focuses primarily on TheRide's local fixed route, ExpressRide, GroceryRide, NightRide/HolidayRide, and FlexRide services, and thus only analyses of these services are covered in the discussions below.

Strengths, weaknesses, opportunities, and challenges are grouped by topic (e.g. fare collection technology). The ordering of the items within each category is not meant to confer any type of hierarchy of importance onto the topics listed.

## 5.1 Strengths

### 5.1.1 Fare Pricing & Policies

**TheRide's fares take into consideration riders' ability to pay.** TheRide offers free or discount fares for seniors, persons with disabilities, K-12 students, and low income riders.

**TheRide's one-way fares align with peer fare pricing.** TheRide's adult local fixed route one-way fare is in the middle of range of what peers charge (\$1.00-\$2.00). However, its 1-Day and 30-Day passes are priced higher than its peers.

**The variety of fare media provides riders with many options to pay their fares.** Fare media types include cash, tokens, magnetic stripe tickets, and more. Each of these products help to meet the needs of different rider segments.

### 5.1.2 Discount Fares

**Photos on Fare Deal, ARide, and GoldRide ID cards as well as UM MRide cards support fare enforcement.** The photos enable the bus operator to confirm that the rider is the ID holder.

### 5.1.3 Third Party Programs

**A majority of boardings are either prepaid or paid through a third-party program, helping minimize cash transactions and dwell times.** Riders who have the ability to prepay or to board using a third-party pass also expressed satisfaction with how easy these payment methods made it to board TheRide. Thus, this characteristic of TheRide's services benefits both the agency and riders.

**Third-party programs bring stability to TheRide financially and expand the reach of the agency in terms of potential riders.** TheRide has done a good job of marketing the advantages of transit benefits programs to organizations in the community, including to educational institutions and employers. These third-party programs, due to the way they are set up, make it easy for members to pay for and board TheRide's services, even if they do not have much previous experience with public transit. While third-party programs provide financial stability today, as technology evolves, it will be important to consider how new mobility options impact TheRide's competitiveness with regards to these new mobility options and third-party participation in TheRide's



pass programs.

### 5.1.4 Fare Technology

**The current data being collected on agency services meet the majority of TheRide's federally-required data reporting needs.**

### 5.1.5 Operations

**TheRide is customer-focused.** TheRide staff and operators are attentive to the needs of riders. For instance, when riders have change cards that are not being read correctly, TheRide will collect their contact information so they can address the issue.

## 5.2 Weaknesses

### 5.2.1 Fare Pricing & Policies

**There are no formal fare policies currently in place at TheRide.** The lack of fare policies means there are no formal guidelines in place to direct staff as they make decisions related to fares. Without this guidance, implementation of new services or any fare changes may appear disconnected from current practices. This disconnect increases confusion for both riders and staff and can create further issues in the future as the variety of fare implementations expands with no clear end goals.

**TheRide's fare options are complex, which can make them difficult to understand and remember.** The variety of discount fares, their eligibility restrictions, and agency-issued IDs complicate fare collection and enforcement. Bus operators are required to learn the different rider categories and fare prices as well as the variety of media used by riders, including passes and IDs. There are concerns that the number of IDs and rider categories may be overwhelming and confusing for both operators, who bear the burden of enforcing these policies, and the public.

**TheRide does not have a fare policy to address how new, innovative programs and services should interact with existing services.** There is no consistent multiplier for the pricing of fare products amongst fare products (e.g., local fixed route monthly pass priced at 38.7x the one-way fare while ExpressRide monthly pass is priced at 20x the one-way fare), nor a methodology for systematically determining the price of new services (e.g., new FlexRide service, route 81 that links the cities of Ypsilanti and Ann Arbor with express service). While there may be business reasons for establishing different pricing policies (e.g., using a different monthly pass multiple for different services), there is no documentation of the rationale behind TheRide's fare policies. Establishing a fare tariff that defines the TheRide's fare policies as well as creating a fare policy for expansion of services would help TheRide plan for the future and help simplify the fare structure to enable better rider comprehension.

**Current policies surrounding Fare Deal ID cards may make people in certain groups feel uncomfortable or disadvantaged.** Underlying this situation is a need to identify what information TheRide needs to collect to improve operations and maintain integrity in and enforceability of TheRide's ID cards. Currently, IDs include the rider's photo and full legal name. Exceptions in regards to the name printed on the card are made on a case-by-case basis for riders who may not identify with their name based on gender identification. In these cases, the first initial of the rider may be printed on the card instead of the rider's full first name.

**TheRide does not have a policy for how to price the first year of an organization's participation in a third-party pass program.** TheRide does not have data regarding current ridership levels for employees who work for employers who are interested in participating in an all-in employer program, similar to the Google's MyCommuter Card. This limits TheRide's ability to expand its third-party pass programs. If expansion of third-party payer programs are pursued, it will be important to identify a way to price the programs in a defensible way that can be explained to new potential organizations while ensuring that the price covers the program's ridership and potential associated administrative costs.

**TheRide's current Title VI policy for fare changes may not appropriately consider how fare changes affect minority or low income populations.** While TheRide conducts Title VI analysis whenever there is a fare change or when a new service is introduced, the Equity Analysis Policy updated by TheRide in 2014 includes a methodology for analyzing fare changes that may not be able to capture the cumulative effects of fare pricing changes on minority and low income populations, or the introduction of new methods of fare payment. Since the new circular, TheRide has not received input or guidance from the FTA on its Title VI policy.

**While TheRide has some service standard performance indicators, there are no metrics related to fares.** Though TheRide does monitor farebox recovery ratio trends, the agency does not have policies in place that identify how to evaluate these trends. There is a general lack of guidance for how to operationalize data or metrics for use in a decision-making process.

**Policies regarding tokens are not uniformly enforced.** There is confusion within TheRide around tokens as to whether two large tokens (half fare token) can be combined to equal a small token (full fare token). It is also unclear if a change card can be given for the value difference between the full and half fare tokens, as the answer varied among people who were asked.

**Change cards are being used for purposes beyond what they were originally intended for.** Some riders appear to pay for a single ride with a \$10 bill upon boarding, and then use the change card over the course of the week to pay for their rides. Since change cards are not written on fare media intended for extended period use, problems can arise due to the durability of the paper magnetic stripe tickets, especially when wet. Use of change cards in this way may point to a need for a 10-ride ticket or stored value ticket. However, TheRide has had challenges with coding 10-ride or stored value tickets in the past with its current fareboxes.

**Current transfer policies diminish riders' incentive to purchase a 1-Day pass.** TheRide currently offers free 90-minute one-way transfers with its cash fares. Since the 1-Day pass is priced at three times the one-way cash fare, the purchase of a 1-Day pass is only advantageous for riders who make more than three one-way trips. In 2017, only 0.1% of boardings were paid with a 1-Day pass.

**The length of time for which transfers are valid (90 minutes) may not be sufficient.** This is especially true during times of day when TheRide has lower service levels and longer headways, such as early morning and late at night as well as on the weekends.

**The current 30-Day pass price does not incentivize increased ridership.** Because a 30-day pass costs 38.7 times the price of a single-ride cash fare, few riders use TheRide often enough for it to make financial sense to buy the 30-Day pass. TheRide may be losing out on ridership since riders who purchase a 30-Day pass are more likely to continue riding the bus throughout those 30 days, since the pass represents an upfront cost that has already been paid.

**Route 81 is unique in terms of industry practices, and thus integrating these types of services into the overall fare policy in the future may require innovative thinking.** Four Nines is unaware of a comparable peer example given the unique funding structure. While in many regards Route 81 is similar to TheRide's other Express routes (e.g., service limited stops, similar end-to-end trip length, operates only during the peak), the main difference is that the service operates 100% currently within the service area. Generally, other transit agencies would price these services the same as the service characteristics; however, given the millage, unique funding structure, and the fact that there are other routes that connect Ysplianti and Ann Arbor (even though they operate as local services), it makes sense that this service is priced like other fixed route services. The challenge will be if the route extends beyond the service area in the future as it was initially proposed. In this situation, if TheRide chooses to price in-service area routes at one price and out-of-service area routes at another price, a viable option to collect the correct fare is to use a pay-upon-boarding policy for inbound trips and use a pay-on-exit policy for outbound trips. If instituted, riders in the morning would pay the fare when boarding (Express fare for out-of-service area stop; fixed route fare for in-service area stations) and then pay the applicable fare based on the stop where the rider is alighting in the evening. These types of policies are common for gated, distance-based fares but have also been implemented for zone fares. These type of policies are also used sometimes to reduce dwell times at high volume stations (e.g., transit centers). There is definitely the potential for fare evasion as riders may exit rear doors without fare payment or if a rider does not have sufficient cash to pay the fare. However, given that this policy would be implemented on a limited basis (i.e. potentially only on one route), frequent fare evaders would be relatively easy to identify.

### 5.2.2 Discount Fares

**There have been challenges with the enforcement of agency-issued ID cards, and associated ridership may not be correctly tracked.** ID cards are issued to riders who receive free or discount fares. ID cards expire and require recertification (e.g., ADA-eligibility is good for three years). Some riders have had issues with the durability of the ID cards, especially those that are valid for longer periods of time. Since these passes are used as flash passes, it can difficult for the bus operators to verify the information on the card and enforce appropriately. For free fares for ARide and GoldRide customers, since the card is not electronically verified, the bus operator must key in the rider type and may do so incorrectly, limiting the validity of the data collected.

**Expiration dates on FareDeal ID cards can result in delays at boarding.** While the expiration date on ID cards enables the bus operator to identify an ID that is no longer valid and requires the rider to be recertified, riders will try to use expired IDs with 30-Day Fare Deal passes. This leads bus operators to explain to the rider that the ID is expired. The operator many times may also explain how to renew the ID out of concern for the rider, but this can further impact dwell times.

**TheRide's in-house eligibility screening services are strained due to the high volume of applications at certain times of year.** There has generally been a huge influx of applicants for ADA and GoldRide photo ID cards at certain times of year (e.g., Ann Arbor Art Fair) since the introduction of free service for these groups on fixed-routes. Current staffing for eligibility services at these peak times may be inadequate.

### 5.2.3 Fare Technology

**The farebox TRiM units cause the most maintenance issues, especially due to the use of wet change cards.** These failures are a major source of supervisor roadcalls, and can cause operator-rider conflicts. It is estimated

that operators call in a supervisor regarding their farebox about a dozen times a day. Some of these issues are solved spontaneously on-site, but others do require a supervisor visit, which can impact the quality and speed of operations.

**Incorrect farebox key entry impacts the quality of TheRide's ridership data.** Operators use the free fare key for multiple fare types, even if there are keys dedicated to other types of situations that may be relevant. This problem seems to be most prevalent when operators experience a heavy load of passengers boarding the vehicle.

**The functional capabilities of the current farebox configuration could enable fraud.** Bus operators are taught that they can tell the farebox to accept a fare media as a dollar value of \$1, \$5, or \$10 and then issue the appropriate amount of return money onto a change card. TheRide is not aware of any current issues with this function being overused or mishandled, but there is some concern that this capability could lead to fraud.

**TheRide's current Odyssey fareboxes can only read first generation proximity cards, which have limited capabilities and may not meet TheRide's desired functionality.** Few transit agencies have used the smart card functionality of these fareboxes due to the limited functionality. The readers support only card based (not account based) smart card systems and don't have the ability to carry more than one product (e-purse plus pass, eg) or reload an e-purse. The specialized cards carry a relatively high cost per smartcard compared to other media.

## 5.3 Opportunities

### 5.3.1 Fare Pricing & Policies

**Simplify rider categories, fare products, and fare media.** Under current operations, there are many different discount groups and rider categories. There are also three ways to pay a fare - cash, token, or pass with a variety of fare media. There is a belief that this confusion extends into the website and other aspects of the rider experience as well. Part of the problem is that new products, rider categories, and fare service types have been added in an ad hoc manner without a guiding policy for how to structure new programs and pricing for new rider categories and services.

**Create well-defined fare policies that provide clear direction for the future.** These policies should address both ongoing service as well as any changes that may be implemented to services or fares.

**Review the current transfer policy that prohibits riders from using a transfer to complete a round trip.** Currently, there is a restriction on transfers so they cannot be used for roundtrips. The farebox will reject the transfer if a rider attempts to use it for this purpose on the reverse direction bus of the same route number. There was not a solid understanding behind the reason for disallowing this behavior. With the introduction of new technologies, replicating this restriction may not be cost-effective.

**Revisit the role tokens play in operations.** Using tokens requires TheRide staff to repackage the tokens by hand before they are recirculated. Presently, tokens are a primary means for social service agencies to provide transit services to their clients. As such, TheRide would need to pay special attention their relationships with social service agencies in terms of fare media provided as they evaluate tokens as a fare medium. If discontinued, it will be important to identify how these agencies can distribute one-way fares with the elimination of tokens

cost-effectively and with use of technology. When TheRide attempted to discontinue tokens without a replacement in the past, TheRide had to reverse its decision and reintroduce tokens to address the public's backlash.

**Integrate fixed route fare products with other services, including rideshare and bikeshare.** The future of Arbor Bike, the local bikeshare, is slightly uncertain, though, since TheRide will soon be seeking an operator for the remaining life on the assets until 2024. There may be opportunities for integrated fare products and/or multimodal fare subsidies. However, it will be important to not undermine the financial sustainability of TheRide's core transit services. There may also be limitations on the ability to use certain funding sources for subsidizing non-traditional public transportation.

**While there is tremendous interest in both the concept of MaaS and integration with app-based services such as Lyft and Uber, this new mobility landscape and the ways transit can integrate with it are still in the process of being defined.** There are a number of pilots, some funded by FTA's Mobility on Demand Sandbox grants, which are still under development. Researchers, Volpe, Smart Card Alliance, vendors, and others have also been exploring viable ways to deliver the integration. Some transit agencies have also been doing pilots using minimal integration (e.g., unique codes, links between apps) to test the viability of transit/ride hailing integration. There may be challenges with subsidies, however. Operating funding sources have restrictions on how the funds can be used and may not enable transit agencies to use the funds to subsidize non-shared ride services (e.g. ride hailing trips).

### 5.3.2 Discount Fares

**Review fare rider category discounts and align rider category discounts with industry standards.** Very few transit agencies offer discounts to individuals ages 60 to 64 or free rides to personal care attendants (PCAs) on fixed-route services. TheRide must consider whether the incentive to shift to fixed-route use that allowing PCAs to ride for free encourages outweighs concerns regarding potential lost fare revenue and concerns that non-PCAs may be claiming PCA status in order to ride free.

**Evaluate how rider category discounts are distributed and enforced.** Many transit agencies have been using technology to help enforce rider category discounts instead of relying on the bus operator to enforce and collect fares.

### 5.3.3 Third Party Programs

**Expand TheRide's third-party programs, especially for employers, and identify opportunities to streamline administration and invoicing.** The go!Pass and MRide programs have been successful at attracting organizations and has resulted in a large share of fares being paid through third-party payers. There has been interest to expand the goPass! concept to employers who are not located in downtown Ann Arbor. A systematic policy and technology investments could enable expansion, while also providing better options for third-party payers to self-manage their participation. If possible, TheRide would like to shift much of the management and administration of passes onto employers and businesses. There are also opportunities to explore alternative methods for invoicing, such as electronic funds transfers (EFT). The challenge in expanding third-party programs will be determining the pricing for new organizations and addressing the limitations of the level of service outside of downtown Ann Arbor.

**Though go!Pass coordinators currently tell employees that passes should be used primarily to travel to and from work, there is interest in marketing the passes as usable for all of employees' travel needs.** It is nearly impossible to monitor whether employees are using their passes primarily for work or non-work trips. However, since the DDA externally encourages businesses to frame go!Passes as an employee benefit and internally views the program as a key component of their travel demand strategy, the DDA is ok with use of the passes beyond commuting purposes. This matters since DDA subsidizes the go!Pass program, even though the agency does not do any marketing, promotion, or administration for the program. TheRide will want to confirm with the DDA that go!Passes can be used by employees for both work and non-work trips.

### 5.3.4 Fare Collection Technology

**Use new technology such as smart cards to enhance ability to track transfer rates and thus more accurately price fares and passes based on actual trip usage patterns.** This would be especially helpful to TheRide as they seek to expand their third-party pass programs and begin negotiating those contracts.

**Use new technology to enable add on pass for ExpressRide for third-party participants.** Currently, third-party payers only pay for local fixed route service. It may be worth evaluating how participants from these organizations could pay an upgrade to use ExpressRide while third-party payers contribute the local fixed route base fare to encourage ExpressRide ridership amongst these third-party participants.

**Implement technology to reduce cash transactions, attract new riders, and reduce maintenance costs.** Various departments within TheRide would like to see technological advancements at the agency. Operators would like to use technology to encourage as many riders to pre-pay as possible, to stay away from cash, and to automate as much of the boarding process as possible in order to improve relationships with riders. Administrative staff are interested in moving in a direction that can be sustained going forward financially and technologically, including in terms of its ability to engage potential riders. Maintenance staff would like to see more modern modes of fare collection explored, such as smart cards, credit cards, and QR codes and reduction in reliance on the farebox and TRiM unit.

**If new technologies considered to reduce cash onboard, expand retail network to provide access to load value for unbanked and underbanked riders.** Currently, TheRide accepts cash, check, and credit card both online and at its two main transit centers. The Bank of Ann Arbor also sells fare media in the form of full fare tokens and passes, and accepts cash or check for these items. This relationship is on a consignment basis. There is currently no retail network outside of the Bank of Ann Arbor branch locations. If smart card and/or mobile ticketing are pursued, it will be important to consider how unbanked and underbanked riders will be able to conveniently and frequently load value using cash, in order to avoid or mitigate impacts to low-income riders.

**Improve data and reporting with new fare collection policies and technologies.** IT generates a monthly report of ridership that is used to report back to the NTD and State of Michigan. Some of this information is also passed along to employers and the University of Michigan, who many times ask to see data concerning their specific ridership segments. This same data is also used to establish billing amounts for these third-party payers. Technology could provide additional ridership data (e.g., boarding and alighting location data, time of day data) to the planning team for service planning and fare product usage rates to the finance team to better price fares and passes. As the data collected expands, it will be important to define business rules about how the data may be used as well as how to protect personally identifiable information to ensure anonymity of riders.

## 5.4 Challenges

### 5.4.1 Fare Pricing & Policies

**There is concern from staff and operators about the level of fare evasion occurring on local fixed routes.** Bus operators view it as their responsibility to help address fare evasion. Operators will call passengers back up who do not show their Fare Deal ID card but pay a reduced fare. They also expressed concern about when they see go!Passes or Exceptional Passes being used at night when people are likely not traveling to/from school or work. Generally, the bus operators said they are consistent about checking for IDs every time a discount fare is paid in order to create a fair playing field for all riders. However, at times, if they can tell the person is qualified for a free or discount fare (e.g., senior 65+), they may allow the rider to board without ID. Nonetheless, some staff members expressed concern about fare evasion and riders not showing proper identification, as well as potential discrimination caused by uneven enforcement of policy. It also clearly states on FareDeal, GoldRide, and ARide ID cards that the rider must present card to receive service. Staff would like to identify ways to ensure low fare evasion rates in the future, as even the perception of fare evasion can affect driver morale and public perception of the system.

**TheRide is constrained in its policies and operations at times due to its funding structure.** In August, TheRide will go out to voters to ask for them to approve a 0.7% millage for five years. All three jurisdictions (City of Ann Arbor, City of Ypsilanti, and Scio Township) must vote in favor by a simple majority for it to be approved. In the last millage campaign five years ago, they promised no fare increases if the millage was approved. No formal promise has been made thus far for the proposed millage. Nonetheless, TheRide is hesitant to approach the discussion of raising fares now ahead of the new millage vote as the revenue generated through a millage is significantly greater than the additional revenue that would be generated by a fare increase.

**TheRide receives set aside funding streams for certain services, but it is unclear if these funding sources cover the forgone fare revenue for free rides by seniors 65+ and ADA-eligible riders on fixed route and the operating costs of providing GoldRide paratransit service.** TheRide has a special GoldRide program for seniors 65+ that provides these customers with curb-to-curb service. Individuals with a GoldRide ID card are eligible to ride all fixed-route vehicles for free and to access ARide services within Ann Arbor and portions of Pittsfield Township with additional trip inclusions to Domino's Farms, UM Lobbies, East Ann Arbor Medical Center, WCC, and St. Joe Hospital. There is dedicated funding set aside for this program, which has been around in some form since the 1970s. The reason given for the GoldRide shuttle program being available in Ann Arbor, but not Ypsilanti, is that funding for the program comes directly from the City of Ann Arbor millage.

**Though costs for the agency are on the rise, there have been no changes to the base fare since the increase planned for 2007 to 2010.**

**TheRide's current coverage service model that ensures 90% of households in the service area should be within ¼ of a mile of a bus stop is at odds with improving farebox recovery.** TheRide has not had a recent, explicit discussion of ridership versus coverage. The initial motivation for a coverage-based service model has been due to the millage that is assessed within the entirety of the service area. The coverage-ridership tradeoff has a direct impact on the effectiveness of service delivery; the coverage model prioritizes access to transit over focusing service investments on high-ridership corridors and maximizing ridership and consequently fare revenue. Currently, TheRide's fare revenue covers 16-17% of its operating costs excluding leases and



depreciation. While farebox recovery provides a means for TheRide to hold itself accountable as an effective steward of public resources, the establishment of farebox recovery targets is heavily dependent on the decision TheRide makes with regards to coverage vs. ridership related to service delivery, which is outside of the scope of this Fare Study.

**Related to financial transactions, TheRide currently pays about \$15,500 in bank fees per year, and this may increase as TheRide tries to reduce cash transactions.** Of this figure, approximately \$3,500 is specifically related to the get downtown program. These fees represent lost revenue for the agency. As TheRide considers new technologies and reducing cash, it will be important to consider the impact on transactions paid. For example, mobile ticketing vendors will typically handle all electronic transactions and accompanying costs for an 8%-15% fee. Additional fees apply for cash transaction network vendors (e.g., PayNearMe) that enable riders to use cash to purchase fares or passes for electronic fare collection systems, such as mobile ticketing and smart cards.

**The uncertainty surrounding the state of the Regional Transit Authority of Southeast Michigan (RTA) created in 2012 adds a level of complication to TheRide's fare policy and technology decisions.** The RTA is currently exploring open payment, open architecture, and retail options as a way to streamline fare integration between SMART, DDOT, and TheRide for riders. The concept of operations created for this project will include various pathways from key decision points to sketch a realistic outline of future integration for the three systems under the RTA. Until these recommendations are released, uncertainty remains about integration between the three transit agencies. Additionally, until the RTA receives a steady source of funding, that agency's viability as an institution for creating greater mobility in the region is also questionable.

#### 5.4.2 Third Party Programs

**The current fare media used for many of TheRide's third-party pass programs make it difficult to administer and manage active cards.** Organizations that participate in a third-party program are asked to let TheRide know if a pass is lost or stolen so that the card can be deactivated, However, the process to deactivate the magnetic stripe cards is complicated and time-intensive. As such, TheRide only deactivates cards about once every two weeks, which increases the possibility for fraudulent use of the missing pass.

**Reliance on the University of Michigan's third-party pass program exposes TheRide to financial risk.** There is concern that TheRide's financial success is too closely tied to MRide's success, since MRide pass holders account for approximately 40% of local fixed route ridership. If the University were to experience declining enrollment or other hardship, TheRide may feel these impacts as well.

**Establishing a cost per eligible employee for third-party payer programs outside of downtown Ann Arbor may be difficult.** While there may be interest expressed by some employers outside of downtown Ann Arbor (e.g., Google), the number of employers interested may be limited. As result, without a significant number of participating employers, it is difficult to establish an EcoPass-type pricing model that prices passes based on the ridership generated per eligible number of employees. Pricing is also complicated as the service levels provided outside of downtown Ann Arbor may vary significantly for employers who are in different parts of the service area. As a result, TheRide may need to explore establishing a contract price based on ridership for each participating employer.



### 5.4.3 Fare Collection Technology

**TheRide's total ridership may be underreported to NTD due to missing farebox transactions.** APC (automated passenger counter) ridership is higher than what is reported by the GFI farebox. While APC ridership tends to be higher than farebox data, the discrepancy is greater than industry standards and may be due to two underlying issues: (1) fares are not being collected at the farebox or (2) APCs are overcounting ridership. The difference in ridership raises concerns about fare evasion.

**TRiM unit issues are difficult to resolve.** The TRiM unit issues discussed under weaknesses may be difficult to resolve. Other agencies' experience has shown that TRiM units create the plurality of farebox maintenance issues everywhere they are in use. The best mitigation practice is to reduce the need, for example by reducing the need for and use of change cards.

**TheRide's current practices for vaulting and probing of buses are slow due to technology constraints, and issues with probing can result in missing farebox data.** Each night, TheRide vaults and probes 115 fixed route fareboxes on-site with one receiver. When TheRide does a significant update to the action list (e.g., there are many go!Passes added to the bad list because they have been lost or not returned when an employee leaves an employer or the M-Ride list is significantly updated), the probing can take longer than normal. Every bus must complete the full download before they can be vaulted, so increased download times multiply. This causes staff to work longer than expected. There are also times when probing is interrupted or an error occurs and probing is not completed, leaving the bus unvaulted and the data on board. If the same bus is problematic multiple nights in a row, when it finally is probed the data memory systems on the bus might be full resulting in missing data and/or the vaults may be exceedingly heavy. One of the limitations is due to the fact that TheRide only has one probing receiver.

**Though new technologies may help minimize cash transactions, it will be important to consider how unbanked and underbanked riders will be able to pay their fares and whether any technology constraints and/or pricing introduces a disparate impact on minority populations or disproportionate burden on low income populations.** Any decisions surrounding policy and technology as it relates to fares will have to be evaluated from an equity lens to ensure vulnerable populations are not negatively impacted. For example, if a stored value discount is introduced for electronic fare payments, it will be imperative to consider minority and low income populations' access to the fare media and ability to load value.

## 6 Option Development

### 6.1 Transfers

Transfers allow riders to use different transit routes and services to complete a trip, providing more seamless travel. They also make fares more affordable to riders who must transfer to another route, service, or agency during their trip by providing a credit for the fare paid on the initial boarding and charging less than the full fare on the second boarding.

According to GFI farebox data provided by TheRide, on local fixed route there are 1.45 boardings per linked trip. Assuming that most people only transfer once during a trip, this equates to approximately 55% of riders who do not transfer during their trip and 45% of riders who do transfer during their trip.

The same dataset was used to calculate boardings per linked trip for ExpressRide. This rate is much lower at 1.03. Again assuming that people who transfer do so only once, this equates to approximately 97% of riders not transferring and 3% of riders transferring during a single trip.

### 6.1.1 Option 1: Maintain existing transfer policy

TheRide currently offers free transfers that are valid for 90 minutes to complete a one-way trip.

The main strength of maintaining the existing transfer policy is that it does not require explaining any changes in the transfer policy to the public. However, the current transfer window is not long enough for some riders to complete their one-way trip, particularly for those traveling from one end of the service area to the other during off-peak hours. Transfers are also printed onboard using the TRiM unit; this creates more wear-and-tear on the units and may result in more maintenance calls as well as farebox maintenance costs. Riders also regularly experience difficulty in getting the TRiM unit on their second vehicle to read the transfer printed onboard their first vehicle. This is especially true in cases where the transfer becomes wet, such as in rainy or snowy conditions. These weather conditions alone tend to reduce on-time performance. When combined with the transfer acceptance issues they induce and the resulting boarding time delays, TheRide's service time performance can be greatly impeded.

### 6.1.2 Option 2: Transition from one-way transfers to time pass

Shifting from one-way transfers to a time pass (e.g. 2 hours) would reduce the wear-and-tear on TRiM units and remove the issue of transfers not being read by the farebox on successive vehicles. Time passes are also simpler to explain and remove the restriction on riders completing a roundtrip if they can complete it within the time window.

A longer, timed pass may also be a more equitable option for Ann Arbor. Because of the way property values are distributed across TheRide's service area compared to where employment opportunities are located, the passengers making longer trips usually earn a lower income than passengers making shorter trips. Thus, a longer pass window may reduce the number of times these lower income riders are required to pay the base fare.

There are two options for how to introduce a time pass and shift away from one-way transfers: (A) by adding a time pass as an additional product separate from the one-ride base fare or (B) by making the time pass the base fare. Either of these alternatives could impact the pricing of third party pass programs; it will be important to consider how the introduction of a time pass may affect third parties' perception of what fair contract pricing would be.

#### *A: Single ride is still available*

In the case where a single ride is still available, passengers would not automatically be issued a time pass upon boarding. Similar to current practices where some riders request a transfer and some do not, riders would need to request a time pass specifically so that operators could collect the up-charge and issue the time pass. Passengers wishing to purchase a single-ride ticket would simply pay their base fare and ride, just as they do today. This way, passengers that do not need to transfer to another vehicle are not paying for a service they do not need. Both single-ride tickets and time passes would be issued on magstripe fare media. Depending on TheRide's decisions regarding fare payment technology, either or both of these fares could also be available on

new fare media to riders.

This is modeled in Alternative 1 of the fare model with the separate time pass as valid for two hours and available on a magstripe.

### *B: Time pass is base fare*

Alternatively, a time pass could be introduced as the base fare. In this case, all passengers automatically receive a two hour time pass upon paying their base fare. In essence, passengers would be paying for access to TheRide's fixed-route, non-express system when they board the bus for a certain period of time instead of for a single trip. This removes the need for an operator to determine which passengers do or do not need to be issued a pass versus a single-ride ticket upon boarding.

This option is not modeled since only two versions of the model are being constructed for this project, with model Alternative 1 being built to reflect the option above and model Alternative 2 being built to reflect the option below. TheRide could, however, easily change the specification of model Alternative 1 on their own in the future to reflect this option and see the effects on ridership and revenue.

### 6.1.3 Option 3: Restrict transfers to electronic media

If TheRide chooses to implement an electronic fare collection system in the future (e.g. a smart card system and/or mobile ticketing), there may be opportunities to restrict transfers only to those riders using electronic media. Electronic transfers are easier to manage than paper transfers - the backend system keeps track of the transfer window and what routes the transfer may be used on and then accepts or rejects a presented transfer accordingly. The backend can also automatically process any up-charges or charge a rider for a new trip. This ease in management provides agencies with a greater ability to enact more intricate transfer policies. Electronic transfers also provide better data on transfer use that can be used for planning purposes within the agency.

This option requires the necessary technology to implement, meaning TheRide would have to move forward with mobile ticketing and/or smart card technology for it to be feasible. Additionally, TheRide should consider what effect restricting transfers to electronic media may have on riders who cannot easily access the electronic media. Potential equity considerations would need to be evaluated for this option to determine whether this change would result in a disparate impact to minority or low-income riders.

### 6.1.4 Option 4: Enable formal transfers between FlexRide and Fixed Route service

Currently, there is no policy to enable FlexRide customers to transfer to TheRide's fixed route services. Instead, they must pay separately for each service at full price. In the event that TheRide wishes to maintain or expand this service, the agency may want to explore options for formal transfers between FlexRide and fixed route in terms of both policy and technology.

For policy, TheRide must determine FlexRide's exact relationship to fixed route:

- If FlexRide is considered a feeder service, TheRide may want to price the service below fixed route. As a feeder service, transfers to fixed route would likely require an upcharge.
- If FlexRide is considered an extension of fixed route service, it may make more sense for the agency to charge the same fare as on local buses. In this case, the simplest way to handle transfers between the two services would be to match the policy in place for transferring between local buses, provided the

necessary technology improvements can be made.

- If FlexRide is considered a premium service, it may be priced above the fixed route fare. TheRide would then want to enact an upcharge for transferring from fixed route to FlexRide.

The policy for FlexRide as it relates to fixed route is also inherently influenced by TheRide's decisions on the options detailed above concerning the base fare and transfer policies for fixed route. Whether TheRide chooses to maintain transfers and whether TheRide chooses to move from a single-ride base fare to a time pass will impact the feasibility of each of the relationships detailed above. For instance, if TheRide chooses to move to a time pass, the easiest option would be to price FlexRide the same as fixed route and then make the pass valid on both services. TheRide could instead choose to retain single-ride pricing on FlexRide, but this would complicate the system for riders, potentially affecting the goals of consistency and convenience established by TheRide. However, TheRide may determine that the goals of attractiveness and/or fairness necessitate a different pricing and transfer structure for FlexRide. It is up to TheRide to weigh these considerations and make a final decision, though recommendations will be provided to the agency based on the analyses detailed in this document.

The technology used to enable transfers between FlexRide and fixed route could take a number of forms, depending on TheRide's willingness to invest in infrastructure. One option is for FlexRide operators to print out simple receipts for their riders with a time and date of issuance, which would require the operators to be equipped with a portable receipt printer. These receipts could then be shown to Fixed Route operators as a form of visual validation upon boarding. Another option is for receipts to include a form of media that can be electronically validated. This could be barcodes, magnetic stripes, or smart media. Any electronically validated fare media would need to be both issued and validated on the FlexRide vehicles. For issuance, the fare media could be pre-encoded and distributed to the drivers, the driver could have a handheld device capable of issuing the media, or an issuing device could be installed on the FlexRide vehicles. For acceptance, a reader would be required. This could be a portable device carried by the driver or an installed reader on the vehicle. On fixed route vehicles the media used for transfers would be validated by existing readers. In the case of magstripe, this would be the existing GenFare magstripe readers. Barcodes could be used if a new mobile ticketing system required barcodes on fixed route buses, and smart media could be used if TheRide adopted a smart card system.

Handheld readers for the drivers would likely be based on a smartphone platform which can support barcodes, magstripes, and smart cards. Installed readers would likely be similar to what is installed on fixed route. Barcodes and magstripes could be validated without internet connectivity to the readers, but connectivity would improve data and reduce fraud potential. Smart card readers would require real time communications and thus an internet connection.

## 6.2 Change Cards

The onboard TRiM unit issues a change card to any customer who inserts more cash into the farebox than is required for their ride. A rider can then dip the change card into the TRiM unit upon subsequent boardings as a form of payment. In FY 2017, TheRide issued 321,951 change cards which were used in aggregate 381,224 times. This comes out to an average usage rate of 1.19. Based upon conversations with TheRide staff and in particular bus operators, there is reason to believe that a number of riders use change cards even more often than this; riders turn change cards into a form of stored value card by loading the maximum \$10 into the farebox and then using the change card throughout the week until all the value is gone. As discussed in earlier memos, this presents challenges with the TRiM units since change cards are not meant for extended use and as such the fare

media tends to malfunction after a time. Additionally, the issuance of change cards causes wear-and-tear on the TRiM units.

Note that the change card options discussed below will not be modeled because of limited data availability and their role in the overall fare structure at TheRide. Without extensive data on the use and amount of value placed on change cards, the model's ability to predict riders' change in behavior related to each of the options below is limited. Additionally, change cards are a convenience and thus do not have a direct impact on the established base fare.

### 6.2.1 Option 1: Maintain change cards

Customers appreciate the change cards since they feel that getting their change back if they overpay is fair. Additionally, some customers use change cards to create their own mid-length passes by paying \$10 upon boarding and putting the rest on a change card, thus fulfilling a need that TheRide's current fare media options do not.

However, issuance and use of change cards negatively impacts both operations and maintenance. Change cards are known for getting stuck in TRiM units and for being hard for the TRiM unit to read. These issues result in boarding delays and impact on-time performance. They also at times force operators to call the maintenance division and request travel out bus repair calls. TRiM units, according to the maintenance department, are by far the most frequent reason for these service calls out to buses, and sometimes replacement TRiM units must be carried out to the bus and a switch-out performed on site. The TRiM unit maintenance issues results in costs to TheRide in a number of forms, including lost fare revenue while the farebox is inoperable and passengers are boarding, opportunity costs in the form of maintenance workers having to take time out of their day to travel to the vehicle, and direct costs in the form of maintenance on and replacement of TRiM units.

### 6.2.2 Option 2: Eliminate change cards

Eliminating change cards will help to prolong the life of the TRiM units, reducing maintenance costs and service calls. Elimination may also remove a source of boarding delays and could reduce rider/operator conflict over change cards.

However, riders may oppose having to carry exact change and being forced into overpaying when they do not have exact change. At the current \$1.50 fare, the risk of not having exact change is lower than if TheRide chose to increase their fare to a less standard figure, such as \$1.60. Thus, if TheRide does choose to eliminate change cards, TheRide should carefully consider the magnitude of its fare increases and the resulting base fare price.

A way to lessen the burden of removing change cards is to encourage as wide an adoption as possible of new fare payment technologies, if TheRide decides to move forward with mobile ticketing and/or smart cards. Expanding access to these electronic forms of payment for current cash riders would eliminate the concern of overpayment for service and the need to carry exact change.

## 6.3 Tokens

Tokens can be inserted into onboard fareboxes as payment for single rides. In FY 2017, TheRide collected 124,729 tokens onboard: 56,532 small tokens and 68,197 large tokens. These tokens are primarily distributed through TheRide's personal retail outlets, such as the Blake Transit Center and AAATA headquarters, Bank of

Ann Arbor local branches, and contracts with social service agencies and nonprofits. When received, tokens are counted and repackaged by TheRide staff before being sold once again through these sales channels. Thus, they are a circulating form of fare media provided they are not lost by purchasing customers.

### 6.3.1 Option 1: Maintain existing token policy

TheRide currently sells tokens to both the general public and social service agencies and nonprofits. Under this option, tokens would continue to be available through all current channels. The benefit of this option is that it would not change the availability of fare media options for any customers; tokens would remain a convenient way for the general public to pre-pay for their trips and thus board more easily.

This pre-pay option may be less necessary, though, depending on TheRide's decisions regarding electronic fare payment technologies, since mobile ticketing and/or smart cards would also provide convenient pre-pay options to customers.

### 6.3.2 Option 2: Tokens only for social services agencies, eliminate tokens for public purchase

TheRide could choose to limit tokens sales to only social service agencies and nonprofits, thereby eliminating tokens as a fare medium for general public purchase and simplifying TheRide's fare structure. A benefit of this policy is the likely reduction in intake of tokens. Since TheRide staff currently count and repackage tokens, this option could reduce the number of hours staff must spend on these tasks. Elimination of tokens could also incentivize customers to migrate to electronic fare payment options as their form of pre-paying for rides if new fare payment technologies are pursued by TheRide.

This option does not suggest eliminating tokens entirely because of the convenience they afford to TheRide and the agency's social service partners. Tokens are a reliable, simple way of fulfilling social service agencies' need for a fare payment media to distribute to its patrons; tokens do not need to be activated and are easy to track and distribute. Tokens remain the most logical fare medium for social service agencies even if TheRide decides to pursue mobile ticketing and/or smart cards. Other agencies who have eliminated tokens have struggled to find as straightforward a fare medium for supplying social service agencies. Some agencies have resorted to distributing costly limited-use smart cards that then must be loaded with value either by the transit agency or the social service agency. These limited-use smart cards would represent a financial and administrative burden to all involved, and are not recommended above tokens.

This token option is modeled in both Alternatives 1 and 2 of the fare model.

## 6.4 30-Day Pass

TheRide offers unique 30-Day Passes to different segments of its ridership, all of which are rolling passes. These passes include a FlexPass for the general public, Value Passes for each of the four half-fare discount rider categories (youth, low-income, non-ADA disability, and seniors 60-64), and an EMU pass for Eastern Michigan University affiliates. Currently, the FlexPass and Value Passes are priced at 38.7 times the base fare for each of these rider groups. Thus, the FlexPass costs \$58, and the Value Passes cost \$29. EMU passes are unique in that TheRide sells them to EMU at the 10% bulk discount rate, and the University then sells them at an additional 20% discount, or \$40.60, to eligible affiliates.

Usage rates for the current 30-Day Pass products are as follows, according to data from November 2017 to March 2018 provided by TheRide:

Pass Product	Usage Rate (number of uses per pass)
FlexPass	47.07
Value Pass Income Eligible	56.79
Value Pass Senior 60-64	64.29
Value Pass non-ADA Disability	72.1
Value Pass K-12 Student	34.25
EMU	40.55

#### 6.4.1 Option 1: Maintain current 30-Day pass pricing

TheRide's magstripe 30-Day Passes are designed for rider convenience and to give frequent riders a discount, with 20 round trips equating to a rider earning back their investment in the pass. Thus, this fare product is ideally suited for commuters and other individuals who use the service regularly. 30-Day Pass use also benefits TheRide by minimizing cash intake at the farebox, which can reduce the costs of cash processing and lowers the number of change cards and transfers issued by the farebox. 30-Day Pass use thus reduces farebox maintenance costs while also speeding boarding times since magstripes allow faster boarding than onboard cash payments. The current 30-Day Pass pricing does incentivize some riders to use the pass, with 11% of riders currently using it to pay their fare.

#### 6.4.2 Option 2: Explore various multiples with goal of incentivizing purchase and use

There is, however, room for growth in 30-Day Pass usage. According to TheRide's 2017 onboard survey, of those customers who use TheRide six or seven days a week (and thus would easily break even on a 30-Day Pass), only 11% use a 30-Day Pass compared to 29% who use cash.

Higher pass usage, which could be incentivized by lowering the 30-Day Pass multiple, would benefit both TheRide and its customers. TheRide would receive the finance and operations benefits mentioned above, except on a greater order of magnitude than under current 30-Day Pass usage. Customers who are currently eligible for the discount built into a 30-Day Pass based on their ridership levels but cannot pay the upfront cost could possibly afford a 30-Day Pass if the pricing multiple is lowered. There is also some hope that lowering the price of a 30-Day Pass would encourage more riders who border on frequent use to purchase the pass upfront. Once purchased, a 30-Day Pass represents a sunk cost. Thus, if an individual owns a 30-Day Pass and is choosing how to travel to a destination, they may choose transit over other modes if they have already paid for their trip in the form of a 30-Day Pass.

A new multiple is explored in Alternative 1 of the model.



### 6.4.3 Option 3: Enable fare capping

Fare capping is a new pricing strategy used by some public transit agencies where riders “cap out” at the price of a pass. If implemented within TheRide’s current fare structure, riders would pay per boarding for each of their trips until they reach their 40th ride (because of the 38.7 multiple), at which point that ride and each subsequent ride would be free for the rest of the pass time period.

This pricing strategy would require implementation of smart card technology. While fare capping is theoretically possible on a mobile ticketing platform, the coding necessary to enable fare capping would greatly increase the costs of purchasing and operating a mobile ticketing platform.

If TheRide decides to pursue fare capping, the agency should strongly consider changing their rolling 30-Day Pass to calendar-based monthly passes. This would simplify both the back-end structure necessary to implement the policy and also the agency’s communication of fare capping policy to riders.

One of the primary motivations behind fare capping is equity. Under fare capping, the cash riders mentioned above who are reaching the 30-Day Pass breakeven ridership threshold but who cannot currently afford the fare product would receive the frequent rider discount embedded in a 30-Day Pass. In order to enable these equity benefits, however, an agency must ensure access to the electronic, account-based fare payment technology in use, even for those riders without banking services. There are new companies such as PayNearMe that provide individuals with retail locations where they can load cash to an account, including a transit account. While these companies help expand access to electronic fare payment technologies, their services come at a cost to the agency that is usually taken as a percentage of the value loaded by riders into their accounts. The retail network these companies rely upon also has to be extensive enough to cover the vast majority of potential riders in order for the equity goals of fare capping to truly be realized.

A second motivation behind implementing fare capping is positive marketing for the agency. Fare capping is often marketed as a “best fare guarantee” to enhance public perception of service and potentially increase ridership. Fare capping is still too new of a strategy, however, to point to any definitive results in increasing ridership.

Fare capping will always result in a decrease in revenue. If fare capping is implemented, TheRide will lose the most revenue from riders who currently purchase a 30-Day Pass even though they do not reach the breakeven ridership threshold. Essentially, these riders are paying for more service than they actually consume, possibly because they enjoy the convenience of a 30-Day Pass or have another institution or person who purchases the pass for them. The table below presents estimated percentage changes in revenue by 30-Day Pass product from this specific source of lost revenue if fare capping were to be implemented with current pricing and ridership trends:

Pass Product	% Change in Revenue
FlexPass	-18.9%
Value Pass Income Eligible	-17.5%
Value Pass Senior 60-64	-11.0%



Value Pass non-ADA Disability	-8.4%
Value Pass K-12 Student	-34.2%

EMU 30-Day Passes were excluded from this table because they represent a unique situation compared to the other 30-Day Pass products offered by TheRide. The agency will need to consider how fare capping would affect EMU 30-Day Passes specifically because of their place within TheRide’s fare structure.

The second driver of revenue loss under fare capping comes from riders who used to pay more than the value of a 30-Day Pass in cash rides each month, but who are now able to reach the capping threshold. Due to data limitations, this revenue loss cannot be estimated for TheRide in particular. Based on the experiences of other agencies in the transit industry, it is safe to estimate that TheRide would expect to lose approximately 2% of current fare revenues from this shift in fare product use.

It is worth noting that the implementation of fare capping, similar to the transition from single ride fares to time passes, may cause third party payers to rethink their contract amounts. TheRide must carefully consider the likelihood of this possibility since third party programs contribute to a substantial portion of the agency’s revenue.

Fare capping is modeled in Alternative 2.

## 6.5 1-Day Pass

1-Day passes are sold onboard fixed route vehicles, at the AAATA main office, and through TheRide’s website. The passes are valid for unlimited rides until 11:59 pm on the day they are purchased and are priced at \$4.50, or 3 times the single-ride fare.

According to GFI ridership data provided by TheRide, only 1,206 1-Day Passes were issued in FY2017. 1-Day Passes thus account for less than 0.2% of boardings.

### 6.5.1 Option 1: Maintain 1-Day Pass

Some riders do use the 1-Day Pass, and it is the only “intermediate” pass option since it lies between single-ride tickets and 30-Day Passes.

### 6.5.2 Option 2: Eliminate 1-Day Pass

1-Day Passes purchased onboard fixed route vehicles are issued using the TRiM unit. This causes additional wear-and-tear on units that are already experiencing regular maintenance issues, according to conversations with TheRide staff. Loading the money necessary to purchase a 1-Day Pass into the farebox also slows boarding times and impacts on-time performance. Eliminating 1-Day Passes would reduce these negative boarding and maintenance impacts. Since these passes are used for so few boardings, there would likely be little pushback from riders if TheRide chose to eliminate this fare product.

The elimination of 1-Day Passes is modeled in Alternatives 1 and 2.

## 6.6 Rider Category Discounts

TheRide offers discounts to a variety of rider segments, far beyond what is required by federal law. These categories include:

- Individuals with an ADA disability
- Seniors ages 65 and older
- Income eligible individuals
- Individuals with a Non-ADA disability
- Seniors ages 60-64
- Students

The discount available to each of these rider segments differs, but there is some natural grouping of segments that arises. Individuals with an ADA disability and seniors ages 65 or older typically receive the same level of discount, thus forming what will be called Group 1. The rest of the segments listed above - income eligible, non-ADA disability, seniors 60-64, and students - will be called Group 2 since they all tend to receive the same level of discount, which is different from the level of discount for Group 1.

### 6.6.1 Option 1: Maintain current rider category discounts

Currently, discounts vary not only by rider category, but also by service. On fixed route, Group 1 discount riders are eligible to ride for free while Group 2 riders receive a 50% discount on single-ride fares and 30-Day Passes. On GroceryRide and ExpressRide, no discounts are given to either group. On NightRide/HolidayRide, Group 1 receives a 40% discount on fares, while Group 2 receives no discount.

TheRide staff have expressed the difficulty of explaining these discounts to eligible individuals, which may impact the attractiveness of TheRide's services, a stated goal of the agency. The current policy also does not align well with TheRide's stated goal of consistency. However, those riders that do receive discounts currently enjoy those discounts and seem to make good use of them on each of the TheRide's services.

### 6.6.2 Option 2: Establish consistent discounts on all services

One proposal is to establish consistent discounts across fixed route, GroceryRide, and NightRide/HolidayRide. This would make it easier for TheRide staff to communicate the agency's discount structure to eligible riders. It would also help maintain a consistency across services that is currently lacking.

Considering the special funding structure behind ExpressRide and the limited segment of riders who transfer between ExpressRide and local fixed route, it is in TheRide's best interest to maintain the no discount policy for ExpressRide fares. Thus, this option does not include ExpressRide in establishing consistency.

#### *A: Adopt federal minimum standards*

To create consistency, TheRide could choose to eliminate all Group 2 discounts and to only offer Group 1 a 50% discount on fares across its services. This alternative technically still goes beyond legal requirements since federal standards state that the 50% discounts for ADA-eligible individuals and seniors 65 and older only have to be in place during off-peak hours and are not required on premium services, which GroceryRide and NightRide/HolidayRide could be considered as. If adopted, this alternative would also impact third party contracts that attempt to incorporate the number of discount riders into the contract pricing. Potential equity

concerns would need to be evaluated for this option to determine whether this change would result in a disparate impact to minority or low-income riders.

This is modeled in Alternative 1 of the fare model.

### *B: Maintain current fixed route discount structure and replicate that on GroceryRide and NightRide/HolidayRide*

Another option to create greater consistency among rider discounts would be to expand the current fixed route discount structure across each of TheRide's services. This would mean that Group 1 individuals could ride for free not only on fixed route, but also on GroceryRide and NightRide/HolidayRide. Group 2 individuals would receive a 50% discount on each of these services.

This is modeled in Alternative 2 of the fare model.

### 6.6.3 Option 3: Discontinue discount fares for individuals 60-64 on fixed route

It is not standard industry practice to offer seniors ages 60 to 64 a discount on services. This is a small portion of ridership to offer a discount to (approximately 1% of riders), and the additional discount category creates greater complexity while requiring TheRide to invest financial and human resources in processing another unique fare media and fare discount ID card type. Also, as more individuals choose to work later in life, asking seniors ages 60 to 64 to pay full fare represents less of a financial burden than in the past. Potential equity concerns would need to be evaluated for this option to determine whether it would result in a disparate impact to minority or low-income riders.

The elimination of the senior ages 60 to 64 discount category is modeled in Alternative 2 of the model, in combination with Option 2B above.

## 6.7 Fare Increase Policy

Currently, TheRide does not have any formal policy to guide fare increases. It is industry best practice for a transit agency to create a fare increase policy that contains guiding principles the agency can use to determine when a fare increase is needed. A fare increase policy also creates an avenue for explaining the justification for fare increases to stakeholders by demonstrating the reasoning and methodology behind fare increases - such as rising labor costs, increased capital costs, etc. - leading to more understanding and less pushback when the need for a fare increase arises.

Ideally a fare increase policy details not only when a fare increase review should begin, but also exactly how that review should be conducted and what key decision points will affect the final fare increase recommendation. A policy such as this provides a clear roadmap for the agency in a process that can at times be controversial and political.

Note that the fare increase options will not be modeled, but TheRide can choose to test various fare increases in the Four Nines fare model once the tool has been turned over to the agency. As with any fare increase, it would be necessary to conduct a Fare Equity Analysis per federal civil rights guidance to determine if the proposed fare increase would result in a disparate impact to minority riders or a disproportionate burden to low-income riders.

### 6.7.1 Option 1: Maintain current fare increase policy

The current fare increase policy is that there is no policy. Due in part to this lack of guidance, the last fare increase occurred over five years ago, and no evaluation of the need for a fare increase has been performed since. During this last fare increase, not all services were considered either. While the cost of fixed route service increased, NightRide/HolidayRide remained at the same price, and there is little evidence that this decision to leave fares at their previous level was carefully analyzed. While the lack of a fare increase policy provides a certain sense of flexibility for TheRide, it also means the agency lacks structure and guidance. Without any structure or guidance, fare increases will always come as a surprise and thus receive greater pushback from stakeholders, especially riders.

### 6.7.2 Option 2: Establish a set period of time between fare increases

Establishing a set period of time between fare increases has a number of advantages. This type of policy provides strict regularity for all stakeholders: the agency itself, the Board, riders, etc. Barring unusual circumstances, this type of fare increase policy is proactive instead of reactive. The agency can forecast their financial needs and adjust fares accordingly each time a fare increase arises. This also allows the agency to appropriately plan for fare increases, which may include marketing campaigns or other fare-related activities in advance of implementation.

One detail that must be considered is how large these fare increases would ideally be. The magnitude of the increases would likely be correlated with how often the fare increases occur (i.e. less time between increases means smaller increases while more time between increases means larger increases). If the fare increases are smaller, the agency must evaluate the effect this would have on cash riders in terms of the change they must carry, especially if change cards are eliminated.

For a regular fare increase policy to confer the above benefits to an agency, the agency must be willing to follow through with the planned fare increases. Delaying or opting out of the fare increases will eliminate the sense of expectation that generates stakeholder buy-in and decrease the effectiveness of this fare increase policy.

### 6.7.3 Option 3: Evaluate need for fare increase along with regular budget review

Coinciding fare increases with regular budget reviews creates structure for a transit agency and confers the added benefit of evaluating fares within the context of the agency's overall financial health. Because the fare increases would occur within this broader context, they would be given an extra sense of legitimacy over the current ad hoc method of fare increases. To maintain this legitimacy, the agency would need to effectively communicate to both the Board and riders the methodology used to decide on fare increases each time a regular budget review is conducted. Otherwise, similar to the caution detailed in the option above, the agency might face greater pushback once staff do decide that a fare increase is necessary.

### 6.7.4 Option 4: Establish internal indicator(s) that will be used to determine when a fare increase should happen

This fare increase policy option provides the greatest level of flexibility by enabling TheRide to establish indicators that determine fare increases instead of establishing a set timeline for increases. TheRide would collaboratively decide as an agency what situations necessitate a fare increase, providing in the end a set of

highly contextualized indicators based on these discussions. Once an indicator (or a number of indicators depending on the details of the policy) reaches a certain threshold, a fare increase review would be triggered. The process of determining indicators and their thresholds alone could help agency staff develop a better understanding of agency priorities around finances and fares.

While internal indicators do not confer the same benefits as setting strict timelines for fare increase reviews, fare increases under this type of policy can still be strongly defended if the indicators and evaluation methodology are documented and communicated well to all stakeholders.

## 6.8 Service Types

TheRide offers a variety of service types to its riders, including:

- Fixed route\*
- ExpressRide\*
- GroceryRide\*
- NightRide/HolidayRide\*
- FlexRide
- ARide
- GoldRide
- AirRide
- FootballRide
- ArtRide
- VanRide

The services marked with an asterisk are the services included within the scope of this particular study and thus within the fare model.

Currently, there is no commonality in the pricing of these services. Instead when a service debuts, pricing for that service is set independently of any established policy. At times this results in a seemingly ad hoc umbrella of services and fares with unclear relationships between the individual services.

### 6.8.1 Option 1: No change

Current service pricing is done on an individualistic basis with only a general regard for the pricing of other services. There is no clear relationship between service pricing for riders, which may cloud their understanding of how the various services interact with one another. However, setting service fares individually does allow for increased freedoms in pricing that can take into account the specific revenue sources that pay for operation of the service. For instance, ExpressRide is very clearly priced to account for operation of the service beyond TheRide's standard service area since Chelsea and Canton do not participate in a funding millage for TheRide. Instead, their governments pay a specific contract amount to TheRide annually to enable the service to operate. This absence of millage funding means fares must cover a higher percentage of ExpressRide's operating costs, and fares for the service are set accordingly.

## 6.8.2 Option 2: Establish all services' fares using a multiple of the base adult fixed route fare

To foster greater rider comprehension of services and establish a guiding policy for service fares, TheRide could choose to price each of its services at a multiple of the base adult fixed route fare. Under this type of policy, it is clear which services are considered “premium” services since they would be priced above fixed route. Multiples pricing could also better facilitate transfers between services, since any upcharge would simply be a multiple of the base fare. Fare increases are then also easily distributed among the services since an increase in the base fare would trickle through to each of the multiples. Multiples pricing could also provide a pricing schema for the establishment of fares for new services instead of setting these fares using more arbitrary methods.

Setting a fare multiple policy among services does create a certain rigidity to pricing, however. TheRide will have to decide if the increased comprehension of service fare multiple pricing outweighs the decrease in pricing flexibility. Because this option may result in a shifting of fare prices between service categories, it would be necessary to evaluate the changes to determine whether it would result in disparate impacts to minority or low-income riders.

This option is modeled in the second iteration of model Alternatives 1 and 2.

## 6.9 Fare Technologies

Fare payment technology within transit is evolving rapidly. Many transit agencies have chosen to deploy mobile ticketing technology, smart card technology, or a combination of the two. All three of these options are detailed below. Note that none of the fare technology options will be modeled specifically. Instead, the model contains a general “electronic fare payment” fare media distinction that encompasses whichever option is selected here.

### 6.9.1 Option 1: No change

Customers - not just riders, but also third party program partners - are accustomed to the existing fare collection system. While it has its limitations, it is capable to providing for TheRide’s current fare collection needs. Any change to the fare collection system would require significant public education and a financial investment by TheRide.

As discussed below though, a smart card and/or mobile ticketing system provides opportunities to reduce operating costs, simplify fare collection, attract new markets, improve data collection, improve administration of third party programs, and can facilitate the introduction of new products and programs.

### 6.9.2 Option 2: Smart card

Smart card systems rely on a reusable card that stores passes and stored value for future use. Customers tap their card on a card reader, rather than dipping or swiping a pass. Smart card systems provide incredibly rich data for agencies to use in planning, can ease the administration of third party programs and other operations, and can enable agencies to introduce new products and programs such as more complicated transfer policies. Smart card systems also provide an opportunity to shift the burden of fare enforcement from onboard to offboard, removing a major source of operator-customer conflict.

Smart card systems require a large, up-front investment and are not cost effective for agencies of all sizes. While

a few years ago smart card systems involved a minimum investment well above a million dollars, there are now a few vendors on the market who will offer Software as a Service smart card solutions that involve capital expenditures that are 10% or so of those costs. Smart cards are less expensive to operate and maintain than magstripe and cash systems because they are entirely solid state. Potential equity considerations would need to be evaluated for this option to determine whether it would result in a disparate impact to minority or low-income riders especially if specific fare media were to be available only on smart cards.

### 6.9.3 Option 3: Mobile ticketing

Mobile ticketing gives customers the ability to use an app on their smartphone or tablet to pay for transit. This technology can attract new markets, eliminate the need for customers to carry cash or pre-purchase passes, while providing better data for the agency, and can reduce operating costs due to lower usage of other fare media. Mobile ticketing has lower capital costs than smart cards and some financial models include no upfront costs.

While good retail options are becoming available for paying cash, mobile ticketing still generally requires customers to complete their purchase using a credit or debit (including prepaid debit) card, which can limit access to the technology for unbanked and underbanked customers. Additionally, users must have a smartphone or tablet with a sufficient data plan and/or wi-fi access to purchase and activate their pass. Potential equity considerations would need to be evaluated for mobile ticketing to determine whether it would result in a disparate impact to minority or low-income riders, especially if certain fare products were only available through mobile ticketing.

### 6.9.4 Option 4: Smart card + mobile ticketing

An integrated smart card and mobile ticketing system provides all the benefits of a stand alone smart card or mobile ticketing system but with a seamless user experience for customers to switch between media types. Offering customers both options also provides the opportunity for a wider group of customers the access the benefits of not having to carry cash, lost/theft protection for passes, etc. than would be able to access one technology or the other.

An integrated smart card and mobile ticketing system would require a significant financial investment by TheRide, above that of either system individually, and potentially greater than the cost of two independent systems together. This is because fewer vendors offer an integrated solution and the integration of separate solutions would require design, development and testing efforts.

## 6.10 Fare Enforcement

TheRide currently offers six different types of discount and free fares to pre-approved customers. The table below displays the percentage of riders using each type of reduced fare according to TheRide’s 2017 onboard survey:

Rider Discount Category	% Ridership
Individuals with an ADA disability	3%

Seniors ages 65 and older	3%
Income eligible individuals	5%
Individuals with a Non-ADA disability	5%
Seniors ages 60-64	1%
K-12 Students	Between 1% and 3%*

\*This was the best data available from the 2017 onboard survey regarding student discount users as a percentage of total ridership

Customers who use a discount fare media constitute about 20% of fixed route ridership. The two largest categories of users are Fare Deal income eligible riders and Fare Deal non-ADA disability riders. The smallest category of users are seniors ages 60-64. In total, the discount fare categories not mandated by federal standards make up a larger percentage of TheRide's ridership than those categories that are mandated by the federal government (i.e. individuals with an ADA disability and seniors ages 65 and older).

Currently, customers eligible for discounted or free rides are pre-approved by submitting appropriate documentation to TheRide staff. Customers who complete this application process then receive a discount fare ID including the following information: name, photo, expiration date, and type of discount. A discount rider, according to policy, is supposed to demonstrate their eligibility for a free or discounted fare by showing the appropriate ID to the driver upon boarding. Each type of discount fare ID is branded differently to help bus operators distinguish visually between the various types of ID cards and confirm the riders' eligibility. There is no electronic or automated form of discount eligibility.

The fare enforcement options will not be modeled.

### 6.10.1 Option 1: No change

The current policy requiring a rider to show their discount fare ID to the driver is not uniformly enforced. Some drivers require that they see an ID every boarding, as dictated by policy, whereas others may come to recognize frequent riders and stop asking to see the ID. While regular riders likely enjoy not having to show their ID each boarding, the inconsistency can create confusion and even irritation among other riders who feel they are being treated unfairly when they are asked to show an ID.

Additionally, the policy of asking to see a discount fare ID upon boarding can increase boarding times and result in rider/driver conflict when there is a question or issue with the ID presented. Currently drivers must act not only as operators of the vehicle, but also as fare enforcement officers. Many drivers take this fare enforcement responsibility seriously, and thus there seems to be a general concern amongst drivers surrounding fare evasion. This concern may increase the instances of rider/driver conflict.

### 6.10.2 Option 2: Shift enforcement to offboard

Transitioning the responsibility for fare enforcement from time of use (onboard) to time of purchase (offboard) can address many of the current issues with fare enforcement. Shifting enforcement offboard takes that responsibility away from bus operators, reducing conflict with passengers and allowing operators to focus on safe and on-time operations rather than boarding disputes. In other words, operators can transition to more of a



customer service role as opposed to an enforcement officer role.

Numerous stakeholders expressed an interest in shifting operators away from an enforcement role. This shift was named as a specific desire by a number of TheRide staff in our on-site interviews. When we spoke to two of the operators during the on-site visit, they stated that enforcement varied among operators. Some operators shy away from conflict with riders and carry out lower levels of enforcement, while others take pride in their enforcement role and are more strict. The operators admitted that they occasionally are inconsistent with enforcement themselves, requesting to see IDs only for those who discount fare eligibility isn't "obvious" and/or not requesting to see the IDs of frequent riders. At this time, current discount fare policy is unequally enforced across operators and customers. This can lead to confusion among riders and a perception of either mistreatment or fare evasion if certain riders are asked to display their IDs while others are not. Shifting to offboard enforcement would eliminate this inconsistency because a backend system would be in charge of determining eligibility at the time of boarding based on the account tied to the fare product presented, giving a green light or a emitting a "ping" to indicate a valid reduced fare product, instead of asking that the operator make this determination. While this would be a culture change for some drivers, this message of desired consistency could be promoted to describe the need for the change.

This change also has the potential to speed up boarding times due to reduced conflict. Enforcement through electronic media, such as smart cards, also allows for automatic eligibility expiration (e.g. youth pass eligibility expires automatically at 18) and can significantly simplify the administration of discount and free fare programs. Additionally, combining technology with offboard enforcement generates much better data on discount fare prevalence and individual usage rates. Currently, TheRide relies on farebox data and records of Fare Deal ID card distributions to understand their discount fare market, but these data can often be incorrect or incomplete. Technology would help improve the accuracy and completeness of this data, providing TheRide with better resources for planning and financial analyses.

Shifting to offboard enforcement however would require investment in the necessary fare collection technology. The level of investment would depend on the number of offboard sites available for distribution of reduced fare media. Depending on the details of the technology and whether rider photos were printed on the cards, the capital cost could range from a few hundred dollars to a few thousand dollars per location.

## 6.11 Third Party Pass Programs

Third party pass programs constitute a significant portion of TheRide's annual revenue and ridership. TheRide currently has third party pass program agreements with University of Michigan (MRide), participating employers in the Downtown Development Authority boundary (go!Pass), Washtenaw Community College (WCC), Google (MyCommuter), and Ann Arbor Public Schools (Exceptional Pass). Each of these program contracts have been negotiated independently from the others.

### 6.11.1 Option 1: No change to current reimbursement pricing

Current contracts for MRide, go!Pass, WCC, and Exceptional Pass take into account an estimated number of transfers as well as an estimated number of discount riders when determining the per-ride reimbursement rate. This pricing methodology provides third parties with a contract amount that approximates what the participating individuals would pay in aggregate outside of the contract, and could be considered the most "fair"

rate to charge third parties. However, while it is common to incorporate transfer rate discounts into contract pricing, it is not common to estimate the number of discount riders covered through a program, especially with as many discount categories as TheRide offers.

### 6.11.2 Option 2: Do not incorporate discounts into pricing of per-ride rates for pass programs

TheRide could explore renegotiating its third party contracts when they come up for review to only include a discount for expected transfer rates and not for rider category discounts. Eliminating the rider category discount from consideration would bring TheRide in line with industry standards. Additionally, this may be the best time to have this conversation with third parties as the agency explores eliminating the seniors ages 60-64 discount altogether.

We've reviewed the federal regulations requiring half-fares for certain rider groups to determine if this recommendation would render compliance issues and have found no evidence that this would violate any federal rule. Federal law under 49 USC 5307 (c)(1)(D) requires public transportation agencies that receive Federal Transit Administration (FTA) 5307 funding to offer reduced fares for fixed route services to people with disabilities and seniors during off-peak hours that is not greater than 50% of the peak hour fare. For pass programs that do not pass the cost along to riders, the FTA rule would not apply, for a number of reasons. First, though many do, federal recipients are not required to offer half fares on payment options such as monthly passes. Second, there are no apparent federal rules regarding the business arrangement between the transit agency and the participating businesses that would require the agency to consider ridership or any other factor in establishing the program's price. Finally, because fares for participating riders in the program are essentially free, the discount given is beyond a 50% reduction in the peak hour fare.

There are some agencies that choose to maintain rider category discount pricing for third party contracts where all participants are eligible for the same discount, such as with the AAPS Exceptional Pass. TheRide may consider maintaining this contract as is even if the agency chooses to renegotiate the other contracts for this reason.

This option of removing rider category discounts from third party pass program pricing is modeled in the second iteration of Alternatives 1 and 2.

## 7 Modeling Process

This section first provides a summary of the data sources and assumptions used to calibrate the inputs for the baseline AAATA Fare Model and the results of the baseline model run, as well as an establishment of preliminary model assumptions for the fare policy alternatives being considered. The second part of this section dives into the assumptions made regarding each of the modeling alternatives and the results of those modeling alternatives.

## 7.1 Baseline Fare Model

### 7.1.1 Base Year Data

Fiscal year 2017 (FY2017) is the model base year, as the most recent complete fiscal year. The model's five-year projection period is FY2018-FY2022.

Base year ridership and revenue used in the modeling effort, FY2017:

- Total Ridership: 6,651,601 unlinked trips
- Total Fare Revenue: \$5,111,167

Base year ridership and revenue are from AAATA's National Transit Database (NTD) report for FY2017 and the agency's internal revenue budget containing FY2017 audit figures, respectively. The ridership and revenue figures do not include some subcontracted services that were excluded from the modeling effort.

### 7.1.2 Fare Structure

This section explains how the baseline model was constructed and calibrated. The explanation seeks to provide transparency within the model's development to TheRide and to allow for replicability by internal stakeholders at TheRide so that the model can be used at the agency into the future.

#### *Fare Model - Rows Description*

For the "1a. IN-Rider&Rev by Fare" model input tab, each row represents a particular market segment of TheRide customers. Market segments are defined as specific combinations of the following three elements:

1. Service Type
2. Rider Category
3. Fare Product

#### Service Type

TheRide has four service types that were included in this model: Fixed Route, ExpressRide, GroceryRide, and NightRide/HolidayRide. Route 81 and FlexRide were added to the model as individual service type placeholders that can be used in the future, but were not actually evaluated as separate service types within the model. This is because there was not yet a full fiscal year's worth of data for either of these service types. Note that the total ridership and total fare revenue input into the model for calibration purposes include only trips and revenues from these four service types and not any of TheRide's other services.

#### Rider Category

TheRide has a number of rider categories: Full fare, Reduced fare - K-12 student, Reduced fare - Fare Deal riders, ARide, GoldRide, MRide, go!Pass, Exceptional Pass, Washtenaw Community College (WCC), Eastern Michigan University (EMU), and Other (short fares, children ages 5 and younger, etc.). Not every rider category is currently applicable to each service type, as illustrated in the *Current fare pricing as used in the fare model* table below.

#### Fare Product

Fare products include Cash, New electronic fare with transfer, Tokens, 1-Day Pass, 30-Day Pass, 10-Ride Ticket (ExpressRide only), 3rd Party Payer, and Free. Cash in particular is further disaggregated into market segments that do and do not include a transfer because the use of a transfer affects that individual customers' usage rate (i.e. 1.00 without a transfer or 2.00 with a transfer). The new electronic fare with transfer assumes that TheRide

implements mobile ticketing and/or smartcard technology where riders can electronically pay for their fare, and that this electronic fare includes a free transfer (i.e. the electronic fare has a 2.00 usage rate).

### Fare Model - Tab 1a Columns Description

The columns in the “1a. IN-Rider&Rev by Fare” input tab include the following information:

#### Existing Fare

Current fare pricing is based on TheRide’s existing fare structure for each combination of service type, rider group, and fare product. This pricing is illustrated in the table below.

#### Current fare pricing as used in the fare model

Service Type	Full Fare	Reduced Fare - K-12 Student	Reduced Fare - Fare Deal	ARide	GoldRide	MRide	go!Pass	MyCommuter	Exceptional Pass	WCC	EMU Pass
<b>Fixed Route</b>											
Cash/Token	\$1.50	\$0.75	\$0.75	Free	Free	--	--	--	--	--	--
1-Day Pass	\$4.50	--	--	--	--	--	--	--	--	--	--
30-Day Pass	\$58.00	\$29.00	\$29.00	--	--	--	--	--	--	--	\$52.50
Institutional Pass Program Rates	--	--	--	--	--	\$1.19	\$1.03	\$1.50	\$0.675	\$1.35 <sup>1</sup>	--
<b>ExpressRide</b>											
Cash	\$6.25	--	--	--	--	--	--	--	--	--	--
30-Day Pass	\$125	--	--	--	--	\$125 <sup>2</sup>	\$125 <sup>2</sup>	--	--	--	--
10-Ride Ticket	\$62.50	--	--	--	--	\$62.50 <sup>2</sup>	\$62.50 <sup>2</sup>	--	--	--	--
<b>GroceryRide</b>											
Cash	\$0.75	--	--	--	--	--	--	--	--	--	--
<b>NightRide &amp; HolidayRide</b>											
Cash	\$5.00	--	--	\$2.50	\$2.50	--	\$3.00 <sup>3</sup>	--	--	--	--

<sup>1</sup> WCC students and faculty ride free only at specific on-campus bus stops. Their fares are then paid by WCC as an institution.  
<sup>2</sup> While MRide and go!Pass program participants can purchase these products at half-price from their program providers, TheRide still receives full payment for these products from the program administrators, and thus the full pass product prices are used in this table and the model.  
<sup>3</sup> The DDA reimburses the \$2 difference between what go!Pass holders pay and what the full NightRide/HolidayRide fare is to TheRide.

With regards to the Institutional Pass Program Rates line item above, it is important to note that these are the prices paid per boarding by the institution and not by the rider. In each of these cases, the actual rider boards for free when the appropriate fare payment media and/or identification is presented. As such, on tab “1a. IN-Rider&Rev by Fare,” the fares for MRide, go!Pass, MyCommuter, Exceptional Pass, and WCC rider categories are input as \$0.00 to reflect the cost to the actual rider. It is only on tab “1b. IN-Fare Reimbursement” that the per-boarding rates from the table above are input into the model to calculate the contract payment amounts paid by the institutions responsible for funding each of the pass programs.

#### Existing Usage Rate

This column in the model represents the average number of boardings made per fare paid.

The pass usage rates, shown in the table below, vary by service type and rider category. The data used to calculate the usage rates below came from the GFI farebox data reports. The 1-Day Pass usage rate reflects the

average from across FY2017 as reflected in a pass usage rate report provided by TheRide staff. The 30-Day Pass usage rates, however, could not be pulled directly the monthly pass usage rates in this data spreadsheet. This is because the spreadsheet’s automatic tabulation of pass usage rates uses the total number of unique 30-Day Passes in each rider category per month and the total number of Pass uses in each rider category per month to calculate a monthly usage rate. TheRide’s 30-Day Passes, though, are rolling and not calendar-based. Hence, a single Pass’ unique ID number gets counted in each month it is used as a distinct pass, and the overall pass usage rates for the 30-Day Pass products are then brought down. To rectify this issue, the model contains pass usage rates calculated using raw farebox data from October 2017 to April 2018, where the number of uses per month per individual pass could be identified. The calculations done using this raw data eliminated Passes used in October whose use appeared to have started in September and also Passes used in April whose use appeared to continue into May. In the future, it would be best to use raw Pass data from an entire calendar year, preferably the fiscal year used for the model baseline, in order to account for any differences in pass usage rates seen across the seasons especially given Michigan’s climate.

These calculated usage rates were then compared to pass sales/revenue numbers for each of the Pass products. Some further adjustment to specific pass usage rates was done to better replicate these revenue numbers:

- Full Fare 30-Day Pass usage rate - GFI analysis suggested average rate of 47.1; adjusted down to 45.1 to replicate revenue figure
- EMU 30-Day Pass usage rate - GFI analysis suggested average rate of 37.1; adjusted up to 40.6 to replicate revenue figure
- Express 30-Day Pass usage rate - GFI analysis suggested average rate of 27.7; adjusted down to 26.2 to replicate revenue figure

These final, adjusted pass usage rates are the ones entered into the model.

**Pass usage rates for 1-Day and 30-Day Passes**

Rider Category	1-Day Pass			30-Day Pass		
	Calculated Usage Rate	Usage Rate in Model	Pricing Multiple	Calculated Usage Rate	Usage Rate in Model	Pricing Multiple
Full Fare	3.4	3.4	3.0	47.1	45.1	38.7
Reduced Fare - K-12 Student	--	--	--	34.3	34.3	38.7
Reduced Fare - Fare Deal Senior (60-64)	--	--	--	64.3	64.3	38.7
Reduced Fare - Fare Deal Disability (Non-ADA)	--	--	--	72.1	72.1	38.7
Reduced Fare - Fare Deal Income Eligible	--	--	--	56.8	56.8	38.7
EMU Pass	--	--	--	37.1	40.6	27.1 <sup>1</sup>
ExpressRide	--	--	--	27.7	26.2	20.0

<sup>1</sup> The pricing multiple for the EMU Pass was calculated based off the price the final customer pays for the product, which is \$40.60 and represents a 30% discount on the full fare product.

The 1-Day Pass usage rate of 3.44 makes sense given that it is priced at three times the Full Fare; those who are taking that many trips are making a logical decision in purchasing a 1-Day Pass instead of paying per single ride.

All of the 30-Day Pass products except one, the Reduced Fare - K-12 Student, also have usage rates higher than their price multiples. While it is difficult to know the exact reason that K-12 students appear to not be using their

passes as much as would make financial sense, one could theorize that parents or guardians may be purchasing 30-Day Passes for their children/students because of convenience. In this scenario, students are not spending their own money on the pass, and thus do not feel as much of a need to “earn their money back.”

The fixed route 30-Day Pass types that do break even, on average, range from a low of 40.6 to a high of 72.1. The Reduced Fare - Fare Deal 30-Day Pass products are particularly well used.

### Existing Ridership

Ridership by market segment is based on GFI farebox data from FY2017, TheRide’s NTD report for FY2017, and internal ridership records on the specialized services GroceryRide and NightRide/HolidayRide. Overall, fixed route comprises 99.09% of ridership within the model, ExpressRide 0.39%, GroceryRide 0.05%, and NightRide/HolidayRide 0.43%. The largest share of TheRide’s customers are MRide program participants using fixed route services (38%). The second largest share are cash riders on fixed route services (26%).

The GFI farebox data is automatically aggregated across fixed route, ExpressRide, and GroceryRide services. Because of this, data for ExpressRide (routes 91 and 92) and GroceryRide had to be backed out of the aggregate fixed route data in order for those rides to not be double counted.

A number of other ridership count manipulations had to be made as well, which are all detailed below.

The GFI fareboxes have no way of tying cash riders to the use of a specific transfer. However, cash riders who do use a transfer and cash riders who do not use a transfer have different fare product usage rates, and these groups will react differently to changes to the base fare pricing, fare structures, and transfer policies. Thus, a methodology was developed to split cash-paying riders into “Cash no transfer” and “Cash with transfer” for each of the rider categories. This methodology is included in tab 1a of TheRide’s fare model for reference, and also explained here. First, the total number of transfers and the total number of first boardings recorded within the GFI farebox data were identified. Then, the number of transfers was divided by the number of first boardings to get an average transfer rate. From here, the transfer rate could be multiplied across each of the cash payment rider categories to approximate the number of riders in the “cash no transfer” and “cash with transfer” fare product groups. Note that in this methodology it was assumed that trips including a transfer included only one transfer for a fare product usage rate of 2.00.

Another data manipulation had to be made around cash payments by Fare Deal eligible riders. In the original GFI farebox data, the number of low-income Fare Deal cash paying riders far outweighed the other two Fare Deal cash paying categories – seniors 60-64 and non-ADA disability. TheRide staff communicated that there was a high likelihood that bus operators were incorrectly keying in cash paying Fare Deal customers with predominantly one key (low-income) instead of distributing the key-ins across the proper rider categories. To rectify this inaccuracy in passenger boarding data, the low-income boardings were split between income eligible, seniors 60-64, and non-ADA disabled Fare Deal rider categories based on a target share of ridership that was arrived at by looking at data from TheRide’s 2017 onboard survey. Using these percentages of ridership as a guideline, cash ridership counts were reallocated to replicate the 2017 onboard survey results as closely as possible. At the end of this process, there was a substantial movement of rides from the income eligible Fare Deal category to the non-ADA disabled Fare Deal category.

A decision also had to be made around the boardings keyed into the farebox as a ‘malfunction.’ Based on the understanding of the system and comparisons to the 2017 onboard survey report, it was decided that these 3,985 malfunction trips should be added to the full fare 30-Day Pass boardings.

Because of the alternatives TheRide wishes to test out within the model, both GroceryRide and NightRide/HolidayRide had to be disaggregated into rider category levels that are not currently tracked by any of TheRide’s data systems. To distribute overall GroceryRide ridership into the fare categories listed in the model, it was assumed that there would be no full fare ridership. This assumption came from the fact that GroceryRide picks up and drops off riders specifically at senior centers, and the assumption is therefore assumed to be not

only reasonable but also the more conservative from a revenue standpoint. Given this assumption, the ridership could then be distributed among the remaining rider categories based on the share of ridership reported in TheRide's 2017 onboard survey. To distribute NightRide/HolidayRide ridership across the necessary rider categories, we first calculated go!Pass ridership based on the size of the subsidy the DDA paid for the service to TheRide. Based on the remaining ridership and revenue targets, once go!Pass riders and payments were accounted for, a Goal Seek function was performed in Excel to determine the share in the full fare versus discount fare categories. The results of this Goal Seek analysis appear reasonable based on other observed ridership trends as well as the various service area and rider contexts at TheRide.

Aggregate ridership counts by service type and fare product are detailed in the table below. More detailed breakouts of ridership numbers can be found in TheRide's baseline model itself.

**Final ridership counts used in the model by service type and fare product**

Fare Payment	Fixed Route	ExpressRide	GroceryRide	NightRide/ HolidayRide
Cash	1,729,946	1,065	3,023	28,484
1-Day Pass	8,098	--	--	--
30-Day Pass	521,341	24,121	--	--
10-Ride Ticket	--	998	--	--
Token	180,720	--	--	--
ARide (free)	205,101	--	--	--
GoldRide (free)	327,922	--	--	--
MRide ID	2,530,911	--	--	--
go!Pass	641,794	--	--	--
Exceptional Pass	112,309	--	--	--
WCC ID	36,968	--	--	--
EMU Pass	26,632	--	--	--
MyCommuter Card	4,497	--	--	--

With the assumptions and manipulations detailed above, the model calculated a systemwide ridership of 6,648,825. When compared to the 6,651,601 ridership figure reported by TheRide to NTD in 2017, this brings the model's calculated ridership within 0.05% of reported ridership.

**Existing Revenue**

Current fare revenue for each market segment, excluding third party payers, was calculated using the ridership times the average fare paid per trip specific to each segment. Revenue numbers for each of the third party payer programs were taken directly from TheRide's internal FY2017 financial audit documents.

The table below compares the revenue figures produced by the model to those detailed in the internal FY2017 financial audit.

**Revenue figures comparison across fare payment types**

Fare Payment <sup>1</sup>	Description	FY2017 Financial	FY2017 Model	Difference
---------------------------	-------------	------------------	--------------	------------



		Audit	Calculation	
<b>Cash</b>	All Cash	\$1,580,168	\$1,489,171	- \$90,996
<b>Token</b>	Full & Reduced Fare Tokens	\$145,113	\$135,945	- \$9,168
<b>Flex Pass</b>	30-Day (Adult)	\$157,122	\$156,506	- \$616
<b>Value Pass</b>	30-Day (Senior 60-64, Income Eligible, Disabled)	\$163,444	\$163,354	- \$90
<b>Student Passes</b>	30-Day (Student)	\$60,794	\$61,701	+ \$907
<b>Commuter Express/ ExpressRide</b>	Express Ride, from multiple accounts	\$115,970	\$115,081	- \$889
<b>MRide</b>	Michigan MRide Program final end of year program payment	\$1,687,997	\$1,687,997	+ \$0
<b>go!Pass</b>	DDA program payment and employer fees	\$752,248	\$752,048	- \$200
<b>Exceptional Pass</b>	AAPS program payment	\$74,906	\$75,809	+ \$902
<b>WCC Special Fares</b>	WCC program payment	\$48,154	\$49,907	+ \$1,752
<b>MyCommuter</b>	MyCommuter Google program payment	\$7,119	\$6,746	- \$373
<b>EMU Rte. 41</b>	EMU - Cost of free service on Rt. 41	\$159,594	\$159,594	+ \$0
<b>EMU Pass</b>	EMU 30-Day Pass	\$33,982	\$34,283	+ \$301
<b>NightRide/ HolidayRide</b>	NightRide/Holiday Ride fare revenue inc. go!Pass subsidy	\$124,556	\$124,555	- \$1
<b>Grand Total</b>	Sum of all revenue	\$5,111,167	\$5,012,696	- \$98,470

<sup>1</sup> GroceryRide fares are included within general cash revenue since GroceryRide specific data was not available in the internal FY2017 audit report.

The model's calculation of revenue comes within 2.0% of actual revenue collected within FY2017. There are two fare product categories that account for the majority of this discrepancy.

The first is the difference in revenue from tokens. The reported revenue at time of sale from tokens for FY2017 is approximately \$9,000 higher than the revenue collected in the form of tokens from the farebox. This discrepancy is likely due to the fact that tokens do not expire as a fare media, and are generally more likely to be retained for later use or lost by riders, than other forms of fare payment. No adjustment was made to account for this discrepancy between the model and actual ridership and revenue reports. However, the model will make automatic adjustments based on this \$9,000 discrepancy to ensure everything is properly calibrated.

There is also an unexplained surplus of \$90,000 in cash revenue that is reported within TheRide's internal FY2017 financial audit, but that is not supported by GFI ridership reports. Based on ridership data, the baseline model's cash revenue estimate is much closer to the GFI report cash statistic. Since the discrepancy in cash revenue is yet to be identified, the model will include the additional revenue as an adjustment factor to ensure the revenue results match the internal FY2017 financial audit.



**Fare Elasticity**

Price elasticities measure riders’ sensitivities to changes in fares and are key to any modeling effort that projects riders’ responses to changes in fare products and/or their pricing. The use of industry standards for price elasticities, such as those developed by American Public Transportation Association (APTA) and the Transit Cooperative Research Program (TCRP), is recommended for the model.

Generally, for a bus transit provider like TheRide, arc elasticities have been estimated to fall somewhere between -0.2 and -0.45 – that is, a 10% fare increase is expected to result in ridership losses in the range of 2% to 4.5%:

- A common fare change rule that has been a standard in the bus transit industry to estimate aggregate ridership response to bus fare changes is based on the Simpson & Curtin formula, which was derived from a regression analysis of before-and-after results of 77 surface transit (bus and streetcar) fare changes. It describes a shrinkage ratio relationship, not an elasticity relationship, and estimates a ridership change of 3.8% in response to a 10% fare increase. Over the years, this formula has evolved into a fare change rule that says that an overall fare increase of 10% will result in a ridership loss of 3%, which is equivalent to an arc elasticity of -0.41.
- A 1991 APTA study, *Effects of Fare Changes on Bus Ridership*, concluded that the fare elasticity was -0.36 for bus systems in urban areas of 1 million population or more and -0.43 in urbanized areas with populations of less than 1 million. Further, the average elasticity during the peak hour is -0.23 and the average off-peak elasticity is -0.42. Industrywide, the overall fare elasticity for bus systems in all cities is -0.40 – on average, a 10% increase in fares will result in a 4% loss of ridership.
- TCRP’s *Transit Pricing and Fares* (2004) conducted a review of studies of transit price elasticities and found that the results of the Simpson & Curtin formula and the APTA study are consistent with other research findings. The most commonly observed range of aggregate fare elasticity values in the U.S. and Europe is between -0.1 and -0.6. The aggregate fare elasticity average for U.S. cities, excluding those with heavy rail, is about -0.4 when calculated using mid-point arc elasticity. The average is less when cities with heavy rail are included. A study by Ecosometrics found an average bus fare elasticity of -0.35 based on 12 fare changes in the U.S. and Europe. In all cases, elasticities vary widely among systems (e.g., from -0.12 to -0.85 among the 52 agencies included in the APTA study and from -0.16 to -0.65 in the Ecosometrics study).

Recommended price elasticities, shown in the table below, were selected on the basis of the following principles:

- Systemwide weighted fare elasticity of about -0.36 (in line with industry standards and experience with past modeling clients),
- Express riders are less elastic (i.e. less sensitive to price changes) on average than local riders,
- Monthly pass riders are less elastic than cash riders, and
- Full fare riders are less elastic than discount riders.

**Fare elasticity rates by market segment**

Service Type	Rider Category	Fare Product	Fare Elasticity
Fixed Route	Full Fare	Cash	- 0.35
Fixed Route	Full Fare	1-Day Pass	- 0.35
Fixed Route	Full Fare	30-Day Pass	- 0.30
Fixed Route	Reduced Fare <sup>1</sup>	Cash	- 0.40
Fixed Route	Reduced Fare <sup>1</sup>	30-Day Pass	- 0.35

Fixed Route	Full Fare	Token	- 0.35
Fixed Route	Reduced Fare <sup>1</sup>	Token	- 0.40
Fixed Route	ARide	Free	**
Fixed Route	GoldRide	Free	**
Fixed Route	EMU Pass	30-Day Pass	- 0.30
ExpressRide	Full Fare	Cash	- 0.25
ExpressRide	Full Fare	30-Day Pass	- 0.20
ExpressRide	Full Fare	10-Ride Ticket	- 0.25
GroceryRide	Full Fare	Cash	- 0.35
GroceryRide	Reduced Fare <sup>1</sup>	Cash	- 0.40
GroceryRide	ARide	Free	**
GroceryRide	GoldRide	Free	**
NightRide/ HolidayRide	Full Fare	Cash	- 0.35
NightRide/ HolidayRide	Reduced Fare <sup>2</sup>	Cash	- 0.40
NightRide/ HolidayRide	go!Pass	Cash	- 0.35

<sup>1</sup> Reduced Fare includes students, seniors 60-64, non-ADA disability individuals, and income eligible individuals.

<sup>2</sup> Reduced Fare includes ARide and GoldRide individuals.

The ARide and GoldRide fare elasticity values are unique in comparison to the others because they were calculated based on an expected percentage ridership loss instead of a prediction of actual fare elasticity value. This is because fare elasticity values use percentage changes in pricing to predict ridership changes, and therefore any change from free fares (\$0) will generate a calculation error. To back into the number, we used academic research suggesting that *implementing* free fares results in an approximate 35% to 55% increase in ridership (Corvalis, OR, Hodge et al 1994), to ascertain that the converse of this would be an approximate -28% to -33% decrease in ridership by removing free fares. Given a proven non-linear response to price increases (loss aversion), the model assumes the higher value of a -33% decrease in ridership due to the elimination of free fares. The “fare elasticity” values input into the model for ARide and GoldRide are thus simply the values that are needed to generate a 33% loss of ridership in the model calculations.

### Fare Model - Other Input Tabs Descriptions

#### Reimbursement Rates

TheRide is reimbursed fares for the MRide, go!Pass, Exceptional Pass, WCC ID card, and MyCommuter programs based on ridership and negotiated rates. The current reimbursement rates for the programs are as follows:

- MRide - \$1.19 per boardings
- go!Pass - \$1.03 per boarding
- Exceptional Pass - \$0.675 per boarding
- WCC - \$1.35 per boarding
- MyCommuter - \$1.50 per boarding

The methodology behind each of these boarding rates has been written in note form into the model so that TheRide can reference these notes to recalculate reimbursement rates in the event of a fare increase.

There is an additional reimbursement line in the model specified as rider category “EMU Rt. 41” that is not an actual reimbursement item. This line item instead accounts for the money EMU pays to TheRide for operation of Route 41, which runs near the EMU business school and is free for everyone to ride. The reimbursement rate was calculated from the total contract amount for this route service divided by the number of passengers reported on tab 1a as “EMU Rt. 41 - 3rd Party Payer.” Thus, because the model knows to add in the additional fare reimbursement revenue figures from fare reimbursements into the model, the full contract amount of Route 41’s operation is included in the final results without affecting ridership or altering the cost of the service on tab 1a.

### **Reconciling Ridership & Revenue**

Because of the structure of TheRide’s agreement with University of Michigan (UM) for the MRide program, the reimbursement rate calculated on tab 1b does not reflect the true value of the MRide contract. Instead, it overestimates the revenue TheRide receives from UM because it does not account for the reconciling of federal and state dollars that TheRide receives on UM’s behalf related to UM’s operation of its Blue Bus service. These federal and state dollars are subtracted from the reimbursement rate value to arrive at the actual contract value UM pays TheRide. To rectify this discrepancy within the model, a revenue adjustment of  $-\$1,323,787$  has been added to tab 1b of the model, representing the federal and state funding dollars.

A similar issue arises within the model because of the structure of the go!Pass program. The go!Pass reimbursement rate does not account for the fixed fee revenue TheRide receives in the form of per employee go!Pass fees and employer participation fees. To rectify the discrepancy in this case, a revenue adjustment of  $\$91,000$  has been added to tab 1b of the model.

### **New Fare Products**

No new fare products were added to the model baseline. This tab will be further explained when reviewing the construction and results of modeling Alternatives 1 and 2.

### **Seasonality Factors**

Seasonality factors assign the proportions of base year ridership and fare revenue reported by calendar month, and are used in the event of a mid-year fare change. No seasonality factors were input into TheRide’s fare model for this study.

### **External Factors**

No external factors were assumed to affect the percentage change in ridership year to year on any of TheRide’s services.

If, at a future date, TheRide decides they would like to assume either ridership growth or decline, tab 4 would be the appropriate place to add these percentages into the model.

### ***Service Changes***

TheRide recently debuted a new service this year called FlexRide, an on-demand flex route servicing the southeastern corner of Ypsilanti. For purposes of the baseline model run and comparison of alternatives, ridership and revenue associated with FlexRide will not be incorporated into the baseline model or model Alternatives at this time. Since FlexRide has not yet been in operation for a full fiscal year, it was not possible to incorporate the service into the model due to a lack of revenue and ridership data.

## **7.1.3 Baseline Model Results**

The following table summarizes the ridership and revenue results of the baseline model run by service type and rider category for FY2017. The individual reconciliation of the MRide program and the additional fixed fee

revenue from the go!Pass program that were not included in the modeled market segments have been added as distinct rows in the table below, but are aggregated together as a single Reconciling Revenue item in the model. The Revenue Adjustment accounts for the discrepancy between the reported FY2017 revenue and the model calculated revenue (largely the cash and token revenue discrepancies discussed in *Existing Revenue* above). Because the calculated revenue is slightly lower (-2%) than the reported revenue, a 1.02 adjustment factor has been applied to the calibrated model so that the FY2017 total revenue equals the reported revenue.

### **Final baseline model results**

<b>Service Type/ Rider Category</b>	<b>Ridership</b>	<b>Revenue</b>
<b>Fixed Route</b>	<b>6,591,134</b>	<b>\$5,990,905</b>
Full Fare	1,309,242	\$1,388,219.85
Reduced Fare	1,130,863	\$603,514.61
Free	546,380	\$0.00
MRide	2,530,911	\$3,011,784.09
MRide Revenue Adj.	-	-\$1,323,787.00
go!Pass	641,794	\$661,047.82
go!Pass Revenue Adj.	-	\$91,000.00
Exceptional Pass	112,309	\$75,808.58
WCC	36,968	\$49,906.80
MyCommuter	4,497	\$6,745.50
EMU (Pass & Rt. 41)	278,170	\$193,877.68
<b>ExpressRide</b>	<b>26,184</b>	<b>\$127,756</b>
Full Fare	26,184	\$127,756.11
<b>GroceryRide</b>	<b>3,023</b>	<b>\$2,267</b>
Full Fare	3,023	\$2,267.26
<b>NightRide &amp; HolidayRide</b>	<b>28,484</b>	<b>\$124,555</b>
Full Fare	16,025	\$80,125.00
ARide/GoldRide	7,146	\$17,865.00
go!Pass	5,313	\$26,565.00
<b>Revenue Adjustment (1.02)</b>	<b>-</b>	<b>\$100,593</b>
<b>GRAND TOTAL</b>	<b>6,648,825</b>	<b>\$5,113,290</b>

## 7.2 Fare Model Alternatives

Drawing on the work done up to this point in the study, Four Nines worked with TheRide staff to identify the options for fare policy and fare technology that the agency would like to be modeled. These options were then grouped into two separate Alternatives, which each represent structurally different versions of the model. Each Alternative was run through two separate Iterations, with an Iteration representing a slight change to an Alternative's inputs as opposed to an entire reconstruction of the Alternative. The table below shows an overview of the fare policy and fare technology ideas that were included in the modeling effort. For a more detailed description of the exact specifications of the baseline, Alternative 1, and Alternative 2 models, please see Appendix E: Modeling Alternatives Details.

**Fare policy and fare technology ideas included in modeling**

Idea	Alternative 1: Iteration 1	Alternative 1: Iteration 2	Alternative 2: Iteration 1	Alternative 2: Iteration 2
Eliminate transfers for public	✓	✓	✓	✓
Introduce 2-hour magstripe pass	✓	✓		
Introduce electronic 2-hour pass			✓	✓
Tokens only available to social service agencies	✓	✓	✓	✓
Lower fixed route 30-Day Pass pricing multiple		✓		✓
Enable fare capping			✓	✓
Eliminate 1-Day Pass	✓	✓	✓	✓
Maintain current rider category discounts, but expand them across all services			✓	✓
Align rider category discounts with base federal standards	✓	✓		
Discontinue discounts for individuals 60-64			✓	✓
Establish all services' fares using a multiple of the fixed route base fare		✓		✓
Introduce electronic fare option			✓*	✓*
Do not incorporate rider category discounts into third party pass program pricing		✓		✓

\*Only a 2-hour electronic pass and an electronic, capped monthly pass are modeled. The introduction of smart cards and/or mobile ticketing throughout the system is not modeled.

**7.2.1 Modeling Alternatives Assumptions**

We made a number of modeling assumptions in order to run both Alternatives 1 and 2. Many of these assumptions are built into the model's structure in terms of how rider categories and fare media were segmented within the model. This structure and the assumptions behind the distribution of current ridership into these segments are detailed above in section 7.1: Baseline Fare Model.

**Both Alternatives**

The model makes the following assumptions regarding both Alternative 1 and Alternative 2:

- Any changes to the status quo are instituted starting in FY2019 and carried through to FY2022. Ridership

and revenue figures from FY2017 and FY2018 thus represent the baseline (with FY2018 simply assumed to be the exact same in terms of ridership and revenue as FY2017) and can be compared to the FY2019-FY2022 figures to assess the effects of the changes entered into the model.

- For Iteration 2 under Service Types, we based the service pricing on an established multiple bringing the full fare for ExpressRide from \$6.25 to \$6.00 (4x local fixed route), the full fare for GroceryRide from \$0.75 to \$1.50 (1x local fixed route), and the full fare for NightRide/HolidayRide from \$5.00 to \$6.00 (4x local fixed route). The model then calculates discount fare prices as 50% off these new full fare prices.
- For Iteration 2 under Third Party Pass Programs, new reimbursement rates are calculated for each of the third party pass programs. These new rates include only a transfer discount and a bulk purchase discount, and do not include a reduced fare discount.

### *Alternative 1*

The model makes the following assumptions regarding Alternative 1:

- Any rider currently classified as a “cash with transfer” rider will migrate to the 2-hour pass when 90-minute transfers are eliminated for all non-token riders. This 2-hour pass is priced at \$2.00 within the model. Though this pass price is higher than the current \$1.50 cash fare with a free transfer, the 2-hour pass still makes more financial sense than buying multiple single rides at \$1.50. This logic supports the migration of individuals from “cash with transfer” to the 2-hour pass. The \$2.00 price of the 2-hour pass is an assumption and can be adjusted if desired.
- When the 1-Day Pass is eliminated, these riders will migrate to the 2-hour pass, the 30-Day Pass, and the single ride fare products. The model calculates the proportion of riders who migrate to each of these products automatically. The majority are assumed to migrate to the 2-hour pass and the 30-Day Pass.
- Even if tokens are restricted to social service agencies and nonprofits, we have assumed the same number of tokens will be used each year. While likely not entirely accurate, there is not sufficient data to make a different assumption, and the number of tokens collected is small enough that fluctuations in their use should not greatly impact TheRide’s overall ridership and revenue.
- For groups whose discounts are eliminated under Alternative 1, their fares are bumped up to full fare starting in FY2019. The fare for ARide and GoldRide customers also increases, but in their case from free to \$0.75 for all single ride tickets to reflect federal guidelines. These fare increases are modeled across all of the services in the model except ExpressRide, which does not offer any discount rides to begin with. On GroceryRide, ARide and GoldRide individuals who currently pay the full \$0.75 fare end up paying the same fare as before once their 50% discount is applied to the new \$1.50 full fare. Thus, these two rider groups did not require any pricing changes.
- Individuals with non-ADA disabilities become eligible for half-fare on NightRide/HolidayRide services, representing a deviation from current practice. To account for this, we estimate the number of riders currently paying full fare on NightRide/HolidayRide who are individuals with non-ADA disabilities. We then manually shift these riders out of the Full Fare category and into the Reduced Fare category on tab 5 of both Alternative 1 model files.

## Alternative 2

The model makes the following assumptions regarding Alternative 2:

- Magstripe transfers are eliminated for all fare media types except tokens, whose sale is restricted to social service agencies and nonprofits, similar to Alternative 1. However in Alternative 2, the 2-hour pass is only available to customers who migrate to a new electronic fare media (mobile ticketing and/or smart cards). All cash riders must pay \$1.50 per boarding. Because the electronic 2-hour pass represents an entirely new fare product, we manually input new ridership distributions into tab 2 of the Alternative 2 model files. The new ridership distribution assumes all “cash no transfer” riders continue buying single ride tickets, but that all former “cash with transfer” riders and all former 1-Day Pass users migrate to the electronic 2-hour pass.
- Only seniors 60-64 lose their discount. All other current rider discounts remain. Fares for this rider category thus increase to full adult prices starting in FY2019.
- The free fare discount for ARide and GoldRide customers expands to NightRide/HolidayRide, and Fare Deal and student discount riders can use the service at a 50% discount. These shifts in eligibility are modeled using tab 5 of the model files. First, we calculate the number of ARide and GoldRide customers who would use the free service by multiplying the FY2017 number of ARide and GoldRide customers by their elasticity rate, which is estimated at 0.4. (For a detailed explanation of how this elasticity figure was arrived at, please see section 7.1.2: Fare Structure.) This means the model assumes that 1.4x the number of current ARide and GoldRide customers will use NightRide/HolidayRide when this service becomes free to them. Second, we estimate the number of riders currently in the full fare category who shift to the 50% discount category. Since Fare Deal ID card holders and students constitute 15% of ridership according to TheRide’s 2017 onboard survey, 15% of riders in the full fare category are shifted out of full fare and into the reduced fare category. Third, to estimate the final ridership number for the reduced fare category, we subtract the previous ARide and GoldRide customers out of the reduced fare category.
- TheRide implements fare capping. Constructing an excel file capable of modeling fare capping requires a number of adjustments to the model, and added assumptions within the files.
  - In terms of adjustments, five new fare products were added to the Alternative 2 model files to represent each of the electronic, capped pass types available. These are found at the bottom of the Alternative 2 model files on tab 1a. Then, the names of the existing 30-Day Passes were changed to “30-Day Pass - Public/Social Serv. Magstripe” to distinguish them from their electronic, capping counterparts.
  - In terms of assumptions, we estimate the proportion of 30-Day Pass holders who will shift from the 30-Day Pass magstripes to an electronic fare capping product at 50% and use this assumption to redistribute ridership between the products on tab 2 “IN-New Fare Products.” A number of pieces of research informed this estimate:
    - In the results of the survey performed as part of this Fare Study in April 2018, 49% of respondents indicated that they were either likely or very likely to use mobile ticketing

or smart cards (electronic forms of fare payment);

- If all current Full Fare, 30-Day Pass users who logically should switch to fare capping (i.e. those who purchase a 30-Day Pass but do not reach the breakeven threshold) chose to switch, 43% of current magstripe users would migrate to the electronic fare capping option; and
- Peer agencies have experienced migration rates from approximately 45% up to 65%, when traditional fare media remain easily accessible for customer purchase.

This migration assumption can be changed for each separate 30-Day Pass fare category by TheRide staff in the future using the table in the “Capping Summary” tab of the Alternative 2 model files.

- We also made assumptions regarding the two types of revenue loss created by fare capping. First, the model assumes a 1.75% revenue loss in Iteration 1 and a 2.00% revenue loss in Iteration 2 due to current cash riders who pay more than the equivalent price of a 30-Day Pass in a single month, since once these current cash riders begin hitting the fare cap, they will no longer pay for their additional trips over the breakeven price point. The difference in these lost revenue assumptions is a reflection of the different 30-Day Pass pricing multiples in each of the iterations; with a lower multiple (Iteration 2), the number of current cash riders who will hit the cap increases, and thus the revenue loss from capping these cash riders increases. While there is not sufficient data to estimate these cash rider revenue loss figures for TheRide specifically, data from peer agency fare capping analyses inform these percentage loss assumptions. Revenue loss estimates computed by transit agencies with enough data suggest approximately 1.6% to 2.0% in terms of the percentage of revenue lost specifically from cash riders when fare capping is instituted. These percentage loss assumptions are applied to the revenue estimates for the “new electronic fare with transfer” fare products on tab 5 of the model files. Second, the model calculates an expected revenue loss from riders who currently buy a 30-Day Pass but do not reach the breakeven point. This analysis uses 30-Day Pass data provided by TheRide to calculate the expected revenue loss for each 30-Day Pass product (excluding the EMU 30-Day Passes which are not available as an electronic fare capping product) by determining which riders would not hit the cap and then calculating the difference between the revenue from their single ride payments and what they would have paid for a 30-Day Pass. These calculations are done using additional tabs that have been added to the end of the model files. On these tabs, the 30-Day pass multiple can be easily changed so that various price multiples can be explored within the fare capping structure in terms of their effect on revenue.

## 7.2.2 Modeling Results & Evaluation

### Modeling Results Overview

RESULTS	Baseline (2017-2018)	Alternative (2019-2022)	Difference	Percentage Change
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<b>Alternative 1</b>				
<b>Iteration 1</b>				
<i>Ridership</i>	6,648,825	6,227,119	- 421,707	- 6.3%
<i>Revenue</i>	\$4,950,493	\$5,603,494	+ \$653,002	+ 13.2%
<b>Iteration 2</b>				
<i>Ridership</i>	6,648,825	6,237,773	- 411,052	- 6.2%
<i>Revenue</i>	\$4,950,493	\$5,730,679	+ \$780,186	+ 15.8%
<b>Alternative 2</b>				
<b>Iteration 1</b>				
<i>Ridership</i>	6,648,825	6,648,553	- 273	- 0.0%
<i>Revenue</i>	\$4,950,493	\$5,126,487	+ \$175,995	+ 3.6%
<b>Iteration 2</b>				
<i>Ridership</i>	6,648,825	6,653,474	+ 4,649	+ 0.1%
<i>Revenue</i>	\$4,950,493	\$5,258,393	+ \$307,900	+ 6.2%

### Alternative 1: Iteration 1 Evaluation

#### Results by service type

Service Type	Change in Ridership	Change in Revenue
Fixed Route	- 421,456	+ \$643,292
ExpressRide	0	\$0
GroceryRide	- 251	+ \$424
NightRide/HolidayRide	0	- \$3,561

Fixed route undergoes the largest changes in ridership and revenue of the services within the Alternative 1: Iteration 1 model. Since most of the alternatives evaluated affect fixed route, this is to be expected. The removal of a number of discount categories likely contributed to the decrease in ridership and increase in revenue. Also, a decent portion of the revenue increase is associated with the 2-hour pass price increasing from \$1.50 (original “cash with transfer” price) to \$2.00. Since this was an assumption that was made to run the model iterations,

and not an explicit directive in pricing from TheRide, it should be noted that this favorable revenue position would change if that price assumption were to be updated.

ExpressRide ridership and revenue remain unchanged since none of the alternatives modeled in Iteration 1 affect ExpressRide service. The impacts on GroceryRide are a reflection of increasing the service's base fare to be commensurate with fixed route full fare. While this is balanced out to a certain extent by extending a 50% discount to individuals with disabilities (ADA and non-ADA) and seniors 65+ and thus keeping their fares at \$0.75, eliminating discounts for low income individuals and seniors 60-64 on TheRide's services raises these two groups' fares to the full \$1.50. With this fare increase, it is reasonable to see a slight decrease in ridership and a slight increase in revenue. The changes in NightRide/HolidayRide are a result of individuals with a non-ADA disability becoming eligible for half-price fares on the service. No attraction of riders was expected due to this change, thus the impact of this change was only reflected in revenue and not ridership.

### Alternative 1: Iteration 2 Evaluation

#### Results by service type

Service Type	Change in Ridership	Change in Revenue
Fixed Route	- 409,203	+ \$756,983
ExpressRide	+ 219	- \$4,080
GroceryRide	- 251	+ \$424
NightRide/HolidayRide	- 1,817	+ \$11,511

As with Alternative 1: Iteration 1 above, fixed route undergoes the largest changes in ridership and revenue due to the number of modifications within the model that affect this service specifically, including the discount category removals and the increase in price from switching to the \$2.00 2-hour pass. ExpressRide sees some loss in revenue and gain in ridership because the service's base fare price goes down to \$6.00 from \$6.25. GroceryRide impacts are the same as in Alternative 1: Iteration 1 since the same modifications from Iteration 1 hold over into Iteration 2. NightRide/HolidayRide receives a revenue bump from increasing the base fare to \$6.00 from \$5.00, but sees the resulting ridership loss associated with this fare increase as well.

### Alternative 2: Iteration 1 Evaluation

#### Results by service type

Service Type	Change in Ridership	Change in Revenue
Fixed Route	- 4,993	+ \$195,934
ExpressRide	0	\$0
GroceryRide	+ 1,381	- \$729
NightRide/HolidayRide	+ 3,339	- \$22,672

The ridership loss on fixed route in Alternative 2: Iteration 1 is much less pronounced than in the Alternative 1 models because the majority of riders are able to retain their discounts on the service. This does translate, though, to a less substantial revenue gain. We can assume that the revenue losses from fare capping are also part of the reason for the less substantial revenue gain. Iteration 1 makes no changes to ExpressRide's pricing structure, so revenue and ridership on this service remain the same. GroceryRide experiences an increase in ridership and decrease in revenue in part because the service is now free for ARide and GoldRide customers. NightRide/HolidayRide similarly experiences an increase in ridership for the same reason. The larger drop in revenue though is a reflection of the larger increase in free ridership on NightRide/HolidayRide, the relatively higher fare which is now forgone, and the transition of a significant number of individuals (Fare Deal and Student riders) from full fare to half-fare.

### *Alternative 2: Iteration 2 Evaluation*

#### **Results by service type**

Service Type	Change in Ridership	Change in Revenue
Fixed Route	+ 1,758	+ \$316,488
ExpressRide	+ 219	- \$4,080
GroceryRide	+ 1,381	- \$730
NightRide/HolidayRide	+ 1,291	- \$9,836

Alternative 2: Iteration 2 is the only scenario in which fixed route experiences an increase in both ridership and revenue. These results show promise for fare capping in combination with the other strategies included in this iteration. All other services in this model similarly see an increase in ridership, even with the increase in fare for NightRide/HolidayRide and GroceryRide. The extension of free service to ARide and GoldRide customers and the extension of a 50% discount to Fare Deal riders and students balances out the ridership loss in the full fare categories on NightRide/HolidayRide and GroceryRide. ExpressRide sees a bump in ridership and loss in revenue from the reduction in full fare from \$6.25 to \$6.00.

## 8 Final Recommendations & Next Steps

These recommendations are a product of the quantitative and qualitative analyses described above, and each recommendation is followed by a series of next steps. These next steps are intended to help TheRide plan for implementation of each recommendation the agency chooses to move forward with.

Implementation of many of the recommendations below is dependent upon implementation of certain other recommendations. This speaks to the intertwined natures of fare policy and fare collection technology. Because of these dependencies, the recommendations below should be viewed for the most part as a package. Attempts to implement some recommendations and not others must be thought through carefully by TheRide staff, and staff should confirm that the necessary policy and technology structures are in place to ensure successful implementation of any recommendations that are selected individually from the list below. Interactions between recommendations have been noted within the descriptions below, where appropriate, to help TheRide

identify any dependencies. As with any proposed fare change, it will be necessary to conduct a Fare Equity Analysis per the federal civil rights guidance to determine whether any of the recommendations involving a fare change below would result in a disparate impact to minority riders or a disproportionate burden on low-income riders.

## 8.1 Transfers

### 8.1.1 Recommendation 1: Transition from one-way transfers to time pass as base fare

TheRide should transition to a 2-hour time pass as its base fare, thus eliminating single ride tickets. Transitioning from a single-ride fare with the option of a free transfer to a 2-hour time pass would bring a number of benefits to the agency.

First, a 2-hour pass would help address the dilemma of riders whose trips cannot be completed within the current 90-minute transfer window when headways increase during off-peak service times by giving them an extra 30 minutes to board their final vehicle. This was named as an issue during initial interviews with TheRide staff, who have had riders lament an inability to complete their entire trip on a single fare payment. Second, this policy change would allow TheRide to discontinue issuance of transfers to the general public. (Customers of social service agencies using tokens as their fare payment would still be able to receive a paper transfer, as detailed in the Tokens Recommendation further on in this document). According to maintenance personnel at TheRide, the issuance and acceptance of transfers is a main source of farebox TRiM unit issues. Eliminating their general public use would help reduce the number of maintenance calls and the magnitude of maintenance costs associated with these TRiM unit issues. Additionally, customers who are new to public transit may not understand the concept of a transfer or know that they must ask to be issued one upon boarding. A 2-hour time pass, on the other hand, is easy to understand even for new riders and does not require any interaction with the driver. This change in fare structure could help TheRide achieve its stated goal of building an attractive service by facilitating more understanding of how fares work even amongst current non-riders. Third, transitioning to a 2-hour pass as the base fare would position TheRide well for implementing mobile ticketing since time passes are the most logical type of fare product to enable on a mobile ticketing platform. A time pass base fare is the most common type of base fare product offered by other transit agencies on their mobile ticketing platforms.

We recommend that TheRide extend this implementation of a 2-hour pass as base fare not just to fixed route service, but also to ExpressRide. The ExpressRide 2-hour pass would be priced above the fixed route only 2-hour pass since ExpressRide is considered a premium service. For commutes into Ann Arbor, riders could use their ExpressRide 2-hour pass to transfer onto local fixed route services instead of asking to be issued a free transfer when boarding ExpressRide as they do now; this is a logical extension of the current policy that allows an ExpressRide customer to use their 30-Day ExpressRide Pass on local fixed route services. Since the travel times on Routes 91 and 92 are under an hour from first stop to last stop, a 2-hour pass would provide sufficient time for a rider to transfer from ExpressRide to fixed route. For reverse commutes, riders would be asked to pay an upcharge equal to the difference between the price of a local fixed route only 2-hour pass and an ExpressRide 2-hour pass if using a local fixed route 2-hour pass to board an ExpressRide vehicle. This is in line with current policy at TheRide. This upcharge could require a second transaction upon boarding the ExpressRide vehicle, or, if new fare payment technologies are implemented, a rider could simply buy an ExpressRide 2-hour pass valid on both local fixed route and ExpressRide in advance of their reverse commute. ARide and GoldRide customers,

since they currently ride free on fixed route services, would simply pay for a full ExpressRide 2-hour pass if transferring from local fixed route to ExpressRide. This would not be a federal compliance concern because ExpressRide is a premium service, and discounts on premium services are not covered under the relevant federal half-fare guidelines. Depending on how you price these new 2-hour pass products, though, there is the possibility for an equity concern with regards to disproportionate impacts on sensitive communities. Appropriate analyses would need to be conducted to determine if the new pricing creates a disproportionate burden on minority or low-income populations.

If TheRide decides to follow through with this recommendation, there will be two main things to consider before implementation. First, TheRide must decide how it would want the 2-hour passes to be priced in relation to current single ride tickets. Since this recommendation would institute the 2-hour passes as the base fare on local fixed route and/or ExpressRide, if TheRide decides it wants the product to be priced above the current single ride tickets then enacting this recommendation will result in a fare increase. Second, TheRide must keep in mind that with a 2-hour pass riders would have the potential to complete round trips using a single pass. Though there did not seem to be a clear, agency-wide consensus on the reasoning behind why round trips are not allowed under the current transfer policy, this aspect of 2-hour passes should be considered for its possible effect on revenue. TheRide may want the 2-hour pass to be priced above the current single ride to proactively address some of the revenue loss that may result from riders completing these round trips.

With regards to modeling this second consideration, at this time, the data provided by TheRide does not have the necessary granularity to determine what percentage of riders would complete round trips on a 2-hour pass. As such, the model for this study did not lower any ridership figures for the 2-hour pass to reflect the absorption of these round trips. This is, however, a manual adjustment that TheRide could input into the model on their own in the future if they are able to obtain the necessary data to estimate the percentage of riders who would complete an entire round trip within 2 hours (or whatever period of time a time pass may be valid for).

This policy recommendation of instituting a 2-hour pass can be implemented alongside technological improvements, as was modeled in Alternative 2, or as a standalone policy change on magstripe tickets, as was modeled in Alternative 1. Implementing the change alongside technology may lend itself to a more cohesive communication strategy when telling riders about the change. If new fare collection technology is not expected in the near future, however, it may be wise for TheRide to move forward with this policy on its own because riders' need for a longer period of time in which to complete a single trip with multiple boardings is unlikely to disappear.

### *Next Steps: Transition from one-way transfers to time pass as base fare*

- Project the most likely timeline for new fare technology implementation based on TheRide's needs/wants for a new system and budgetary constraints. Based on this analysis, decide whether to move forward with this recommendation on magstripe tickets or to wait until implementation of new fare payment and fare collection technology.
  - Even if TheRide does decide to wait until new technology is implemented, TheRide will have to decide whether to also offer this product on magstripe tickets or if the agency will try to incentivize migration to the new technology by making people who pay with cash pay for each boarding. Without a solid retail distribution and loading network, opting for the latter could cause equity concerns.

- Decide what price point the time pass as base fare will be sold at. This should consider whether TheRide wants to use this policy change as a fare increase and should include an estimation of how many riders will use the time pass to complete round trips, which would result in a loss of revenue.
- Perform a Title VI equity analysis to determine whether this policy and price change would result in a disparate impact to minority riders or a disproportionate burden on low-income riders.

### 8.1.2 Recommendation 2: Enable formal transfers between FlexRide and Fixed Route service

In early interviews, TheRide staff explained that there had been some difficulty in deciding how to price their new FlexRide pilot program in relation to fixed route, and that they continued to debate how and to what extent FlexRide should be integrated with fixed route services now that it was up and running.

No matter the specific relationship between FlexRide and fixed route, the two services should be connected by a formal transfer policy to demonstrate to riders that TheRide functions as a cohesive unit with regards to its variety of services. Formalizing transfers between the services should encourage riders to use both options together as a comprehensive system instead of viewing them as siloed operations by making these transfers more attractive and convenient, two qualities of service that are also identified as goals leading this study. Given FlexRide's current status as a pilot program that serves primarily to connect people with existing bus routes in the southeastern portion of Ypsilanti, it would be best to treat FlexRide as an extension of local fixed route service. The policy regarding transfers that TheRide chooses to enact for transferring between fixed routes should thus apply also to transfers between FlexRide and fixed route. Acknowledging the recommendation above, enacting formal transfers using the fixed route policy would mean 2-hour passes would be valid on both fixed route and FlexRide services.

As discussed in section 6.1.4, enabling these transfers will require some additional investment into the infrastructure present on FlexRide vehicles and possibly fixed route vehicles as well. Until TheRide decides which fare media technology to move forward with on its fixed route services (i.e. smart cards and/or mobile ticketing), it is difficult to make a final technology recommendation for these transfers. In the interim, the cheapest and easiest way to enable transfers between the services would be to enable visual validation of FlexRide media on fixed route and vice versa. Immediate implementation of visual validation would likely be accomplished through the use of paper transfers. During implementation of mobile ticketing, visual validation could be used on FlexRide for the mobile tickets. There is not a similar visual validation available for smart cards. Visual validation forgoes a rich data set from the transfers between service types, data that would be particularly valuable as TheRide designs service to increase cost effectiveness. Visual validation also carries some risk of misuse and fraud, although if it is only visual on FlexRide, and electronic validation is used on fixed route services, the risk is small.

#### *Next Steps: Enable formal transfers between FlexRide and Fixed Route service*

- Decide on a final fare for FlexRide service. TheRide could do this in the very near term, or they could choose to wait until they have a full fiscal year's worth of ridership and revenue data to put into the model to help with the decision.

- Depending on how the fare is priced in relation to local fixed route, decide whether there will be an upcharge to transfer between FlexRide and local fixed route in either direction and whether local fixed route pass products will be valid on FlexRide.
- Begin visual validation of magstripe and paper pass products to enable transfers. This would require no new infrastructure to be purchased, only some new driver training. As new fare technologies are adopted, explore how to best enact them on FlexRide and local fixed route for the purpose of enabling transfers between the two services.

## 8.2 Change Cards

### 8.2.1 Recommendation: Eliminate change cards

Change cards create well-documented negative impacts on operations, maintenance, and occasionally customer-operator interactions due to regular issues with the TRiM units. Each of the staff groups and operators spoken with at TheRide named change cards as a pain point in operations and identified a number of the negative impacts they have on TheRide's services. These impacts include costs in the form of lost fare revenue, maintenance and repair costs, and time costs due to boarding delays. Additionally, they add further complexity to TheRide's fare structure and have caused some of TheRide staff to be concerned about the opportunity for fraud. While staff are not aware of any current cases of fraud, operators are taught during training that they can tell the farebox to accept any fare media as a dollar value of \$1, \$5, or \$10 and then issue the appropriate amount of return money onto a change card.

Eliminating change cards would simplify TheRide's fare structure, eliminate any concerns of fraud, and improve operation and maintenance efficiency. It would also help address an identified weakness in TheRide's fixed route service, which is that change cards are being used for purposes beyond their original intent. Operators have said that riders will load the maximum \$10 into the farebox, then use the change card they are issued as a type of stored value card; since change cards are not intended for extended use, riders using them as makeshift stored value cards exacerbate issues related to change cards malfunctions at the farebox. Given this current unintended use of change cards that indicates the desire for a stored value and/or prepay option, eliminating change cards could incentivize customers to migrate to non-cash forms of fare payment. In fact, if in the future TheRide implements a new fare collection technology, such as a smart card system, riders could achieve the same benefit of a change card by loading cash value onto their smart card; their balance would then be available for future use, and riders would not have to worry about carrying exact change or overpaying.

This proposed policy change is consistent with policies at TheRide's peer agencies. Only four of the ten peers chosen for this study offer change cards; one of these peers is Grand Rapids, who has proposed eliminating change cards as part of their new electronic fare system. In Four Nines' experience, many transit agencies are making the decision to move away from change cards.

In terms of implementation timeline, there is no technical reason the elimination of change cards cannot be done independently of a fare payment technology upgrade. However, from a practical and user convenience perspective it would be ideal to do so when an alternative that gives riders a way of not overpaying (i.e. mobile ticketing and/or smart card) becomes available. If TheRide does not see itself implementing new fare payment technology any time soon, the agency must weigh the benefits of eliminating change cards in the near-term (e.g.



reducing wear-and-tear on the TRiM units) against the impacts this would have on riders. Since change cards function as a convenience mechanism instead of a base fare, it would be difficult to quantify the equity impacts of this elimination. Because of their convenience mechanism nature, though, eliminating this product is unlikely to produce problematic equity impacts with regards to federal requirements.

### *Next Steps: Eliminate change cards*

- TheRide should project when implementation of new fare payment technology is likely given needs/wants at the agency and budgetary constraints.
  - If implementation is likely to occur in the near term (i.e. within the next few years), then eliminate change cards alongside implementation of the new technology.
  - If implementation is not likely to occur soon, TheRide must weigh the benefits of eliminating change cards in the near-term (e.g. reducing wear-and-tear on the TRiM units) against the impacts this would have on riders. We recommend attempting to capture all of the both positive and negative impacts of change cards, from revenue (e.g. likely some extra revenue due to overpayment if change cards eliminated) to operations (e.g. less boarding delays due to TRiM unit issues) to customer relations (e.g. riders may think receiving a change card is “fair,” or they may not care), and to include quantitative data on these impacts wherever possible. This data collection will help TheRide come to a decision and defend that decision to stakeholders.
- If a decision is made to eliminate change cards, TheRide should establish both a last issue date, after which point change cards will no longer be issued to riders who overpay, and a last acceptance date, after which change cards will no longer be accepted. The acceptance date should fall a few months after the last issue date so riders have a chance to use up the remaining value on any change cards they possess.

## 8.3 Tokens

### 8.3.1 Recommendation: Tokens only for social services agencies; eliminate tokens for public purchase

Revisiting the role tokens play in operations was identified as a key opportunity for TheRide to explore during this study. Over the course of conversations with TheRide, it has been determined that tokens, while of great benefit for use with social service agencies and nonprofits, add another layer of complexity to an already crowded fare media landscape at TheRide. Eliminating tokens for public purchase would simplify TheRide’s fare structure, could reduce the intake of tokens and therefore the employee hours spent repackaging them (a main concern for the finance department), and could incentivize customers to migrate to electronic forms of fare prepayment for rides.

There are few downsides to eliminating tokens for public purchase. Only 3% of Fare Study survey respondents and only 2% of 2017 onboard survey respondents indicated that they use tokens as their regular fare media. While some people may like the simplicity, the ability to pre-pay, or the ability to purchase them from Bank of Ann Arbor locations, tokens are not the only fare medium that confers these benefits. Magstripes are easy to board with according to both operators and passengers; base fare magstripes, and possibly smart card fare



media, could be sold at Bank of Ann Arbor locations to preserve retail outlet options and the ability to pre-pay.

Tokens offer social service agencies a reliable, simple way to confer transit benefits to their clients. Tokens also offer TheRide a contract fare medium that is easy to administer and cheap to distribute to these agencies. No other fare media, current or proposed, meet these criteria as well as tokens do. Limiting tokens to social service agencies and nonprofits could also provide TheRide with a better idea of how these entities' clients use TheRide's system if token use and collection are tracked.

While this recommendation could go so far as proposing the total elimination of tokens as a fare media, Four Nines has found in conversation with other transit agencies that tokens remain the simplest and most reliable way of providing transit benefits to social service agencies that they can easily pass along to their customers. Tokens thus represent a valuable fare media that, as opposed to disappearing, are actually making a comeback in the transit industry.

Even if tokens are restricted only to social service agencies, it will be important to reinforce policies surrounding tokens. In our conversations with operators and staff, there was some confusion around whether two large, half-fare tokens can be combined to equal a small, full-fare token and whether a change card can be given for the difference between the full-fare and half-fare tokens. The Four Nines team received multiple and different answers to these questions when asked.

### *Next Steps: Tokens only for social services agencies; eliminate tokens for public purchase*

- Decide on official policies for the following questions:
  - Can two large, half-fare tokens can be combined to equal a small, full-fare token?
  - Can a change card be given for the difference between a full-fare and half-fare token?

Include these official policies in the formal fare policy document (suggested later in this section), and modify driver training manuals to include explicit mention of and training on these token policies.

- Begin conversations with Bank of Ann Arbor locations to determine if the branches would be willing to sell magstripe tickets instead of tokens.
- Determine if switching from tokens to magstripe tickets at these retail locations will affect TheRide's demand for magstripe fare media, and increase orders of the fare media to meet the new demand if necessary.

## 8.4 30-Day Pass

### 8.4.1 Recommendation 1: Lower the 30-Day Pass pricing multiple for fixed route

TheRide should lower the pricing multiple on its 30-Day Pass products to encourage more riders to migrate to the Passes. The desire to leverage this pass product as a way to increase ridership has been a common thread in conversations with TheRide staff, and the current 30-Day Pass price multiple on fixed route was identified as a challenge to increasing ridership during Four Nines review of the agency's needs, opportunities, and weaknesses. 30-Day Passes, when paid for upfront, represent a sunk cost for the rider. Thus, a 30-Day Pass holder is incentivized to use TheRide's services more often since each trip they take within those 30 days does not cost them any additional money. From the rider perspective, 30-Day Passes are also more convenient to

swipe to board than loading cash into the farebox, one of the overall fare policy goals of TheRide.

TheRide has an opportunity to target riders who currently use charge cards as a type of stored value card with this lower multiple since their current behavior points to a desire for a multiple use product and, if the recommendation of this memo is followed, charge cards will be eliminated in the future. There is also room to hopefully encourage some current cash riders to migrate to the 30-Day Pass since, according to the 2017 onboard survey, cash payments accounted for 25% of overall boardings in 2017 and for 29% of boardings by people who use TheRide six to seven days a week (and thus would already break even on a 30-Day Pass). Comparatively, only 7% of overall boardings and 11% of boardings by riders who use the system six to seven days a week were paid for using a 30-Day Pass in 2017. This hope for increase in 30-Day Pass use is supported by the results of Iteration 2 for modeling Alternatives 1 and 2, in which the 30-Day Pass pricing multiple was lowered from 38.7 (current multiple) to 36 times the adult single ride fare.

We are not equipped at this time to tell TheRide exactly what their new pricing multiple should be. Instead, we encourage the agency to test various pricing multiples by inputting these multiples into the fare model. TheRide can then use the model results to gauge the effect of different multiples on ridership and revenue. 30-Day Pass price multiples can be easily altered within the model by changing the value in cell N2 on tab 1a of each model file. The multiples tested within the model can be informed by the pricing multiples of peer agencies; TheRide could start with the multiples of the ten peers analyzed in this study, which are recorded in Technical Memo #1/#2.

### *Next Steps: Lower the 30-Day Pass pricing multiple for fixed route*

- Use the model to test various 30-Day Pass pricing multiples and assess their impact on ridership and revenue. Note that this pricing multiple will affect both full fare and reduced fare 30-Day Pass prices.
- TheRide will likely need to determine a maximum level of acceptable revenue loss related to lowering the 30-Day Pass multiple, and then look at changes to ridership at each revenue loss threshold up to that point using the model to determine exactly what level of ridership and revenue trade-off the agency is willing to pursue.
- Once TheRide decides on a new pricing multiple, the agency should develop a strategic communication plan that lauds the benefits of this change for riders.

### 8.4.2 Recommendation 2: Explore fare capping as a future possibility

Though fare capping shows promise according to model results, we cannot recommend fare capping at this time because TheRide does not have the necessary policies or technologies in place to implement it. Putting these policy and technology structures in place will take time, and aspects of TheRide's fare collection system will likely change between now and the time when implementation of fare capping is feasible. Instead, we recommend that TheRide use the Alternative 2 model files to predict the effects of fare capping when its system is at a point where fare capping would be feasible within a 5-year horizon since the model is designed to predict up to five years out from the baseline. At that point, the model baseline can be adjusted to reflect TheRide's new system. The results of that model will be more accurate than the results presented in this analysis since implementation of fare capping in FY2019 is not feasible.

In the interim, TheRide can learn from the results of peer agencies who have implemented fare capping. These

insights can be used to gain a better understanding of capping's effect on ridership and revenue, and these lessons could then be applied to the assumptions embedded in the fare model to create an even better prediction of the effects of capping within TheRide's system specifically. In terms of U.S. peers to watch, TriMet's capped monthly pass option began in August 2017, and DART (Dallas) plans to debut a capped fare product in August 2018.

When considering fare capping in the future, TheRide will need to consider these details of implementation:

- What services will fare capping be available on? If capping is available on multiple services, how will passengers who use multiple services in a single trip be affected? For instance, would fares paid on ExpressRide count towards the value of a local fixed route monthly cap?
- How will fare capping affect current 30-Day magstripe passes? Will these continue to be offered? If not, how will social service agency relationships be handled?
- Will discount riders only be required to hit half the full-price cap (i.e. would their cap be \$29 instead of \$58 under the current system)?
- Will third-party payers ask to renegotiate their contracts based on this new pricing scheme? Would UM want the cap to be incorporated into their contract pricing, for instance? (A rough calculation of what this would mean in terms of contract revenue based on FY2017 MRide ridership data has been provided to TheRide staff.)
- Is TheRide willing to switch from a 30-Day rolling pass to a calendar monthly pass, since the implementation of fare capping on a rolling pass is questionable and, if possible, would necessitate a significantly more expensive backend system?

TheRide should also consider that fare capping will always result in a loss of revenue. TheRide can predict the magnitude of this loss based on industry experience and 30-Day Pass data from the GFI fareboxes, but then the agency must decide whether this loss is acceptable to the agency from a financial perspective.

### *Next Steps: Explore fare capping as a future possibility*

- Set up informational interviews with peer transit agencies as they come to have more data on the success and implications of their fare capping programs. This will help TheRide obtain the most accurate assumptions on capping uptake and revenue loss for entry into their fare model and help them determine best practices if in the future they decide to implement.
- Using the information on experiences from peer agencies, begin testing capping and different capping thresholds within the fare model to project impacts on ridership and revenue.
  - Answer each of the questions listed above, and test these decisions within the model where possible to determine how TheRide's answers regarding fare capping will impact the agency's ridership and revenue. TheRide may want to test a variety of answers within the model where possible to help inform their final decision.
- If TheRide decides fare capping is a policy they would like to pursue, make sure to include requirements related to fare capping capabilities in any fare technology scope of work and request for proposals.

## 8.5 1-Day Pass

### 8.5.1 Recommendation: Eliminate 1-Day Pass

Eliminating the 1-Day Pass will simplify TheRide's fare structure and get rid of an underutilized fare product. Since 1-Day Pass holders are expected to easily migrate to another fare product, eliminating the 1-Day Pass will have little to no effect on ridership figures or the experience of riders who currently use the product. During conversations at on-site meetings, TheRide staff did not foresee any particular difficulties in communicating the financial and operational reasons for eliminating the Pass - namely, that not producing 1-Day Passes could lower fare media costs, help minimize issues with the onboard farebox TRiM units that currently print the 1-Day Passes, and simplify the current fare structure.

Because 1-Day Passes constitute less than 0.2% of boardings according to the 2017 onboard survey, even if current 1-Day Pass riders choose to move to the less expensive, recommended 2-hour pass, TheRide will experience a very minimal loss in revenue.

#### *Next Steps: Eliminate 1-Day Pass*

- The most convenient time to eliminate the 1-Day Pass would be in coordination with another one of the fare-based changes recommended here or with implementation of new fare technology.
- Because of the extremely low usage rate, though, TheRide could explore eliminating this product in the much nearer term if the agency expects progress on other recommendations contained within this report will not occur for some time. Perhaps the agency could eliminate the 1-Day Pass when it debuts its official fare tariff (further information on fare tariffs detailed later in this recommendation section).
- If TheRide chooses to eliminate the 1-Day Pass, the agency will need to make the necessary changes to its online store, to the farebox programming, and to its promotional materials. The agency will also want to communicate the other fare product options available to 1-Day Pass holders leading up to the elimination, either through an automatic message that appears when purchasing online or through bus operators and transit center staff when purchasing in person.
- TheRide will also need to determine if the magnitude of 1-Day Pass advance purchases warrants separate final issue and final acceptance dates, or if the agency can stop issuing and stop accepting the fare product on the same day.

## 8.6 Rider Category Discounts

### 8.6.1 Recommendation 1: Discontinue discount fares for individuals 60-64

It is recommended that TheRide eliminate discount fares for individuals ages 60-64 on its services. The current practice of offering this discount goes beyond federal standards, which only require ADA-eligible individuals and seniors ages 65 and older to receive a 50% discount on basic services during off-peak hours. This is a very small segment of riders (approximately 1% of total ridership according to the 2017 onboard survey) to target with a discount. While the small size of this rider category means that TheRide is unlikely to see any increase in revenue due to this policy change, the agency will save time and resources by not needing to distribute a third Fare Deal ID card type. Additionally, bus operators will have one less discount fare ID that they must be able to

recognize; both staff and operators brought up the difficulty of training operators to recognize the multitude of Fare Deal ID cards during interviews and named this as an area for improvement at the agency.

As more people work into their early 60s, removing this discount presents less of an economic burden to the individuals who would be impacted by this change. Still, to minimize backlash to the change, it is recommended that TheRide determine a cease date for accepting new applications for the 60-64 discount but then grandfather in all individuals who were already deemed eligible prior to this date. As these individuals reach age 65, the discount category will naturally phase out.

### *Next Steps: Discontinue discount fares for individuals 60-64*

- Obtain internal consensus on the decision to discontinue discount fares for individuals 60-64.
- Document the reasoning behind the decision, including alignment with peer agencies, sociodemographic shifts since implementation of the discount, and revenue benefits for presentation to the Board and as a response to public questioning.

### **8.6.2 Recommendation 2: Do not eliminate discounts for PCAs on fixed route services at this time**

TheRide staff expressed some interest in exploring the elimination of discounts for personal care attendants (PCAs) on local fixed route services because of a perception among staff and operators that riders who did not in reality serve as PCAs were committing fare evasion by claiming PCA status. As identified in the review of the needs, opportunities, and challenges at the agency, TheRide requires Fare Deal ID cards to identify whether or not the card holder requires a PCA, but PCAs themselves are not required to have their own identification card since a single Fare Deal ID card holder is likely to have multiple PCAs. Instead, TheRide created a policy that states a Fare Deal card holder and their PCA must deboard at the same stop for the PCA to be eligible for the discount. However, there is still a lingering perception of fare evasion even after implementation of this policy.

Though concerns about fare evasion still remain, Four Nines does not recommend moving forward with elimination of the PCA discount at this time. We instead recommend that TheRide begin to gather sufficient data to understand the possible implications of eliminating the PCA discount since anecdotal and perceived inequity is all that has been presented at this time. When later analyzing this data on rates of PCA discount use and likely rates of PCA discount abuse, TheRide should keep in mind that paratransit service costs may go up if the elimination of the PCA discount encourages disabled riders to switch from using fixed route service to using paratransit service on which PCAs ride free. TheRide should compare these increases in paratransit costs to the lost revenue estimated to be a result of PCA discount abuse. The agency may decide that based on these numbers, a certain level of fare evasion is worth encouraging riders to use fixed route as opposed to paratransit services.

### *Next Steps: Do not eliminate discounts for PCAs on fixed route services at this time*

- Begin collecting data on PCAs on fixed route, perhaps by programming a new farebox key the operator can use to record boardings by PCAs.
- Once TheRide has enough data, they could add this rider segment to the model or proceed with external analyses on the impacts of eliminating the PCA discount on fixed route.

- Work with the Local Advisory Committee to understand the effectiveness of the PCA fixed route discount in incentivizing disabled individuals to choose fixed route services over paratransit services.

### 8.6.3 Recommendation 3: Establish consistent discounts on services using current discount rates

TheRide should extend all of its current fixed route discounts to GroceryRide and the majority of its fixed route discounts to NightRide/HolidayRide (minus the discount for individuals 60-64 in keeping with the recommendation above). Doing so would be a major step towards TheRide's goal of bringing more consistency to its fare structure and would address staff's concerns around the difficulty of explaining to new discount fare category riders the variations in their discount eligibility depending on service type.

To enable the benefits of consistency and therefore simplicity to the rider that this recommendation is designed to bring, this recommendation should be implemented in concert with raising GroceryRide's base fare from \$0.75 to the fixed route base fare of \$1.50. Because so many current GroceryRide riders fall into discount rider categories, hardly any of these riders would experience an increase in fares if consistent discounts are enacted on the service. In fact, riders who fall into the ARide or GoldRide categories would go from paying \$0.75 to riding for free, which is expected to produce a slight increase in ridership on the service.

Regarding NightRide/HolidayRide, it is recommended that TheRide carry its 50% Fare Deal and student discounts over to the service in pursuit of increasing consistency. However, we do not at this time recommend that TheRide make NightRide/HolidayRide service free for ARide and GoldRide customers (or for PCAs), which would be in line with their discount on other non-paratransit services. NightRide/HolidayRide is an inherently expensive service, and making fares free for these groups is expected to induce about twice the current demand from these rider categories on the service. Thus, no decision should be made as to whether ARide and GoldRide customers should either continue receiving their current 50% discount or be raised to a 100% discount until TheRide can compare the results of their paratransit study and the likely cost per hour or rider of running ARide/GoldRide service to the results of this study and the likely cost per hour or rider of providing free NightRide/HolidayRide service. A decision regarding the level of PCA discount to offer on this service would need to be made after a decision regarding the ARide discount level. For now, we recommend that the current policy of asking PCAs to pay full fare on NightRide/HolidayRide continue.

Regarding ExpressRide, because of the nature of the financing behind its operation, we do not recommend extending discounts onto the service. Doing so could jeopardize the financial stability and viability of ExpressRide since a high farebox recovery is essential to maintaining the service.

#### *Next Steps: Establish consistent discounts on services using current discount rates*

- Determine when the fare on GroceryRide is likely to be raised to \$1.50 in order to plan in advance for enacting the steps below so that these discount rate extensions coincide with the increased fare on GroceryRide to minimize the impact on customers and prevent the payment of a half-fare on \$0.75.
- Align promotional and marketing materials as well as operator training to reflect the new discount rate policy.
- Publicize the new standardization of discounts to current Fare Deal riders and to GoldRide and ARide riders.

## 8.7 Fare Increases

### 8.7.1 Recommendation: Establish internal indicator(s) that will be used to determine when a fare increase should happen

Considering the agency's last fare increase took place from 2007 to 2010 with no review of fares since, TheRide staff have indicated the need for a fare increase policy that provides clear direction and justification regarding fare increases to both internal and external stakeholders. This ability to justify fare increases by pointing to specific indicators will build community faith in the agency by increasing transparency and the perception of fairness (an overarching fare policy goal). This will also provide the agency with a greater opportunity to plan for increases internally in terms of financial stability, communication strategy, and implementation processes. A formal fare increase policy based on indicators could also help to delineate the important millage votes separately from fare increase considerations by linking increases to a set agency policy, thus making the relationship between fare increase implementations and voting timelines less tense.

The needs surrounding a fare increase policy at TheRide eliminate "Option 1: Maintain current fare increase policy" from consideration since there is no fare increase policy. "Option 2: Establish a set period of time between fare increases" and "Option 3: Evaluate need for fare increase along with regular budget review" rely too heavily on mandated timelines for fare increases; these require regular implementations of a fare increase if they are to be effective. Because of TheRide's funding structure, fare revenue does not drive service level decisions to the extent it does at many other transit agencies. Instead, millages voted on by the general public are the main financial priority for the agency, even though TheRide's overall farebox recovery ratio is already generally in line with industry averages. Given this situation, implementation of an unneeded fare increase could do more harm than good by negatively affecting public opinion of the service. For these reasons, a fare increase policy that requires regular fare increases would be restrictive and ineffective for the agency.

"Option 4: Establish internal indicator(s) that will be used to determine when a fare increase should happen" on the other hand not only provides the flexibility the agency needs, but also would require TheRide staff to have an agency-wide conversation about what should necessitate a fare increase. This is an important conversation that it appears TheRide has not had in some years given there is no formal fare increase policy and that the last fare increase happened almost a decade ago. Additionally, during our analysis of needs, opportunities, and challenges at TheRide, Four Nines observed that while TheRide has some service standard performance indicators, there are no metrics related to fares. This recommendation would eliminate this weakness in TheRide's operations and administration and increase the agency's ability to balance its historic planning standards (such as ensuring 90% of households lie within ¼-mile of a bus stop) with its financial needs. These fare increase indicators could even be used beyond determining when fare increases should happen, potentially informing other finance and planning decisions as well.

In crafting this fare increase policy and its internal indicators, TheRide would have the opportunity to look to other transit agencies for guidance and to be creative in thinking about the context of their own agency's needs. Examples of indicators include:

- Inflation
- Local property values (because of the relation to millage revenue)
- Local population changes



- Fuel prices
- Labor costs
- 3rd party pass program enrollment and usage numbers
- State and federal funding amounts
- Capital project funding goals
- Comparisons to a specific set of peers
- Farebox recovery ratio goals
- Cost of service per passenger mile
- Changes in service area extent

### *Next Steps: Establish internal indicator(s) that will be used to determine when a fare increase should happen*

- Form a working group with representation from important departments (e.g. finance, planning) to begin the process of workshopping indicators that could be used for a fare increase. This process should keep in mind TheRide's values and vision for the future. The internal indicators should also keep in mind the three ends statements codified by the Board.
- The working group should both look to peer agencies for examples and brainstorm indicators of its own in coming up with its list. The list of indicators should then be distributed to other necessary staff with comments solicited from these reviewers to strengthen and gain backing for the indicators that will be used to determine when a fare increase should happen.

## 8.8 Service Types

### 8.8.1 Recommendation: Establish all services' fares using a multiple of the base adult fixed route fare

TheRide should use a pricing multiple, with the local fixed route adult fare as the base, to price its other services. This policy would provide clear direction for the agency in the future on how to price new services. Looking beyond pricing, setting services at multiples of each other also lays the foundation for establishing future policies that encourage riders to use the variety of services operated by TheRide. With first/last mile solutions such as FlexRide on the horizon and fare products that would be valid across the services under consideration, laying this structural groundwork is especially important for the future success of TheRide. Even today, service multiple pricing could help foster better rider understanding of the current umbrella of services since people tend to intuitively understand pricing multiples. All of these benefits would help make TheRide's services more attractive, consistent, and convenient, three of the goals of this study.

Modeling results from Iteration 2 of modeling Alternatives 1 and 2 in which this recommendation was implemented indicate that lowering the ExpressRide base fare to \$6.00 (4x fixed route) and increasing the GroceryRide base fare to \$1.50 (1x fixed route) would not pose major risks to ridership or revenue on these services in the context of the agency's entire operations. It should be acknowledged, though, that it is difficult to ascertain the impact on ridership and revenue of this change specifically because of the variety of changes built into Alternatives 1 and 2. As such, TheRide may find it beneficial to run the model with only changes to service



type pricing multiples to better predict the effect on ridership and revenue, and could even test various pricing multiples. The agency can then compare these predicted impacts with the benefits outlined above.

### *Next Steps: Establish all services' fares using a multiple of the base adult fixed route fare*

- Use the fare model to test various multiples of the base fare for ExpressRide, GroceryRide, and NightRide/HolidayRide and determine the likely impacts on ridership and revenue.
- Determine how any change to services' base fare multiples might affect how fare products are treated across services. For instance, if TheRide chose to bring GroceryRide up to full fare, perhaps local fixed route products such as Flex Pass could be used to board GroceryRide.

## 8.9 Fare Technologies

### 8.9.1 Recommendation: Procure a smart card + mobile ticketing system

TheRide should procure an integrated smart card and mobile ticketing fare collection system. While procuring and implementing such a system would require a significant investment of both capital and staff time, this technology upgrade would provide a host of benefits to TheRide and TheRide's customers.

Various departments expressed interest in encouraging riders to pre-pay for trips, shifting away from cash handling, reducing maintenance needs on onboard fareboxes, creating a better interface for engaging with new and potential customers, and automating as much of the boarding process as possible to improve relationships with riders — all of which can be better achieved through the use of new fare technologies. Implementation of new fare technology could also improve the quality of data collection and reporting at TheRide. This improved data could enhance the agency's ability to track whole trips instead of just boardings and in turn more accurately price fares and passes based on actual trip usage patterns for both the general public and third party pass programs. Beyond financial decisions, TheRide could leverage this data in its service planning processes and decisions. The data could also help the agency investigate why automated passenger counter (APC) ridership is higher than what is reported by the GFI farebox. As the data collected expands, it will be important to define business rules about how the data may be used as well as how to protect personally identifiable information to ensure anonymity of riders. With respect to these data privacy concerns, there are many peer examples to look to for best practices as the number of agencies who have implemented smart cards or mobile ticketing grows.

#### Why smart cards?

A smart card system can improve MRide management and is the best way to give employers or other organizations the ability to manage transit passes/value for their employees or members. While it is true that the current Odyssey fareboxes have smart card capabilities, they can only read first generation proximity cards which are outdated and difficult to implement with TheRide's current system. Thus, using the technology in place would not bring much additional benefit while still increasing the fare media costs for the agency. Because of this, Four Nines recommends implementation of a new smart card system with the capabilities necessary to impart benefits to both TheRide and its customers.

TheRide could leverage the backend system that implementing new smart card technology entails to shift a significant portion of administrative duties related to third party program management onto the third parties,

simplifying administration for TheRide and thus addressing the agency's interest in shifting personnel hours from managing current programs to exploring opportunities for implementing new ones. This backend system architecture could also potentially provide a more attractive and convenient customer experience as riders could go directly to their organization's transit coordinator to address issues or get questions answered. Smart cards also may be able to integrate with a potential future regional fare system.

A smart card system could add more flexibility to a third party pay program by allowing riders to pay for a base fare, for example, while the rider's e-purse could be used to pay for an up charge for ExpressRide.

Additionally, a smart card system is necessary to shift the bulk of fare enforcement to offboard. Shifting to offboard fare enforcement, discussed in more detail in the following recommendation section, would remove a significant source of operator-customer conflict, a major concern voiced by TheRide. It would also allow for automatic expiration of discount fares e.g. a student's reduced fare eligibility could be set to automatically expire following their 18th birthday. The student would not need to get a new smart card and TheRide would have better control over use of reduced fares.

New fare payment technology can also facilitate easier implementation of restrictions on third party payer program members, such as go!Pass usage only being valid during business hours or Exceptional Passes for students only being valid on weekdays. These restrictions are not the established policy at TheRide, but some operators perceive it as such and misinterpret third party pass use outside certain times of day or days of the week as fare evasion. Moving any time of use restrictions to technology means operators do not have to worry about (1) knowing these policies or (2) enforcing them. An added benefit of procuring a fare collection technology system with this capability would be that the process would require TheRide to formally discuss limitation policies with its third party payers. During conversations with TheRide staff and bus operators, it became clear that currently there is no formal policy between TheRide and the DDA and AAPS about limitations to the go!Pass and Exceptional Pass programs, respectively. Even without the procurement of new fare collection technology, Four Nines recommends that TheRide solidify the boundaries on third party payer programs in collaboration with each program's funder in the near term.

### **Why mobile ticketing?**

Mobile ticketing has proven to be a successful way to convert cash riders to an alternative method of fare payment. While mobile ticketing tickets are typically purchased using a credit or debit (including prepaid debit) card, many mobile ticketing vendors are now offering ways for cash riders to purchase their mobile tickets and passes using cash at a transit center or through integration with an electronic cash transaction network vendor. While it will not address all barriers to mobile ticketing (i.e., rider still must have a smartphone), offering a way to purchase tickets and passes using cash solves one of the most significant barriers for low income riders.

### **Why smart card + mobile ticketing in an integrated system?**

Though both standalone smart card systems and integrated smart card and mobile ticketing systems require large, up-front investments, all combinations of smart card and or mobile ticketing may result in lower operation and maintenance costs depending on the selected solution and penetration rate. Smart cards are less expensive to operate and maintain than magstripe and cash systems because they are entirely solid state; mobile ticketing systems require no infrastructure or a limited amount of inexpensive infrastructure (e.g. beacons). Both will help shift customers away from magstripe tickets and passes and cash, thereby reducing wear on the TRiM units and

costs associated with printing magstripe passes and reconciling printed passes and cash. Additionally, the reduction in on-board cash received can extend the life of TheRide's fareboxes and possibly enable TheRide to procure less complex and less expensive fareboxes as replacements.

It should be noted that mobile ticketing will likely come with a 10% all inclusive transaction fee, and smart cards will come with a 5% credit card fee. While these fees do represent an additional financial cost to the agency, TheRide should compare these costs to the potential savings from reducing the cost of cash collection in terms of both operations and maintenance.

Integrating a smart card and mobile ticketing solution with a common Customer Relationship Management (CRM) system will allow TheRide to better support customers rather than managing two parallel fare collection systems. The common CRM could also be used to manage rider eligibility for low fare programs and to track customer interactions through phone calls, emails, and letters. Integration also provides customers with a seamless user experience and the ability to switch between media types. Offering both smart card and mobile ticketing also gives more customers the ability to access the benefits of the new fare collection technology than would be able to access either one as a stand-alone system.

Mobile ticketing on its own, while in some cases a low cost solution that can be implemented quickly, provides only a fraction of the benefits of an integrated smart card and mobile ticketing system. Stand alone mobile ticketing applications offer limited options in terms of third party pass programs and would not inherently be capable of delegating management over these programs to transit coordinators at employers or other organizations. Very few of the current mobile ticketing offerings provide significant administrative capabilities. This is both because the industry is relatively young (compared to ride matching, for example) and because mobile ticketing is not inherently well suited to the types of fares generally associated with third party programs (lengthy period passes, or electronic purses with regular deposits). Adding these to the requirements in a solicitation would limit the number of vendors capable of responding and/or increase the capital cost due to non-recurring engineering costs.

For those vendors that do respond, their cost quotes to build a mobile ticketing system that is capable of handling third party partners would be almost as expensive as a smart card system. There are two primary drivers of the expense. First, the accurate and lower risk handling of lengthy period passes such as monthly, semester or annual passes, requires real-time electronic validation. This involves both readers on board (NFC or barcode) and real-time communications such as a mobile access router. This hardware costs the same for a smart card or mobile system and is the lion's share of the cost of a smart card system. The second expense driver is a back-end capable of handling bulk transactions, such as an upload of cards that are valid for the next semester or cards that are no longer valid. This along with administrative capabilities for the back end, through which a single person can manage multiple accounts, are not common features of a mobile system. Again the cost is the same as for a smart card system. With these capabilities the system capital costs would be the same for a smart card and a mobile ticketing system.

Since many employers and schools already use contactless IDs that could be used as the identifier for a smart card system, a smart card system is preferable to a mobile ticketing system capable of handling third party partners. Additionally, since mobile ticketing requires riders to have a smartphone, an integrated smart card and mobile ticketing system is fairer as it allows all riders to access the benefits of the improved fare collection technology regardless of smartphone ownership.

If the procurement of an integrated system is not possible, a valid option would be to continue to use the existing mag stripe system for third party partners and then add a mobile ticketing system without third party capabilities. This would be much less expensive, but would not support off board validation or a significant expansion of the third party programs, particularly employer programs. It would however provide a convenient option for less frequent riders and may capture riders who currently pay cash, load change cards for future use, or pay using tokens.

### *Next Steps: Procure a smart card + mobile ticketing system*

- Contact peer agencies to gain a better understanding of the functionalities of smart card, mobile ticketing, and integrated smart card and mobile ticketing fare technology systems. The lessons learned by these agencies could not only help TheRide decide what technology route to follow, but also may provide information that TheRide could use to construct a stronger request for proposals when the time comes to procure the fare technology.
- Run revenue projections to determine the timeline for fare technology implementation on smart card and/or mobile ticketing systems. Conduct fare model runs and independent cost-benefit analyses to demonstrate the utility of new fare payment technology and compare the quantitative and qualitative benefits to the financial costs.

## 8.10 Fare Enforcement

### 8.10.1 Recommendation: Shift enforcement to offboard

We recommend that TheRide shift enforcement for reduced fare programs offboard by determining eligibility at the time of purchase and not at the time of boarding. This policy change would address a number of issues that were identified earlier in this project by TheRide staff.

This policy change would remove the burden placed on operators to memorize all the types of fare discount IDs and the looks and discount levels associated with each. During conversations, operators indicated that not only is it difficult to memorize each of these IDs, it can also be difficult to read the details on the IDs once the cards are presented. Some IDs become worn over time and make the writing on the cards, such as expiration dates or names, difficult to discern. Additionally, offboard enforcement would reduce rider/operator conflict and shift operators to more of a customer service role. Many staff members expressed a desire to shift operators to a customer service role as a way to make bus service more inviting to current customers and as a way to attract new riders to the service who may be unsure of how the system works.

Offboard enforcement, because of the technology improvements it requires, would simplify administration of discount fares, including the deactivation of lost/stolen cards and the monitoring of suspicious discount fare use. Staff and operators alike are currently worried about fare evasion; publicizing the ability to control discount fare use would help assuage these concerns and minimize the perception of fare evasion on TheRide's services, which in itself can hurt the agency's image. The new technology required for offboard enforcement would also enable TheRide to assign eligibility to rider accounts that expires after a certain amount of time (e.g. youth or temporary disability).

Offboard enforcement policies and technologies would enable TheRide to obtain better data on discount fare

usage rates and prevalence, creating a trove of information that would serve as a better resource for planning and financial analyses into the future. This would represent a significant improvement from the status quo regarding discount fare data. Conversations with staff and operators as well as analyses of farebox data compared to survey data show that operators quite often press the wrong key when recording a discount fare rider boarding, meaning TheRide likely cannot currently rely on its farebox data for accurate discount fare use information.

To enable the technology benefits named above, offboard eligibility enforcement is best done using an account-based smart card system. TheRide could choose to place names and/or photos on the smart cards tied to a discount fare account as an extra layer of enforcement if desired. To address equity concerns and protect sensitive personal information, it is recommended that TheRide document in its policy and ID card distribution instructions that only first initials will be placed on these cards if the agency does choose to print names on them. This practice could also help reduce the discomfort of transgender riders who do not identify with their given first name, and has already been informally implemented by staff at TheRide for current Fare Deal ID cards. (TheRide could choose to implement this part of the policy recommendation with or without the change to offboard enforcement and begin printing all future Fare Deal ID cards with only a first initial.)

As mentioned in section 6.10.2, the level of financial investment necessary to enable offboard enforcement would depend on the number of offboard sites available for distribution of the reduced fare media, the details of the technology, and whether riders' photos were printed on the cards. Based on the decisions made related to each of these considerations, the capital cost for a reduced fare media distribution network could range from a few hundred dollars to a few thousand dollars per location. Considering that TheRide currently handles almost all of its reduced fare ID distribution at AAATA Headquarters without too much of an issue, the agency could probably function with just the one central reduced fare media distribution site, which would minimize the required capital investment costs. TheRide could then explore alternative distribution locations to help accommodate high-volume application times, such as before Art Fair each July. The supplies used to set up these temporary locations could also be used during the debut of the new smart card reduced fare system to help process current reduced fare ID card holders into the new system.

A number of transit agencies have used the implementation of smart card technologies as an opportunity to shift fare enforcement offboard. The potential for offboard enforcement is even regarded within the industry as a driving factor behind agencies' decisions to implement smart card technology, and in general smart card implementation combined with the switch to offboard enforcement is strongly recognized as an industry trend. In the San Francisco Bay Area, the debut of the Clipper card coincided with a shift of youth fare enforcement to offboard; bus drivers no longer ask to see an ID upon boarding for a rider to receive a youth discount fare when a Clipper card is used. AC Transit also coordinated its smart card implementation with shifting its youth program enforcement offboard. RTD in Denver enforces all of its pass programs and associated discounts through its MyRide smart cards and an accompanying offboard enforcement program, and CTA in Chicago does the same with its Ventra smart cards.

### *Next Steps: Shift enforcement to offboard*

- Include the quantitative and qualitative benefits of offboard fare enforcement in the analyses done to determine justification for fare technology implementation.

- Consult the Local Advisory Committee to gauge their perspective on the possibility of shifting enforcement to offboard and to investigate whether there are any special considerations TheRide should be cognizant of regarding the ability of people to participate in an offboard enforcement program.

## 8.11 Third Party Pass Programs

### 8.11.1 Recommendation 1: Do not incorporate rider category discounts into pricing of per-ride rates for pass programs; this is not common industry practice

It is very uncommon for transit agencies to incorporate reduced fare discounts into third party payer agreements. The only exceptions to this are third party payer programs where all program participants are eligible for the same reduced fare, such as with the Exceptional Pass program. To better align itself with industry standards and to create greater consistency across third party payer contracts, Four Nines recommends that TheRide eliminate the reduced fare discount from all third party payer program rate calculations except Exceptional Pass. This means contract pricing would only incorporate a transfer rate discount, ideally specific to each third party, and a bulk purchase discount, which is currently set at 10%. This policy should be codified within the formal fare policy documents suggested in the next recommendation to give the policy permanency and to insure it is followed in future contract negotiations.

If TheRide decides to eliminate the seniors 60-64 discount, this would be an ideal time to make the contract rate pricing change to current programs since the reduced fare discount rates for MRide and go!Pass - the third party payer programs currently benefiting from a reduced fare discount - would change anyways. The new contract pricing, as outlined above, would include only a transfer rate discount and bulk purchase discount. Assuming the current transfer rate discounts stay the same, the new pricing would increase the MRide rate from \$1.19 to \$1.22 and the go!Pass rate from \$1.03 to \$1.13. Using ridership numbers from FY2017, this would have increased the MRide contract amount from \$3,011,784 to \$3,087,711 and the go!Pass contract amount from \$2,606,838 to \$2,859,929. These are not insignificant increases in contract amounts for these entities, and TheRide may experience pushback from the University of Michigan and the Ann Arbor DDA when implementing this recommendation. It is important though to recognize that by writing this policy into formal fare policy documents that will undergo review and approval by the Board, TheRide demonstrates that this change to contract pricing is founded in forward-thinking that considers the agency's financial health, that seeks to remove any perception of arbitrary negotiation of contracts, and that thus opens future possibilities to introduce new third party pass programs. TheRide can fall back on this agency-wide consensus and the weight of having these changes codified within a formal policy if negotiations become difficult. Other transit agencies across the country have had to go through similar contract renegotiations with third party payers. AC Transit renegotiated its contract with UC Berkeley to comply with their adopted pass program policies. This was also critical in helping the University explain the changes to the student body, who were required to vote on changes to student fees associated with this program. RTD in Denver is currently in the process of reviewing its contracts with local institutions as part of a holistic review of their entire landscape of pass programs. In all cases, change will result in difficult negotiations because any change from the status quo creates perceived winners and losers. TheRide's key tools in approaching this change will be strong justifications for its decisions, which policies and analysis can provide.

If TheRide decides it is not in their best interest to remove reduced fare discounts from the MRide and go!Pass contract rates, Four Nines still recommends that TheRide document this policy going forward and adhere to it in pricing any new third party payer contracts. This will remove some uncertainty around pricing new programs by letting organizations interested in a third party payer contract as well as TheRide staff know what to expect. If TheRide moves to smart cards, the data from these cards would help TheRide determine more accurate transfer rates, which would also contribute to greater certainty around contract pricing.

*Next Steps: Do not incorporate rider category discounts into pricing of per-ride rates for pass programs; this is not common industry practice*

- Wait until the next contract negotiation cycle comes around for the MRide and go!Pass programs to broach the subject of removing rider category discounts from their program pricing.
- It may be beneficial for the agency to coordinate this effort with either the onboard survey or another rider survey in order to assure the DDA and University of Michigan that TheRide is using the most up-to-date information possible regarding transfer rates for pricing these contracts.

### 8.11.2 Recommendation 2: The MRide data agreement does not need any modifications unless the University would like to cooperate in moving to contactless cards

Because the MRide agreement is a substantial source of TheRide's ridership and revenue, Four Nines does not recommend any modifications to the agreement, besides the potential change to rate pricing outlined above, at this time. In the future, TheRide may want to discuss moving the the MRide program to the contactless capabilities already embedded in MCards, especially if the transit agency decides to move forward with a smart card program. The move would hopefully help TheRide obtain better data on MRide usage and create more consistency across rider experiences. If UM affiliates are familiar with the contactless card boarding experience, they may feel more confident in migrating to an agency smart card after their affiliation with UM terminates.

*Next Steps: The MRide data agreement does not need any modifications unless the University would like to cooperate in moving to contactless cards*

- When/if TheRide begins to consider the procurement of a smart card system, it will be important to talk with University of Michigan in advance to discuss their willingness to use MCards NFC capabilities with the smart card system. This discussion may inform aspects of the scope of work and request for proposals related to data scrubbing or anonymization.
- If the University of Michigan agrees to incorporate their MCards into the contactless smart card system, MCards will need to be included in the testing and implementation of the new system.

### 8.11.3 Recommendation 3: Develop a methodology for pricing new third party pass programs without pre-existing ridership data

We recommend that TheRide develop a methodology to establish third party pass programs that can be adapted to situations where ridership by employer may be difficult or impossible to assess. In the past, this lack of ridership data has made TheRide hesitant to bring in new third party pass programs because of concerns regarding the impact of new programs on agency costs and, related to this, an uncertainty regarding how to



price the first year of the program. There are several ways in which peer agencies establish new third party pass programs that do not rely on pre-existing ridership data for an institution’s members; TheRide could build on these examples to develop their own methodology for pricing new third party pass programs where little to no ridership data is available.

In the San Francisco Bay area, AC Transit established the EasyPass program for employers to induce ridership to employers or developments on bus routes with existing capacity. Their program is a Universal Pass Program, where employers provide passes for all employees in the defined pool regardless of current or anticipated use. The employer’s cost is based on transit service levels, size of the participant pool (employees), and some pass production and management costs. In this way, employers pay an annual per-participant price which can either subsidize the cost of the pass to the employer (in part or in whole) or pass the cost on to employees as a group benefit. However, employees must provide passes for all employees in the defined pool regardless of current or anticipated use. The cost matrix AC Transit uses for pricing its employer pass programs is shown below:

**Transit Level of Service Example**

		Number of Program Participants (Annual Price per Participant)				
		100-500	501-1,000	1,001-5,000	5,001-10,000	10,000+
Transit Level of Service	1	\$134	\$115	\$96	\$76	\$57
	2	\$120	\$104	\$86	\$71	\$54
	3	\$104	\$91	\$77	\$64	\$50
	4	\$90	\$78	\$69	\$58	\$48

These costs were developed using a Transit Level of Service (TLS) score that reflects the frequency and concentration of service that is available within ¼-mile of the worksite. Specifically, this TLS score incorporates two factors:

- Number of trips during peak morning and midday service,
- Then downward or upward adjustments to the score for less frequent afternoon service and unserved peak, short turns/modified service, and premium service

To calculate the TLS score for a specific potential employer, each bus line within ¼ mile of the plotted employer location is analyzed and given a point score based on the two factors above. The sum of the scores determines their TLS score, with Level 1 representing the highest service and Level 4 representing the lowest service:



- Level 1- 45 points or more
- Level 2- 25-44 points
- Level 3- 10-24 points
- Level 4- 1-9 points

If a score falls just inside or outside of a TLS by one point or less, the pass program coordinator at AC Transit has the option of making an adjustment to a Client's TLS that they deem appropriate, with final approval from the marketing manager. As transit service increases and a particular employer's TLS score changes, AC Transit renegotiates an employer's program costs.

Similar "Universal" programs exist at other agencies such as SamTrans and Caltrain, which provide employer pass programs that are based on employee counts rather than ridership or usage. For both of these agencies, passes are set at a per-employee basis, with a minimum cost needed to participate (based approximately at 100 employees). Employers pay an annual fee for every eligible user regardless of whether the users take advantage of the pass benefit. Their pass program also includes Residential Developments. How the employers of residential developments recoup their costs for the program is left to the organization.

TheRide could use a similar scoring program to those outlined above in order to create first-year pricing for new employer programs when no current ridership data is available. This type of scoring methodology prices programs in a defensible way that can be explained to new organizations while ensuring that the price covers the program's ridership and potential associated administrative costs. Establishing these types of pass program parameters also opens the opportunity to target more pass programs towards employers in areas where service may be rich, but still underused. Codifying the price methodology also provides the structure to ensure fairness between employers along with ensuring consistency in administrative functions associated with payment collection and pass distribution. While TheRide would still need to understand route-level ridership to plan where they would target more employer pass program market penetration, it would not be needed for their pass program pricing methodology if a pricing methodology similar to the examples above is established.

#### *Next Steps: Develop a methodology for pricing new third party pass programs without pre-existing ridership data*

- Use the AC Transit example above as a jumping-off point for developing a third party pass program pricing methodology for TheRide.
- This methodology development process would be aided by the creation of a working group with representatives from finance, marketing, and operations who could use their own experience to create attractive and also financially realistic pricing thresholds.

#### **8.11.4 Recommendation 4: Expand business program (similar to go!Pass program) to other businesses in the service area located near transit service**

We recommend that TheRide expand the business pass program in areas where it makes sense. Expansion of the business program could (1) help attract new customers to TheRide and (2) diversify the portfolio of pass programs bringing revenue into the agency, a concern that was expressed by staff specifically related to MRide pass holders accounting for approximately 40% of current local fixed route ridership.

While it may be attractive to offer a pass program everywhere, priority should be for areas that already have

rich service that is not currently at capacity. For areas that do not have transit service, or areas where the buses may be at capacity, it would be necessary for businesses to contribute to the cost of transit service in addition to any pre-established pass program costs. By strategizing in this way, TheRide can achieve economies of scale in their pass program without being hampered with additional service delivery costs. Should TheRide decide to expand into areas without existing transit service, it would be necessary to determine how costs of new service would be shared. However, we recommend keeping service related costs separate from pass program costs in order to avoid unnecessary complexity and confusion. Because service related costs are fixed based on the service provided, agencies often have a good sense of the cost-sharing arrangement that would be necessary to meet the financial objectives of the agency. For pass programs, on the other hand, agencies have wide latitude in determining the cost-sharing arrangement, based on existing capacity and service availability. Further, decisions related to service design and operations are rarely made with fare payment in mind. Creating a cost-sharing formula for new service allows an agency to investigate potential partnerships with businesses outside of the pass program model, at the same time understanding that it's rare that the revenue generated from a pass program would be enough to fund new service. While cost sharing arrangements for service or pass programs can be sequential, we recommend establishing a cost-sharing model for service outside of any cost-sharing model in the development of pass programs.

### *Next Steps: Expand business program (similar to go!Pass program) to other businesses in the service area located near transit service*

- Once the methodology discussed above is developed, publicize the creation of this new pricing method to employers that have previously expressed interest in a pass program.
- TheRide should also reach out to organizations the agency thinks would consider a pass program and are located in underused portions of the service area. This effort, if successful, could help to address some of the public's 'empty bus' argument/perception that makes them question the efficacy of TheRide's routes while also improving operational efficiency for the agency.

## 8.12 Formal Fare Policy

TheRide currently does not have any formal fare policy. As such, staff have no formal guidelines to direct them as they make decisions related to fares and no blueprint for implementing new and innovative programs and services or for integrating those new programs and services with existing ones.

Establishing a fare policy is one of the most significant ways an agency can take control of their future and establish good will with their customers. It can create an orderly, transparent, and rational process for fare increases, providing stability for riders and agency alike. Rather than relying on ad hoc fare decisions that do not adhere to any predictable policy and can lead to rider anxiety or agency uncertainty, a comprehensive fare policy provides a clear trajectory for the agency that can be easily understood and followed by both internal and external stakeholders. A comprehensive fare policy can also support other agency goals and helps the agency remain compliant with regulatory mandates such as Title VI and ADA.

There are several good reasons for transit agencies to develop policies and fare tariffs:

1. It presents a single repository of fare-related operating procedures that can include everything from the amount of time that transfers are valid to the conditions under which a fare increase would occur.

2. It provides transparency to the public and the agency for issues that may be complex or open to multiple interpretations
3. It offers the agency discipline in establishing new fare products, discounts, or corporate relationships so that all agency staff are working toward the same organizational goal.

Many agencies have a variety of documents that contain fare-related information, from board policies to operating procedures. The problem arises when new fares are established or when fares or fare procedures change, and it becomes necessary to change two or three documents in order for everything to be consistent. To combat this, many agencies have established fare tariffs—a codified fare structure—that delineates fare prices, fare media, fare-related operating procedures, and other fare-related issues. Valuable to riders and agency staff alike, fare tariffs can provide information on existing fares that can be used across a range of functions, from marketing to driver training. Fare tariffs can also contain information related to parking and transit center operations, or the establishment of Charter Service, insofar as they relate to fares and fare-related procedures. Many agencies have their codified fare tariff in their driver handbooks as standard operating procedures for the collection of fares, fare enforcement, and discount fare eligibility.

A comprehensive Fare Policy can include the rationale for and timing of fare increases as well as the more procedural elements of a tariff. This way all the fare-related issues can be kept within one policy document, eliminating the need to change other related documents that may exist within the agency along with the confusion and contradiction that can often occur when updates do not happen across the board.

### 8.12.1 Recommendation 1: Establish a fare tariff

Establishing a fare tariff takes time in order to ensure that all the conceivable elements associated with fare payment, fare enforcement, fare structure, and other fare related procedures are included. However, at the end of the process, the agency is left with a document that is useful to the agency and provides a solid basis for communicating fare issues to the public.

At the very least, the Fare Tariff should include:

- Fare Structure (media and ticket types, fare categories, discounts, rates, etc.)
- Fare Enforcement Protocol
- Transfers/Upgrades
- Pass Programs
- Specialized Discounts and/or Promotional Fares

As stated above, fare tariffs can also contain information related to any parking or transit center operations, advertising practices, or the establishment of Charter Service, insofar as they relate to fares, fare-related procedures, or revenue-related issues. While the breadth and depth of the fare tariff can vary from agency to agency, the best fare tariffs are those that provide the most clarity to agency staff regardless of the department.

#### *Next Steps: Establish a fare tariff*

- Use operator training documents, the fixed route fare media chart, and the rider guide published each season as a starting point for identifying and compiling all fare-related elements at TheRide.
- Run this initial list of payments, enforcement, structure, technologies, and procedures by a subset of staff in each department at TheRide. These staff members should check the list for both completeness

and accuracy. It is likely that during this review, some disagreements will arise as to what payments, procedures, etc. are accurate (e.g. whether a change card can be issued to a discount rider who pays using a full-fare token). TheRide should identify either an individual or group of individuals who have final say in these discussions.

### 8.12.2 Recommendation 2: Establish a fare policy

A fare policy can be a few paragraphs, or it can be a comprehensive compendium of all fare-related items. One thing all fare policies have in common is that they anticipate the future and provide a blueprint for getting there by establishing principles and goals aimed at guiding the agency's revenue-related decisions. While these typically include broad pronouncements such as "Increase Ridership" or "Improve Farebox Ratio," they also may include other more specific goals related to technology, partnership opportunities, equity, and the process for evaluating the need for fare increase. While goals included in a Fare Policy may be qualitative, such as "Fares should be easy to use," the principles may be more quantitative, such as "Price a monthly pass at 38 times the base cash fare."

Because a fare policy is typically adopted by the governing board, agencies strictly adhere to the policy; as such, the policy should be written with clarity and process in mind. This can be a double edged sword for agencies that have not considered the consequences of their proposed policies. However, if undertaken adequately, the fare policy can act both as a sword and a shield in fare-related internal discussions by providing context and content. It also helps to explain fare-related decisions to the public by framing the decisions within the context of the policy. Issues such as fare increases, new transfer policies, pass programs, or technology changes can be directly traced to the agency's overall goals and principles and therefore the decisions made regarding these issues better defended to external stakeholders.

Additionally, if the process for increasing fares is codified in the fare policy, there would be a standing expectation of the public and the agency board as to when increases would be considered. Some agencies have instituted multi-year fare increases within their fare policy that includes a "kill switch" based upon the financial health of the agency. If TheRide decides to institute budget-driven fare increases or fare increases related to internal indicators, the process for evaluating fare increases would be included in the fare policy along with the standards or conditions under which fare increases would occur. In all cases, standard protocols for outreach should be included in order to provide internal guidance to staff as well as to help the public understand how to become involved in the decision making process.

It should be understood, as previously mentioned, that a fare policy is only of benefit if the agency adheres to it. In fact, adopting a fare policy that is not followed may engender public mistrust, especially if the public was involved in drafting the policy. However, if done with sincerity, the fare policy can provide a structure and discipline to an agency by eliminating ambiguity within its fare structure and clearly stating goals and principles.

#### *Next Steps: Establish a fare policy*

- It may be prudent for TheRide to delay creation of a fare policy until some amount of progress is made regarding a decision on each of the other recommendations in this document. As such, TheRide should first decide which of the recommendations listed here the agency believes they will implement. Then, they must consider how those choices would affect the content of a fare policy.

- As with a fare tariff, the fare policy should be reviewed by members of each department at TheRide in order to ensure agency-wide consensus on its content. Without this consensus, the policies within the fare policy document may not be universally enforced. Any vacillation in enforcement levels will undermine the credibility and strength of the fare policy.

## 9 Equity in Transit: Processes for Evaluation

### 9.1 Title VI Compliance

#### 9.1.1 Overview

As a recipient of financial assistance from the Federal Transit Administration (FTA), TheRide is required to comply with Title VI of the Civil Rights Act of 1964 by evaluating service and fare changes at the planning and programming stages to determine whether those changes have discriminatory impacts, including Disparate Impacts on minority populations and/or Disproportionate Burdens on low income populations. Title VI Equity Analysis should not replace good program planning. Rather, good program planning should be an ongoing process that considers equity among other factors when designing fare changes, service changes, or other discretionary policies and programs.

This Fare Study has identified areas that may result in adverse effects for certain rider populations. TheRide will need to conduct a Fare Equity Analysis prior to board adoption in order to quantify the negative effects of the fare change(s) and determine whether the proposal would render discriminatory impacts to minority or low income riders. This requires robust and comprehensive rider survey data that can be disaggregated by ethnicity, income, and fare payment.

The typical measure of disparate impact or disproportionate burden involves a comparison between the proportion of persons in the protected class (i.e. minority or low-income populations) who are adversely affected by the service or fare change and the proportion of persons not in the protected class (i.e. non-minority or non-low income) who are adversely affected.

For fare changes, two areas pose the greatest risk of resulting in adverse effects:

1. Higher cost per ride including increased transfer penalties: While appearing to be self-evident, it is necessary to calculate all of the potential costs on a per-rider basis when comparing the effects between minority and non-minority riders and low income and non-low income riders. This includes factoring in transfer penalties or upcharges between service types, as well as the rate of transfer and pass utilization rates needed to quantify per-trip fares.
2. Changes in access to fare media, including administrative requirements for specific fare types: Analyzing the means in which riders access fare media should also include changes to current administrative requirements and needed to access new technologies, such as smart cards or mobile ticketing. These changes can present a significant impact to some rider populations and will need to be analyzed for potential discriminatory impacts. This analysis should include a review of minority and low income access to current versus proposed vendor networks since these changes can impact fare and/or pass distribution.

### 9.1.2 Specific Considerations

This second risk area is particularly pertinent to our recommendation within this study calling for implementation of an integrated smart card and mobile ticketing fare technology system. Though these new technologies may help minimize cash transactions and provide other benefits to TheRide, it will be important to consider how unbanked and underbanked riders will be able to pay their fares and whether these riders will have sufficient opportunities to participate in these new fare payment technology systems, especially if the fare structure incentivizes use of these new systems financially or in terms of ease of access to fare media.

One strategy for combating any negative impacts of implementing the new fare collection technology would be to expand TheRide's retail network to provide access to places where riders can load value to their transit account using cash or another type of fare payment. TheRide could attempt to negotiate new retail outlets with this cash-loading functionality on their own, or they could contract with a company such as PayNearMe that already has created this type of retail network. PayNearMe and similar companies usually take a certain percentage of each money-loading transaction as payment for their services. Another strategy TheRide can use to combat potential negative impacts of the new technology is to increase access to these new fare payment technologies by requiring the system to accept prepaid debit cards, which do not require a person to have a bank account.

## 10 Mobility as a Service: Possibilities for the Future

Mobility as a Service (MaaS), as defined by the MaaS Alliance, is the integration of various forms of transport services into a single mobility service on demand. This integration can take a number of forms with differing levels of intensity, as shown by the graphic below (also seen in section 3.7 Multimodal Fare Integration), and can involve anywhere from a few to many transportation modes, such as public transit, ride-sharing, car-sharing, bike-sharing, taxi, or car rental. MaaS systems can also combine both on-demand services and traditional services to create an on-demand system with scheduled components.

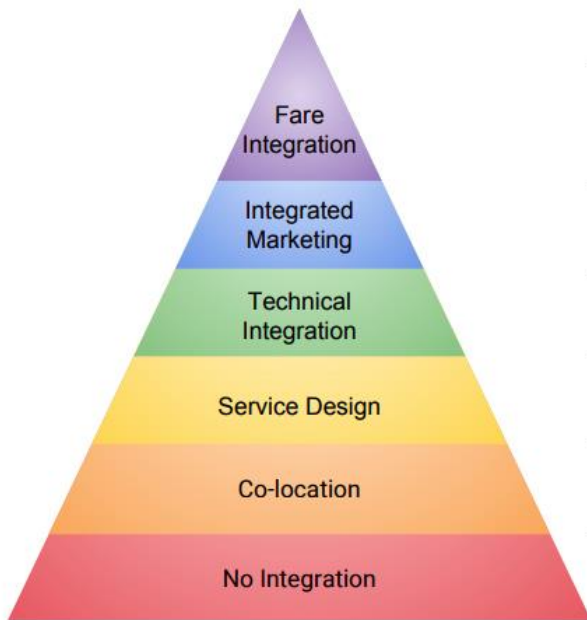
Mobility as a Service, in its best form, should offer smooth, seamless coverage across multiple transportation modes in a service area. A user should be able to access a single application with a single account and payment channel in order to view the entire set of transportation options available to them. Their MaaS experience should be as convenient as, more sustainable than, and cheaper than owning a personal vehicle.

We discuss MaaS here in the final report for a number of reasons. Though still a nascent concept, MaaS is becoming an emerging industry trend across both Europe and the United States in response to new patterns of consumer demand. MaaS is considered by many transit agencies as a key strategy for attracting new riders to their services and for enhancing the experience and mobility of current riders. Additionally, MaaS concepts, though not necessarily identified explicitly as such, came up a number of times during our conversations with TheRide staff. The section below is thus intended to provide TheRide with an overview of the current state of MaaS and then as a guide for what the agency should start thinking about and doing now to position themselves to become a MaaS coordinator in the future.

### ***MaaS Integration***



# Types of Transit Integration



Indicators	Intervention
Bikeshare access to stored cash value on transit smart card; bikeshare/transit cost-sharing	Use transit payment infrastructure to expand bikeshare accessibility and equity
Ride credit for transit users; cross-promotion of services	Incentivize bikeshare adoption by current transit users
Single access card; open data feed	Increase discoverability, access for current transit users
Pay-as-you-go pricing; 24/7/365 availability	Design services to be intelligible to transit user
Bikeshare proximate to premium transit infrastructure	Expand bikeshare density in catchment area of freq. transit
Sparse bikeshare system; infrequent transit network	Increase frequency of mass transit

## 10.1 State of the Industry

According to the MaaS Alliance, the map below ([link here](#)) displays a selection of the MaaS deployments and projects occurring around the world.

### MaaS Implementations

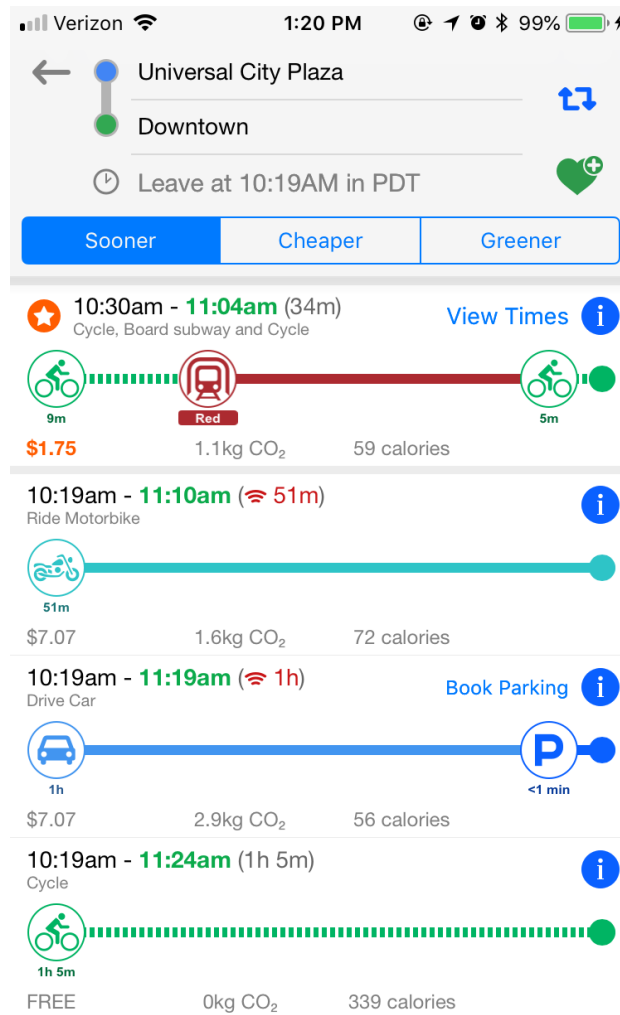


As evidenced above, a majority of current MaaS deployments and initiatives are located in Europe. There are however some peer examples to look to in the United States.

Los Angeles, CA has implemented “Go LA,” a trip-planning mobile application that integrates public transport services with taxi, Lyft, Zipcar, and bikeshare. The app also includes personal vehicles and motorbikes as

transport options when showing the trip options available to the user. Users can turn on or off each of these transport options to customize their list of trip planning options to their modes of preference. Other adjustable settings include car preferences (type (e.g. electric) and size), maximum walk time, minimum transfer time, typical walk speed (slow, average, or fast), and the value of 10 minutes in a dollar amount, all of which help the app better prioritize trip options. Once the user has selected their trip origin and destination, a list of possible trips appears, as shown in the screenshot below.

**Go LA MaaS Mobile App Screenshot**

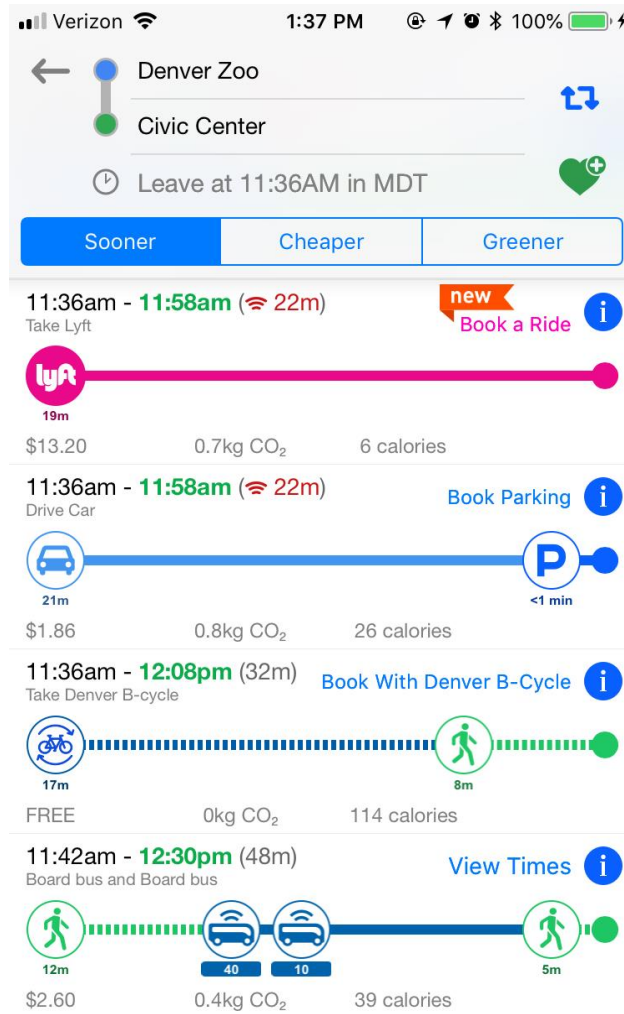


The app presents a best option at the top of the list with a star. This best option is a reflection of the users’ stated preferences. Each trip option not only includes a list of the different modes that would be used during the trip, but also the total cost of the trip, the time length of the trip, the carbon dioxide emissions associated with the trip, and the likely number of calories to be burnt in completing the trip. As such, the list of trip options can be sorted by time, cost, or sustainability. Importantly, this app also has options to view transit times and to book parking in advance, capabilities that add more clarity and convenience to the user experience. This app is run by a company called Conduent.

Denver, CO also has a trip planning app created by Conduent called Go Denver. The interface and functionality of the app is identical to the Go LA mobile app, as shown in the screenshot below.



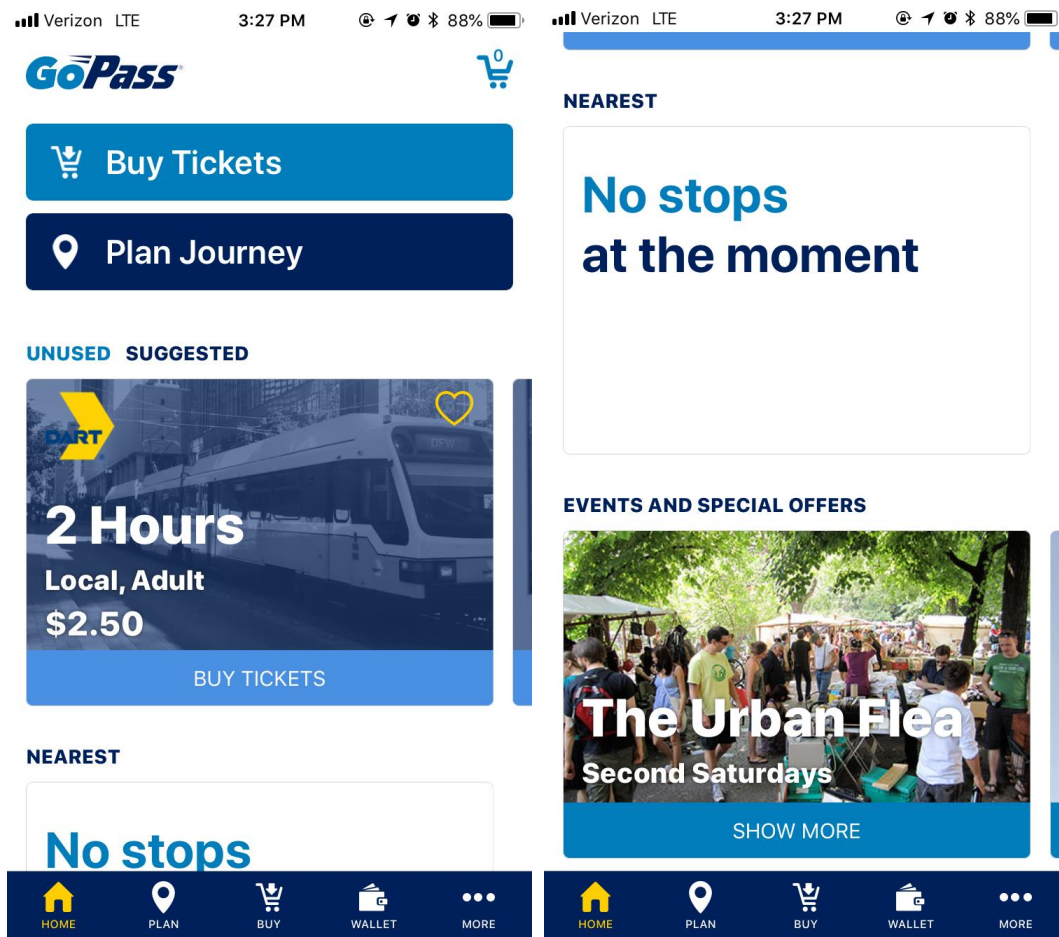
**Go Denver MaaS Mobile App Screenshot**



The Go Denver app makes it apparent that the integrations with Lyft and the Denver B-Cycle bikeshare are built directly into the app, allowing a user to seamlessly transfer to the reservation system in question to book their ride.

The Dallas-Fort Worth, TX area has a new mobile ticketing application, GoPass, that allows users to buy passes for travel on Dallas Area Rapid Transit (DART) in Dallas, Denton County Transportation Authority (DCTA) in Denton, or Trinity Metro in Fort Worth for a truly regional transit experience. The app also integrates with Uber and Lyft to offer discounts to new users of the ride-hailing apps and encourage trips that take advantage of both ridehailing and transit. While the app does not appear at this time to include any other modes of travel in its trip planning function, such as bikeshare or personal vehicle use, the app does feature events and special offers on the home page, a sign of a major transit agency embracing the lifestyle benefits integrations possible on a MaaS application.

**DART GoPass Mobile Application Screenshots**

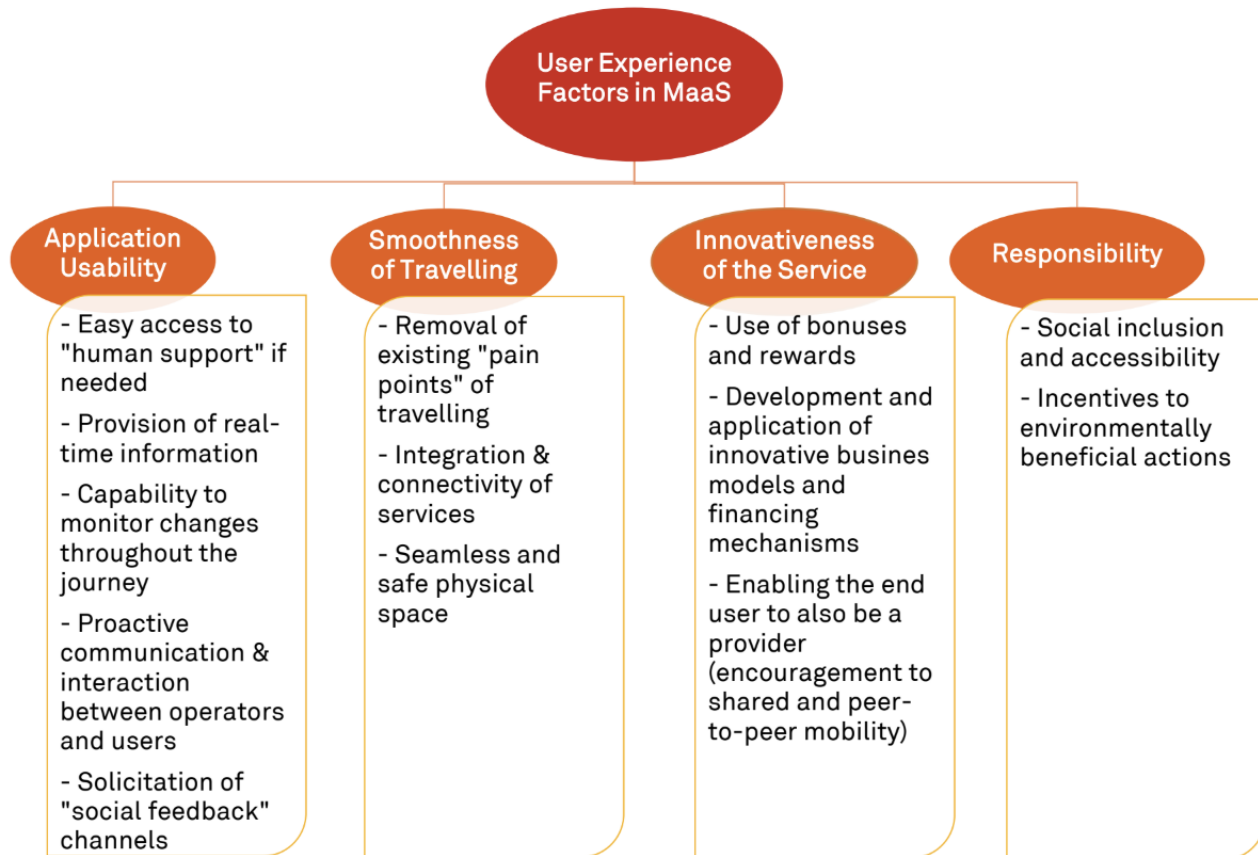


## 10.2 Considerations in Developing MaaS

### 10.2.1 User Experience

MaaS systems must be designed to focus on the experience of the end user. This experience is affected by a number of factors, as outlined in the graphic below from MaaS Alliance. From planning a trip through to its actual execution, the user needs to find the process easy to understand and complete and convenient to execute. This means that payment methods should be able to be stored and implemented easily, the number of fare media required during the entirety of the trip should be as few as possible, and the system should provide real-time updates on the status of vehicles involved in the trip completion. In the words of the MaaS Alliance, “When planning a trip, people should not have to worry about ticket validity, routing, transportation modes, multiple app downloads, or other technical aspects of their journey. Rather, **they should be able to focus on where they want to go and what they want to achieve.** Mobility as a Service should support people in their daily activities, while staying out of the way as much as possible.” In this way, MaaS is not so much about moving people around, but about facilitating users’ access to the people and places they want to visit through whichever mode(s) the user finds most attractive.

#### ***User Experience Factors in MaaS***



### 10.2.2 Data Collection & Handling

By operating a MaaS system, a transit agency has the opportunity to collect a significant amount of origin-destination and rider preference data that can in turn be used to construct better systems and experiences for the user in terms of system planning, technology integrations, interface capabilities, etc. If an agency can encourage individuals who are not traditionally transit riders to use the MaaS system, this dataset will provide broader insights into community travel and access patterns than farebox data or onboard surveys.

With this amount of personal data though comes increased necessity for personal information protection and anonymization. The exact reasons and occasions for data collection and use must be made transparent to the end-user. The MaaS provider should also clearly describe how it intends to protect and secure user data and agree to quickly communicate any data breaches or data misuse to affected individuals.

### 10.2.3 Designing a MaaS System

MaaS providers can offer their services either as subscription packages where each package allows access to different modes or to different total usage amounts or as pay-as-you-go models where an individual only pays for what they use. These two models can also be offered in tandem with each other if a MaaS operator prefers.

When it comes to designing MaaS products and packages, providers must remember that current travel patterns and behavior do not necessarily represent ideal travel patterns and behavior, since introducing seamless intermodality enables users to tailor their travel experience more accurately to their ideal situation. Thus,

existing data on trips should not be the only source informing the packing of MaaS services and products. MaaS providers will need to instead build upon this historical data with assumptions about the future and about individuals' ideal preferences. Transit agencies seeking to become MaaS providers/coordinators would benefit from seeking other sources of data on travel preferences from other mobility providers in the area and any academic sources available.

As the portfolio of transport options provided by a transit agency turned MaaS provider expands, the agency will need to consider the effect this may have on the insurance the agency itself needs to possess and whether or not insurance will need to be provided to the end use (e.g. in the case of car rentals). Before debuting MaaS beyond an agency's normal portfolio of services, it would be wise to document which use cases current insurance protections do and do not cover.

## 10.3 Emerging Best Practices

### 10.3.1 Single Payment System

Users should not be asked to enter their payment details more than once when planning a trip and should have the option of saving payment details to their account for future use. Currently, if an individual wanted to use Arbor Bikes then transfer to TheRide's local fixed route, they would have to pay separately for their bike trip and their bus ticket. In a MaaS system, this entire payment process for both Arbor Bikes and TheRide should be completed in one step, with revenue allocation done to the proper entities on the backend, separate from the user experience.

### 10.3.2 Privacy

People should not be forced to create an account in order to access the MaaS system. If they do choose to create an account, the account should provide them with increased convenience in their user experience, such as saved payment details, favorite routes, or other preferences. In creating the account, the user should only be asked to provide essential information. Too long of an account creation process may deter people from signing up for an account. This can impact both the quality of data the MaaS provider receives, since data tied to an account has more context and allows various trips to be linked to the same user, and also the likelihood that someone will continue using the MaaS application. More importantly, however, asking only for essential details increases privacy for the user and helps diminish, though not eliminate, security concerns.

### 10.3.3 Cost

The total cost of participating in the MaaS environment should be less than the equivalent cost of owning a car in the same area. This way, embracing MaaS becomes a financial gain for the end-user. People will, however, put a high implicit price on the convenience associated with owning a personal vehicle. As such, the MaaS system must rival the convenience of a personal vehicle, come in at a lower price point than car ownership in proportion to the lower degree of convenience, and take into consideration the idea that persuading people to deviate from the status quo takes more incentive than a simple cost-benefit analysis might imply.

### 10.3.4 Journey Planning

A user should be able to establish parameters around their desired trip (mode, walk time, etc.) and to filter trip planning results by these parameters. Each individual differs in the value they put on different aspects of their trip. Some people may not know how to ride a bike or may not feel comfortable using a bike in an urban environment; others may be looking to minimize or maximize walk time because of the weather on the day of their trip. The MaaS journey planning application needs to make it easy for each individual user to find their ideal way of getting from their origin to their destination. This requires the application to have a high level of both flexibility and detailed information provision, as shown by the Go LA and Go Denver platform depictions.

### 10.3.5 Implementation

A new MaaS provider should roll out new mode and service offerings as they become available instead of waiting for the entire system to be ready. Individuals will expect that with time a MaaS portfolio will continue to develop to address their mobility needs. An agency needs to be particularly careful, though, in ensuring that any MaaS offerings that do come online are of the highest possible experiential quality to the end-user. Otherwise, the agency runs the risk of turning off users early on in MaaS ecosystem development, and a lost customer is more difficult to convince to return to the platform than a new customer is to persuade to join. The high quality experience should encompass everything from the journey planner application interface to the interactions with operators and technologies on the modes an individual uses during their trip.

## 10.4 Possibilities for the Near-Term Future

TheRide could promote itself as the MaaS coordinator for the broader Ann Arbor region in order to construct a MaaS system that serves all end-users instead of just the most profitable end users. TheRide is also uniquely positioned to step into this role because of its history in the community, its reputation with the public, and its relationships with important stakeholders. TheRide thus has the influence to get all potential actors/mode providers in the MaaS ecosystem to the sit at the table.


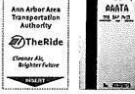








As TheRide explores mobile ticketing implementation, the agency could build recommended MaaS capabilities and APIs into its requirements. This way, these requirements could be activated once TheRide is ready to begin offering intermodal services in a coordinated MaaS environment. These requirements could include the ability to split payments with other transit agencies in the event that the Southeast Michigan RTA is successful and this body enables greater integration between AAATA, SMART, and DDOT.

TheRide should also consider best practices and principles associated with MaaS as the agency looks to decide the future of Arbor Bikes, the local bikeshare. If TheRide believes that at some point in the future it would like to integrate Arbor Bikes with TheRide's current services, the agency should consider the necessary structures and policies needed to enable integration when seeking an operator for the remaining life on the assets until 2024.

# 11 Appendix A: Fixed Route Fare Media Chart



## Fixed-Route Fare Media Chart

Name of Fare / Pass	Rider Pays to Ride	Fare Media	Farebox Key
Full Cash	\$1.50		1st > Left Panel
Transfer	FREE	●	5*
Day Pass	\$4.50	● 	3rd < Right Panel
Fare Deal Value - Income Eligible Value - Student Value - Senior Value - Disability	\$0.75	● 	4th > Left Panel 1 2 3
ADA Fare	FREE w/ AAATA Issued ID	● 	8
GoldRide	FREE w/ AAATA Issued ID	● 	7
Students (Grades K-12)	\$0.75 w/ School Issued ID \$1.50 without School ID**	●	1 1st > Left Panel
Children (5yr & Younger)	FREE	●	2nd < Right Panel
Full Fare Token	One Token	● 	1st > Left Panel
Reduced Fare Token	One Token with ID	● 	
30 Day Flex Pass	FREE	● 	
Value Pass - Senior	FREE	● 	
Value Pass - Income Eligible	FREE	● 	

January 2015

● Swipe Pass ● Show ID \*Press Upon Malfunction \*\*At Driver's Discretion



## Fixed-Route Fare Media Chart

Name of Fare / Pass	Rider Pays to Ride	Fare Media	Farebox Key
Value Pass - Disability	FREE		
Value Pass - Student	FREE		
AAPS Exceptional Pass	FREE w/ School Issued ID <i>(at Driver's discretion)</i>		
EMU Pass	FREE w/ School Issued ID		
WCC Pass	FREE (Check Photo) <i>(Valid only at WCC. May receiveve transfer.)</i>		
MRide Pass	FREE (Check Photo)		2nd > Left Panel*
go!Pass / go!Pass SmartCard	FREE (Check Photo)		Proximity reader
ExpressRide Commuter Pass	\$6.25 <i>30-Day swipe 10-ride punch</i>		1st > Left Panel D
FootballRide & ArtFairRide	\$1.50		D
Ride TheRide On Us	FREE 2-Ride Punch		2nd < Right Panel
Employees	FREE with AAATA Issued ID		2nd < Right Panel
Change Card	<i>(Dip card shows value on back.)</i>		C

● Swipe Pass    ● Show ID    \*Press Upon Malfunction



## Fixed-Route Fare Media Chart

Name of Fare / Pass	Specific Eligibility	Duration of Use
Full Cash	w/ Cash Fare or WCC	One Way
Transfer		90 Minutes
Day Pass		11:59PM
Fare Deal	w/ K-12 or Fare Deal Card	Check Exp Date / Photo
ADA Fare		Check Exp Date / Photo / PCA
GoldRide		Check Photo
Students (Grades K-12)	Grades 9-12 with ID*	
Children	5 Yrs and Younger	
Full Fare Token		One Way
Reduced Fare Token	w/ K-12 or Fare Deal Card	One Way
Flex Pass		30 Days from Validation
Value Pass - Senior	w/ Fare Deal "S" Card	30 Days from Validation
Value Pass - Income Eligible	w/ Fare Deal "IE" Card	30 Days from Validation
Value Pass - Disability	w/ Fare Deal "D" Card	30 Days from Validation
Value Pass - Student	w/ School ID*	30 Days from Validation
AAPS Exceptional Pass	w/ School ID*	School Year (Sept - June)
EMU Pass	EMU Student or Staff ID	
WCC Pass	Only at WCC Bus Stop	Check Exp Date & Photo
MRide Pass	UM Student or Staff	Check Exp Date & Photo
go!Pass	Downtown Employee	One Year (Nov - Oct)
go!Pass SmartCard	Downtown Employee	
ExpressRide Commuter Pass		30 Swipe or 10-Ride Punch
FootballRide & ArtFairRide		UM Football Season / Art Fair
Ride TheRide On Us		Check Expiration Date
Employees		
Change Card	Overpayment of \$0.25	

\* At Driver's Discretion





## Fixed-Route Fare Media Chart

Name of Fare / Pass	Application Cost of Fare / Pass
Full Cash	
Transfer	
Day Pass	\$4.50
Fare Deal	
ADA Fare	
<i>Good As Gold</i>	
Students (Grades K-12)	Inquire with School
Children (5 & Younger)	
Full Fare Token	\$15.00 / Pkg of 10
Reduced Fare Token	\$75.00 / Pkg of 100
Flex Pass	\$58.00
Value Pass - Senior	\$29.00
Value Pass - Income Eligible	\$29.00
Value Pass - Disability	\$29.00
Value Pass - Student	\$29.00
AAPS Exceptional Pass	Inquire with School
EMU Pass	Inquire with School
WCC Pass	
MRide Pass	
go!Pass	
ExpressRide Commuter Pass	\$125 / 30-Days; \$62.50 /10-Ride Ticket
FootballRide & ArtFairRide	Inquire with AAATA
Ride TheRide On Us	Inquire with AAATA
Employees	
Change Card	

## 12 Appendix B: Discount Fare Categories & Eligibility

City	Rider Category	Fixed Route Discount	Eligibility	Restrictions
Ann Arbor, MI	Fare Deal	50%	K-12 students, persons with disabilities, seniors 60-64 years, low income riders	Requires agency-issued photo ID Card (K-12 student ID)
	GoldRide	Free	Seniors 65+	Requires agency-issued photo ID Card
	ARide	Free	Persons with disabilities qualifying for ADA paratransit service	Requires agency-issued photo ID Card
Champaign-Urbana, IL	Disabled	Free	Persons with disabilities, Medicare Card holders under 65	Requires agency-issued photo ID Card
	Senior	Free	Seniors 65+	Requires agency-issued photo ID Card
	School Fare	0-50%	K-12 students	Proof of age may be requested
	Veterans	Free	Veterans	Requires agency-issued ID Card for 3-year bus pass
Erie, PA	Reduced Fare	52%	Persons with disabilities, Medicare card holders	Requires agency-issued photo ID Card; excludes 7-8 am & 4:30-5:30 pm
	Senior	Free	Seniors 65+	Requires agency-issued photo ID Card
Gainesville, FL	ADA Certified	Free	ADA Certified persons	Requires ADA photo ID
	Medicaid/Medicare	50%	Medicare and Medicaid card holders	Requires agency-issued photo ID Card or valid photo ID and Medicare/Medicaid card
	Senior	50%	Seniors 65+	Requires agency-issued photo ID Card or valid photo ID with age
	Student	50%	K-12 students, City College students	Requires valid student photo ID for college students; no ID necessary for students K-12
	Veterans and Active Duty Military	50%	Veterans and Active Duty Military	Requires agency-issued photo ID Card or valid Veteran/Military photo ID
Grand Rapids, MI	Disabled	52%	Persons with disabilities, Medicare Card holders under 65	Requires agency-issued photo ID card or Medicare Card
	Senior	52%	Seniors 65+	Requires Medicare card, driver's license, or other proof of age
	Student	22%	K-College	Requires valid school ID; only applies to 10-Ride Ticket
Hartford, CT	Senior/Disabled	52%	Persons with disabilities, Medicare card holders, seniors 65+	Requires agency-issued photo ID card or Medicare Card
	Youth	20%	Age 5-18	Proof of age may be requested

Peoria, IL	Disabled	50%	Persons with disabilities, Medicare Card holders	Requires agency-issued photo ID card or Medicare Card
	Senior	50%	Seniors 65+	Requires agency-issued photo ID card, Medicare Card, state driver's license or identification card
	Student	50%	K-12 students, college students	Requires valid school or college ID, class schedule, or report card
	Veteran	50%	Eligible veteran status (statuses other than dishonorable or "uncharacterized" status)	Requires agency-issued photo ID card
Roanoke, VA	Disabled	52%	Persons with disabilities	Requires agency-issued photo ID card
	Senior	52%	Seniors 65+	Requires agency-issued photo ID card
	Student	52%	Students 11-18	Requires school ID or agency-issued photo ID card
Shreveport, LA	Disabled	52%	Persons with disabilities	Requires agency-issued photo ID card
	Senior	52%	Seniors 65+	Requires agency-issued photo ID card
	Student	50%	Students age 12 through the 12th grade	Requires agency-issued photo ID card; only applies to monthly pass
South Bend, IN	Disabled	50%	Persons with disabilities, Medicare Card holders	Requires agency-issued photo ID card or Medicare card
	Senior	50%	Seniors 65+	Requires agency-issued photo ID card or valid photo ID with age
	Student	15%	Students K-12	Requires student ID or proof of age; only applies to 31-Day pass
Syracuse, NY	Disabled	50%	Persons with disabilities, Medicare Card holders	Requires agency-issued photo ID card or Medicare Card and photo ID
	Senior	50%	Seniors 65+	Requires agency-issued photo ID card or Medicare Card and photo ID
	Children	50%	Age 6-9 accompanied by adult	No restrictions

# 13 Appendix C: Rider Survey

## SURVEY FOR CURRENT CUSTOMERS

### Tell Us What You Think About Fares

TheRide is conducting a study to learn more about our current fares, what changes you'd like to see, and how technology could be used to pay fares in the future. The outcomes of the study will determine possible alternatives for future fare improvements.

1. Which of the following of TheRide's services do you use? **(mark all that apply)**

- |                          |                          |                          |          |                          |             |                          |                                  |
|--------------------------|--------------------------|--------------------------|----------|--------------------------|-------------|--------------------------|----------------------------------|
| <input type="checkbox"/> | Local bus                | <input type="checkbox"/> | A-Ride   | <input type="checkbox"/> | NightRide   | <input type="checkbox"/> | ExpressRide to Canton or Chelsea |
| <input type="checkbox"/> | Park & Ride to local bus | <input type="checkbox"/> | GoldRide | <input type="checkbox"/> | HolidayRide | <input type="checkbox"/> | Ypsilanti Twp Express - Route 81 |
| <input type="checkbox"/> | GroceryRide              | <input type="checkbox"/> | FlexRide | <input type="checkbox"/> | AirRide     | <input type="checkbox"/> | VanRide                          |

2. In a typical week, how many days do you use TheRide's services?

- |                          |                   |                          |                   |                          |                       |                          |                    |
|--------------------------|-------------------|--------------------------|-------------------|--------------------------|-----------------------|--------------------------|--------------------|
| <input type="checkbox"/> | 1 day per week    | <input type="checkbox"/> | 4-5 days per week | <input type="checkbox"/> | A few times per month | <input type="checkbox"/> | A few times a year |
| <input type="checkbox"/> | 2-3 days per week | <input type="checkbox"/> | 6-7 days per week | <input type="checkbox"/> | About once a month    |                          |                    |

3. If you use TheRide's fixed route, express route, FlexRide, or NightRide services, how do you pay your fare the majority of the time?

- |                          |                               |                          |   |                          |  |
|--------------------------|-------------------------------|--------------------------|---|--------------------------|--|
| <input type="checkbox"/> | Cash fare/transfer            | <input type="checkbox"/> | go!pass pass                            | <input type="checkbox"/> | University of Michigan ID card (MCard)         |
| <input type="checkbox"/> | Token                         | <input type="checkbox"/> | MyCommuter Card from Google             | <input type="checkbox"/> | Exceptional Pass from AAPS                     |
| <input type="checkbox"/> | Day Pass                      | <input type="checkbox"/> | Eastern Michigan University 30-Day Pass | <input type="checkbox"/> | Credit/debit card on FlexRide                  |
| <input type="checkbox"/> | 30-Day Pass                   | <input type="checkbox"/> | Washtenaw Community College ID card     | <input type="checkbox"/> | My ARide or GoldRide ID card lets me ride free |
| <input type="checkbox"/> | Other (please specify): _____ |                          |   |                          |  |

4. If you don't purchase a 30-Day pass, why do you not currently purchase a 30-Day pass? (please write in any comments)

5. If you are eligible for a free or discounted fare, which program do you participate in?

- |                          |                          |                          |                       |                          |                                   |
|--------------------------|--------------------------|--------------------------|-----------------------|--------------------------|-----------------------------------|
| <input type="checkbox"/> | A-Ride (ADA paratransit) | <input type="checkbox"/> | Youth (K-12 Student)  | <input type="checkbox"/> | FareDeal - Individuals ages 60-64 |
| <input type="checkbox"/> | GoldRide (Senior 65+)    | <input type="checkbox"/> | FareDeal - Low Income | <input type="checkbox"/> | FareDeal - Disability (non-ADA)   |

6. What do you like about how you pay for your fare? **(mark all that apply)**

- |                          |                                  |                          |   |
|--------------------------|----------------------------------|--------------------------|---|
| <input type="checkbox"/> | Fares are easy to understand     | <input type="checkbox"/> | I feel like I can board the bus and pay quickly         |
| <input type="checkbox"/> | Fares are reasonably priced      | <input type="checkbox"/> | I ride for free with my A-Ride or GoldRide card         |
| <input type="checkbox"/> | I can pay with cash when I board | <input type="checkbox"/> | My employer or school pass makes it easy for me to ride |
| <input type="checkbox"/> | Other (please specify): _____    |                          |   |

7. What don't you like about how you pay your fare? **(mark all that apply)**

- I don't like carrying cash
- I don't like having to ask for a transfer
- Fares are difficult to understand
- I have trouble using the farebox (bills aren't accepted, transfer or change card can't be read/returned)
- Other (please specify): \_\_\_\_\_
- Cost of the fare is too high
- Qualifying for a discount fare isn't easy to understand
- I wish I could more easily pre-pay for my trip

**TheRide is looking into new and innovative ways for people to pay their fare such as smart cards or mobile ticketing.** Smart cards enable customers to pay with a plastic card by prepaying for their rides at a retail location. Mobile ticketing enables customers to pay for rides with the use of a smartphone app.

8. Would you be interested in using a smart card or mobile ticketing to pay your fare?

- Very unlikely   
  Unlikely   
  Neutral   
  Likely   
  Very likely   
  Not applicable/no opinion

9. Which would you be more interested in?

- Smart card                     
  Mobile ticketing

10. What do you like about being able to use a smart card or mobile ticketing to pay your fare? **(mark all that apply)**

- I like using technology
- I don't need to carry cash
- I can board more easily
- I don't need to buy my pass from a retailer
- I can see and buy my fare on my smartphone
- My fares and passes are protected from loss/theft
- I can purchase my fare anywhere
- I can reload my fare automatically
- Other (please specify): \_\_\_\_\_

11. Why wouldn't you be interested in using a smart card or mobile ticketing? **(mark all that apply)**

- Too difficult to understand
- I prefer to pay cash
- I don't want to share the required information
- I don't have a smartphone
- I prefer to use current form of payment
- I don't plan to use TheRide's services
- I don't have a credit card or a debit card
- Other (please specify): \_\_\_\_\_

12. Do you currently use any of the following? **(mark all that apply)**

- Credit card   
  Debit card   
  Pre-paid debit card   
  Mobile payment (such as Apple Pay or Android Pay)

13. Do you have a smartphone or tablet with internet access?

- Yes                                     
  No

14. Are there other ways that technology could improve how you pay your fare? (please write in any comments)

15. How old are you?

Under 18     18-25     26-59     60-64     65+

16. What is your gender?

Female     Male     Non-binary/third gender/gender non-conforming

17. Which do you consider yourself? **(mark all that apply)**

African-American/Black     Caucasian/White     Native-American Indian     Asian  
 Hispanic     Pacific Islander/Hawaiian     Other (please specify): \_\_\_\_\_

18. What is your total combined annual household income?

Less than \$14,999     \$20,000 to \$24,999     \$50,000 to \$74,999  
 \$15,000 to \$19,999     \$25,000 to \$49,999     More than \$75,000

19. Please provide any additional comments about TheRide’s current fares and ways they might be improved to meet your needs.

20. If you are interested in participating in future surveys or public outreach, please write in your email address.

**Email Address:** \_\_\_\_\_

# 14 Appendix D: Non-Rider Survey

## SURVEY FOR FORMER CUSTOMERS AND NON-CUSTOMERS

### Tell Us What You Think About Fares

TheRide is conducting a study to learn more about our current fares, what changes you'd like to see, and how technology could be used to pay fares in the future. The study outcomes will determine possible alternatives for fare improvements.

TheRide provides a variety of services, including: fixed route local bus service, express bus service to Canton, Chelsea, and Ypsilanti, Park & Ride facilities, FlexRide, Vanpool, A-Ride for passengers with disabilities, GoldRide to provide seniors with enhanced mobility options, and AirRide to get people to and from the Detroit airport.

1. Why do you currently not use TheRide? (mark all that apply)

- |   |   |
|---|---|
| <input type="checkbox"/> TheRide doesn't take me where I need to go | <input type="checkbox"/> Service does not run early or late enough  |
| <input type="checkbox"/> I don't know how to use the service        | <input type="checkbox"/> I have safety concerns about using TheRide |
| <input type="checkbox"/> I prefer to drive or carpool               | <input type="checkbox"/> I don't know how to pay for my trip        |
| <input type="checkbox"/> I prefer to walk or bike                   | <input type="checkbox"/> Fares are too complicated to understand    |
| <input type="checkbox"/> Schedule does not meet my travel needs     | <input type="checkbox"/> Cost of the fare is too high               |
| <input type="checkbox"/> Service is too infrequent                  | <input type="checkbox"/> Other (please specify): _____              |

2. What would encourage you to use TheRide's services? (please write in any comments)

**TheRide is looking into new and innovative ways for people to pay their fare such as smart cards or mobile ticketing.** Smart cards enable customers to pay with a plastic card by prepaying for their rides at a retail location. Mobile ticketing enables customers to pay for rides with the use of a smartphone app.

1. Would you be interested in using a smart card or mobile ticketing to pay your fare?

- |  |                                  |  |
|--|----------------------------------|--|
| <input type="checkbox"/> Very unlikely | <input type="checkbox"/> Neutral | <input type="checkbox"/> Very likely               |
| <input type="checkbox"/> Unlikely      | <input type="checkbox"/> Likely  | <input type="checkbox"/> Not applicable/no opinion |

2. Which would you be more interested in?

- |                                     |   |
|-------------------------------------|---|
| <input type="checkbox"/> Smart card | <input type="checkbox"/> Mobile ticketing |
|-------------------------------------|---|

3. What do you like about potentially being able to use a smart card or mobile ticketing to pay your fare? (mark all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> I like using technology | <input type="checkbox"/> I can purchase my fare from anywhere |
|--|---|

- |                          |   |                          |   |
|--------------------------|---|--------------------------|---|
| <input type="checkbox"/> | I don't need to carry cash  | <input type="checkbox"/> | I can see and purchase my fare on my smartphone |
| <input type="checkbox"/> | I can board the bus more easily   | <input type="checkbox"/> | I can reload my fare automatically              |
| <input type="checkbox"/> | I save time since I don't need to go to a retailer to purchase my pass      |                          |   |
| <input type="checkbox"/> | The value and passes stored in my account are protected from loss and theft |                          |   |
| <input type="checkbox"/> | Other (please specify): _____   |                          |   |

4. Why wouldn't you be interested in using a smart card or mobile ticketing? **(mark all that apply)**

- |                          |   |                          |  |
|--------------------------|---|--------------------------|--|
| <input type="checkbox"/> | Too difficult to understand                             | <input type="checkbox"/> | I don't have a credit card or a debit card     |
| <input type="checkbox"/> | I don't have a smartphone                               | <input type="checkbox"/> | I prefer to use current form of payment        |
| <input type="checkbox"/> | I prefer to pay cash                                    | <input type="checkbox"/> | I don't want to share the required information |
| <input type="checkbox"/> | I don't currently use or plan to use TheRide's services |                          |  |
| <input type="checkbox"/> | Other (please specify): _____                           |                          |  |

5. Do you currently use any of the following? **(mark all that apply)**

- |                          |   |                          |            |                          |                     |
|--------------------------|---|--------------------------|------------|--------------------------|---------------------|
| <input type="checkbox"/> | Credit card                                       | <input type="checkbox"/> | Debit card | <input type="checkbox"/> | Pre-paid debit card |
| <input type="checkbox"/> | Mobile payment (such as Apple Pay or Android Pay) |                          |            |                          |                     |

6. Do you have a smartphone or tablet with internet access?

- |                          |     |                          |    |
|--------------------------|-----|--------------------------|----|
| <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
|--------------------------|-----|--------------------------|----|

7. Are there other ways that technology could improve how you pay your fare? (please write in any comments)

8. How old are you?

- |                          |          |                          |       |                          |       |                          |       |                          |     |
|--------------------------|----------|--------------------------|-------|--------------------------|-------|--------------------------|-------|--------------------------|-----|
| <input type="checkbox"/> | Under 18 | <input type="checkbox"/> | 18-25 | <input type="checkbox"/> | 26-59 | <input type="checkbox"/> | 60-64 | <input type="checkbox"/> | 65+ |
|--------------------------|----------|--------------------------|-------|--------------------------|-------|--------------------------|-------|--------------------------|-----|

9. What is your gender?

- |                          |        |                          |      |                          |   |
|--------------------------|--------|--------------------------|------|--------------------------|---|
| <input type="checkbox"/> | Female | <input type="checkbox"/> | Male | <input type="checkbox"/> | Non-binary/third gender/gender non-conforming |
|--------------------------|--------|--------------------------|------|--------------------------|---|

10. Which do you consider yourself? **(mark all that apply)**

- |                          |                        |                          |                 |                          |                           |
|--------------------------|------------------------|--------------------------|-----------------|--------------------------|---------------------------|
| <input type="checkbox"/> | African-American/Black | <input type="checkbox"/> | Caucasian/White | <input type="checkbox"/> | Native-American Indian    |
| <input type="checkbox"/> | Asian                  | <input type="checkbox"/> | Hispanic        | <input type="checkbox"/> | Pacific Islander/Hawaiian |



---

Other (please specify): \_\_\_\_\_

11. What is your total combined annual household income?

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Less than \$14,999   | <input type="checkbox"/> \$20,000 to \$24,999 | <input type="checkbox"/> \$50,000 to \$74,999 |
| <input type="checkbox"/> \$15,000 to \$19,999 | <input type="checkbox"/> \$25,000 to \$49,999 | <input type="checkbox"/> More than \$75,000   |

12. Please provide any additional comments about TheRide’s current fares and ways that they might be improved to meet your needs.

13. If you are interested in participating in future surveys or public outreach, please write in your email address.

**Email Address:** \_\_\_\_\_

# 15 Appendix E: Modeling Alternatives Details

	Baseline	Alternative 1	Alternative 2
Transfers	Retain 90-min one-way transfers	Offer single ride and separate 2-hour pass instead of transfers; use magstripes for 2-hour passes	Transition to 2-hour pass on electronic fare media only; all cash rider pay per boarding; transfers eliminated
Change Cards	No modeling		
1-Day Pass	Retain Full Fare 1-Day Pass	Discontinue Full Fare 1-Day Pass	Discontinue Full Fare 1-Day Pass
Tokens	Retain Tokens for General Public & Social Service Agency	Tokens available only to Social Service Agencies and Nonprofits; Token priced at single ride Magstripe transfers issued only for tokens	Tokens available only to Social Service Agencies and Nonprofits; Token priced at single ride Magstripe transfers issued only for tokens
30-Day Pass	Retain 30-Day Pass at current pricing	Retain magstripe 30-Day Passes  Iteration 1: 38.7 Fixed Route; 20 ExpressRide  Iteration 2: 36 Fixed Route; 20 ExpressRide	Introduce Monthly Fare Capping (electronic only) and retain magstripe 30-Day Passes  Iteration 1: 38.7 Fixed Route; 20 ExpressRide Iteration 2: 36 Fixed Route; 20 ExpressRide
Rider Category Discounts	Retain free rides on Fixed Route for ARide, GoldRide and PCAs  Retain 50% discount for income eligible riders, students, persons with disabilities (non-ADA), and individuals 60-64  Retain current flat pricing on GroceryRide  Retain 50% discount on NightRide/HolidayRide for ARide and GoldRide  No discounts on ExpressRide	Offer 50% discount on Fixed Route for seniors 65+ and persons with disabilities (ADA and non-ADA) to be compliant with federal law  Discontinue discount for income eligible riders, students, and individuals 60-64  GroceryRide - Set fare at fixed route pricing and apply Fixed Route 50% discounts  NightRide/HolidayRide - Offer 50% discount for persons with disabilities (ADA and non-ADA) and seniors 65+  No discounts on ExpressRide	Retain free rides on Fixed Route for ARide and GoldRide  Retain 50% discount for income eligible riders, students, and persons with disabilities (non-ADA)  Discontinue discount for individuals 60-64  GroceryRide - Set fare at fixed route pricing and apply Fixed Route 50% discounts. Make service free for ARide and GoldRide to be consistent with Fixed Route.  NightRide/HolidayRide - Offer 50% discount for income eligible riders, students, and persons with disabilities (non-ADA). Make service free for ARide and GoldRide  No discounts on ExpressRide
Fare Increases	No modeling		
Service Types	Current fare pricing	Iteration 1: Current pricing; no established multiple Iteration 2: New pricing based on established multiple	
Fare Technologies	No modeling		
Fare Enforcement	No modeling		

<p>Third Party Pass Programs</p>	<p>Current reimbursement pricing</p>	<p>Iteration 1: Current reimbursement pricing Iteration 2: Reimbursement without Reduced Fare discount</p>
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