AAATA Fare Study

Technical Memo #6: Fare Model Baseline Calibration & Assumptions Final

Prepared For: Ann Arbor Area Transportation Authority (AAATA) / TheRide

Prepared By: Four Nines Technologies

Date: August 13, 2018

This memo provides a summary of the data sources and assumptions used to calibrate the inputs for the baseline AAATA Fare Model and results of the baseline model run. This memo also establishes preliminary model assumptions for the fare policy alternatives being considered.

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.

2 Fare Structure

This section of the document 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.

2.1 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

2.1.1 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.

2.1.2 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 Table 1 below.

2.1.3 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, which then includes a free transfer.

2.2 Fare Model - Tab 1a Columns Description

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

2.2.1 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 Table 1 below.

Table 1: 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
Fixed Route											
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[1]	--
ExpressRide											
Cash	$6.25	--	--	--	--	--	--	--	--	--	--
30-Day Pass	$125	--	--	--	--	$125[2]	$125[2]	--	--	--	--
10-Ride Ticket	$62.50	--	--	--	--	$62.50[2]	$62.50[2]	--	--	--	--
GroceryRide											
Cash	$0.75	--	--	--	--	--	--	--	--	--	--
NightRide & HolidayRide											
Cash	$5.00	--	--	$2.50	$2.50	--	$3.00[3]	--	--	--	--

[1] WCC students and faculty ride free only at specific on-campus bus stops. Their fares are then paid by WCC as an institution.
[2] 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.
[3] 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 ber 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 in the model to calculate the contract payment amounts paid by the institutions responsible for funding each of the pass programs.

2.2.2 Existing Usage Rate

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

The pass usage rates, shown in Table 2 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 Pass, 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
- EMU 30-Day Pass usage rate - GFI analysis suggested average rate of 37.1; adjusted up to 40.6 to replicate revenue
- Express 30-Day Pass usage rate - GFI analysis suggested average rate of 27.7; adjusted down to 26.2 to replicate revenue

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

Table 2: 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	Calculate 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[1]
ExpressRide	--	--	--	27.7	26.2	20.0

[1] 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 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.

2.2.3 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 in the base fare pricing and structure and changes to 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 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 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, first go!Pass ridership was calculated 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 Table 3 below. More detailed breakouts of ridership numbers can be found in TheRide's baseline model itself.

Table 3: 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.

2.2.4 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.

Table 4 below compares the revenue figures produced by the model to those detailed in the internal FY2017 financial audit.

Table 4: Revenue figures comparison across fare payment types

Fare Payment [1]	Description	FY2017 Financial Audit	FY2017 Model Calculation	Difference
Cash	All Cash	$1,580,168	$1,489,171	- $90,996
Token	Full & Reduced Fare Tokens	$145,113	$135,945	- $9,168
Flex Pass	30-Day (Adult)	$157,122	$156,506	- $616
Value Pass	30-Day (Senior 60-64, Income Eligible, Disabled)	$163,444	$163,354	- $90
Student Passes	30-Day (Student)	$60,794	$61,701	+ $907
Commuter Express/ ExpressRide	Express Ride, from multiple accounts	$115,970	$115,081	- $889
MRide	Michigan MRide Program final end of year program payment	$1,687,997	$1,687,997	+ $0
go!Pass	DDA program payment and employer fees	$752,248	$752,048	- $200
Exceptional Pass	AAPS program payment	$74,906	$75,809	+ $902
WCC Special Fares	WCC program payment	$48,154	$49,907	+ $1,752
MyCommuter	MyCommuter Google program payment	$7,119	$6,746	- $373
EMU Special Fares	EMU - Cost of free service on Rt. 41	$159,594	$159,594	+ $0
EMU Pass	EMU 30-Day Pass	$33,982	$34,283	+ $301
NightRide/ HolidayRide	NightRide/Holiday Ride fare revenue inc. go!Pass subsidy	$124,556	$124,555	- $1
Grand Total	Sum of all revenue	$5,111,167	$5,012,696	- $98,470

[1] 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 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.

2.2.5 Fare Elasticity

Price elasticities measure rider's sensitivities to changes in fares and are key to any modeling effort to project 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, which are shown in Table 5, 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.

Table 5: 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 [1]	Cash	- 0.40
Fixed Route	Reduced Fare [1]	30-Day Pass	- 0.35
Fixed Route	Full Fare	Token	- 0.35
Fixed Route	Reduced Fare [1]	Token	- 0.40
Fixed Route	ARide	Free	**
Fixed Route	GoldRide	Free	**
Fixed Route	EMU	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 [1]	Cash	- 0.40
GroceryRide	ARide	Free	**
GroceryRide	GoldRide	Free	**
NightRide/ HolidayRide	Full Fare	Cash	- 0.35
NightRide/ HolidayRide	Reduced Fare [2]	Cash	- 0.40
NightRide/ HolidayRide	go!Pass	Cash	- 0.35

[1] Reduced Fare includes students, seniors 60-64, non-ADA disability individuals, and income eligible individuals.
[2] 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, academic research tends to suggest that *implementing* free fares results in an approximate 35% to 55% increase in ridership (Corvalis, OR, Hodge et al 1994). 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.

2.3 Fare Model - Other Input Tabs Descriptions

2.3.1 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 to everyone. 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 operation is included in the final results without affecting ridership or altering the cost of the service on tab 1a.

2.3.2 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.

2.3.3 New Fare Products

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

2.3.4 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.

2.3.5 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.

2.4 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.

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 Table 6, 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 Section 2.2.4). 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.

Table 6: Final baseline model results

Service Type/ Rider Category	Ridership	Revenue

Fixed Route	**6,591,134**	**$5,990,905**
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	278,170	$193,877.68
ExpressRide	**26,184**	**$127,756**
Full Fare	26,184	$127,756.11
GroceryRide	**3,023**	**$2,267**
Full Fare	3,023	$2,267.26
NightRide & HolidayRide	**28,484**	**$124,555**
Full Fare	16,025	$80,125.00
ARide/GoldRide	7,146	$17,865.00
go!Pass	5,313	$26,565.00
Revenue Adjustment (1.02)	**-**	**$100,593**
GRAND TOTAL	**6,648,825**	**$5,113,290**