SRTA Year End Fixed Route Ridership Analysis: FY 2021

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I.   Introduction

Presented here are the results of an in-depth analysis of ridership trends for the Southeastern Regional Transit Authority (SRTA) fixed route service for the entirety of fiscal year 2021 (FY21); FY21 began July 1, 2020 and ended June 30, 2021.

Ridership data is collected and reported by the Sheidt & Bachmann farebox system and stored in the Central Computing System (CCS). The farebox system records the details of each transaction at the fareboxes, ticket vending machines, and terminal ticket offices. The data is compiled through a series of reports available in the CCS. The data used to prepare this report was compiled from the "Route Ridership by Garage and Day of Week" and the "Route Ridership by Garage and Product Type" reports.

Values for revenue miles and revenue hours are calculated using data collected by the Clever Devices Automatic Vehicle Locator system which records time and distance for buses in fixed route service. The data was also used to report on-time performance and passenger boarding and alighting at stops. The data is reported using Ridecheck Plus v8.10.

Tableau Desktop 2020.4.6 was used to analyze ridership data and develop the tables and charts found in this report. Individual route profiles were excluded from this report, however, are stored in Tableau Desktop 2020.4.6.

A.   Key Terms Used in this Report

Route is the path a vehicle will travel while operated in service which passengers are permitted to board after paying the appropriate fare.

Trip is a segment of time in which the vehicle will travel a route in a single direction from one end of the route to the other end of the route.

Ridership is the number of trips recorded by SRTA fixed route vehicles.

Revenue Miles is the measure of distance traveled by a fixed route vehicle operated along scheduled routes in which passengers are permitted to board after paying the appropriate fare.

Revenue Hours is the measure of time a fixed route vehicle is operated along scheduled routes in which passengers are permitted to board after paying the appropriate fare.

Passengers per Revenue Mile (PPRM) is the calculation of the number of passengers boarding a fixed route vehicle for each mile the vehicle operates revenue service.

Passengers per Revenue Hour (PPRH) is the calculation of the number of passengers boarding a fixed route vehicle for each hour the vehicle operates revenue service.

Passenger per Trip (PPT) is the calculation of the number of passengers boarding a fixed route vehicle for each trip the vehicle performs in revenue service.

Boardings per Day is the stop level calculation of total boardings divided by the total number of days the stop was serviced.

Alightings per Day is the stop level calculation of total alightings divided by the total number of days the stop was serviced.

Stop Use is the ratio of total boardings and alightings and the number of trips serving a bus stop. The ratio measures how frequently the bus stops compared with the number of times it passes a stop and ranges from 0.00 – 1.00 and is represented as a percentage.

B.   List of Routes in Service during FY21

Route	Route Name
FR1	Fall River Route 1 - South Main Street
FR10	Fall River Route 10 - Rodman Street
FR14	Fall River Route 14 - Swansea Mall
FR2	Fall River Route 2 - North Main Street
FR3	Fall River Route 3 - Laurel Street
FR4	Fall River Route 4 - Robeson Street
FR5	Fall River Route 5 - Stafford Street
FR6	Fall River Route 6 - Pleasant Street*
FR7	Fall River Route 7 - Bay Street
FR8	Fall River Route 8 - Bristol Community College/Durfee High School
FR9	Fall River Route 9 - Bedford Street
NB1	New Bedford Route 1 - Fort Rodman
NB10	New Bedford Route 10 - Dartmouth Mall
NB11	New Bedford Route 11 - Fairhaven
NB2	New Bedford Route 2 - Lund's Corner
NB3	New Bedford Route 3 - Dartmouth Street
NB4	New Bedford Route 4 - Ashley Boulevard
NB5	New Bedford Route 5 - Rivet Street
NB6	New Bedford Route 6 - Shawmut/Rockdale
NB8	New Bedford Route 8 - Mt. Pleasant Street
NB9	Intercity Route - New Bedford/Fall River
NB9X	Intercity Express – New Bedford/Fall River
NB21	New Bedford North End Shuttle
NBHSN	New Bedford High School – North*
NBHSS	New Bedford High School – South*
NBKN	New Bedford Keith Middle School – North*
NBKS	New Bedford Keith Middle School – South*
NBW	New Bedford / Wareham - New Bedford to Wareham

*Route only in service when school is in session.

II.   Key Findings

A.   Ridership

SRTA ridership in FY2021 is defined by the prolonged COVID-19 pandemic that disrupted all aspects of everyday life for residents in southeastern Massachusetts. State and local restrictions on gathering size, capacity limits for retail stores, restaurants, and other service sector businesses, continued remote learning at local high schools and universities, and the resulting widespread unemployment took a toll on ridership. The year-end total for unlinked passenger trips for FY21 was 1,657,0378, a 25.8% reduction from the FY20 total of 2,233,923; FY21 was 30% below the five-year annual average of 2,373,936.

The year-end total only tells a portion of the story because the COVID-19 pandemic didn't affect ridership until March 2020, making a direct year to year comparison between FY20 and FY21 complicated. In the months between July through March, FY21 recorded fewer trips than FY20. However, beginning in April, ridership began to outperform FY20 figures significantly; each month was double the ridership of the same month from FY20. The increase in unlinked passenger trips that began in April and was sustained through the end of June occurred during the period when fare collection was reinstated on the SRTA system. Another positive trend in FY21 was that despite lower-than-normal total unlinked passenger trips, the trends in passenger trips tended to follow normal year month-to-month ridership trends.

The steady trend of ridership and the increase unlinked passenger trips at the end of the fiscal year suggest that customers remained dependent on the fixed route transit system and slowly more customers are returning.

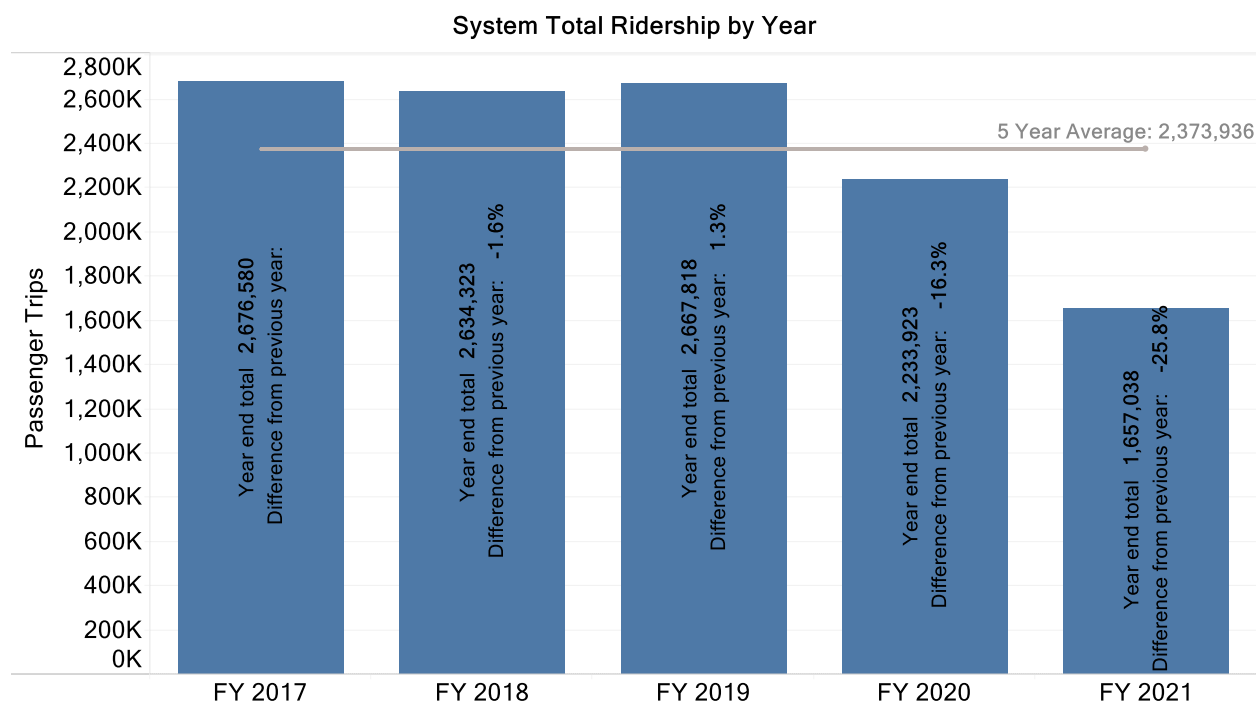Total ridership for the previous five fiscal years is shown below in Figure 1.

System Total Ridership by Year

Figure 1: SRTA Total Ridership FY17-FY21

SRTA operates fixed route service out of two terminals: Fall River and New Bedford. The service from each terminal operates independent of the other with exception of the New Bedford Route 9 – Intercity (NB9) and the New Bedford Route 9X – Intercity Express (NB9X), which provides a connection between New Bedford and Fall River. Ridership data for the NB9 and NB9X is recorded such that boardings on the trips originating from New Bedford terminal are attributed to New Bedford terminal and boardings on the trips originating from Fall River terminal are attributed to the Fall River terminal.

The service in each city reflects the unique service demands for each city, and as a result the ridership trends vary between the two cities. Ridership in Fall River for FY21 was 671,753 trips (41% of the systemwide total). Ridership in New Bedford was 985,285 trips (59% of the systemwide total). The totals are shown below in Figure 2.
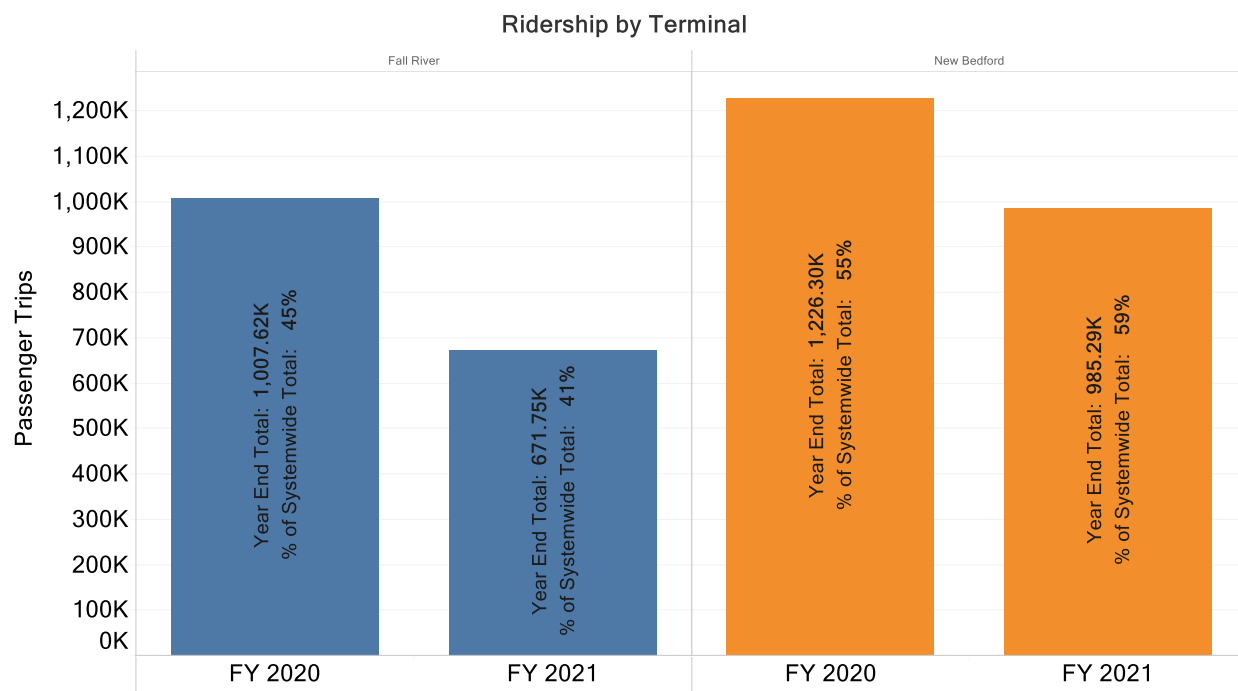
Figure 2: Total by Terminal FY20 & FY21

SRTA operates three schedules for service: Weekday, Saturday, and Holiday. Weekday service operates Monday through Friday and provides the greatest span of service and the shortest headways of the three schedules. Saturday and Holiday service share the same schedule, which provides shorter span of service and longer headways than the Weekday schedule. The Saturday schedule is operated each Saturday; Holiday service is operated on weekdays when a federal or state holiday is observed.

There were 311 service days in FY21. There were 249 Weekdays, 52 Saturdays, and 9 Holidays. Notably, there were two additional Holidays in service in FY21 because of the manner Holiday service was categorized in FY20. Between March 1 and June 30, 2020, there were 2 holidays that were counted as Weekdays because the same level of service was operated due to service reductions due to the COVID-19 pandemic. This difference in how service was categorized resulted in a higher total number of trips on Holidays in FY21 compared with FY20. The Holiday daily average was lower in FY21 consistent with overall ridership trends.

Weekday average ridership decreased 28% in FY21; the FY20 weekday average ridership was 7,986, the FY21 weekday average ridership was 5,776. Saturday ridership declined 7% from the FY20 average of 3,776 to the FY21 average of 3,512. Holiday ridership decreased 7% from FY20 average of 3,659 to 3,399 in FY20. The results are shown below in Figure 3.
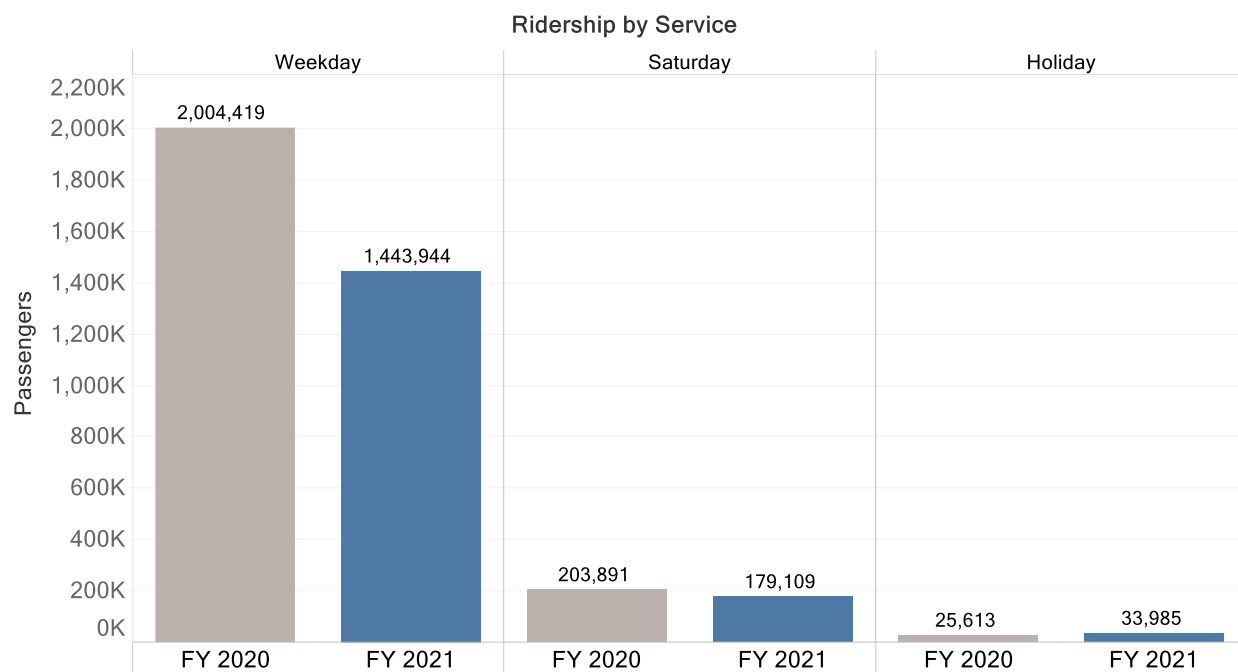
Figure 3: Ridership by Service Schedule

B.   Fare Payment

In addition to recording boarding counts, the Sheidt & Bachmann fare collection system records detailed information regarding each transaction made when passengers board a bus. This information is useful to determine the method customers pay for their service and the extent that various pass products are used by SRTA customer. For much of FY21, fare collection was suspended in response to the COVID-19 pandemic. Fare collection was resumed on April 1, 2021, with fare prices reduced from the pre-pandemic fare rates. This report evaluates fares collected during the period of April 1, 2021, to June 30, 2021.

Historically, cash has been the predominant method of fare payment, and that remained true in FY21 with 53,106 (39%) trips paid for with cash; multi-ride pass products (one day, seven-day, thirty-one day, and ten ride) accounted for 31,001 (23%) trips; transfers accounted for 28,064 trips (20%); and stored value accounted for 23,543 (17%) trips.

The results are shown below in Figure 4.

Use by Product Type

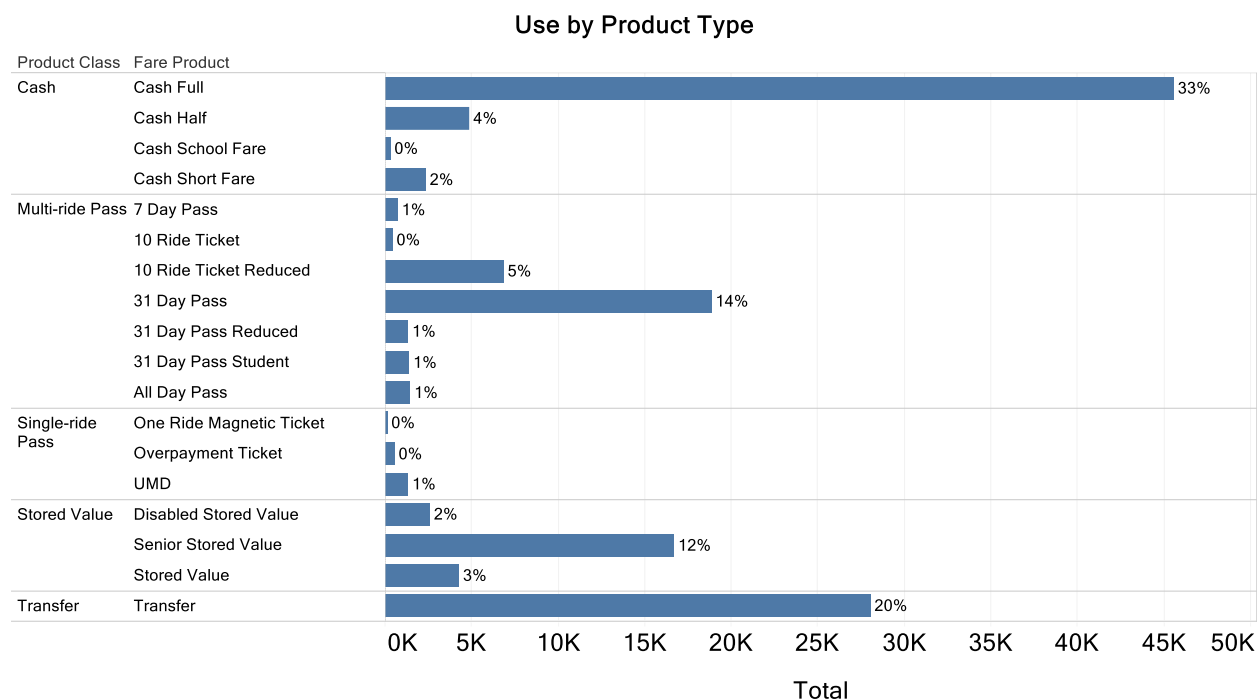| Product Class	Fare Product	
Cash	Cash Full	33%
	Cash Half	4%
	Cash School Fare	0%
	Cash Short Fare	2%
Multi-ride Pass	7 Day Pass	1%
	10 Ride Ticket	0%
	10 Ride Ticket Reduced	5%
	31 Day Pass	14%
	31 Day Pass Reduced	1%
	31 Day Pass Student	1%
	All Day Pass	1%
Single-ride Pass	One Ride Magnetic Ticket	0%
	Overpayment Ticket	0%
	UMD	1%
Stored Value	Disabled Stored Value	2%
	Senior Stored Value	12%
	Stored Value	3%
Transfer	Transfer	20%

0K   5K   10K   15K   20K   25K   30K   35K   40K   45K   50K

Total

Figure 4: Fare Product Use

Fare products are sold in three locations: at the farebox, at the ticket vending machines located in both terminals, and at the staffed ticket windows in each terminal. Farebox sales only accept cash and only allow for cash fare products, to add cash value to stored value products, or to purchase an All-Day Pass. Ticket vending machines and ticket windows sell all fare products and accept cash, credit, and debit transactions.

Multi-use pass products are the greatest value for frequent riders due to their fixed purchase price and unlimited use while the product is valid. When fare collection was resumed, prices were reduced from pre-pandemic prices, the prices shown in this report reflect the discounted prices. Multi-use products include: All Day Pass ($2.00), 7 Day Pass ($8.00), and 31 Day Pass (full price - $20; student - $20; reduced - $20). Multi-use passes are analyzed in two ways: the average fare paid per pass use and average trips taken per pass.

The average fare paid per pass use is calculated by dividing the total value of products sold by the total number of unlinked passenger trips recorded for the pass products. The resulting figure measures the value each pass provides to the user relative to the maximum fare that user may otherwise be required to pay. For example, an adult rider may choose to pay cash when boarding for their trip, which would cost $1.00 for each trip; however, if that same adult purchased a 31 Day Pass for $20.00, they would be provided unlimited use of the SRTA Fixed Route bus network while the pass is valid, and assuming they use the pass more than 20 times, they have maximized the use of the pass by reducing their per trip cost below $1.00.

Based on the analysis of multi-use pass products, the only pass providing value to the customer was the 31 Day Reduced: the average fare paid was $0.89 per trip, which represents an 11% cost savings over a cash fare. The remaining pass products had fewer trips redeemed per pass than the equivalent cash value of a single trip. The likely cause in the case of the 31 Day Pass Student is bulk purchases occurring near the end of FY21 with the intent to distribute the passes

to students in the first quarter of FY22. The remaining pass product redemption rates is confounding since most of these products are sold directly to the customer, rather than through an institutional purchase as is the case with the student passes. It is possible that customers are purchasing products during the discount period with the intent of redeeming them when prices revert to pre-pandemic amounts. The results are shown in Figure 5.

Average Fare by Multi-Use Product			
Pass Product	**Total Trips**	**Average Fare**	**Discount**
7 Day Pass	739	$2.35	-135%
31 Day Pass	18,836	$1.60	-60%
31 Day Pass Reduced	1,326	$0.89	11%
31 Day Pass Student	1,378	$6.82	-582%
All Day Pass	18,004	$0.60	60%

Figure 5: Average Fare by Multi-Use Product

Another way of evaluating Multi-Use Products is by the average number of trips taken by pass type. The average fare paid answers the question of the value of the multi-use pass for the customer; the average number of trips taken by pass type answers the question of how frequently do multi-use riders use the pass. This analysis includes all the pass types analyzed for average fare and include two additional passes: full price and reduced price 10 Ride Ticket. Interestingly, the utilization of ten trip tickets is less than 100% of trips purchased. The product is sold for $10.00 at full price and $7.00 reduced price to students, which would represent a per trip cost of $1.00 and $0.70 respectively. This is the only multi-use product where utilization can be measured as a ratio of trips available. Average trips taken per ten trip ticket is less than 1 (0.27) for the full price 10 Ride Ticket and 4 for the reduced price. Contributing to the lower utilization rate could be passes sold but not distributed during the fiscal year, as is common for school districts or social service agencies. It is possible however, that customers purchase the product and never use all ten trips that were purchased.

The unusual trend of pass sales and use is illustrated in the analysis of trips per pass product. It is expected to see pass products with average trip counts exceed the cash value of the trip taken (assuming each trip would have otherwise been paid for at the base cash rate of $1.00). However, multi-ride pass product use between April and June of FY21 was below the cash value of the trips taken. For example, a 31 Day Pass costs $20.00 to purchase and is good for 31 days after the pass is first used. During that 31-day period, it would be expected that customers would take more than 20 trips, otherwise, the pass cost more than paying for each trip individually. However, in FY21, the only pass product that had an average trip count higher than its cash value equivalent was the 31 Pass Reduced, a pass used by customers over 60 or with a qualified disability.

The full results are below in Figure 6.

Average Trips per Multi-Use Product			
Pass Product	**Total Sold**	**Total Trips**	**Average Trips per Pass**
10 Ride Ticket	1505	405	0.27
10 Ride Ticket Reduced	1926	6870	4
31 Day Pass	1507	18836	12
31 Day Pass Reduced	59	1326	22
31 Day Pass Student	470	1378	3
7 Day Pass	217	739	3
All Day Pass	919	1447	2

Figure 6: Average Trips per Multi-Use Product

III. Performance Analysis of Service

SRTA adopted performance standards to assess the productivity of service for each route relative to the whole system. The standards are quantitative indicators that measure route performance against a specific measure of productivity for the purpose of identifying routes that are underperforming expectations.

Route performance is measured against the systemwide average and falls in one of three categories:

- **Pass** – productivity measure is greater than 50% of the systemwide average and no corrective action is necessary.
- **Monitor** – productivity is less than 50% of the systemwide average but greater than 35% of the systemwide average, performance should be monitored, and a corrective plan should be developed;
- **Fail** – productivity is less than 35% of the systemwide average, the corrective plan should be implemented.

There are three indicators used in this report: **passengers per revenue hour, passenger per revenue mile, and passengers per trip**. The metrics each measure a different aspect of transit route productivity, each providing a slightly different insight in to how the service is being used by SRTA customers.

Passengers per revenue hour measures the number of passengers boarding a route during an hour of service. It is reported as an average number based on the total number of hours a route is in service and the total passengers that boarded the route during a period of time. Passengers per revenue hour identifies productivity based on the amount of time a route is in service and is a way to determine if that time is being used as efficiently as possible. Routes with a greater frequency of service tend to perform better over those with lower frequency as there are more opportunities in an hour for the route to board passengers.

Passengers per revenue mile measures the number of passengers boarding a route over the course of a mile of service. It is reported as an average number based on the total number of miles a route travels while in service and the total number of passengers that board the route while in service. Passengers per revenue mile identifies productivity based on the total distance a route travels and is a way to determine if the distance traveled by the route is being used as

efficiently as possible. Routes that are shorter and serve more densely developed areas tend to perform better over those that are longer and serve less densely developed areas.

Passenger per trip measures the number of passengers that board a bus each time it travels the route. It is reported as an average number based on the total number of trips performed on a route and the total number of passengers that board the route during a trip. Passengers per trip identifies the number of passengers that board a vehicle for each trip and is a way to determine if the amount of service for a route is being allocated as efficiently as possible. This metric is as close to a combined metric of hours and miles but tends to favor routes that serve more densely developed areas, as there is a greater potential to pick up passenger.

A. Passengers per Revenue Hour

The systemwide average for passengers per revenue hour (PPRH) was 15.52, a decrease of 28% over FY20; the Monitor category was set at 7.76 and the Fail category was set at 5.43. Nine of the twenty-two routes operated in FY21 performed above the average PPRH.

Two routes fell in the Monitor category: Fall River Route 14 – Swansea (FR14) and the New Bedford 9X – Intercity Express (NB9X). The FR14 is a route that historically has underperformed the system average. The route serves lower density residential areas compared with the rest of the Fall River service area as well as auto-centric shopping and commercial corridors. The operating environment for the route is not favorable to transit and is not generally favorable for pedestrian traffic either. The route is also the second longest route, with significant distances between trip generators. These factors all contribute to the FR14 consistently underperforming the system average.

The NB9X also underperformed the system average, which is not surprising given the unique manner the route operates. The NB9X is a commuter express route that connects the New Bedford Terminal with the Fall River Terminal via Interstate 195; the only boarding location is either terminal. Having only one location to board passengers and a lengthy trip between terminals results in underperformance for the route. The NB9X is currently operated as a pilot service and further examination of ridership trends is necessary to determine whether the schedule currently operated is well matched for passenger demand.

One route fell in the Fail category: New Bedford: North End Shuttle (NB21). The New Bedford North End Shuttle is a perennial low-performer. A service evaluation was conducted in 2015 determined that retaining service on the busiest portions of the route would be costlier to extend existing routes than to retain the service in its current alignment. The route alignment was planned to be re-evaluated in FY21, however due to the COVID-19 pandemic and the disruption in regular ridership, no planning effort was made to address performance issues. The results of the Passengers per Revenue Hour analysis are shown below in Figure 7 and Figure 8.

Passengers per Revenue Hour

Route ID	July	August	September	October	November	December	Date January	February	March	April	May	June	Grand Total
FR1	16.71	19.26	19.89	19.44	19.48	14.99	16.23	16.79	18.32	18.91	20.34	19.64	18.35
FR2	13.33	13.49	13.90	14.23	14.07	11.47	12.93	14.04	15.52	15.55	15.53	15.55	14.16
FR3	19.60	20.34	19.84	19.67	19.11	15.62	18.45	17.13	20.90	22.78	23.57	21.85	19.93
FR4	19.35	15.37	11.42	11.92	10.83	8.36	11.01	10.82	11.86	13.13	13.88	13.23	12.28
FR5	13.91	15.01	12.54	13.38	13.74	11.57	12.80	13.11	13.68	15.13	17.19	15.73	13.88
FR7	15.20	14.97	17.29	17.50	17.72	12.33	11.69	10.90	12.49	16.51	17.83	14.89	14.95
FR8	5.17	4.96	7.86	12.78	10.78	5.53	6.89	6.21	10.73	15.59	18.19	11.21	10.18
FR9	12.17	10.73	8.82	9.31	8.84	6.55	8.77	8.44	9.32	9.96	11.47	8.46	9.28
FR10	17.02	18.13	23.87	26.91	27.03	19.28	18.37	16.88	19.04	26.70	26.03	22.61	21.85
FR14	7.99	8.23	7.63	7.20	7.53	5.60	7.05	6.47	7.39	7.25	6.85	6.75	7.14
NB1	32.73	31.47	27.76	25.24	26.33	25.30	23.32	24.96	27.45	27.19	26.89	29.16	27.06
NB2	27.36	25.35	20.54	20.83	24.06	22.41	20.79	22.12	24.11	22.67	23.53	23.07	22.81
NB3	12.07	13.49	12.10	11.98	12.57	11.75	13.94	13.85	15.30	13.80	13.54	13.15	13.14
NB4	20.60	18.38	13.43	14.23	14.58	12.48	11.73	13.17	14.42	16.59	19.22	19.56	15.34
NB5	15.88	16.35	17.08	13.02	9.61	15.55	17.20	24.17	19.52	13.52	12.38	12.66	15.63
NB6	12.79	11.29	8.27	9.22	7.18	8.90	7.84	7.08	8.81	6.94	8.09	8.19	8.78
NB8	24.43	24.17	20.30	19.37	20.02	18.41	19.31	18.29	22.01	23.31	20.75	22.59	21.05
NB9	16.94	17.46	16.97	16.25	16.72	15.67	16.98	16.37	18.69	18.53	18.02	18.30	17.23
NB9X	4.25	5.87	5.90	6.66	7.49	7.21	5.63	4.95	5.58	8.64	11.20	10.26	6.90
NB10	12.60	16.45	19.03	18.58	20.34	19.49	16.39	16.02	17.51	15.39	15.46	15.65	16.92
NB11	14.66	14.04	12.40	14.03	13.40	13.04	12.62	12.09	13.29	13.46	12.57	13.70	13.25
NB21	5.72	7.44	4.44	4.07	4.54	3.57	3.33	4.46	5.34	2.95	3.03	3.52	4.33
Grand Total	15.91	16.21	15.01	15.33	15.64	13.72	14.05	14.21	16.01	16.60	17.11	16.57	15.51

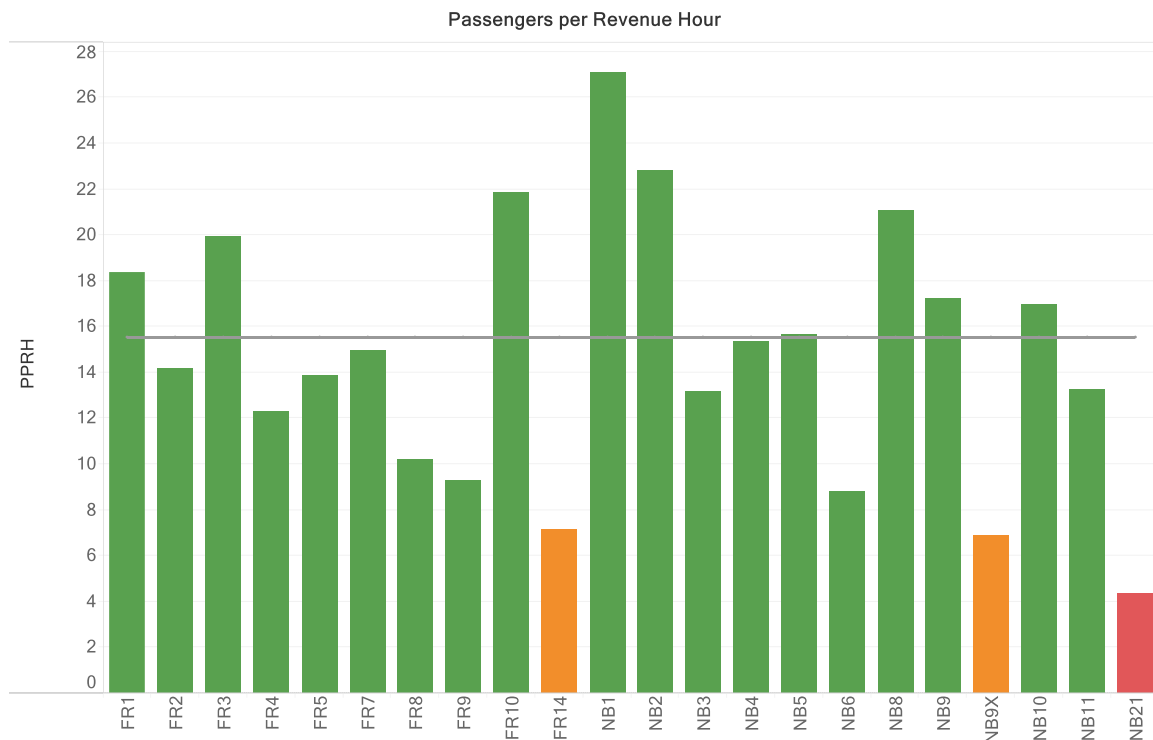*Figure 7: FY21 Passengers per Revenue Hour Table*

Figure 8: FY21 Passengers per Revenue Hour Score Chart

B.   Passengers per Revenue Mile

The systemwide average for passengers per revenue mile was 1.04; the Monitor category was set at 0.52 and the Fail category was set at 0.364. Twelve of twenty-two routes were observed above the average of 1.04.

One route fell in the Monitor category: The Fall River Route 14 – Swansea. The FR14 is often in the Monitor category for reasons stated above. In FY20, the route was in the Fail category, which suggests there was an improvement in ridership in FY21. There were no changes to the route alignment, service frequency, or service span in FY21.

Two routes fell in the Fail category: NB9X and NB21.

The NB21 is a perennial low-performing route for this category. The NB9X is unsurprising as well considering the long distance of travel and a single boarding location at either terminal. The NB9X will be subject to a service improvement plan in FY22.

The results of the Passengers per Revenue Mile analysis are shown below in Figure 9 and Figure 10.

Passengers per Revenue Mile

Route ID	July	August	September	October	November	December	Date January	February	March	April	May	June	Grand Total
FR1	1.34	1.55	1.60	1.56	1.56	1.20	1.30	1.35	1.47	1.52	1.63	1.58	1.47
FR2	0.59	0.60	0.62	0.63	0.63	0.51	0.58	0.63	0.69	0.70	0.70	0.70	0.63
FR3	1.91	1.99	1.94	1.92	1.87	1.53	1.80	1.67	2.04	2.22	2.30	2.13	1.95
FR4	1.23	0.98	0.73	0.76	0.69	0.53	0.70	0.69	0.75	0.83	0.88	0.84	0.78
FR5	1.09	1.18	0.99	1.06	1.09	0.91	1.01	1.04	1.08	1.14	1.25	1.15	1.08
FR7	1.27	1.25	1.44	1.46	1.48	1.03	0.98	0.91	1.04	1.38	1.49	1.24	1.25
FR8	0.44	0.42	0.67	1.09	0.92	0.47	0.59	0.53	0.92	1.95	3.07	1.88	0.99
FR9	1.05	0.82	0.57	0.60	0.57	0.42	0.57	0.54	0.60	1.02	1.71	1.25	0.71
FR10	1.39	1.48	1.96	2.21	2.22	1.58	1.50	1.38	1.56	2.18	2.12	1.84	1.79
FR14	0.43	0.44	0.41	0.39	0.41	0.30	0.38	0.35	0.40	0.39	0.37	0.36	0.38
NB1	2.42	2.28	1.94	1.76	1.84	1.77	1.63	1.74	1.92	2.05	2.09	2.28	1.95
NB2	2.04	1.98	1.70	1.72	1.99	1.86	1.71	1.83	2.01	1.77	1.77	1.74	1.83
NB3	1.00	1.10	0.95	0.94	0.98	0.92	1.09	1.09	1.20	1.61	2.13	2.09	1.17
NB4	1.17	1.09	0.85	0.90	0.92	0.79	0.74	0.83	0.91	0.96	1.05	1.07	0.93
NB5	1.31	1.31	1.17	0.90	0.66	1.07	1.18	1.66	1.34	0.93	0.85	0.87	1.12
NB6	0.75	0.70	0.60	0.67	0.52	0.65	0.57	0.52	0.64	0.51	0.59	0.60	0.62
NB8	1.80	1.78	1.49	1.43	1.47	1.35	1.42	1.35	1.62	1.75	1.57	1.71	1.56
NB9	0.97	1.00	0.97	0.93	0.96	0.90	0.97	0.94	1.07	2.84	157.77	251.43	1.24
NB9X	0.15	0.20	0.20	0.23	0.26	0.25	0.19	0.17	0.19	0.26	0.32	0.29	0.23
NB10	0.91	1.15	1.23	1.20	1.31	1.26	1.06	1.03	1.13	1.80	2.79	3.23	1.31
NB11	1.08	1.03	0.91	1.03	0.98	0.96	0.93	0.89	0.98	0.99	0.92	1.00	0.97
NB21	0.24	0.31	0.18	0.17	0.19	0.15	0.14	0.19	0.22	0.14	0.15	0.17	0.19
Grand Total	1.01	1.03	0.97	0.99	1.01	0.89	0.91	0.92	1.04	1.23	1.37	1.33	1.05

Figure 9: FY21 Passengers per Revenue Mile Table
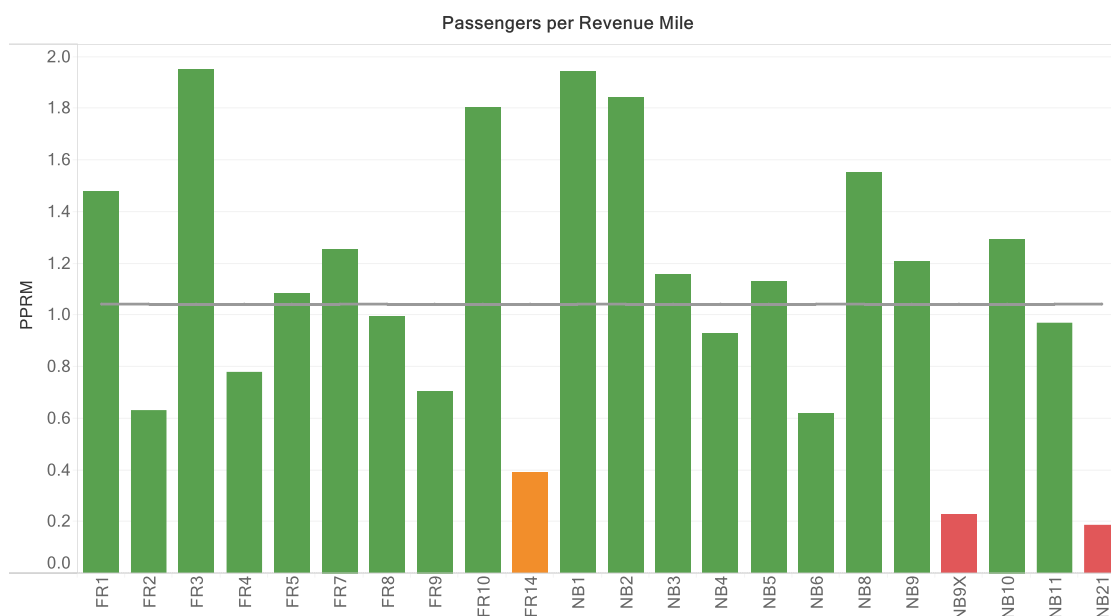
Passengers per Revenue Mile

Figure 10: FY21 Passengers per Revenue Mile Chart

C.   Passengers per Trip

The systemwide average for passengers per revenue mile was 5.82; the Monitor category was set at 2.91 and the Fail category was set at 2.04. Six of twenty-two routes were observed above the average of 5.82. The system average was 30% lower than FY20 and is consistent with ridership trends observed throughout FY21.

Three routes fell in the Monitor category: Fall River Route 9 – Bedford St (NB9), New Bedford Route 6 – Shawmut, and New Bedford North End Shuttle (NB21). The FR9 was in the Monitor category based on the year end average passengers per trip, however only was in the Monitor category in eight months. The route was subject to a minor alignment to service in early FY21, however with systemwide ridership decreased due to the COVID-19 pandemic it is possible that performance will improve was ridership increases.

The NB6 was subject to a service change in FY21 that significantly changed the route alignment. The change was necessary to support continued operations during the COVID-19 pandemic and was in response to declining ridership along large portions of the route. The route has historically performed below the system average, but above the Monitor threshold. This route should continue to be monitored to determine if further adjustments are appropriate to improve service.

The NB21 is the perennial low-performer. Its performance in this category is affected by low ridership and relatively few trips. The NB21 serves a low-density residential area with few commercial trip generators.

New Bedford Route 5 – Rivet Street (NB5) is the only route to fall in the Fail category. The route was subject to a service improvement plan that greatly reduced the service area for the route. The change accelerated the trend of declining ridership that had been trending for several years. The areas historically served by this route should be considered for a service assessment to determine how to maintain coverage and improve system operations.

The full results of the analysis are shown below in Figure 11 and Figure 12.

Passengers per Trip

| Route ID	July	August	September	October	November	December	Date January	February	March	April	May	June	Grand Total
FR1	4.04	4.66	4.81	4.70	4.71	3.62	3.92	4.06	4.43	4.57	4.92	4.75	4.44
FR2	6.13	6.19	6.31	6.46	6.39	5.21	5.87	6.38	7.04	7.10	7.10	7.12	6.45
FR3	5.87	6.10	5.95	5.90	5.73	4.69	5.53	5.14	6.27	6.83	7.07	6.55	5.98
FR4	5.48	4.36	3.24	3.38	3.07	2.37	3.12	3.06	3.36	3.72	3.93	3.75	3.48
FR5	4.64	4.95	4.07	4.34	4.46	3.74	4.16	4.25	4.43	4.67	5.15	4.71	4.44
FR7	4.43	4.37	5.05	5.11	5.17	3.60	3.41	3.18	3.65	4.82	5.20	4.35	4.37
FR8	1.72	1.65	2.54	4.12	3.48	1.79	2.22	2.01	3.46	5.05	5.87	3.65	3.30
FR9	3.98	3.39	2.65	2.80	2.66	1.97	2.64	2.54	2.80	2.99	3.45	2.54	2.81
FR10	4.25	4.53	5.99	6.75	6.78	4.83	4.61	4.23	4.78	6.66	6.48	5.62	5.47
FR14	4.00	4.11	3.81	3.60	3.77	2.80	3.53	3.24	3.70	3.63	3.43	3.38	3.57
NB1	9.58	8.99	7.66	6.96	7.27	6.98	6.44	6.89	7.58	7.92	8.03	8.74	7.66
NB2	9.69	9.44	8.17	8.27	9.56	8.95	8.22	8.79	9.63	8.47	8.49	8.35	8.79
NB3	4.93	5.44	4.76	4.70	4.94	4.62	5.48	5.45	6.01	5.26	5.09	4.94	5.13
NB4	7.01	6.44	4.90	5.19	5.32	4.56	4.27	4.80	5.27	5.52	6.05	6.18	5.38
NB5	3.97	3.30	1.71	1.30	0.96	1.55	1.72	2.42	1.95	1.35	1.24	1.27	1.84
NB6	5.40	4.27	2.41	2.69	2.09	2.60	2.29	2.06	2.57	2.02	2.36	2.39	2.69
NB8	6.52	6.45	5.41	5.17	5.34	4.91	5.15	4.88	5.87	6.32	5.67	6.19	5.65
NB9	16.94	17.47	16.99	16.27	16.74	15.70	17.00	16.39	18.72	17.00	15.75	16.01	16.75
NB9X	2.13	2.93	2.95	3.33	3.74	3.61	2.82	2.47	2.79	3.85	4.67	4.27	3.32
NB10	6.83	8.61	9.20	8.98	9.83	9.42	7.92	7.74	8.46	7.58	7.69	7.80	8.35
NB11	7.33	7.02	6.20	7.02	6.70	6.52	6.31	6.05	6.65	6.73	6.29	6.85	6.63
NB21	2.86	3.72	2.22	2.03	2.27	1.79	1.66	2.23	2.67	1.63	1.75	2.06	2.24
Grand Total	6.27	6.30	5.64	5.75	5.87	5.16	5.27	5.34	6.02	6.10	6.21	6.04	5.81

Figure 11: FY21 Passengers per Trip Table
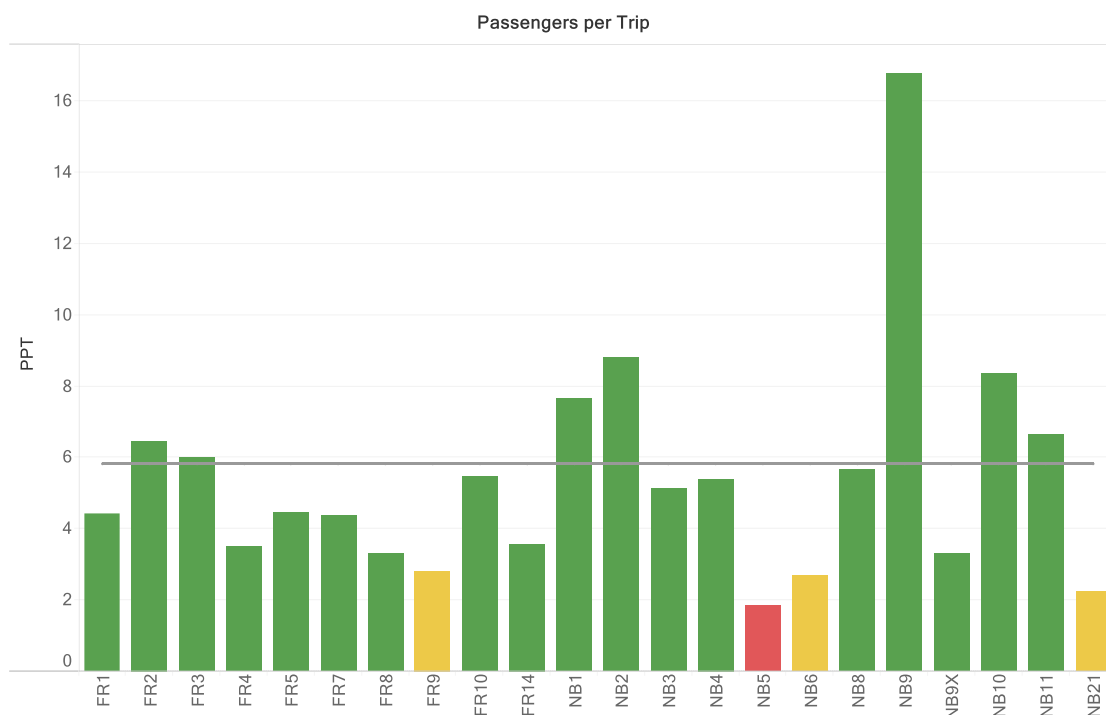
Figure 12: FY21 Passengers per Trip Chart

D.   Significant changes in Route Ridership

The above section identified route performance relative to the standards SRTA uses to evaluate performance. The analysis is intended to identify underperforming routes for corrective actions, and because the standards are established relative to the systemwide performance, there are routes that experienced significant changes in ridership that did not affect the position relative to the whole.

Significant changes in ridership were identified based on the average change in ridership for all routes and the standard deviation from that average. Any route where the change was greater than 1.65 standard deviations from the average was identified as a significant change. 1.65 standard deviations is chosen because it includes 90% of the dataset, making any change above or below that threshold significantly greater than any other change observed and warrants further examination.

The average change in ridership across all routes was 28,050 fewer trips than the FY20 average. Routes with an increase of more than 43,633 represented 1.65 standard deviation above the average, where as a decrease of more than 43,633 represented 1.65 standard deviation below the average. Only one route experienced a significant change in ridership compared with FY20: the Fall River Route 8 – BCC/Durfee High School

The FR8 generates most trips from students at Durfee High School and, to a lesser extent, students at Bristol Community College. The remote learning for both institutions resulted in significantly less ridership than in years past. The decrease is expected to be reversed in FY22 when students return to the classroom.

While not a significant increase relative to the system average, the FR14 remained nearly flat for ridership between FY20 and FY21, only losing 107 trips. This is an interesting trend as it suggests that the FR14 supports regular ridership that is more durable than many other routes. What makes the steady ridership interesting is that when compared against systemwide metrics and performance standards, the FR14 appears to be an underperforming route to be considered for performance improvement plan. However, when compared against absolute change in ridership, it is a steady performer.

The other interesting observation was that the NB10 increased ridership in a year when ridership was declining across most routes. It was the only route to add ridership in FY21. The growth occurred on all service days and across all service periods. Service was added in the AM in FY21, however the greatest growth of ridership occurred in the afternoon, 2,554 additional Weekday trips (42% increase) were taken compared with FY20. Midday Weekday trips increased by 2,504 (11% increase).

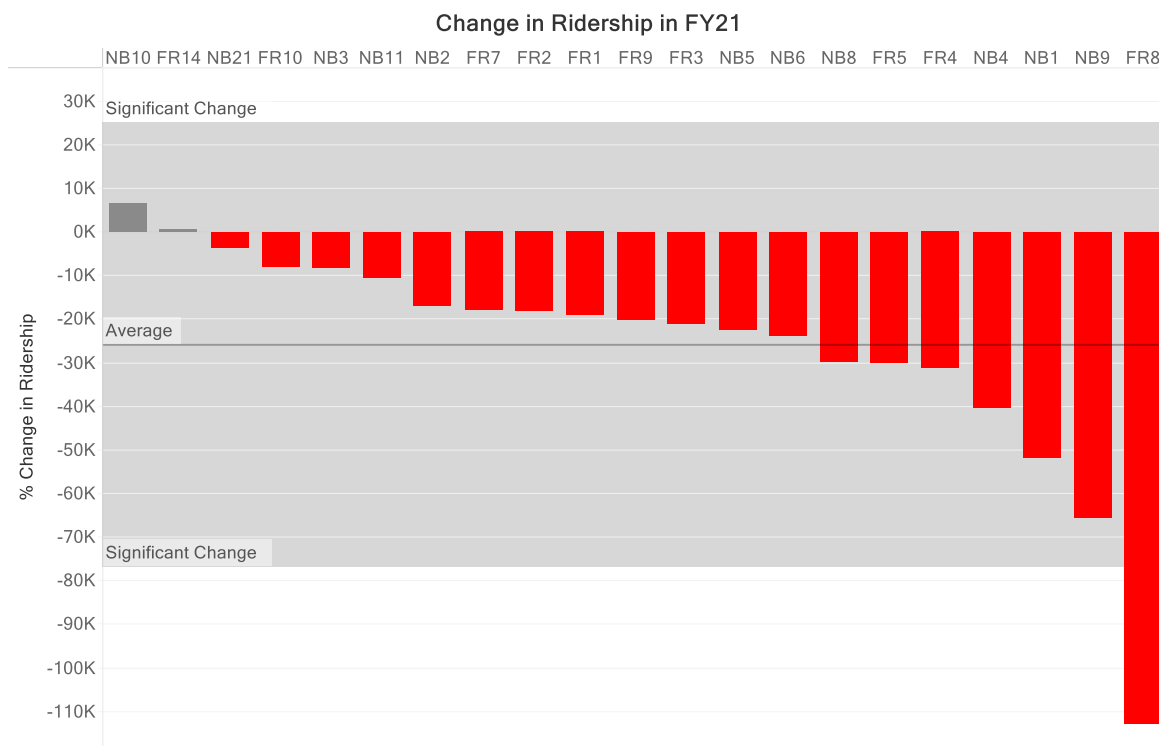The results of the route ridership change analysis are shown below in Figure 13.

Figure 13: Route Ridership Change from FY20

E.   On-Time Performance

On-time performance is the operational statistic most relevant to the customer experience. A bus that arrives late is frustrating for customers because they rely on the fixed route transit system to carry them to their destination and plan their trip around the published times. Waiting for a bus that is running late can make customers anxious or stressed knowing they are likely to arrive at their destination later than they intended. More detrimental to the customer experience is a bus that runs early. Early departures are incredibly disruptive because the customer may be waiting for a bus that has already passed the stop. For many routes, missing a bus that arrived early can mean waiting as much as an hour for the next to arrive.

SRTA measures On-time performance against the scheduled departure time for the trip origin. Trip origins are either the New Bedford or Fall River Terminals for outbound buses; inbound trip origins are the location where the outbound trip ends. A trip is considered on-time if it departs the trip origin no less than one minute prior to the scheduled time or five minutes after the scheduled time. The systemwide metric for on-time performance is 85% of scheduled trips departing within the on-time performance window. Systemwide on-time performance for FY21 was 88%; 4% of trips left early, 8% of trips left late. Four routes fell below the systemwide standard of 85%: Fall River Route 9 – Bedford St (FR9) at 82%, New Bedford Route 8 – Mt Pleasant (NB8) at 79%, New Bedford Route 10 – Dartmouth Mall (NB10) at 79%, and Fall River Route 10 – Rodman St (FR10) at 61%. Measuring on-time performance should also consider early departures because there are few, if any, operating conditions that would explain an early departure. Of the routes that were below the systemwide standard for on-time performance, the NB10 was early 9% of all trips and the FR9 was early on 8% of all trips, and the NB8 was early

on 6% of all trips. The FR10 fell below the on-time performance standard due to 37% of all trips departing late. The full results are below in Figure 14.
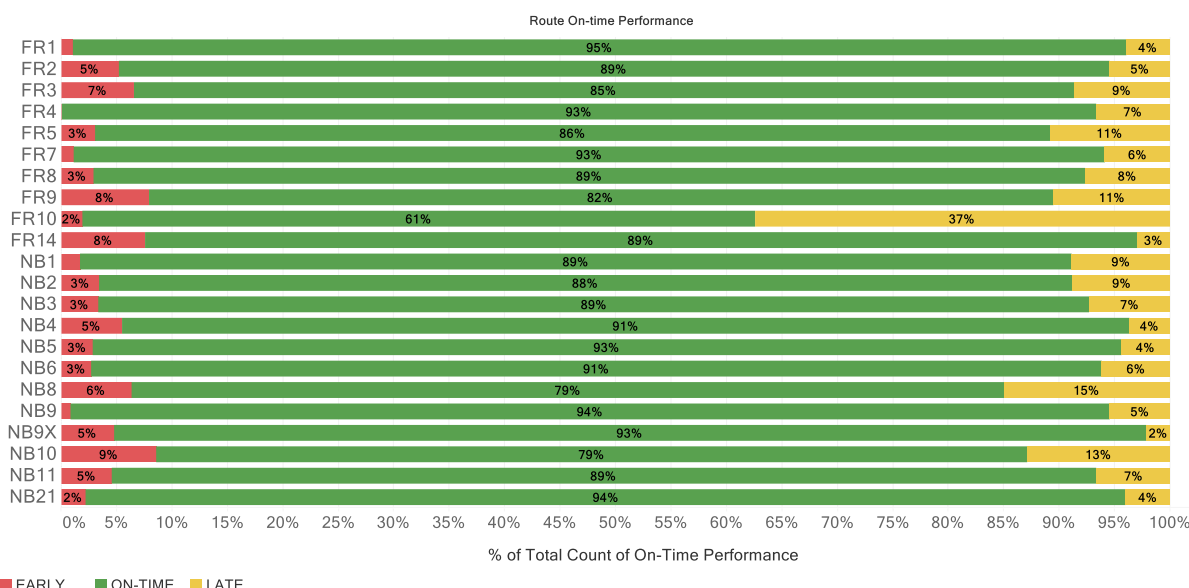

Figure 14: FY21 Route On-Time Performance

F.   Stop Level Boarding and Alighting

With the introduction of Automatic Passenger Counters (APC) systems on all SRTA fixed route buses, it is now possible to monitor and report information relating to passenger activity at the stop level. This information is important to understand ridership trends and to analyze route performance to determine segments of high and low use. The SRTA fixed route network serves more than 1,100 stops. Stop use can be categorized to either a boarding stop or an alighting stop. Most stops (excluding the Fall River and New Bedford Terminals) tend to have significant differences between boarding and alighting activity and for that reason this report considers both measures of passenger activity. The Fall River and New Bedford Terminals have been excluded from the list because most boardings and alightings are customers transferring from one route to another. The purpose of this list is to illustrate locations in the SRTA system that generate demand for transit service.

The top ten stops for boardings are shown below in Figure 15.

Stop Number	Name	Boardings	Boardings per Day	Stop Use
5060	New Bedford Market Basket	45,233	146.39	79%
5247	Dartmouth Mall	26,390	85.40	99%
5194	Fairhaven Walmart	18,665	61.40	73%
5656	Stafford Rd and Anthony St	11,769	38.09	67%
5211	Fall River Walmart	11,077	36.08	87%
5051	Dartmouth Street Stop & Shop	10,346	33.48	63%
5175	County St and Division St	10,044	32.50	46%
5031	Fall River Shopping Plaza	8,954	28.88	78%
5018	Rodney French Blvd and Welcome St	8,928	28.89	49%
5760	County St and Rivet St	7,946	25.72	47%
		716,396	51.68	69%

Figure 15: Top Ten Boarding Stops

The top ten stops for alightings are shown below in Figure 16.

Stop Number	Name	Alightings	Alightings per Day	Stop Use
5060	New Bedford Market Basket	43,878	142.00	79%
5247	Dartmouth Mall	34,596	111.96	87%
5656	Stafford Rd and Anthony St	13,696	44.32	67%
5211	Fall River Walmart	11,496	37.45	87%
5031	Fall River Shopping Plaza	13,434	43.34	78%
5440	Brock Ave and Ruth St	11,035	35.71	55%
5131	Bedford St and Seabury St	13,647	44.02	14%
5886	Bridge St and Fairhaven Commons	21,943	72.18	76%
5242	S Main St and Sullivan Dr	16,425	53.68	32%
6122	Hartwell St and Brow St	11,411	36.93	26%
		968,831	62.16	416%

Figure 16: Top Ten Alighting Stops

IV. Discussion

FY21 was another challenging year for SRTA. The ridership declines experienced in the last quarter of FY20 stabilized in the first quarter of FY21 but remained well below historic averages. Ridership began to increase in the fourth quarter, but also remained below historic levels. The declining ridership is cause for concern because it occurred across the entire system, however it affected some routes more than others, and in the case of the FR8, the effect was a significant decrease in expected ridership. The systemwide decrease is concerning because it makes it difficult to predict what will cause ridership to return to historic levels with the possibility that it may never return. The COVID-19 pandemic restrictions have been eased and many area schools are anticipating a return to in-person learning in the Fall of 2021. As unemployment rates drop and more of the workforce returns to jobsites, ridership should start to recover as well. The FY22 Half-Year Ridership Report will be telling whether this prediction is true, and ridership will return, or if we have entered a period of protracted low transit ridership.