

# SRTA Year End Fixed Route Ridership Analysis: FY 2020



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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 2020 (FY20); FY20 began July 1, 2019 and ended June 30, 2020.

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 trips scheduled on the published timetables. Scheduled values are used because detailed operational data are not currently available from South Coast Transit Management (SCTM), the service operator for SRTA.

Tableau Desktop 2019.2.13 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 2019.2.13.

### 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.

**B. List of Routes in Service during FY19**

<b>Route</b>	<b>Route Name</b>
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
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

## II. Key Findings

### A. Ridership

SRTA ridership in FY2020 is defined by two distinct periods: pre-COVID and COVID. The coronavirus pandemic of 2020 caused dramatic and rapid declines in ridership unlike anything ever experienced by SRTA. Ridership in the pre-COVID period (July 1 – February 29) was on a record setting pace, having recorded 1,837,442 trips, a 3% increase over the same period for FY19 and a 2% increase over the same period for FY16. FY16 was the highest ridership year in SRTA history. Beginning in early March, the coronavirus pandemic started affecting ridership, which experienced an unprecedented and rapid decline. March 2020 saw a 28% decrease over March 2019. April was the worst month on record with only 61,887 total trips, a 72% decrease from April 2019. Ridership began a slow recovery, however FY2020 finished with a total of 2,236,844 trips, a 16% reduction from FY19 and an 18% reduction from FY16. Total ridership for the previous five fiscal years is shown below in Figure 1.

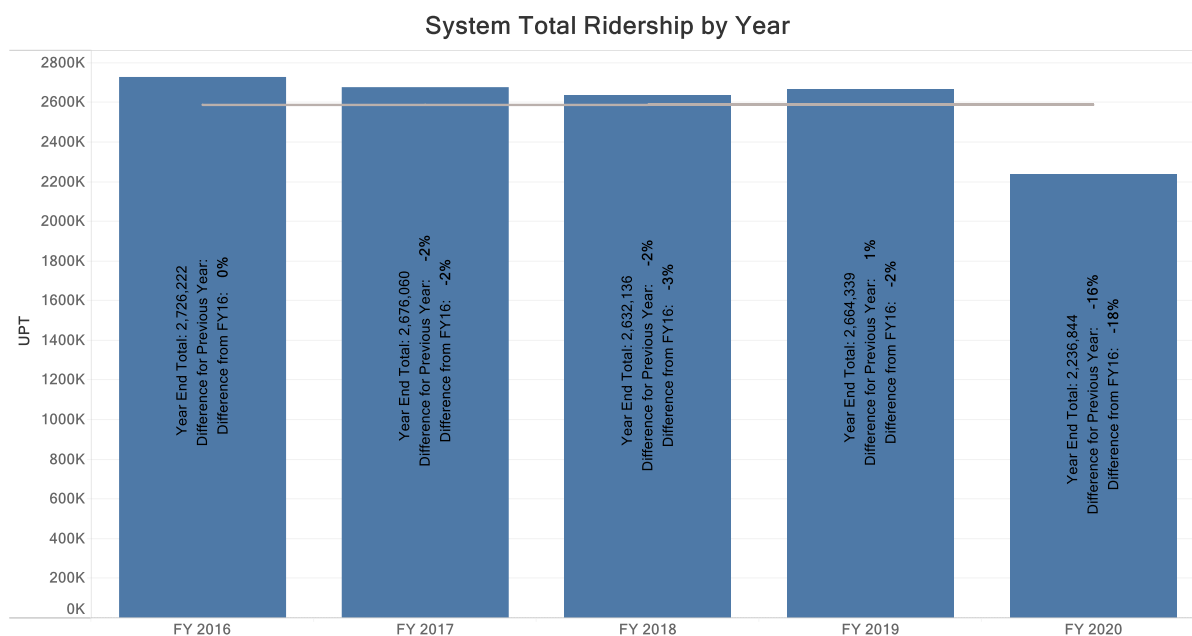


Figure 1: SRTA Total Ridership FY16-FY20

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

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 FY20 was 1,065,320 trips (48% of the systemwide total). Ridership in New Bedford was 1,171,524 trips (52% of the systemwide total). The totals are shown below in Figure 2.

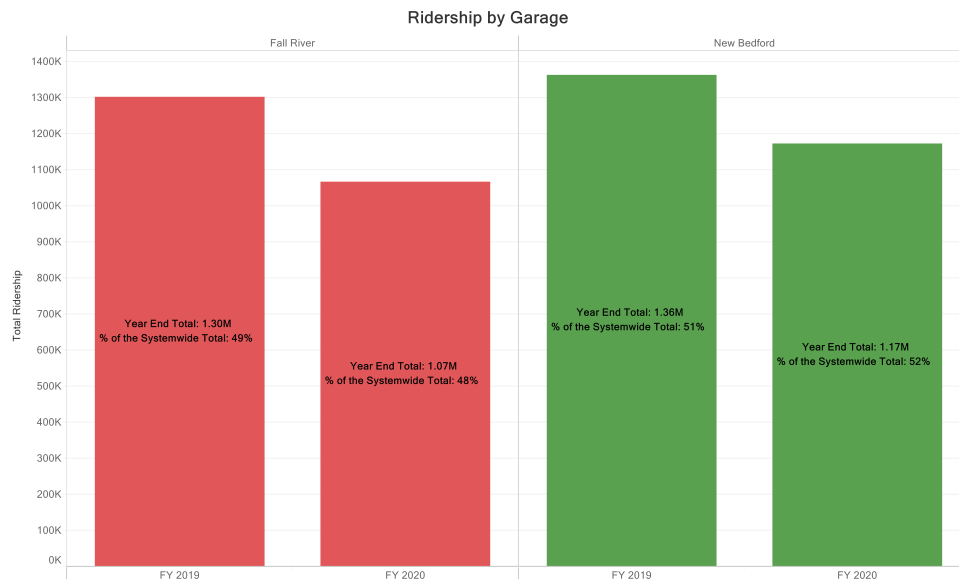


Figure 2: Total by Garage FY19 & FY20

SRTA operates three schedules for service: Weekday, Saturday, and Holiday; however due to the coronavirus pandemic, a fourth service, “COVID” was added in March in response to the pandemic. Weekday service operates Monday through Friday and provides the greatest span of service and the shortest headways of the four schedules. Saturday, Holiday, and COVID 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, and the COVID service operated Monday through Saturday beginning on March 25, 2020 through the end of the fiscal year.

There were 312 service days in FY20 compared with 309 in FY19. Despite an overall decrease in ridership due to coronavirus, an analysis of the pre-COVID service indicates that Weekday ridership average increased 1% in FY20; the FY19 weekday average ridership was 9,661, the FY20 weekday average ridership was 9,813. Saturday ridership declined 2% from the FY19 average of 4,457 to the FY20 average of 4,375. Holiday ridership increased 9% from FY19 average of 3,352 to 3,654 in FY20. The COVID daily average was 2,881. The full results are shown below in Figure 3.



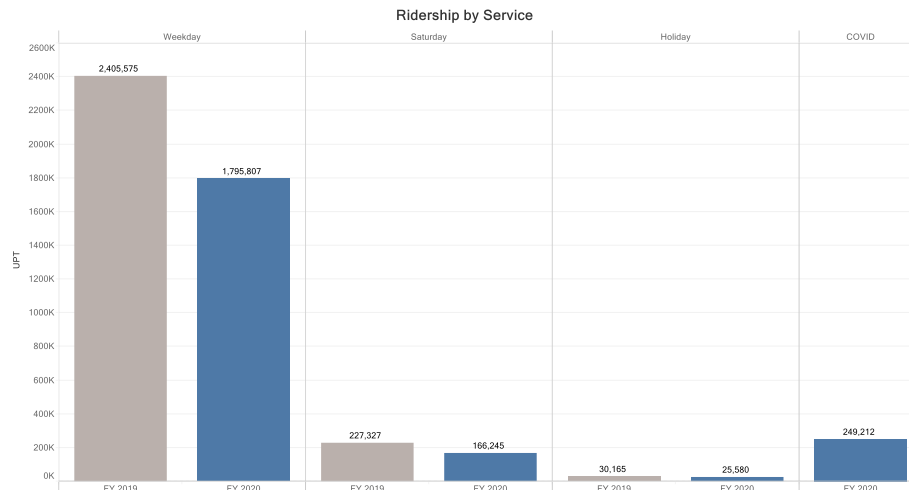


Figure 3: Ridership by Service Schedule

## 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. Historically, cash has been the predominant method of fare payment, and that remained true in FY20 with 793,783 (36%) trips paid for with cash; multi-ride pass products (one day, seven-day, thirty-one day, and ten ride) accounted for 579,160 (26%) trips; transfers accounted for 427,939 trips (19%); and stored value accounted for 164,897 (7%) trips.

On March 21, 2020, SRTA began rear-door boarding and suspended fare collection in response to the coronavirus pandemic. Between March 21 and June 30, a total of 241,888 trips were recorded. The COVID fare class is considered a promotional fare product due to its temporary status as a fare type. The full results are shown below in Figure 4.

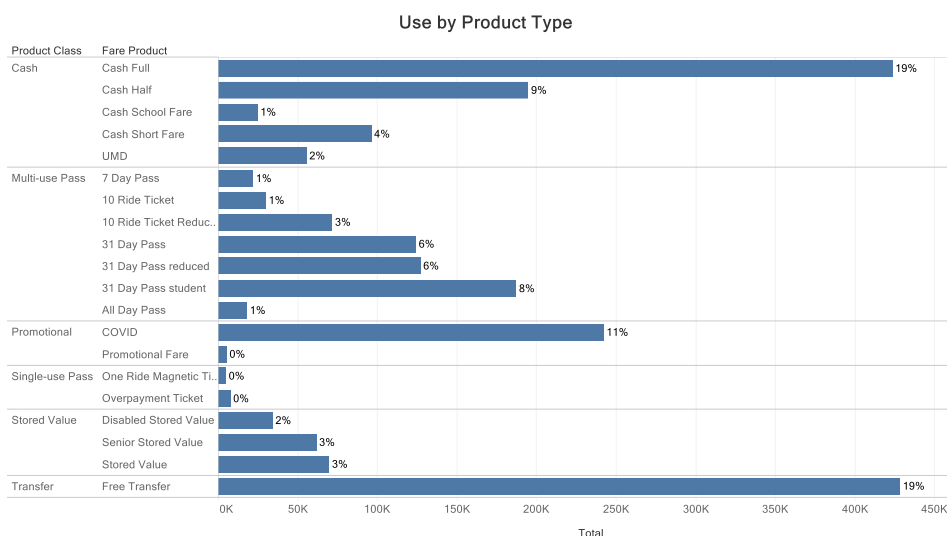


Figure 4: Fare Product Use

The evaluation of fare media use does not incorporate the entirety of FY20 because of the fare collection suspension. The fare media use analysis evaluates a shortened period that included all fares paid in FY19 and FY20 between July 1 and February 29 (28<sup>th</sup> for FY19). The growth trend in multi-use and stored value products continued in FY20. Multi-ride pass products increased use by 11% (54,110 more trips) from FY19, the largest absolute increase experienced by any pass product class. Not all products increased, ten-ride reduced (sold to schools for student use) decreased 12%, and All-Day passes decrease 13%.

The use of stored value products increased 12% (16,341 more trips) from FY19. The increase in the use of stored value products is not universal across all stored value products; the Disabled Stored Value products saw a reduction of 27% in FY20 from FY19, which represents 12,116 fewer trips. This loss was offset by a significant increase in the use of Senior Stored Value, which went from 29,114 trips in FY19 to 56,319 trips in FY20, a 93% increase in use. Both the Senior and Disabled passes are issued by SRTA provided the customer satisfies a set of qualifications. A review of the applications processed in FY19 and FY20 show that in FY19, 880 applications were approved: 531 Disabled passes issued, 349 Senior passes issued. In FY20 412 applications were approved: 260 Disabled Passes and 152 Senior passes were issued. SRTA has increased efforts to issue more Senior Passes, the ridership data and application data suggests that more seniors are riding more often and that the efforts have been effective.

Cash remains the predominant method of payment; 36% of all trips were paid for in cash. Despite being the largest category of fare payment, it decreased less than 1% from FY19. The full results are shown below in Figure 5.

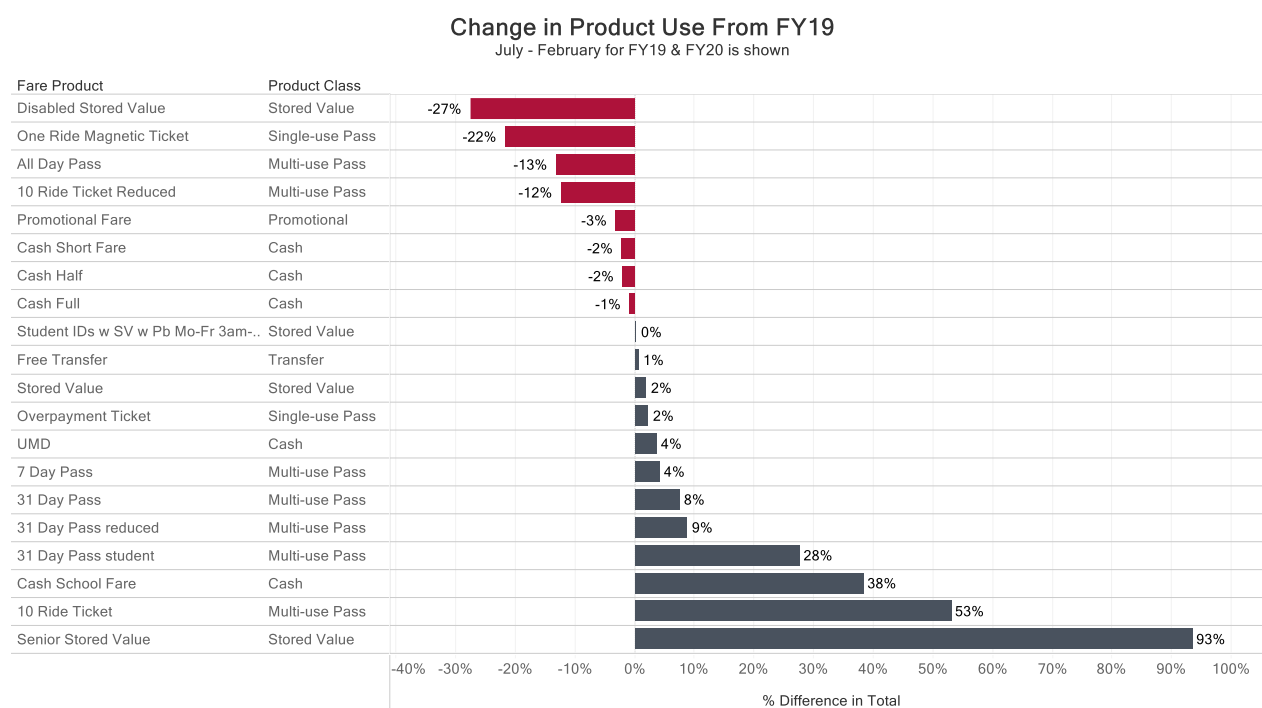


Figure 5: Change in Fare Product Use

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. Multi-use products include: All Day Pass (\$4.00), 7 Day Pass (\$14.00), and 31 Day Pass (full price - \$40; student - \$28; reduced - \$28). Multi-use passes are analyzed in two ways: the average fare paid per pass use; 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. 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 \$1.50 for each trip; however, if that same adult purchased a 31 Day Pass for \$40.00, 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 27 times, they have maximized the use of the pass by reducing their per trip cost below \$1.50.

Based on the analysis of multi-use pass products, the best value is with the All Day Pass: the average fare paid is \$0.60 per trip, which represents a 60% cost savings over a cash fare. The 31 Day Pass has a savings of 46% and the 31 Pass Reduced has a savings of 42%. The 31 Day Student Pass has less savings at 29% of the cash fare. The 7 Day Pass average fare paid was \$0.95, a 37% savings. The results are shown in **Error! Reference source not found..**

Average Fare by Multi-Use Product			
Pass Product	Total Trips	Average Fare	Discount
7 Day Pass	21,882	\$0.95	37%
31 Day Pass	123,961	\$0.81	46%
31 Day Pass Reduced	126,788	\$0.43	42%
31 Day Pass Student	187,115	\$1.07	29%
All Day Pass	18,004	\$0.60	60%

Figure 6: 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 Trip Ticket. Interestingly, the utilization of ten trip tickets is less than 100% of trips purchased. The product is sold for \$14.00 at full price and \$7.00 reduced price to students, which would represent a per trip cost of \$1.40 and \$0.70 respectively. This is the only multi-use product where utilization can be measured as a ratio of trips available and is interestingly less than 100%. Average trips taken per ten trip ticket is 8 for both full price and 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 most surprising result was the average trips taken with the All-Day Pass, which far exceeds any of the other multi-use pass products. Customers with All-Day passes took an average of 7 trips. The next most utilized product was the 31 Day Reduced pass with an average of 65 uses per pass. The 31 Day pass had an average of 49 trips per pass, which suggests that 31 Day pass holders are frequent and regular riders of the SRTA bus network. The full results are below in Figure 7.

<b>Average Trips per Multi-Use Product</b>			
<b>Pass Product</b>	<b>Total Sold</b>	<b>Total Trips</b>	<b>Average Trips per Pass</b>
10 Ride Reduced	9360	71,722	8
10 Ride Ticket	3565	29,688	8
31 Day Pass	2513	123,961	49
31 Day Pass Reduced	1960	126,788	65
31 Day Pass Student	7138	187,115	26
7 Day Pass	1479	21,882	15
All Day Pass	2691	18,004	7

*Figure 7: 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 21.61, a decrease of 10.7% over FY19; the Monitor category was set at 10.81 and the Fail category was set at 7.56. Ten of the twenty-two routes operated in FY20 performed above the average PPRH.

Two routes fell in the Fail category: New Bedford: North End Shuttle (NB21) and the Fall River: 14 – Swansea (FR14). The FR14 was the subject of a service change that eliminated service along a sparsely developed corridor and shifted the alignment to serve destinations with a higher demand for service. The resulting decrease in PPRH is concerning since the service change was intended to improve service availability along the route corridor. Interestingly, the FR14 performed in the monitor category in April and June and was in the passing category in May; these three months were marked by a decrease in service and ridership systemwide. Despite the systemwide decreases, the FR14 remained largely unchanged in PPRH performance during this period, which suggests that its ridership is consistent, but not increasing.

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 is planned to be re-evaluated in FY21 to determine whether an alternate service plan could improve ridership through service to the New Bedford Industrial Park.

The results of the Passengers per Revenue Hour analysis are shown below in Figure 8 and Figure 9.

Route ID	July	August	September	October	November	December	January	February	March	April	May	June	Route Average
FR1	22.45	22.78	31.79	31.23	30.21	24.51	26.48	25.71	19.50	9.23	11.70	15.20	23.17
FR2	18.23	19.02	22.73	22.08	21.76	18.03	20.31	20.93	17.48	13.18	16.65	15.58	19.37
FR3	30.02	32.11	39.37	40.00	38.18	33.43	35.06	34.42	25.63	11.89	14.47	20.32	29.94
FR4	18.18	17.30	23.52	24.25	21.57	18.83	21.82	21.28	15.62	8.49	11.91	15.20	18.96
FR5	16.53	17.60	29.03	28.76	26.82	23.10	27.62	25.46	17.99	7.25	8.89	12.57	20.80
FR6	19.67	21.68	32.87	31.72	31.20	26.39	29.46	27.72	20.42	11.93	17.23	19.72	24.69
FR7	17.10	17.47	27.16	27.40	25.87	21.39	24.83	23.96	17.96	8.01	10.15	13.77	20.29
FR8	13.33	13.12	50.80	51.63	42.75	32.23	41.76	39.89	28.40	2.72	3.20	4.29	32.25
FR9	13.35	13.95	18.77	18.87	17.76	14.84	18.15	17.36	13.25	6.95	8.61	10.36	15.09
FR10	23.69	24.53	37.76	39.52	36.92	31.39	34.15	31.82	24.60	10.44	13.38	16.12	27.15
FR14	7.46	7.94	7.90	7.29	6.88	7.26	7.44	7.35	6.34	5.02	6.61	7.72	7.14
NB1	33.47	34.57	37.41	35.62	34.06	29.20	32.79	34.30	26.33	20.50	25.48	30.83	32.22
NB2	27.43	28.04	28.63	27.19	26.47	24.07	25.88	26.88	21.86	25.30	24.29	26.69	26.24
NB3	15.37	15.90	16.38	15.67	15.64	13.87	14.93	15.76	12.93	12.14	13.10	14.11	14.95
NB4	29.26	29.80	30.72	28.76	28.33	23.76	26.44	27.58	21.16	16.40	19.29	23.08	26.28
NB5	16.20	17.47	18.57	16.74	17.79	15.12	15.98	16.72	15.10	11.23	12.58	15.28	16.07
NB6	12.31	12.67	13.64	13.57	13.28	11.18	11.98	13.25	10.29	7.57	8.81	10.83	11.94
NB8	29.97	33.63	32.74	31.54	31.93	28.12	29.11	30.99	23.54	15.00	17.52	22.12	27.94
NB9	25.15	26.89	29.60	28.80	27.78	24.31	24.89	26.97	19.38	12.83	13.81	17.21	24.21
NB10	20.09	21.85	18.23	18.00	18.56	16.57	16.54	17.05	12.34	6.67	6.48	12.02	15.69
NB11	16.46	17.82	16.66	15.98	17.21	15.55	14.77	15.09	12.70	11.24	12.59	14.44	15.25
NB21	6.18	6.62	8.47	8.40	8.37	6.71	7.48	7.71	6.01	3.53	3.10	4.13	6.38
System Average	20.92	21.83	26.90	26.30	25.12	21.51	23.69	23.99	18.30	11.29	13.13	16.10	21.61

Figure 8: FY20 Passengers per Revenue Hour Table

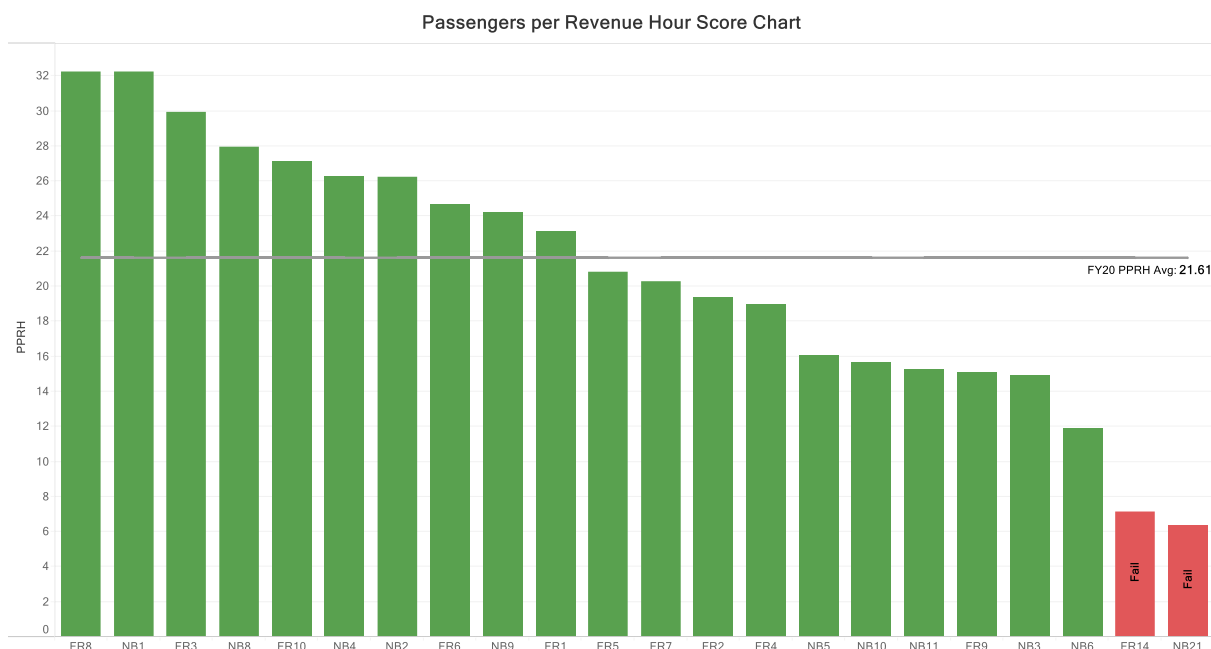


Figure 9: FY20 Passengers per Revenue Hour Score Chart

## B. Passengers per Revenue Mile

The systemwide average for passengers per revenue mile was 1.50; the Monitor category was set at 0.75 and the Fail category was set at 0.525. Eleven of twenty-two routes were observed above the average of 1.50.

One route fell in the Monitor category: New Bedford Route 6 – Shawmut/Rockdale (NB6) with an observed passengers per revenue mile of 0.68. The NB6 was identified in FY19 as an underperforming route. A service improvement plan that changed the alignment to discontinue service to little used portions of the route, along with increase service frequency to a more popular route deviation has been planned for FY21. The NB6 will continue to be monitored to determine if the service changes have improved ridership.

Two routes fell in the Fail category: FR14, NB21. The FR14 remained in the failing category for each month of FY20, with exception to April, May, and June and was the subject to a route realignment in FY20. As mentioned previously, the effects of COVID will pause any route re-evaluation until normal operations return to the SRTA system.

The NBNES is a perennial low-performing route for this category and as mentioned previously, corrective action being planned.

The results of the Passengers per Revenue Mile analysis are shown below in Figure 10 and Figure 11.

## SRTA Year End Fixed Route Ridership Analysis: FY 2020

Route ID	July	August	September	October	November	December	January	February	March	April	May	June	Route Average
FR1	1.81	1.83	2.56	2.51	2.43	1.97	2.13	2.07	1.57	0.74	0.94	1.22	1.87
FR2	1.03	1.02	1.03	1.00	0.99	0.82	0.92	0.95	0.80	0.60	0.76	0.70	0.92
FR3	2.47	2.64	3.24	3.29	3.14	2.75	2.88	2.83	2.11	0.98	1.19	1.77	2.47
FR4	1.37	1.30	1.77	1.83	1.63	1.42	1.65	1.61	1.18	0.64	0.90	1.09	1.43
FR5	1.31	1.39	2.31	2.29	2.13	1.84	2.20	2.03	1.43	0.58	0.71	1.00	1.65
FR6	1.69	1.86	2.83	2.72	2.70	2.26	2.54	2.40	1.80	1.25	1.80	1.93	2.20
FR7	1.59	1.62	2.52	2.54	2.40	1.99	2.31	2.22	1.63	0.65	0.82	1.12	1.83
FR8	1.15	1.13	4.41	4.49	3.71	2.80	3.63	3.47	2.47	0.23	0.28	0.37	2.80
FR9	1.09	1.13	1.52	1.53	1.44	1.21	1.47	1.41	1.08	0.56	0.70	0.86	1.23
FR10	1.55	1.61	2.50	2.62	2.44	2.08	2.26	2.10	1.64	0.72	0.92	1.11	1.81
FR14	0.37	0.40	0.43	0.39	0.37	0.39	0.40	0.40	0.34	0.27	0.36	0.42	0.38
NB1	2.90	3.00	3.25	3.09	2.95	2.53	2.84	2.98	2.28	1.78	2.21	2.55	2.79
NB2	2.31	2.36	2.41	2.29	2.22	2.03	2.17	2.25	1.81	1.77	1.70	1.91	2.16
NB3	1.39	1.44	1.48	1.41	1.41	1.25	1.35	1.42	1.16	1.01	1.09	1.19	1.34
NB4	1.70	1.74	1.80	1.69	1.67	1.39	1.55	1.62	1.25	1.01	1.19	1.39	1.55
NB5	1.29	1.38	1.45	1.30	1.39	1.18	1.24	1.30	1.18	0.89	1.00	1.21	1.26
NB6	0.71	0.73	0.78	0.78	0.76	0.64	0.69	0.76	0.59	0.43	0.50	0.61	0.68
NB8	2.34	2.62	2.55	2.46	2.49	2.20	2.27	2.41	1.83	1.14	1.33	1.68	2.17
NB9	1.41	1.52	1.69	1.64	1.58	1.39	1.42	1.54	1.11	0.73	0.78	0.98	1.38
NB10	1.40	1.52	1.27	1.25	1.30	1.15	1.15	1.19	0.86	0.47	0.46	0.87	1.10
NB11	1.19	1.29	1.21	1.16	1.25	1.13	1.07	1.09	0.92	0.82	0.91	1.05	1.11
NB21	0.25	0.27	0.35	0.34	0.34	0.27	0.31	0.32	0.25	0.14	0.13	0.17	0.26
System Average	1.46	1.52	1.87	1.83	1.74	1.49	1.64	1.67	1.27	0.77	0.90	1.09	1.50

Figure 10: FY20 Passengers per Revenue Mile Table



Figure 11: FY20 Passengers per Revenue Mile Chart



## C. Passengers per Trip

The systemwide average for passengers per revenue mile was 8.23; the Monitor category was set at 4.12 and the Fail category was set at 2.88. Six of twenty-two routes were observed above the average of 8.23.

Three routes fell in the Monitor category: New Bedford Route 5 – Rivet Street (NB5), NB21, FR14. The NB5 has been a route targeted for service improvements due to ridership that has been steadily declining for several years. The route serves a portion of New Bedford's industrial waterfront, an alignment that was intended to expand access to jobs in the fish processing facilities. The demand for service on the waterfront has proven to be lower than initially thought, and is likely due to an incompatible span of service compared against the employer work shift schedules. A service improvement plan was developed for the route and is being implemented in FY21.

The NB21 falls in the Monitor category due to the limited number of trips operated daily. As mentioned previously, corrective action is planned for the NB21 in FY21.

The full results of the analysis are shown below in Figure 12 and Figure 13.

Passengers per Trip													
Route ID	July	August	September	October	November	December	Date January	February	March	April	May	June	Grand Total
FR1	5.43	5.51	7.68	7.55	7.30	5.92	6.40	6.21	4.71	2.23	2.83	3.68	5.60
FR2	10.05	10.09	10.53	10.23	10.09	8.35	9.41	9.70	8.11	6.20	7.83	7.25	9.29
FR3	7.50	8.03	9.84	10.00	9.55	8.36	8.77	8.61	6.41	2.97	3.62	5.39	7.52
FR4	6.06	5.77	7.84	8.08	7.19	6.28	7.27	7.09	5.21	2.83	3.97	4.83	6.31
FR5	5.30	5.66	9.39	9.30	8.69	7.46	8.94	8.24	5.85	2.42	2.96	4.19	6.77
FR6	5.87	6.47	9.81	9.50	9.22	7.96	8.74	8.19	5.90	2.88	4.16	4.46	6.97
FR7	5.70	5.82	9.05	9.13	8.62	7.13	8.28	7.99	5.84	2.34	2.96	4.02	6.56
FR8	4.44	4.32	16.26	16.53	13.70	10.31	13.38	12.78	9.12	0.91	1.07	1.43	10.44
FR9	4.12	4.30	5.78	5.81	5.47	4.57	5.59	5.34	4.08	2.15	2.67	3.26	4.65
FR10	5.54	5.75	8.89	9.30	8.68	7.39	8.03	7.48	5.87	2.61	3.35	4.03	6.48
FR14	3.73	3.97	3.95	3.64	3.44	3.63	3.72	3.67	3.17	2.51	3.30	3.86	3.57
NB1	11.16	11.52	12.47	11.87	11.35	9.73	10.93	11.43	8.78	6.83	8.49	9.82	10.72
NB2	11.07	11.31	11.54	10.97	10.62	9.73	10.41	10.79	8.67	8.43	8.10	9.11	10.33
NB3	6.82	7.05	7.27	6.95	6.94	6.15	6.62	6.99	5.68	4.86	5.24	5.70	6.55
NB4	9.82	10.03	10.40	9.74	9.59	8.05	8.95	9.34	7.17	5.54	6.52	7.82	8.89
NB5	4.05	4.37	4.64	4.18	4.45	3.78	3.99	4.18	3.77	2.81	3.14	3.82	4.02
NB6	5.13	5.27	5.66	5.63	5.52	4.64	4.98	5.50	4.28	3.20	3.72	4.57	4.97
NB8	8.21	9.21	8.96	8.64	8.73	7.71	7.97	8.48	6.42	4.00	4.67	5.90	7.61
NB9	25.19	26.94	29.64	28.85	27.82	24.35	24.93	27.01	19.40	12.83	13.81	17.21	24.24
NB10	10.18	11.08	9.25	9.12	9.45	8.38	8.41	8.68	6.26	3.44	3.35	6.31	8.00
NB11	8.23	8.91	8.33	7.99	8.60	7.78	7.39	7.54	6.35	5.62	6.29	7.22	7.62
NB21	3.09	3.31	4.23	4.20	4.18	3.35	3.74	3.85	3.00	1.77	1.55	2.07	3.19
Grand To...	8.16	8.47	10.28	10.06	9.59	8.23	9.05	9.16	6.96	4.13	4.81	5.99	8.23

Figure 12: FY20 Passengers per Trip Table

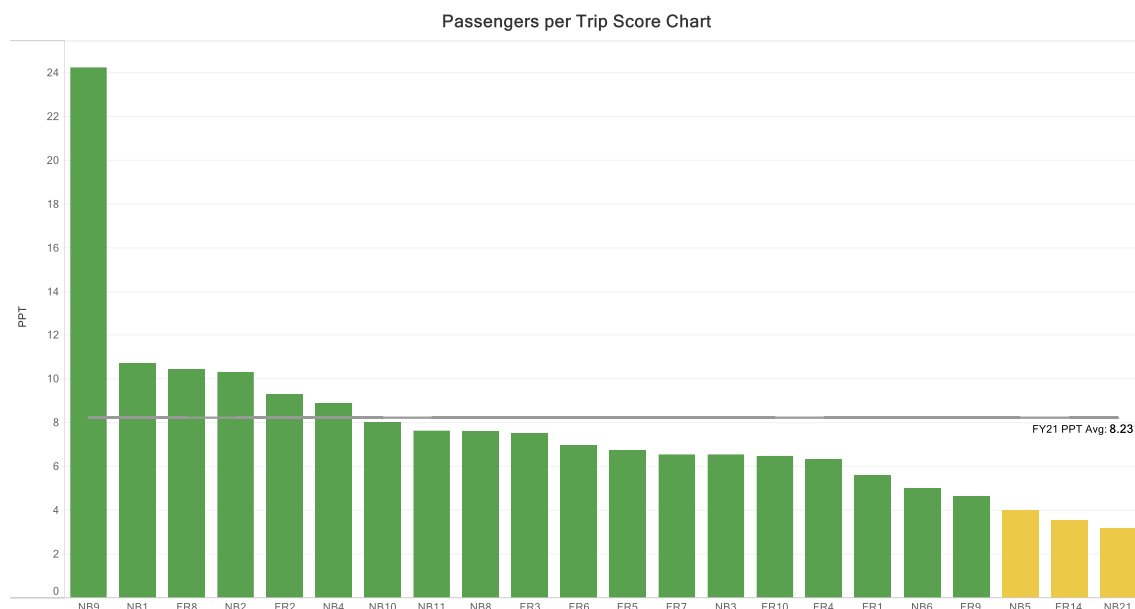


Figure 13: FY20 Passengers per Trip Chart

## 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.

FY20 was the most unusual year for system ridership due to the coronavirus pandemic. Ridership fell steeply and quickly beginning in March and did not recover through the end of June. SRTA made a significant change in service schedule to address the decline and operated Saturday service schedule through the end of June. This dramatic and rapid shift in ridership and ridership patterns imposes a unique challenge on the analysis to determine significant changes in ridership. A change in the evaluation period that compares July through February is less than perfect, but is the best indicator available to identify routes that should be monitored.

The average change in ridership across all routes was 2,783; an increase of more than 7,505 represented 1.65 standard deviation above the average, where as a decrease of more than 1,940 represented 1.65 standard deviation below the average. Seven routes experienced a significant change in ridership: New Bedford: 9 – Intercity (NB9), Fall River: 1 – South Main (FR1), New Bedford: 2 – Lund’s Corner (NB2), New Bedford: 4 – Ashley Boulevard (NB4), Fall River: 2 – North Main (FR2), Fall River: 8 – BCC/Durfee High School (FR8), and Fall River: Route 14 – Swansea (FR14).

The NB9 saw a significant increase in FY20 over FY19 adding 10,279 trips, a 4.7% increase in ridership. The NB9 is the busiest route in the SRTA system and serves major points of interest including the Dartmouth Mall and the UMass Dartmouth (UMD) campus. UMD continued to

subsidize student fares in FY20, which contributes to the increasing ridership, however does not explain the entire increase. The route operates thirty-minute service during the day and could likely see further increases if that frequency was expanded to the entire service day.

The FR1 was an interesting to see increasing the number of trips, adding 10,198 in FY20 over FY19, which represents a 14% increase. This route serves a predominantly commercial corridor in the City of Fall River and operates with thirty-minute frequency. This route should be monitored to determine if increasing the frequency could further increase ridership.

The NB2 increased its ridership by adding 10,093 more trips than FY19, a 6% increase. The NB2 has historically been a strong performer for ridership and it not surprising it increased a significant amount. The NB2 serves the very busy New Bedford Market Basket and operates on twenty-minute headways during the weekdays.

The FR5 continued to increase in ridership, gaining 8,135 additional trips, 10% increase as compared with FY19. The FR5 has experienced significant growth in ridership since FY17, partially attributed to the Southcoast Marketplace, but largely due to an expansion of service to the Atlantis Charter School. Beginning in September 2018, the FR5 began serving the school with the result being extraordinary growth in ridership.

The NB4 experienced significant decrease in ridership, losing 2,575 trips, an 2% decrease as compared with FY19; total ridership was 129,503. The decline in ridership did not change the NB4 position relative to the performance measures, and the route outperformed the systemwide average of 100,326 trips for the entirety of FY20. This is the second year in a row in which the NB4 lost a significant amount of ridership without affecting its positions in the route rankings. The NB4 performance should be monitored to determine if changes to service frequency, service span, or service alignment could reverse the declining trend of ridership.

The FR8 lost ridership, carrying 4,880 fewer passengers in FY20 than FY19, a 3% decrease. The route predominantly carries students to Fall River Durfee High School. It is unclear why it would have experienced such a significant drop in ridership. Despite the decline, it continued to outperform most other routes in all categories monitored.

The results of the route ridership change analysis are shown below in Figure 14.

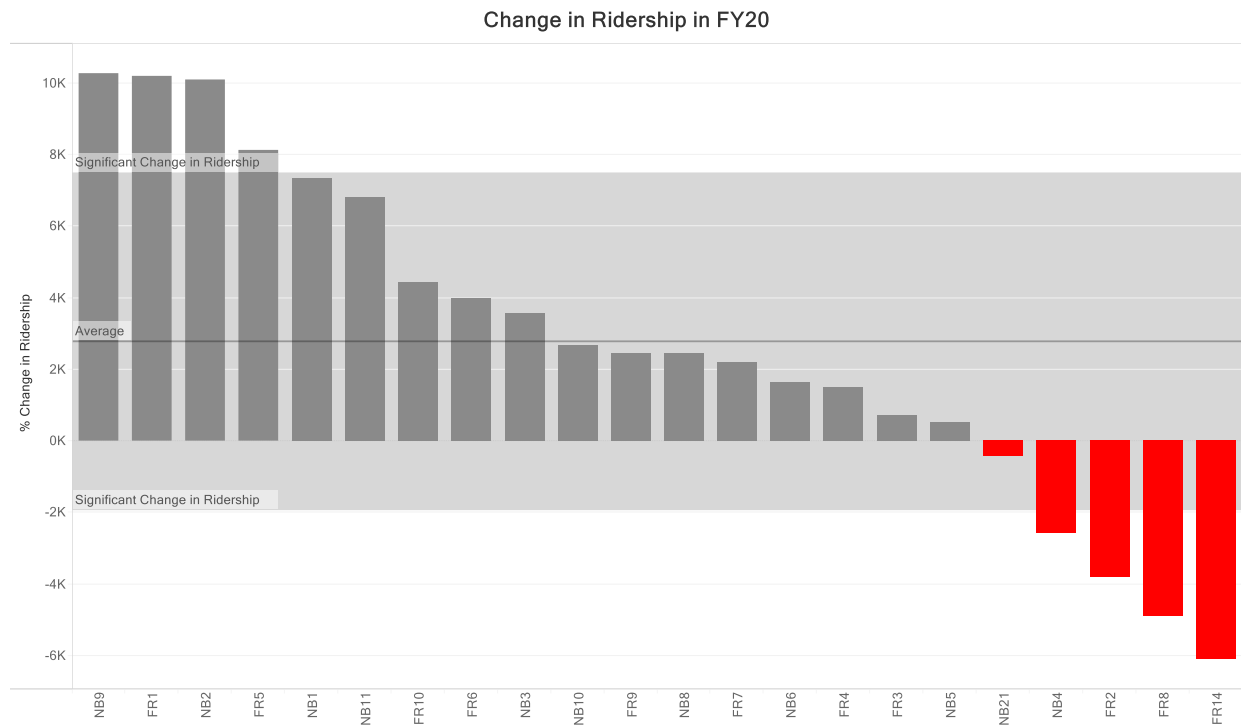


Figure 14: Route Ridership Change from FY19

## IV. Discussion

Fiscal Year 2020 was the most unusual year in recent, and possibly the entire history of SRTA. The year is well divided into two major periods: pre-COVID and COVID. The pre-COVID period from July 1 through February 29 had ridership on-track to out perform any previous year on record, experiencing a 3% increase over FY19 and a 2% increase over FY16, the previously high year for ridership. December 2019 was the only month in the period that had less ridership prior years. The increase is not the result of any single action taken, but as a combination of factors, mostly related to service. Strategic increases in service offerings that expanded night service on the New Bedford: 11 – Fairhaven and the Fall River: 5 – Stafford Road had been steadily increasing ridership. The partnership with Atlantis Charter School in Fall River continued to add passengers to the FR5 and FR10, both routes serving the school.

The steady increase in ridership came to abrupt halt in early March when the coronavirus pandemic caused schools to be closed indefinitely, work places to shut-down, and many retail and restaurants to close. The rapid decline in ridership began on March 12 and steadily declined until April 18 when the lowest daily ridership of only 1,301 trips was recorded.

The change in service revealed the routes that are most crucial to SRTA customers. The routes were ranked 1 to 22 based on total ridership in the pre-COVID and COVID periods of FY20. The NB11 was ranked 10 in the pre-COVID period and was very close to the systemwide average for total ridership. During the COVID period, the NB11 moved to rank number 4 and with almost twice the number of trips of the systemwide average. There was no change in the frequency of the service on NB11 between the two periods, however during COVID, the span of service was shorter. Going the opposite direction was the FR8, a route that was ranked number 4 with more than twice the number of trips as the systemwide average dropped to rank 21, carrying less

than twenty percent of the systemwide COVID average. The COVID schedule operated half as many trips as the pre-COVID schedule, however the biggest factor in the loss was the closure of Fall River Durfee High School, the largest trip generator for the route, and in the city of Fall River.

This phenomenon exemplifies why service planning must consider factors beyond the number of passengers using a route. Demand for service was strengthened on routes serving essential businesses like grocery stores or general merchandise retailers, however other routes experienced a decline in ridership directly caused by the closure of a single location along the route. The data can be misleading if taken out of context of the operating environment for the route.

The long-term impacts of the coronavirus pandemic are only starting to be understood. Ridership is recovering, but doing so slowly. It is unknown how long it will take to experience a full recovery for ridership, but the trend is positive. A great deal more will be learned once SRTA transitions back to a full offering of service consistent with the pre-COVID period. During the recovery period, service planning should direct the focus to improving service delivery and reliability. Improvements to on-time performance will make the system more reliable and perhaps desirable as more employment centers begin to restore their workforce.