2019

SRTA Year End Fixed Route Ridership Analysis: FY 2019

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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 2019 (FY19); FY19 began July 1, 2018 and ended June 30, 2019.

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", the "Route Ridership by Garage and Time of Day", 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 2019.2.1 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 2019.2.1.

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

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
NBNES	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
NBWM	New Bedford Whaling Museum Shuttle

II. Key Findings

A. Ridership

SRTA ridership trends have reached a leveling point; FY19 ridership was 2.67 million trips as compared with 2.63 million in FY18 and down from the five-year peak in FY16 of 2.74 million trips. The increase from FY18 to FY19 was minimal, only 1.51% more trips and less than 1% more than the five-year average of 2.66 million trips. Total ridership for the previous five fiscal years is shown below in Figure 1.

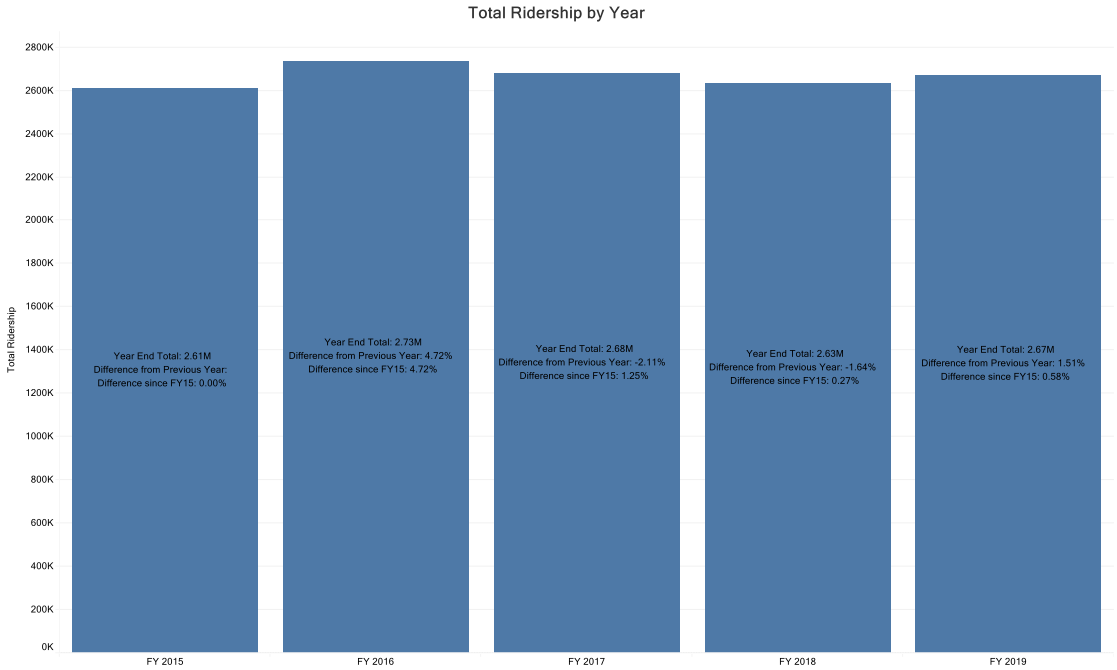

Figure 1: SRTA Total Ridership FY15-FY19

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 FY19 was 1.30 million trips (49% of the systemwide total) which represents a 2.48% increase over FY18 Fall River ridership. Ridership in New Bedford was 1.37 million trips (51% of the systemwide total) and a 0.60% increase over FY18 New Bedford ridership. The totals are shown below in Figure 2.

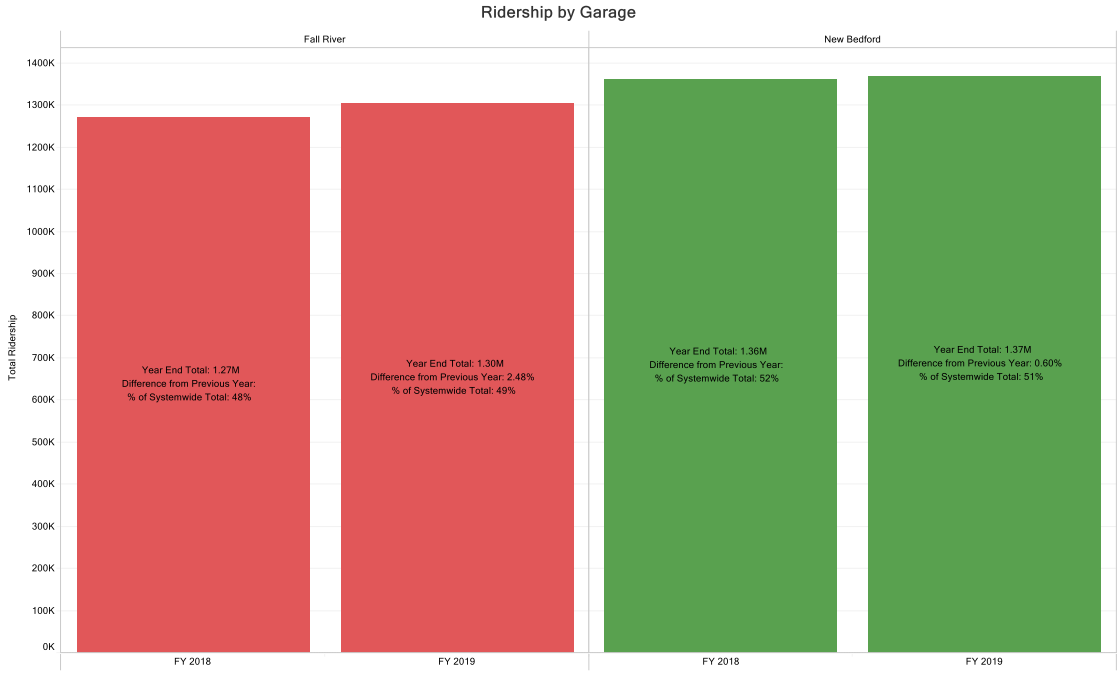

Figure 2: Total by Garage FY18 & FY19

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, whereas Holiday service is operated on weekdays when a federal or state holiday is observed. Weekday service experienced the majority of trips on SRTA and was observed at 2.41 million for FY19, an increase of 1.98% when compared with FY18. Saturday service followed with 227,323 trips, a 4.71% decrease when compared with FY18, and lastly, Holiday service provided 30,165 trips, an 1.96% decrease from FY18. The full results are shown below in Figure 3.

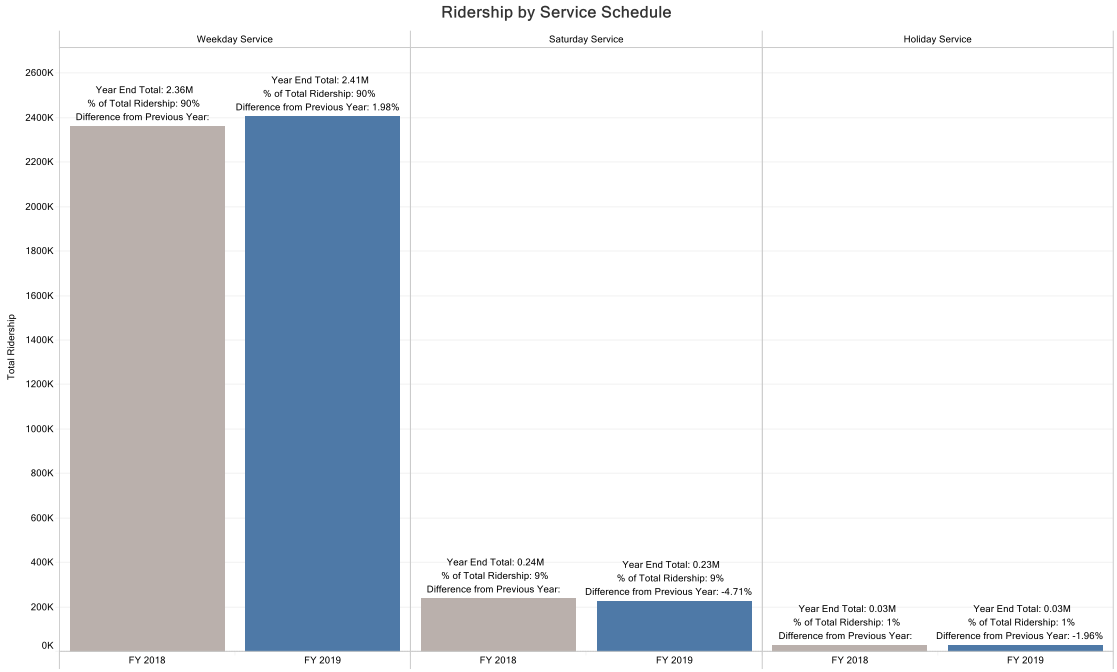

Figure 3: Ridership by Service Schedule

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 FY19 with 1.06 million (41.7%) trips paid for with cash; multi-ride pass products (one day, seven-day, thirty-one day, and ten ride) accounted for 737,539 (27.8%) trips; transfers accounted for 572,426 trips (21.6%); and stored value accounted for 210,894 (8%) trips. The full results are shown below in Figure 4.

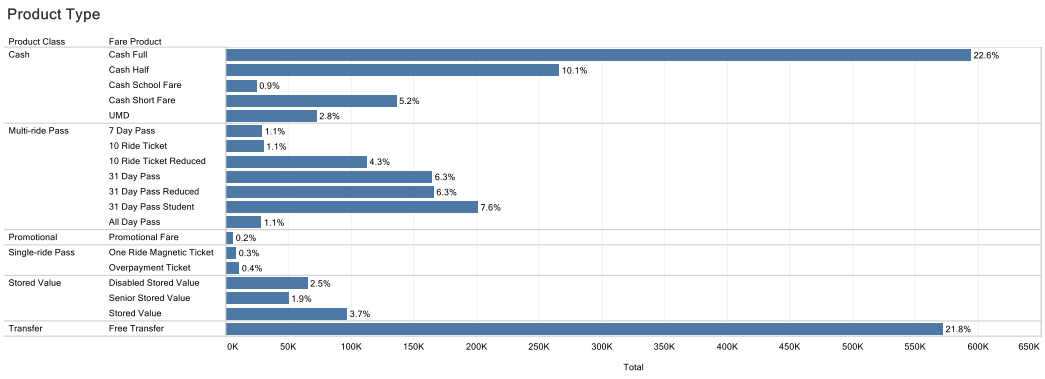

Figure 4: Fare Product Use

The use of fare media did change in FY19, continuing the trend from the cash to multi-ride pass products. Cash remains the predominant method of payment, however in FY19 cash experienced a 2.1% (24,247 fewer payments) decrease from FY18. Multi-ride pass products increased use by 4% (28,686 more trips) from FY18, the largest absolute increase experienced by any pass product class. The use of stored value products increased 11.1% (21,027 more trips) from FY18. The full results are shown below in Figure 5.

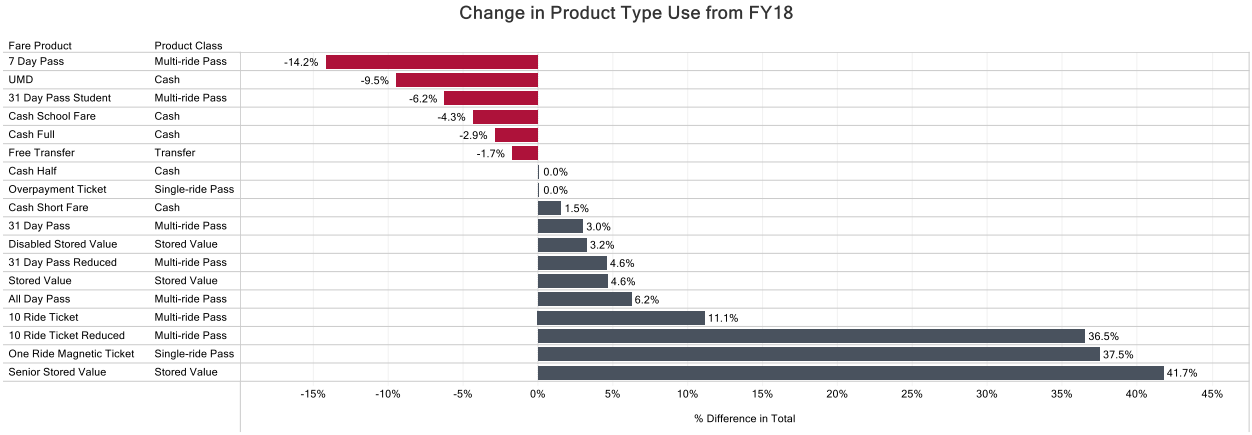

Figure 5: Change in Fare Product Use

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 fair paid per pass use; average trips taken per pass.

The average fair 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 $28.00, 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 $0.55 per trip, which represents a 63% cost savings over a cash fare. The full price, reduced price, and student 31 Day Passes are very close in their savings at $0.91 per trip (39% savings) and $0.47 per trip (37% savings), and $1.00 (33% savings) respectively. The 7 Day Pass average fare paid was $1.04, a 31% savings, which is similarly in-line with the 31 Day Pass savings. The results are shown in Figure 6

Average Fare by Multi-Use Product				
Pass Product	Total Trips		Average Fare	Cost Savings
7 Day Pass	28,727	$	1.04	31%
31 Day Pass	164,598	$	0.91	39%
31 Day Pass Reduced	165,502	$	0.47	37%
31 Day Pass Student	206,929	$	1.00	33%
All Day Pass	27,910	$	0.55	63%

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 7.03 for full price and 8.01 for 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 7.23 trips. The next most utilized product was the 31 Day Reduced pass with an average of 59.49 uses per pass. The 31 Day pass had an average of 44.01 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.

Average Trips per Multi-Use Product			
Product	**Total Sold**	**Total Trips**	**Average Trips per Product**
10 Ride Reduced	14,207	113,760	8.01
10 Ride Ticket	4,283	30,113	7.03
31 Day Pass	3,740	164,598	44.01
31 Day Pass Reduced	2,782	165,502	59.49
31 Day Pass Student	7,385	206,929	28.02
7 Day Pass	2,126	28,727	13.51
All Day Pass	3,862	27,910	7.23
Total	**38,385**	**737,539**	**19.21**

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 on 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 24.20, an increase of 1.0% over FY18; the Monitor category was set at 12.10 and the Fail category was set at 8.47. Fifteen of the twenty-eight routes operated in FY19 performed above the average PPRH.

One route fell in the Monitor category: Fall River Route 14 – Swansea Mall (FR14). Two routes fell in the Fail category: New Bedford North End Shuttle (NBNES) and the New Bedford to Wareham (NBW). The FR14 has been the subject of a service improvement plan that eliminates service along a sparsely developed corridor and shifts the alignment to serve destinations with a higher demand for service. Service changes to the FR14 are programmed for FY20; no changes are proposed for the NBNES at this time.

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 and is not a priority route for service changes.

The second route in the Fail category is the New Bedford to Wareham (NBW). The NBW is operated in partnership with the Greater Attleboro Taunton Transit Authority (GATRA) and provides a connection between New Bedford and Wareham. SRTA serves as the operator for the route, providing a vehicle and operator, however it is funded through a grant the was received by GATRA. The partnership agreement allows SRTA to report ridership for the trips departing from New Bedford, whereas GATRA reports ridership for the trips departing from Wareham. Due to the partnership agreement, SRTA cannot implement service changes without the approval of the GATRA administrator.

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

Passengers per Revenue Hour

	July	August	September	October	November	December	January	February	March	April	May	June	Year End Average
FR1	21.1	21.8	27.1	27.4	25.9	24.1	25.2	23.4	26.3	24.6	26.1	23.3	24.7
FR2	18.6	19.7	21.9	22.2	22.0	21.1	21.5	20.9	20.5	21.3	21.6	19.7	20.9
FR3	30.9	34.3	39.0	39.6	37.0	35.3	33.2	34.2	36.2	33.9	36.3	30.9	35.1
FR4	17.3	18.4	22.4	23.4	21.5	19.6	19.0	17.7	19.1	19.3	20.7	17.8	19.7
FR5	16.8	17.8	31.0	32.4	30.9	28.7	29.5	26.1	29.1	28.1	31.3	23.2	27.1
FR6	20.6	21.1	30.2	29.1	27.8	27.3	24.0	21.8	25.5	25.4	26.5	21.9	25.1
FR7	18.3	17.9	28.1	28.3	26.1	24.0	24.3	22.1	24.4	23.7	25.2	18.9	23.5
FR8	14.0	16.1	47.8	47.9	42.1	37.3	42.4	36.4	39.0	35.2	35.1	19.9	35.3
FR9	14.7	14.9	17.2	19.1	16.6	15.4	15.7	14.6	16.1	16.0	17.7	13.5	16.0
FR10	22.2	24.4	34.0	33.5	34.3	34.0	31.7	31.7	32.7	31.3	33.3	26.6	30.8
FR14	10.4	10.8	10.6	10.4	9.9	9.7	8.4	9.0	8.9	7.8	8.5	8.0	9.4
NB1	33.1	33.7	34.9	35.0	34.1	31.9	31.0	31.2	33.4	34.0	35.4	31.0	33.3
NB2	31.8	31.8	31.8	31.3	31.4	29.8	30.2	30.7	31.9	32.5	33.6	31.8	31.6
NB3	14.5	14.7	14.8	14.6	15.0	14.7	14.9	15.7	15.5	14.7	14.6	14.3	14.8
NB4	28.7	28.9	31.8	31.2	29.4	28.0	27.1	27.7	28.1	28.8	30.1	27.1	28.9
NB5	15.2	16.5	18.3	18.7	19.0	17.1	16.0	16.2	17.1	18.2	17.6	15.7	17.1
NB6	14.6	15.5	14.5	14.9	14.2	13.3	12.8	13.1	13.7	13.4	14.2	12.8	13.9
NB8	38.0	40.4	38.0	37.7	36.8	35.0	30.4	30.5	32.5	31.5	36.2	34.9	35.2
NB9	24.4	25.6	29.0	27.5	26.9	25.8	22.4	25.4	23.7	24.9	24.3	23.5	25.3
NB10	20.9	22.4	22.0	21.7	21.6	21.4	18.3	18.9	19.5	20.3	20.8	20.9	20.7
NB11	18.3	18.7	18.2	18.4	18.1	18.6	15.8	16.4	16.7	17.6	18.1	18.3	17.8
NBHSN		77.0	50.1	71.5	79.8	77.3	66.2	67.9	62.5	76.1	79.4	70.4	70.0
NBHSS		13.0	28.7	37.1	32.4	40.7	49.1	44.8	53.8	41.6	31.1	18.9	38.5
NBKN		69.0	99.6	99.9	101.0	106.0	106.1	99.7	92.5	122.2	101.3	81.3	101.5
NBKS		23.0	35.7	34.5	34.0	33.5	30.4	34.3	47.2	44.4	46.1	36.0	37.8
NBNES	7.5	7.8	7.6	8.5	8.5	7.5	8.2	7.6	7.1	7.1	7.2	7.2	7.6
NBW	3.9	4.4	3.6	4.1	3.9	4.2	4.2	4.0	4.3	4.3	4.9	5.4	4.3
NBWM	26.8	14.6	14.1	16.0									15.6
Monthly Average	21.5	22.3	26.7	26.9	25.7	24.3	23.7	23.4	24.4	24.2	25.1	21.8	24.2

Figure 8: FY19 Passengers per Revenue Hour Table

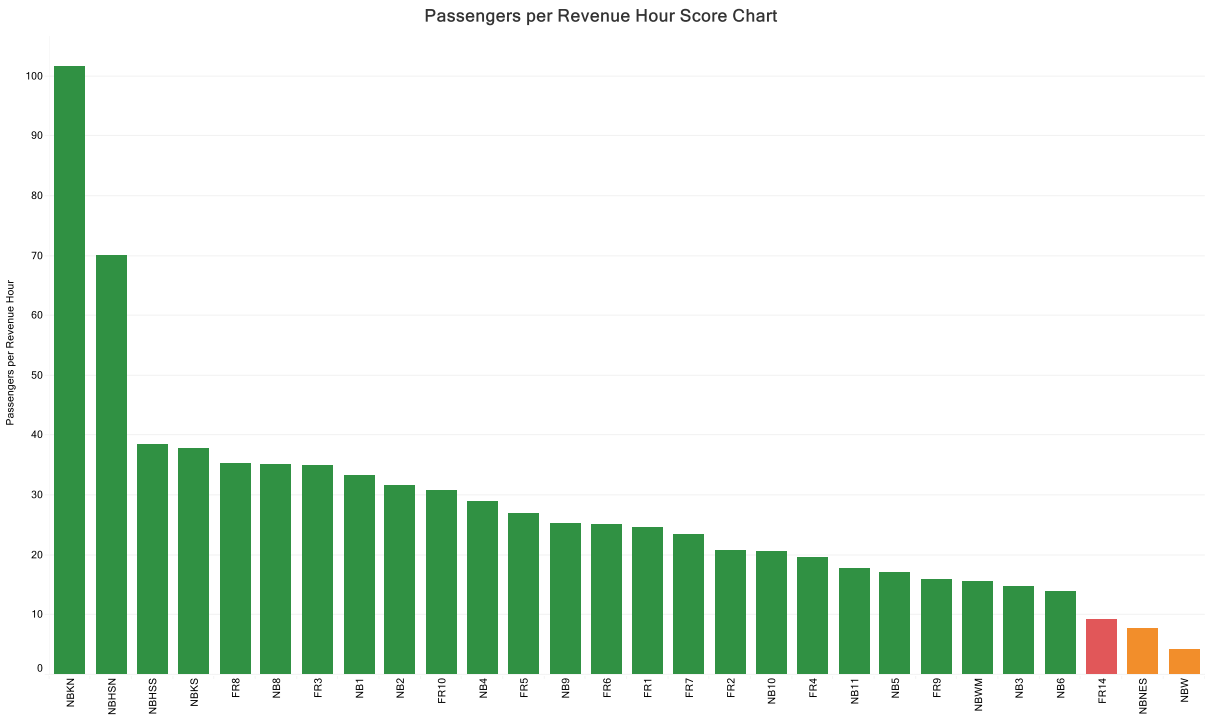

Figure 9: FY19 Passengers per Revenue Hour Score Chart

B. Passengers per Revenue Mile

The systemwide average for passengers per revenue mile was 1.70; the Monitor category was set at 0.89 and the Fail category was set at 0.60. Sixteen of twenty-eight routes were observed above the average of 1.70.

One route fell in the Monitor category: New Bedford Route 6 – Shawmut/Rockdale (NB6) with an observed passengers per revenue mile of 0.75. The NB6 was identified in FY18 as an underperforming route, however, no service improvement plans have been developed for the route. The route performance has remained consistent, but will be reviewed to determined what, if any corrective actions should be considered to improve performance.

Three routes fell in the Fail category: FR14, NBNES, and NBW. The FR14 remained in the failing category for each month of FY19 and will be subject to a route realignment in FY20 that should improve route performance. The alignment scheduled for implementation will serve new destinations likely to increase the number of boardings and will no longer operate on Interstate 195 where there was no opportunity for passenger boardings. Route performance will continue to be monitored to determine if the service changes have had a positive effect on passengers per revenue miles.

The NBNES is a perennial low-performing route for this category and as mentioned previously, it has been determined that no corrective action is necessary. The NBW is likely in this category due to the length of the route, however because of the partnership agreement between SRTA and GATRA no corrective action will be pursued.

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

Passengers per Revenue Mile

	July	August	September	October	November	December	January	February	March	April	May	June	Year End Average
FR1	1.82	1.88	2.34	2.36	2.23	2.08	2.18	2.02	2.27	2.12	2.26	2.01	2.13
FR2	0.96	1.02	1.13	1.15	1.14	1.09	1.12	1.09	1.06	1.10	1.12	1.02	1.08
FR3	2.72	3.02	3.43	3.49	3.26	3.11	2.92	3.01	3.19	2.98	3.19	2.72	3.09
FR4	1.37	1.45	1.77	1.85	1.70	1.55	1.50	1.40	1.51	1.53	1.64	1.41	1.56
FR5	1.46	1.54	2.69	2.81	2.68	2.49	2.56	2.27	2.52	2.44	2.72	2.02	2.36
FR6	1.76	1.80	2.59	2.49	2.38	2.33	2.05	1.87	2.18	2.17	2.27	1.87	2.15
FR7	1.76	1.73	2.72	2.73	2.52	2.31	2.34	2.13	2.36	2.28	2.44	1.82	2.27
FR8	1.22	1.40	4.15	4.16	3.66	3.24	3.68	3.17	3.39	3.06	3.05	1.73	3.07
FR9	1.25	1.26	1.46	1.62	1.41	1.31	1.33	1.24	1.37	1.35	1.50	1.14	1.36
FR10	1.82	2.01	2.81	2.77	2.83	2.80	2.62	2.62	2.70	2.58	2.75	2.19	2.54
FR14	0.53	0.55	0.54	0.53	0.50	0.49	0.43	0.46	0.45	0.40	0.43	0.41	0.48
NB1	2.84	2.89	2.99	3.00	2.93	2.74	2.66	2.67	2.86	2.92	3.03	2.66	2.85
NB2	2.29	2.29	2.30	2.26	2.27	2.15	2.18	2.21	2.31	2.35	2.42	2.30	2.28
NB3	1.33	1.35	1.35	1.34	1.37	1.34	1.36	1.44	1.42	1.35	1.34	1.31	1.36
NB4	1.72	1.73	1.92	1.88	1.77	1.69	1.63	1.67	1.69	1.73	1.81	1.63	1.74
NB5	1.24	1.35	1.49	1.52	1.55	1.39	1.30	1.32	1.39	1.48	1.43	1.28	1.39
NB6	0.79	0.84	0.78	0.81	0.77	0.72	0.69	0.71	0.74	0.72	0.77	0.69	0.75
NB8	3.00	3.19	2.99	2.98	2.90	2.76	2.40	2.41	2.56	2.48	2.86	2.75	2.78
NB9	1.44	1.51	1.72	1.63	1.59	1.52	1.32	1.50	1.40	1.47	1.44	1.39	1.49
NB10	1.46	1.57	1.54	1.52	1.51	1.50	1.28	1.32	1.37	1.42	1.46	1.46	1.45
NB11	1.35	1.37	1.34	1.35	1.33	1.36	1.16	1.20	1.23	1.29	1.33	1.34	1.30
NBHSN		8.57	5.58	7.96	8.88	8.61	7.37	7.56	6.96	8.48	8.84	7.84	7.80
NBHSS		1.44	3.19	4.11	3.60	4.51	5.44	4.97	5.97	4.62	3.45	2.09	4.27
NBKN		7.65	11.04	11.08	11.20	11.75	11.76	11.06	10.25	13.55	11.23	9.02	11.26
NBKS		3.56	5.52	5.33	5.26	5.18	4.71	5.30	7.31	6.87	7.13	5.57	5.85
NBNES	0.31	0.32	0.31	0.35	0.35	0.31	0.33	0.31	0.29	0.29	0.30	0.29	0.31
NBW	0.16	0.18	0.15	0.17	0.16	0.17	0.18	0.17	0.18	0.18	0.20	0.23	0.18
NBWM	3.52	1.93	1.85	2.10									2.06
Monthly Average	1.50	1.56	1.89	1.89	1.81	1.71	1.66	1.64	1.71	1.70	1.76	1.53	1.70

Figure 10: FY19 Passengers per Revenue Mile Table

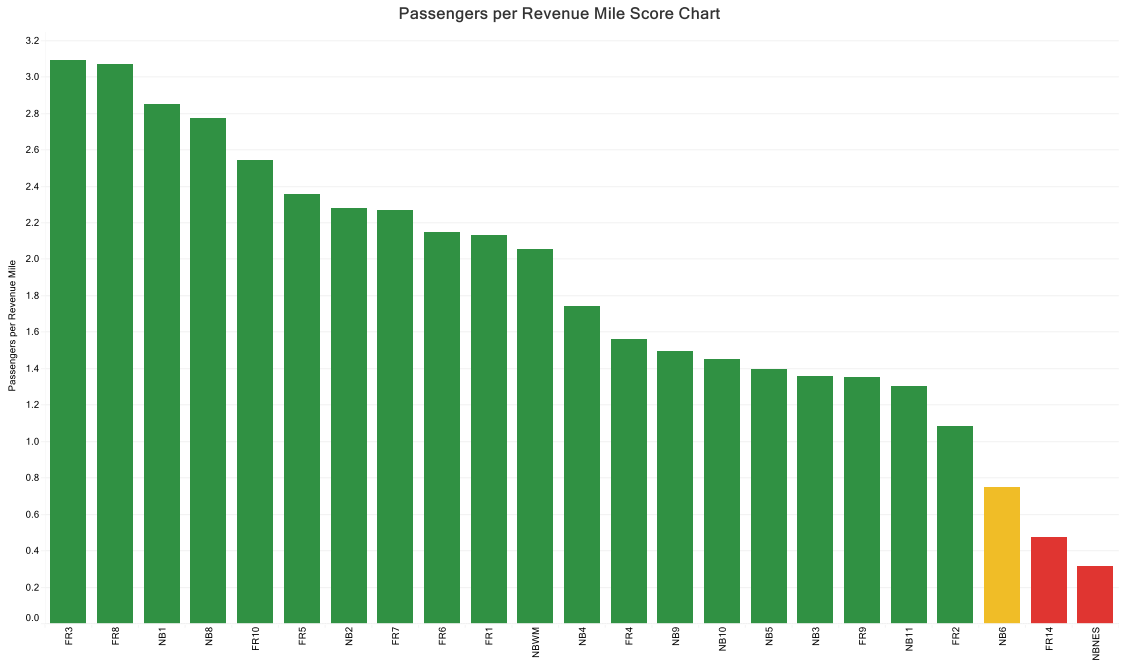

Figure 11: FY19 Passengers per Revenue Mile Chart

C. Passengers per Trip

The systemwide average for passengers per revenue mile was 9.18; the Monitor category was set at 4.59 and the Fail category was set at 3.21. Twelve of twenty-eight routes were observed above the average of 9.18.

Three routes fell in the Monitor category: New Bedford Route 5 – Rivet Street (NB5), NBNES, NBW. 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 has been developed for the route, however no action has been taken due to budgetary constraints.

The NBNES and NBW fall in the Monitor category due to the limited number of trips operated daily. As mentioned previously, corrective action is not be pursued for these routes. The New Bedford Whaling Museum (NBWM) was a short-term shuttle that was operated during a special exhibit of the museum. The special exhibit ended in October and the shuttle service was concluded.

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

Passengers per Trip

	July	August	September	October	November	December	January	February	March	April	May	June	Year End Average
FR1	5.07	5.24	6.51	6.57	6.21	5.79	6.06	5.61	6.31	5.90	6.27	5.59	5.93
FR2	9.28	9.80	10.89	11.08	10.96	10.50	10.71	10.40	10.23	10.59	10.76	9.81	10.42
FR3	7.73	8.58	9.74	9.91	9.26	8.83	8.29	8.54	9.05	8.48	9.07	7.72	8.77
FR4	5.72	6.06	7.39	7.71	7.09	6.46	6.26	5.84	6.29	6.38	6.83	5.88	6.50
FR5	5.55	5.87	10.22	10.69	10.20	9.46	9.74	8.61	9.59	9.26	10.33	7.66	8.95
FR6	6.16	6.39	8.98	8.77	8.35	8.18	7.16	6.53	7.66	7.62	7.99	6.63	7.55
FR7	6.03	5.91	9.29	9.34	8.62	7.91	8.01	7.28	8.05	7.81	8.33	6.23	7.76
FR8	4.63	5.30	15.78	15.81	13.88	12.30	13.98	12.03	12.87	11.63	11.58	6.57	11.66
FR9	4.49	4.55	5.24	5.81	5.07	4.70	4.78	4.47	4.92	4.87	5.39	4.12	4.88
FR10	5.22	5.74	8.03	7.91	8.10	8.02	7.48	7.49	7.71	7.37	7.87	6.26	7.27
FR14	5.19	5.41	5.30	5.19	4.95	4.83	4.21	4.48	4.44	3.91	4.23	4.00	4.68
NB1	10.93	11.13	11.51	11.56	11.26	10.54	10.24	10.30	11.01	11.23	11.68	10.24	10.98
NB2	10.48	10.48	10.51	10.34	10.37	9.84	9.97	10.12	10.54	10.74	11.08	10.50	10.42
NB3	6.40	6.50	6.52	6.44	6.63	6.48	6.57	6.93	6.85	6.50	6.45	6.33	6.55
NB4	9.66	9.72	10.70	10.52	9.90	9.44	9.12	9.34	9.45	9.70	10.15	9.12	9.74
NB5	3.79	4.13	4.56	4.67	4.75	4.27	3.99	4.05	4.27	4.54	4.39	3.91	4.28
NB6	5.56	5.88	5.51	5.68	5.41	5.06	4.86	4.98	5.21	5.08	5.41	4.86	5.30
NB8	10.46	11.12	10.44	10.38	10.12	9.61	8.35	8.40	8.93	8.65	9.97	9.60	9.68
NB9	24.36	25.55	28.99	27.49	26.86	25.77	22.37	25.43	23.72	24.91	24.32	23.54	25.25
NB10	10.44	11.20	10.98	10.87	10.81	10.68	9.13	9.44	9.77	10.16	10.41	10.45	10.36
NB11	9.16	9.33	9.11	9.18	9.04	9.29	7.90	8.19	8.37	8.82	9.03	9.16	8.88
NBHSN		38.50	25.05	35.73	39.89	38.67	33.10	33.93	31.24	38.06	39.68	35.22	35.01
NBHSS		6.50	14.37	18.55	16.22	20.33	24.55	22.40	26.90	20.82	15.55	9.44	19.24
NBKN		34.50	49.79	49.95	50.50	53.00	53.05	49.87	46.24	61.12	50.64	40.67	50.76
NBKS		11.50	17.84	17.23	17.00	16.73	15.20	17.13	23.62	22.18	23.05	18.00	18.89
NBNES	3.76	3.90	3.79	4.24	4.23	3.76	4.08	3.78	3.55	3.56	3.62	3.58	3.82
NBW	3.65	4.08	3.38	3.84	3.67	3.88	3.93	3.73	4.01	3.97	4.51	5.06	3.98
NBWM	6.69	3.66	3.52	3.99									3.91
Monthly Average	8.18	8.44	10.05	10.18	9.76	9.22	8.98	8.88	9.25	9.17	9.52	8.29	9.17

Figure 12: FY19 Passengers per Trip Table

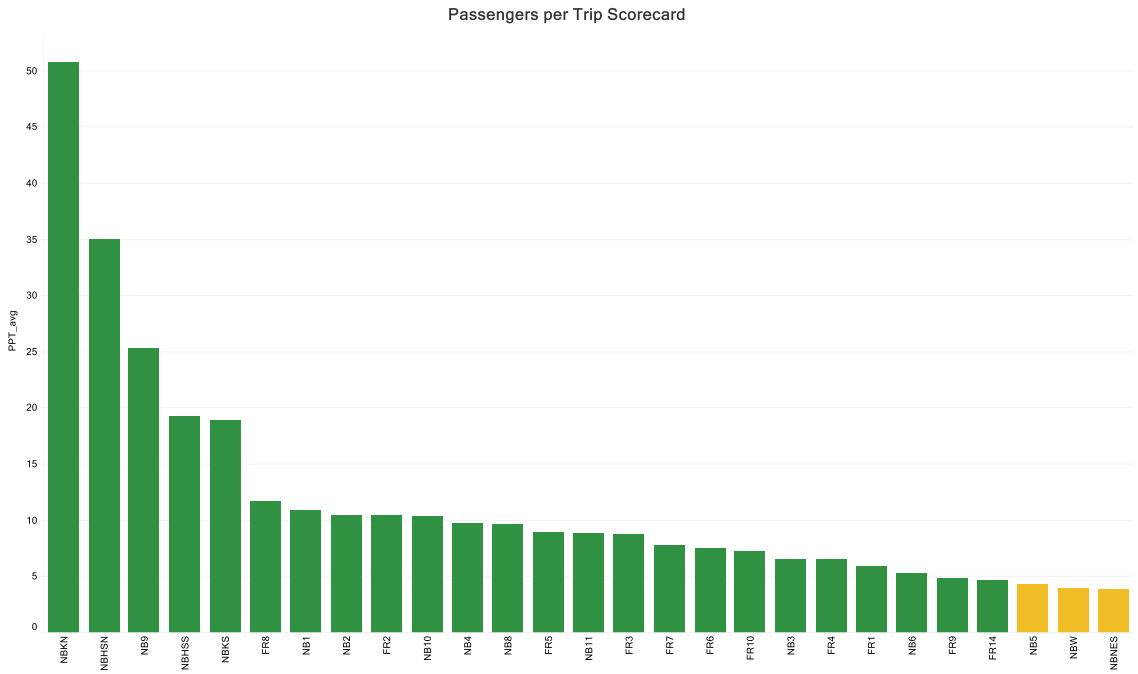

Figure 13: FY19 Passengers per Trip Chart

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. The significant change threshold of 1.65 standard deviations was used because it includes a range of values that represent 90% of the entire dataset. Any change in ridership that is greater than or less than 1.65 standard deviations of the average represents 10% of the total change and warrants further analysis to determine if corrective action is necessary to maintain an acceptable route performance.

The average change in ridership across all routes was 613; an increase of more than 14,789 represented 1.65 standard deviation above the average, where as a decrease of more than 13,562 represented 1.65 standard deviation below the average. Three routes experienced a significant change in ridership: New Bedford Route 4 – Ashley Boulevard and the Fall River Route 5 – Stafford Road (FR5).

The FR5 saw a significant increase in ridership, gaining 30,928 additional trips, 30.8% increase as compared with FY18. 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 daily average on days school was in session was 549 passengers compared with the systemwide route average of 380.

The NB4 experienced significant decrease in ridership, losing 14,310 trips, an 8.04% decrease as compared with FY18; total ridership was 163,681. The decline in ridership did not change the NB4 position relative to the performance measures, and the route out performed the systemwide average of 95,222 trips for the entirety of FY19. The decline is peculiar, however FY18 was also a high point for ridership on the NB4. The three-year average for ridership is 171,062, however FY19 fell below the average. 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 results of the route ridership change analysis are shown below in Figure 14.

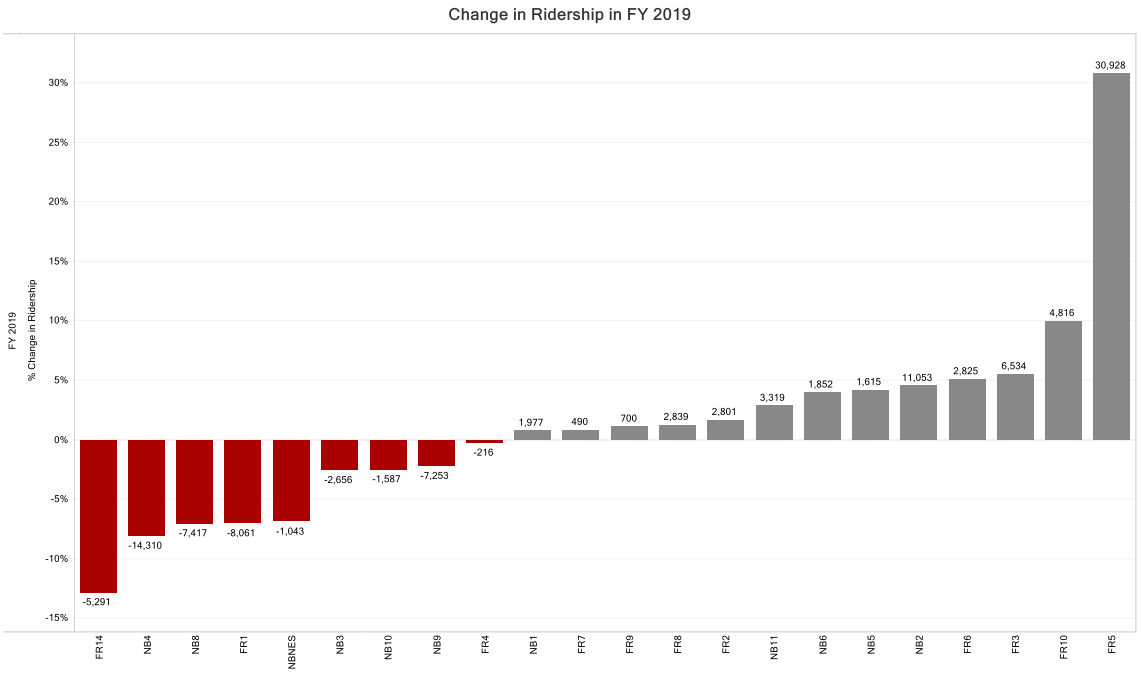

Figure 14: Route Ridership Change from FY18

IV. Discussion

Ridership continues to hold steady, with the system carrying only 36,109 more trips than FY18 and appears have reached a plateau. It is not surprising that ridership has leveled over the course of the past several years since there hasn't been many major service changes that added or removed service. Service additions in FY19 occurred in the spring with an expansion of night service on the FR5, NB8, and NB11. These service expansions were added late in the fiscal year without much time to realize enough growth to have a substantial effect on systemwide ridership trends. The biggest increase in ridership was experienced on the FR5 due to the addition of service to Atlantis Charter School which brought 30,928 additional trips. The increase is significant for the route; however, the increase only represents 1.1% of total system ridership. Overall, system ridership increased 1.37% from FY18, while modest, suggests that transit use in the SRTA region is consistent and a regular part of the lives of many residents. Without any major service expansion projects planned for FY20, significant growth is unlikely.

One of the routes that experienced a decrease in ridership and has regularly fallen below system performance metric thresholds is the Fall River 14 – Swansea Mall. The route continued to experience declining ridership throughout FY19 and will be re-aligned in FY20. The route will be monitored to determine if the realignment is effective at reversing the declining ridership.

The expansion of night service on the FR5, NB8, and NB11 will be monitored throughout FR20 to determine if the expansion of service has had a positive effect on ridership. Night service was expanded to the three routes late in FY19; the NB8 and FR5 night service began on March 25, 2019 and the NB11 began on June 24, 2019. The NB8 did experience a decline in ridership, carrying 7,417 fewer passengers in FY19 than FY18; nearly half of the decline came

in Quarter 4 when Night Service was added to the route, however, the addition of night service did bring an additional 1,335 trips offsetting loses experienced during the quarter.

UMass Dartmouth ridership has continued to trend down having experienced 23% fewer trips in FY19 as compared with FY17 when the program began. The program allows UMass students to access the entire SRTA system with a valid student ID. Most routes have experienced a decline; however, some have seen modest gains in student ridership: FR10 increased from 377 trips in FY17 to 924 in FY19, a 145% increase; FR6 increased from 849 in FY17 to 1,263 in FY19, a 49% increase; and FR7 increased from 723 trips in FY17 to 1,067 in FY19, a 48% increase. The decline has several contributing factors making it difficult to identify a singular solution that can reverse the trend. Among the factors was an expansion of service on the Loop, a shuttle that connects the College of Visual and Performing Arts in downtown New Bedford to the campus in Dartmouth. The Loop began serving the Hidden Brook Apartments, a popular apartment complex for off-campus student housing. Students previously could walk a short distance to US Route 6 to board the NB9, however with direct access with the Loop, it is suspected that fewer students were using the NB9. SRTA has engaged in discussions with the campus to expand service, however no plans have been put in place since neither party is able to commit the financial resources needed to offer expanded service.

Cash continues to be the most popular method of fare payment, 49.5% of all trips, however it is decreasing as a percentage of total trips. The most promising change in fare payment is the modest growth in Multi-Ride Passes and Stored Value. Both these categories experienced more use both as a percentage of all fare products used and as absolute counts of fare products used. This change suggests that customers are riding more frequently, which may explain the increase in multi-ride passes; and gaining trust in the payment system, which may explain the growth in the use of Stored Value fare media.

The growth in ridership is modest, it is also bucking trends in Massachusetts and nationally for transit ridership. Many of SRTA peer agencies are sustaining continued losses in ridership, where as SRTA continues to retain and grow its customer base. The addition of night service on several routes, the realignment of several routes, and modest expansion to new destinations should maintain and expand SRTA ridership. SRTA anticipates that by the end of FY20, more accurate and reliable passenger count data will be available to further refine the system and identify areas to improve operating efficiency with minimal impact on riders. Making small changes to the system should improve on-time performance and allow for reallocating assets to increase service where it is most needed.