

Appendix G: Service Performance Monitoring

Marin Transit 2023 Service Performance Monitoring

Overview

The FTA requires providers of public transportation that operate 50 or more fixed route vehicles in peak service and that are located in a UZA of 200,000 or more in population to monitor the performance of their transit system relative to their system-wide service standards and service policies (i.e., vehicle load, vehicle headway, vehicle assignment, transit amenities, etc.) no less than every three years.

The guidelines presented in the FTA Circular 4702.1B lay out the following methodology:

- Identify routes as Minority or non-Minority transit routes – a route that has at least one-third of its total revenue mileage in a Minority Census block group is considered a minority route. Minority Census Block Groups are defined as those that have a percentage minority population that meets or exceeds the service area baseline percentage of minority population;
- Assess the performance of each Minority and non-Minority route for each of the transit provider’s service standards and service policies;
- Compare the transit service observed in the assessment to the transit provider’s established service policies and standards;
- For cases in which the observed service for any route exceeds or fails to meet the standard or policy, analyze why the discrepancies exist, and take steps to reduce the potential effects;
- Evaluate transit amenities policy to ensure amenities are being distributed throughout the transit system in an equitable manner;
- Develop a policy or procedure to determine whether disparate impacts exist on the basis of race, color, or national origin, and apply that policy or procedure to the results of the monitoring activities; and
- Submit the results of the monitoring program as well as documentation to verify the board’s awareness, consideration, and approval of the monitoring results to FTA every three years as part of the Title VI Program.

Identification of Minority and Non-Minority Routes

According to the methodology outlined in the FTA guidance, a Minority transit route is a route that has at least one-third of its total route mileage in the Minority Census Block Group. To identify Minority routes, staff conducted a Geographic Information System (GIS) based analysis using block group data from the American Community Survey along with outputs from Marin Transit’s scheduling software for route length. As a result of the analysis, staff found that 14 of the 17 routes are designated Minority Routes. This route designation provided the basis for the performance analysis, which reviews the performance of all 17 routes as appropriate. Table 1 presents the Minority and Non-Minority Routes and percentage of total route length in Minority Block Groups.

Table 1: Minority and Non-Minority Route Designation

Route Number	Total Route Length	Total Route Length within Minority Block Groups	Percentage of Route Length within Minority Block Groups	Minority Route Designation
17	30.8	12.8	42%	Yes
22	27	10.1	37%	Yes
23	17.2	10.5	61%	Yes
23X	14.9	7.5	50%	Yes
29	16	10.6	66%	Yes
35	29.5	26.6	90%	Yes
36	23.2	17	73%	Yes
49	31.4	28.1	90%	Yes
61	49.9	1.2	2%	No
68	56.5	4	7%	No
71	38.9	34.1	88%	Yes
219	12.5	4	32%	No
228	23.1	9.1	40%	Yes
233	11.9	8.4	71%	Yes
245	16.2	11.2	69%	Yes
251	31.1	25.3	81%	Yes
257	30.4	21	69%	Yes
Total Minority Routes				14
Total Non-Minority Routes				3
Total Routes				17
Minority Routes as Percent of Total Routes				82%
Non-Minority Routes as Percent of Total Routes				18%

Headway Analysis

Headway represents the amount of time between buses on a particular route; a lower number indicates a shorter wait for riders. For the purpose of this data analysis, rural routes with 4-8 trips per day were not included, as they are not scheduled based on a standard headway. Headway measures were calculated on an average value if headways were operated on a range of values based on their service design.

The following Table 2 presents the average peak and non-peak headways by route number.

Table 2: Peak and Non-Peak Headway (Frequency) by Route

Route Number	Minority Route Designation	Peak Headway	Off-Peak Headway
17	Yes	30	60
22	Yes	30	60
23	Yes	60	60
23X	Yes	60	NA
29	Yes	60	NA
35*	Yes	23*	30
36	Yes	30	30
49	Yes	30	30
61**	No	NA	NA
68**	No	NA	NA
71	Yes	30	60
219	No	30	30
228	Yes	60	60
233	Yes	60	60
245	Yes	60	60
251	Yes	60	60
257	Yes	60	60

*Route 35 provides short line service within the Canal District at 15 minutes peak.

**Rural Routes are coverage based and are not scheduled by headway. They are excluded from this analysis.

When reviewing the frequencies from a systemwide perspective, there is only a 1% difference between Minority routes and Non-Minority routes in the peak and 14% difference in the off-peak. Because there is only one headway-based route that is non-minority, this route's influence on the average non-peak frequency analysis overstates the frequency difference in the off-peak. This route provides 30-minute frequency in the off-peak to provide coverage. Unlike other areas that have overlapping routes which together provide higher corridor-level frequency, the 219 is the only route operating in its area. Table 3 provides the Average Peak Frequency Analysis by service type.

Table 3: Average Headway by Service Type

Average Headway by Service Type	Average Peak Headway	Average Off-Peak Headway
Average All Minority Routes	46	52
Average All Non-Minority Routes	45	45
Average All Routes	46	51
Percent Difference between Minority and Non-Minority	1%	14%

Load Factor

Load factor measures the amount of service that is effectively available to riders, as it considers not just the number of daily trips, but the number of seats available on the bus. The non-minority routes have significantly lower load factors due to operating in low ridership areas. In particular, rural routes 61 and 68 operate in very low-density areas. The minority routes primarily operate along high-ridership transit corridors, which leads to greater loads on the routes that serve these corridors. It is also worth noting that all routes are well below the service standard maximum of 1.25 and that although the difference between the minority and non-minority load factor is a larger percentage difference, the average load factors are very low.

Table 4 provides historical load factors.

Table 4: Load Factor by Year

Route	Ridership	2023 Load Factor	2022 Load Factor	2021 Load Factor	2020 Load Factor
17	140,654	0.38	0.35	0.22	0.41
22	122,900	0.26	0.21	0.14	0.30
23	135,413	0.54	0.49	0.30	0.50
23X	43,766	0.46	0.44	0.22	0.30
29	32,134	0.32	0.27	0.14	0.24
35	453,439	0.46	0.39	0.23	0.49
36	197,930	0.41	0.36	0.24	0.46
49	173,878	0.39	0.35	0.23	0.37
61	16,655	0.17	0.29	0.12	0.22
68	52,604	0.31	0.29	0.19	0.29
71	229,021	1.13	0.88	0.22	0.37
219	21,833	0.08	0.10	0.07	0.12
228	44,505	0.29	0.26	0.17	0.30
233	27,949	0.20	0.15	0.10	0.17
245	30,605	0.22	0.21	0.12	0.22
251	65,551	0.42	0.34	0.23	0.41
257	46,183	0.36	0.30	0.17	0.34
Average Minority Load Factor		0.42	0.35	0.20	0.35
Average Non-Minority Load Factor		0.19	0.22	0.13	0.21
% Difference btw Minority and Non-Minority		76%	46%	43%	50%

Vehicle Assignment

Per the Marin Transit Vehicle Assignment standard, assigning vehicles by policy helps ensure that vehicles are placed into service based on service type, ridership demand, or roadway requirements rather than by other conditions, such as neighborhood demographics, that could result in discriminatory outcomes. Routes with the lowest passenger demand will be assigned a 24' cutaway, while those with higher demand will be assigned a 35' or 40' vehicle. However, if terrain and street design warrants, vehicle assignments may be adjusted for safe operations.

Systemwide, the average age of the fleet is approximately 6 years. Average age by route is calculated as a weighted average of the vehicle age for every vehicle used on the route, weighted by number of pullouts. Because two of the three non-minority routes have relatively newer vehicles, non-minority routes have an average age that is approximately 2 years newer than minority routes. However, as the 2011 model year vehicles get replaced in the next two years, this will result in minority routes with a significantly newer average age. Table 5 presents the average vehicle age by route and year.

Table 5: Vehicle Age by Route

Route	Minority Route Designation	Average Model Year	FY 2023 Vehicle Age	FY 2022 Vehicle Age	FY 2021 Vehicle Age
17	Yes	2016	7.1	5.9	4.8
22	Yes	2016	7.2	6.0	5.4
23	Yes	2011	11.9	11.5	10.6
23X	Yes	2013	9.7	7.7	7.2
29	Yes	2013	9.8	7.4	6.9
35	Yes	2018	5.0	3.8	2.5
36	Yes	2015	7.9	7.4	5.6
49	Yes	2016	7.1	5.8	5.2
61	No	2018	5.4	3.6	4.5
68	No	2019	4.4	3.9	4.2
71	Yes	2017	5.7	4.2	2.8
219	No	2020	3.2	2.4	2.0
228	Yes	2020	3.3	1.8	2.9
233	Yes	2020	2.6	1.6	2.6
245	Yes	2020	2.6	1.6	2.5
251	Yes	2018	5.3	5.2	5.3
257	Yes	2020	3.4	3.5	2.7
Average Model Year of Fleet		2017	6.0	4.9	4.6
Average Model Year Minority Routes		2017	6.3	5.2	4.8
Average Model Year Non-Minority Routes		2019	4.3	3.3	3.6
Absolute Difference Between Minority and Non-Minority			2.0	1.9	1.2
Percentage Difference Between Minority and Non-Minority			37%	45%	29%

On Time Performance

Marin Transit defines “on time” as up to 5 minutes late and 1 minute early upon arrival at a timepoint. On Time performance is determined by the percentages of runs completed. This data represents the percentage of times all service was within this metric. A higher number indicates better reliability for riders.

On Time performance for the FY 2023 Year-To-Date has been the same for Minority Routes as Non-Minority Routes. Only small differences in on-time performance were experienced in the prior years. Table 6 presents the on-time performance by route and year.

Table 6: On-Time Performance (OTP)

Route	Minority Route	FY23 YTD	FY22	FY21
17	Yes	69%	69%	74%
22	Yes	70%	71%	79%
23	Yes	76%	76%	67%
23X	Yes	73%	70%	70%
29	Yes	68%	68%	62%
35	Yes	73%	78%	75%
36	Yes	78%	76%	75%
49	Yes	69%	80%	79%
61	No	67%	71%	74%
68	No	74%	69%	75%
71	Yes	75%	74%	75%
219	No	75%	71%	78%
228	Yes	71%	72%	80%
233	Yes	71%	70%	75%
245	Yes	76%	75%	75%
251	Yes	70%	76%	80%
257	Yes	70%	75%	77%
Summary				
OTP Minority Routes		72%	74%	75%
OTP Non-Minority Routes		72%	70%	76%
Difference Between Minority and Non-Minority		0%	4%	-1%

Service Availability

Service availability is evaluated in the Marin Transit service area by analyzing the distance from the centroid of each Census Block Group in the service area to its nearest bus stop to assess the percentage of the population in both Minority Block Groups and Non-Minority Block Groups with access to transit. Marin Transit’s goal is to provide transit within ½ mile of 85% of all County residents, 80% of all jobs within the County, and 90% of residential units in large multifamily housing developments, as well as ensuring that 90% and 75% of middle and high schools are within ½ mile and ¼ mile, respectively, of transit service.

In general, all of the targets were exceeded in both Minority Block Groups as well as Non-Minority Block Groups. Table 7 presents the findings for population, large residential buildings, jobs, and schools.

Table 7: Access to Transit

	Target	Minority			Non-Minority		
		Service Area Total	Within ½ mile*	Percent	Service Area Total	Within ½ Mile*	Percent
Population	85%	91,615	91,615	100%	170,772	161,480	95%
Large Residential Buildings	90%	5,674	5,674	100%	3,597	3,594	100%
Jobs	80%	53,757	47,396	88%	50,284	41,467	82%
Middle Schools	90%	6	6	100%	5	5	100%
High Schools	75%	2	2	100%	9	6	67%

* ¼ mile used for high schools in accordance with established service standard.

Transit Amenities

Transit amenities include improvements to the riders’ waiting experience at stops and stations, which are distributed according to rider need, including benches, shelters, signage or real-time passenger information signs. In general, transit amenities are more likely to be located in minority block groups than in non-minority block groups. Table 8 presents the Transit Amenities analysis for stops within Minority Block Groups and Non-Minority Block Groups.

Table 8: Transit Amenities by Block Groups

	Trash Can	Benches	Shelter	All Stops
Within Minority Block Groups	91	130	98	211
Within Non-Minority Block Groups	135	187	112	330
Total	226	317	210	541
% of Stops in Minority Block Groups w Amenities	43.1%	61.6%	46.4%	
% of Stops in Non-Minority Block Groups w Amenity	40.9%	56.7%	33.9%	
% of All Stops with Amenity	41.8%	58.6%	38.8%	
Difference between Minority and Non-Minority	2.2%	4.9%	12.5%	