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Technical Memorandum

July 12, 2023

Project# 21385.003

To: David Berman, AICP, Senior Transportation Planner
Alameda-Contra Costa Transit District
1600 Franklin Street
Oakland, CA 94612

From: Transportation Management & Design, Inc.

CC: Laurence Lewis, Kittelison & Associates

RE: AC Transit Realign: Ridership Summary

INTRODUCTION

AC Transit *Realign* (*Realign*) is a comprehensive operational analysis of the AC Transit system. The project will examine the current and prospective mobility and access needs of the AC Transit service area and develop a plan to better serve the East Bay over the next ten years. This memo provides a broad overview of AC Transit's weekday service as it exists today, as well as a brief examination of how the pandemic has changed how the District provides service. This analysis will provide context for the planning study and provide a starting point for deeper analysis of the existing service.

The *Realign* project focuses on three types of service AC Transit provides: local, all-nighter, and Transbay. In addition, AC Transit also operates school-focused service which are not the focus of this study, but could undergo modifications consistent with changes to local service and BART Early Bird Express routes that operate under contract to BART as a replacement for early morning rail service.

While this memo focuses on weekday service because route alignments will be determined by weekday demand. Weekend data will influence recommended frequency and span on weekends, and there could be destinations that have weekend only demand that will be considered but are not the major drivers of the realign effort.

2022 RIDERSHIP VS. 2019 RIDERSHIP

Ridership and the amount of service provided was compared between the same period during the Fall of 2019 with the same period during the Fall of 2022.

Excluding 600 and 700 series routes, ridership is down approximately 26 percent, while resources are down approximately 13 percent. Appendix A provides a detailed comparison by route between 2019 and 2022.

Service quality makes an impact. Ridership on Route 1T is higher than ridership on pre-pandemic Route 1, with a similar amount of service. Productivity on Route 1T in 2022 is 35 percent higher than Route 1 in 2019.

A plurality of survey respondents indicated that they use AC Transit five to seven days per week, however this dropped from 39% pre COVID to 28% currently. Since the number of survey respondents that indicated that they never use AC Transit actually is lower today than it was pre COVID (11% today compared with 15% in 2019) the ridership drop could be primarily the result of people using AC Transit less often.

Table 1: Summary of Ridership and Service Changes between 2019 and 2022

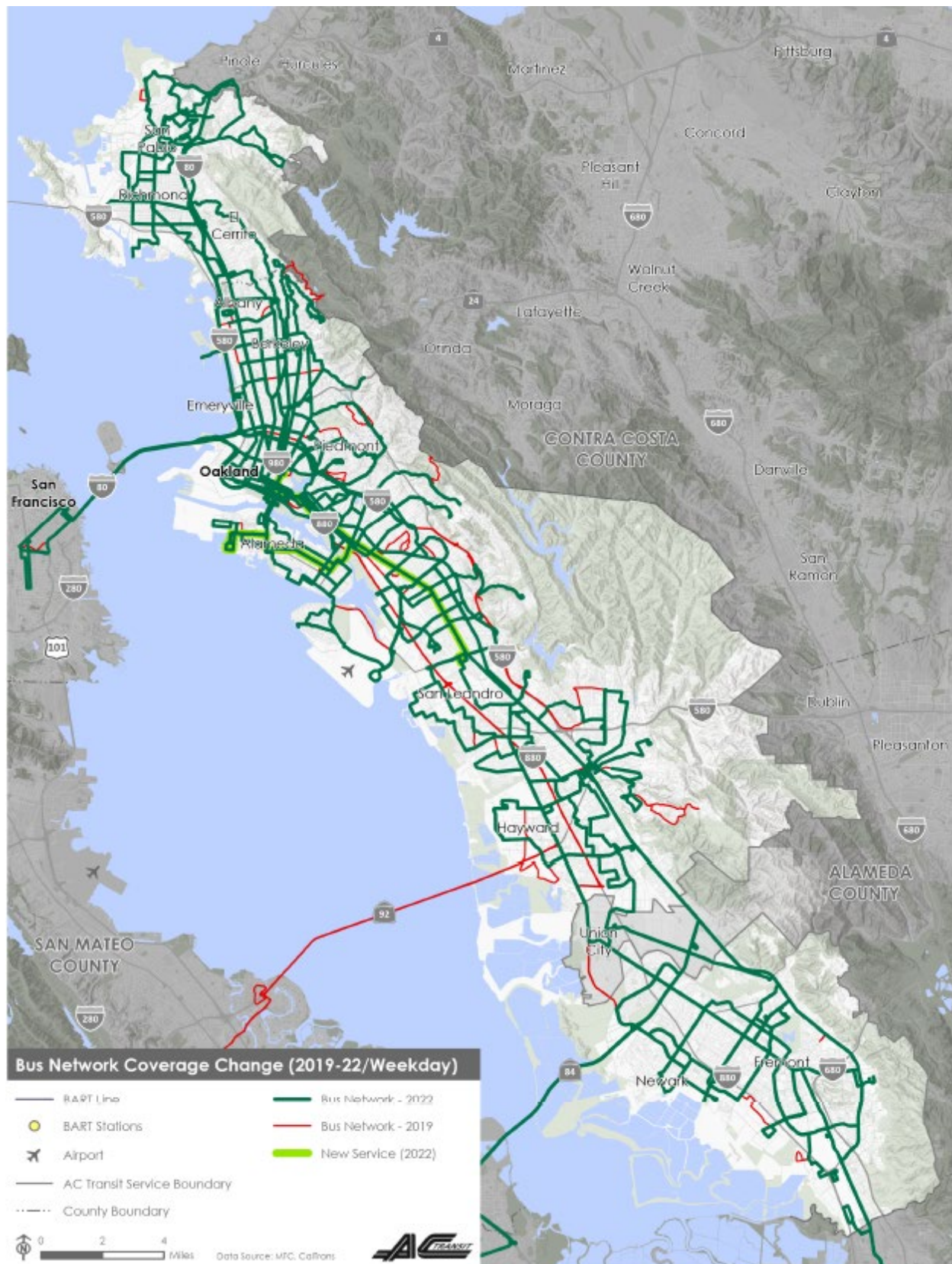
Service	Change in Weekday Ridership	Change in Weekday Service Hours	Change in Productivity
Local	-20%	-9%	-12%
Transbay	-67%	-49%	-36%
Overall	-36%	-15%	-15%

The majority of discontinued routes between 2019 and 2022 were Transbay Routes. Transbay routes were, on average, hit harder by the pandemic than local routes, falling in productivity by 36 percent, three times as much as local routes.

The Transbay routes that are currently operating were generally better performing routes. For example, the Transbay routes still operating in 2022 had an average productivity of 27.7, compared to 25.5 for routes not operating in 2022.

Map 1 illustrates in red where service coverage that existed in 2019 was no longer provided in 2022. Many of the suspended Transbay routes overlap other local routes, therefore some parts of the AC Transit service area lost direct access to San Francisco but not local service.

Map 1: Bus Network Coverage Change 2019 to 2022 Weekdays



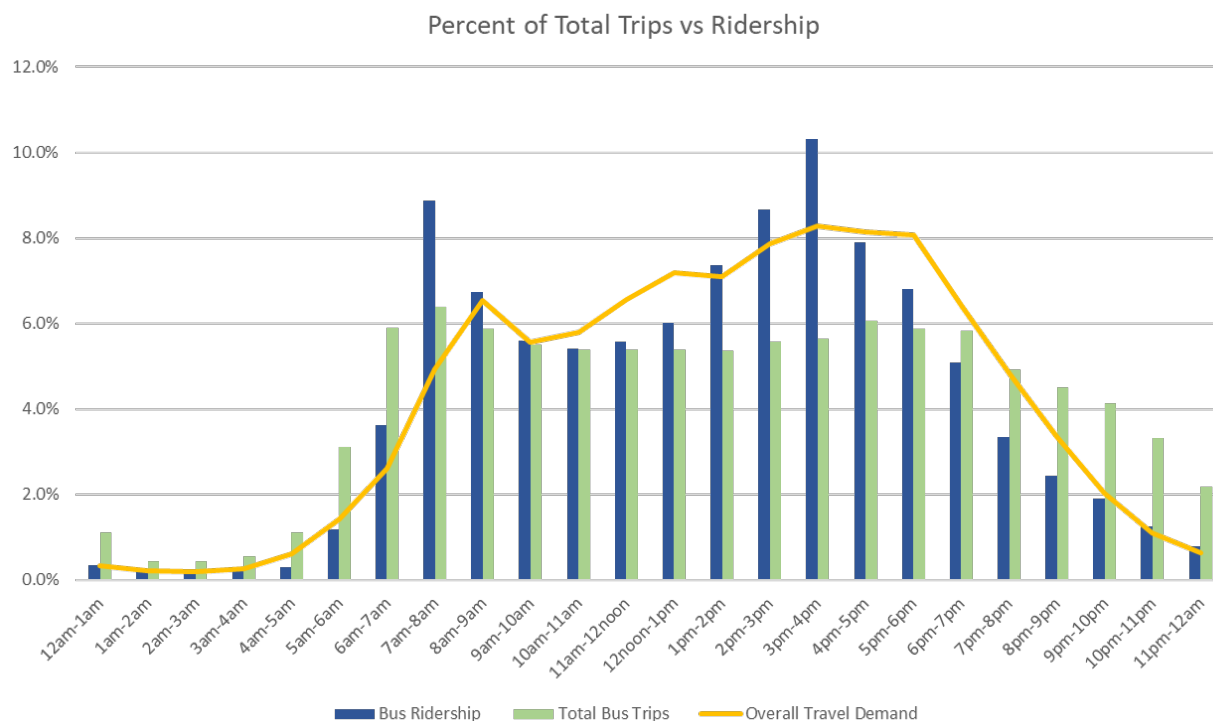
2022 SERVICE PERFORMANCE

When comparing overall travel demand to AC Transit ridership a consistent pattern emerges as shown in Figure 1. The one exception is between 7 and 9 AM and between 3 and 4 PM where AC Transit ridership exceeds overall travel demand. This is likely due to students using AC Transit for trips to and from school.

Although ridership is generally more concentrated during the AM and PM peaks, the number of bus trips stays relatively consistent during the day. Even with a relatively high level of mid-day service, over 51% of the respondents to the online survey indicated that the time period in which they would like to see more service was the weekday periods between 10 AM and 3 PM.

The percentage of bus trips offered outstrips the total travel demand and bus ridership in late evening through the early morning.

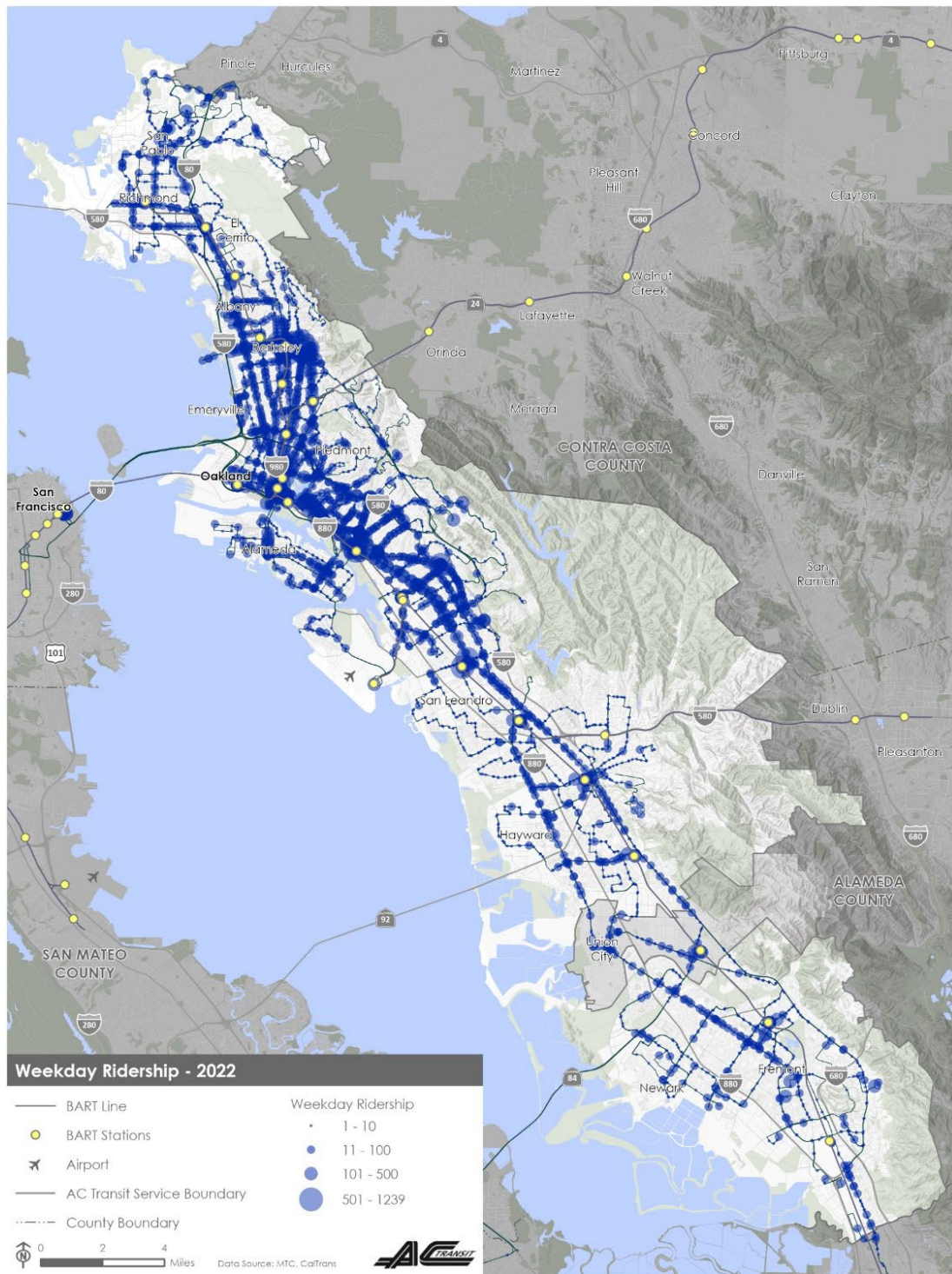
Figure 1: Travel Demand Compared to Transit Use



Map 2 illustrates weekday ridership based on boardings per bus stop. Ridership is highest in the core of the network, centered on Oakland and Berkeley where 11 routes represent more than half of all weekday ridership. Appendix B illustrates weekday ridership per route in rank order highest to lowest.

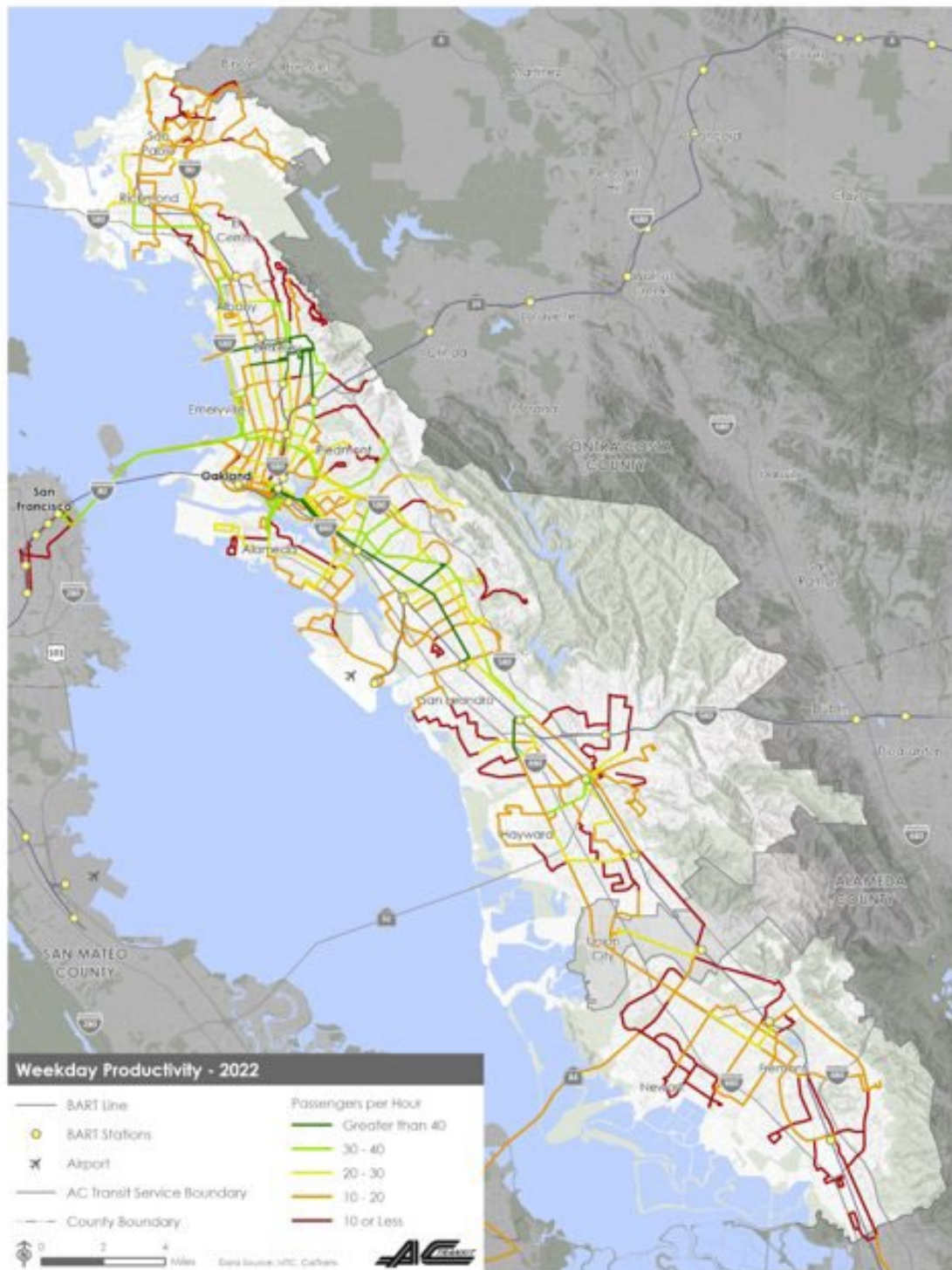
Ridership is much lower on routes in less dense areas. Excluding 600, 700, and 800 series routes, there are 76 routes in service. The bottom 50 routes in ridership represent just 23 percent of total weekday ridership.

Map 2: Weekday Ridership Fall 2022



Map 3 illustrates weekday productivity. Productivity is highest in Oakland and Berkeley, matching what is seen in ridership. Productivity decreases in more suburban and low-density portions of the network. As seen in Appendix C which ranks routes in order of weekday productivity, the top 15 routes are either local or transbay routes serving the Oakland-Alameda-Berkeley subarea. Of the 27 routes with productivity over 20 boardings per hour three serve the Hayward-San Leandro subarea, one serves West Contra Costa County subarea, two routes serve both the Oakland-Alameda-Berkeley and West Contra Costa County subarea.

Route 51B with a weekday productivity of 60 Boardings per hour and 1T (Tempo) with a weekday productivity of over 57 boardings per hour are the highest performing routes in the system. On the other end of the scale the 200 series routes, which primarily serve Newark and Fremont, have poorer performance. The highest performing route in the Fremont-Newark-Union City subarea is Route 251 with 14.2 boardings per hour, while five of the 10 poorest performing routes are in this subarea.

Map 3: Weekday Productivity Fall 2022

Appendix A: Ridership, Revenue Hours, and Productivity in 2019 and 2022 by Route (pg. 1 of 3)

Route	Tier	2019 Ridership	2022 Ridership	2019 Hours	2022 Hours	2019 Productivity	2022 Productivity
1/1T	Local	10,343	13,615	244.0	238.2	42.4	57.2
6	Local	5,677	5,294	136.9	129.3	41.5	40.9
7	Local	259	490	50.4	34.0	5.1	14.4
10	Local	2,902	2,413	103.0	104.8	28.2	23.0
12	Local	1,717	1,993	125.7	136.1	13.7	14.6
14	Local	4,803	3,312	146.4	135.1	32.8	24.5
18	Local	4,302	3,047	160.6	150.3	26.8	20.3
19	Local	326	181	55.2	31.9	5.9	5.7
20	Local	2,843	1,958	80.0	83.8	35.6	23.4
21	Local	1,758	1,421	68.7	71.4	25.6	19.9
28	Local	1,161	541	80.6	49.1	14.4	11.0
29	Local	1,253	896	72.9	79.8	17.2	11.2
33	Local	3,068	2,020	128.1	114.2	24.0	17.7
34	Local	750	557	65.3	41.7	11.5	13.4
35	Local	1,049	578	64.9	42.0	16.2	13.8
36	Local	1,583	1,962	72.7	70.3	21.8	27.9
39	Local	488	409	13.8	17.4	35.3	23.6
40	Local	9,042	5,885	204.2	199.7	44.3	29.5
41	Local	672	491	49.3	33.2	13.6	14.8
45	Local	1,873	1,415	86.9	84.3	21.6	16.8
46	Local	321		14.6		22.1	
46L	Local	217	175	13.8	13.8	15.8	12.7
47	Local	129		9.0		14.4	
51A	Local	8,623	5,791	207.0	185.1	41.7	31.3
51B	Local	11,071	8,456	155.3	141.0	71.3	60.0
52	Local	3,584	2,862	73.4	79.8	48.8	35.9
54	Local	2,484	1,487	59.8	63.0	41.5	23.6
56	Local	523	358	48.7	33.3	10.7	10.8
57	Local	6,407	4,312	189.1	215.9	33.9	20.0
60	Local	1,547	1,049	70.1	53.2	22.1	19.7
62	Local	3,479	2,000	102.7	100.5	33.9	19.9
65	Local	322	314	30.4	24.3	10.6	12.9
67	Local	151		21.2		7.1	
70	Local	913	368	43.3	25.0	21.1	14.7
71	Local	1,407	802	72.1	75.1	19.5	10.7
72	Local	3,423	2,692	137.9	125.3	24.8	21.5
72M	Local	3,407	2,583	127.6	116.0	26.7	22.3
72R	Local	3,205	3,971	165.5	180.2	19.4	22.0
73	Local	2,672	2,153	68.2	70.9	39.2	30.4

Appendix A: Ridership, Revenue Hours, and Productivity in 2019 and 2022 by Route (pg. 2 of 3)

Route	Tier	2019 Ridership	2022 Ridership	2019 Hours	2022 Hours	2019 Productivity	2022 Productivity
74	Local	1,421	898	66.0	65.7	21.5	13.7
76	Local	2,380	1,736	82.0	81.7	29.0	21.2
79	Local	865	2,060	63.7	66.5	13.6	31.0
80	Local	265		79.1		3.4	
83	Local	1,047		64.8		16.2	
86	Local	1,146	1,193	76.4	58.2	15.0	20.5
88	Local	2,523	1,961	88.5	96.8	28.5	20.3
90	Local	1,112	752	46.4	47.7	24.0	15.8
93	Local	583	610	50.7	53.1	11.5	11.5
94	Local	138		13.6		10.1	
95	Local	269	185	15.6	14.7	17.3	12.6
96	Local	364	1,018	64.8	64.8	5.6	15.7
97	Local	4,110	3,183	147.3	142.4	27.9	22.4
98	Local	1,796	1,310	73.1	71.3	24.6	18.4
99	Local	2,763	2,301	154.5	151.7	17.9	15.2
200	Local	1,366	1,373	90.5	111.0	15.1	12.4
210	Local	1,442	1,060	68.0	67.6	21.2	15.7
212	Local	707	482	72.3	35.0	9.8	13.8
215	Local	175	171	26.9	27.9	6.5	6.1
216	Local	336	255	28.6	25.5	11.8	10.0
217	Local	1,112	810	85.0	75.3	13.1	10.8
232	Local	388	252	33.0	28.6	11.7	8.8
239	Local	731	554	59.0	60.1	12.4	9.2
251	Local	226	202	17.7	14.2	12.8	14.2
339	Local	109		4.5		24.2	
376	Local	244	134	27.8	23.5	8.8	5.7
B	Transbay	311		8.4		36.9	
BSD	Transbay	1,496		32.7		45.8	
BSN	Transbay	173		9.7		17.9	
C	Transbay	454		14.1		32.3	
CB	Transbay	314		9.1		34.6	
E	Transbay	427	103	9.3	7.7	45.8	13.4
F	Transbay	2,132	2,093	98.0	93.0	21.8	22.5
FS	Transbay	848	76	13.1	4.2	64.9	18.1
G	Transbay	495	126	12.7	6.5	38.9	19.3
H	Transbay	581		22.2		26.2	
J	Transbay	1,325	186	25.1	7.0	52.8	26.4
L	Transbay	494	132	26.7	7.2	18.5	18.4

Appendix A: Ridership, Revenue Hours, and Productivity in 2019 and 2022 by Route (pg. 3 of 3)

Route	Tier	2019 Ridership	2022 Ridership	2019 Hours	2022 Hours	2019 Productivity	2022 Productivity
LA	Transbay	697	45	27.2	3.7	25.6	12.2
M	Transbay	238		21.7		11.0	
NL	Transbay	3,748	2,066	129.9	128.5	28.9	16.1
NX	Transbay	270	130	13.2	5.4	20.4	24.3
NX1	Transbay	174		7.8		22.5	
NX2	Transbay	249		11.9		21.0	
NX3	Transbay	350	94	13.3	7.9	26.4	11.9
NX4	Transbay	333		19.2		17.3	
O	Transbay	1,913	960	70.7	66.2	27.1	14.5
OX	Transbay	612	84	23.4	7.9	26.2	10.6
P	Transbay	877	153	24.2	8.7	36.3	17.7
S	Transbay	178		12.0		14.9	
SB	Transbay	395		22.7		17.4	
U	Transbay	203	179	13.3	14.6	15.3	12.2
V	Transbay	554	153	30.9	7.0	17.9	21.8
W	Transbay	451	112	26.0	8.9	17.4	12.5
Z	Transbay	71		3.2		22.0	

Appendix B: Weekday Ridership and Productivity by Route and Subarea, Sorted by Ridership (1 of 3)

Route	Tier	Subarea	Ridership	Productivity
1T	Local	Oakland-Alameda-Berkeley	13,615	57.2
51B	Local	Oakland-Alameda-Berkeley	8,456	60.0
40	Local	Oakland-Alameda-Berkeley	5,885	29.5
51A	Local	Oakland-Alameda-Berkeley	5,791	31.3
6	Local	Oakland-Alameda-Berkeley	5,294	40.9
57	Local	Oakland-Alameda-Berkeley	4,312	20.0
72R	Local	Oakland-Alameda-Berkeley	3,971	22.0
14	Local	Oakland-Alameda-Berkeley	3,312	24.5
97	Local	Hayward-San Leandro	3,183	22.4
18	Local	Oakland-Alameda-Berkeley	3,047	20.3
52	Local	Oakland-Alameda-Berkeley	2,862	35.9
72	Local	Oakland-Alameda-Berkeley	2,692	21.5
72M	Local	Oakland-Alameda-Berkeley	2,583	22.3
10	Local	Hayward-San Leandro	2,413	23.0
99	Local	Hayward-San Leandro	2,301	15.2
73	Local	Oakland-Alameda-Berkeley	2,153	30.4
F	Transbay		2,093	22.5
NL	Transbay		2,066	16.1
79	Local	Oakland-Alameda-Berkeley	2,060	31.0
33	Local	Oakland-Alameda-Berkeley	2,020	17.7
62	Local	Oakland-Alameda-Berkeley	2,000	19.9
12	Local	Oakland-Alameda-Berkeley	1,993	14.6
36	Local	Oakland-Alameda-Berkeley	1,962	27.9
88	Local	Oakland-Alameda-Berkeley	1,961	20.3
20	Local	Oakland-Alameda-Berkeley	1,958	23.4
76	Local	West Contra Costa County	1,736	21.2

Appendix B: Weekday Ridership and Productivity by Route and Subarea, Sorted by Ridership (2 of 3)

Route	Tier	Subarea	Ridership	Productivity
54	Local	Oakland-Alameda-Berkeley	1,487	23.6
21	Local	Oakland-Alameda-Berkeley	1,421	19.9
45	Local	Hayward-San Leandro	1,415	16.8
200	Local	Fremont-Newark-Union City	1,373	12.4
98	Local	Oakland-Alameda-Berkeley	1,310	18.4
86	Local	Hayward-San Leandro	1,193	20.5
210	Local	Fremont-Newark-Union City	1,060	15.7
60	Local	Hayward-San Leandro	1,049	19.7
96	Local	Oakland-Alameda-Berkeley	1,018	15.7
O	Transbay		960	14.5
74	Local	West Contra Costa County	898	13.7
29	Local	Oakland-Alameda-Berkeley	896	11.2
217	Local	Fremont-Newark-Union City	810	10.8
71	Local	West Contra Costa County	802	10.7
90	Local	Oakland-Alameda-Berkeley	752	15.8
93	Local	Hayward-San Leandro	610	11.5
35	Local	Hayward-San Leandro	578	13.8
34	Local	Hayward-San Leandro	557	13.4
239	Local	Fremont-Newark-Union City	554	9.2
28	Local	Hayward-San Leandro	541	11.0
41	Local	Hayward-San Leandro	491	14.8
7	Local	Oakland-Alameda-Berkeley	490	14.4
212	Local	Fremont-Newark-Union City	482	13.8
39	Local	Oakland-Alameda-Berkeley	409	23.6
70	Local	West Contra Costa County	368	14.7
56	Local	Hayward-San Leandro	358	10.8
65	Local	Oakland-Alameda-Berkeley	314	12.9
216	Local	Fremont-Newark-Union City	255	10.0
232	Local	Fremont-Newark-Union City	252	8.8

Appendix B: Weekday Ridership and Productivity by Route and Subarea, Sorted by Ridership (3 of 3)

Route	Tier	Subarea	Ridership	Productivity
251	Local	Fremont-Newark-Union City	202	14.2
J	Transbay		186	26.4
95	Local	Hayward-San Leandro	185	12.6
19	Local	Oakland-Alameda-Berkeley	181	5.7
U	Transbay		179	12.2
46L	Local	Oakland-Alameda-Berkeley	175	12.7
215	Local	Fremont-Newark-Union City	171	6.1
P	Transbay		153	17.7
V	Transbay		153	21.8
78	Local	Oakland-Alameda-Berkeley	152	8.9
376	Local	West Contra Costa County	134	5.7
L	Transbay		132	18.4
NX	Transbay		130	24.3
G	Transbay		126	19.3
W	Transbay		112	12.5
E	Transbay		103	13.4
NX3	Transbay		94	11.9
OX	Transbay		84	10.6
FS	Transbay		76	18.1
LA	Transbay		45	12.2

Appendix C: Weekday Ridership and Productivity by Route and Subarea, Sorted by Productivity (1 of 3)

Route	Tier	Subarea	Ridership	Productivity
51B	Local	Oakland-Alameda-Berkeley	8,456	60.0
1T	Local	Oakland-Alameda-Berkeley	13,615	57.2
6	Local	Oakland-Alameda-Berkeley	5,294	40.9
52	Local	Oakland-Alameda-Berkeley	2,862	35.9
51A	Local	Oakland-Alameda-Berkeley	5,791	31.3
79	Local	Oakland-Alameda-Berkeley	2,060	31.0
73	Local	Oakland-Alameda-Berkeley	2,153	30.4
40	Local	Oakland-Alameda-Berkeley	5,885	29.5
36	Local	Oakland-Alameda-Berkeley	1,962	27.9
J	Transbay		186	26.4
14	Local	Oakland-Alameda-Berkeley	3,312	24.5
NX	Transbay		130	24.3
54	Local	Oakland-Alameda-Berkeley	1,487	23.6
39	Local	Oakland-Alameda-Berkeley	409	23.6
20	Local	Oakland-Alameda-Berkeley	1,958	23.4
10	Local	Hayward-San Leandro	2,413	23.0
F	Transbay		2,093	22.5
97	Local	Hayward-San Leandro	3,183	22.4
72M	Local	Oakland-Alameda-Berkeley	2,583	22.3
72R	Local	Oakland-Alameda-Berkeley	3,971	22.0
V	Transbay		153	21.8
72	Local	Oakland-Alameda-Berkeley	2,692	21.5
76	Local	West Contra Costa County	1,736	21.2
86	Local	Hayward-San Leandro	1,193	20.5
18	Local	Oakland-Alameda-Berkeley	3,047	20.3
88	Local	Oakland-Alameda-Berkeley	1,961	20.3
57	Local	Oakland-Alameda-Berkeley	4,312	20.0

Appendix C: Weekday Ridership and Productivity by Route and Subarea, Sorted by Productivity (2 of 3)

Route	Tier	Subarea	Ridership	Productivity
62	Local	Oakland-Alameda-Berkeley	2,000	19.9
21	Local	Oakland-Alameda-Berkeley	1,421	19.9
60	Local	Hayward-San Leandro	1,049	19.7
G	Transbay		126	19.3
L	Transbay		132	18.4
98	Local	Oakland-Alameda-Berkeley	1,310	18.4
FS	Transbay		76	18.1
P	Transbay		153	17.7
33	Local	Oakland-Alameda-Berkeley	2,020	17.7
45	Local	Hayward-San Leandro	1,415	16.8
NL	Transbay		2,066	16.1
90	Local	Oakland-Alameda-Berkeley	752	15.8
96	Local	Oakland-Alameda-Berkeley	1,018	15.7
210	Local	Fremont-Newark-Union City	1,060	15.7
99	Local	Hayward-San Leandro	2,301	15.2
41	Local	Hayward-San Leandro	491	14.8
70	Local	West Contra Costa County	368	14.7
12	Local	Oakland-Alameda-Berkeley	1,993	14.6
O	Transbay		960	14.5
7	Local	Oakland-Alameda-Berkeley	490	14.4
251	Local	Fremont-Newark-Union City	202	14.2
212	Local	Fremont-Newark-Union City	482	13.8
35	Local	Hayward-San Leandro	578	13.8
74	Local	West Contra Costa County	898	13.7
E	Transbay		103	13.4
34	Local	Hayward-San Leandro	557	13.4
65	Local	Oakland-Alameda-Berkeley	314	12.9
46L	Local	Oakland-Alameda-Berkeley	175	12.7
95	Local	Hayward-San Leandro	185	12.6
W	Transbay		112	12.5
200	Local	Fremont-Newark-Union City	1,373	12.4
U	Transbay		179	12.2

Appendix C: Weekday Ridership and Productivity by Route and Subarea, Sorted by Productivity (3 of 3)

Route	Tier	Subarea	Ridership	Productivity
LA	Transbay		45	12.2
NX3	Transbay		94	11.9
93	Local	Hayward-San Leandro	610	11.5
29	Local	Oakland-Alameda-Berkeley	896	11.2
28	Local	Hayward-San Leandro	541	11.0
56	Local	Hayward-San Leandro	358	10.8
217	Local	Fremont-Newark-Union City	810	10.8
71	Local	West Contra Costa County	802	10.7
OX	Transbay		84	10.6
216	Local	Fremont-Newark-Union City	255	10.0
239	Local	Fremont-Newark-Union City	554	9.2
78	Local	Oakland-Alameda-Berkeley	152	8.9
232	Local	Fremont-Newark-Union City	252	8.8
215	Local	Fremont-Newark-Union City	171	6.1
376	Local	West Contra Costa County	134	5.7
19	Local	Oakland-Alameda-Berkeley	181	5.7