Covid Market Assessment

Technical Memorandum

February 2024

CONTENTS

Changes in Travel Patterns

This document presents an overview of the market analysis findings based on 2022 travel patterns, in contrast with the 2019 travel patterns previously analyzed as part of the Market Assessment. Specifically, this analysis seeks to identify where market patterns have changed significantly in ways that need to be accounted for in the redesigned networks. As presented in this document, the changes in travel patterns between 2019 and 2022 support the recommended changes in the redesigned bus networks.

1. Total Changes

Total trips across all modes have significantly decreased since 2019, as shown in **Table 1**. Average daily trips changed from 12.9 million to 9.4 million (-27 percent), while trips on Metrorail decreased by over 50 percent, Metrobus trips decreased by 24 percent, and Metro transit trips overall decreased by nearly 50 percent. However, since total trips decreased by more than Metrobus trips, the **Metrobus share actually increased relative to other modes**. Metrobus represented about 1.8 percent of trips on an average day in 2019 and about 1.9 percent of trips in 2022. In contrast, Metrorail share dropped from 3.6 percent to 2.4 percent in 2022 and Regional Transit Operator share dropped from 0.9 percent to 0.5 percent in 2022. Overall, transit share dropped from 6.6 percent in 2019 to 4.9 percent in 2022.

Table 1: Change in Average Daily Trips for Selected Modes – 2019 vs. 2022

Mode	2019 Total	2022 Total	% Change
Auto	11,100,000	8,200,000	-26%
Walk or Bike	932,000	729,000	-22%
Total Transit	848,000	460,000	-46%
Total Metro Transit	733,000	410,000	-46%
Metrobus*	232,000	175,000	-24%
Metrorail*	461,000	222,000	-52%
Metrobus+Metrorail*	41,000	13,000	-69%
Regional Transit Operators	115,000	50,000	-56%
Total Trips	**12,900,000**	**9,400,000**	**-27%**

Note: An average day is an average of all days in a week.
**These modes are components of the Total Metro Transit row and sum to equal the Total Metro Transit totals.*

2. Day of Week

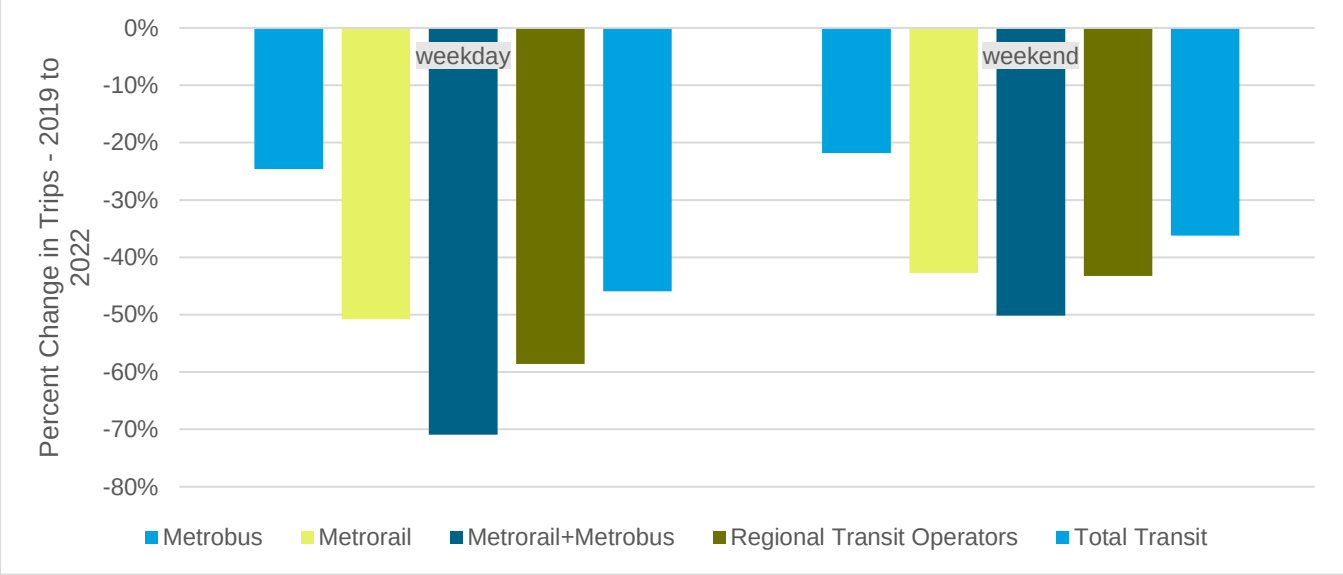
Overall, total trips have decreased by less than 30% on both weekdays and weekends. However**, total transit trips see a much larger decrease on weekdays (47%) but only a 36% decrease on weekends**. Transit's market share dropped from 7 percent to 5 percent on weekdays, while transit market share stayed about the same (approximately 3 percent) on weekends. The decrease in transit share is quite different for different transit modes, as shown in **Table 2**. While Metrorail trips decreased by 53 percent on weekdays and 43 percent on weekends, **Metrobus trips decreased by only 25 percent on weekdays and 22 percent on weekends.**

Table 2: Change in Daily Trips for Selected Modes – 2019 vs 2022

Trips for selected modes	2019 Weekday	2022 Weekday	% Change - Weekday	2019 Weekend	2022 Weekend	% Change - Weekend
Auto	11,500,000	8,500,000	-26%	10,200,000	7,500,000	-27%
Walk or Bike	1,010,000	771,000	-23%	743,000	625,000	-16%
Total Transit	1,028,000	542,000	-47%	399,000	254,000	-36%
Total Metro Transit	891,000	485,000	-46%	340,000	221,000	-35%
Metrobus*	273,000	205,000	-25%	130,000	102,000	-22%
Metrorail*	566,000	265,000	-53%	198,000	114,000	-43%
Metrobus+Metrorail*	52,200	15,300	-71%	11,500	5,700	-50%
Regional Transit Operators	137,000	56,600	-59%	58,500	33,200	-43%
Total Trips	**13,500,000**	**9,800,000**	**-27%**	**11,400,000**	**8,400,000**	**-26%**

**These modes are components of the Total Metro Transit row and sum to equal the Total Metro Transit totals.*

Figure 1: Percent Change in Transit Trips by Mode and Day of Week – 2019 vs. 2022

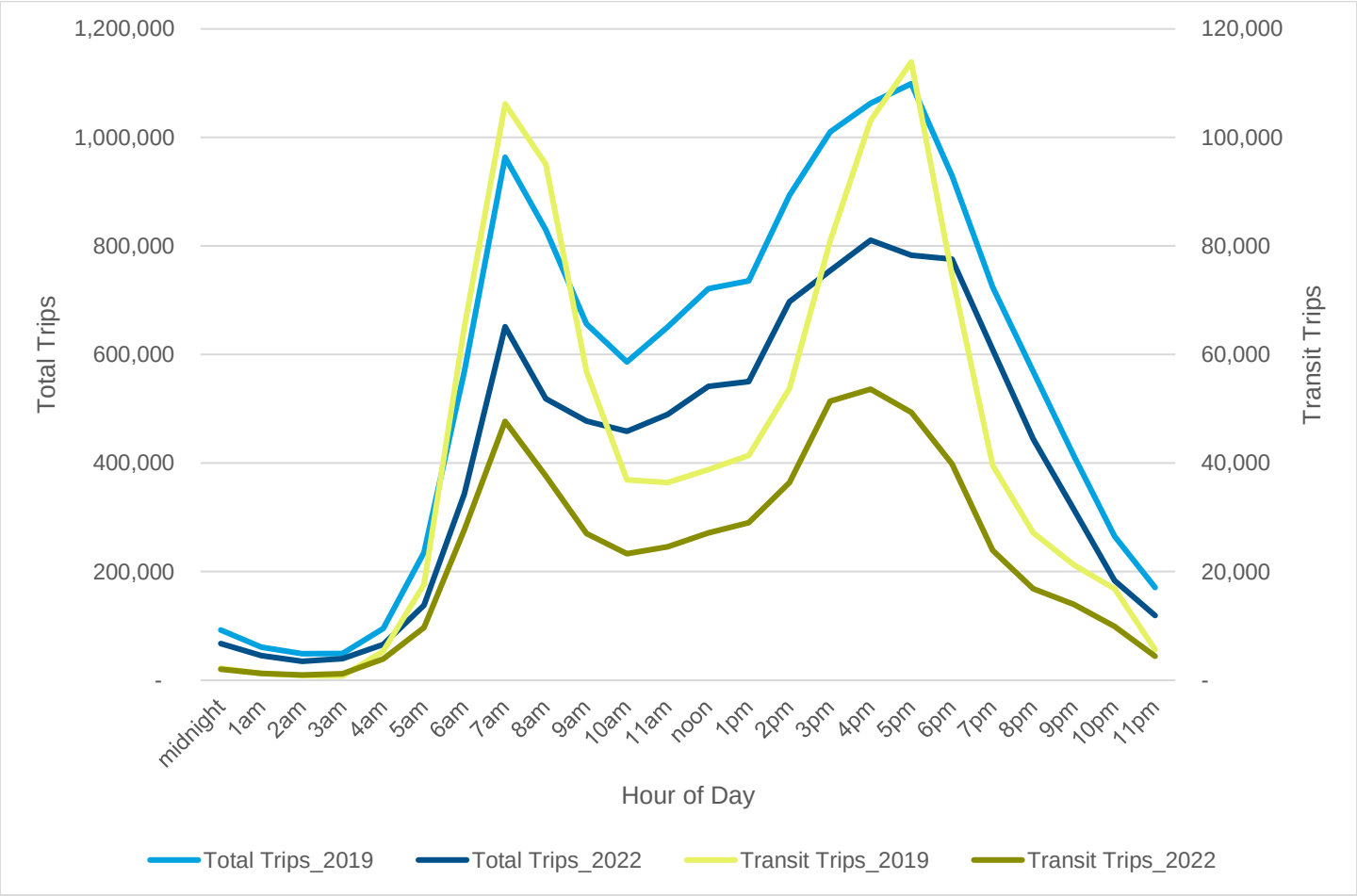


3. Time of Day

Figure 2 shows the change in total and transit trips between 2019 and 2022 by hour on weekdays. Since 2019, total trips have dropped by 28 percent in the peak periods[1] but only 24 percent in off-peak periods. Similarly, the number of **transit trips has decreased more in the peak periods** (52 percent decrease) than in off-peak periods (37 percent decrease).

[1] Defined as 6am to 9am and 3pm to 7pm.

Figure 2: Total Trips and Transit Trips by Hour on Weekdays – 2019 vs. 2022



The transit trip shares by hour on weekdays are shown in **Figure 3**. **Transit market shares have decreased by the largest amounts in the peak periods.** Transit market share in peak periods decreased from 9.9 percent in 2019 to 6.6 percent in 2022, while in the off-peak periods it only decreased from 5.8 percent in 2019 to 4.8 percent in 2022.

Figure 3: Transit Market Share by Hour on Weekdays – 2019 vs. 2022

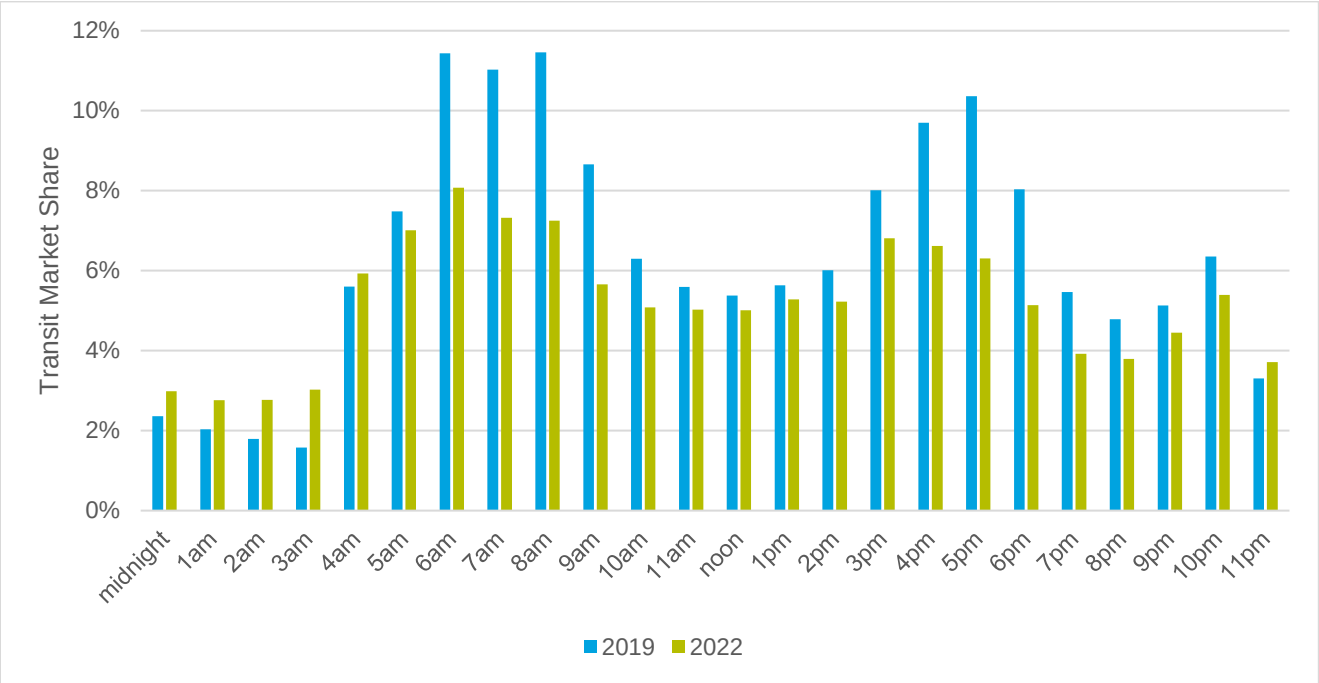


Figure 4 and **Figure 5** show how market shares specifically for Metrobus have changed by hour of the day on weekdays and weekends, respectively. On weekdays, Metrobus market share dropped in the traditional evening peak period between 4pm and 7pm. However, **Metrobus mode share increased in most other hours of the day, particularly in the early morning** from 4am to 7am, where Metrobus share increased from about two percent in 2019 to over three percent in 2022. Weekends saw slight increases in Metrobus share from 10am to 3pm and from 10pm to 3am and slight decreases from 4am to 7am.

Figure 4: Metrobus Market Share by Hour on Weekdays – 2019 vs. 2022

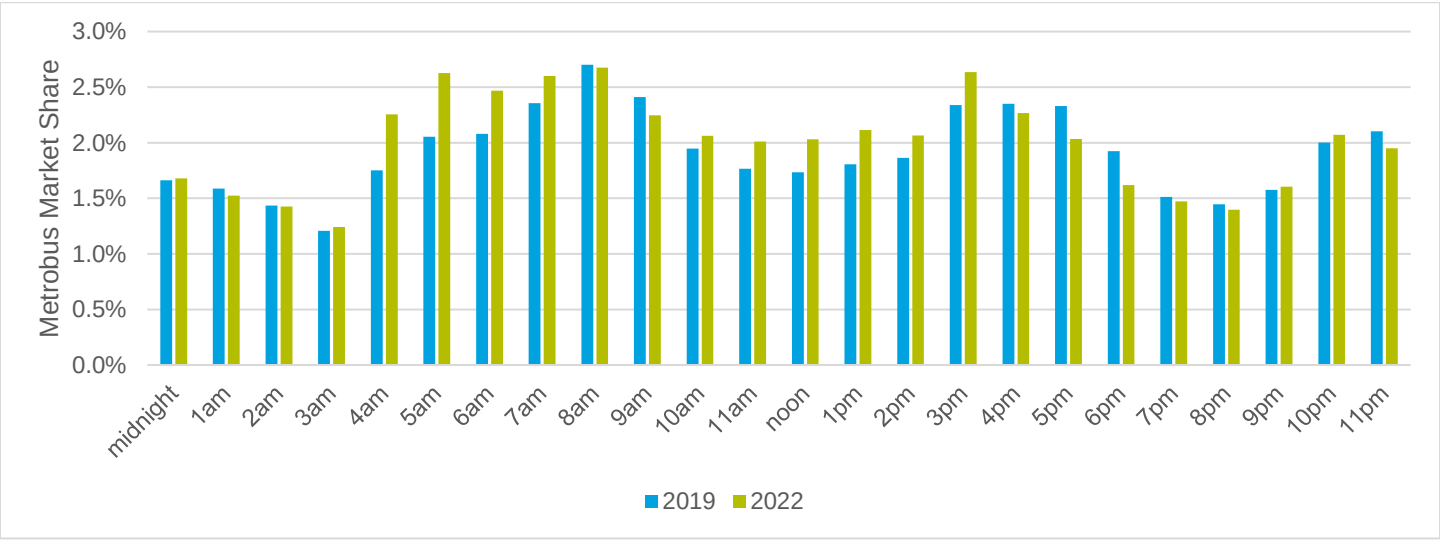
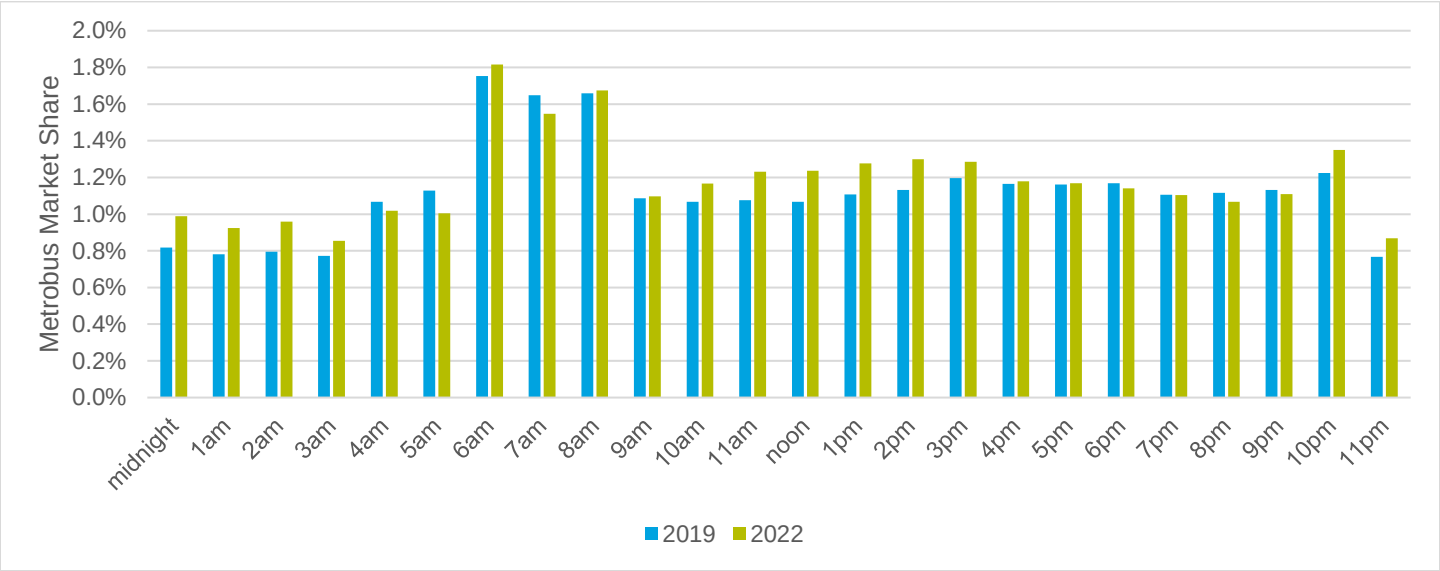


Figure 5: Metrobus Market Share by Hour on Weekends – 2019 vs. 2022



4. Changes in Locations

Figure 6 and **Figure 7** show the change in total trips at the modified Block Group level between 2019 and 2022 and **Figure 8** and **Figure 9** show the change in trip density. Several notable findings include the following:

- When we examine the entire service area, the total trip changes do not show strong geographic patterns. However, when we zoom into District of Columbia (DC), we see that there are bigger decreases in trips coming from areas along the Potomac River, which is where many of the District's employment centers are located – especially Federal employers.

- Trip density changes mostly in the densest areas of the service area—in particular, DC and the downtown area.

Figure 6: Change in Total Trips for WMATA Service Area – 2019 vs. 2022

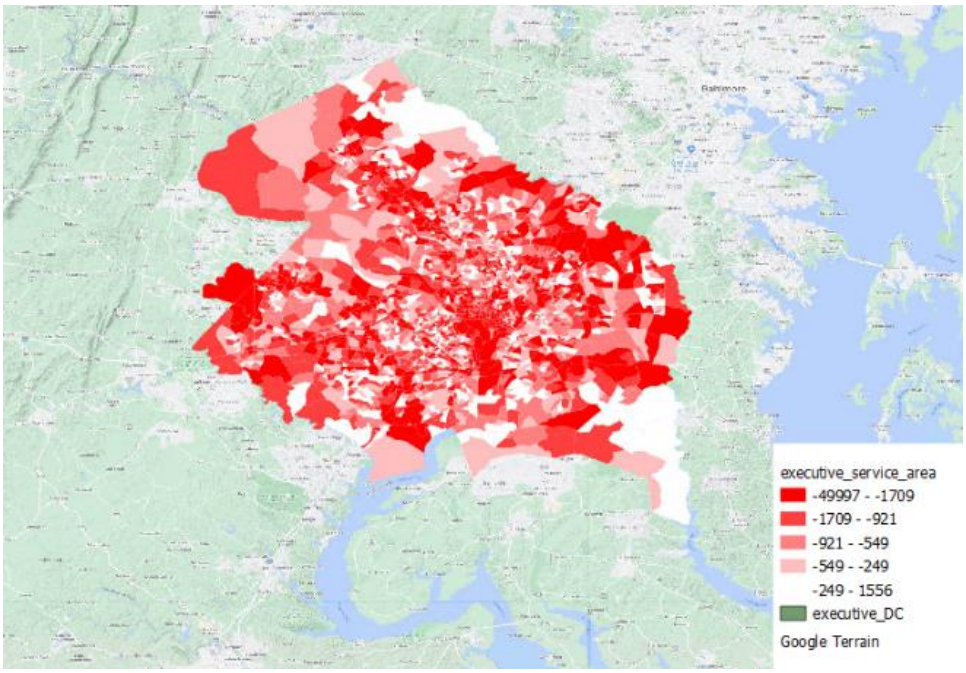


Figure 7: Change in Total Trips for Washington, D.C. – 2019 vs. 2022

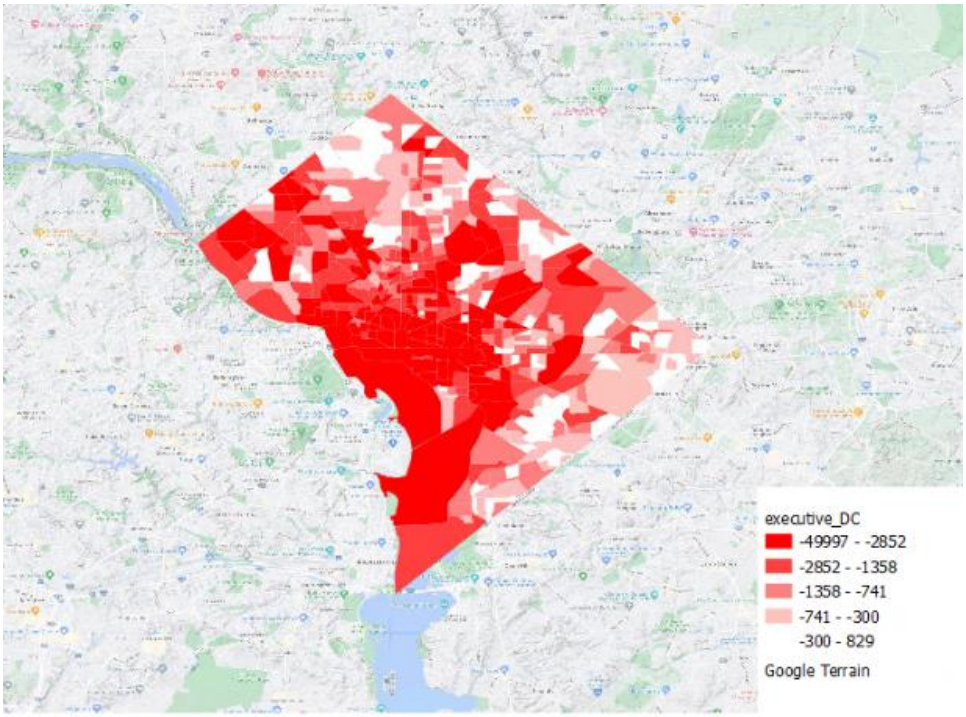


Figure 8: Change in Trip Density for WMATA Service Area – 2019 vs. 2022

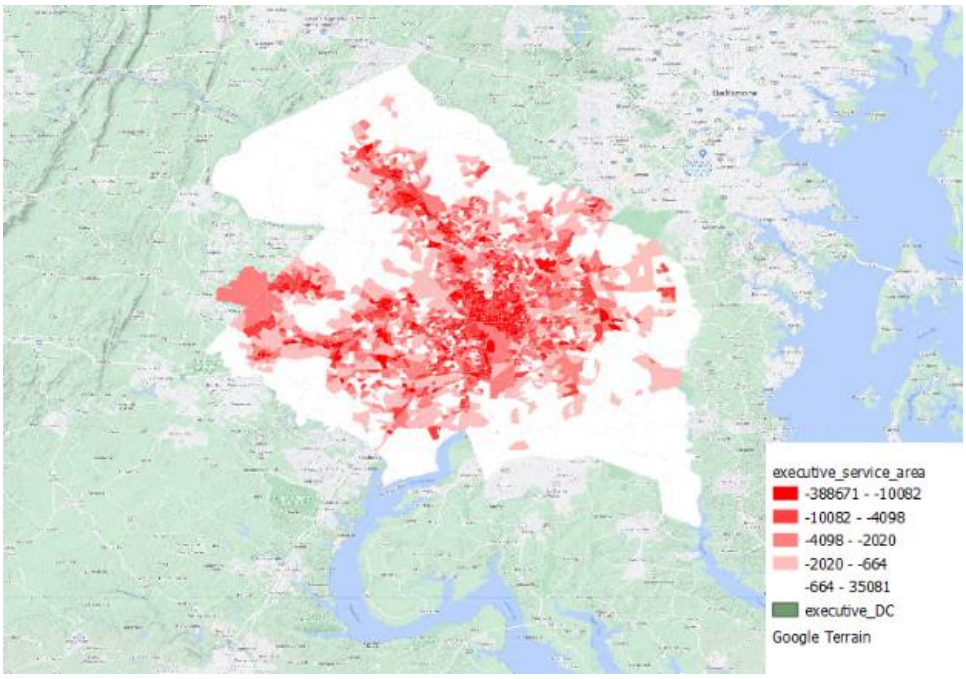
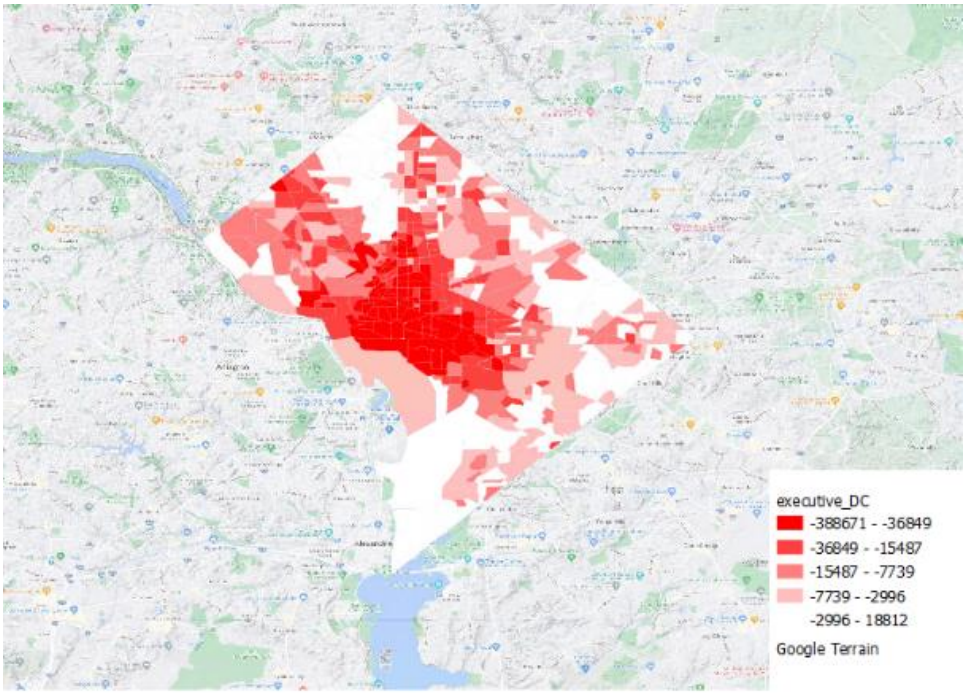


Figure 9: Change in Trip Density for Washington, D.C. – 2019 vs. 2022



To further examine the data, trip totals were organized by origin-destination (O-D) pair at the jurisdictional level as shown in **Table 3**. When comparing changes in trip patterns by jurisdictional pair, **trips to/from DC and to/from Dulles Airport have the largest reductions**. Total trip making to/from these locations decreased by between 30 to 70 percent. In total, 17 O-D pairs have reductions in trips greater than 50 percent (highlighted in

red in the table below) and all have at least one end in DC or Dulles Airport. As expected, no O-D pairs see an increase in travel, but 26 O-D pairs have reductions that are smaller than 25 percent (highlighted in green). These smaller decreases occur in jurisdictions outside of DC, particularly suburb-to-suburb trips that include two of the following jurisdictions:

- City of Alexandria (includes 7 of the 26 O-D pairs with a reduction less than 25 percent)
- Fairfax County (7 of 26 O-D pairs)
- Falls Church (10 of 26 O-D pairs)
- Montgomery County (6 of 26 O-D pairs)
- Prince George's County (10 of 26 O-D pairs)

Table 3: Change in Total Trips by Origin and Destination Jurisdiction

Origin / Destination	Alexandria	Arlington County	District of Columbia	Dulles Airport	Fairfax City	Fairfax County	Falls Church	Montgomery County	Prince George's County
Alexandria	-18%	-30%	-52%	-51%	-28%	-23%	-21%	-26%	-20%
Arlington County	-32%	-25%	-56%	-49%	-32%	-28%	-23%	-34%	-31%
District of Columbia	-52%	-56%	-42%	-62%	-50%	-50%	-51%	-44%	-31%
Dulles Airport	-52%	-52%	-61%	-72%	-33%	-62%	-39%	-43%	-38%
Fairfax City	-28%	-32%	-51%	-37%	-25%	-28%	-27%	-25%	-23%
Fairfax County	-23%	-27%	-51%	-61%	-27%	-18%	-23%	-28%	-21%
Falls Church	-22%	-24%	-51%	-43%	-27%	-23%	-17%	-27%	-10%
Montgomery County	-28%	-35%	-45%	-46%	-24%	-28%	-25%	-19%	-23%
Prince George's County	-21%	-33%	-32%	-35%	-25%	-21%	-14%	-24%	-19%

Additional information on how travel changed by location (including time of day and purpose segmentations) is available in Appendix A2.

5. Trip Purpose

Table 4 shows the change in trips by trip purpose[2] between 2019 and 2022. The pandemic significantly reduced work travel, which has impacted not only home-regular trips, but also non-home-based trips (e.g.,

[2] Trip purpose is categorized based on the type of activity at the origin and destination of a trip. Home-regular trip purpose has one trip end that is a device's inferred home location and the other trip end that is a device's inferred regular (work or school) location. A home-

dropping kids off on the way to work or making a lunch trip midday). It is therefore not surprising that there has been a shift away from more complex trip chaining patterns as work-related travel has decreased. This can be observed in the 59 percent decrease in regular-other trips and the almost 30% decrease in home-regular trips. On the other hand, home-other trips drop only slightly from 5.5 million trips in 2019 to 5.3 million trips in 2022 (-4 percent).

Additional details on changes in trip purpose by day of week, time of day, and mode are available in Appendix A1.

Table 4: Change in Weekday Trips and Share of Trips by Trip Purpose – 2019 vs. 2022

	2019		2022		Changes (2022-2019)		
Purpose	Total Trips	Trip Share	Total Trips	Trip Share	Total Trips	Trip Share	Total Trips
Home-Regular	3,054,000	23%	2,142,000	22%	-912,000	-1%	-30%
Home-Other	5,504,000	41%	5,490,000	55%	-14,000	14%	0%
Regular-Other	1,875,000	14%	765,000	8%	-1,110,000	-6%	-59%
Other-Other	3,000,000	22%	1,518,000	15%	-1,482,000	-7%	-49%

6. Trends for Equity Focus Communities

Equity Focus Communities (EFCs) are of particular importance in this study because these communities often rely more heavily on the transit system than other populations. **Table 5** shows the change in average daily trips made by residents of EFCs by mode. Overall, **EFC trip totals decreased by 21 percent between 2019 and 2022, significantly less than the decrease in trips for the whole region (27 percent)**. EFC transit trips decreased by 39 percent overall, with significant difference by mode. EFC trips on Metrorail decreased by 44 percent, compared to EFC Metrobus trips decreasing by only 30 percent. Similar patterns were observed for EFC trips as for travel patterns in the region as a whole (e.g. greater reduction of rail trips than bus trips).

other trip purpose has one home trip end and one trip end that is neither home nor regular. A regular-other trip purpose has one regular trip end and one other trip end, and lastly, an other-other trip purpose is one where neither trip end is home nor regular.

Table 5: Change in EFC Average Daily Trips for Selected Modes – 2019 vs. 2022

Mode	2019 Total	2022 Total	% Change
Auto	3,140,000	2,520,000	-20%
Walk or Bike	196,000	204,000	4%
Total Transit	274,000	161,000	-41%
Total Metro Transit	247,000	149,000	-39%
Metrobus*	118,000	82,000	-30%
Metrorail*	111,000	62,000	-44%
Metrobus+Metrorail*	18,000	5,100	-72%
Regional Transit Operators	27,000	12,000	-57%
Total Trips	3,650,000	2,890,000	-21%

**These modes are components of the Total Metro Transit row and sum to equal the Total Metro Transit totals.*

A few important differences were found between regional trends and EFCs. **Table 6** shows the changes in trip totals for different market segments and compares the non-EFC totals for those market segments to EFC-specific totals for the same market segments. Several differences exist in the changing patterns:

- Total trip-making for EFCs was reduced by a smaller amount than non-EFCs (21 percent for EFCs compared to 30 percent for non-EFCs).
- Commuting trips and peak period trips dropped by a smaller amount among residents of EFCs as compared with non-EFC residents. These effects are linked, as commuting trips often occur during peak periods. The relatively smaller decrease among EFCs also makes sense because EFC workers were less likely to be able to telecommute due to the nature of their jobs.
- While transit market share drops by a similar amount for non-EFCs and EFCs (24 percent vs. 23 percent), transit trip totals drop by more among non-EFCs (-47 percent vs. -39 percent).
- EFCs see a larger decrease in Metrobus trips than non-EFCs, while non-EFCs see a larger decrease in Metrorail trips than EFCs.

Table 6: Change in Trip Totals by Market Segment – Non-EFCs and EFCs

Trip Segment	Non-EFC	EFC
Total Trips	-30%	-21%
Total Metro Transit Trips	-47%	-39%
Metrobus Trips	-18%	-30%
Metrorail Trips	-54%	-44%
Regional Transit Operator Trips	-56%	-57%
Total Metro Transit Share*	-24%	-23%
Home-Regular Trips	-34%	-19%
Regular-Other + Other-Other Trips	-56%	-46%
AM Peak Trips	-39%	-29%
PM Peak Trips	-27%	-16%

*This metric compares the transit market share. All other metrics in the table compare changes in trip totals.

7. Transit Competitiveness

In addition to understanding generally how travel patterns have changed since before the pandemic, it is also important to understand how those changes shape our understanding of the transit service being provided as measured by travel time ratio (TTR) – the ratio between the travel time by transit and the travel time by auto.

Figure 10 shows the transit share for different ranges of travel time ratio across origin-destination pairs in the region – for instance, transit mode share was 31% for trips where the travel time ratio is less than 1.5 (travel time by transit was less than 1.5 times of that by auto). In contrast to the 2019 market assessment, the transit shares are lower for each travel time ratio bin. This is not surprising given the drop in transit market share regionwide, particularly for Metrorail. Also, given that Metrorail trips dropped by a larger amount than Metrobus, the portion of transit trips that are made by Metrobus has increased since 2019.

Figure 10: Transit Share Compared to Travel Time Ratio

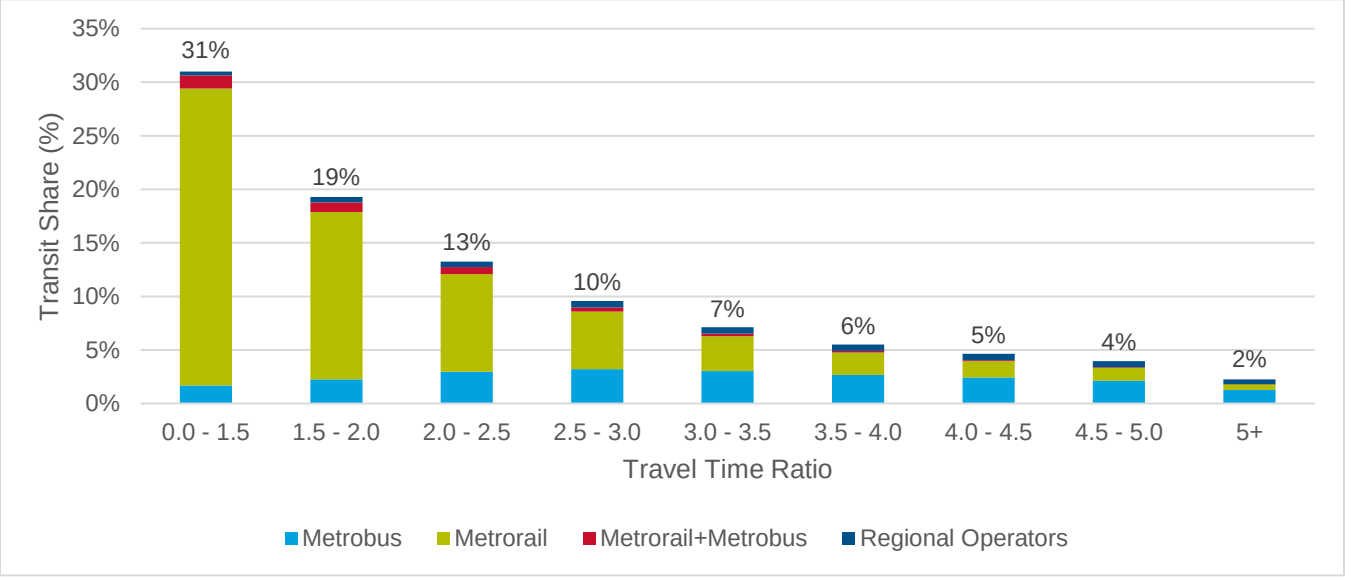


Figure 11 shows the distribution of travel time ratio values among trips with a viable transit path for 2019 and 2022. The main difference between 2019 and 2022 is that there were 48 percent of trips in the category with TTR of five or greater in 2019 whereas 2022 shows only 42 percent in that category. Overall, average travel time ratio dropped from about 4.5 to about 4.4. Note that these small differences may be attributable to changes in underlying data streams rather than changes in underlying competitiveness between 2019 and 2022.

Figure 11: Percent of Total Trips with Viable Transit Paths by Travel Time Ratio

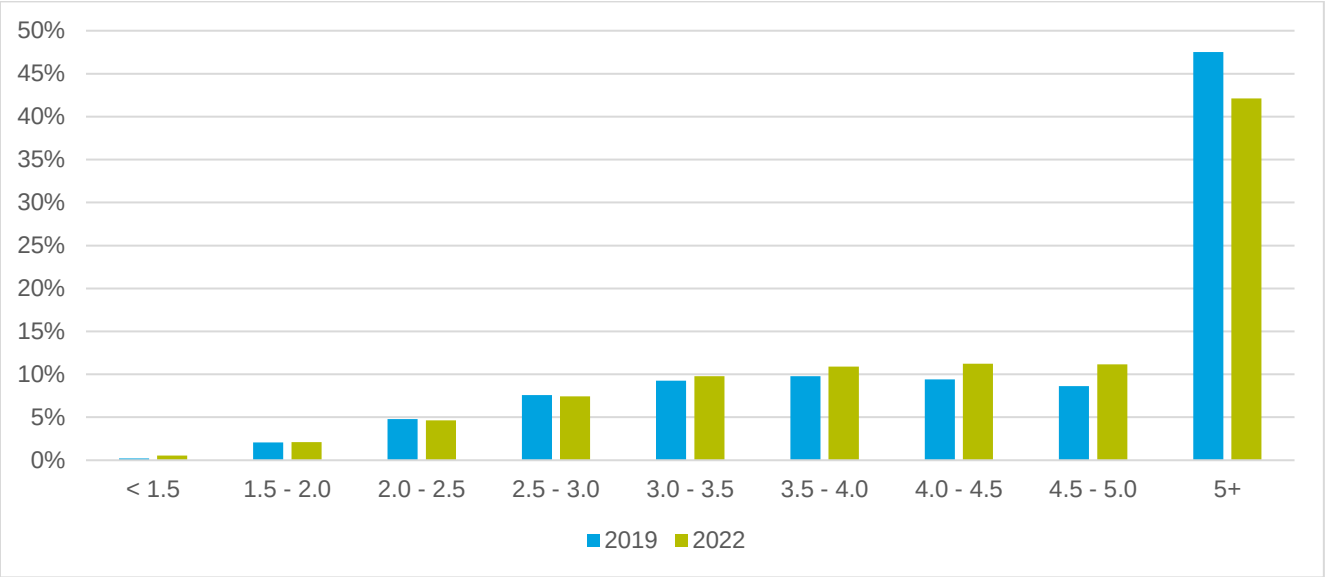


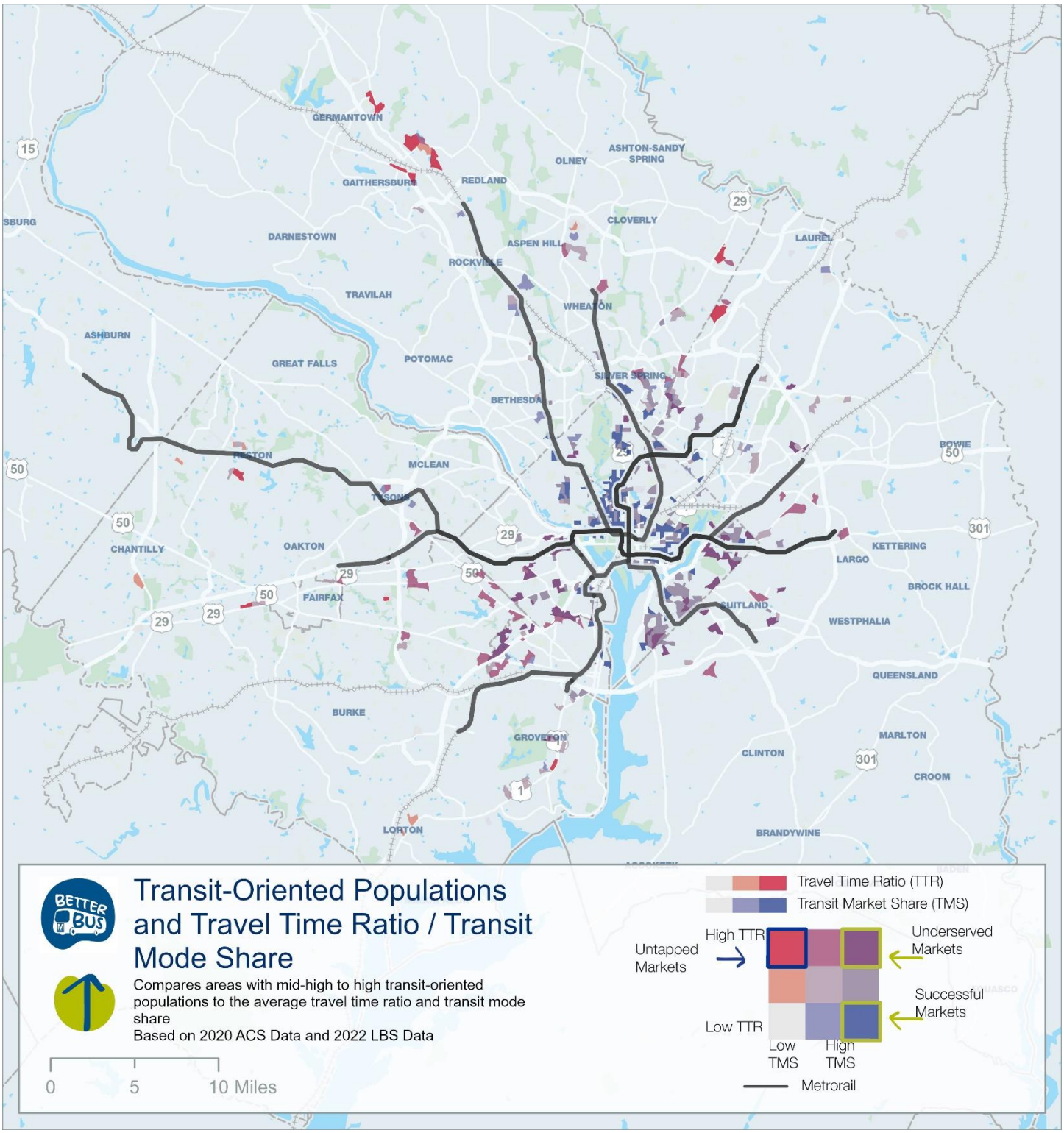
Figure 12 shows the average TTRs for transit-oriented populations, who have limited transportation options outside of transit.[3] The 2019 market assessment (pre-COVID) found that areas in Southeast DC, Arlington County, and along the Prince George's and Montgomery County border (especially near where the border meets DC) all had high TTRs and high transit mode shares, which indicates that the transit network in those areas is not providing convenient options for the trips that people most often make. In 2022, the same areas were found to have high TTRs and high transit mode shares, but it was found that these conditions extended to communities in Fairfax County as well. Transit mode share increased in Fairfax County, the result of total trips being reduced in these areas while transit trip totals were reduced by a more modest amount (effectively increasing mode share).

Also similar to 2019, the 2022 findings suggest that a number of the transit-oriented populations in the outer edges of the suburbs have high TTR and low transit market share and DC generally was found to have successful markets for these populations.

In all, the relative similarities between 2019 and 2022 patterns suggest that the recommendations and conclusions drawn from the 2019 market/scenario analyses remain valid post-pandemic, with the shifts noted throughout this memo. While overall transit shares have dropped, the changes in transit usage have been similar across the region. In particular, bus usage has decreased less than other modes, with more significant decreases during the peak periods. This is in line with the types of changes to the bus system included in the proposed Visionary and Year One bus networks.

[3] Note that a version of this figure that uses 2019 data can be found in the 2019 Market Assessment Report, Figure 14.

Figure 12: Transit-Oriented Populations Compared to Travel Time Ratio and Transit Mode Share



8. Transfers

Transfer patterns have changed between 2019 and 2022 as shown in **Table 7**. Of the ten locations with the most transfers in 2019, the percent of people transferring (rather than ending the transit stage of the trip) varied from 6 percent to 78 percent in 2019. Collectively, those 10 stations had a transfer share of 15 percent (3.7 million out of 24 million trip ends) in 2019. In 2022, the transfer share at those same 10 locations had decreased to 10 percent (910,000 out of 9.4 million trip ends). The biggest drops in transfer share were at Pentagon station and Anacostia station which dropped from 20 and 28 percent in 2019 to 9 and 10 percent in 2022. These figures are based on farecard data, and so changes may also reflect changes in farecard usage and tap and non-tap behavior across stations.

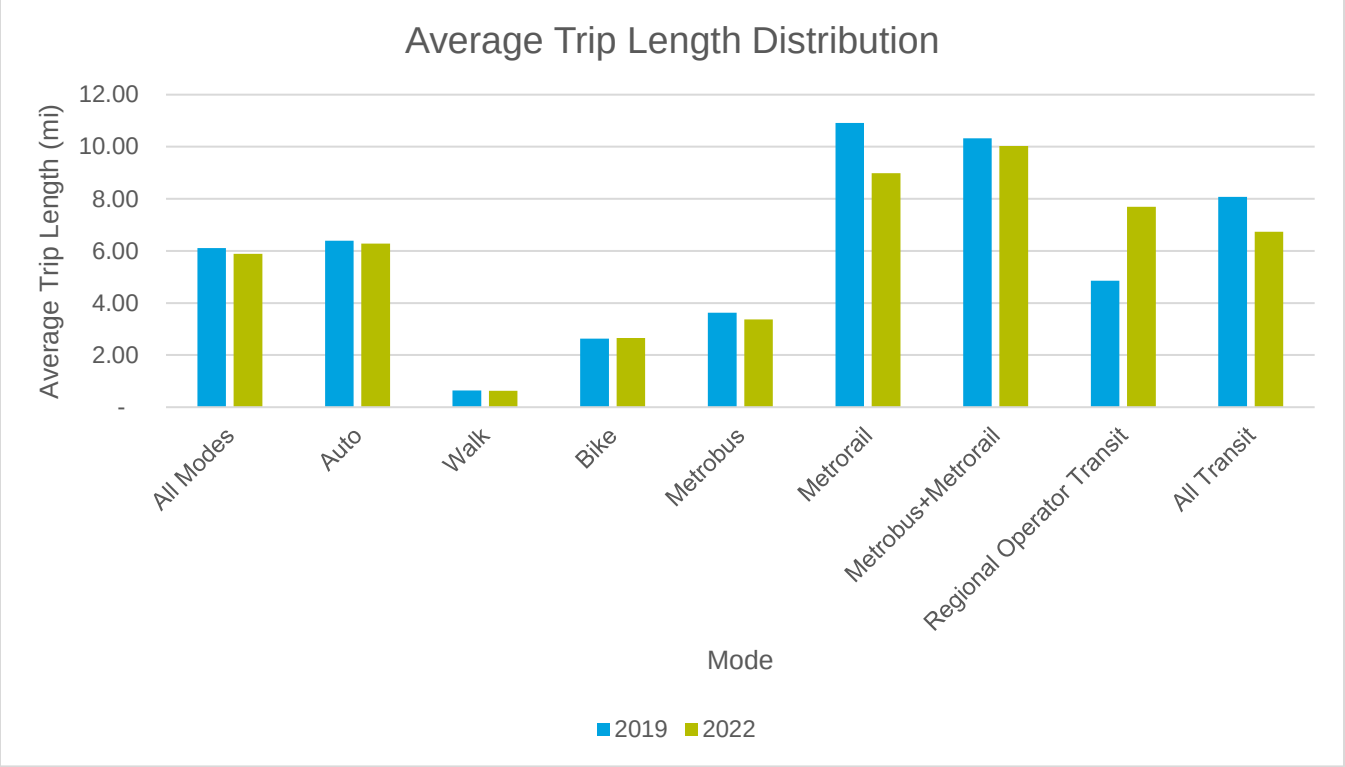
Table 7: Transfer Share at Top Ten Transfer Locations by Year

Location	2019 Transfer Share	2022 Transfer Share
Pentagon Metro Station	20%	9%
Anacostia Metro Station	28%	10%
Pentagon Transit Center	78%	70%
Fort Totten	18%	14%
Southern Avenue Metro Station	22%	14%
Rhode Island Avenue Metro Station	19%	11%
Pentagon City Metro Station	7%	8%
Ballston Metro Station	9%	7%
Georgia Ave-Petworth Metro Station	14%	11%
Columbia Heights Metro Station	6%	6%
Average	**15%**	**10%**

9. Trip Length Changes by Mode

Figure 13 shows average trip lengths by mode for 2019 and 2022. In general, the average trip lengths remained fairly steady. Two key observations can be made about the largest changes. First, rail trips saw a reduction in average trip length from about 11 miles to about 9 miles, a modest reduction of about 7 percent. Second, regional operator transit trips saw their average trip length increase from about 5 miles to nearly 8 miles.

Figure 13: Average Trip Length by Mode – 2019 vs. 2022



10. Market Classifications

As a part of the market assessment, the Origin-Destination travel markets were classified into four categories[4] based on transit market share and average travel time ratio (TTR) to contextualize the state of the transit market with respect to the overall travel. This was a critical precursor to the bus network redesign exercise, so that targeted transit improvements can be designed to move travel markets into the more productive categories.

- Successful Markets : Good transit market share and convenient transit options (low TTR)
- Underperforming Markets : Poor transit market share and convenient transit options (low TTR)
- Markets that Need Improvement : Good transit market share and inconvenient transit options (high TTR)
- Untapped Markets : Poor transit market share and inconvenient transit options (high TTR)

Table 8 shows the classifications assigned to travel markets (each representing an OD Geomarket pair) under the 2019 and 2022 conditions. 78% of the travel markets retained their classification, while 22% moved classifications. There were fewer "successful markets" in 2022, as compared to 2019 conditions.

Table 9 shows the movements for each market classification – 63% of the "Markets that Need Improvement" moved into "Successful markets" classification. These numbers were 5% and 4% for the underperforming and untapped markets. 20% of the "Successful Markets" almost moved to less desirable categories.

[4] Thresholds used for Transit Market Share = 8% and Travel Time Ratio = 4.0.

Table 10 summarizes the changes by the Origin Jurisdiction – Alexandria City (33%), Fairfax County (26%), and Arlington County(25%) had the highest proportion of travel markets changing classifications between 2019 and 2022. Dulles International Airport was the most steady in terms of retaining market classifications.

Table 8: Travel Markets by Classification in 2019 and 2022

Market Classification in 2019	Market Classification in 2022				
	Markets that Need Improvement	Successful Market	Under-performing Market	Untapped Market	Grand Total
Markets that Need Improvement	40	80	5	1	**126**
Successful Market	7	1004	232	0	**1243**
Underperforming Market	0	41	744	3	**788**
Untapped Market	5	10	149	80	**244**
Grand Total	**52**	**1135**	**1130**	**84**	**2401**

Table 9: Market Classification Changes (2019 to 2022)

Market Classification in 2019	Market Classification in 2022				
	Markets that Need Improvement	Successful Market	Under-performing Market	Untapped Market	Grand Total
Markets that Need Improvement	32%	63%	4%	1%	**100%**
Successful Market	1%	81%	19%	0%	**100%**
Underperforming Market	0%	5%	94%	0%	**100%**
Untapped Market	2%	4%	61%	33%	**100%**

Table 10: Change in Classification of Travel Markets by Origin Jurisdiction

Origin Jurisdiction	No Change in Market Classification	Change in Market Classification	Total
Arlington County	75%	25%	100%
Alexandria City	67%	33%	100%
District of Columbia	79%	21%	100%
Fairfax County	74%	26%	100%
Dulles International Airport	92%	8%	100%
Montgomery County	78%	22%	100%
Prince George's County	81%	19%	100%
Total	**78%**	**22%**	**100%**

11. Accessibility to Jobs and Essential Destinations

An efficient and reliable bus network allows users to access jobs and essential services in the region – including educational institutions (schools, colleges, and universities), medical facilities (hospitals, urgent care), and grocery stores.

Table 11 shows the number of total jobs and low-income jobs (jobs with earnings of $1250/month or less) between 2019 and 2022. **Figure 14** summarizes the average number of total jobs and low-income jobs per Census Block Group that can be accessed within 30 minutes of transit travel – for the entire region and equity-focused communities (EFCs).

For all jobs, there is a slight decrease in the percentage of jobs that can be accessed on average from a Census Block Group between 2019 and 2022 (6.3% vs 6.0%). The drop is more dramatic for EFC populations (5.4% to 4.8%) – in both years, the access for EFC populations lags behind the regionwide numbers.

For low-income jobs, the trend is reversed – there is a higher proportion of jobs that can be accessed within 30 minutes on transit, both at a regionwide and EFC level (although the increase is less pronounced for EFC populations).

Table 11: Number of Jobs in the WMATA compact region 2019 and 2022

Year	All Jobs	Jobs with earnings of $1250/month or Less
2019	2,263,241	240,894
2022	2,167,314	293,370

Figure 14: Number of jobs accessible within 30 mins on transit (2019 vs 2022)

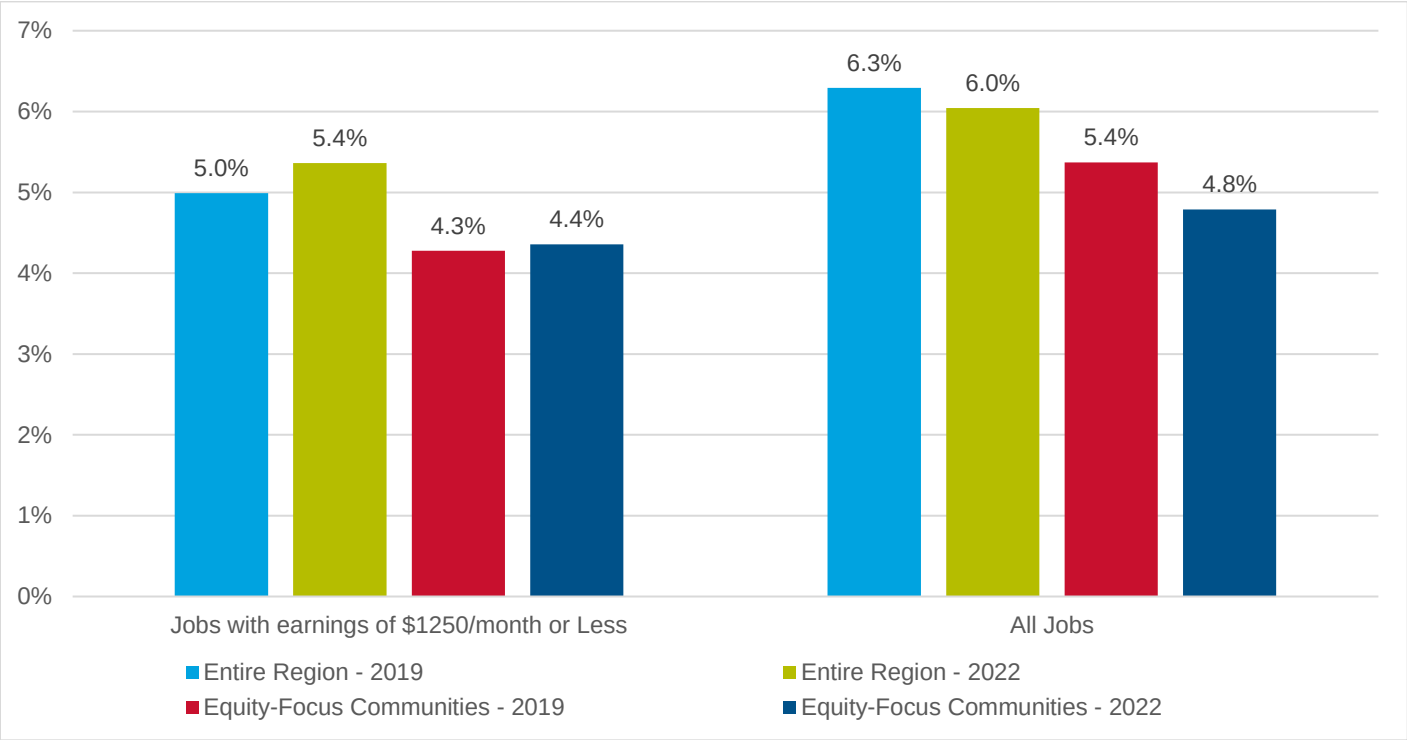
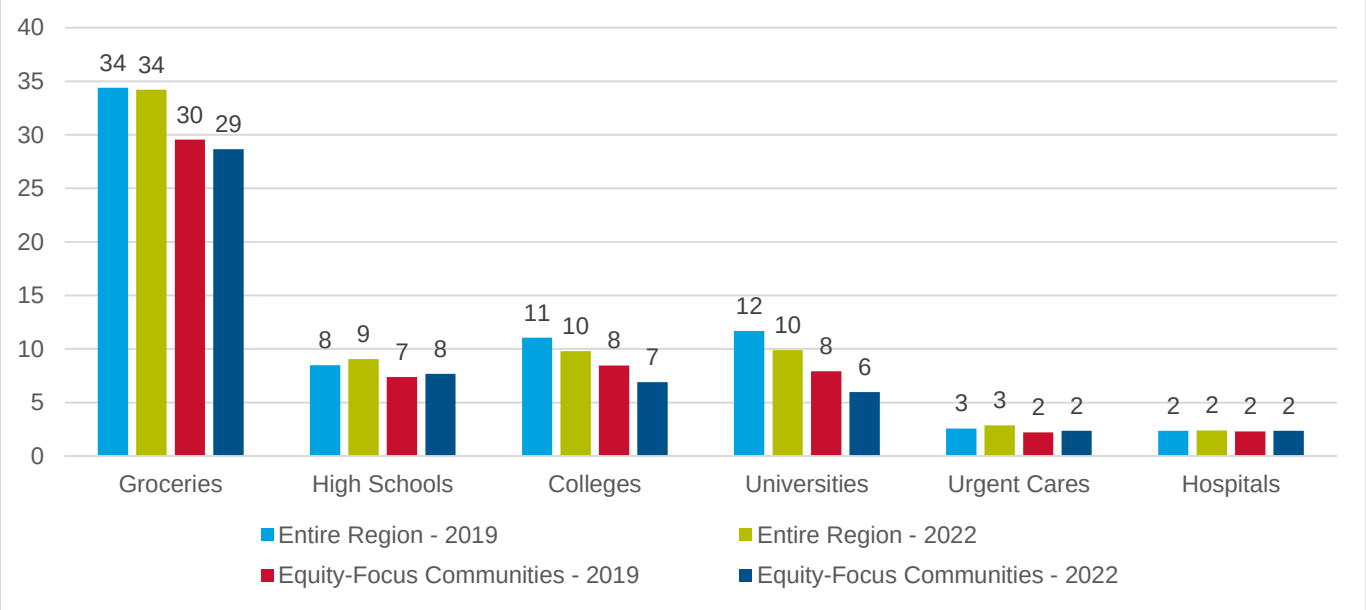


Figure 15 compares the number of essential destinations accessible within 30 mins on transit per Census Block Group for the entire region and EFCs between 2019 and 2022. At the regional level, the number of destinations remains more or less the same between 2019 and 2022 (except for colleges and universities, where it slightly decrease and high schools where it slightly increased). The trend is similar for EFCs. However, in both years, the number of destinations accessible by EFCs are lower than the regionwide numbers. Such areas that do not have easy transit access to these types of essential destinations warrant improved service and/or new connections.

Figure 15: Number of Essential Destinations accessible with 30 mins on transit (2019 vs 2022)



Appendix

A1. Trip Purpose Changes by Day of the Week, Time of Day, Mode

Changes in trips by purpose and day of week, purpose and time of day, and purpose and mode were also examined. The intersection of purpose and day of week and of purpose and time of day did not show any clear signals beyond the changes observed for purpose, time of day, and day of week individually. However, the intersection of purpose with mode showed that certain segments display different patterns for different modes (see **Table 12**). For instance, while overall non-home-based trip making dropped by the largest amount between 2019 and 2022, among transit trips, Home-Regular travel decreased by more than Other-Other travel (54 percent vs. 49 percent) and by almost as much as Regular-Other (61 percent). Additionally, home-based travel actually increases among walk trips.

Table 12: Change in Trips by Purpose and Mode – 2019 vs. 2022

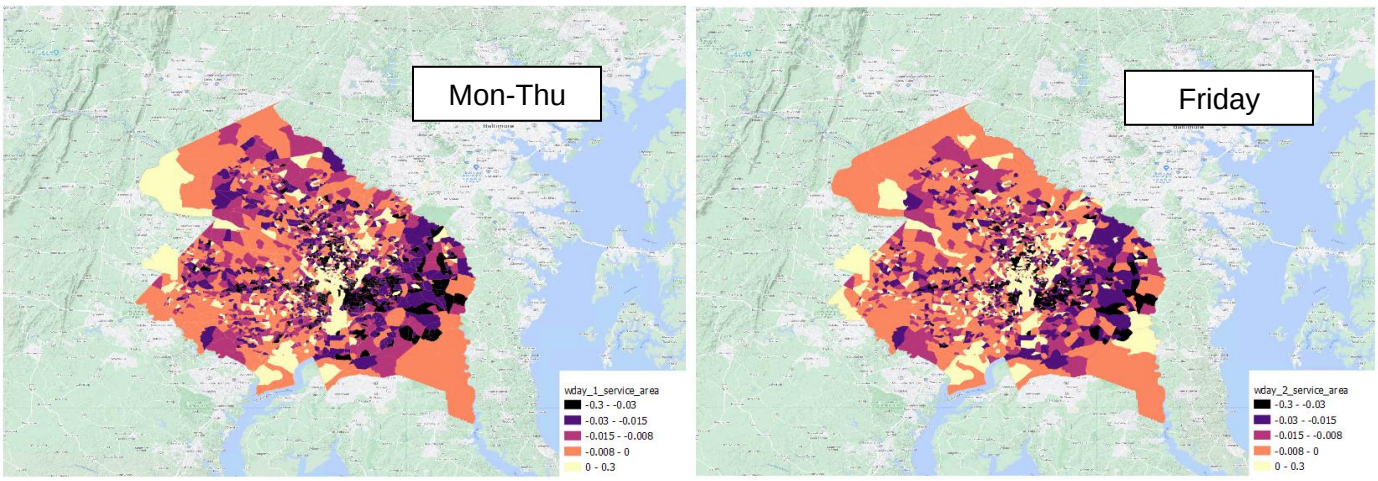
Mode	Trip purpose	2019 trips	2022 trips	2019%	2022%	% change in trips
Auto	HOME-REGULAR	1,805,454	1,438,269	16%	17%	-20%
Auto	HOME-OTHER	5,325,333	4,831,023	48%	59%	-9%
Auto	REGULAR-OTHER	1,238,176	566,899	11%	7%	-54%
Auto	OTHER-OTHER	2,769,920	1,389,746	25%	17%	-50%
Walk	HOME-REGULAR	43,690	56,824	6%	9%	30%
Walk	HOME-OTHER	377,108	429,050	48%	68%	14%
Walk	REGULAR-OTHER	119,089	33,675	15%	5%	-72%
Walk	OTHER-OTHER	246,210	107,751	31%	17%	-56%
Bike	HOME-REGULAR	26,077	19,034	18%	19%	-27%
Bike	HOME-OTHER	70,453	62,189	48%	61%	-12%
Bike	REGULAR-OTHER	18,577	6,234	13%	6%	-66%
Bike	OTHER-OTHER	31,263	14,605	21%	14%	-53%
Metrobus	HOME-REGULAR	122,477	92,693	53%	53%	-24%
Metrobus	HOME-OTHER	58,253	47,577	25%	27%	-18%
Metrobus	REGULAR-OTHER	11,817	7,771	5%	4%	-34%
Metrobus	OTHER-OTHER	39,301	27,322	17%	16%	-30%
Metrorail	HOME-REGULAR	267,754	92,554	58%	42%	-65%
Metrorail	HOME-OTHER	69,480	73,691	15%	33%	6%
Metrorail	REGULAR-OTHER	39,723	14,076	9%	6%	-65%
Metrorail	OTHER-OTHER	83,981	41,374	18%	19%	-51%
Metrobus+Metrorail	HOME-REGULAR	28,861	7,646	71%	61%	-74%
Metrobus+Metrorail	HOME-OTHER	6,100	2,750	15%	22%	-55%
Metrobus+Metrorail	REGULAR-OTHER	1,703	542	4%	4%	-68%
Metrobus+Metrorail	OTHER-OTHER	3,893	1,596	10%	13%	-59%
Regional Transit Operators	HOME-REGULAR	38,174	16,987	33%	34%	-56%

Mode	Trip purpose	2019 trips	2022 trips	2019%	2022%	% change in trips
Regional Transit Operators	HOME-OTHER	37,656	22,110	33%	44%	-41%
Regional Transit Operators	REGULAR-OTHER	12,568	3,192	11%	6%	-75%
Regional Transit Operators	OTHER-OTHER	26,223	7,599	23%	15%	-71%
Total Transit	HOME-REGULAR	457,266	209,879	54%	46%	-54%
Total Transit	HOME-OTHER	171,489	146,128	20%	32%	-15%
Total Transit	REGULAR-OTHER	65,812	25,581	8%	6%	-61%
Total Transit	OTHER-OTHER	153,397	77,890	18%	17%	-49%

A2. Detailed Changes in Locations

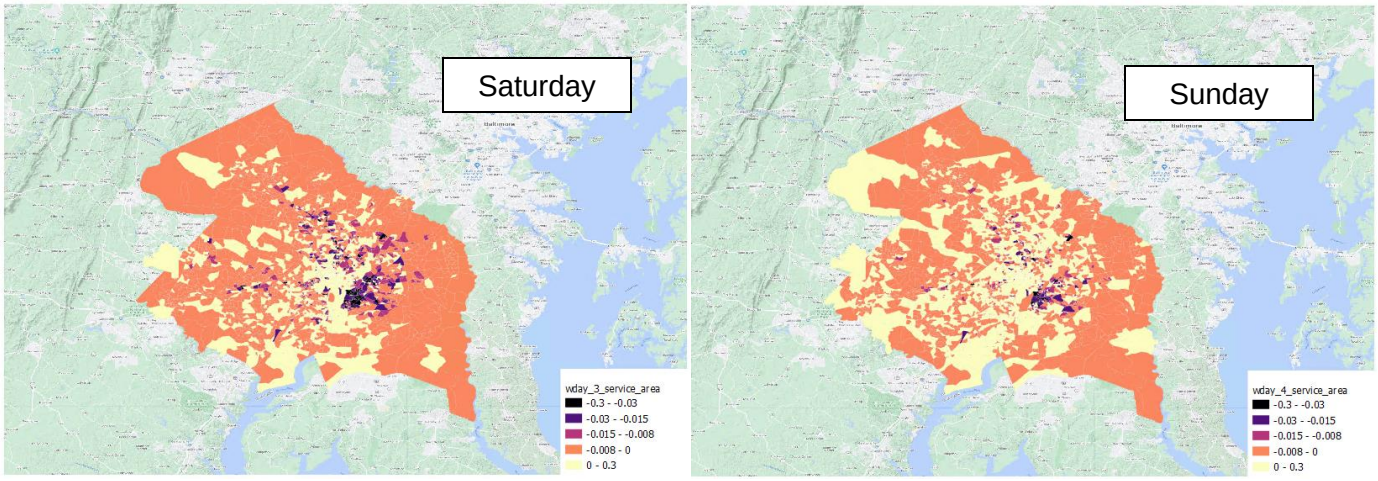
Figure 16 and **Figure 17** show how transit market shares changed across the region and by day of week. Fridays were split out separately than other weekdays to test whether the observed changes were the result of flexible Friday work schedules. While Fridays were found to be similar to other weekdays in this regard, the largest changes in transit share occurred on Monday-Thursdays and Fridays and were located in the southeastern quadrant of the service area, particularly in Prince George's County, with transit share falling by between 3 percent and 30 percent at the block group level. Transit market share actually increases for 364 block groups on Monday-Thursdays and 515 on Fridays. These represent about 14 and 20 percent of the service area, respectively. These block groups are generally found centrally east-to-west, and span the length of the region north-to-south (with a few exceptions).

Figure 16: Changes in Transit Share by Origin Block Group for Monday-Thursday and Fridays – 2019 vs. 2022



Transit market share dropped by significantly more on weekdays than weekends. In total, 779 block groups saw increases to transit market share on Saturdays (30 percent of the service area) and 1200 saw increases on Sundays (47 percent of the service area). In general, the areas seeing an increase tend to be more centrally located, similar to those seen on weekdays.

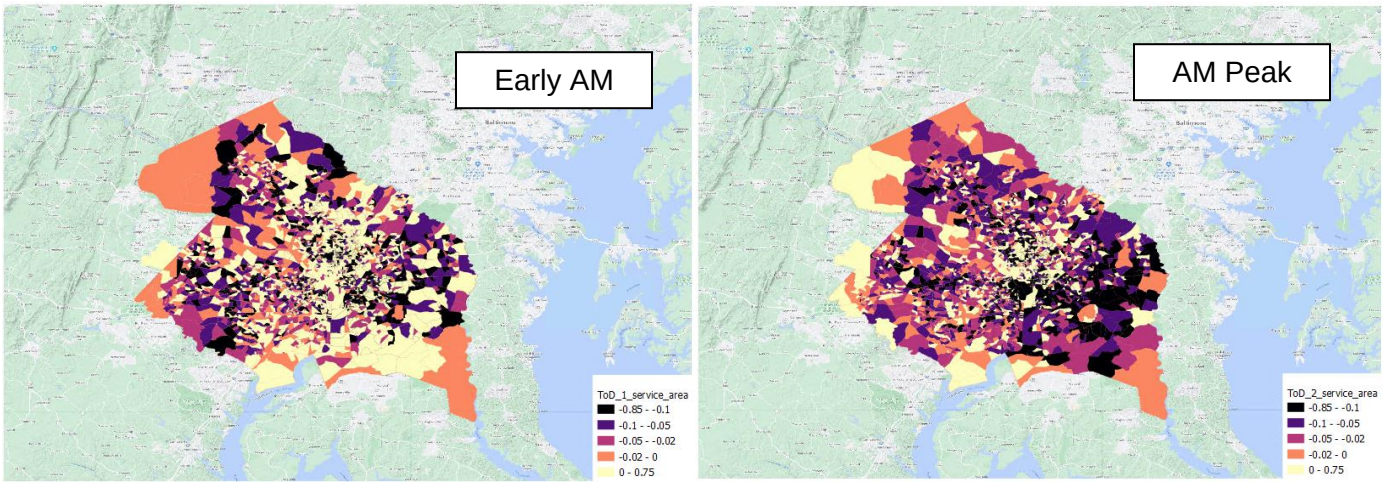
Figure 17: Changes in Transit Share by Block Group for Saturdays and Sundays – 2019 vs. 2022



When considering different times of day[5] and trip purposes, the largest decreases in transit market share occurred in similar locations across the region, as shown in **Figure 18, Figure 19, Figure 20, Figure 21, and Figure 22**. The changes are most pronounced in the morning Peak period and among Home-Regular trips. This is not surprising given that the morning peak period travel is most associated with Home-Regular travel.

There are locations in some areas of the region where transit market share increased between 2019 and 2022. As noted, these locations tend to be more concentrated in the center of the region geographically. Certain segments also have more increases in transit mode share, including non-home-based travel[6] (with 1300 to 1600 block groups having positive change compared to 400 to 800 among home-based trip segments) and in the evenings and early morning (with 1,100 to 1,500 positive change block groups compared to only 500 to 700 in the peak periods and midday).

Figure 18: Changes in Transit Share by Block Group for Early AM and AM Peak – 2019 vs. 2022



[5] Time of day periods include the following: Early AM – 4am-6am; AM Peak – 6am-9am; Midday – 9am-3pm; PM Peak – 3pm-7pm; Evening – 7pm-11pm; Overnight – 11pm-4am.
[6] Regular-Other and Other-Other trip purposes.

Figure 19: Changes in Transit Share by Block Group for Midday and PM Peak – 2019 vs. 2022

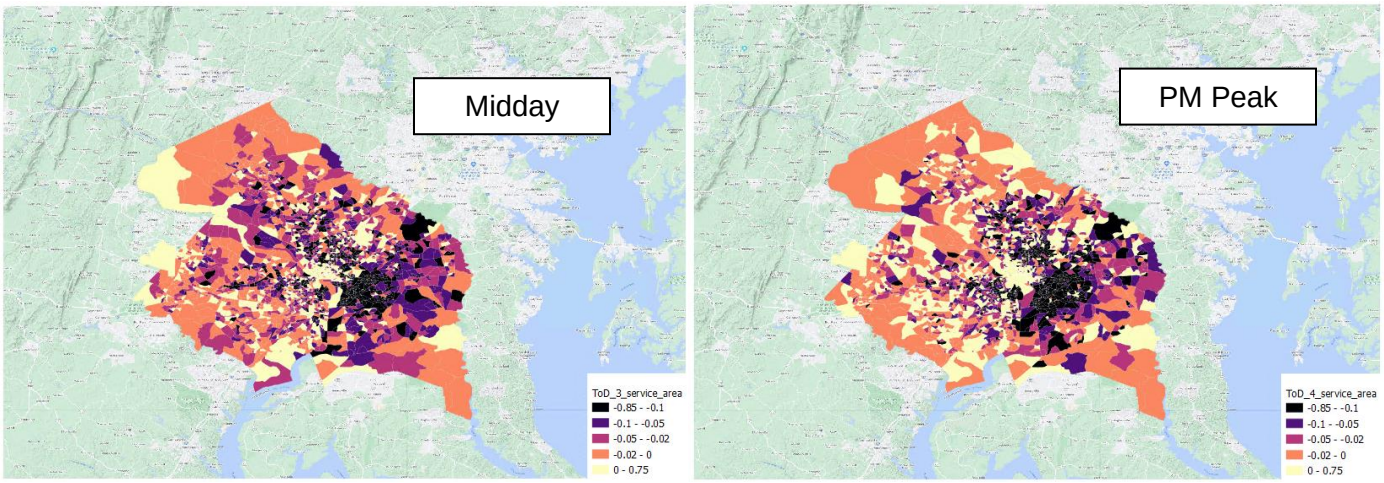


Figure 20: Changes in Transit Share by Block Group for Early Night and Late Night – 2019 vs. 2022

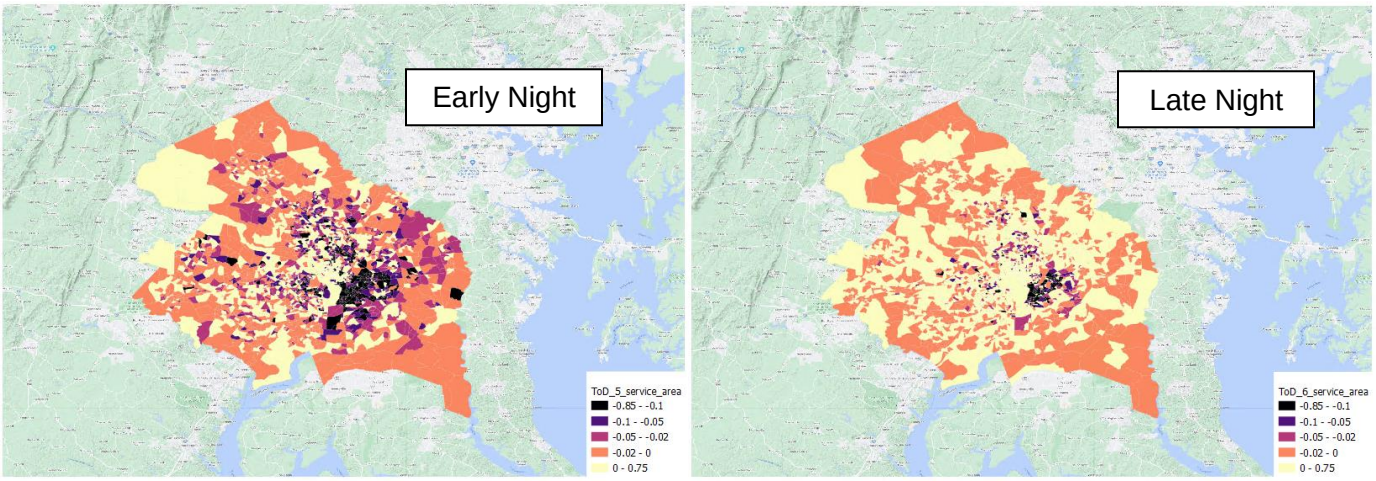


Figure 21: Changes in Transit Share for Home-Regular (H-R) and Home-Other (H-O) Trips – 2019 vs. 2022

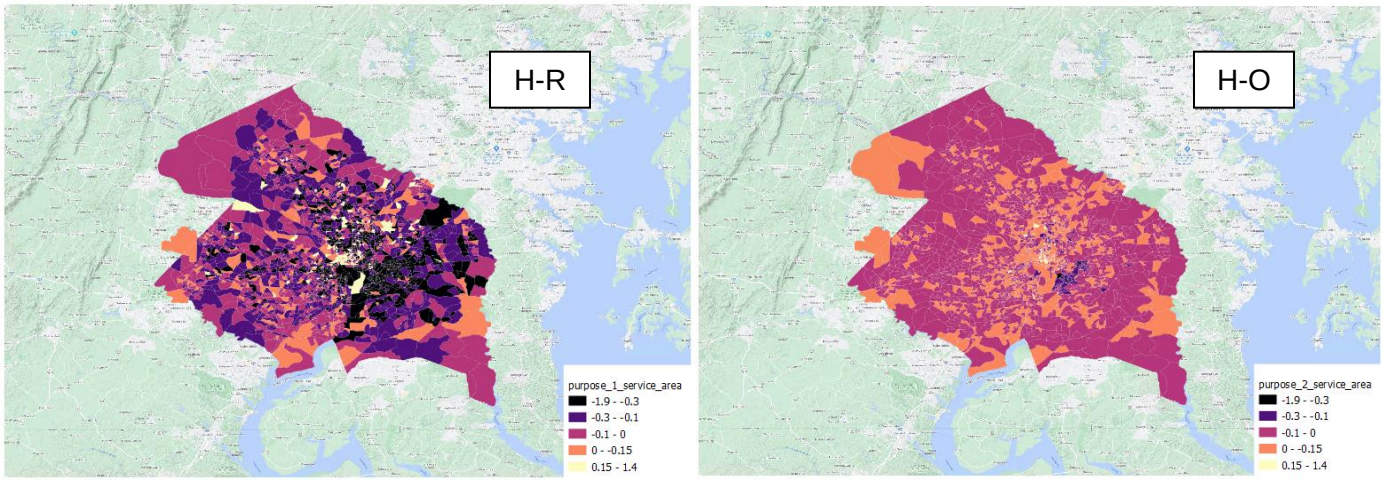
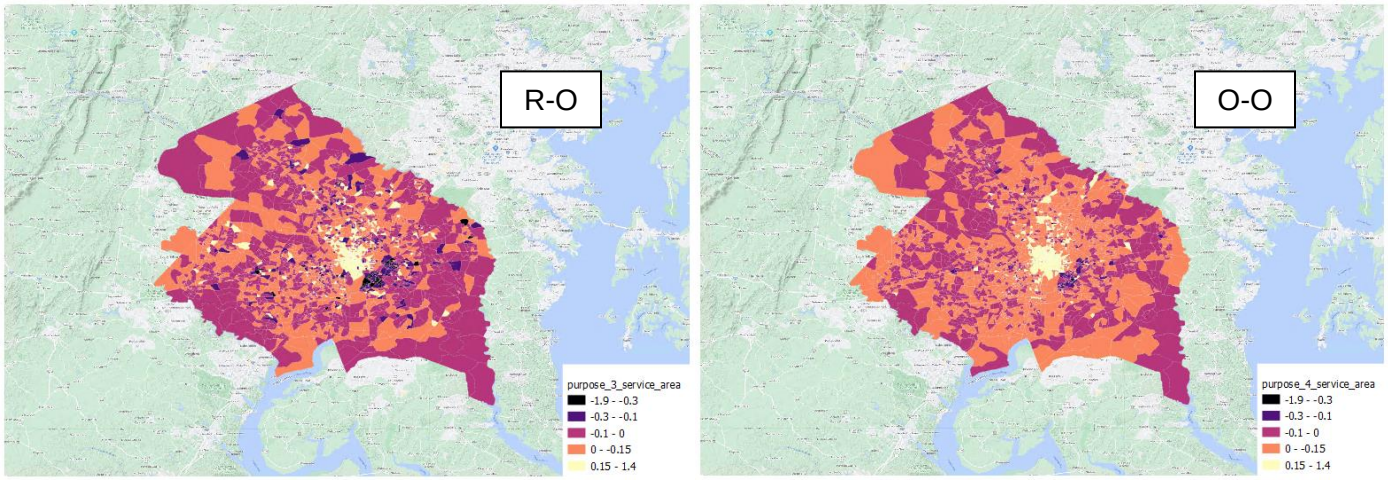


Figure 22: Changes in Transit Share for Regular-Other (R-O) and Other-Other (O-O) Trips – 2019 vs. 2022



Transit shares and trips were also examined at the jurisdictional O-D level; transit travel patterns by jurisdictional pair have changed in important ways. The largest decreases in transit trips occurred for trips starting and/or ending in DC. Of the 15 pairs that have a drop in transit trips greater than 60 percent, 11 have DC as either the origin or destination jurisdiction. (Interestingly, the DC to DC O-D pair saw a reduction in transit trips of only 40 percent). On the other hand, 21 O-D pairs saw an increase in transit trips, and these O-D pairs were concentrated in five jurisdictions:

- City of Alexandria (includes 6 of the 21 O-D pairs with a positive change in transit trips)
- Dulles Airport[7] (11 of 21 O-D pairs)

[7] Transit travel to Dulles Airport will have been impacted by the opening of the Silver Line Metrorail extension of November 2022.

- City of Fairfax (7 of 21 O-D pairs)
- Fairfax County (6 of 21 O-D pairs)
- Falls Church (6 of 21 O-D pairs)

Notably, all five of these jurisdictions are in Virginia. Interestingly, Arlington County did not appear in any of the 21 O-D pairs where transit trips increased.

Focusing on Metrobus travel, results are more sporadic. While 19 O-D pairs saw a decrease in Metrobus trips of greater than 60 percent, 12 saw an increase in Metrobus trips. The O-D pairs with a decrease of 60 percent or more were distributed relatively evenly across most jurisdictions, with the exceptions of Arlington County and the City of Fairfax, which were observed in only one such O-D pair each. On the other hand, there were three jurisdictions that were part of multiple O-D pairs with an increase in bus trips, including:

- City of Alexandria (includes 5 of the 12 O-D pairs with a positive change in Metrobus trips)
- Dulles Airport (4 of 12 O-D pairs)
- City of Fairfax (5 of 12 O-D pairs)