2023 TRAVEL MONITORING REPORT

Montgomery Planning

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Chapter 1: Introduction

The 2023 Travel Monitoring Report (TMR) provides residents, developers, and decision makers with insights into various aspects of Montgomery County's transportation system. As with each edition of the TMR, the report strives to explore and leverage new alternative transportation datasets and analytical tools that help provide a clearer vision of how the county is meeting its transportation goals, objectives, and metrics defined in the General Plan, *Thrive Montgomery 2050*, and functional plans. These goals, objectives, and metrics are rapidly evolving as the county strives to create a more balanced, equitable, and safe transportation system.

This report was created by the Montgomery County Planning Department, part of the Maryland-National Capital Park and Planning Commission (M-NCPPC). With each subsequent edition of the TMR, Planning Department Staff aim to better align the report's contents with metrics that drive policy decisions and discussions within the Planning Department that have been vetted by the Planning Board and County Council, including those described in Table 1, below. The TMR serves as a compendium for the agency's transportation-related monitoring activities.

Table 1: Progress Measures as Identified by Various Policy Documents Included in this Document

Source	Goal/Metric/Progress Measure	Spatial Resolution
Thrive Montgomery 2050	Vehicle Miles Traveled (VMT)	Countywide, Growth Corridors
	Non-Auto Driver Mode Share	Countywide, Growth Map Areas
	Average Commute Time by Mode	Countywide
	Transit Coverage	Transportation Policy Areas, Equity Focus Areas
	Job Accessibility via Transit	Activity Centers
	Difference between Travel Time by Car and Transit	Activity Centers
Complete Streets Design Guide (CSDG)	Average Protected Crossing Spacing Compared to CSDG Guidance	Growth Corridor
	Percent Comfortable Walkways	Growth Corridor
	Percent Master-Planned Bikeways	Growth Corridor
	Completeness of Street Grid	CSDG Area Types Organized by Growth Corridors
Bicycle Master Plan	Increase Bicycling Rates in Montgomery County (Goal 1)	Countywide, Transportation Management Districts, Metro Rail Stations, Schools
	Create a Highly Connected, Convenient, and Low-Stress Bicycling Network (Goal 2)	Countywide, Transportation Policy Areas, Transit Stations, Public Schools, Other Public Facilities

Source	Goal/Metric/Progress Measure	Spatial Resolution
	Provide Equal Access to Low-Stress Bicycling for All Members of the Community (Goal 3)	Equity Focus Areas, Title 1/ Focus or FARM Public Schools
	Improve the Safety of Bicycling (Goal 4)	Countywide, Equity Focus Areas
	Facility Construction	Bikeways, Bicycle Parking
	Bicycle Supportive Programs & Legal and Policy Framework	Countywide
Pedestrian Master Plan	Increase Walking Rates and Pedestrian Satisfaction in Montgomery County (Goal 1)	Countywide, Public Schools, Transit Stations, Transportation Management Districts
	Create a Comfortable, Connected, Convenient Pedestrian Network (Goal 2)	Countywide, Public Schools, Transit Stations, Other Public Facilities
	Enhance Pedestrian Safety (Goal 3)	Countywide
	Build an Equitable and Just Pedestrian Network (Goal 4)	Equity Focus Areas, Title 1/ Focus or FARM Public Schools

In addition to this summary document, the 2023 TMR is supplemented by a set of online and interactive data dashboards intended to provide users with interactive tools to better explore the numerous transportation datasets that are managed by the Planning Department and other transportation agencies in the region. The metrics and analyses in these dashboards were selected based on their inclusion in past TMR reports and their relevance to transportation goals, metrics, and progress measures identified in the policy documents noted in Table 1.

Key Findings

- According to a recent survey conducted by the Metropolitan Washington Council of Governments, compared to 2019, there was a nearly five-fold increase in the percentage of commute trips replaced by telework in 2022. Overall, 48% of commute "trips" were replaced by telework in 2022 compared to just 1 in 10 in 2019, eliminating over 2.9 million daily commute trips.
- Travel time along I-270 between Frederick County and the Capital Beltway was significantly shorter in 2022 compared to 2019. Travelers commuting round trip on average saved one hour and 40 minutes each workweek. Travel times on the Capital Beltway were also shorter in 2022, although to a lesser degree.
- After a sharp decline at the onset of the pandemic, bus ridership steadily rebounded with a pause during the COVID Delta Variant during the winter of 2021-2022. Ridership in November 2022 was still, however, 31% and 18% below January 2020 levels for Ride-On and Metrobus respectively.

- Although Metrobus ridership has rebounded, rail ridership remains well below pre-pandemic levels. Overall, average 2022 weekday Red Line station entries in Montgomery County are approximately 55% below pre-pandemic levels.Overall, 52% of respondents are satisfied with the overall pedestrian experience in Montgomery County, with respondents in urban areas reporting the highest rates of satisfaction (60%) and those in exurban/rural areas reporting the lowest satisfaction (46%).
- Pedestrians were involved in only 4% of total crashes between 2015 and 2022, but they accounted for 26% of severe injuries and fatalities.
- Equitable access to low-stress bicycling has decreased since the *Bicycle Master Plan* was approved. EFAs had 84% of the low-stress connectivity that non-EFAs experience in December 2022, down from 87% in December 2020 and from 89% in December 2018.
- Countywide bicycle connectivity grew slightly between December 2020 and December 2022 from 15% to 16%. Upon completion of projects that are under construction, funded in the capital improvements program or development projects approved in 2021 and 2022, countywide connectivity will grow to 20%.

Moving Beyond Vehicle Level of Service Metrics

Since its inception nearly two decades ago, the TMR has expanded the purview of its monitoring effort. Initially, the document served as an accounting report to assess whether roadway construction was keeping pace with development. As better congestion modeling tools became available, the report shifted its focus to primarily monitoring highway congestion. More recently, as the county began to focus on safety and planning for a transportation system that serves all users (not simply those who drive cars), the report expanded its analysis to include many transportation modes. It is important to consider why the Planning Department emphasizes planning for other modes of transportation and has shifted away from solely considering vehicle level of service metrics as the prime determinant of transportation investments and planning.

Single occupancy vehicles (SOVs) cause many negative externalities, costs that are borne by society. These externalities cause inefficiencies in the transportation sector, as the private costs to vehicle users are artificially lowered, causing a demand for SOVs that exceeds the socially efficient number of vehicles.

One of the biggest negative externalities of this artificial inflation of SOV demand is congestion. In 2019, congestion on Montgomery County's interstates and Thrive Growth Corridors cost users approximately $422 million. The cost of congestion in 2022 stood around $342 million. A simple application of microeconomics to a hypothetical travel corridor illustrates the difference between the equilibrium demand for SOV travel and the socially optimal demand for traffic volume (Table 2).

Table 2: Hypothetical Illustration of Congestion Externalities along a 10-Mile Corridor[1]

Volume (A)	Trip Time (B) (Min)	Private Trip Cost (C)	Increase in Time Caused by One Additional Vehicle (D) (Min)	Increase in Total Travel Time for All Vehicles (E) (Min)	External Trip Cost (F)	Social Trip Cost (G)
400	10.00	$8.74			$0.00	$8.74
599	10.47					
600	10.48	$8.88	0.004	2.4	$0.72	$9.59
1,199	15.27					
1,200	15.28	$10.31	0.012	14.4	$4.29	$14.61
1,399	17.98					
1,400	18.00	$11.12	0.015	21.0	$6.26	$17.39
1,599	21.26					
1,600	21.28	$12.10	0.018	28.8	$8.59	$20.69
1,799	25.10					
1,800	25.12	$13.25	0.020	36.0	$10.74	$23.99

In this hypothetical example, travel along a 10-mile corridor takes approximately 10 minutes at free-flow speed. However, travel time begins to increase as more cars enter the corridor, causing delays not only to the driver entering the corridor, but also to all other vehicles previously traveling on the roadway. The private trip cost (third column) depends on a monetary travel cost (57.5 cents/mile) and an opportunity time cost (30 cents/min). Once the volume surpasses 400 vehicles, every additional vehicle causes an increase in travel time. The rows highlighted in blue illustrate the marginal impacts to one additional vehicle entering the corridor, compared with the preceding white row.

For example, the travel time for 1,399 vehicles is 17.985 minutes, and the travel time for 1,400 vehicles is 18 minutes, an increase of .015 minutes for every vehicle when the 1,400th vehicle enters the roadway (column D). The 1,400th vehicle increases the total travel time for all vehicles (column E), the external trip cost (the additional cost external to the 1,400th vehicle caused by this vehicle entering the corridor, column F), and the total social cost (column G). The social cost is a combination of the private vehicle cost and the external trip cost borne by society and represents the actual cost incurred by the 1,400th vehicle.

[1] This example is adapted from O'Sullivan, A (2009). Urban Economics, 7th Edition. McGraw-Hill.

Figure 1: Graphical Representation of Congestion Externalities and Inflated Single Occupancy Vehicle (SOV) Demand

When the costs of congestion (private trip cost curve) are not internalized, equilibrium is reached at point A (approximately 1,600 vehicles). Internalizing the costs of congestion, however, means that the socially efficient number of vehicles (point B) is much lower, approximately 1,375 vehicles, with a cost of $17.56 per trip. This example illustrates only one negative externality of SOV travel. Others include air pollution, noise pollution, opportunity costs of forgoing more productive land uses, property damage, injuries and deaths associated with accidents, and issues of equity. If these externalities and opportunity costs were internalized, the demand for SOV travel would dramatically shift.

Chapter 2: Travel Trends

The COVID-19 pandemic had obvious and profound impacts on the demand for transportation services in Montgomery County. The demand for transportation is largely derived, meaning most travel is not done for the sake of traveling but rather to carry out other tasks, and as demand for other services plummeted, so did travel (apart from bike, pedestrian, and e-commerce travel). What is becoming clearer is that the shift to teleworking continues to impact our transportation system now, three years after the beginning of the pandemic. A survey of 8,396 employed residents in the Washington, DC area estimated that there was "a nearly five-fold increase in the percentage of commute trips replaced by telework in 2022, compared with 2019." Overall, 48% of commute "trips" were replaced by telework in 2022, compared with just 1 in 10 in 2019, which means over 2.9 million daily commute trips have been eliminated.[2]

Vehicular Travel

Figure 2 compares the average weekday travel time on the county's interstates during 2019, 2020, and 2022. Travel time along I-270 between Frederick County and the Capital Beltway was significantly shorter in 2022 than in 2019. In 2022, travel time during the 8 a.m. hour in the southbound direction was 8 minutes shorter in 2019 (Figure 2). Travel time during the 5 p.m. hour in the northbound direction was approximately 9 minutes shorter than in 2019, potentially saving a commuter traveling this section of I-270 an average of one hour and 40 minutes each workweek. Peak travel times along the Capital Beltway were also shorter in 2022, although to a lesser degree (Appendix A). This reduction in travel time estimated from big data corroborates the finding that in 2022, 52% of workers reported a commute time of 30 minutes or fewer, compared with 40% whose commutes were this length in 2019.[3]

[2] State of the Commute Survey Report, Washington Council of Governments: https://www.mwcog.org/documents/2022/09/20/state-of-the-commute-survey-report--carsharing-state-of-the-commute-telework-travel-surveys/

[3] State of the Commute Survey Report, Washington Council of Governments.

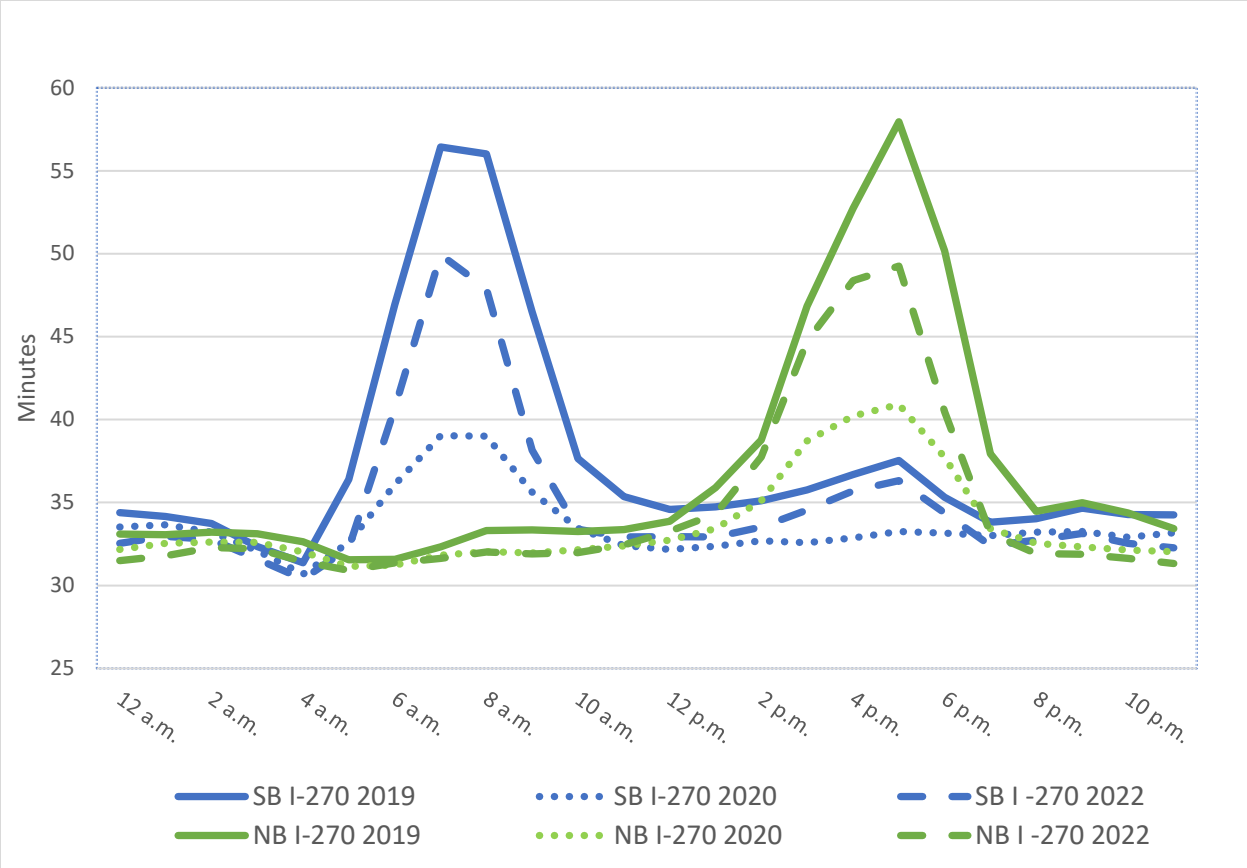


Figure 2: Average 2019, 2020, and 2022 Weekday Travel Time on I-270 between the Frederick County Line and Capital Beltway[4]

Vehicular volumes, which plummeted during 2020, have not rebounded uniformly across the county. Annual average daily traffic (number of vehicles expected to pass a given location on an average day) are still down approximately 7% compared with 2019 (Table 3) at Maryland State Highway's permanent counter locations. Traffic volume at permanent counter locations on the Capital Beltway is still approximately 11% below 2019 levels, while traffic volume on I-270 is 1.5% below 2019 levels (Table 3). The estimated vehicle miles traveled (VMT) on the county's Growth Corridors is approximately 9.4% below 2019 levels. (Please see Chapter 3 for a map of the county's Growth Corridors.)

Table 3: Traffic Volumes at Maryland State Highway Permanent Counter Locations[5]

Location	2019 AADT	2020 AADT	2022 AADT	2019–2022 Change
I-270 South of MD 121	111,270	93,772	110,253	-0.9%
I-495 at Persimmon Tree Rd	231,287	175,735	206,953	-10.5%
I-495 West of MD 650	215,614	178,006	190,914	-11.5%
I-270 South of Middlebrook Rd	175,352	144,437	172,134	-1.8%
Total	**733,523**	**591,950**	**680,254**	**-7.3%**

[4] Inrix travel time data summarized using RITIS' Probe Data Analytics Suite.
[5] Maryland State Highway's Internet traffic Monitoring System (https://maps.roads.maryland.gov/itms_public/).

In addition to lower traffic volumes, 2020 brought a flattening of the traditional dichotomous peak travel patterns, which have now returned. Figures 3 and 4 illustrate this phenomenon by comparing the average measured weekday speed as a percentage of free-flow speed during 2019, 2020, and 2022 along Growth Corridors described in *Thrive Montgomery 2050* (Thrive). Although not a direct measure of volume, this speed ratio is a good surrogate for congestion and hence volume. Presumably, the lower the speed ratio, the higher the volume of vehicles.

The solid lines in Figures 3 and 4 illustrate the traditional peak direction/period traffic pattern that occurred in May 2019 along north–south Thrive Growth Corridors. For example, the average southbound weekday speed across all Thrive Growth Corridors in the 8 a.m. hour was 79% of free-flow speed in 2019. The dashed lines, however, show that the peak periods/peak directions were attenuated. The average southbound weekday speed during the 8 a.m. hour in 2020 was 96.5% of free flow speed in 2020. Finally, the dotted lines represent travel patterns observed during 2022. This analysis indicates that the traditional peak direction/period pattern of travel is returning to Montgomery County. For example, the average southbound weekday speed across all Thrive Growth Corridors in the 8 a.m. hour was 81% of free-flow speed in 2022.

Interestingly, travel speeds did not differ much from historical averages in the southbound direction during the p.m. peak period in 2020. This may be a product of people using remote work flexibility to conduct personal errands, as well as an increase in e-commerce deliveries. It is important to understand that factors outside of volume can impact speed, including construction, speed limit reductions, road reconfigurations, and changes in speed enforcement.

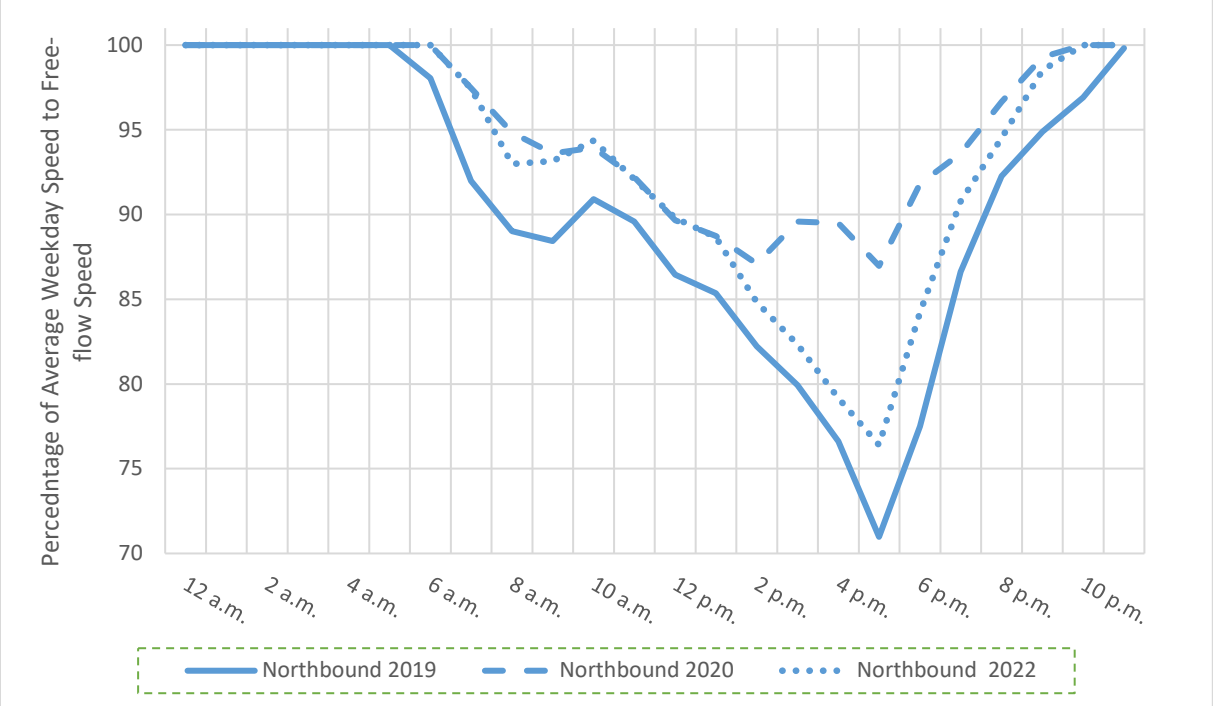


Figure 3: Average Weekday Northbound Speed as a Percentage of Free-Flow Speed along Thrive's Growth Corridors[6]

[6] Inrix travel time data summarized using RITIS' Probe Data Analytics Suite.

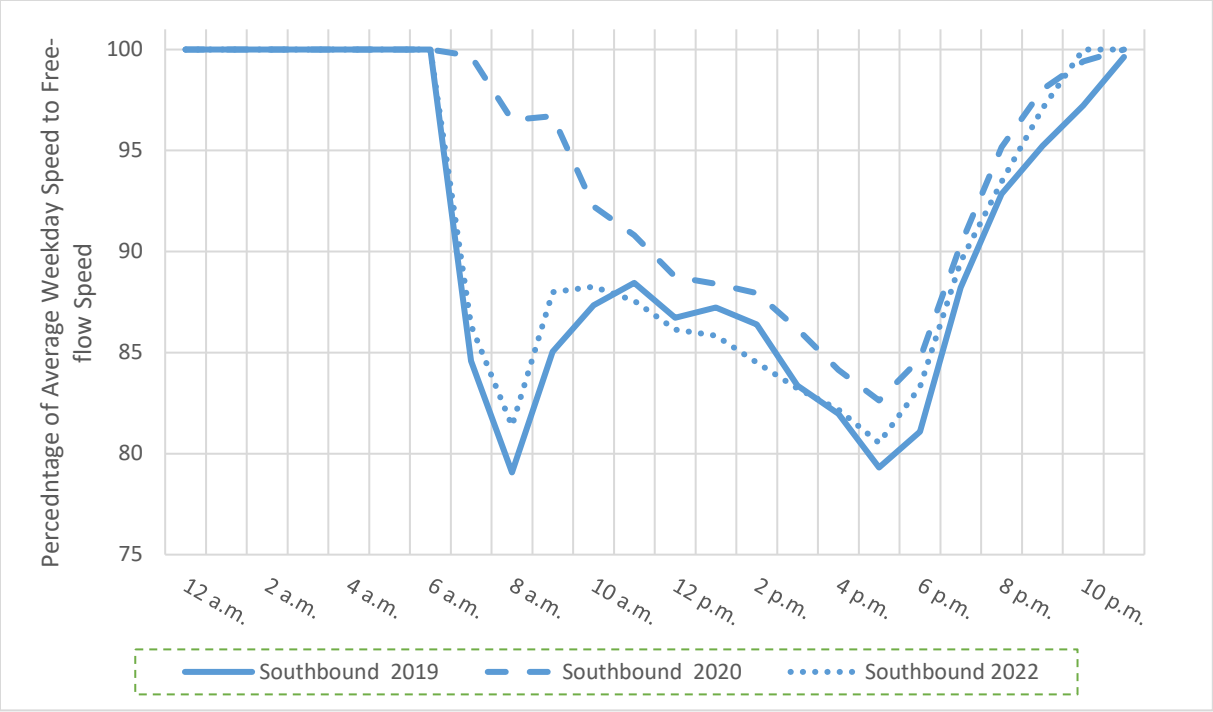


Figure 4: Average Weekday Southbound Speed as a Percentage of Free-Flow Speed along Thrive's Growth Corridors[7]

Transit Travel

Transit ridership is slowly rebounding but at different rates across service types. After a sharp decline at the onset of the pandemic, bus ridership steadily rebounded, with a pause when the Delta variant of COVID was circulating during the winter of 2021–2022. Unlinked passenger trips in November 2022 were still, however, 31% and 18% below January 2020 levels for Ride-On and Metrobus respectively (Figure 5). Service availability, as indicated by monthly vehicle revenue miles, plummeted during the heart of the pandemic, but has largely reached pre-pandemic levels. As of November 2022, Metrobus service levels have returned to pre-pandemic levels and Ride-On was running approximately 6% below pre-pandemic levels. For route-by-route ridership information, please see Appendix A.

Although Metrobus ridership has rebounded, rail ridership remains well below pre-pandemic levels (Figure 7). Overall, Red Line station entries in Montgomery County are approximately 55% below pre-pandemic levels. Station entries on the east side of the Red Line (Glenmont, Wheaton, Forest Glen, Silver Spring, and Takoma) have recovered a bit better than stations on the west side of the Red Line (52% below pre-pandemic levels for the east side vs. 57% below for the west side).

[7] Inrix data; RITIS' Probe Data Analytics Suite.

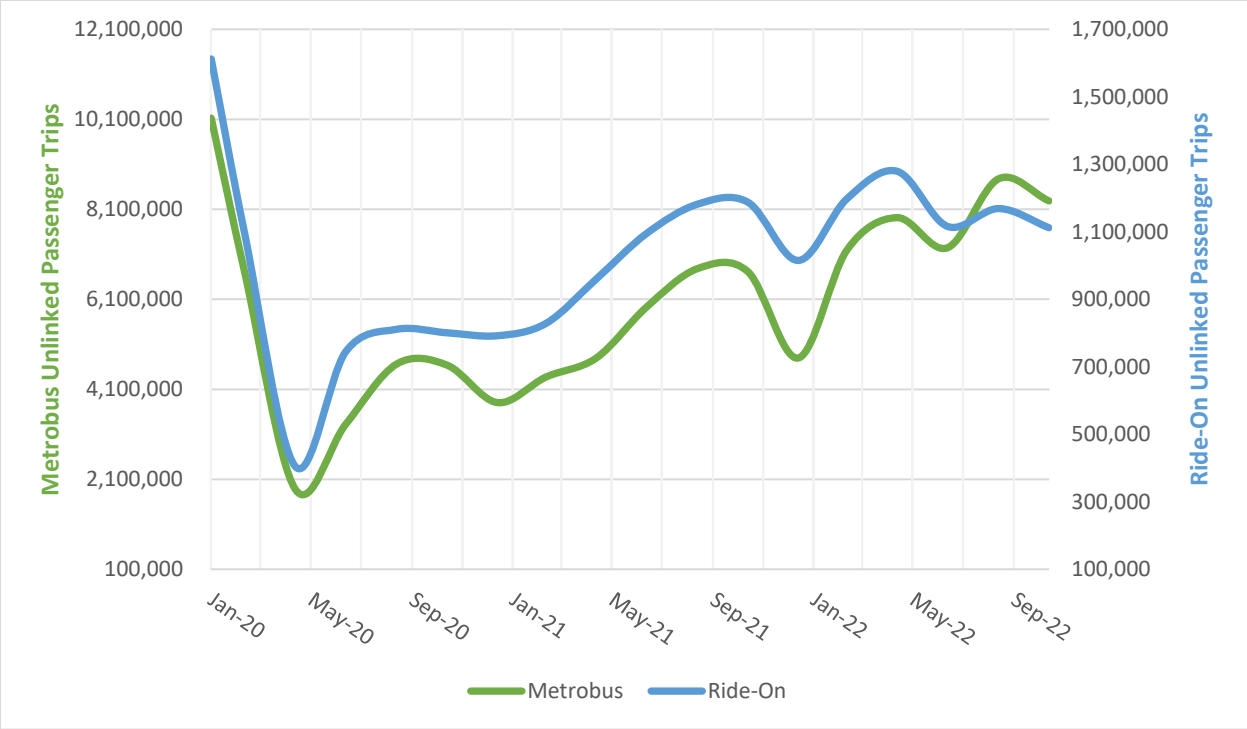


Figure 5: Ride-On and Metrobus Unlinked Bus Passenger Trips[8]

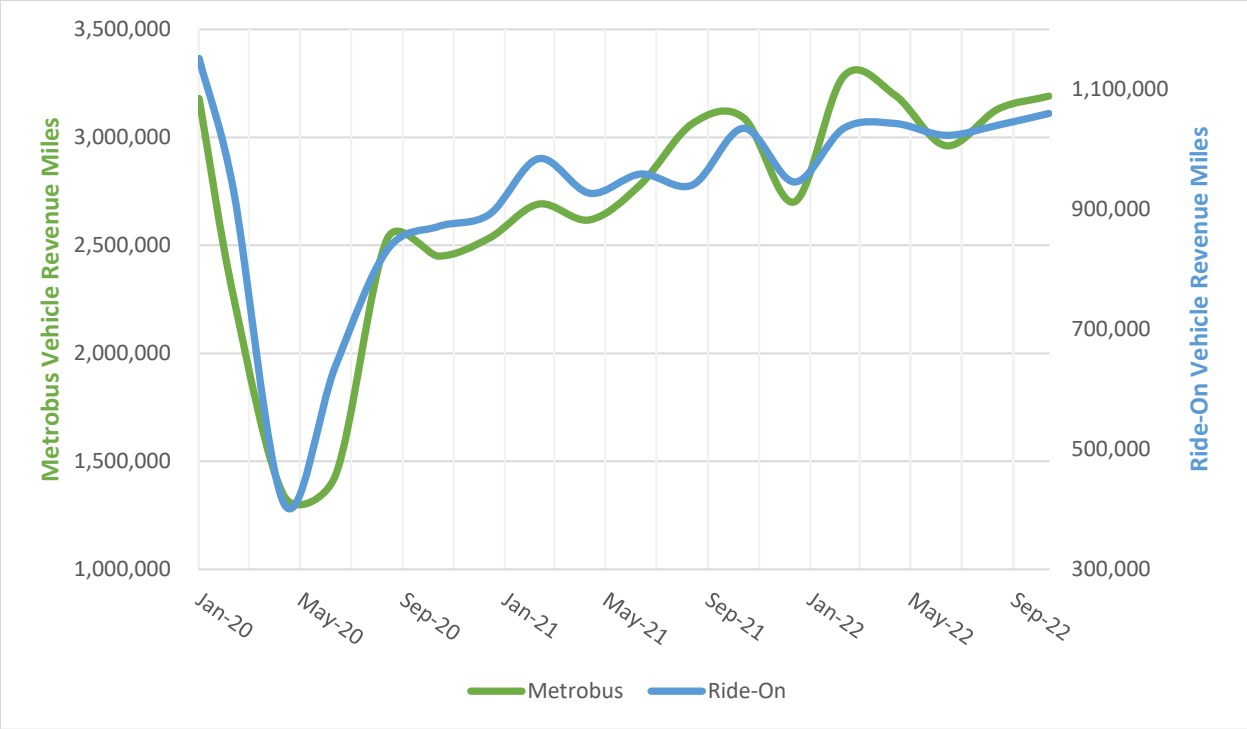


Figure 6: Metrobus and Ride-On Vehicle Revenue Miles for January 2020 to November 2022[9]

[8] National Transit Database: https://www.transit.dot.gov/ntd; WMATA trips are system wide.

[9] National Transit Database

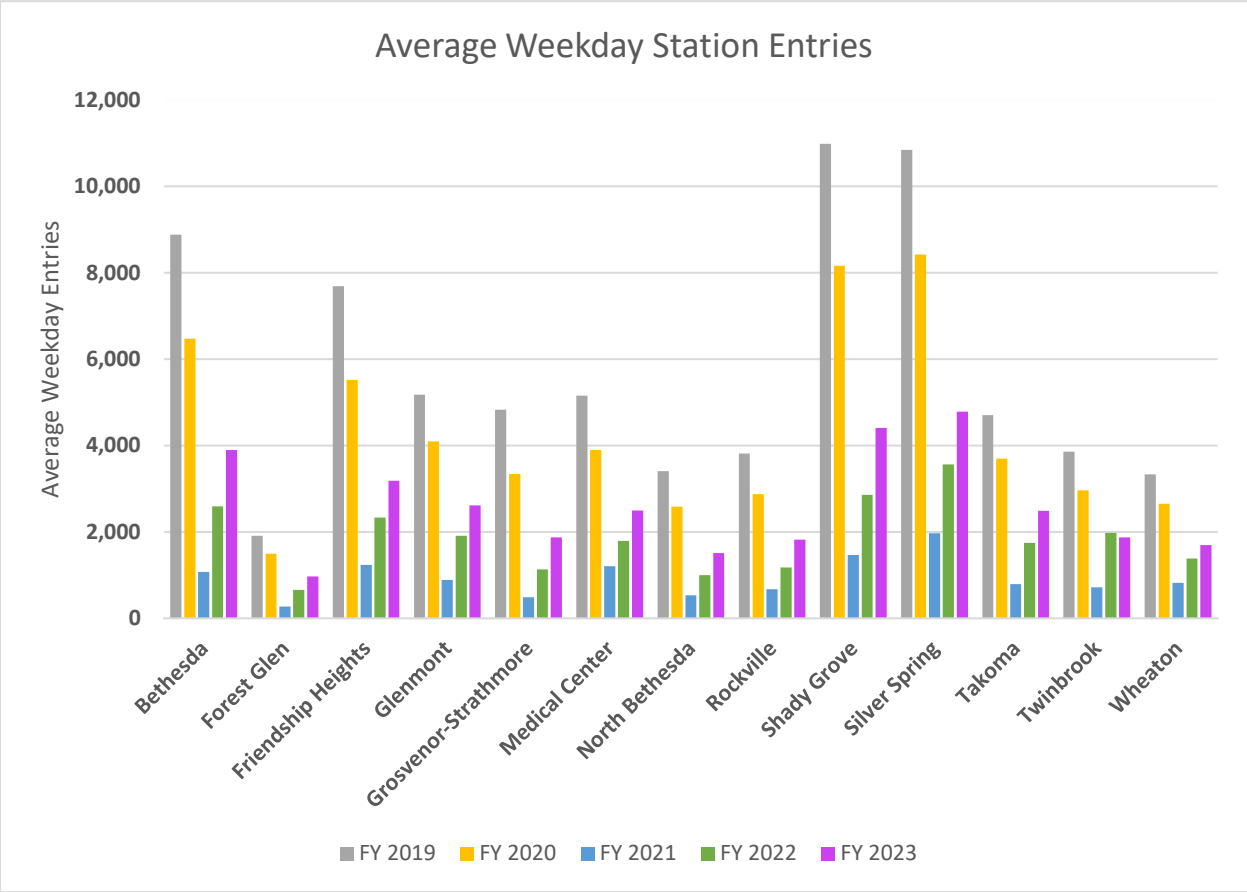


Figure 7: Average Weekday Metrorail Red Line Station Entries by Fiscal Year[10]

Bike and Pedestrian Travel

While the demand for transit and private automobile sharply declined in 2020, the demand for biking and recreation remained resilient during the heart of the pandemic in 2020. After an unseasonal decline in Capital Bikeshare trips between March and April 2020, the number of trips steadily increased from May 2020 through June 2020 in Montgomery County (Figure 8). The average trip length (in minutes) also sharply increased the moment a State of Emergency was declared in Maryland. This is likely an indication that people used bicycles to complete trips rather than as last-mile connections to transit hubs. Evidently, bicycles were instrumental in maintaining a sustainable and resilient transportation system for vulnerable populations who needed to meet their employment obligations; another possibility is that recreational trips tend to be longer than utilitarian trips. In 2022, the number of Capital Bikeshare trips has been consistent with 2020 activity; however, the average trip duration is closer to 2019 levels. Please note that this analysis does not consider changes in Capital Bikeshare capacity in the county or trips that do not have a start or end docked location in Montgomery County. The rise of dockless trips likely impacts the number of trips in each subsequent year.

[10] WMATA Data Ridership Portal: https://www.wmata.com/initiatives/ridership-portal/Metrorail-Ridership-Summary.cfm

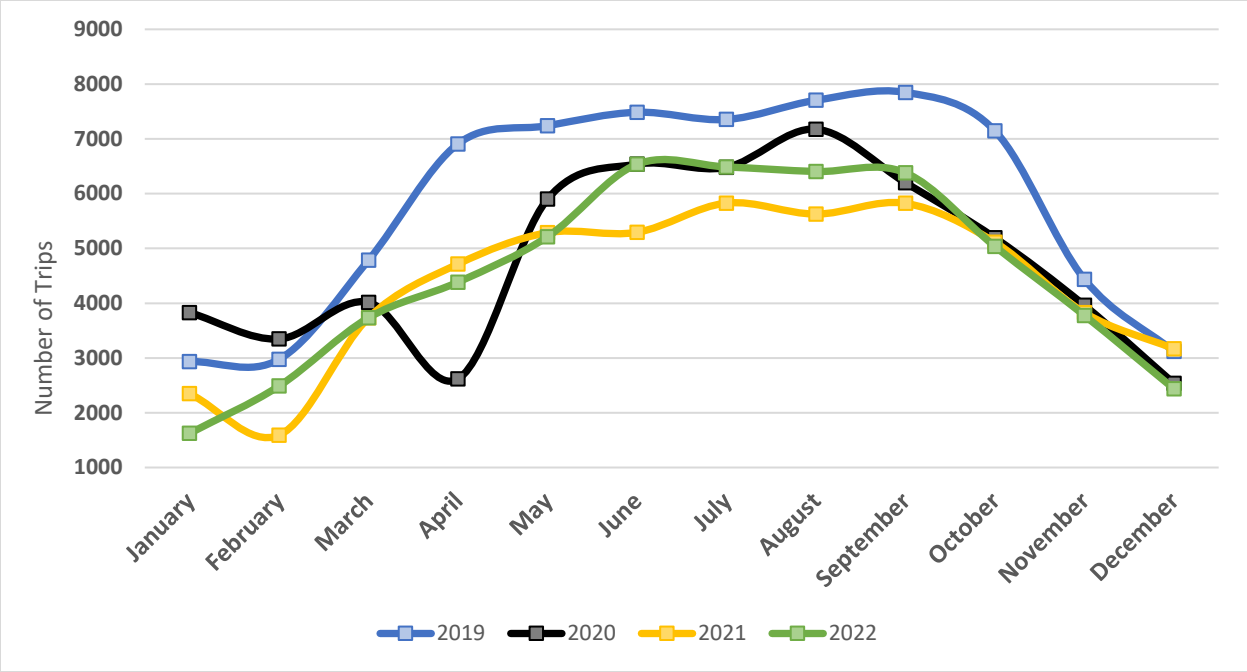


Figure 8: Number of Locatable Capital Bikeshare Trips Beginning or Ending in Montgomery County[11]

Like Capital Bikeshare usage, bicycle and pedestrian activity on the county's trail remained robust during the pandemic. For example, combined pedestrian and cyclist activity on the Capital Crescent Trail in Bethesda was 29.5% higher in 2020 than in 2019. The number of cyclists in 2020 was approximately 33% higher than in 2019, indicating that perhaps a portion of the increase was due to commuting and other utilitarian trips that would have otherwise been completed via a different mode. Since 2020, activity has moderated to around 2019 levels. Cycling activity in 2022 was down 13%, but pedestrian activity is up approximately 5% compared with 2019.

[11] Capital Bikeshare System Data: https://capitalbikeshare.com/system-data. Note only locatable trips are included in this analysis. Undocked trips are not included.

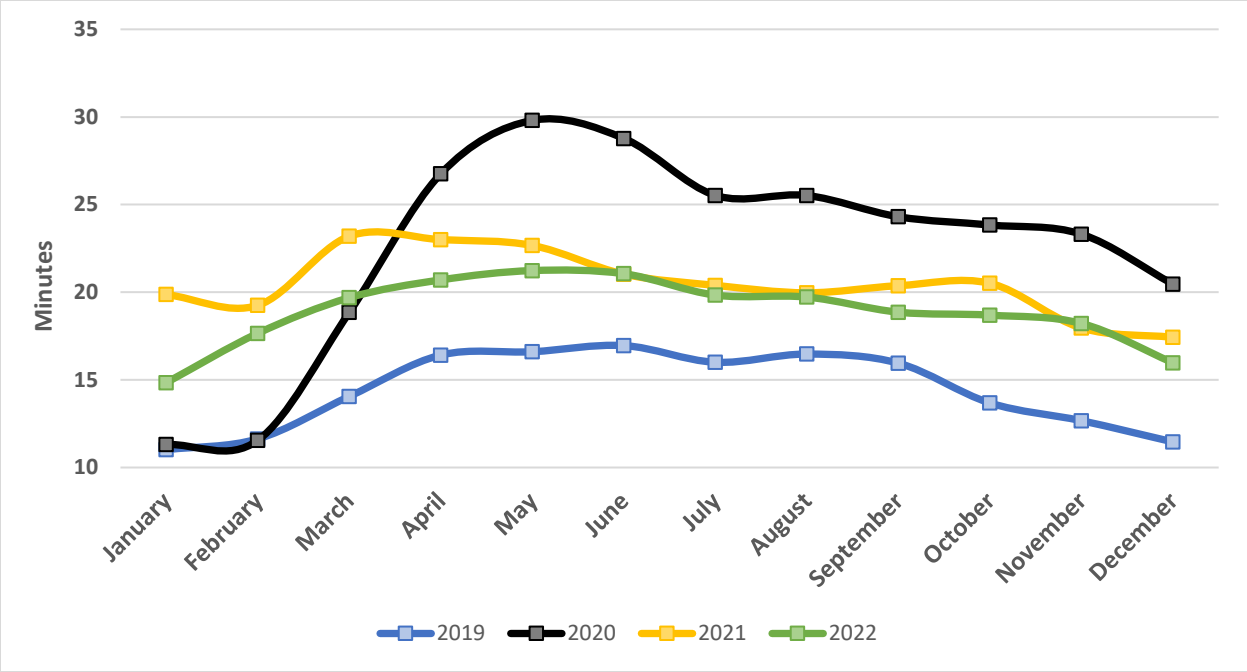


Figure 9: Average Duration (Minutes) of Locatable Capital Bikeshare Trips Beginning or Ending in Montgomery County[12]

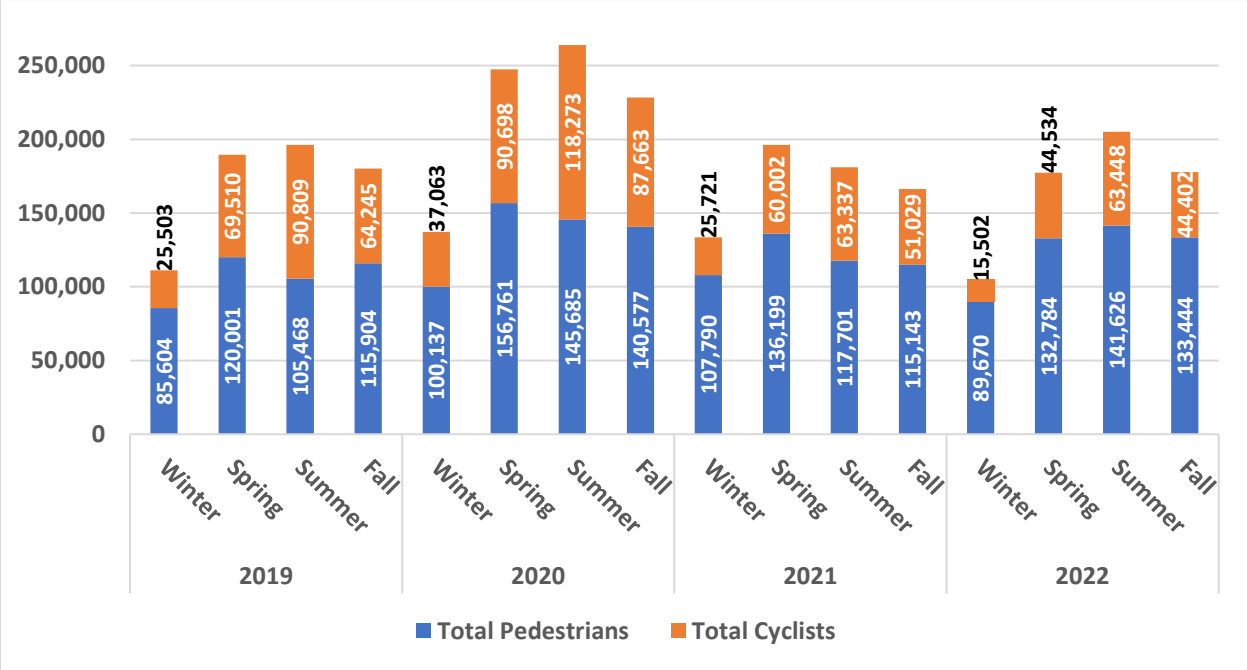


Figure 10: Seasonal Pedestrian and Cyclist Counts on the Capital Crescent Trail at Bethesda Avenue in Bethesda

[12] Capital Bikeshare System Data: https://capitalbikeshare.com/system-data. Note only locatable trips are included in this analysis. Undocked trips are not included. Outliers have been removed.

Chapter 3: Thrive Montgomery 2050 Transportation Monitoring

On October 25, 2022, the Montgomery County Council approved *Thrive Montgomery 2050* (Thrive). Thrive is an update to the County's General Plan and serves as the policy foundation and framework moving forward. Thrive's framework is centered around achieving three overarching objectives: economic competitiveness, racial and social equity, and environmental sustainability. To support achieving these objectives, it includes recommendations organized into various chapters. Each chapter explains how its recommendations serve the broader objectives of Thrive and provides suggested measures to gauge progress in implementing the chapter's ideas. Below is a list of recommended transportation-related policies from Thrive's "Transportation and Communication Networks: Connecting People, Places, and Ideas" chapter.

- Develop a safe, comfortable, and appealing network for walking, biking, and rolling.
- Build a frequent, fast, convenient, reliable, safe, and accessible transit system.
- Adapt policies to reflect the economic and environmental costs of driving alone, recognizing that car-dependent residents and industries will remain.

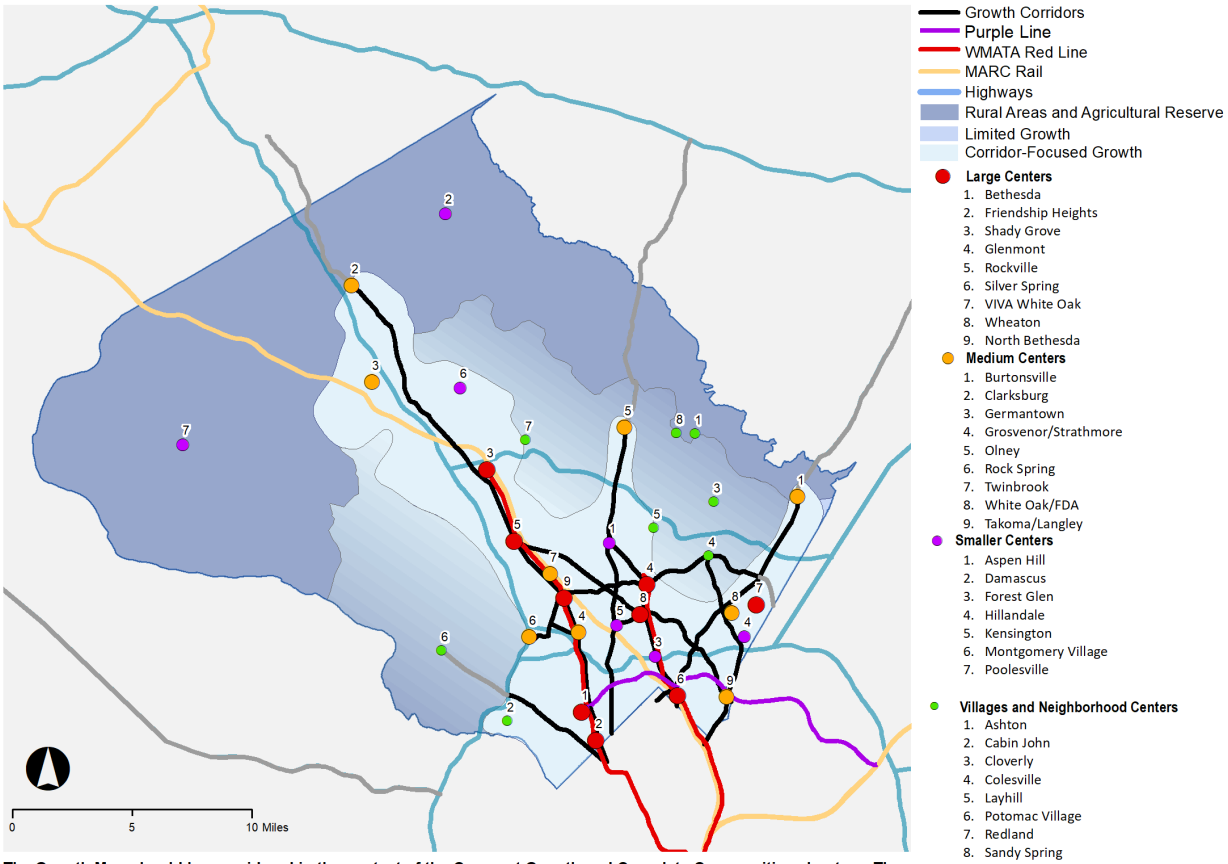


Figure 11: Thrive Montgomery 2050 Growth Map

Thrive Performance Measures

A core tenet of Thrive is to focus growth along established corridors and activity centers. Thrive's Growth Map helps illustrate this principle (Figure 11). The remainder of this chapter summarizes several performance measures recommended in the "Transportation and Communication Networks Connecting People, Places, and Ideas" chapter. Where possible, measures are summarized according to main components of Thrive's Growth Map (corridors, growth areas, and activity centers). Some measures are summarized according to other geographies due to technical limitations or where it makes practical sense. Some of the performance measures presented in Thrive are simple to operationalize, while others require some interpretation. For example, "Person Trip Accessibility for Pedestrians and Bicyclists" can be interpreted various ways and is covered in the *Bicycle Master Plan* and *Pedestrian Master Plan* Monitoring sections of this report.

The metrics presented here do not fully cover Thrive's recommended measures; however, they do represent data and methodologies that are widely available and repeatable. The Planning Department is likely to adjust these methodologies in the future, as it is scheduled to convene a formal review of Thrive's implementation metrics in FY 2024. "Thrive Corridor Profiles" are presented at the conclusion of this chapter that include additional data points summarized by each Thrive Growth Corridor.

Vehicle Miles Traveled (VMT)

VMT has long been used to measure vehicle travel demand and evaluate transportation projects, policies, and decisions. VMT is an estimate of the total number of miles traveled by all motor vehicles along a roadway or within a region over a certain period. For this exercise, VMT is estimated by the Maryland State Highway Administration's (SHA's) traffic monitoring system. SHA collects vehicle counts on a rotating 3-year cycle throughout the county. Counts that were not conducted in certain locations for a given year are adjusted based on permanent counters positioned on Maryland's interstates. These counts are extrapolated to sections of roadways and summarized by the desired extent or geography. It is important to consider that these estimates do not differentiate between travel conducted by Montgomery County citizens and pass-through travel conducted by others.

Lower VMT indicates that the demand for SOVs is decreasing. This may occur if travelers are utilizing other modes of travel that provide competitive travel times and accessibility similar to SOVs. It could also indicate that the travel distance required to satisfy everyday needs is shorter due to the development of complete communities. It is important, however, to view VMT in the broader context of the economy. As we can see from Figure 12, VMT per capita dropped precipitously in 2020 due to the pandemic. Prior to the pandemic, VMT per capita remained steady, although it has been slowly increasing since 2014. For a complete list of estimated VMT along Thrive Growth Corridors, please see the Thrive Growth Corridor Profiles at the end of this chapter.

Data Sources: Maryland State Highway Administration & Census American Community Survey (ACS) 1-Year Estimates (2020 uses the 5-year estimate).

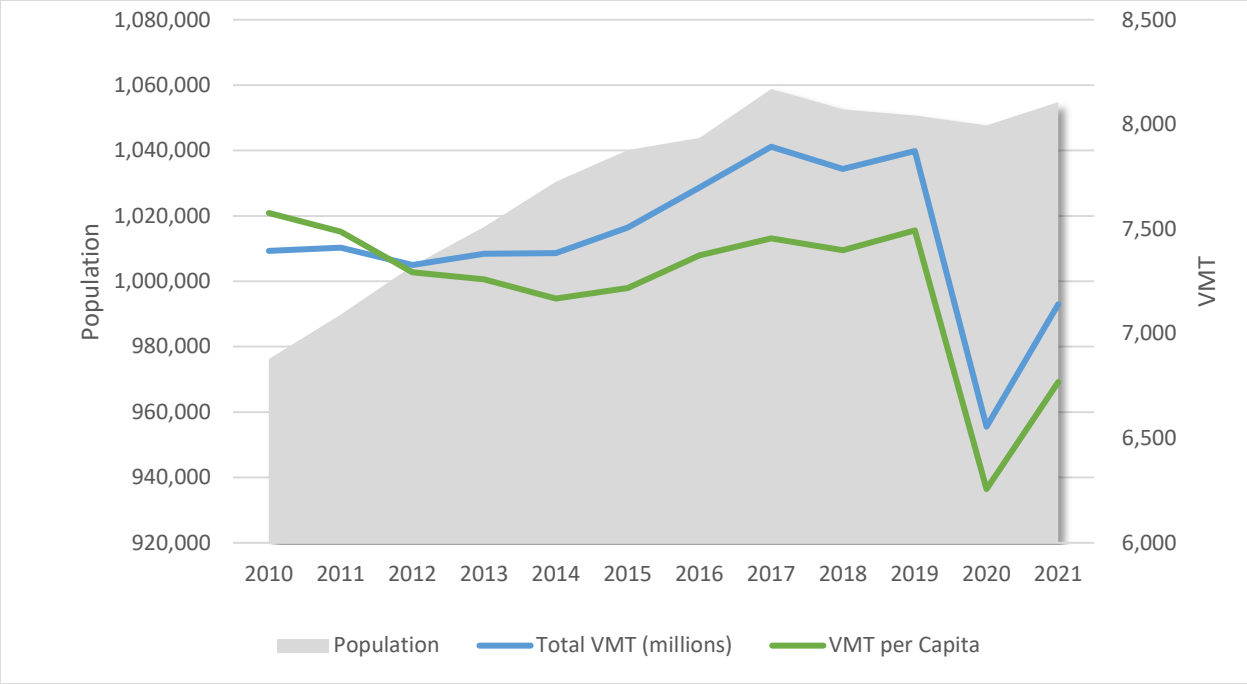


Figure 12: Total Annual VMT, Annual VMT per Capita, and Population for Montgomery County[13]

Non-Auto Driver Mode Share (NADMS)

NADMS is the percentage of commuters who did not drive for a majority of their commuting needs, including teleworkers. A higher NADMS percentage indicates that commuters are able and willing to rely on alternative modes of travel for their commuting needs or can telework. Five-Year Census American Community Survey commuting data have been summarized by Thrive's Growth Map areas and are presented below (Figure 13). Countywide, NADMS hovered around 30% between 2013 and

[13] https://www.roads.maryland.gov/OPPEN/Vehicle_Miles_of_Travel.pdf; https://data.census.gov/cedsci/

2019. Broken out by Thrive's growth areas, however, the data reveal that areas outside the corridor-focused growth areas have a much lower commuting NADMS.

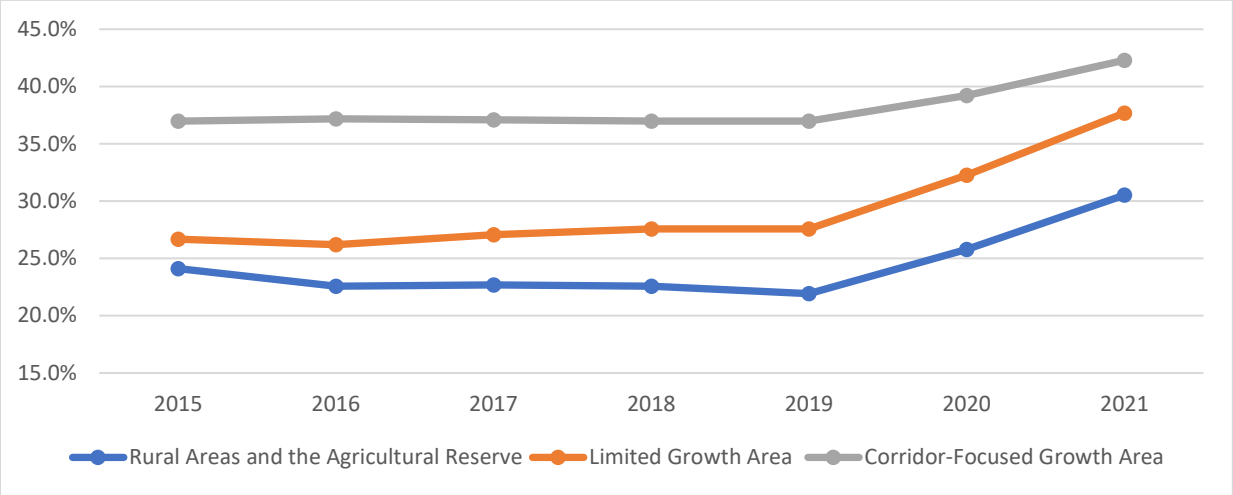


Figure 13: NADMS by Thrive Growth Map Area and Year

The spike in NADMS in 2020 is explained by the pandemic's impact on the rise of teleworking throughout the country. Please note that these data are disaggregated from the 5-year ACS estimates due to higher statistical robustness and therefore that they mask some of the recent abrupt changes in teleworking. For example, the 2021 1-year ACS estimates NADMS to be 52.5%. This is primarily due to the 37.1% of commuters who reported that they telework for a majority of the workweek. For reference, the 2019 estimate of teleworkers was 6.7%.

Data Sources: ACS 5-Year Estimates (Census) & Parcel Data (Planning).

Average Commute Time

Shorter commute times can indicate a good job-housing balance. They can also indicate that people can afford to live near where they work, a luxury that is often only available to higher income earners. Complete communities and affordable housing are a core Thrive strategy to accomplish its objectives. When viewing commute time by mode, one can see that the current burden of long commute times falls disproportionately on transit users (Figure 14). In 2021, the average commute time for transit riders was about 22 minutes longer than that of commuters who traveled in an automobile. This is a slight increase from 20.6 minutes in 2019. Overall commute times have decreased; however, these decreases have largely benefited auto drivers due to lower vehicle volumes from increases in teleworking. Riders of public transit tend to be from lower income brackets and to lack access to a private vehicle.

Closing the travel time gap between the private automobile and transit is key in advancing an equitable transportation system and improving transit ridership. Both Ride-On and Washington Metropolitan Area Transit Authority (WMATA) have recently taken steps to increase transit frequency and coverage. For example, Ride-On now offers on-demand transit in certain zones (Ride-On Flex) and increased frequency along the US-29 corridor via its Flash Service. Expanding these frequent and flexible services is intended to close the commuting time gap between SOVs and transit.

Data Source: ACS 1-Year Estimates (Census)

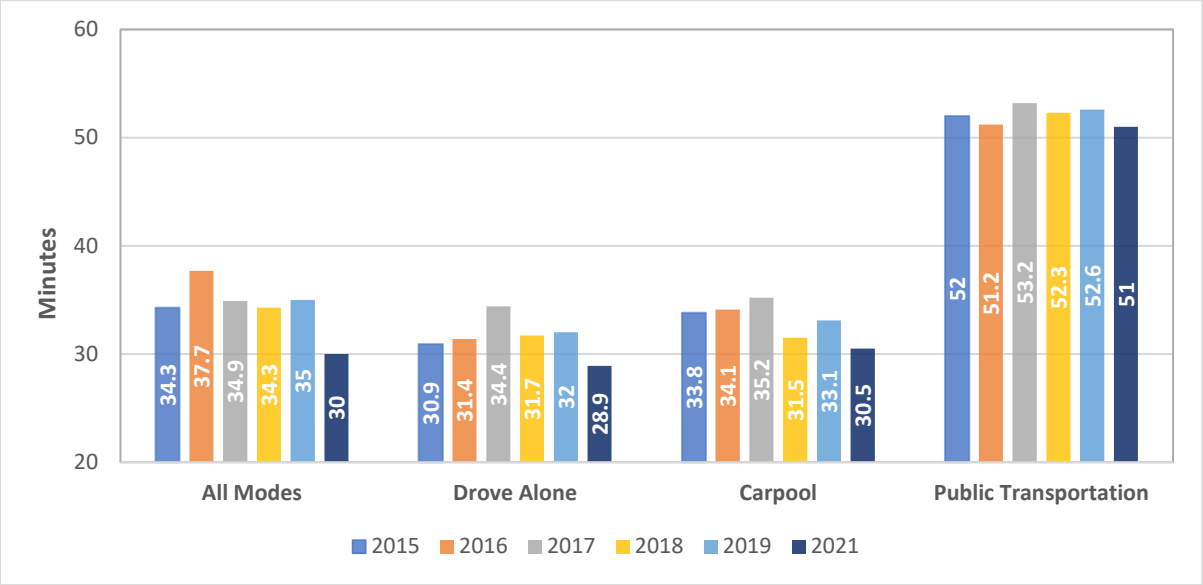


Figure 14: Average Commute Time by Mode

Transit Travel Time, Accessibility, and Coverage

The next three metrics are not explicitly stated in Thrive as measures of progress; however, they may be worth tracking over time. As stated earlier, an explicit policy and practice of Thrive is to "Build a frequent, fast, convenient, reliable, safe, and accessible transit system." The following metrics attempt to operationalize this stated policy by measuring several aspects of the county's transit system. The results from this exercise should be considered as a baseline and represent transit schedules as of March 2023.

Transit Coverage

One method to evaluate transit performance is to quantitatively measure access to transit services based on walk distance and trip frequency. This report creates quarter-mile network buffers around transit stops (MARC Rail, WMATA Rail, WMATA Bus, and Ride-On Bus) and then summarizes the average number of unique transit trips per hour per route reachable within each walkshed. The output is a generalized spatial representation of transit coverage throughout Montgomery County (Figure 15). Once transit coverage is spatially identified, a comparison of transit coverage among various geographies is made. For this analysis, transit coverage during four time periods was summarized by Transportation Policy Area (policy area) category (Red, Orange, Yellow, or Green) and Equity Focus Area (EFA) designation (Figure 16).

A policy area is a geographic sub-area of the county delineated by the Planning Board and adopted by the County Council in the Growth and Infrastructure Policy for the purpose of growth management analysis. Each policy area is categorized by its predominant development form and transit availability. Below is a description of each color category:

- Red: Downcounty central business districts characterized by high-density development and the availability of premium transit service (e.g., Metrorail, MARC).

- Orange: Corridor cities, town centers, and emerging transit-oriented development (TOD) areas where premium transit service (e.g., Purple Line and bus rapid transit) is planned.
- Yellow: Lower density areas of the county characterized by mainly residential neighborhoods, that include community-serving commercial areas with more limited transit availability.
- Green: The county's Agricultural Reserve and rural areas.

EFAs are parts of Montgomery Equity Focus Areas are parts of Montgomery County that are characterized by high concentrations of lower-income people of color, who may also speak English less than very well. Montgomery Planning developed a data-driven tool to identify and map these areas in the county in order to assess potential racial and social inequities. This includes access to resources and opportunities for employment, transportation, education, health, and government services that support a good quality of life. Please see Appendix B for a map that compares these two areas.

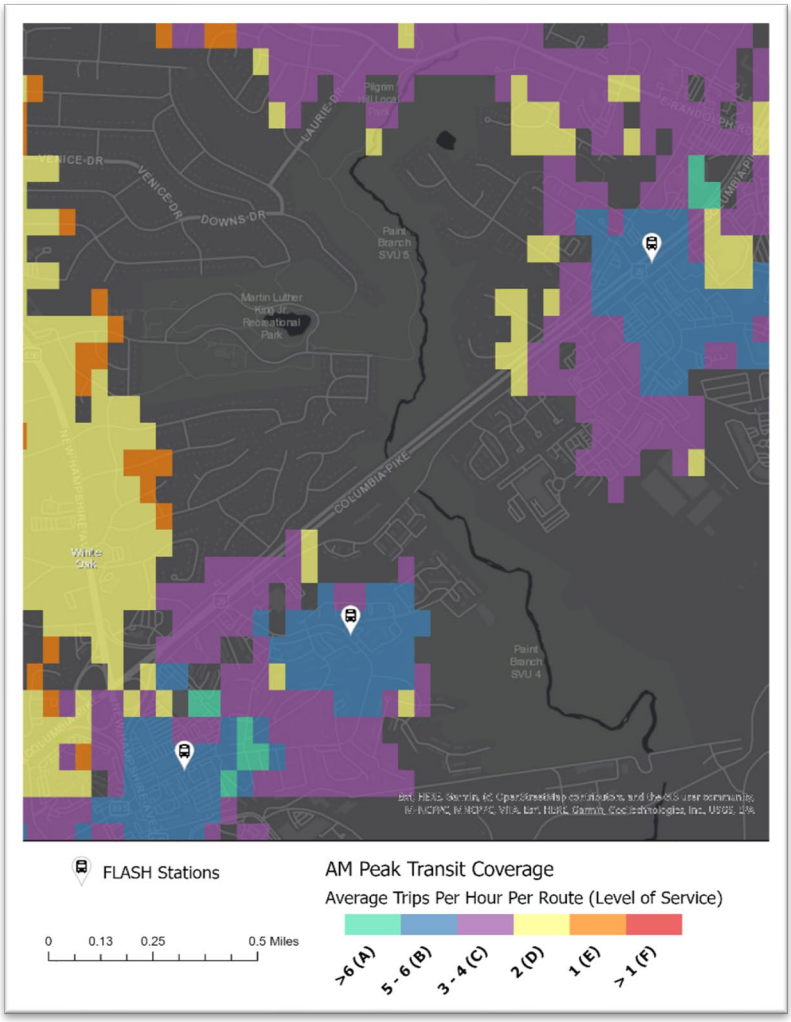


Figure 15 :Transit Service Reachable Within Quarter Mile Walkshed (AM Peak)

For the a.m. peak period, all portions of policy areas that are identified as EFAs in Red Policy Areas have slightly higher overall a.m. peak transit coverage.[14] For the most part, EFAs in these regions also experience higher quality coverage (greater than or equal to five trips an hour). Transit coverage in Yellow Policy Areas identified as EFAs have far greater transit coverage than Yellow Policy Areas that are not identified as disadvantaged. Somewhat surprisingly, Yellow Policy Areas identified as EFAs have very similar coverage as Orange Policy Areas. This is largely due to the frequent FLASH service in the White Oak area and high frequency transit in the Aspen Hill and Germantown policy areas. For coverage comparisons of other time periods, please see Appendix B. It should be noted that this analysis may be generous in assigning level of service categories. This is because, there is currently no differentiation between direction of travel. Bus stops servicing both inbound and

[14] The a.m. peak period is defined as 7 a.m. to 9 a.m.

outbound directions for a particular route may be reachable from a single location. Transit frequency is typically observed for one direction of travel; however, this analysis does not consider this level of specificity.

Data Sources: Regional General Transit Feed Specification files (WMATA), Equity Focus Areas (Planning), Transportation Policy Areas (Planning)

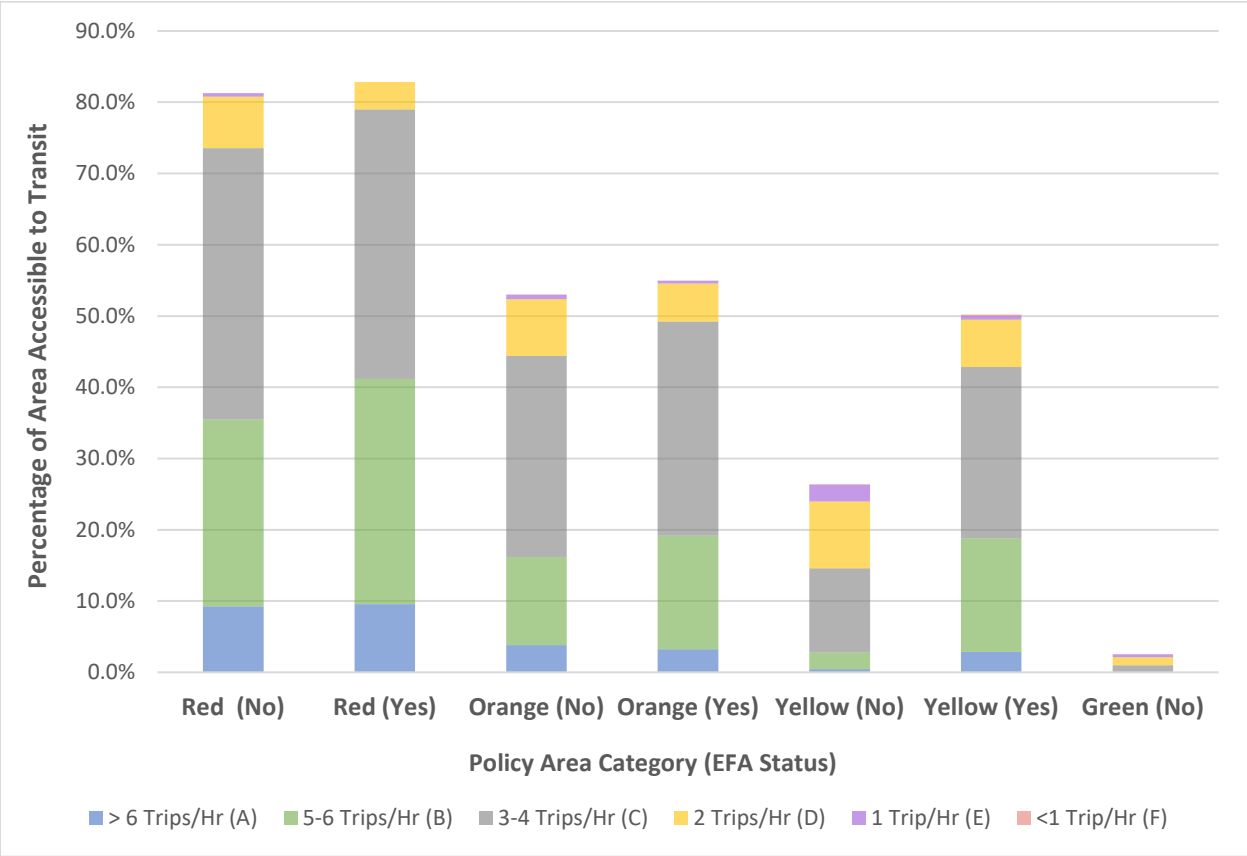


Figure 16: Transit Coverage Summarized by Policy Area and EFA Designation (AM Peak)

Job Accessibility by Transit

A second method to evaluate transit quality is to identify the number of jobs accessible by time-of-day. Accessibility of a location by transit is highly dynamic and changes minute by minute. Higher frequency transit, along with properly timed transfers, should result in smoother access to jobs across time. To capture this variability, this report calculates the number of jobs accessible within 45 minutes via transit from each of Thrive's activity centers for four periods (AM Peak, Midday, PM Peak, and Evening). Variability is measured within each period by determining the number of jobs accessible at 15-minute intervals.

Column A in accessibility stability below 50%. This indicates that transit patrons traveling from these areas have far fewer opportunities to reach the universe of reachable jobs and must carefully consider scheduling when planning their commutes.

Table 4 represents the total jobs accessible from a particular Activity Center within the period at least once during the time window. In the case of the AM Peak period, this would be the number of jobs accessible at least once during the 8–15-minute intervals between 7 a.m. and 9 a.m. Column B represents the number of jobs reachable at least 50% of the 15-minute interval start times within the period. Activity Centers with frequent service, particularly those serviced by Metrorail, have stable job accessibility with each time window. For example, job accessibility stability for Bethesda, Forest Glen, Friendship Heights, Grosvenor/Strathmore, Silver Spring, and Wheaton is at least 78%. This indicates that there are numerous opportunities to reach the expected "universe" of jobs within a 45-minute transit ride throughout the AM Peak period. Other Activity Centers, however, such as Burtonsville, Clarksburg, Germantown, Kensington, and VIVA White Oak / FDA, all have job accessibility stability below 50%. This indicates that transit patrons traveling from these areas have far fewer opportunities to reach the universe of reachable jobs and must carefully consider scheduling when planning their commutes.

Table 4: Job Accessibility via Transit from a Portion of Thrive's Activity Centers

+Activity Center	AM Peak		Midday		PM Peak		Evening	
	Total Jobs Reachable (A)	% Total Jobs Reachable 50% of Time (B)	Total Jobs Reachable (A)	% Total Jobs Reachable 50% of Time (B)	Total Jobs Reachable (A)	% Total Jobs Reachable 50% of Time (B)	Total Jobs Reachable (A)	% Total Jobs Reachable 50% of Time (B)
Aspen Hill	193,653	67%	164,882	43%	282,477	67%	264,115	47%
Bethesda	1,078,069	86%	1,044,082	87%	1,059,179	87%	1,045,044	87%
Burtonsville	53,103	33%	17,249	96%	68,059	58%	41,463	11%
Clarksburg	17,365	46%	19,685	27%	22,424	44%	19,565	21%
Damascus	13,274	26%	29,002	23%	6,181	36%	6,462	29%
Forest Glen	840,056	82%	839,292	75%	840,765	74%	864,090	74%
Friendship Heights	1,020,778	86%	994,305	87%	1,003,574	87%	1,006,931	86%
Gaithersburg / Shady Grove	380,488	68%	289,746	72%	358,748	78%	234,018	60%
Germantown	185,056	44%	110,735	55%	188,172	33%	125,771	25%
Glenmont	617,180	56%	603,279	48%	635,315	50%	650,607	58%
Grosvenor/Strathmore	955,901	81%	936,837	85%	950,019	81%	916,198	76%
Hillandale	143,329	59%	147,106	56%	125,367	66%	148,611	55%
Kensington	488,394	43%	282,828	61%	400,845	56%	398,414	50%
Montgomery Village	130,543	52%	104,369	47%	136,405	48%	122,030	26%
Olney	103,672	15%	12,989	61%	134,933	10%	86,307	17%
Poolesville	4,941	18%	876	100%	10,460	8%	876	100%
Rock Spring	284,129	61%	286,580	60%	350,482	55%	343,144	54%
Rockville	565,088	70%	500,073	64%	531,183	66%	600,829	57%
Silver Spring	917,094	84%	896,118	84%	958,371	79%	905,776	84%
Takoma/Langley	539,535	47%	502,537	47%	532,417	51%	647,042	46%
Twinbrook	776,303	68%	741,589	72%	767,294	74%	682,516	68%
VIVA White Oak / FDA	81,476	34%	52,024	52%	77,056	37%	56,866	43%
Westbard	627,017	37%	644,043	62%	698,001	52%	729,860	27%
Wheaton	890,494	78%	832,602	79%	865,188	80%	862,607	72%
White Flint	743,239	66%	731,417	69%	725,356	73%	678,995	66%

Data Sources: Regional General Transit Feed Specification files (WMATA), Longitudinal Employer-Household Dynamics (LEHD) Data (Census)

Transit Travel Time Comparison

A third method to evaluate the quality of transit is to evaluate travel times. Most individuals seek to maximize their utility, and therefore to minimize travel time, when making economic decisions. To shift demand from SOVs to transit, travel time must be competitive (along with parking costs and congestion pricing). This report compares the average transit travel time between the region's Activity Centers (those identified in Thrive and others in the region) to the average vehicle travel time for four time periods. (For a complete list of Activity Centers, please see Appendix B.) Please note that travel times for transit are based on transit scheduling information, and travel time for vehicles is based on historical congestion data. Vehicle travel times tend to be optimistic and represent "the best-case scenario" for each time period.

An analysis of auto and transit travel times reveals that, on average, transit is not competitive with auto travel. For example, the average transit travel time from Montgomery Village to all other destinations in the analysis during the PM Peak Period is 88 minutes. The average vehicle travel time during the same period is 33 minutes. Overall, average transit times leaving from Thrive Activity Centers are approximately 2.7 times longer than the average auto times during the AM Peak and 2.4 times longer during the PM Peak. For a complete comparison of average transit and auto travel times between the complete list of Activity Centers, please see the TMR dashboard.

Data Sources: Regional General Transit Feed Specification files (WMATA), Regional Activity Centers (Washington Council of Governments), Thrive Activity Centers (Montgomery Planning), and time-enabled vehicle routing network (Esri)

Table 5: Average Auto and Transit Travel Times and Their Ratios Leaving from Thrive's Activity Centers to All Other Activity Centers

Activity Center (Leaving From)	AM Peak			PM Peak		
	Transit TT	Auto TT	Ratio	Transit TT	Auto TT	Ratio
Aspen Hill	72	27	2.7	62	28	2.2
Bethesda	53	22	2.4	49	27	1.8
Burtonsville	107	35	3.1	86	33	2.6
Clarksburg	112	43	2.6	104	37	2.8
Damascus	106	47	2.3	117	45	2.6
Forest Glen	60	22	2.8	57	24	2.3
Friendship Heights	57	23	2.5	53	28	1.9
Gaithersburg / Shady Grove	69	28	2.4	64	29	2.2
Germantown	84	37	2.3	82	34	2.4
Glenmont	64	27	2.4	58	28	2.1
Grosvenor/Strathmore	57	22	2.6	52	26	2.0
Hillandale	83	28	2.9	74	26	2.9
Kensington	68	23	2.9	60	26	2.3
Montgomery Village	89	33	2.7	88	33	2.7
Olney	86	33	2.6	81	33	2.5
Poolesville	185	45	4.1	119	45	2.6
Rock Spring	72	21	3.4	66	26	2.6
Rockville	60	25	2.4	59	28	2.1
Silver Spring	58	24	2.5	52	27	2.0
Takoma/Langley	72	28	2.5	68	28	2.4
Twinbrook	58	24	2.4	54	28	2.0
VIVA White Oak / FDA	97	32	3.0	90	30	3.0
Westbard	72	23	3.2	67	27	2.4
Wheaton	58	24	2.4	54	26	2.1
White Flint	61	23	2.6	57	27	2.1
White Oak	75	28	2.7	66	27	2.4

Table 6: Average Auto and Transit Travel Times and Their Ratios Arriving to Thrive's Activity Centers from All Other Activity Centers

Activity Center (Arriving To)	AM Peak			PM Peak		
	Transit TT	Auto TT	Ratio	Transit TT	Auto TT	Ratio
Aspen Hill	68	25	2.7	66	30	2.2
Bethesda	52	26	2.0	49	26	1.9
Burtonsville	107	31	3.5	97	38	2.6
Clarksburg	114	33	3.4	107	42	2.5
Damascus	120	41	2.9	104	49	2.1
Forest Glen	57	23	2.5	56	28	2.0
Friendship Heights	55	27	2.1	52	26	2.0
Gaithersburg / Shady Grove	68	26	2.6	64	32	2.0
Germantown	89	31	2.9	82	39	2.1
Glenmont	61	25	2.4	60	30	2.0
Grosvenor/Strathmore	54	23	2.4	51	26	2.0
Hillandale	75	24	3.1	77	31	2.5
Kensington	63	24	2.6	61	27	2.3
Montgomery Village	92	30	3.1	84	37	2.2
Olney	86	31	2.8	82	36	2.3
Poolesville	272	45	6.1	117	47	2.5
Rock Spring	68	22	3.0	67	25	2.7
Rockville	60	25	2.4	56	29	1.9
Silver Spring	55	24	2.3	55	28	1.9
Takoma/Langley	70	26	2.7	71	32	2.2
Twinbrook	57	24	2.4	54	28	1.9
VIVA White Oak / FDA	93	28	3.4	95	35	2.7
Westbard	68	26	2.6	65	26	2.5
Wheaton	56	24	2.3	54	28	1.9
White Flint	57	23	2.4	55	27	2.0
White Oak	69	25	2.7	71	31	2.3

Thrive Growth Corridor Profiles

Thrive introduces the concept of Growth Corridors, which, in combination with Activity Centers, are intended to be the focus of future growth in the county. The following section contains several metrics organized according to the 10 Growth Corridors identified in Thrive. The intent is to create Growth Corridor "profiles" that can be used by planners and other decision makers to quickly access general vehicle travel trends and show how each corridor is meeting the intent and vision articulated in the County's Complete Streets Design Guide (CSDG). The CSDG provides policy and design guidance to government agencies, consultants, private developers, and community groups on the planning, design, and operation of roadways for all users. Complete Streets are roadways that are designed and operated to provide safe, accessible, and healthy travel for all users of our roadway system, including pedestrians, bicyclists, transit riders, and motorists. Below is a description of each metric presented on each corridor's infographic.

Vehicle Miles Traveled (VMT)

An estimate of the number of miles traveled by all motor vehicles (cars, trucks, buses, etc.) in a defined area over a certain period of time. Among other things, it is a proxy for greenhouse gas emissions.

Travel Time Index (TTI)

A measurement of how much longer it takes to travel a certain distance in traffic compared to traveling without traffic. A value of 1.6 indicates a trip took 60% longer than if the roadway were congestion-free. For example, a 10-minute trip without congestion takes 16 minutes with congestion (10 minutes x 1.6 = 16 minutes).

Planned Bikeway Build-Out

The percentage of bikeways recommended in the Bicycle Master Plan fronting or adjacent to the Growth Corridor that are existing, under construction or funded for construction, or are elements of an approved development project, such that:

- 100% = Full Build Out
- 0% = No Build Out

Pedestrian Pathway Comfort

The percentage of pedestrian pathways, including sidewalks, sidepaths, trails and low-traffic residential streets fronting the Growth Corridor that are rated Very Comfortable or Somewhat Comfortable by Montgomery County's Pedestrian Level of Comfort scoring system, such that:

- 100% = Completely Comfortable
- 0% = Completely Uncomfortable

Protected Crossing Spacing

Protected street crossings provide more safety and comfort for pedestrians and bicyclists because they include traffic-control devices that reduce or eliminate conflicts with motor vehicles. Protected Crossing Spacing is a measurement of the average distance (feet) between protected street crossings for each street type in the Complete Streets Design Guide. Protected Crossing Spacing Build Out is the

ratio of the average Protected Crossing Spacing divided by the target Protected Crossing Spacing for the street type as defined in the Complete Streets Design Guide (Downtown Boulevards = 400 feet, Town Center Boulevards = 600 feet, Boulevards = 1,300 feet) for the Growth Corridor, such that:

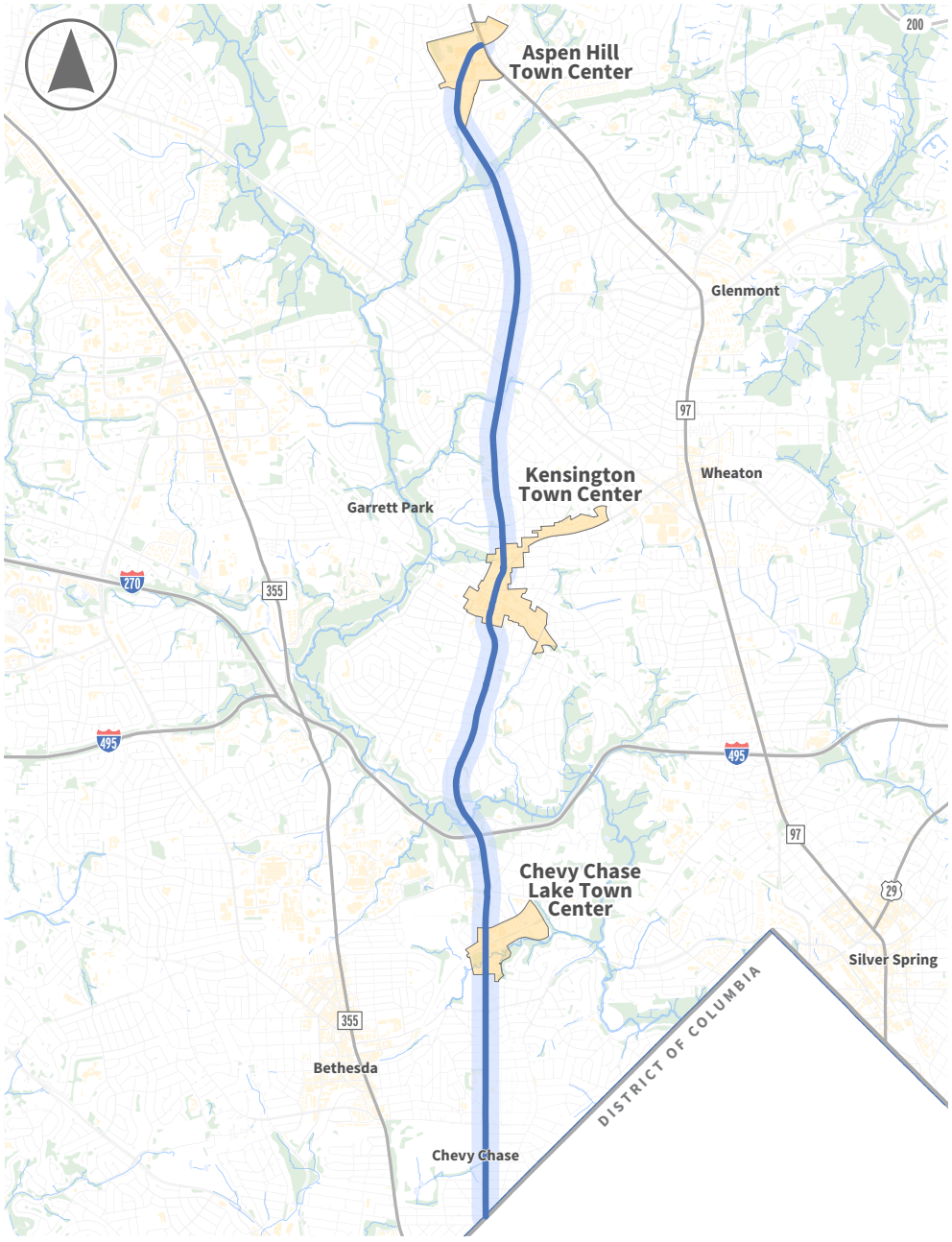
- 1.0 = Target
- <1.0 = Exceeds Target
- >1.0 = Below Target

Street Grid Build-Out

A street grid is a pattern of intersecting roads that form a network of blocks and streets. This metric compares the desired number of blocks with the actual number of blocks within the Downtowns and Town Centers along the Growth Corridors. An area with a perfect grid of streets would have a ratio of 100%, whereas an area with half the desired blocks would have a ratio of 50% such that:

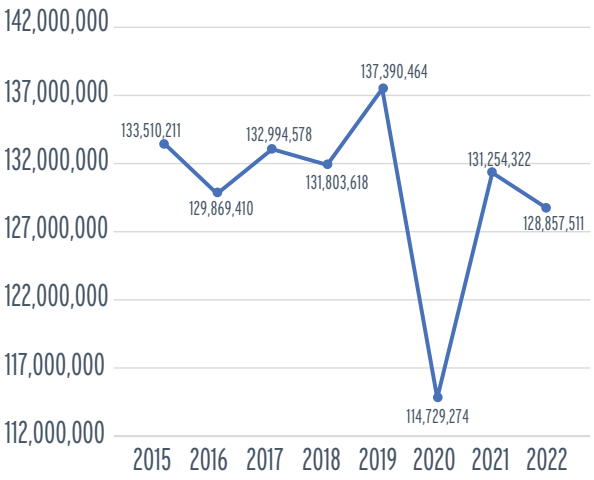
- 100% = Target
- >100% = Exceeds Target
- <100% = Below Target

Connecticut Avenue

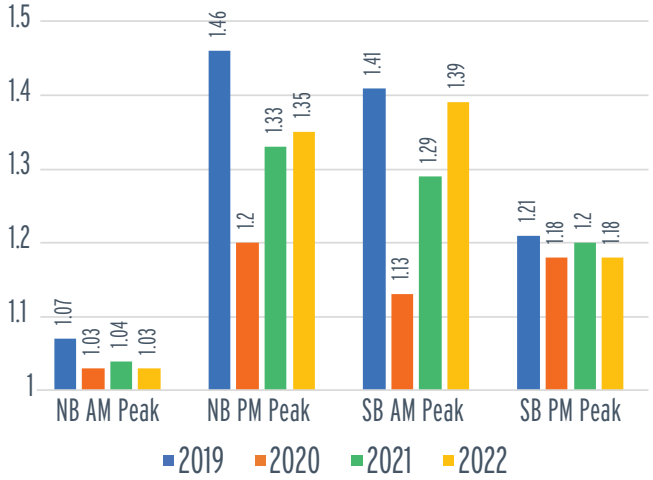


- Corridor
- Downtown
- Town Center
- Suburban
- Industrial

Vehicle Miles Traveled



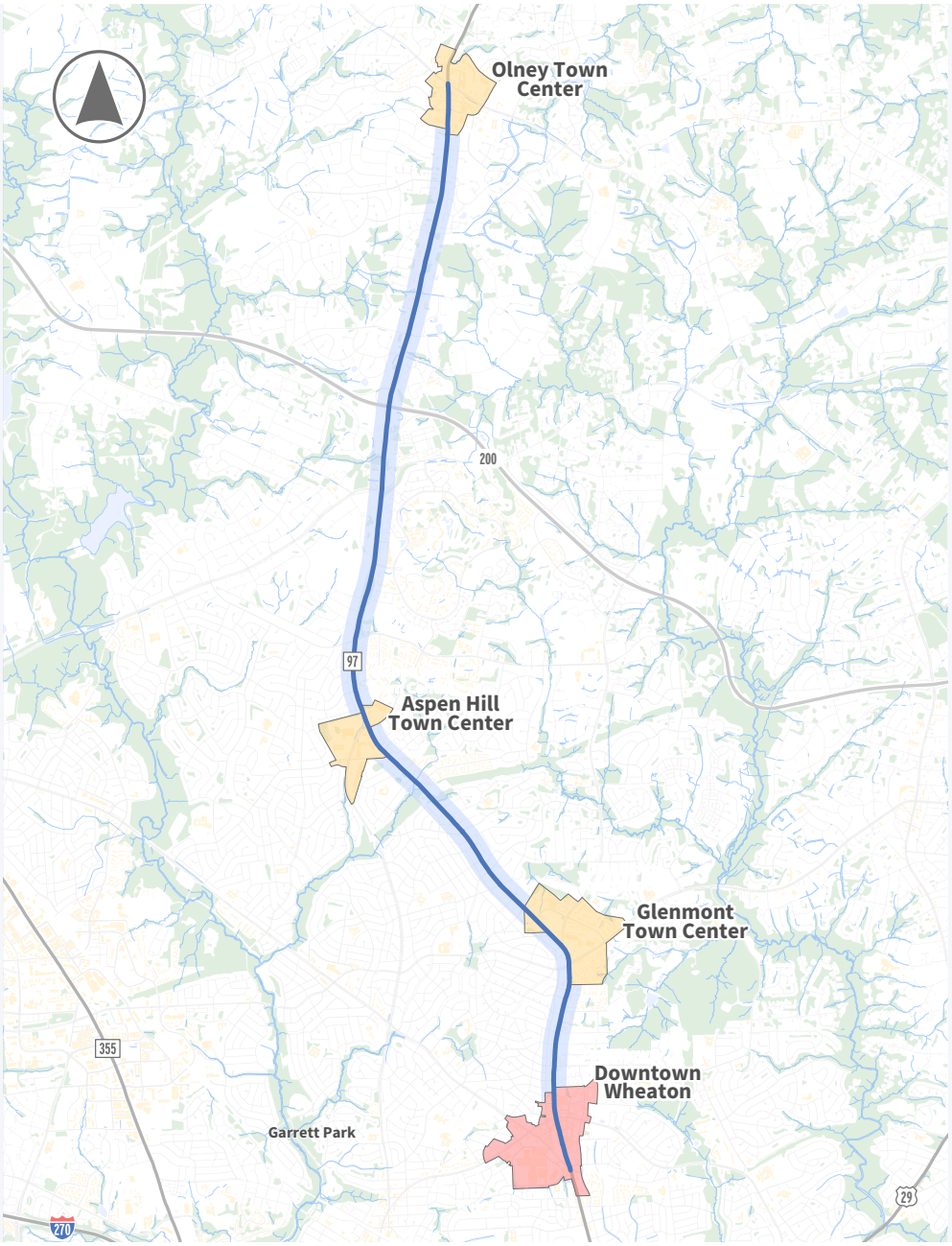
Travel Time Index



Connecticut Avenue

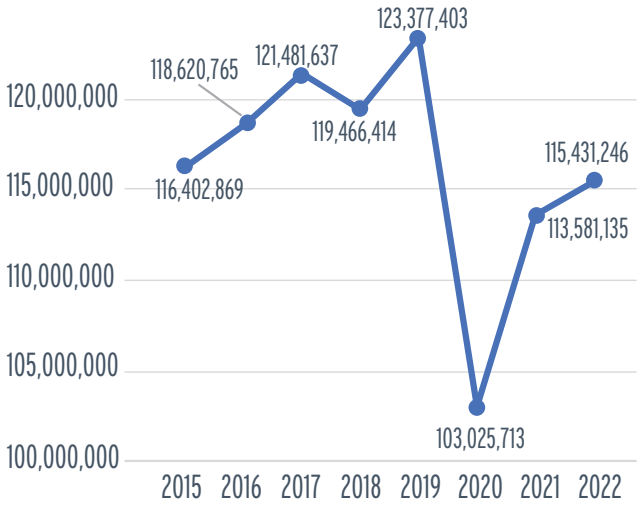
	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
 Aspen Hill Town Center	0%	0%	2.3	35%
Suburban	3%	43%	1.6	N/A
 Kensington Town Center	5%	3%	1.2	145%
Suburban	10%	4%	1.5	N/A
 Chevy Chase Lake Town Center	24%	18%	1.7	62%
Suburban	0%	62%	1.0	N/A

Georgia Avenue North

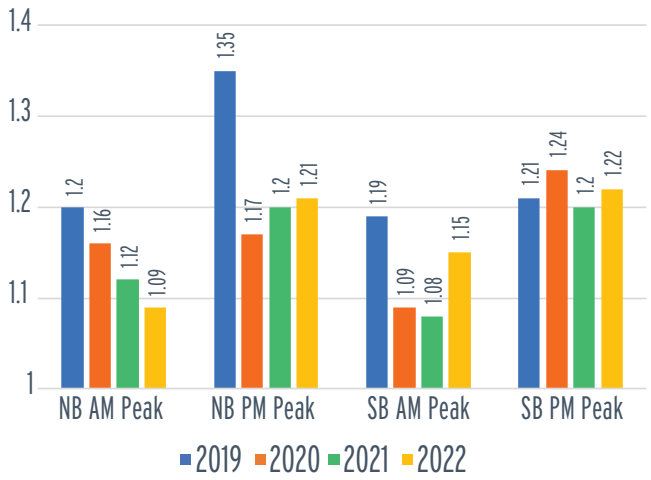


Corridor
Downtown
Town Center
Suburban
Industrial

Vehicle Miles Traveled



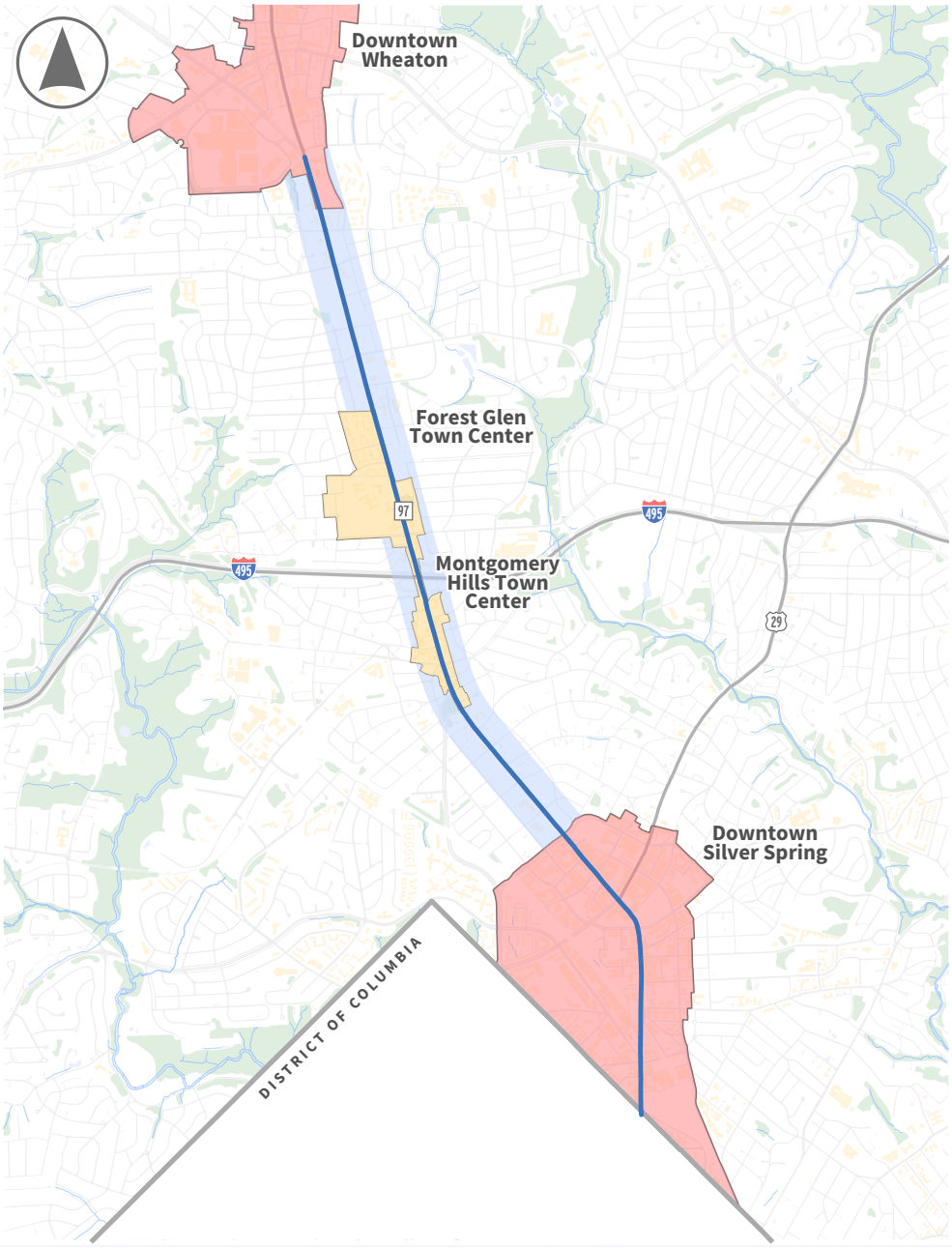
Travel Time Index



Georgia Avenue North

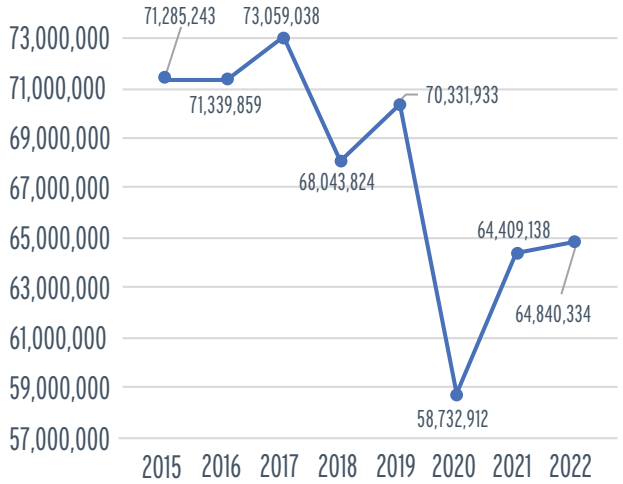
	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
 Olney Town Center	0%	0%	2.1	84%
Suburban	16%	15%	1.5	N/A
 Aspen Hill Town Center	0%	2%	2.3	35%
Suburban	8%	0%	1.7	N/A
 Glenmont Town Center	21%	54%	1.7	31%
Suburban	53%	8%	1.6	N/A
 Downtown Wheaton	51%	42%	2.6	63%

Georgia Avenue South

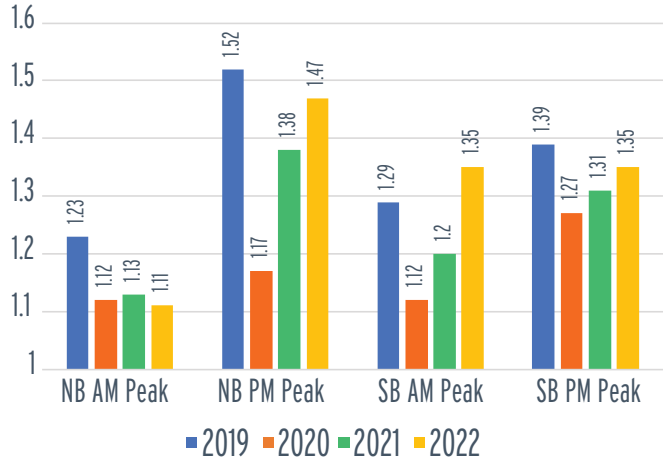


Corridor
Downtown
Town Center
Suburban
Industrial

Vehicle Miles Traveled



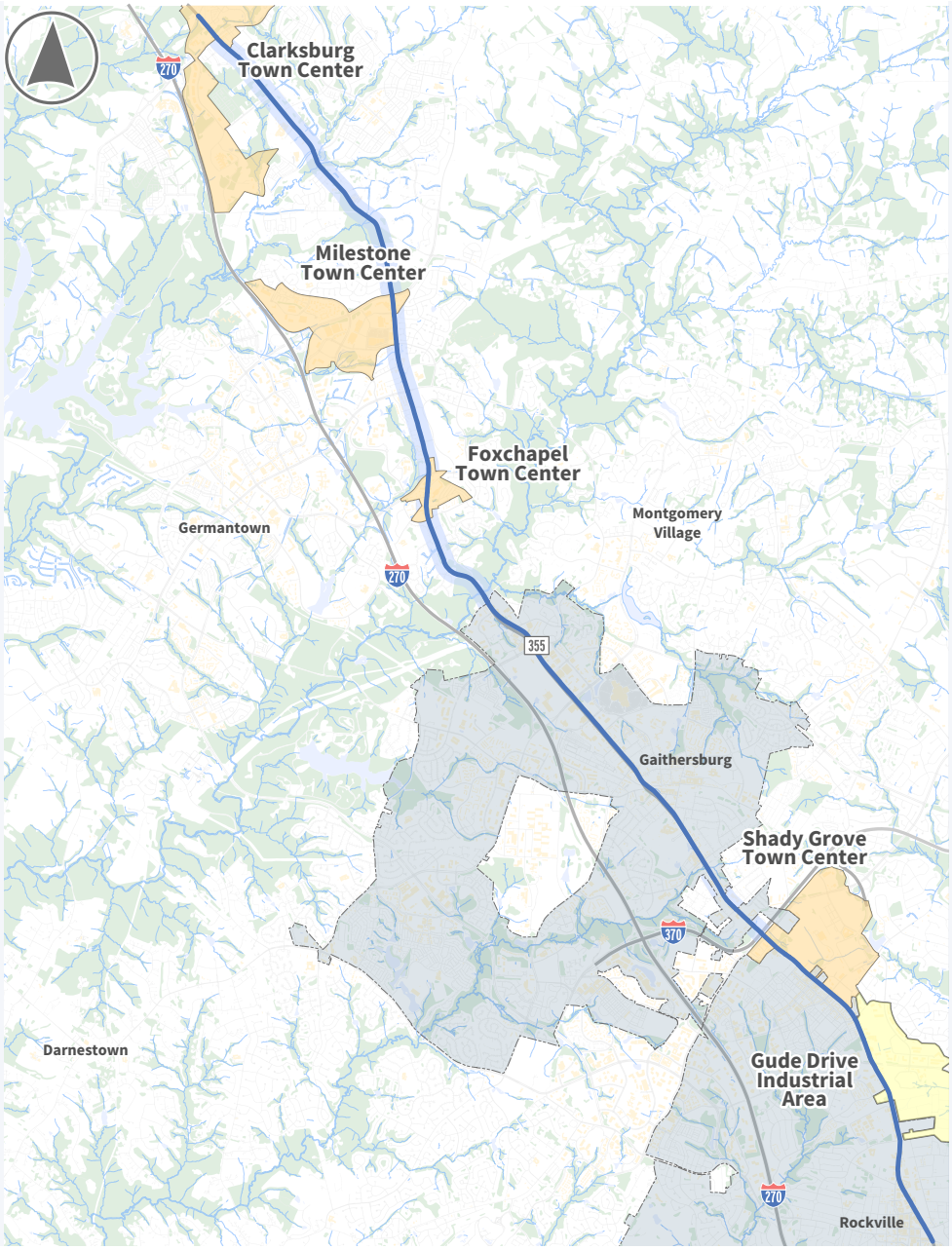
Travel Time Index



Georgia Avenue South

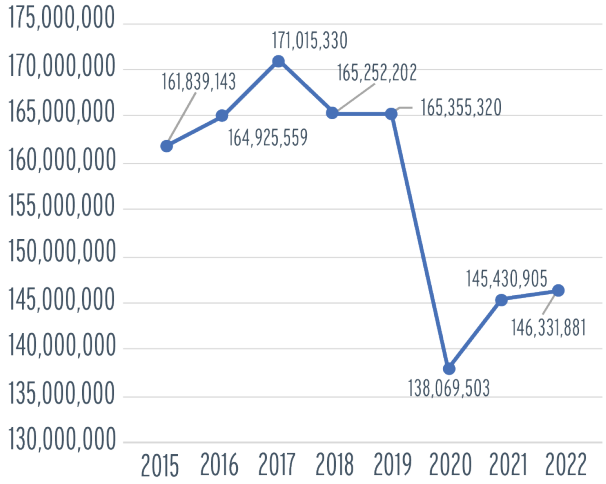
	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
 Downtown Wheaton	51%	42%	2.6	63%
Suburban	22%	7%	1.0	N/A
 Forest Glen Town Center	28%	11%	2.2	100%
 Montgomery Hills Town Center	53%	10%	0.9	433%
Suburban	1%	0%	2.3	N/A
 Downtown Silver Spring	84%	98%	1.4	68%

MD 355 North



Corridor
Downtown
Town Center
Suburban
Industrial

Vehicle Miles Traveled



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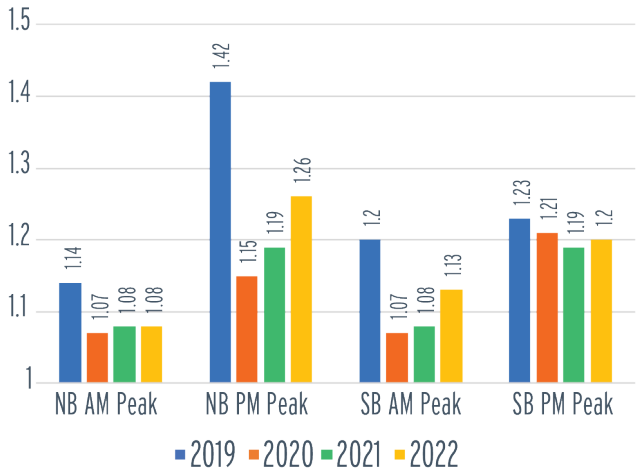
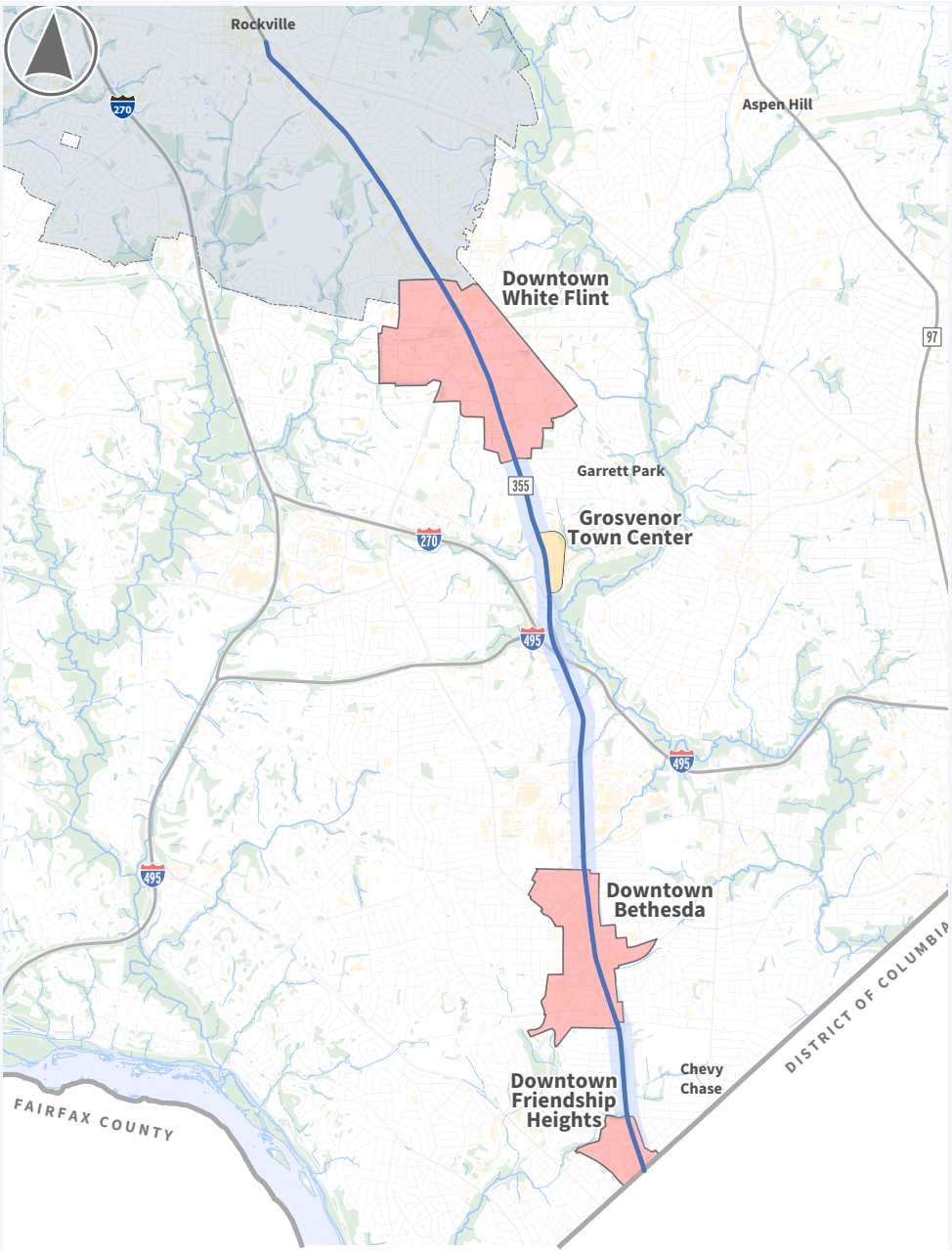


MD 355 North

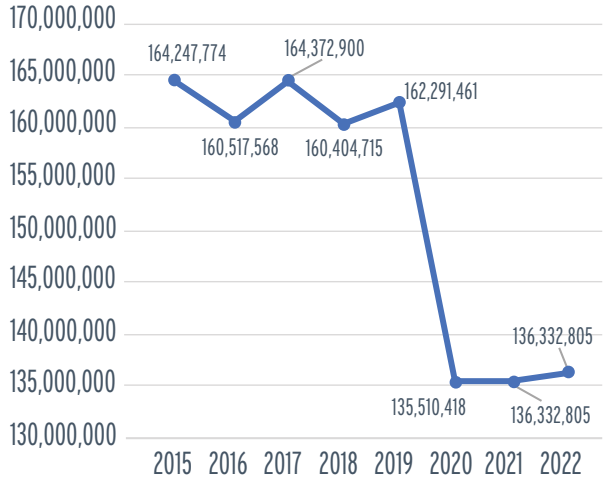
	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
 Clarksburg Town Center	100%	24%	2.2	35%
Suburban	83%	12%	2.1	N/A
 Milestone Town Center	53%	0%	1.3	50%
Suburban	32%	16%	1.7	N/A
 Foxchapel Town Center	36%	0%	4.2	42%
Suburban	44%	29%	1.8	N/A
Suburban	50%	0%	1.0	35%
 Gude Drive Industrial Area	0%	1%	1.1	N/A

MD 355 South



Corridor
Downtown
Town Center
Suburban
Industrial

Vehicle Miles Traveled



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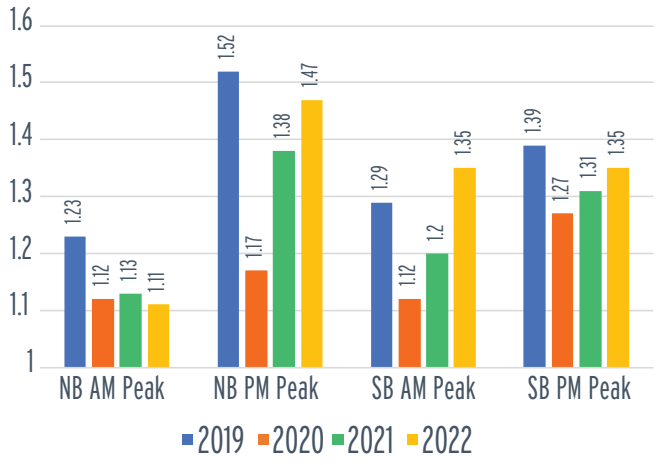
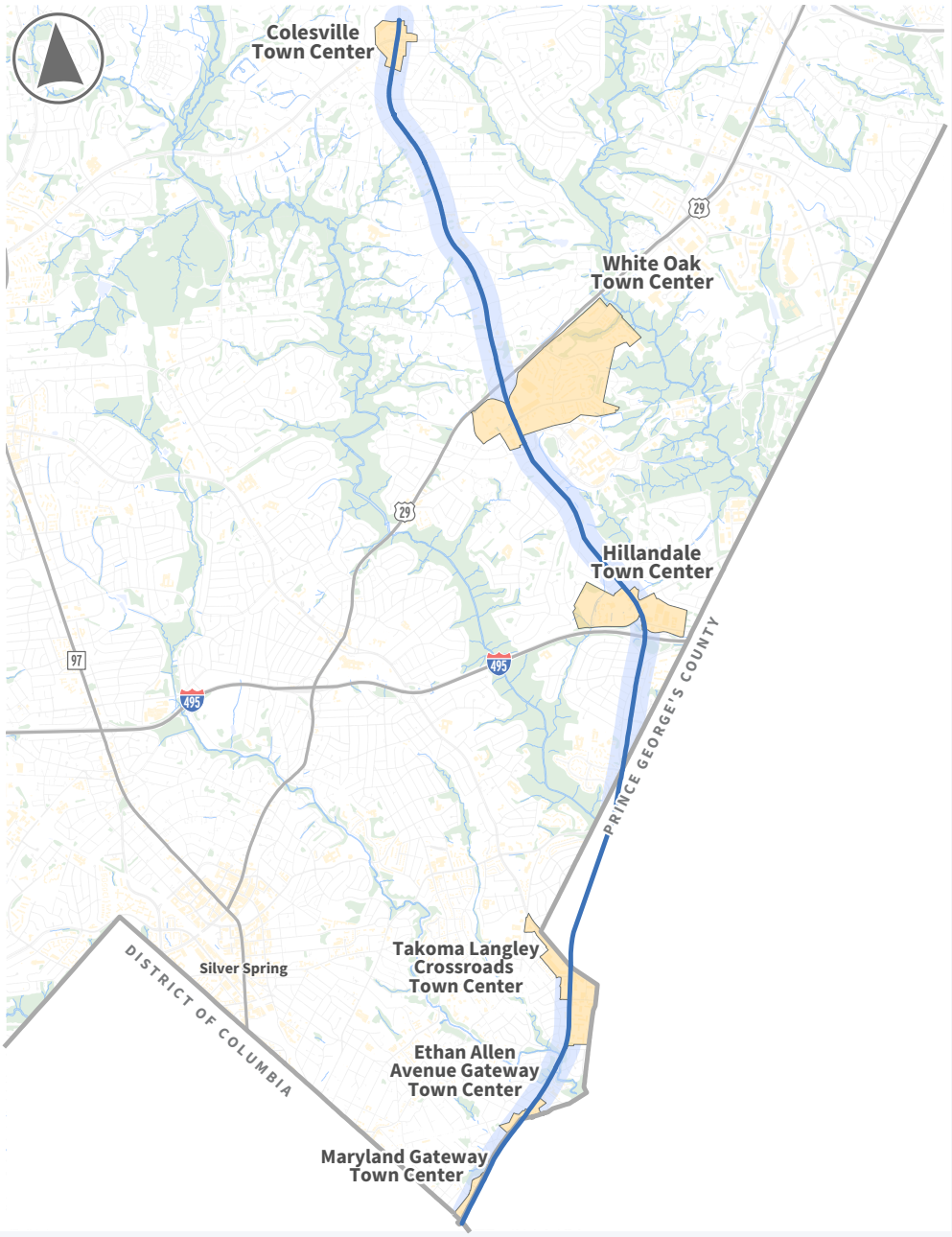


MD 355 South

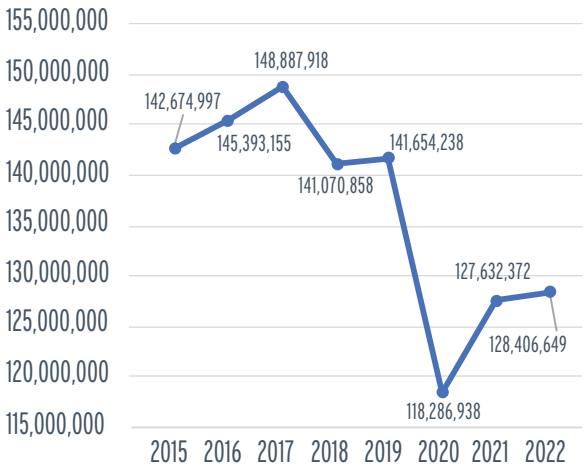
	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
 Downtown White Flint	6%	20%	1.8	25%
Suburban	32%	15%	1.1	N/A
 Downtown Bethesda	41%	75%	1.1	85%
Suburban	32%	1%	2.8	N/A
 Downtown Friendship Heights	0%	36%	1.1	43%

New Hampshire Avenue



- Corridor
- Downtown
- Town Center
- Suburban
- Industrial

Vehicle Miles Traveled



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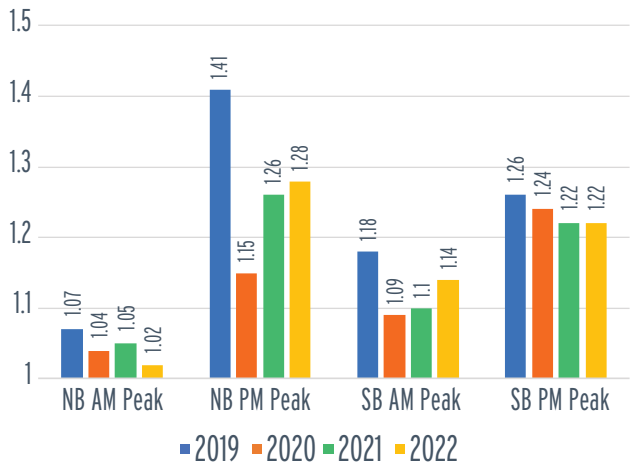


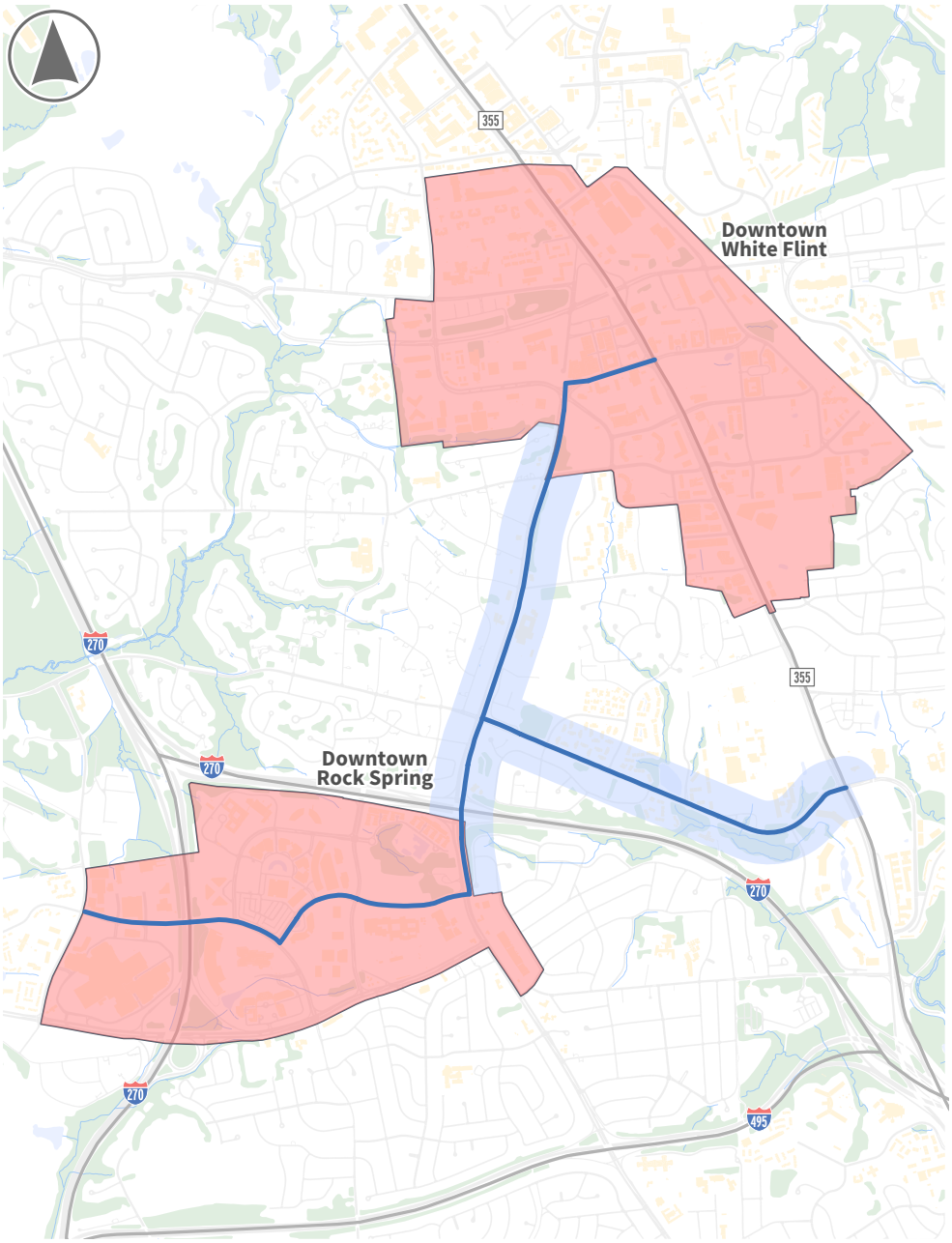
New Hampshire Avenue

	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
 Colesville Town Center	0%	0%	1.2	125%
Suburban	2%	2%	1.9	N/A
 White Oak Town Center	0%	18%	1.5	26%
Suburban	26%	20%	1.2	N/A
 Hillandale Town Center	17%	0%	2.3	25%

New Hampshire Avenue

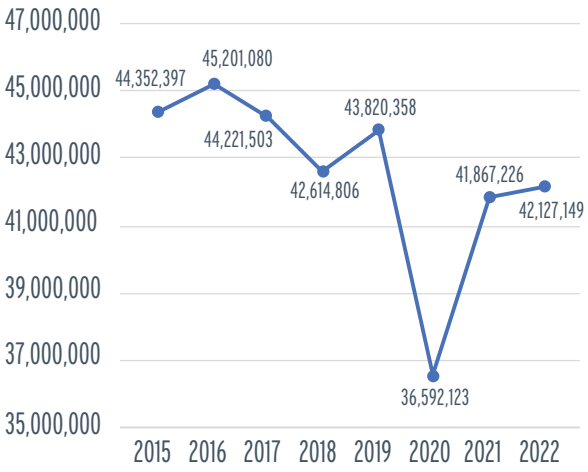
	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
Suburban	0%	21%	1.2	N/A
Prince George's County	N/A	N/A	N/A	N/A
 Takoma Langley Crossroads Town Center	0%	30%	1.1	60%
Suburban	0%	29%	0.6	N/A
 Ethan Allen Avenue Gateway Town Center	0%	36%	1.8	300%
 Maryland Gateway Town Center	0%	0%	N/A	100%

Old Georgetown Road



Corridor
Downtown
Town Center
Suburban
Industrial

Vehicle Miles Traveled



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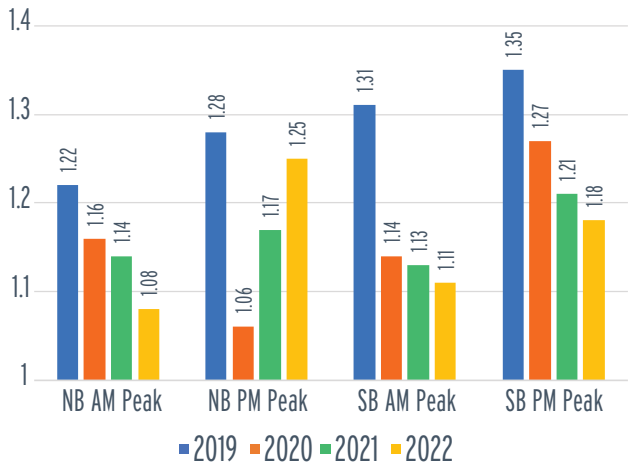
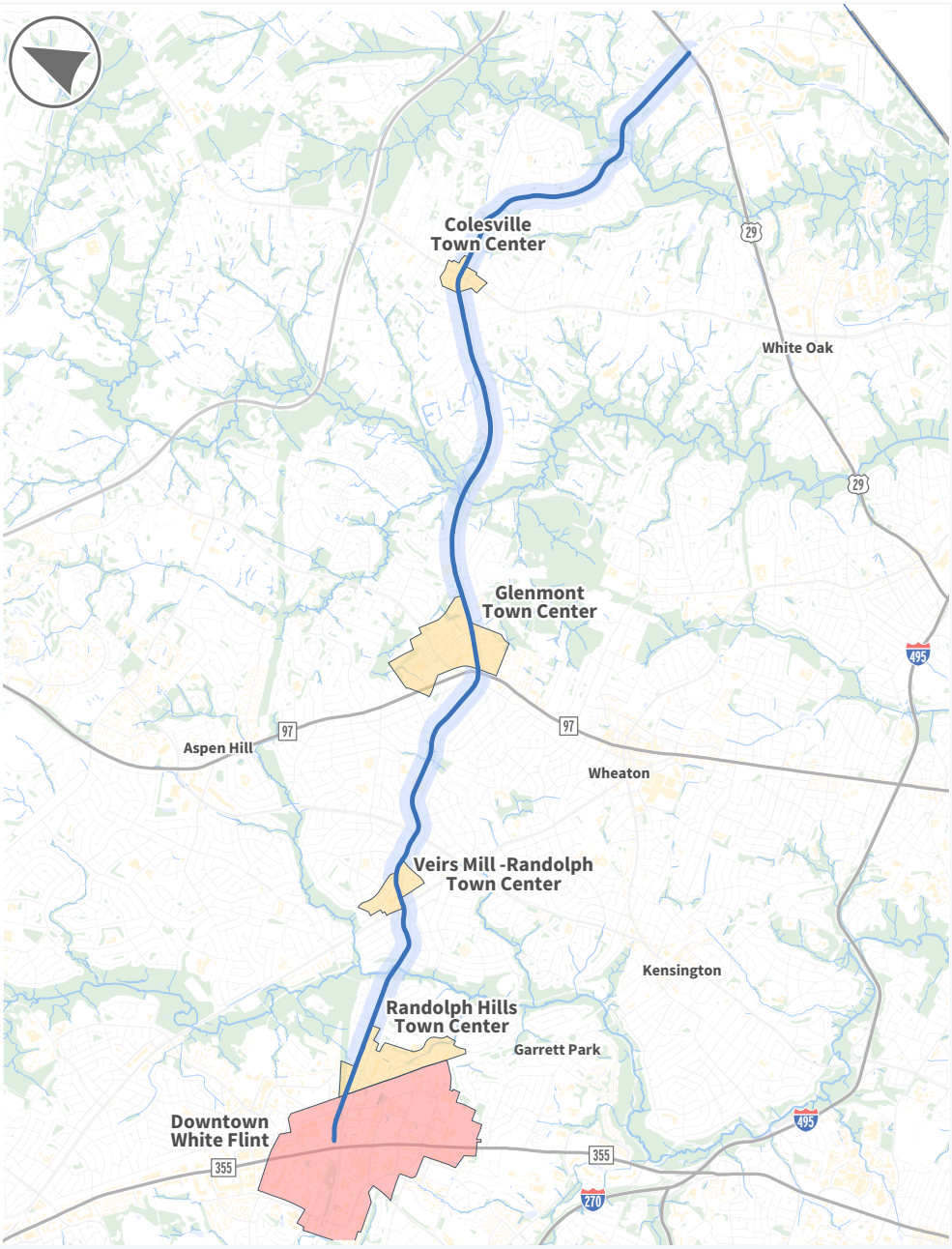


Old Georgetown Road

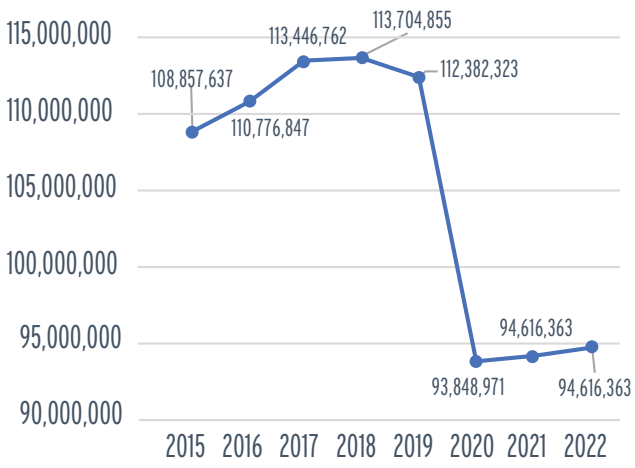
	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
 Downtown White Flint	2%	7%	2.1	25%
Suburban	14%	20%	1.0	N/A
 Downtown Rock Spring	19%	13%	2.4	19%

Randolph Road



Corridor
Downtown
Town Center
Suburban
Industrial

Vehicle Miles Traveled



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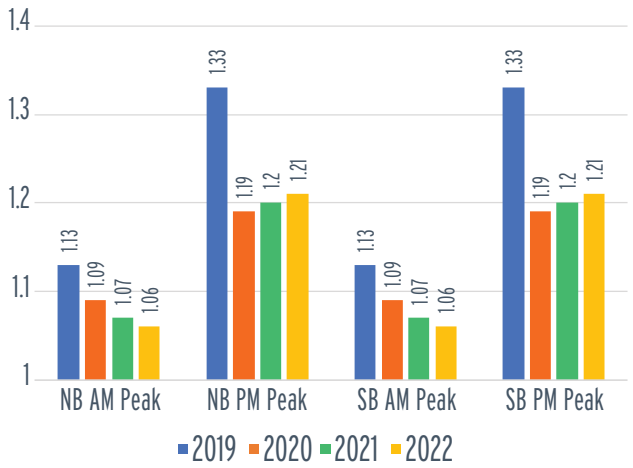
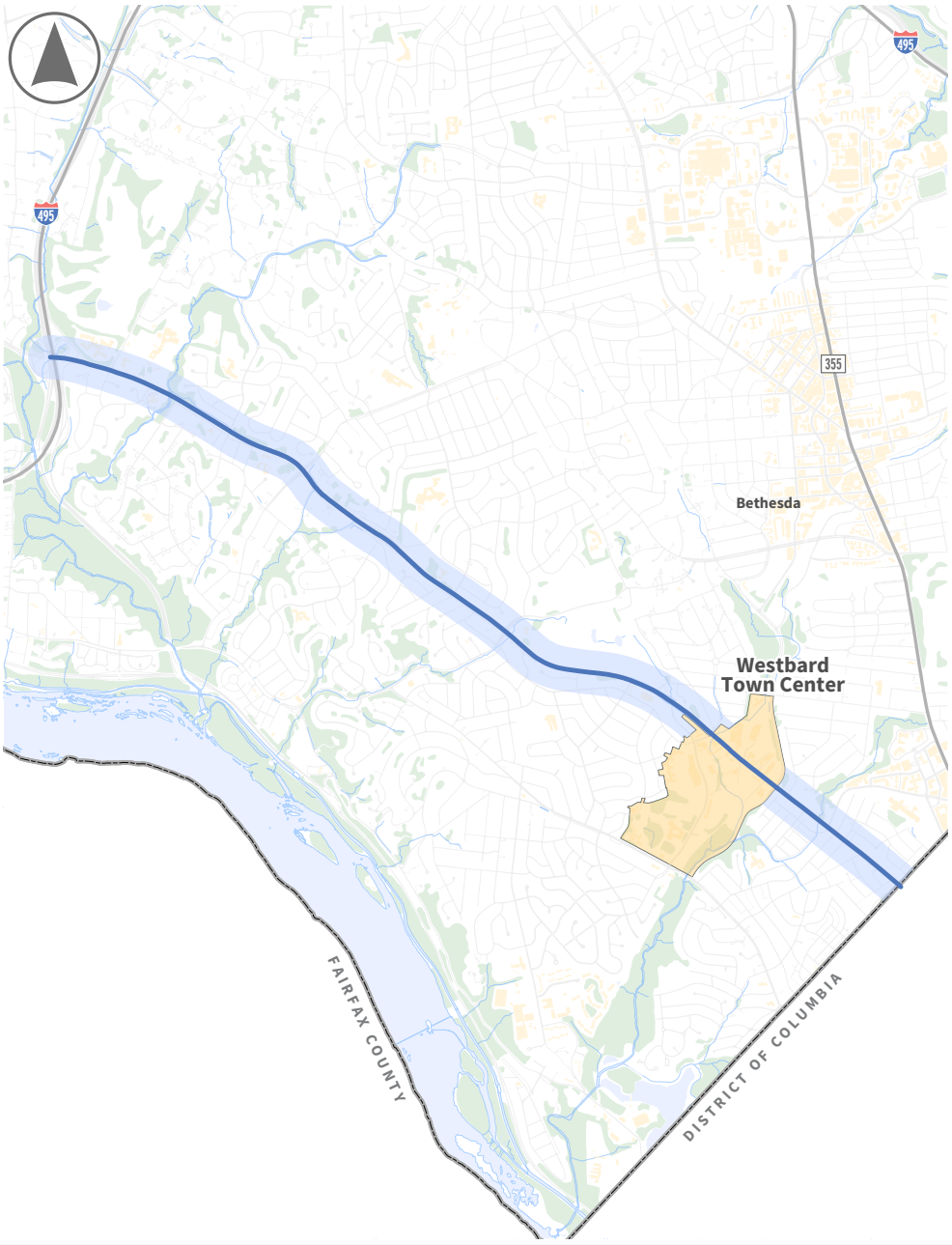


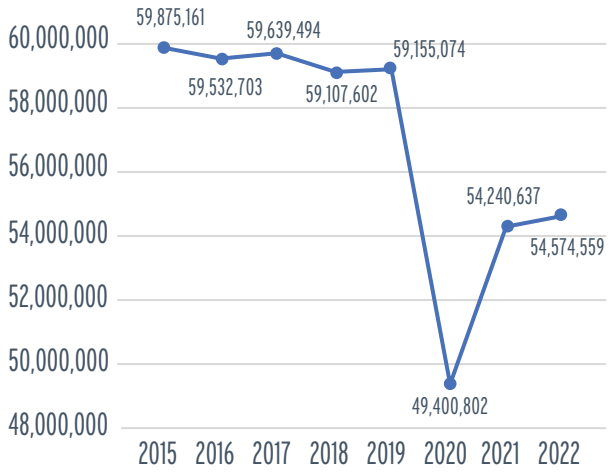
Randolph Road

	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
Suburban	30%	3%	1.3	N/A
 Colesville Town Center	31%	0%	4.3	125%
Suburban	0%	0%	1.4	N/A
 Glenmont Town Center	1%	19%	2.0	31%
Suburban	0%	51%	1.3	N/A
 Veirs Mill - Randolph Town Center	0%	0%	1.6	67%
Suburban	3%	33%	1.3	N/A
 Randolph Hills Town Center	22%	40%	1.9	45%
 Downtown White Flint	49%	39%	1.4	25%

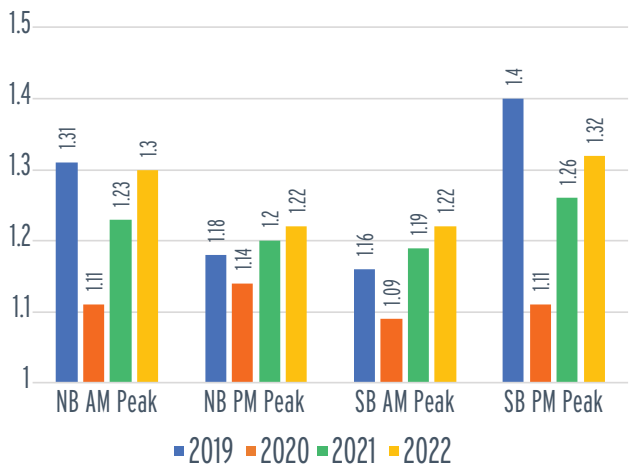
River Road



Vehicle Miles Traveled



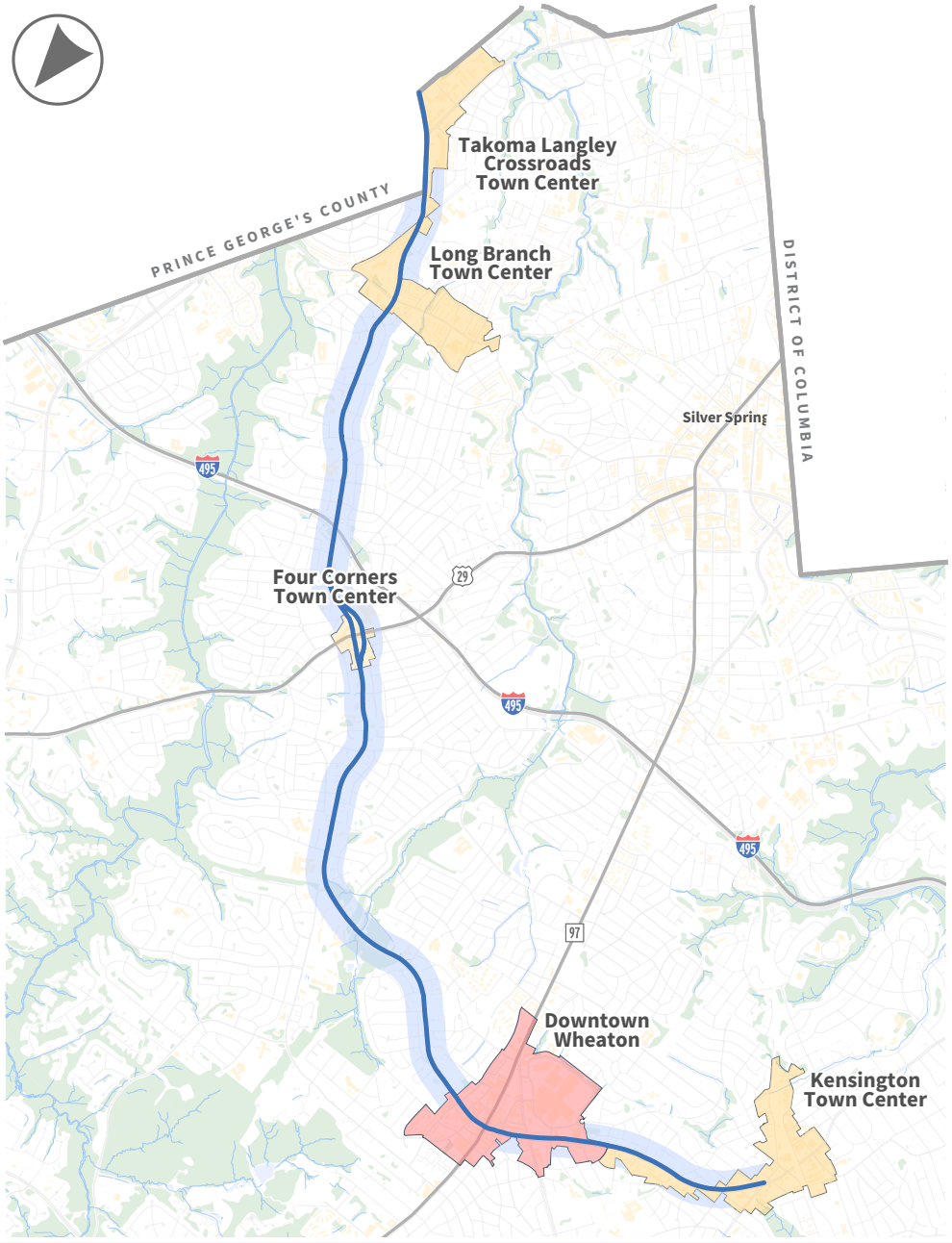
Travel Time Index



River Road

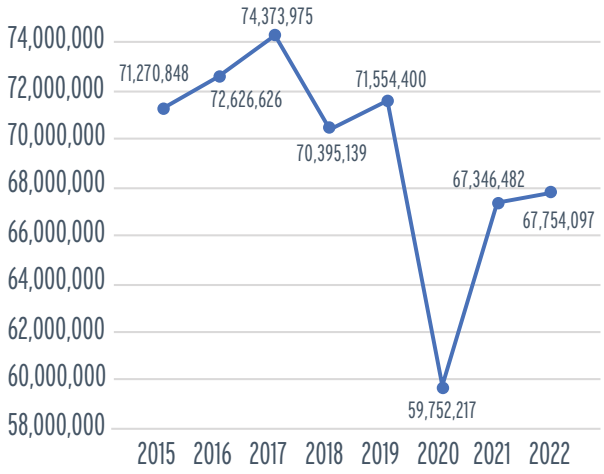
	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
Suburban	0%	0%	1.5	N/A
 Westbard Town Center	0%	5%	1.5	27%
Suburban	0%	1%	1.4	N/A

University Boulevard



Corridor
Downtown
Town Center
Suburban
Industrial

Vehicle Miles Traveled



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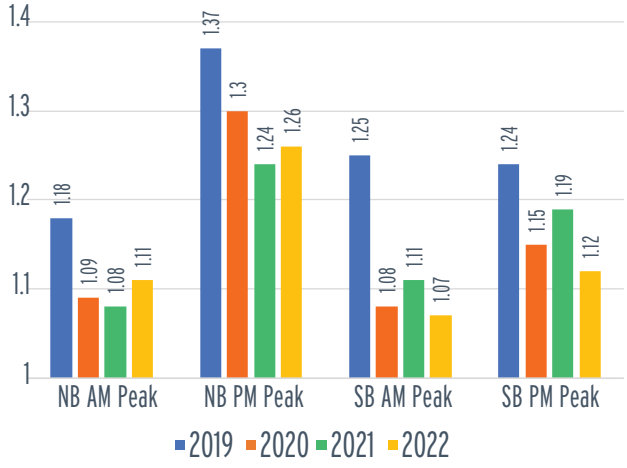
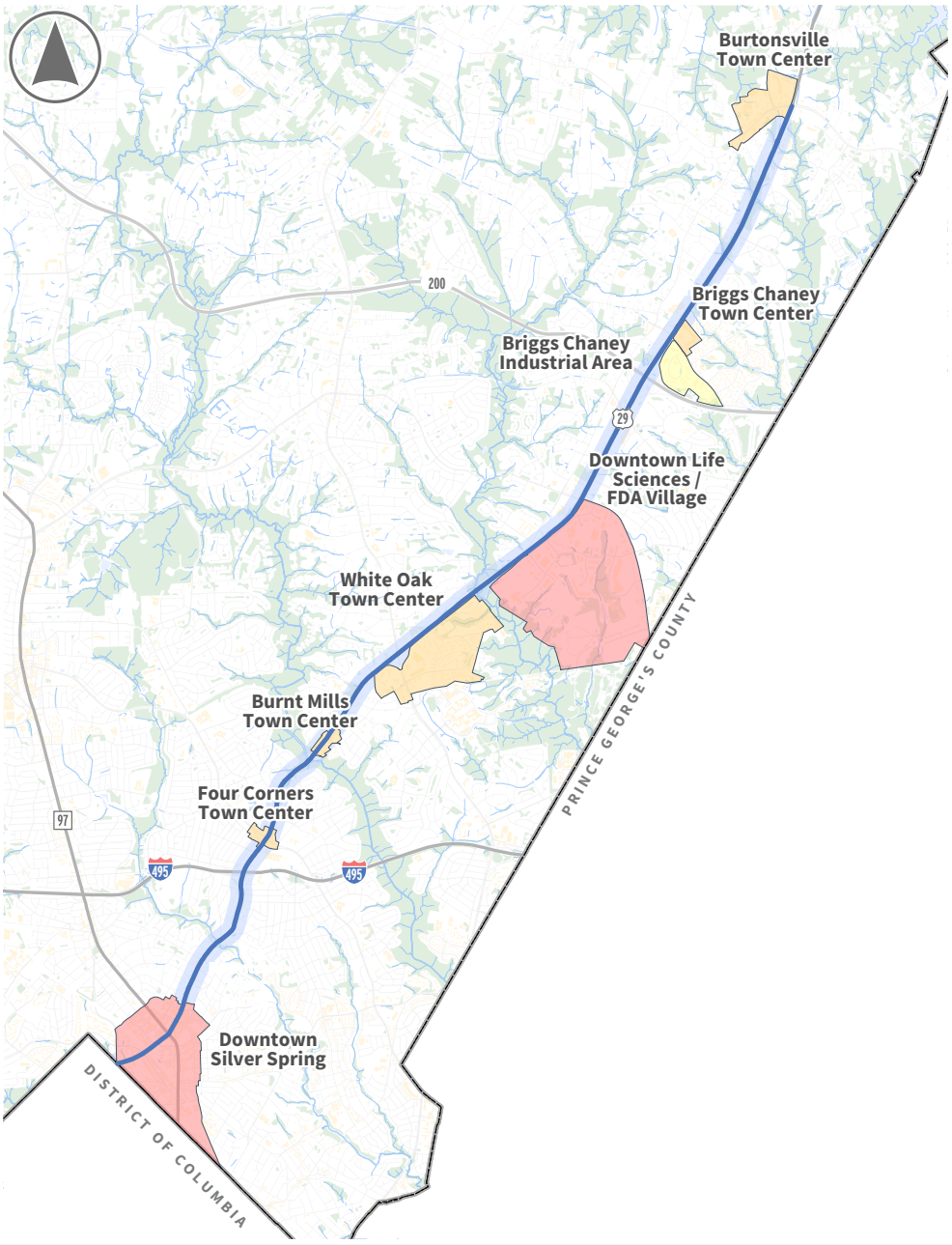
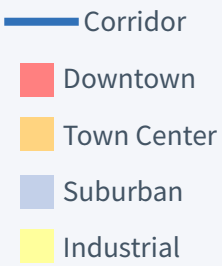


University Boulevard

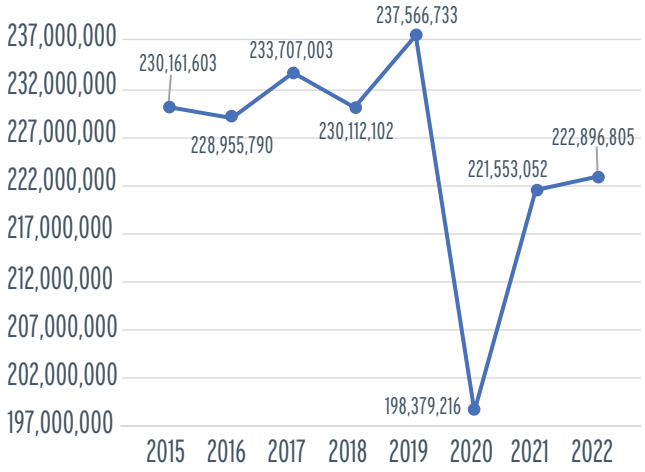
	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
 Takoma Langley Crossroads Town Center	0%	27%	0.8	60%
 Long Branch Town Center	0%	13%	1.6	71%
Suburban	10%	10%	1.1	N/A
 Four Corners Town Center	20%	14%	1.3	233%
Suburban	6%	2%	1.2	N/A
 Downtown Wheaton	0%	21%	1.6	63%
 Kensington Town Center	0%	7%	4.0	145%

US 29





Vehicle Miles Traveled



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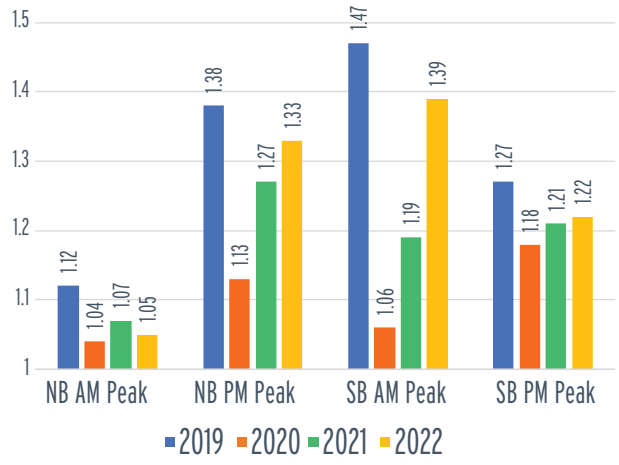


US 29

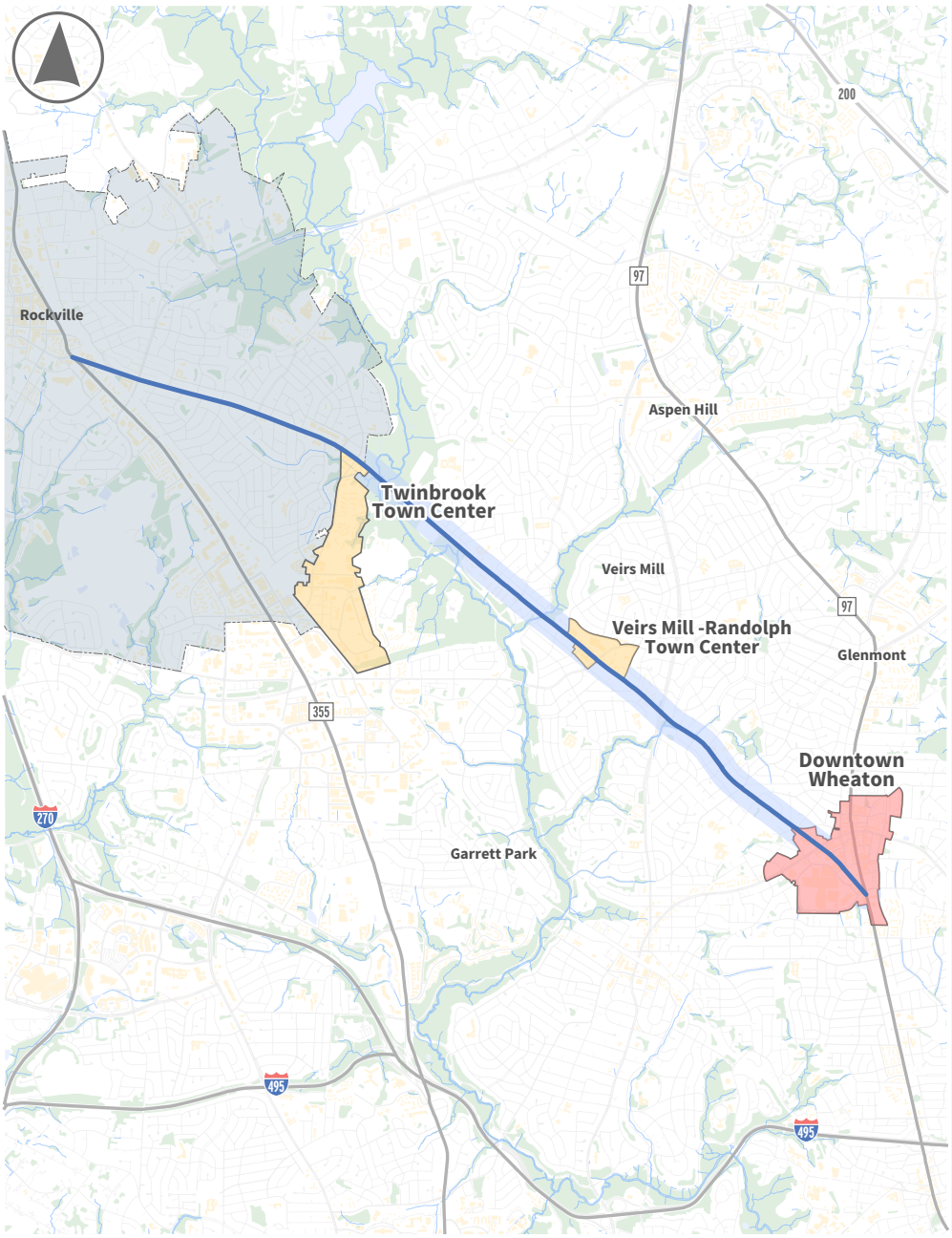
	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
 Burtonsville Town Center	39%	N/A		50%
Suburban	31%	19%		N/A
 Downtown Life Sciences / FDA Village	0%	0%	1.7*	4%
 White Oak Town Center	0%	0%		26%
Suburban	0%	13%		N/A
 Burnt Mills Town Center	0%	30%	2.0	133%
Suburban	19%	0%	0.7	N/A
 Four Corners Town Center	32%	12%	1.5	233%

* Protected Crossing Spacing Build Out between Burtonsville Town Center and Burnt Mills Town Center evaluated together as a Suburban area.

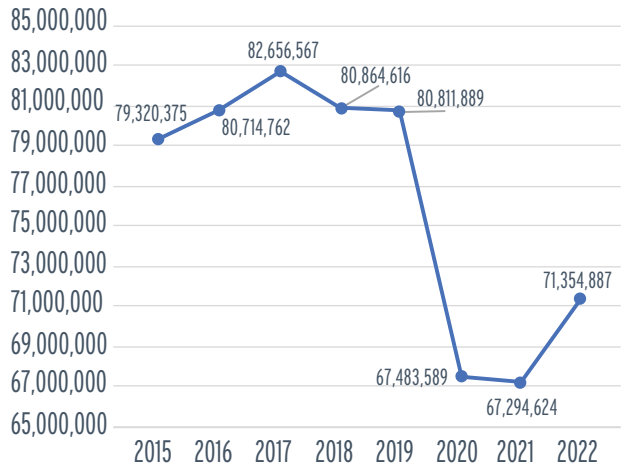
US 29

	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
Suburban	14%	8%	1.2	N/A
 Downtown Silver Spring	11%	81%	1.4	68%

Veirs Mill Road



Vehicle Miles Traveled



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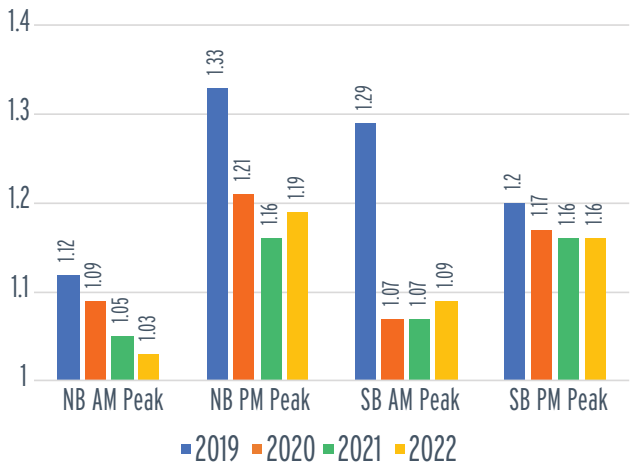

Veirs Mill Road

	Planned Bikeway Build Out	Pedestrian Pathway Comfort	Protected Crossing Spacing Build Out	Street Grid Build Out
 Twinbrook Town Center	0%	0%	N/A	36%
Suburban	15%	1%	1.4	N/A
 Veirs Mill - Randolph Town Center	1%	29%	1.6	67%
Suburban	18%	14%	0.6	N/A
 Downtown Wheaton	0%	2%	1.5	63%

Thrive Growth Corridor Recommendations and Summary

The following recommendations are based on the evaluation in the Growth Corridor profiles and are intended to improve protected crossing spacing, build out a grid of streets, and build out the walking and bicycling networks. < insert corridor profiles here>

Protected Crossing Spacing

Table 7 recommends several locations along Thrive Montgomery 2050 Growth Corridors that should be considered for new protected crossings. These locations have some of the highest ratios between the actual distance between protected crossings and the target distance between protected crossings identified in the Complete Streets Design Guide, and many are Equity Focus Areas (EFAs). For a complete list of protected crossing spacing along the county's Growth Corridors, please see Appendix B.

Table 7: Recommended New Protected Crossings Along Thrive Growth Corridors

Location	Area	Actual	Target	Ratio
Connecticut Avenue Growth Corridor				
Maplefield Dr to Denfeld Ave	Suburban	3,000	1,300	2.3
Saul Rd to Beach Dr	Suburban	2,800	1,300	2.2
Washington St to Saul Rd	Suburban	2,700	1,300	2.1
Matthew Henson Trail to Weller Rd	Suburban	2,700	1,300	2.1
Georgia Avenue Growth Corridor				
August Dr to Forest Glen Dr	Forest Glen Town Center	2,100	600	3.5
Arcola Ave to Blueridge Ave	Downtown Wheaton	1,400	400	3.5
Rossmoor Blvd to Bel Pre Rd	Suburban	3,200	1,300	2.5
16th St to Spring St	Suburban	3,100	1,300	2.4
Norbeck Rd to Rossmoor Blvd	Suburban	2,900	1,300	2.2
MD 355 Growth Corridor				
Germantown Rd to Middlebrook Rd	Foxchapel Town Center	4,000	600	6.7
Gunner's Branch Rd to Plummer Dr	Foxchapel Town Center	2,500	600	4.2
Little Seneca Pkwy to W. Old Baltimore Rd	Suburban	3,600	1,300	2.8
New Hampshire Avenue Growth Corridor				
Chalmers Rd to Powder Mill Rd	Hillandale Town Center	3,200	600	5.3
Wolf Dr to Venice Dr	Suburban	4,600	1,300	3.5
Jackson Rd to Heartfields Dr	Suburban	2,800	1,300	2.2

Location	Area	Actual	Target	Ratio
Old Georgetown Road Growth Corridor				
Rockledge Dr to Fernwood Rd	Downtown Rock Spring	1,500	400	3.8
Randolph Road Growth Corridor				
New Hampshire Ave to Locksley Ln	Colesville Town Center	3,000	600	5.0
Lauderdale Dr to Gaynor Rd	Randolph Hills Town Center	2,800	600	4.7
Glenallan Ave to Garden Gate Rd	Glenmont Town Center	2,000	600	3.3
Colie Dr to Connecticut Ave	Veirs Mill/Randolph Town Center	1,800	600	3.0
Hawkesbury Ln to Locksley Ln	Suburban	3,800	1,300	2.9
University Boulevard Growth Corridor				
Newport Mill Rd to Valley View Ave	Kensington Town Center	3,800	600	6.3
Caddington Ave to Dennis Ave	Suburban	2,900	1,300	2.2
US 29 Growth Corridor				
Greencastle Rd to Briggs Chaney Rd	Suburban	5,300	1,300	4.1
Veirs Mill Road Growth Corridor				
Aspen Hill Rd to Robindale Dr	Suburban	3,500	1,300	2.7

Grid of Streets

Appendix B includes a summary of block ratios in Montgomery County's eight existing and emerging downtowns and 47 town centers. To build out a grid of streets in Downtowns, in Town Centers, and along Growth Corridors, with block sizes based on the protected crossing spacing standards in the Complete Streets Design Guide, complete the following tasks:

- Capital Projects: Continue to advance projects in the capital budget to build out the street grid, including North High Street Extended (CIP # 502310) in Olney and Summit Avenue Extension (CIP # 502311) in Kensington.
- Development Projects: Develop tools to reduce the size of blocks through the development approval process.
- Master Plans: Identify opportunities to expand the street grid in Downtowns, in Town Centers, and along Growth Corridors.

Pedestrian Network Comfort

Table 8 shows the percentage of walkways on Growth Corridors that are acceptable for pedestrians. While the overall average is 17%, many corridors have lower rates of acceptable walkways. Therefore, Montgomery County should focus on upgrading the walkway network along all Growth Corridors, with a particular focus on those with below average percentages of acceptable walkways, including:

- Old Georgetown Road
- Veirs Mill Road
- New Hampshire Avenue
- MD 355 North
- University Boulevard
- River Road

Table 8: Pedestrian Walkway Evaluation Along Growth Corridors

Growth Corridor	% Acceptable	% Unacceptable	% Gaps
Connecticut Avenue	31%	69%	0%
Georgia Avenue South	30%	70%	0%
MD 355 South	26%	72%	2%
US 29	18%	43%	39%
Georgia Avenue North	17%	82%	1%
Randolph Road	17%	83%	0%
Old Georgetown Road	16%	84%	0%
Veirs Mill Road	14%	56%	30%
New Hampshire Avenue	13%	82%	5%
MD 355 North	11%	70%	19%
University Boulevard	9%	91%	0%
River Road	1%	34%	65%
Average	**17%**	**72%**	**11%**

Bicycle Network Completeness

Table 9 shows the percentage of master-planned bikeways along Growth Corridors that are existing, under construction, or funded. While the overall average is 15%, most corridors are at or below the average, the exceptions being the Georgia Avenue South and MD 355 North Growth Corridors, both of which are making substantial progress toward implementing master-planned bikeways. Therefore, Montgomery County should continue focusing on upgrading the bikeway network along all Growth Corridors, with a particular focus on:

- Veirs Mill Road
- Randolph Road
- US 29
- MD 355 South
- Georgia Avenue North
- Old Georgetown Road
- New Hampshire Avenue

Table 9: Bikeway Completion Evaluation Along Thrive Growth Corridors

Growth Corridor	% Existing	% Under Construction	% Funded	% Total
Georgia Avenue South	19%	0%	35%	53%
MD 355 North	29%	0%	2%	31%
Veirs Mill Road	3%	0%	12%	15%
Randolph Road	15%	0%	0%	15%
US 29	15%	0%	0%	15%
MD 355 South	13%	0%	1%	15%
Georgia Avenue North	13%	0%	1%	14%
Old Georgetown Road	0%	0%	10%	10%
New Hampshire Avenue	5%	2%	1%	7%
University Boulevard	4%	0%	1%	6%
Connecticut Avenue	1%	0%	0%	2%
River Road	0%	0%	0%	0%
Average	**12%**	**0%**	**3%**	**15%**

Chapter 4: *Pedestrian Existing Conditions*

The *Pedestrian Master Plan* will be Montgomery County's first countywide master plan to make recommendations to holistically improve the pedestrian experience. An important element in the county's *2017 Vision Zero Action Plan* and *2021 Climate Action Plan*, the Planning Board Draft *Pedestrian Master Plan* supports the *Thrive Montgomery 2050* goal to "develop a safe, comfortable and appealing network for walking, biking and rolling." The draft plan documents the pedestrian experience in Montgomery County today and makes recommendations that are in line with national and international best practices to improve the pedestrian experience in the years to come. The Pedestrian Master Plan is anticipated to be approved by the County Council in October 2023.

The draft plan envisions a county where walking (and rolling using a mobility device) is safer, more comfortable, more convenient, and more accessible for pedestrians of all ages and abilities. To achieve this vision, the draft plan includes the following goals:

1) Increase Walking Rates and Pedestrian Satisfaction
2) Create a Comfortable, Connected, Convenient Pedestrian Network
3) Enhance Pedestrian Safety
4) Build an Equitable and Just Pedestrian Network

Findings

This chapter serves as an update to the Pedestrian Existing Conditions Report that was released in March of 2022 to reflect ongoing data collection regarding the quality of the pedestrian environment throughout the county. It also represents the baseline for which progress towards the Pedestrian Master Plan's four goals will be measured in subsequent Travel Monitoring Reports. For the complete pedestrian existing conditions report, please see Appendix C.

Walking Rates and Satisfaction

Overall, 7.5% of weekday trips are made by walking (Table 10) and 1.8% of commute trips are made by walking in Montgomery County. Walking rates vary greatly by land use type, with a greater share of trips made by walking in urban areas (11.3%) compared with transit corridors (7.3%) and exurban/rural areas (4.6%). In addition, residents in urban areas make up a greater share of commute trips by walking (3.2%) than those in transit corridors (1.5%) or exurban/rural areas (1.0%).

Walking rates also vary depending on whether an area is an Equity Focus Area (EFA). Residents in EFAs make 9.6% of trips by walking, while residents in non-EFAs make 7.0% of trips by walking. The share of commute trips made by walking is only slightly greater in EFAs (1.9%) than in non-EFAs (1.8%).

Table 10: Pedestrian Mode Share by Area Types

	Total	Land-Use Type			Equity Focus Areas	
		Urban	Transit Corridor	Exurban/ Rural	EFAs	Non-EFAs
Overall Weekday Trips*	**7.5%**	11.3%	7.3%	4.6%	9.6%	7.0%
Commute Trips**	**1.8%**	3.2%	1.5%	1.0%	1.9%	1.8%

Overall, 12% of Montgomery County Public School students walk to school and 16% walk from school. Walking is most prevalent among elementary school students, with 16% of arrivals made by walking and 18% of departures made by walking (Table 11). Walking is least prevalent among high school students, with 8% of arrivals made by walking and 12% of departures made by walking.

Table 11: Walking Arrivals and Departures by School Level

School Level	Arrival	Departure
Elementary School	16%	18%
Middle School	11%	16%
High School	8%	12%
Total	**12%**	**16%**

As shown in Figure 17, 52% of respondents are satisfied with the overall pedestrian experience in Montgomery County, with respondents in urban areas reporting the highest rates of satisfaction (60%) and those in exurban/rural areas reporting the lowest satisfaction (46%).

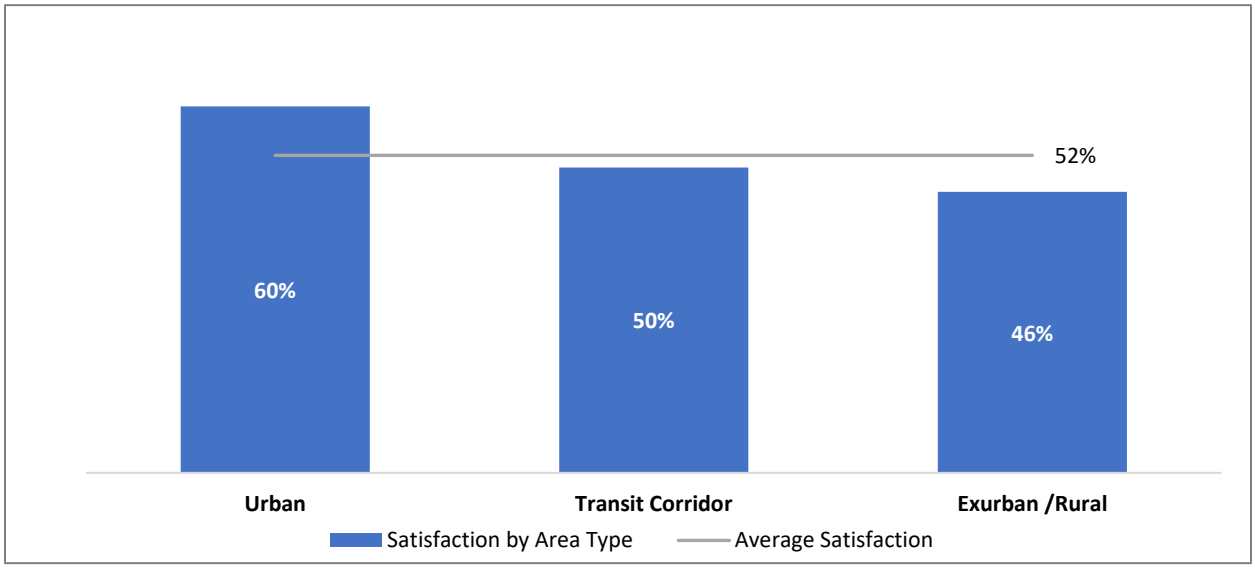

Figure 17: Satisfaction with the Overall Pedestrian Experience

As shown in Figure 17, only 43% of pedestrians with reported disabilities are satisfied with their overall pedestrian experience in Montgomery County, compared with 53% of respondents without reported disabilities. However, there are notable differences based on land-use type, with respondents in urban areas reporting the same level of satisfaction whether they have a reported disability (59%) or not (60%). In contrast, respondents with reported disabilities in transit corridors are substantially less satisfied (33%) than respondents without reported disabilities (52%). Respondents with reported disabilities in exurban/rural areas are also less satisfied (36%) than respondents without reported disabilities (47%), but the differences are less pronounced.

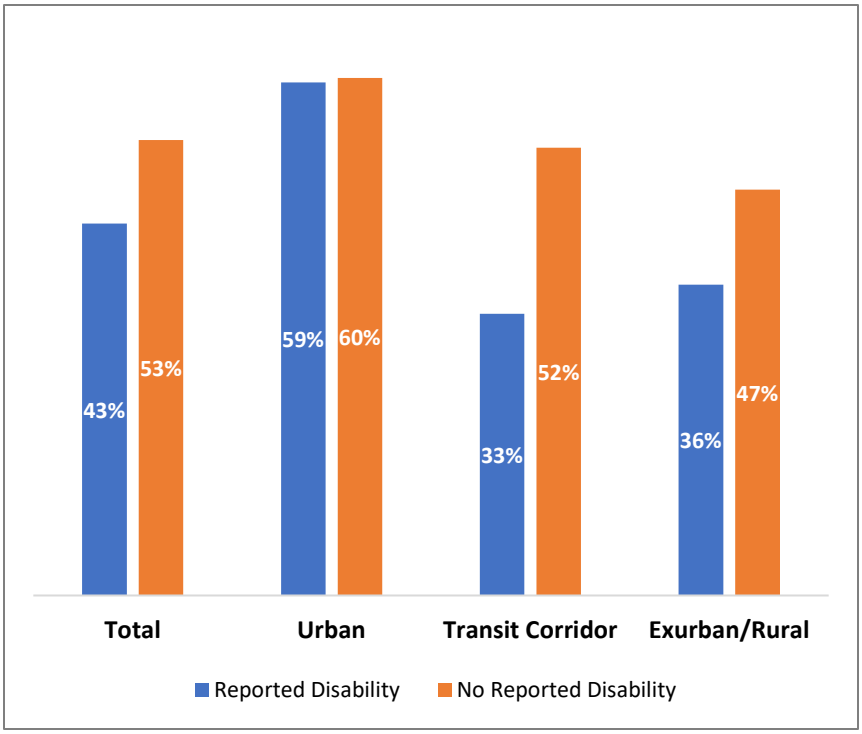

Figure 18: Overall Satisfaction by Reported Disability Status and Land-Use Type

A Comfortable, Connected, Convenient Pedestrian Network

Countywide, there are about 2,500 miles of sidewalks (primarily on local—or residential—streets) and 220 miles of sidewalk gaps on non-local streets. These sidewalk gaps are not evenly distributed across the county; 79% of the sidewalk gap mileage is in the exurban/rural part of the county. The highlighted cells in Table 12 call out those sidewalk gaps in urban and transit corridor communities along busier, faster streets and locations with more pedestrian activity.

Table 12: Sidewalk Gap Mileage by Street Classification and Land Use[15]

Street Classification	Existing Sidewalks (miles)	Gap Mileage			
		Urban	Transit Corridor	Exurban/ Rural	Total
Controlled Major Highway	20	1	0	0	**1**
Major Highway	205	4	7	38	**49**
Parkway	3	0	0	0	**0**
Arterial	202	4	10	84	**98**
Minor Arterial	63	0	2	5	**7**
Business	81	2	0	0	**2**
Primary Residential	228	3	8	47	**58**
Industrial	12	0	0	1	**1**
Country Road	2	0	0	3	**3**
Rustic Road	2	0	0	0	**0**
Exceptional Rustic Road	0	0	0	1	**1**
Local Streets	1,622	N/A	N/A	N/A	**N/A**
Total	**2,438**	**14**	**27**	**179**	**220**

[15] Missing sidewalks on local streets are not classified as sidewalk gaps.

Street buffer width is the distance between the pathway and the curb. Street buffers separate moving vehicles from pedestrians, and wide enough buffers may contain large street trees to provide robust physical separation from traffic, shade canopy, and a sense of enclosure for pedestrians. Of the 2,438 miles of county sidewalks, most (51%) have at least a six-foot buffer between the sidewalk and the street. However, nearly half (47%) of sidewalks along major highways like Georgia Avenue are missing buffers. By contrast, 20% of arterial sidewalks, 11% of primary residential sidewalks, and 18% of local street sidewalks are missing buffers (Table 13).

Table 13: Street Buffer Width by Street Classification

Street Classification	Buffer Width		
	No Buffer	Less than Six Feet	Six Feet or Greater
Controlled Major Highway	3%	74%	23%
Major Highway	47%	34%	19%
Parkway	4%	36%	61%
Arterial	20%	35%	45%
Minor Arterial	21%	34%	45%
Business	28%	44%	28%
Primary Residential	11%	23%	66%
Industrial	14%	27%	59%
Country Road	0%	4%	96%
Rustic Road	7%	33%	60%
Exceptional Rustic Road	52%	27%	21%
Local Street	18%	26%	56%

Sidewalks in EFAs are less likely to have buffers than those outside of EFAs. While 27% of sidewalks in EFAs are missing street buffers, only 18% of those in non-EFAs lack sidewalks (Figure 19).

Figure 19: Street Buffer Width by Street Classification

Overall, 61% of pathway distance and 42% of crossing distance in the county is “very comfortable” or “somewhat comfortable” (Table 14).

Table 14: Overall Pedestrian Comfort on Streets and at Crossings

PLOC Score	Pathway Distance	Crossing Distance
Very Comfortable	25%	10%
Somewhat Comfortable	36%	32%
Uncomfortable	21%	38%
Undesirable	17%	19%

An analysis of pedestrian conditions along all streets and crossings in the county indicates that there are large areas of the county where it is uncomfortable to walk and many locations where it is undesirable to do so. Figure 20 summarizes pedestrian comfort along pathways. Comfort levels in urban (67%) and transit corridors (71%) are greater than in exurban/rural (52%) areas of the county. Pathway comfort levels are substantially higher in EFAs (71%) than non-EFAs (60%).

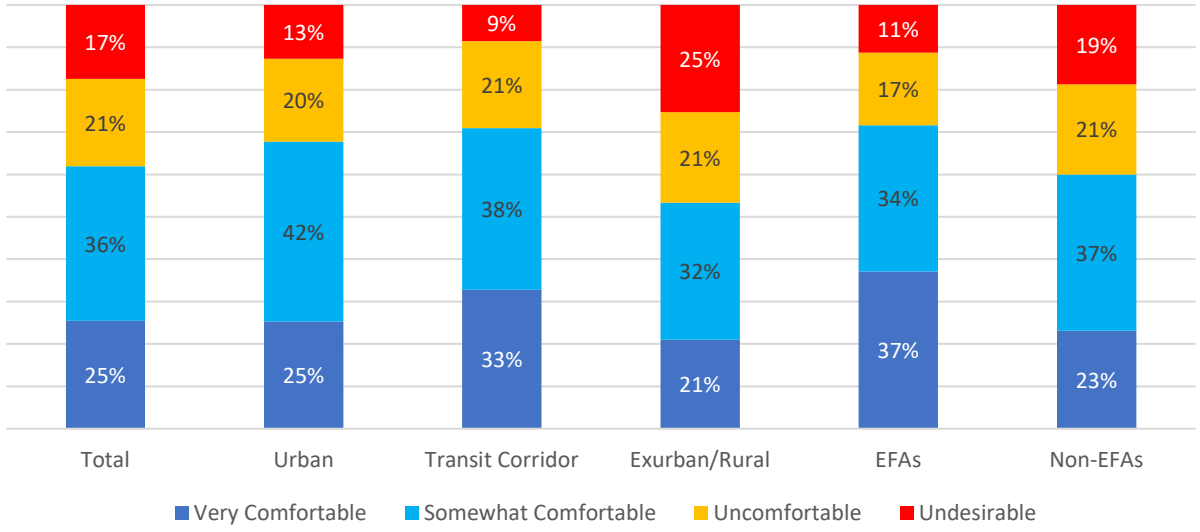

Figure 20: Overall Pedestrian Comfort Along Pathways

Table 15 provides comfortable access scores for walking to community destinations (libraries, recreation centers, and parks) and transit stations broken out by pathway and crossing mileage. While all libraries and recreation centers were scored, only two types of parks (regional and recreational) were included in the analysis. Overall, the pathways are the most comfortable part of the walk to these destinations. Crossing streets is generally less comfortable. While there are disparities between pathway comfort and crossing comfort for most destinations, the difference for parks is the greatest at 35%. Only 35% of the crossing distance between residences and parks was comfortable, lower than every other destination in Table 15.

Table 15: Comfortable Pedestrian Access to Community Destinations and Transit Stations

	Pathway Distance	Crossing Distance
Community Destinations		
Libraries	80%	66%
Recreation Centers	78%	66%
Parks	70%	35%
Transit Stations		
Red Line	88%	66%
Purple Line	76%	70%
Brunswick Line	90%	72%

Regarding walking to schools, Table 16 shows that walking to elementary schools tends to be more comfortable, with 55% comfortable access walking along streets, and 43% comfortable access at crossings. In contrast, walking to high schools tends to be the least comfortable, with only 27% comfortable access along pathways and 13% comfortable access at crossings.

Table 16: Comfortable Pedestrian Access to School

School Types	Streets	Crossings
Elementary Schools	55%	43%
Middle Schools	38%	23%
High Schools	27%	13%

Pedestrian Safety

While users of all transportation modes suffer fatalities and severe injuries, pedestrians are particularly vulnerable. Figure 21 shows that pedestrians were involved in only 4% of total crashes between 2015 and 2022, but they accounted for 26% of severe injuries and fatalities.

Figure 21: Pedestrian Crashes as a Percent of Total Crashes and Severe Injuries and Fatalities

Higher classification roads such as controlled major highways and major highways, as well as business streets, disproportionately account for pedestrian crashes that result in severe injuries or fatalities. Table 17 shows that while controlled major highways, major highways, and business streets make up only 8% of roadway mileage, they account for 57% of pedestrian crashes and 63% of pedestrian severe injuries and fatalities.

Table 17: Pedestrian Crashes by Roadway Type

Street Classification	Percent of Roadway Miles	Percent of Pedestrian Crashes	Percent of Pedestrian Severe Injuries and Fatalities
Controlled Major Highway	1%	3%	5%
Major Highway	5%	33%	40%
Parkway	0%	0%	0%
Arterial	8%	11%	11%
Minor Arterial	2%	5%	3%
Business	2%	21%	18%
Primary Residential	7%	16%	15%
Industrial	0%	1%	0%
Country Arterial	2%	0%	0%
Country Road	1%	0%	0%
Rustic & Exceptionally Rustic	6%	0%	1%
Local	67%	10%	8%
Total	**100%**	**100%**	**100%**

An Equitable and Just Pedestrian Network

Addressing equity and social justice first requires understanding the disparities that exist around pedestrian issues. Throughout the report, the analysis and results are supplemented with data about how specific topics pertain to historically disadvantaged people and areas of the county. The equity findings described throughout the previous sections are summarized below.

Walking Rates and Satisfaction

- **Overall and commute walking rates are higher in EFAs:** Residents in EFAs make 9.6% of trips by walking, compared with residents of non-EFAs who made 7.0% of trips by walking. The share of commute trips made by walking is only slightly greater in EFAs (1.9%) than in non-EFAs (1.8%).
- **Walk-to-school rates are slightly higher for Title I/Focus schools and those with a high number of students enrolled in Free and Reduced Meals (FARM):** Students at designated schools have walk mode shares to and from school of 13% and 17% respectively, compared with 11% and 15% arrival and departure walk shares for non-designated schools. Many of the schools with the highest walking rates are designated as Title I/Focus or have a high FARM rate.
- **Pedestrian satisfaction is lower for people with reported disabilities:** Only 43% of pedestrians with reported disabilities are satisfied with their overall pedestrian experience, compared with 53% of respondents without reported disabilities. Respondents in transit corridors and exurban/rural are less satisfied if they report having a disability (33% and 36%, respectively) than respondents without reported disabilities (52% and 47%, respectively).

A Comfortable, Connected, Convenient Pedestrian Network

- Crossing comfort accessing community destinations tends to be worse in EFAs, while pathway comfort is better.
- Title I/Focus elementary schools have more comfortable access than their more affluent counterparts. Pathway comfort for Title I/Focus Schools is 10% greater than it is for other elementary schools (60% vs. 50%). Crossing comfort for these schools is 11% greater (50% vs. 39%).
- Less comfortable pathways in urban and transit corridor EFAs have less tree-canopy coverage than similar pathways outside EFAs. “Somewhat comfortable” pathways in EFAs in urban areas have 5.7% less canopy coverage than non-EFAs. In transit corridor areas, these same pathways have 5.4% less coverage. Generally, people traveling along less comfortable sidewalks in EFA communities experience higher temperatures as a result of climate change than will people in other parts of the county.

Pedestrian Safety

- Crashes and injuries are overrepresented in EFAs. While EFAs contain only 14% of roadway miles in the county, they account for 41% of all pedestrian-involved vehicular crashes and 45% of such crashes that result in a fatality or severe injury.

Recommendations

The Planning Board Draft of the Pedestrian Master Plan includes recommendations related to pedestrian satisfaction, comfort, safety and equity. Below are recommendations that address the data in this report.

Goal 1: Increase Walking Rates and Walking Satisfaction in Montgomery County.

- Address Issues that Pedestrians with Disabilities Face: Improve the pedestrian experience for residents with disabilities, particularly in transit corridors and exurban/rural areas.
- Improve Pedestrian Satisfaction Along Streets: Address issues with low levels of pedestrian satisfaction throughout the county, with a focus on transit corridors and exurban/rural areas. Elements with countywide satisfaction below 40% include speed of cars alongside sidewalks and paths (21%), snow removal (28%), distance between sidewalks and cars (31%), how often driveways cross sidewalks (35%), and shading by trees or buildings (39%).
- Improve Pedestrian Satisfaction at Crossings: Address issues with low levels of pedestrian satisfaction throughout the county, with a focus on transit corridors and exurban/rural areas. Topics with countywide satisfaction below 40% include the number of vehicles cutting across the crosswalk (22%), places to stop partway while crossing (33%), and drivers stopping when pedestrians cross the street (34%).

Goal 2: Create a Comfortable, Connected, Convenient Pedestrian Network in Montgomery County.

- Fill Sidewalk Gaps: Repair sidewalks that are missing sections, with a focus on major highways, arterials, and primary residential streets in areas of the county where they will improve connectivity comfort to schools, parks, transit stations, and other community destinations.
- Prioritize Buffers on High-Speed Streets: Provide a buffer between the sidewalk and the street, prioritizing roads with speeds greater than 40 miles per hour; 30% of sidewalks on these streets are missing a traffic buffer.
- Provide Pedestrian Refuges: Increase the number of pedestrian refuges to improve crossing comfort, particularly on roads with six or more lanes of traffic. Today, only 19% of crossings with six or more lanes have pedestrian refuges that are ADA-compliant.
- Focus on Crossing Improvements: Prioritize improvements to the comfort and safety of crossings, as crossings are less comfortable than street segments and result in a greater number of pedestrian crashes that involve severe injuries and fatalities.
- Improve Comfortable Access to Elementary Schools: While elementary schools already have the highest connectivity comfort, this connectivity should be enhanced further. Improving comfortable access to elementary schools will increase the number of students walking to school, reduce busing costs, and make it more comfortable for all pedestrians to travel in school areas.
- Prioritize Safer Crossings to Parks: Improve the comfort of crossings to parks, as parks have less comfortable pedestrian access than recreation centers and libraries (35% vs. 66%).

Goal 3: Enhance Pedestrian Safety

- Reduce High-Speed Pedestrian Crashes: Identify strategies to reduce pedestrian crashes on high-speed roads, given the correlation between vehicle speeds and pedestrian crash severity.
- Address Safety Disparities: Concentrate safety improvements in EFAs, given the overrepresentation of crashes and severe injuries and fatalities in these communities. EFAs comprise only 14% of the county's roadway miles, but they experience 41% of the county's pedestrian crashes and 45% of the county's pedestrian severe injuries and fatalities.
- Improve Lighting: Identify strategies to improve pedestrian visibility in dark conditions (e.g., lighting at intersections and along streets).
- Communicate Permitted Pedestrian Activity: Given the lower understanding of permitted pedestrian behavior, relative to driver behavior, improve education and communication about where and how pedestrians are permitted to travel.

Chapter 5: *Bicycle Master Plan*

The *Bicycle Master Plan* sets forth a transformative vision for transportation in Montgomery County, encouraging people of all ages and bicycling abilities to meet their daily needs by bicycle. The Plan envisions a community where bicycling to work, stores, schools, and transit or going for a leisurely ride on the weekend is so embedded in our way of life that bicycling becomes an integral mode of transportation in the daily lives of the county's residents. The *Bicycle Master Plan* creates a framework for this transformation, with recommendations to build an extensive network of low-stress bikeways, an environment where people of all ages and bicycling abilities feel comfortable and safe riding bicycles, connecting the county's downtowns and town centers, transit stations and public facilities, and a plethora of secure and convenient bicycle parking and bicycle-supportive programs and policies.

To ensure transparency and accountability of implementation, the Plan requires the Planning Department to produce a biennial monitoring report to track how well the vision of the Plan is being fulfilled. The report is reviewed by the Planning Board and County Council. This document meets the *2018 Bicycle Master Plan* requirement for a biennial monitoring report and provides recommendations to the Planning Board and County Council for implementing the vision of the plan. It evaluates progress made in advancing the goals and objectives of the Plan as well as recommendations for bikeways and bicycle parking, and bicycle-supportive programs and policies. The 2021-2022 Bicycle Master Plan Biennial Monitoring Report was released in June of 2023 as a standalone document but is summarized here to fulfill the intent of the Travel Monitoring Report to serve as a compendium for all of the Planning Department's transportation monitoring activities. It is intended that the TMR will serve as the primary source for future Bicycle Master Plan Biennial Monitoring Reports. For the complete Bicycle Monitoring Report, please see Appendix D.

Implementing *Bicycle Master Plan* Recommendations

The *Bicycle Master Plan* recommends a robust network of bikeways and bicycle parking and identifies numerous policy and programmatic recommendations. Highlights in implementing these recommendations over the past two years include:

Bikeways

During the two-year period ending on December 31, 2022:

- 5.3 miles of master-planned bikeways were built, including 3.9 miles of sidepaths and 0.9 miles of separated bike lanes. An additional 5.6 miles of non-master planned bikeways were built during this time (for example, the separated bike lanes on Old Georgetown Road).
- 8.2 miles of new master-planned bikeways were under construction on December 31, 2022, including 4.9 miles of off-street trails (largely the Capital Crescent Trail), 1.9 miles of sidepaths, 0.7 miles of bikeable shoulders and 0.4 miles of separated bike lanes.
- 15.6 miles of master-planned bikeways were funded in the county's capital budget but not yet constructed, including 7.0 miles of sidepaths, 4.6 miles of neighborhood greenways, 3.2 miles of separated bike lanes and 0.5 miles of off-street trails. An additional 5.9 miles of non-master planned bikeways were funded in the county's capital budget.

- 3.9 miles of master-planned bikeways were conditioned in development projects approved by the Montgomery County Planning Board but not yet constructed, including 2.5 miles of sidepaths and 1.2 miles of separated bike lanes. An additional 3.7 miles of non-master planned bikeways were conditioned in development approvals.

Bicycle Parking

Three bicycle parking stations are advancing, including the 460-space station at the Bethesda Purple Line station, which was constructed by the 7272 Wisconsin development project; the 74-space Dixon Lane bicycle parking station in downtown Silver Spring, which was in design at the end of 2020; and the 100+ bicycle parking station at Grosvenor station, which was a condition of approval for a development project.

Programs

The Planning Department's Bikeway Branding project, an effort to create a recognizable brand for Montgomery County's emerging bicycling system, was nearing completion in December 2022.

Polices

The County Council amended the county code to reflect guidance in the Complete Streets Design Guide with the enactment of bills 24-22 and 34-22.

Findings

Metrics help to tell the story of the bicycling network. Salient findings over the past two years include improvements in low-stress connectivity, a reduction in the equitable distribution of low-stress bicycling and slight improvements in the provision of bicycle parking.

Low-Stress Connectivity

Countywide Connectivity is the overall measure of low-stress connectivity and measures the percentage of potential bicycling trips that will be able to be made on a low-stress bicycling network. This metric grew slightly between December 2020 and December 2022 from 15% to 16%. Upon completion of projects that were under construction in December 2022, this will grow to 17% and with the completion of projects in the capital improvements program or development projects approved in 2021 and 2022, countywide connectivity will grow to 20% (Figure 22).

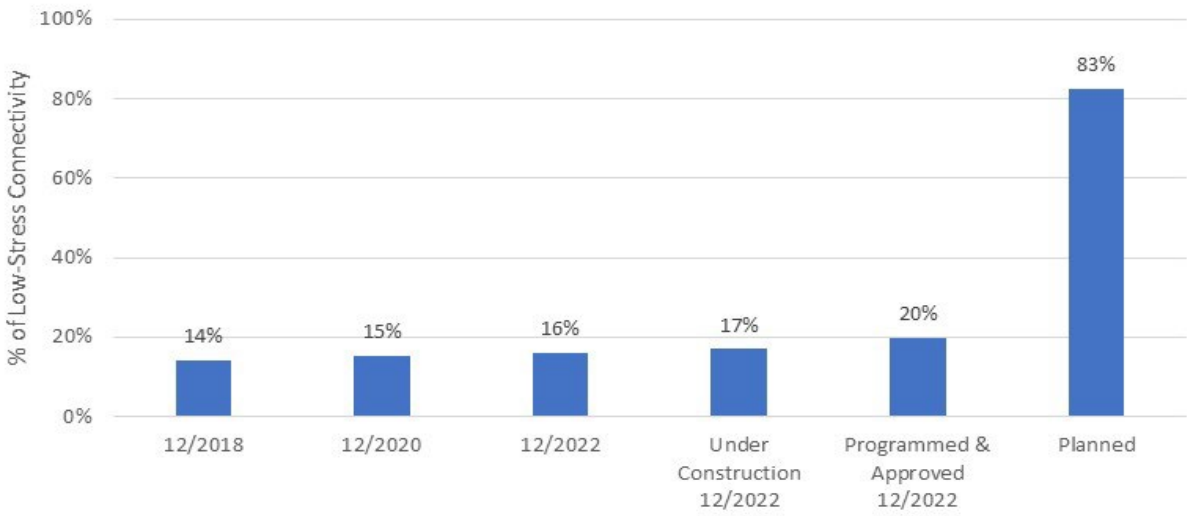

Figure 22: Growth in Countywide Connectivity

Equity

Equitable access to low-stress bicycling has decreased since the *Bicycle Master Plan* was approved. EFAs had 84% of the low-stress connectivity that non-EFAs experience in December 2022, down from 87% in December 2020 and from 89% in December 2018 (Figure 22). When projects that are under construction, funded in the capital improvement program and conditions of development approvals are completed, the metric will improve to 87%. Still more progress is needed to address inequitable access to low-stress bicycling.

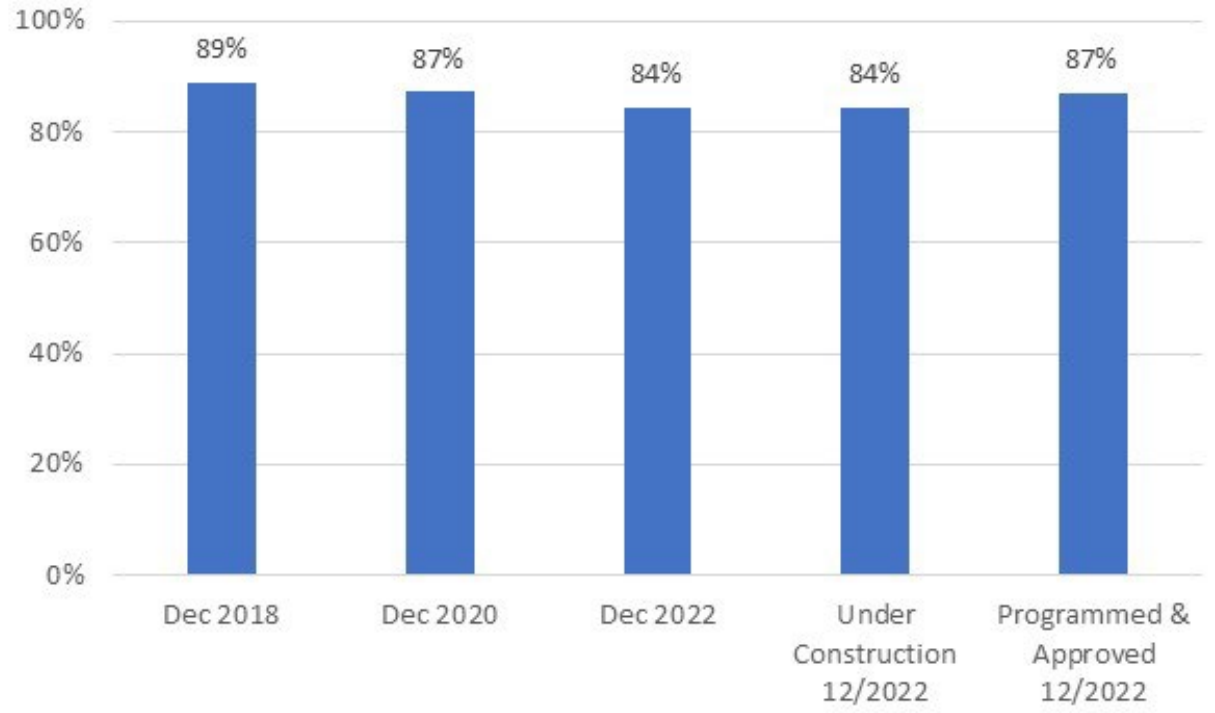

Figure 23: Equitable Access to Low-Stress Bicycling

Bicycle Parking at Public Facilities

In 2022, existing bicycle parking that conforms to industry standards provided 8% of the total needed bicycle parking at public schools. While this is an increase from 5% in 2016, substantial improvements are needed to upgrade existing bicycle parking and provide more bicycle parking at public schools.

Recommendations

The monitoring report provides the opportunity to offer recommendations to address some of the challenges that have arisen since the Plan was approved and to provide thoughts on how to proceed over the next few years. While fiscal capacity may limit the county's ability to implement all the recommendations in the next two years, the following recommendations should be considered as implementation of the *Bicycle Master Plan* proceeds:

1. Bikeways: Prioritize construction of the bikeway projects (Table 18) to improve connectivity to downtowns, upgrade the county's temporary neighborhood greenways to permanent neighborhood greenways, and improve access to low-stress bicycling in EFAs. To improve equity, focus on implementing bikeways along the following roads:
    a. Montgomery Village Avenue, providing synergies with the coming redevelopment of Lakeforest Mall.
    b. Castle Boulevard, connecting to existing bikeways on Briggs Chaney Road.
    c. Tech Road/Broadbirch Drive, providing connections to the US 29 FLASH station, Adventist Hospital, and the future VIVA White Oak development.
2. Bicycle Parking at Public Schools: To improve bicycle parking:
    a. Over the next two years, prioritize funding to upgrade bicycle parking at the following schools: Dr. Ronald A. McNair ES, Glenallan ES, Bells Mill ES, Poolesville ES, Sligo Creek ES, Olney ES, Thomas W. Pyle MS, Silver Spring International MS, North Bethesda MS, Rosa M. Parks MS, Westland MS, Bethesda-Chevy Chase HS, Quince Orchard HS, Walt Whitman HS, and Walter Johnson HS.
    b. Over the next six years, prioritize funding to upgrade bicycle parking at the following Title I/Focus schools and schools with high FARM rates: Rolling Terrace ES, Stedwick ES, South Lake ES, Arcola ES, Roberto W. Clemente MS, Forest Oak MS, Eastern MS, White Oak MS, Sligo MS, and Gaithersburg HS.
    c. Provide Montgomery County Public Schools (MCPS) with an annual funding program for installing bicycle parking.
    d. MCPS should develop bike rack standards that correspond with standards identified in Montgomery County's zoning code.
3. Bicycle Parking Stations: Fund a bicycle parking station at the Glenmont Metrorail station to expand the reach of transit and develop the organizational capacity to operate bicycle parking stations, including those at the Bethesda Purple Line station and the Silver Spring Transit Center, which are already funded.
4. Design Standards: Develop comprehensive design standards for bicycle facilities.
5. Travel Survey: Fund and conduct a biennial travel monitoring survey in support of the *Bicycle Master Plan* and forthcoming *Pedestrian Master Plan* to measure travel behavior and attitudes about walking and bicycling.

Table 18: High-Priority Bicycle Projects

Policy Area	Street	From	To	Bikeway Type
Bethesda CBD	Arlington Rd	Old Georgetown Rd	Bradley Blvd	Separated Bike Lanes
Bethesda CBD	Edgemoor La	Arlington Rd	Bethesda Metro Station	Separated Bike Lanes
Bethesda CBD	Woodmont Ave	Battery Ln	Old Georgetown Rd	Separated Bike Lanes
Bethesda CBD	Woodmont Ave	Strathmore Ave	Wisconsin Ave	Separated Bike Lanes
Fairland / Colesville	Castle Blvd	Castle Ridge Cir	Briggs Chaney Rd	Separated Bike Lanes
Friendship Heights	Friendship Blvd	Willard Ave	District of Columbia	Separated Bike Lanes
Germantown East	MD 355 (West Side)	Germantown Rd	Shakespeare Blvd	Sidepath
Germantown Town Center, Germantown West	Wisteria Dr	Father Hurley Blvd	Great Seneca Hwy	Sidepath or Separated Bike Lanes
Kensington / Wheaton, Glenmont	Holdridge Rd	Matthew Henson Trail	Georgia Ave	Neighborhood Greenway
Montgomery Village	Lost Knife Rd	City of Gaithersburg	Odendhal Ave	Separated Bike Lanes
Montgomery Village	Montgomery Village Ave (East Side)	Stewartown Rd	City of Gaithersburg	Sidepath
North Bethesda	Old Georgetown Rd (MD 187)	Towne Rd	Tuckerman Ln	Breezeway
Silver Spring	13th St / Burlington Ave	District of Columbia	Fenton St	Separated Bike Lanes
Silver Spring / Takoma Park	Woodland Dr	Columbia Blvd	Spring St	Neighborhood Greenway
Wheaton CBD	Grandview Ave	Blueridge Ave	Reedie Dr	Separated Bike Lanes
White Flint	Marinelli Rd	Executive Blvd	Woodglen Dr	Separated Bike Lanes
White Oak	Broadbirch Dr	Tech Rd	Cherry Hill Rd	Separated Bike Lanes
White Oak	Cherry Hill Rd	Columbia Pike	Prince George's County	Separated Bike Lanes

Policy Area	Street	From	To	Bikeway Type
White Oak	Old Columbia Pike	Tech Rd	White Oak Shopping Ctr	Sidepath
White Oak	Tech Rd	Columbia Pike	Industrial Pkwy	Separated Bike Lanes