Mike Maguire/Flickr

CHAPTER Where Are We Today?

> This chapter describes the regional context in which the TPB and its members plan for the region's transportation system. This includes a description of the region's geography, demographics, and existing and projected population and jobs. It reflects on the current cultural, social, and environmental conditions that impact the planning and use of the transportation system. This section also describes the transportation system and services that support the region.

> "Regional context" is not just about technical data and reporting. The Voices of the Region public outreach includes quotes, findings, and survey responses from people living in the region about their use and opinion of the transportation system.

### **Voices of the Region**

"I think [transportation] it's not just about moving people and buses and cars and trains from Point A to Point B, but it's how people actually experience these things and experience the stations and what makes you feel safe architecturally versus not feel safe. Blind spots, weird corners...we need to think in the big macro terms of moving people and goods from one place to the other, but we also think about how we experience those things as people. Whether we're young, whether we're older, whether we're physically able, whether we're physically challenged, and try to think a little bit beyond that immediate 'this is faster, this is more efficient, this is cheaper.'"

- Resident, Olney MD



### **Current Issues: COVID-19, Equity, and Climate**

During the development of this plan, the region faced a global health crisis and a call for racial justice that transformed people's lives and the region. The region faces the challenges of adapting to a changing climate while continuing to work together to mitigate climate change impacts. The COVID-19 pandemic highlighted significant inequities in health outcomes that continue to affect daily lives and the public transportation system, particularly for marginalized communities. The response to the death of George Floyd and others called on the nation to reconsider what racial equity and anti-racism truly look like. Temperatures and the water surface level in the Potomac River have been rising and will continue to rise.<sup>1</sup> In addition, a regional climate risk and vulnerability assessment found that climate change will increase the frequency or severity of heat, drought, flooding, lightning and thunderstorms, and extreme winter conditions.<sup>2</sup>

The TPB recognizes the Visualize 2045 update comes at a critical turning point in history. During the COVID-19 pandemic, the region saw drastic changes in economic activity and travel behavior, with reduced driving and transit use and more people walking, biking, and teleworking. How long these pandemic-related changes in behavior will continue or to what extent they will impact long-term planning remains to be seen. There will be a transition period to a "new normal" as people integrate lessons from the pandemic into their life choices. The TPB will continue to monitor transportation demand through surveys and system use to inform future plans.

While the TPB has worked for many years to address these challenges, in 2020, the TPB passed three resolutions to reaffirm the region's commitment to advance equity, climate, and safety initiatives. Read about these resolutions in Chapter 3, Visualizing our Future Together.

1 Metropolitan Washington 2030 Climate and Energy Action Plan. November 2020. MWCOG; <u>mwcog.org/documents/2020/11/18/metropolitan-washington-2030-climate-and-</u> <u>energy-action-plan/</u>

2 Ibid

### Voices of the Region on travel habits

The Voices of the Region survey gathered information on attitudes and behaviors related to how COVID-19 has affected their views on the region's transportation system and asked them to consider scenarios as occurring one year after the COVID-19 pandemic is over.

One year after the pandemic is over, **38%** of respondents said they will probably have different travel habits, while **62%** said they expected to go back to the same travel habits as before. Over half of those who expected their travel would be different said they would walk more than before the pandemic (**53%**).



## **Voices of the Region**

### **ON EQUITY:**

"When I do my consulting work or my catering, sometimes I go to far Northeast Washington. Buses are few and far between, the waiting times run 45 to an hour and fifteen minutes. That is inequitable. The more affluent areas have more transportation options, more lines, more frequency, where the lower income areas do not and they probably depend on transportation—public transportation even more."

Resident of Hyattsville, MD

### **ON CLIMATE AND SAFETY:**

"I'd say in a perfect world I would ride my bike a lot more than I do now. For me, the issue is certain areas I just don't feel safe riding it. But if there were safer bike trails and that sort of thing, I would certainly use that as my first choice."

Resident of Arlington, VA

#### **ON CLIMATE AND PUBLIC HEALTH:**

"I look at it like if you're in an airplane you can't help somebody else if you don't take the oxygen first. And so you need to be healthy in order to be able to work in the environment for positive results."

Resident of the District of Columbia

### **Voices of the Region**

Through focus group discussions, residents shared their own personal experiences with transportation equity, safety, and its relationship to climate change, then reflected on their own thoughts and opinions with others from similar backgrounds. While there were some similarities, there were also differences that allowed the focus group participants to learn as well as share their own stories. It is clear that one's experiences with equity, safety, and climate change varies on the individual level. However, these hot topics have affected almost every participant in some way. For transportation equity, an overwhelming majority of participants expressed that they felt the regional transportation system was inequitable in some fashion. The causes ranged from issues such as rising costs and reliability to geographic location. Safety was a consistent theme throughout the focus groups that participants could speak about openly. For safety, participants shared many experiences in which they have felt unsafe using transportation, hesitated to use certain modes due to safety, or suggested ways to improve safety within the system. Lastly, climate change was a topic that varied based on how familiar participants were with the topic as it relates to transportation or whether they recognized it as an issue. Many participants shared their own suggestions for ways to prepare the region for a greener transportation system, as well as their thoughts about new technology such as driverless cars. **Read our Focus Group Report.** 



### **The National Capital Region**

The National Capital Region comprises approximately 3,500 square miles and spans the spectrum of settlement patterns: urban, suburban, exurban, and rural. The region is one of the most affluent in the country, with an annual median household income of nearly \$106,000 and a gross regional product of over \$561 billion per year.<sup>3</sup>

This economic strength is due in large part to a consistently strong job market that, even during the COVID-19 pandemic, is driven by the federal government and the robust service sector that recovered much of its job losses or could shift to telework. The difference in laws, government structures, and financial resources of Maryland, Virginia, and the District of Columbia creates a complex policy environment. The region's large size and range of development patterns lead to diverse transportation needs. For these reasons, regional transportation planning and decision-making must balance a wide array of needs and priorities.

### **Recent Trends**

Over the past few decades, the National Capital Region's healthy economy has fueled consistently strong population and job growth, and that trend is expected to continue well into the future. Since 1970, the region's population has nearly doubled, and the total number of jobs in the region has grown at an even faster rate.<sup>4</sup>

According to the U.S. Census, from 2000 to 2020 the region steadily gained over one million residents from 4.4 to 5.6 million people. Total regional employment has grown by almost 284 thousand jobs from 2000 to 2020, although the recession of the late-2000s slowed the growth and resulted in reductions in regional employment for a few years (Figure 2.1).<sup>5</sup> More recently, the COVID-19 pandemic contributed to a loss of 371,000 jobs from March to April 2020, followed by a recovery of 318,000 jobs by October 2021.

Figure 2.1: Population and Employment in Millions of the National Capital Region, 2000 - 2020 (Source: Population Figures: U.S. Census Bureau, Population Division, Annual Estimates of the Resident Population, Employment Figures: U.S. Department of Labor, Bureaus of Labor Statistics, Quarterly Census of Employment and Wages)



<sup>3</sup> U.S. Census Bureau, 2019 American Community Survey and Bureau of Economic Analysis

<sup>4</sup> U.S. Census Bureau, as cited in 2014 Constrained Long-Range Plan

<sup>5</sup> U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census for Employment and Wages, 2021



### **Forecast Growth**

Where and how the region grows impacts the transportation options, congestion levels, and quality of life for the people in the region. According to the latest data from COG's Cooperative Forecasts, there are 5.7 million people living in the National Capital Region and, by 2045, that number is expected to increase to over 7 million, an increase of 23 percent (Figure 2.2). Fairfax County (including City of Fairfax and City of Falls Church) and the District of Columbia will gain the most residents, by 252 thousand and 258 thousand, respectively.

The number of jobs in the region will grow from 3.4 million today to 4.3 million by 2045, an increase of 26 percent (Figure 2.3). Fairfax County (including City of Fairfax and City of Falls Church) and the District of Columbia, the jurisdictions with the most forecasted job growth, are expected to gain 196 thousand and 199 thousand jobs, respectively.

Housing availability and affordability is a growing problem in the region. As noted in the COG report *The Future of Housing in Greater Washington,* "There is an imbalance between the number of jobs and the amount of housing available to the workforce. This situation affects the area's affordability, potentially undercuts its appeal to new companies and talent, strains the transportation system, and impacts the environment and quality of life for the region's residents. For some, this means not only long commutes to work, but also difficult choices

### HOW DOES COG FORECAST HOUSEHOLDS AND EMPLOYMENT?

The COG Cooperative Forecasting Program uses common assumptions about future growth and development, including local landuse plans, to forecast jobs, households, and population. The program combines regional data, which are based upon national economic trends and regional demographics, with local projections of population, households, and employment. These local projections are based on data about real estate development, market conditions, adopted land-use plans, and planned transportation improvements. The Cooperative Forecasting Program is used extensively by the TPB staff in modeling travel demand and emissions.

between paying rent or affording other basic necessities such as food or medicine."<sup>6</sup> With employment expected to grow at a faster rate than the population, if housing growth cannot keep up with the rate of employment growth, more and more people will have to commute into the region from outside. This type of commuting pattern puts a heavy load on the region's roads and transit systems as trips become longer and more congested.

Working closely to align regional transportation policy and land-use policies, the TPB and regional leaders are committed to finding solutions to the regional housing and job imbalance. One approach is to encourage greater concentration, circulation, and connection of residential and commercial developments in mixed-use Activity Centers and near high-capacity transit, places optimal for future growth. See Chapter 6 for more information.

<sup>6</sup> The Future of Housing in Greater Washington: A Regional Initiative to Create Housing Opportunities, Improve Transportation, and Support Economic Growth. September 2019; http://www.mwcog.org/documents/2019/09/10/the-future-of-housing-in-greater-washington/





Figure 2.2: Forecast Population Growth in Millions, Today – 2045\* (Source: MWCOG Cooperative Forecast Round 9.2)



Figure 2.3: Forecast Employment Growth in Millions, Today – 2045\* (Source: MWCOG Cooperative Forecast Round 9.2)

\*Fairfax County data includes data for the cities of Fairfax and Falls Church. Prince William County data includes data for the cities Manassas & Manassas Park.

# Understanding "Density" in the TPB Region

To help make progress toward the TPB's transportation and land-use goals and get more out of the investments made in existing transportation infrastructure, the TPB calls upon regional leaders to promote policies that "Bring Jobs and Housing Closer Together." A TPB priority is focusing new development to support population growth in Activity Centers and near high-capacity transit station areas (HCTs). Doing so can expand travel options and make for shorter trips in vibrant walkable communities.

By analyzing census block group and COG's cooperative forecast transportation analysis zone data, the TPB can monitor progress and better understand where new growth has been occurring in our region through the 'population-weighted density' concept. This concept reflects the density experienced by a resident of the region based on where they live. For example, people living in concentrated clusters, like Activity Centers, experience density greater than in other parts of the region. This metric can help determine where to preserve open space or invest in transportation infrastructure that depends on density to succeed, such as a transit line that requires high ridership to be feasible. See Figure 2.4 to see how density has changed in the metropolitan Washington region from 2010 to 2020 with census block

Figure 2.4 Population Weighted Density in the Region, 2010 and 2020 (Source: Staff Analysis of 2010 and 2020 U.S. Decennial Census Block Groups)



group data and Figure 2.5 for how COG's cooperative forecast transportation analysis zone data estimates density to change.

Since 2010, much of the region has undergone some form of increased density. High-capacity transit station areas and Activity Centers saw the greatest increase between 2010 and 2020, with 31 percent, and 21 percent increases, respectively. According to census data, in 2020, residents of the region, as a whole, experienced density at a little over 10,000 people per square mile. In Activity Centers, experienced density was much higher than the region, at over 14,000 people per square mile. In HCT station areas, it was two times greater than the region as a whole—more than 21,000 people per square mile.

Conducting this analysis using COG's cooperative forecast data for 2020 and 2045, the region anticipates densification trends to continue. The region, Activity Centers, and HCT Station Areas will all become denser at similar rates, at or just above 40 percent. Those rates lead to higher density forecasts within HCT Station Areas and Activity Centers, greater than 26,000 and 38,000 people per square mile, respectively. This data suggests that development policies are focusing growth consistent with COG and TPB priorities and reflecting historical growth patterns.



Figure 2.5 Population Weighted Density in the Region, 2020 and 2045 (Source: Staff Analysis of COG Round 9.2 Cooperative Forecast Transportation Analysis Zones)

### **Demographics**

The National Capital Region is a dynamic and diverse metropolitan area. According to data from the U.S. Census, it is a highly diverse region, less than half (42 percent) non-Hispanic white, followed by 26 percent African American, 17 percent Hispanic/Latino/a/x, and 11 percent Asian. In terms of age distribution, the largest age groups are between 25-34 and 35-44 (15.5 percent and 14.7 percent, respectively). There is slightly larger proportion of females (51.3 percent) compared with males (48.7 percent). Nearly one-quarter (23 percent) of the region's households earn less than \$50,000 a year.<sup>7</sup>

Analysis of regional household travel data collected in 2017-2018 identifies important findings in household size, type and tenure, and vehicles. These figures have important implications for land use and transportation plans, programs, and policies as the region determines the needs of residents.

There are currently 2.1 million households in the TPB region. The largest household size group in the region are two-person households (30 percent), followed by households with four or more persons (27 percent), one-person (26 percent) households, and three-person households (17 percent). About 70 percent of households live in single-family housing (51 percent single family detached, 20 percent single family attached homes, such as row houses) and 30 percent live in multifamily housing, such as apartment buildings. Over two-thirds of households own

their home (71 percent) while just over one-quarter of households live in rental housing (27 percent), the remaining 1.7 percent is categorized as other. In terms of vehicle availability, 34 percent of households have one vehicle, 39 percent have two vehicles, and 19 percent have three or more vehicles. About eight percent of households do not have a vehicle (Figure 2.6).<sup>8</sup>

Figure 2.6: Summary of Characteristics in the National Capital Region, Percent of Population (Source: U.S. Census Bureau, 2015 – 2019 American Community Survey 5-year estimates, 2017/2018 TPB Regional Travel Survey)



U.S. Census Bureau. American Community Survey (ACS) Public Use Microdata Sample (PUMS), 2015-2019 5-Year Estimates

8 National Capital Region Transportation Planning Board, 2017/18 Regional Travel Survey; <u>mwcog.org/transportation/data-and-tools/household-travel-survey/</u>





Important trends in household characteristics present themselves when examining the difference between the region's core, innersuburban, and outer-suburban geographies. One-person households comprise the highest share of households in the core; two-person households make up the highest share of households in the inner and outer suburbs. The share of oneperson households decreased across the entire region, most notably in the core. For housing type and tenure, more than half of residents in the core live in multifamily housing and nearly half of core residents live in rental housing. The share of residents living in single-family detached housing decreased and the share of residents living in multifamily and rental housing increased in the core and inner suburbs since 2007/08.

About one-quarter of households in the core have no vehicle available, which increased since 2007/08 (Figure 2.7). $^9$ 



Figure 2.7: Detail of Household Characteristics in the National Capital Region,

🗖 Outer Suburbs 🛛 🔳 Inner Su

Inner Suburbs

9 National Capital Region Transportation Planning Board, 2017/18 Regional Travel Survey; <u>mwcog.org/transportation/data-and-tools/household-travel-survey/</u>

# The Regional Transportation System Planning for the future transportation system

Planning for the future transportation system is built on the patterns of past growth, development, and infrastructure investment. When considering the total job and residential locations expected in 2045, about **80 percent** of those are already in place in the region. Visualize 2045 adds to and enhances the region's already extensive transportation network but to preserve past investments **about 28 percent** of funds go to system maintenance.

An integrated and extensive rail and bus transit system and a connected system of highways and priced toll lanes comprise the high-capacity backbone of the transportation system. In addition, extensive infrastructure for bicyclists and pedestrians, as well as provisions for bike sharing, ridehailing, and car-sharing services, allow for a wide range of options throughout the region.

Within its boundaries, the region is served by:

- >17,000 lane miles of highways and major roads, more than 500 miles of which are tolled lanes.
- 129 miles of Metrorail and 91 Metrorail stations.
- 173 miles of MARC and VRE commuter rail and 39 commuter rail stations.
- 37 miles of bus rapid transit, light rail, and streetcars, with more to come.
- 800+ of miles of off-street paved trails and paths for walking and biking.
- 400+ miles of bike lanes.
- >19,000 directional miles of important freight corridors within the TPB's planning area carrying more than 300 million tons of goods annually.
- Two Class I railroads—CSX Transportation and the Norfolk Southern Corporation which operate 250+ miles of mainline track and carrying more than 47 million tons of local freight annually.
- 852 EV Charging Stations and 2,424 EV plugs.
- 15+ local and commuter bus systems and about 10 paratransit service providers.
- Nine intercity train stations and an estimated 14 intercity bus stations.
- Three major airports with extensive domestic and international connections, Ronald Reagan Washington National Airport (DCA), Baltimore/Washington International Thurgood Marshall Airport (BWI), and Washington Dulles International Airport (IAD) that also carry significant levels of freight cargo.

Planning, building, operating, and maintaining this infrastructure is handled by a long list of public agencies that have oversight over different aspect of the process, as well as private companies providing transportation services. These include:

- The Maryland Department of Transportation (MDOT), the Virginia Department of Transportation (VDOT), the Virginia Department of Rail and Public Transportation (DRPT), and the District Department of Transportation (DDOT), which control major transportation planning and funding decisions in their respective jurisdictions.
- Other regional transportation planning and funding agencies, including the Northern Virginia Transportation Authority (NVTA) and the Northern Virginia Transportation Commission (NVTC).
- The city and county governments that make local decisions on transportation and land-use.
- The Washington Metropolitan Area Transit Authority (WMATA), with a service area of 1,500 square miles, providing Metrorail, Metrobus, and paratransit services.
- Dozens of local bus, commuter bus, and paratransit operators that serve specific cities and counties in the region.
- Amtrak, the national rail system, and the MARC and VRE commuter rail systems.
- Numerous private taxi companies and a growing number of smartphone-based ridehailing applications.
- Services such as Uber and Lyft that operate throughout the region.
- Capital Bikeshare and other private companies that provide bicycles and scooters for short-term rental.
- Multiple car-share companies, such as car2go and Zipcar, that allow short-term vehicle rental.
- Multiple micromobility companies that offer shared scooters, bicycles, and e-bicycles in many of the urban and denser suburban parts of the region.
- Numerous firms of all types that depend on freight transportation for their business.



### Travel Patterns/Behavior in Metropolitan Washington

### How Does TPB Get Data On Transportation System Use and Travel Patterns?

The TPB gathers data through several types of surveys on the use of the transportation system. Much of the data in this update to Visualize 2045 are data from three recent surveys: the Regional Travel Survey (RTS), the State of the Commute Survey, and the Voices of the Region. The TPB also cites data from public and private sources such as the U.S. Census, or Capital Bikeshare usage as reported by the company that manages that system. Following is a description of the three of TPB's surveys:

**Regional Travel Survey (RTS):** The TPB has conducted a RTS approximately every 10 years since 1968. The survey, which collects demographic and travel information from a randomly selected representative sample of households in the TPB region and adjacent areas, is the primary source of observed data used to estimate, calibrate, and validate the regional travel demand model. The TPB uses the model for travel forecasting and an Air Quality Conformity analysis of the region's long-range transportation plan as well as to support other key program activities. Staff use the survey to analyze regional travel trends and TPB member jurisdictions and agencies use them to inform their transportation-related studies.

The RTS creates a better understanding of the household characteristics and persons in the region and their daily travel and activities, like, how, why, where they travel, how long it takes, and what they do upon arrival. The survey seeks to obtain a complete picture of travel patterns in the region.

State of the Commute Survey: Commuter Connections' State of the Commute (SOC) Survey and associated report have been produced every three years since 2001. It tracks a wide range of transportation information and assistance services designed to inform area commuters of the availability and benefits of alternatives to driving



alone and help them find alternatives. In 2020, TPB's Commuter Connections Program conducted an Employer Telework Survey to examine telework experience and changes in teleworking implemented by the employers during the COVID-19 pandemic.

Voices of the Region: The Voices of the Region survey was a representative regional survey of residents in the TPB planning area that gathered information on attitudes and behaviors related to transportation topics. The study focused on topics that will be addressed in this plan including equity, future technologies, and climate change. It also asked respondents about how COVID-19 affected their views on the region's transportation system and how the system can serve them better.

**Other surveys:** TPB may conduct other surveys to gather information to support transportation planning for the metropolitan Washington region as needed.



### **Trips and Mode Share**

Through the RTS, the TPB monitors the regional totals for trips by type and mode. Approximately 17 million trips are taken per day on all modes of transportation for all purposes, including travel to work, school, medical appointments, and other destinations. Of those trips, 41 percent are people driving alone, 38 percent are in a vehicle with two or more people, 11 percent are by walking or biking, 6 percent are by bus or rail transit, and the remaining 5 percent use taxi/ridehail, school bus, and other services (Figure 2.8).<sup>10</sup>

Over the past 10 years, shares of single occupancy vehicle trips and carpool trips for all purposes have remained steady. For commute trips, shares of single occupancy vehicle and carpool trips decreased while other modes such as bus transit, walk, bicycle, and

Figure 2.8: Mode Share of All Types of Trips, 2017/2018 (Source:

taxi/ridehail increased. Following this trend, the share of single occupancy vehicle trips will likely continue to decline as additional transit services come online, as bicycle and pedestrian infrastructure continues to grow, and land-use policies push for the concentration of jobs and households in regional Activity Centers (Figure 2.9).

The TPB monitors the regional totals for trips by type and mode. As discussed in the previous section, land-use correlates with transportation options and mode choice.





10 National Capital Region Transportation Planning Board, 2017/18 Regional Travel Survey; <u>mwcog.org/transportation/data-and-tools/household-travel-survey/</u>

41%

2017/2018 TPB Regional Travel Survey)

5%

6%

38%

11%

Drive Alone





Figure 2.10: Weekday Household Trip Rate (Average Number of Trips Taken per Weekday), 2017/2018 (Source: 2017/2018 TPB Regional Travel Survey)

Average number of trips per weekday, 2017/2018

### **Change in Trip Rates**

Based on the RTS, households in the region are taking fewer trips compared to ten years ago, reflecting a national trend in declining household trip rates. The weekday household trip rate, or the average number of trips being taken per household per weekday in the TPB region, dropped from 8.9 to 8.3 trips since 2007-2008, the last time the data was collected. Comparing different regional geographies, larger decreases occurred in the inner- and outersuburbs than the regional core. The decline in household trip rates may be partially explained by the rise in online shopping and smartphone app-based delivery services replacing trips to stores and restaurants.

Household size, vehicle availability, and age are key factors influencing the household trip rate, with the largest decreases in the trip rate among larger households, households with two or more vehicles, and persons under 35 years of age. Household size in the TPB region has slightly increased with the decrease in single person households and the increase in three or more person households. The household trip rate also increases with household income, with households earning less than \$25,000 a year taking only about half as many trips as households earning more than \$200,000 a year. Households in regional Activity Centers and Equity Emphasis Areas (EEAs), census tracts with high concentrations of individuals, communities of color, or both also produce fewer trips on average than outside those geographies (Figure 2.10).<sup>11</sup>

### **Trip Length**

How far residents of the region travel differs on the type of trip being taken, where it is being taken from, and who is taking it. For commute trips, drive alone and rail transit trips have the longest median trip length while rail transit trips are the longest for nonwork trips. For trip purpose, commute trips are the longest by distance, followed by work-related, social/ recreation, personal business, drop-off/pick-up, shop/meal, and school trips.

Trip length generally increases from the core to the suburbs, with the shortest trip distances in the core and the longest trip distances in the outer suburbs (Figure 2.11). This may reflect differences in land-use patterns since suburbs are more auto-oriented and spatially dispersed than the core. Commute trips are significantly longer than non-commute trips. Commute trip length also increases with household income; the highest income group (over \$150,000 a year) has the longest commute distances.

A comparison of trip length by demographic groups found that in terms of race/ethnicity, African Americans take longer trips by distance than other racial/ethnic groups. Trip lengths also increase with vehicle availability, with households with two or more vehicles taking significantly longer trips. This may suggest that households without a vehicle are more geographically constrained in terms of mobility and accessibility in the region. Life stage also influences trip length, with the longest commute trips taken by

persons between age 35 and 74, roughly corresponding with members of the Millennial, Generation X, and Baby

Figure 2.11: Median Household Trip Length in Miles, 2017/2018 (Source: 2017/2018 TPB Regional Travel Survey)



Boomer generations, while persons under 35 (younger Millennials and Generation Z) take shorter commute trips. Median commute trip distance for males are longer than for females, and households with children have longer trips to work than households without children.<sup>12</sup>

12 Ibid









### Change in Mode Share

### All Types of Weekday Trips

According to the RTS, for all weekday trips (work and non-work trips) across the TPB region, the share of personal vehicle trips (drive alone, drive others, and auto passenger) remained steady since 2007-2008, while the share of rail transit trips decreased. However, the share of bicycle and taxi/ ridehail trips increased for all trips, although ridehail was introduced in the region after 2007-2008. In the regional core, drive alone trips decreased while walk, bicycle, and taxi/ridehail trips increased as they also did in the inner suburbs (Figure 2.12).

#### CHAPTER 2 | WHERE ARE WE TODAY?

**Region 2007/2008** 11.4% 14.2% 66.7% 3.8% 1% **Region 2017/2018** 64.9% 7.4% 15.5% 4.3% 6.3% Core 2007/2008 46.9% 7.8% 25.0% 7.7% 11.4% 1.6% Core 2017/2018 34.6% 4.1% 9.1% 29.8% 18.4% 4.8% 2.4%2.1% Inner Suburbs 2007/2008 69.1% 11.9% 13.9% 0.7% 3 2% Inner Suburbs 2017/2018 70.1% 7.4% 14.6% 3.6% 1.6% 1.7%1.3% **Outer Suburbs 2007/2008** 78.3% 13.2% 4.9% 1.1% 2.2%09% **Outer Suburbs 2017/2018** 82.3% 11.0% 3.2% .4% 10% 0% 70% 20% 30% 40% 50% 60% 80% 90% 100% Drive alone Drive with two or more people Rail Transit Bus Transit Walk and Bike Other

Figure 2.13: Change in Mode Share of Commute Trips, 2007/2008 – 2017/2018 (Source: 2007/2008 and 2017/2018 TPB Regional Travel Survey) \* *due to rounding figures may not sum to 100%* 

#### **Commute Weekday Trips**

For work travel, commute trips by personal vehicle significantly decreased between 2017-2018 and 2007-2008, while shares of non-automobile travel modes, particularly bus, transit, walk, bicycle, and taxi/ridehail significantly increased. The regional core had the sharpest decline in trips to work by personal vehicle, while walk, bicycle, and taxi/ridehail trips to work increased. Bicycle and taxi/ridehail commute trips also increased in the inner suburbs (Figure 2.13).

Bicycle trips doubled throughout the metropolitan Washington region, and increased three-fold in the regional core. The share of rail transit trips decreased across the region, especially for non-commute trips. Workers in the region are taking more bus, walk, bicycle, and taxi/ridehail trips, which may reflect increased investment in transit, walk, and bicycle infrastructure in the region and the rise of ridehailing services such as Uber and Lyft.

### **Use By Mode**

#### **Bus and Rail Transit Use**

Public transit-including rail, local bus, bus rapid transit, and streetcar- serves all of the jurisdictions in the region and carries a large number of people to their destinations every day. Though transit only carries about 6 percent of all daily trips, twenty percent of all trips to and from work are on public transit.<sup>13</sup> The share of trips to work by bus and rail transit for workers who live in the regional core is 39 percent, exceeding the share of single occupancy vehicle commuters (35 percent). Additionally, the National Capital Region is fifth in the U.S. in average number of transit trips taken per month.<sup>14</sup> In 2019, Metrorail, one of the largest mass transit systems in the country, handled over 600,000 trips per weekday, and the bus systems throughout the region collectively carry over 530,000 trips per weekday (Figure 2.14).<sup>15</sup> Commuter rail services including MARC and VRE carry around 50,000 riders on an average weekday.

<sup>13</sup> National Capital Region Transportation Planning Board, 2017/18 Regional Travel Survey; <u>mwcog.org/transportation/data-and-tools/household-travel-survey/</u>

<sup>14</sup> National Capital Region Transportation Planning Board staff analysis of 2011-2020 unlinked passenger trips reported in National Transit Database, May 2021 Monthly Module Adjusted Data Release; transit.dot.gov/ntd/data-product/monthly-module-adjusted-data-release

<sup>15</sup> National Capital Region Transportation Planning Board staff collection and analysis of weekday ridership estimates reported by the Region's transit operators. Ridership from 2019 is reported due to incomplete 2020 ridership data. Montgomery County Ride On transitioned to rear door boarding only passenger counts systems, typically located in the front of buses, were not being utilized.



Metrorail ridership hit an all-time peak in 2009 and remained somewhat steady in the first half of the decade. Since 2015, overall ridership has declined along national trends in travel patterns. Bus operators have also reported similar drops in ridership over the past few years. Ridership declined sharply after service was reduced due to COVID-19. While some members sheltered and did not use transit, many essential workers continued to use the service. Regional forecasts see this downward trend, including the decrease associated with COVID-19, as temporary. As land-use patterns continue to concentrate jobs and households near new and existing high-capacity transit systems, transit ridership levels are expected to increase.

#### **Transit During the COVID-19 Pandemic**

In the wake of the COVID-19 pandemic and throughout 2020, local transit services in the National Capital Region faced new pressures operationally, financially, and politically to adapt to a new normal of decreasing ridership, loss of peak travel demand, and related fare revenue losses because of stay-at-home orders and work from home policies implemented across many employers. Simultaneously, service providers quickly adapted to the new public health protocols mandated across levels of government to protect the health and safety of riders and operators. Many local service providers quickly shifted priorities and service levels to balance short- and long-term needs while finding innovative ways to ensure the region's transportation networks remain operational for transit dependent workers unable to telework. A few measures taken by local service providers across 2020 included suspension of fare collection, allowed or mandated rear-door boarding, implementation of social distancing requirements on vehicles, installation of physical barriers between riders and operators, and increased cleaning frequencies of fleets to reduce or prevent the spread of the virus.

#### **Motor Vehicle Travel**

Motor vehicle travel comprises the vast majority of trips taken in the region. As of 2019, vehicles traveled approximately 131 million miles per weekday on average on the region's roadways, which is an increase of 6 percent since 2010.<sup>16</sup> While driving measured in vehicle miles traveled (VMT) has increased over the past nine

Figure 2.14: Transit Ridership Over Time, 2009 – 2019 (Source: TPB Regional Transportation Data Clearinghouse)



16 National Capital Region Transportation Planning Board, Regional Transportation Data Clearinghouse, VMT – Weekday Trends Modeled Region 2005 to 2018; \* These estimates do not include the portion of the TPB Planning Region that extends into Fauquier County, VA



years, it has done so at a slower rate than the 11 percent increase in the region's population over that same period of time.<sup>17</sup> Therefore, the total number of VMT per person decreased by four percent between 2010 and 2019, as more people live in the region and are finding alternate modes to use for their daily travel.

There are approximately 4.1 million vehicles registered in jurisdictions throughout the region, up from 3.6 million vehicles 10 years ago. As of 2020, vehicles classified as light duty trucks (including SUVs) equal the number of light duty cars and motorcycles (1.94 million) on the road, followed by a relatively small number of heavy duty vehicles and buses. The share of hybrid and electric vehicles has been steadily increasing over the past decade. There are currently 159,000 hybrid vehicles registered in the region, which is 3.9 percent of the total fleet, and on top of that there are 23,000 electric plug-in vehicles.<sup>18</sup>

The forecast expects VMT to increase as population and employment figures increase throughout the region, but

Figure 2.15: Population and Vehicle Miles Traveled (VMT) Changes 2010 – 2019 (Source: U.S. Census Bureau and TPB Regional Transportation Data Clearinghouse, VMT – Weekday Trends Modeled Region 2005 – 2019)



VMT per person will continue to decline (Figure 2.15).

The number of vehicles in the region will also likely increase, and trends indicate that these vehicles will continue to get cleaner and more efficient as time goes on. The TPB tracks the charging stations and individual plugs available that help to make this environmentallyfriendly option more practical. As of 2021 there are 852 stations in the region and 2,424 charging plugs, which is an increase of 587 percent since 2012.<sup>19</sup> Maps that document charging stations locations are available online here. Increasingly, vehicles will become more connected and more automated, which will make an imprint on the region as new technologies are adopted, although the pace and implications of integration are still largely unknown. See COG's and TPB's work on vehicle electrification planning and connected and automated vehicles in Chapter 6 to learn more.

<sup>17</sup> The VMT observed on the region's roadways is reported. It is a developed by summing the product of the amount of daily traffic on each roadway segment by the length of the segment for each segment in the region. This is different than household VMT which is the sum of VMT produced by each household in the region.

<sup>18</sup> National Capital Region Transportation Planning Board. September 2021. A Recent Profile of Motor Vehicle Characteristics in Metropolitan Washington;

http://www.mwcog.org/file.aspx?&A=2zfN8jFwPUBe5fF00qJ6XzPND5Vf%2fTkLhftGULnc0bA%3d.

<sup>19</sup> MWC0G. 2020. 2030 Climate and Energy Action Plan; mwcog.org/documents/2020/11/18/metropolitan-washington-2030-climate-and-energy-action-plan/

#### CHAPTER 2 | WHERE ARE WE TODAY?

Figure 2.16: Workers Eligible to Telework, 2007/2008 – 2017/2018 (Source: 2007/2008 and 2017/2018 Regional Travel Survey)



#### Teleworking

Many workers in this region telework some of the time instead of physically traveling to their place of employment. According to the RTS conducted in 2017-2018, since 2007-2008 the share of workers who are eligible to telecommute increased from 26 percent to 43 percent in the TPB region (Figure 2.16); the share of workers teleworking one or two days per week also increased.<sup>20</sup> Today, the share of employers that are currently offering telework is higher as many workers rapidly transitioned to teleworking during the COVID-19 pandemic. As more and more workers have the option to work from home, teleworking has changed the landscape of transportation in this region by reducing the total number of people commuting to work. Even when considering the pandemic-fueled growth in telework, there is still potential for even greater increases as more employers offer permanent flexible telework policies. However, the long-term impacts of the pandemic on telework are not yet known.



#### **Taxis and Ridehailing Services**

Application-based ridehailing services like Uber and Lyft (also known as transportation network companies or TNCs), has revolutionized for-hire transportation in the region over the past decade. Ten years ago most for-hire services were provided by taxicab and limo companies that operated in separate jurisdictions throughout the region. Now many of those trips are taken via TNCs. While only one percent of all weekday trips in the TPB region are taxi and ridehail trips, they comprise three percent of all weekday trips in the regional core.<sup>21</sup>

Agencies require more data to thoroughly understand how residents and visitors are using TNCs and how the pandemic will impact usage. TNC trips will likely continue to increase as these companies grow and introduce more products and services to entice more riders.

<sup>20 2017/18</sup> Regional Travel Survey; <u>mwcog.org/transportation/data-and-tools/household-travel-survey/</u>

<sup>21</sup> ibid

#### **Freight Trends and Curb Management**

Each year hundreds of millions of tons of freight valued in the billions of dollars move over the region's roadways and railways and pass through its airports, contributing to the economic vitality of metropolitan Washington. Nearly every physical thing, from food to clothes to medicines and furniture, and everything in between was transported on a truck for at least some part of its journey. People increasingly have turned to e-commerce to get goods delivered to their homes; the onset of the COVID-19 pandemic accelerated the trend. Figure 2.17 shows how national e-commerce has increased consistently as a percent of total retail sales.

#### **Bikeshare and Scootershare**

In the past decade, the region has been implementing bikeshare as a mode of travel. Since its inception as one of the nation's first systems of its kind in 2010, Capital Bikeshare has grown from 1,100 bikes at 114 stations in the District of Columbia and Arlington County, to over 4,300 bikes at 550 stations in seven jurisdictions today. By 2017, the number of annual trips taken on the system had more than doubled to over 3.7 million, but ridership has since seen a decline, with nearly 2.3 million reported in 2020. This decline coincides with an eruption of dockless options, including bikes, e-bikes, and e-scooters (Figure 2.18). These options are often referred to as "micromobility". Much of the increase in the share of bicycle trips in the TPB region over the last decade can be attributed to continuous and consistent investment in bicycle infrastructure and bikeshare programs such as Capital Bikeshare.

In 2017, companies began offering dockless bikeshare options. Dockless bikeshare allows users to pick-up and drop off bikes anywhere without needing to park them in specific bike docks. Some companies also offer electric bicycles and electric scooters using the same systems. Riders can lock and unlock the bikes and scooters using applications on their mobile phones. The dockless

Figure 2.17: National Quarterly E-Commerce Sales as a Percent of Total Retail Sales, 2011 – 2021 (Source: Retail Indicators Branch, U.S. Census)





Figure 2.18: Total Annual Capital Bikeshare Trips 2014 – 2020 (Source: TPB Staff Analysis of Capital Bikeshare Data)



bikes have become quite popular among policymakers and residents. In addition, a recent Virginia Tech study suggests that the presence of dockless bikeshare may be helping to address issues of transportation equity since riders on dockless systems are more racially diverse compared to Capital Bikeshare users and are also slightly younger and less affluent.<sup>22</sup>

As Capital Bikeshare increases its reach across the region, and micromobility options such as dockless bikeshare and scooters continue to expand, their use is expected to continue to rise in the coming years. As growth is focused in Activity Centers and HCT station

areas, these options are an increasingly important part of the transportation system as they enable car-free travel for short trips and improved access to transit.

#### **Air Travel**

Commercial air travel at the National Capital Region's three major airports reached an all-time high in 2019 with approximately 36.8 million airplane boardings (enplanements) reported, up from 32 million in 2007.<sup>23</sup> From 2019 to 2020, enplanements plummeted 65 percent, decreasing from 36.8 million to 12.9 million, at Baltimore/Washington International Thurgood Marshall Airport (BWI), Ronald Reagan Washington National Airport (DCA), and Washington Dulles International Airport (IAD), collectively (Figure 2.19). As the region continues to recover from the COVID-19 pandemic, enplanements are recovering at all three airports but are still well below pre-pandemic levels.

In terms of how passengers access the airports, DCA has the highest rate of access by transit among the three airports, due to its direct connection to Metrorail. Twelve percent of airport travelers reach DCA via Metrorail.<sup>24</sup> Phase 2 of the Metrorail Silver Line extension, which is expected to open in 2022, will provide Metrorail access to IAD and areas beyond.

The use of TNCs, such as Uber or Lyft, to access the region's airports continues to grow rapidly. TNC usage is highest at DCA, with 36 percent of passengers, while 22 percent of IAD passengers, and 13 percent of BWI

<sup>22</sup> Virginia Polytechnic Institute and State University, D.C. Dockless Bikeshare: A First Look, May 2018.

<sup>23</sup> Federal Aviation Administration, Enplanements at all Commercial Service Airports, Calendar Year 2019 Passenger Boarding Data (Final); <u>faa.gov/airports/planning\_capacity/</u> passenger\_allcargo\_stats/passenger/media/cy19-commercial-service-enplanements.pdf

<sup>24</sup> National Capital Region Transportation Planning Board, "Washington-Baltimore Regional Air Passenger Survey, 2019: General Findings," April 2020



Figure 2.19: Monthly Observed Boardings at Three Major Airports, 2019 – July 2021 (Source: Monthly Passenger Boardings, Metropolitan Washington Airports Authority and Maryland Department of Transportation Maryland Aviation Administration; includes revenue and non-revenue passengers)



passengers use TNCs to access the airport. For all three airports, TNC use accounted for 25 percent of ground access trips by airport passengers in 2019, surpassed only by the private automobile, which accounted for 41 percent.<sup>25</sup>

### **Environmental and Equity Considerations**

Many transportation policy topics are interrelated, but few are so closely tied together than environmental and equity implications. Historically, people of color, lowincome individuals, and other traditionally disadvantaged populations have experienced unequal treatment and not been included in the decision-making process. Planning has adapted to address that wrong, but there are still challenges ahead.

### **Transportation Emissions and Air Quality**

Transportation planning in the region is heavily influenced by air quality planning, which is a federal requirement. Once the financially constrained element (project list) of the plan is approved by the board, it is tested to ensure that the plan's projects collectively contribute to the air quality improvement goals embodied in the Clean Air Act Amendments of 1990. Using models, TPB staff perform a series of tests to forecast how much air pollution will be generated between now and 2045, and how much the air will be improved by cleaner gasoline standards and other factors.

If the TPB's analysis demonstrates that the plan meets regional air quality goals, federal agencies certify that the plan is "in conformity." In other words, the TPB ensures that the constrained element "conforms" to air quality

<sup>25</sup> National Capital Region Transportation Planning Board, "Washington-Baltimore Regional Air Passenger Survey, 2019: General Findings," April 2020



improvement goals. Results of the most recent analysis show that, with respect to ozone season pollutants, specifically, Volatile Organic Compounds (VOC) and, Nitrogen Oxides (NOx), the TPB is in attainment for all criteria but ozone, and the TPB is making plans to be in attainment for that criteria. While not federally required, the TPB also forecasts GHG emissions and takes strides to contribute to achieving the COG 2030 climate mitigation goals (see Chapter 3).

Data analysis provides important context to the experiences of residents of the region. Traffic and the number of vehicles passing near or through communities can lead to prolonged exposure to transportation-related emissions (see Figure 2.20). Increased exposure to certain forms of air pollution can lead to significant health risks. Communities' proximity to congested or high-volume roadways increases the likelihood of localized impacts, especially if elements aimed at mitigating the impacts are not present. Further, national studies and reporting have concluded that communities of color are more likely to bear a greater burden of emissions related exposure.<sup>26</sup>

Like other large metropolitan regions, proximity to congested roadways and high levels of vehicle volume in the National Capital Region are not felt equally. Communities closer to the region's core, interstates, or major highways experience greater exposure than in outer suburban or rural parts. In Activity Centers, proximity and level of traffic is 150 percent higher than in non-Activity Centers. This is likely reflective of high traffic counts on highways and major roads near Activity Centers. From an equity perspective, **EEAs** in the region experience 57 percent greater traffic volume than non-EEAs. The proximity of many EEAs near the region's core and along major roadways leads to the uneven experience.<sup>27</sup> See Chapter 6 to learn more about considering EEAs in planning.

### **Equitable and Resilient Communities**

While natural disasters have occurred in the past, scientists expect the intensity, frequency, and duration of



Figure 2.20: Proximity to Traffic and Volume, 2020 (Source: TPB Staff Analysis of EPA EJSCREEN)

Count of Vehicles per Day at Major Roads within 500 Meters by Distance

these extreme weather events to increase. Agencies will need to consider the impacts of climate change in this region and plan for a resilient and reliable transportation system. Unique needs of the region's more vulnerable populations and their sensitivities to climate impacts will need to be considered. In the COG 2030 Climate Risk Vulnerability Analysis (COG CRVA), COG demonstrated potential climate risks to vulnerable populations by overlaying their climate-risk maps with TPB's EEAs. The COG CRVA found that EEAs are more heavily burdened by extreme heat, more than 60 percent of EEAs lie in FEMA floodplains, and more than 10 percent of EEAs will be affected by a 6-foot sea level rise. The TPB and its member jurisdictions may need to work with communities in exposed EEAs to identify specific impacts and how to address community needs.

<sup>26</sup> Environmental Protection Agency, 2018, Disparities in Distribution of Particulate Matter Emission Sources by Race and Poverty Status, February 22, 2018

<sup>27</sup> Count of vehicles per day (average annual daily traffic) at major roads within 500 meters (or nearest one beyond 500 m), divided by distance in meters. Calculated from U.S. Department of Transportation National Transportation Atlas Database, Highway Performance Monitoring System.



The benefits of solutions, such as clean technologies, must be shared equitably amongst all population groups. The TPB looks to achieve change that is sustainable and equitable for all residents of the region and to improve on the wrongs of the past.

Many residents are aware of environmental concerns facing the region. According to the Voices of the Region public opinion survey, 88 percent of the region's population agree that human actions contribute to at least some climate change; further, 84 percent agree that elected officials need to consider the impacts of climate change when planning transportation in the future. The survey did not ask questions about how to fund climate solutions, but residents are also aware that some environmental solutions can also bring about additional equity considerations. One noted: "If we start working on climate change, transportation is going to get a lot more expensive for a lot more people that need it."

Surveying and public input also notes equity challenges experienced by residents. Two-thirds of residents reported experiencing some form of transportation barrier to getting where they need to go from where they live, with transit-related barriers in service frequency, transfers, or accessibility as the most noted barriers. In addition, pandemic-related questioning presented challenges only experienced by those that need to commute to work. Individuals who self-identified as essential workers were more likely than non-essential workers to note inconvenience and costs considerations of transit and more likely to find the high prices of tolls as a barrier.

The TPB and its members seek to achieve change that is sustainable and equitable for all residents of the region. As the region continues to grow, evolve, and become more aware of climate-related impacts, leaders and planners will continue to meet the policy goals and aspirations that lead to a more sustainable and equitable region. As described by a participant as their ideal scenario: "...the transportation system is so human-friendly [in] design and it's accessible and it's safe, that people will actually choose to rely less on their vehicles...they feel comfortable using the [public] transportation because it's frequent, accessible, safe, and we understand that by doing the rational choice of riding [public] transportation it [not only] responds to our needs but also helps the environment."



Figure 2.21: 25<sup>th</sup> Percentile of Region Block Groups in Traffic Proximity and Volume, 2017 (Source: TPB Staff Analysis of US EPA EJ Screen Data Retrieved from US DOT Traffic Data)

