BICYCLE AND PEDESTRIAN PLAN FOR THE NATIONAL CAPITAL REGION- DRAFT

July 20, 2021 DRAFT

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Prepared by Bicycle and Pedestrian Subcommitee of the TPB Technical Committee
Adopted on Month Date, Year

ABOUT THE TPB

The National Capital Region Transportation Planning Board (TPB) is the federally designated metropolitan planning organization (MPO) for metropolitan Washington. It is responsible for developing and carrying out a continuing, cooperative, and comprehensive transportation planning process in the metropolitan area. Members of the TPB include representatives of the transportation agencies of the states of Maryland and Virginia and the District of Columbia, 24 local governments, the Washington Metropolitan Area Transit Authority, the Maryland and Virginia General Assemblies, and nonvoting members from the Metropolitan Washington Airports Authority and federal agencies. The TPB is staffed by the Department of Transportation Planning at the Metropolitan Washington Council of Governments (COG).

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EXECUTIVE SUMMARY

Prologue

The Washington region has seen rapid changes in the four years since the last regional bicycle and pedestrian plan was adopted. New neighborhoods have grown up and old ones have been revitalized. The people living and working in these new urban neighborhoods are mostly walking, bicycling and using transit for their daily needs. Bicycle infrastructure in the urban core is better than ever, with protected bicycle lanes, paths, on-street bike parking to meet surging demand, and better support facilities at the workplace. Car-sharing, on-line shopping, and delivery services have made it easier to live without a personal automobile. Bike-sharing, which existed only as a pilot program in 2010, has succeeded beyond expectations, providing an option for those who prefer not to own their own bicycle.

Walkable and bikeable activity centers are also growing in the inner suburbs, especially near Metrorail. New Metrorail stations are opening, and old ones are being made more accessible by foot and bicycle. While the automobile still dominates travel and living patterns in the greater Washington region, walkable urban living is growing faster than anticipated.

Overview of the Plan

This *Bicycle and Pedestrian Plan for the National Capital Region* identifies the capital improvements, studies, actions, and strategies that the region proposes to carry out by 2040 for major bicycle and pedestrian facilities. This plan is an update to the 2010 *Bicycle and Pedestrian Plan for the National Capital Region*.

The National Capital Region Transportation Planning Board (TPB), composed of governments and agencies from around metropolitan Washington, has developed this plan with the support of its Bicycle and Pedestrian Subcommittee. The plan incorporates the goals, targets, and performance indicators for walking and bicycling from the *TPB Vision* (1998) and the Council of Governments' *Region Forward 2050* (2010) plans.

In addition to building upon the *TPB Vision*, the *Bicycle and Pedestrian Plan for the National Capital Region* draws on and has been shaped by a number of regional, state, and local policy statements, plans, and studies. These include the TPB's regularly updated Constrained Long Range Plan (CLRP) and Transportation Improvement Program (TIP); federal and state guidance on bicycle and pedestrian facilities; and a wealth of state and local bicycle and pedestrian plans from around the region.

The *Bicycle and Pedestrian Plan for the National Capital Region* is intended to be advisory to the CLRP and TIP, and to stand as a resource for planners and the public. In contrast to the CLRP, the *Bicycle and Pedestrian Plan* includes both funded and unfunded projects – projects in this plan may not yet have funding identified to support their implementation.

Planning Context

A number of federal, state, and local activities, as noted above, provide the planning context (Chapter 1) for this document. At all levels the trend is to require or strongly encourage the routine inclusion of pedestrian and bicycle facilities in all transportation, a policy sometimes known as "complete streets".

Jurisdictions and agencies around the region maintain active bicycle and pedestrian planning and coordination programs. Within this context, the TPB incorporates bicycle and pedestrian considerations into overall regional transportation planning, bike-to-work components of the Commuter Connections program, the Transportation-Land Use Connections program, and the region's Access for All Committee concerning minority, low-income, and disabled communities. The Transportation Planning Board and the Council of Governments support bicycling and walking and their health, community, pollution reduction, and congestion reduction benefits for the region.

Bicycling and Walking in the National Capital Region

The state of bicycling and walking in the Washington region (Chapter 2) includes success stories, challenges, and opportunities for improvement. Data from the 2007/2008 Household Travel Survey, the U.S. Census, surveys, and other sources provide an understanding of where bicycling and walking are found throughout the region, as well as who is walking and bicycling. These data may point to opportunities for increasing these activities, and support the need to consider bicycling and walking in overall roadway and transit planning and engineering.

Safety

Bicycle and pedestrian safety (Chapter 3) is a key challenge for the region. The plan describes the scope of the safety problem, its geographic and demographic distribution across the region, and the legal rights and responsibilities of drivers, pedestrians, and bicyclists. Unfortunately, bicycle and pedestrian safety issues are found throughout the region. The region and member agencies are actively pursuing a number of engineering, enforcement, and educational strategies to reduce deaths and injuries.

Existing Facilities

The Washington region benefits from a number of popular bicycle and pedestrian facilities in place in our communities (Chapter 4). The region's transit agencies have also worked to provide access and accommodation of bicycling and walking to and on their systems. A goal of this plan is to complement and augment the existing system of facilities.

Goals and Indicators

Region Forward 2050 and the TPB's *Vision* of 1998 both encourage walking and bicycling. *Region Forward 2050* calls for more rapid implementation of the projects in this plan, increased walking and

bicycling, and reduced pedestrian and bicyclist fatalities, as well as setting targets and indicators which will measure progress towards the regional goals. It also calls for specific targets and indicators which will measure progress towards the plan goals. Chapter 5 incorporates the goals in the *Vision* and *Region Forward 2050* relevant to walking and bicycling, as well as the corresponding targets and indicators from *Region Forward.* It also suggests additional indicators which could be used to measure progress.

Recommended Best Practices

Convenient and safe bicycle and pedestrian access is a key goal of the TPB's *Vision* and the Council of Governments' *Region Forward 2050* plans. To help achieve this, the Bicycle and Pedestrian Subcommittee developed a set of recommended best practices (Chapter 6) for the design and implementation of bicycle and pedestrian facilities, as well as for the incorporation of bicycling and walking considerations into overall roadway and transit design. Best practices are based upon national and state laws and guidelines.

Planned Bicycle and Pedestrian Facilities and Improvements

Improvements included on the plan's list of regional bicycle and pedestrian projects (overview in Chapter 7 and the full listing in Appendix A) were identified, submitted and reviewed by agency staffs of TPB member jurisdictions. The plan includes 475 bicycle and pedestrian facility improvement projects from across the region.

If every project in the plan were implemented, in 2040 the region will have added nearly miles of bicycle lanes, 800 miles of shared-use paths, hundreds of miles of signed bicycle routes (signage without additional construction), 30 pedestrian intersection improvements, and fifteen pedestrian/bicycle bridges or tunnels. A new bicycle and pedestrian crossing over the Potomac would be created, at the American Legion Bridge, and bridges over the Anacostia River would be improved for pedestrians and bicyclists. In addition, 27 major streetscaping projects would improve pedestrian and bicycle access and amenities in DC, Bethesda, Loudoun, Tysons Corner and other locations.

If it implements the projects in this plan, by 2040 the region will have approximately 2300 miles of bike lanes and multi-use paths, nearly three times the current total.

Progress since the 2010 Bicycle and Pedestrian Plan

Fifty-three projects from the 2010 Bicycle and Pedestrian Plan have been completed, including the 11th Street Bridge Trail and several protected or buffered bike lanes. The region added 52 miles of multiuse path and 45 miles of bike lanes. This does not include many projects that have been partially completed, or any privately provided facilities, or projects such as sidewalk retrofits that were too small to be included in a regional plan.

The Washington region has become a national leader in innovative policies and designs, especially bike sharing (public self-service bicycle rental). In September 2010, the District of Columbia and Arlington County launched a regional bike sharing system, Capital Bikeshare, which has since

expanded to over 2500 bicycles at 300 stations in DC, Arlington, Alexandria, and Montgomery County.

Costs

Total estimated cost of projects in the draft plan is about $3 billion (2014 dollars). Total plan cost was imputed based on planned facility mileage and project types. Project-level cost estimates should be considered as order-of-magnitude planning estimates and in most cases do not reflect engineering-level estimates.

On-Line Resources

Development of the *Bicycle and Pedestrian Plan for the National Capital Region* has benefited from an on-line plan project database, a resource separate from the printed document. Bicycle and Pedestrian Subcommittee members were able to view, enter, and edit their project listings on-line. This on-line database will facilitate keeping the regional list accurate and up-to-date, and will facilitate integration of information from this plan into the region's *Constrained Long-Range Plan* and Transportation Improvement Program as necessary. A public access version of this on-line version of this database can be found at http://www.mwcog.org/bikepedplan/.

Outlook

The TPB's *Vision* and the Council of Governments' *Region Forward 2050* plans call for convenient, safe bicycle and pedestrian access, walkability in regional activity centers and the urban core, reduced reliance on the automobile, increased walking and bicycling overall, inclusion of bicycle and pedestrian facilities in new transportation projects and improvements, and implementation of a regional bicycle and pedestrian plan. The *Bicycle and Pedestrian Plan for the National Capital Region* provides a blueprint for making the region a better place for bicycling and walking.

INTRODUCTION

Figure 1: Green Bike Lane/TPB

BICYCLING, WALKING AND THE VISION OF THE TRANSPORTATION PLANNING BOARD

The National Capital Region Transportation Planning Board (TPB) has long recognized the benefits of bicycling and walking in the region's multi-modal transportation system. The Transportation Planning Board's *Transportation Vision for the 21st Century*, adopted in 1998, emphasizes bicycles and pedestrians in its goals, objectives and strategies.

A key goal of the *Vision*, and of subsequent regional plans, is a strong urban core and a set of regional activity centers, which will provide for mixed uses in a walkable environment and reduced reliance on the automobile.

The Region has a Growing Network of Bike lanes and Paths

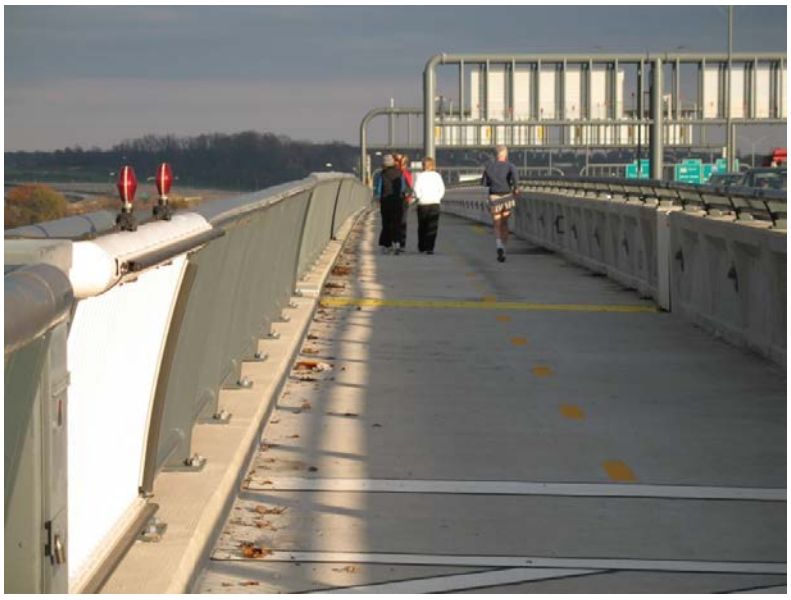

Figure 2: Woodrow Wilson Bridge Trail

REGION FORWARD 2050

In 2010 the Metropolitan Washington Council of Governments adopted *Region Forward,* a vision for the National Capital region in 2050. *Region Forward* built on the TPB *Vision,* calling for more rapid implementation of the regional bicycle and pedestrian plan, increased walking and bicycling, and reduced pedestrian and bicyclist fatalities.

This plan incorporated the goals, targets, and indicators from *Region Forward* which relate to walking and bicycling, as well as some additional indicators which will help show how well those goals are being met.

COMPLETE STREETS

The National Capital Region Transportation Planning Board adopted a Complete Streets policy in May 2012. The policy defined a complete street as one that safely and adequately accommodates motorized and nonmotorized users, including pedestrians, bicyclists, motorists, freight vehicles, emergency vehicles, and transit riders of all ages and abilities, in a manner appropriate to the function and context of the facility. The TPB endorsed the concept of Complete Streets and encouraged its member governments, which had not already done so, to adopt a Complete Streets policy.

All three States and 91% of the local governments in the Washington region now have Complete Streets policies. This is significant in that, insofar as Complete Streets policies are implemented, some kind of accommodation for pedestrians and bicyclists will be built as part of larger transportation projects.

REGIONAL TRANSPORTATION PRIORITIES PLAN

The National Capital Region Transportation Planning Board Regional Transportation Priorities Plan adopted the *Regional Transportation Priorities Plan* (RTPP) in January 2014. The Regional Transportation Priorities Plan aims to identify strategies with the greatest potential to respond to our most significant transportation challenges. It also aims to identify those strategies that are "within reach" both financially and politically--recognizing the need for pragmatism in an era of limited financial resources and a lack of political will to raise significant amounts of new revenue.

Walking and Bicycling account for 9% of all trips in the region

The RTTP expands on the TPB Vision goals for walking and bicycling, proposing improved access to transit stops and stations, expanded pedestrian and bicycle infrastructure, promotion of walking and bicycling, and concentration of growth in walkable, bikeable activity centers.

BICYCLING AND WALKING IN THE NATIONAL CAPITAL REGION

The Washington region is nationally known for the quality, beauty, and extent of its bicycle paths. Its walkable core neighborhoods attract residents and visitors alike. The region has a strong foundation of walking and bicycling facilities to build upon.[1]

One fourth of all driver trips in the Washington Region are less than 1½ miles

Taken together, bicycling and walking are a significant and growing mode of transportation in the Washington region. According to the Metropolitan Washington Council of Governments' 2008 Household Travel Survey walking and bicycling account for 9% of all trips in the Washington region, up from 8.3% in 1994. Bicycling to Work in the District of Columbia nearly quadrupled, from 1.16% in 2000 to 4.1% in 2012.

Recent years have seen progress for bicyclists and pedestrians. Several major new trails and bridges have opened, and most local governments have adopted bicycle, pedestrian, and/or trail plans. Most of the transit agencies in the region have added bike racks to their buses. Bicycle or pedestrian coordinators and trail planners are now found at most levels of government. In accordance with federal guidance and state and local Complete Streets policies, pedestrian and bicycle facilities are increasingly being provided as part of larger transportation projects. Employers are investing in bike facilities at work sites, and developers are including paths in new construction.[2] Capital Bikeshare, which launched in September 2010, has been a dramatic success, and now features over 2500 bicycles at over 300 stations.

Bicycling and walking could reach a greater potential in the Washington region, however. Many trips currently taken by automobile could be taken by bicycle. The average work trip length for all modes in the Washington Metropolitan Statistical Area is 16 miles.[3] But 17% of commute trips are less than five miles, a distance most people can cover by bicycle.

Many people who live far from their jobs, but closer to transit or a carpool location could walk or bike to transit or the carpool instead of driving.

The potential for shifting non-work trips to bicycling or walking is even greater than for work trips. The average non-work trip is a little more than five miles, and nearly 3/4 of all trips are non-work trips.[4] The median auto driver trip in the Washington region, according to the 2008 COG Household Travel Survey, is four miles. The median trip for an auto passenger is only 2.8 miles. One fourth of all auto trips are less than 1½ miles in length. Destinations such as schools, shopping, and recreational facilities are often close enough to walk or bicycle. Bicycling and walking have

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[1] Green Bike Lane Photo: City of Alexandria

[2] Woodrow Wilson Bridge Trail Photo: COG/TPB / Michael Farrell

[3] National Capital Region Transportation Planning Board, *2013 State of the Commute Survey Report*, p. 32.

[4] National Capital Regional Transportation Planning Board, *1994COG/TPB Household Travel Survey: Summary of Major Findings,* January, 1998. Page 5.

considerable potential to displace automobile trips if suitable transportation, design, safety, parking, school siting, and land development policies are followed.

The New York Avenue Metro Station Incorporates a Shared-Use Path and Bicycle Parking

PLAN DEVELOPMENT AND ORGANIZATION

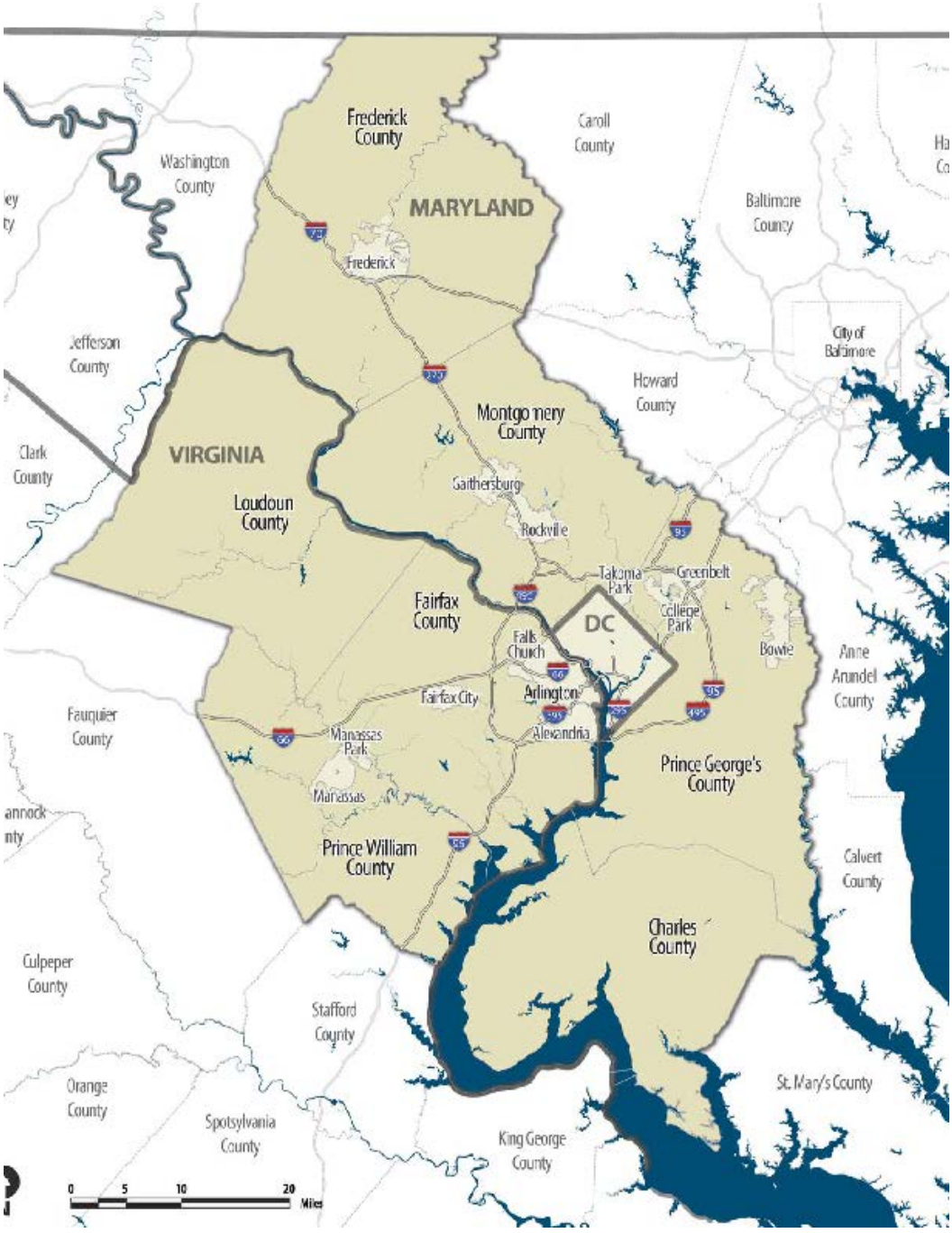
This plan has been prepared by the National Capital Region Transportation Planning Board, the federally designated Metropolitan Planning Organization (MPO) for the Washington region. The TPB is made up of representatives of 21 local governments, the departments of transportation of Maryland, Virginia, and the District of Columbia, the state legislatures, and the Washington Metropolitan Area Transit Authority (WMATA). Member jurisdictions are shown in Figure i-A on page i-6.

Figure 3: New York Avenue Metro Station and Metropolitan Branch Trail

This document presents the long-range Bicycle and Pedestrian Plan for the Washington Region through the year 2040. The plan is a list of regional projects identified by the TPB member jurisdictions, accompanied by recommended best practices and a description of existing facilities and regional trends for bicycling and walking. This plan includes both funded and unfunded projects. It does not specify design guidelines, but refers instead to state and national guidelines for bicycle and pedestrian facilities.

This update of the *Bicycle and Pedestrian Plan for the National Capital Region* seeks to reflect the goals, objectives and strategies of the 1998 *TPB Vision*, *Region Forward 2050,* and the *Regional Transportation Priorities Plan* while building on information from previous bicycle plans. It includes performance measures that will show progress towards the *Vision* and *Region Forward* goals.

Pedestrian access and safety receives more attention in this update, reflecting increased involvement in transportation safety planning by the TPB. . Pedestrian planning is most needed at the county, city and neighborhood level. There is, however, a role for regional pedestrian planning, especially in the area of educating the public.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Fairfax County
College Park
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Fairfax City
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Fauquier County
Alexandria
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CHAPTER ONE: PLANNING CONTEXT

Overview

This *Bicycle and Pedestrian Plan for the National Capital Region* draws on and has been shaped by a number of regional, state, and local policy statements, plans, and studies, including the *Vision* and the *Regional Transportation Priorities Plan (RTPP)* of the Transportation Planning Board, the *Region Forward 2050* vision of the Council of Governments, the TPB's *Visualize 2045* long range transportation plan, federal and state guidance on provision of bicycle and pedestrian facilities, the and Transportation Improvement Program, and state and local bicycle and pedestrian plans.

This plan is intended to help fulfill the goals of the *TPB Vision*, *RTPP , Region Forward 2050* and *Visualize* for bicyclists and pedestrians. It includes performance measures that will show progress towards regional goals.

Regional Planning

THE VISION OF THE TRANSPORTATION PLANNING BOARD

The National Capital Region Transportation Planning Board (TPB) is the Metropolitan Planning Organization for the Washington region. It brings key decision-makers together to coordinate planning and funding for the region's transportation system.

The TPB's official vision statement for the region, the *Transportation Vision for the 21st Century*, adopted in 1998, is meant to guide regional transportation investments into the new century. The *Vision* is not a plan with a map or specific lists of projects. It lays out eight broad goals, with associated objectives and strategies that will help the region reach its goals.

The Vision of the TPB calls for more Walking and Bicycling

The *Vision* is supportive of pedestrians and bicyclists. It calls for:

- Convenient, safe bicycle and pedestrian access
- Walkable regional activity centers and urban core
- Reduced reliance on the automobile
- Increased walk and bike mode share
- Including bicycle and pedestrian facilities in new transportation projects and improvements
- Implementation of a regional bicycle and pedestrian plan

Other goals of the *Vision* affect bicyclists and pedestrians, such as: maintaining the existing transportation system, reducing the per capita vehicle miles traveled, linking land use and transportation planning, and achieving enhanced funding for transportation priorities. Sections of the *Vision* relating to bicycle and pedestrian goals are highlighted in Table 1.

Figure 4: National Capital Region Transportation Planning Board Members

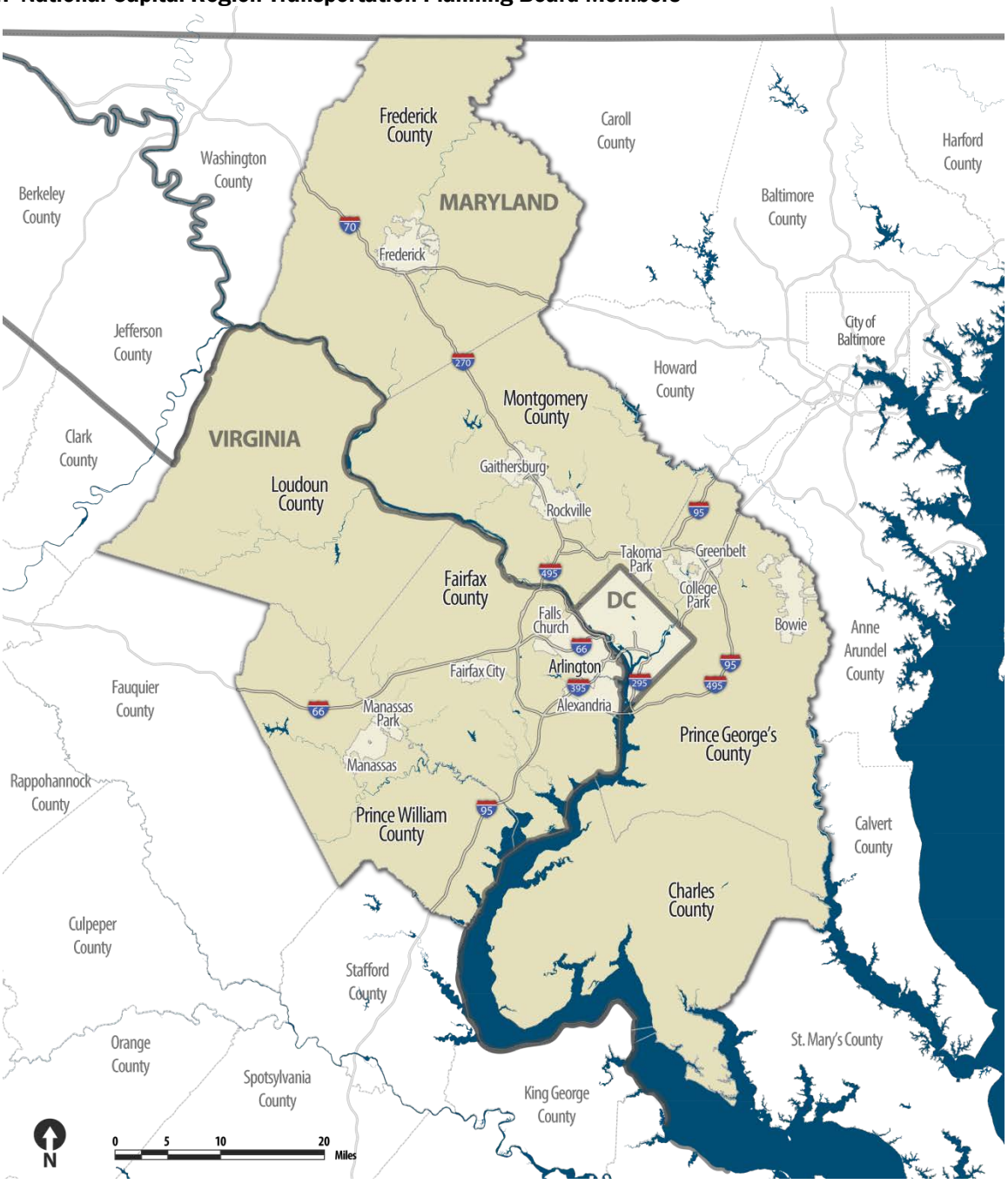


Table 1: Bicycle and Pedestrian Provisions of the TPB Transportation Vision

Goal 1. The Washington metropolitan region's transportation system will provide reasonable access at reasonable cost to everyone in the region. Objective 4: Convenient **bicycle and pedestrian** access.

Strategy 3: Make the region's transportation facilities safer, more accessible and less intimidating for **pedestrians, bicyclists**, and persons with special needs.

Goal 2. The Washington metropolitan region will develop, implement, and maintain an interconnected transportation system that enhances quality of life and promotes a strong and growing economy through the entire region, including a healthy regional core and dynamic region activity center with a mix of jobs, housing, and services **in a walkable environment**.

Objective 2: Economically strong regional activity centers with a mix of jobs, housing, services, and recreation **in a walkable environment.**

Objective 4: Improved internal mobility with reduced **reliance on the automobile** within the regional core and within regional activity centers.

Goal 5. The Washington metropolitan region will plan and develop a transportation system that enhances and protects the region's natural environmental quality, cultural and historic resources, and communities.

Objective 3: Increased transit, ridesharing, **bicycling and walking** mode shares.

Strategy 7: Implement a regional **bicycle/trail/pedestrian plan** and include **bicycle and pedestrian facilities** in new transportation projects and improvements.

REGION FORWARD 2050

Region Forward 2050 Calls for Faster Construction of the projects in the Bicycle and Pedestrian Plan

The Council of Governments is a regional organization of Washington area local governments. COG comprises 21 local governments surrounding our nation's capital, plus area members of the Maryland and Virginia legislatures, the U.S. Senate, and the U.S. House of Representatives.
COG provides a focus for action and develops sound regional responses to such issues as the environment, affordable housing, economic development, health and family concerns, human services, population growth, public safety, and transportation.

In January 2010 the Council of Governments adopted *Region Forward,* a vision for the National Capital region in 2050. The goals of *Region Forward* are broader than those of the TPB *Vision,* encompassing areas such as public safety, land use, economic development, housing, and the environment. For transportation, *Region Forward* builds on the TPB *Vision,* calling for more rapid implementation of the regional bicycle and pedestrian plan, increased walking and bicycling, and reduced pedestrian and bicyclist fatalities.

Provisions of *Region Forward* relating to bicycling and walking are summarized in Table2.

Table 2: Bicycle and Pedestrian Provisions of Region Forward

Goals:

- Transit-oriented, compact, walkable mixed-use communities emerging in Regional Activity Centers that will capture new employment and household growth.
- A transportation system than maximizes community connectivity and walkability, and minimizes ecological harm to the region and the world beyond.
- A broad range of public and private transportation choices for our Region which maximizes accessibility and affordability to everyone and minimizes reliance upon single occupancy use of the automobile.
- Safe and healthy communities

Targets:

Reduce daily vehicle miles traveled (VMT) per capita.

Increase the rate of construction of bike and pedestrian facilities from the Transportation Planning Board's (bicycle and pedestrian) plan.

Prioritize walking and biking options by improving pedestrian and bicycle networks, especially in the regional activity centers. Planning and street improvements will focus on:

- Wide sidewalks
- Street trees
- Mixed-use development
- Pedestrian-friendly public spaces
- Bike stations near transit hubs
- Bike lanes
- Bike sharing

Increase the share of walk, bike and transit trips

- Give people options to meet everyday needs locally by building mixed-use developments

Reduce pedestrian and bicyclist fatalities

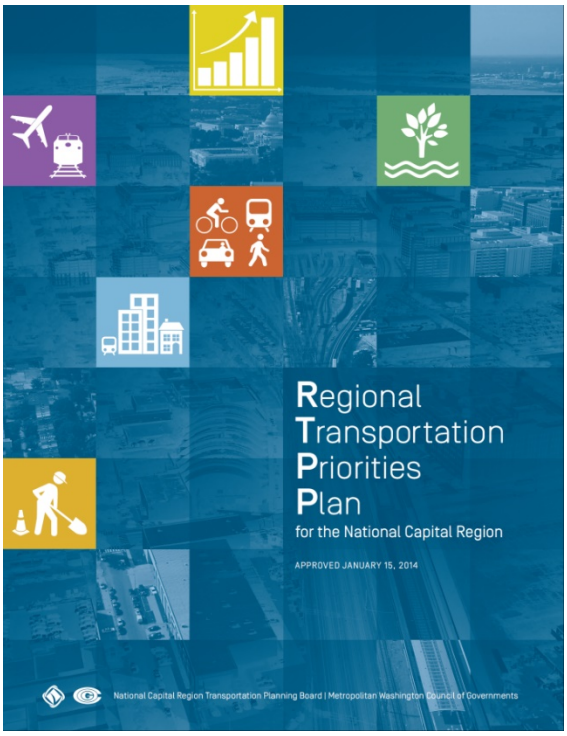
- Build sidewalks, bike lanes, and other improvements
- Narrower local streets

- Better crossings
- Lower speeds for vehicles on local streets and arterials
- More education and enforcement

Indicators:

- Transit, bicycle and walk share in Regional Activity Centers
- Street/node ratio for Regional Activity Centers
- Square feet of mixed-use development
- Reduced pedestrian and bicyclist fatalities

REGIONAL TRANSPORTATION PRIORITIES PLAN



On January 15, 2014, the TPB approved the *Regional Transportation Priorities Plan* (RTPP). The RTPP builds on the *Vision* goals by identifying strategies with the greatest potential to respond to our most significant transportation challenges. The strategies are intended to be complementary, to make better use of existing infrastructure, and to be "within reach" both financially and politically. The RTPP recognizes the need for pragmatism in an era of limited financial resources and a lack of political will to raise significant amounts of new revenue.

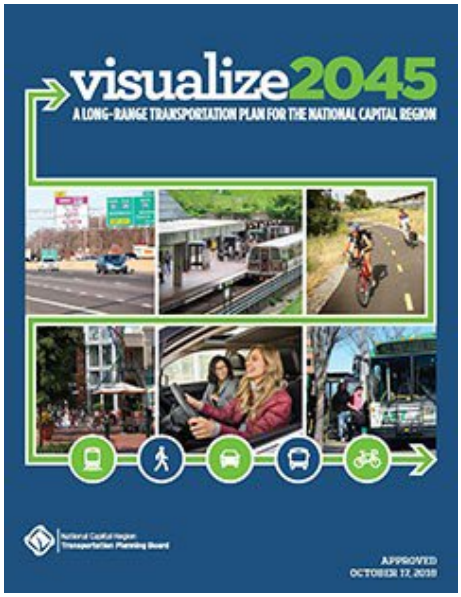
Bicycle and pedestrian modes are prominent in the RTPP. It calls for:

1. **Improved access to transit stops and stations**, connecting them to nearby neighborhoods and commercial areas with sidewalks, crosswalks, and bridges.
2. **Incentives to use commute alternatives** such as transit, carpool, vanpool, bicycling, walking, telework, and living closer to work.
3. **Expanded pedestrian and bicycle infrastructure,** including
   - Sidewalks, crossings, traffic calming
   - Bicycle lanes/paths, bicycle parking, bikeshare
   - Workplace amenities for bicyclists
   - Growth concentrated in **Walkable, Bikeable Activity Centers**
4. **Improved circulation** within activity centers though enhanced
   - Pedestrian and bicycle infrastructure

- Local bus service
- Street connectivity

Expanded use of space-efficient modes such as walking, bicycling, and transit use, particularly in the activity centers, are essential to the success of the RTPP.

VISUALIZE 2045



Visualize 2045, which was approved by the Transportation Planning Board in October 2018, is the current federally mandated, long-range transportation plan for the National Capital Region.

Financially Constrained Element

Federal regulations require the TPB to develop a long-range transportation plan identifying the projects expected to be funded within a minimum planning horizon of 20 years. The TPB must demonstrate that there is funding available for those projects. The total expenditures cannot exceed the total anticipated funding. The TPB must also analyze the plan for its effect on the region's air quality.

This kind of plan is known as a financially constrained long-range plan. Future population growth, congestion, and travel mode shares are forecast based on the transportation network for which funding is available.

The constrained element predicts 45% growth in walk and bike trips by 2045, much faster than the expected 23% increase in population and 20% increase in vehicle-miles traveled.

Aspirational Element

Visualized 2045 also represents a new kind of long-range planning effort in this region. For the first time, in addition to projects that the region's transportation agencies expect to be able to afford between now and 2045, the plan includes aspirational projects, programs, and policies that go beyond financial constraints.

The latest information on the 2022 update to the plan can be found at the Visualize 2045 website.In addition, an interactive companion is available to view Visualize 2045 projects and initiatives in a story map.

Visualize 2045 also proposed seven aspirational initiatives which, if enacted, would have the potential to significantly improve the region's transportation system performance compared to current plans and programs.

The seven Aspirational Initiatives are:

- Bring Jobs and Housing Closer Together

- Expand Bus Rapid Transit and Transitways
- Move More People on Metrorail
- Provide More Telecommuting and Other Options for Commuting
- Expand Express Highway Network
- **Improve Walk and Bike Access to Transit**
- Complete the **National Capital Trail**

Most of these initiatives imply a greater role for walking and bicycling. Bringing jobs and housing closer together echoes longstanding TPB goals, and makes walking and bicycling for transportation more feasible. Increased transit service, and improving walk and bike access to transit mean more walking and bicycling. Completing the National Capital Trail, a circumferential bicycle route around the core of the region, would be the first step towards a continuously connected regional and long distance bike network.

NATIONAL CAPITAL TRAIL

The National Capital Trail is a proposed trail loop circling the core of the Washington region. It will integrate existing regionally significant, heavily used trails such as the Mt. Vernon Trail, the Capitol Crescent, and the Anacostia River Trail into a single circuit. Combined, all the links in the trail, including short connector trails, will be 60 miles long. Thirty-nine miles have already been built.

The route is accessible for people of all ages and abilities, and incorporates both existing and planned facilities from agency and jurisdictional plans.

The National Capital Trail will provide a high quality, low stress bicycle and pedestrian connection between the population centers, jobs, rail stations, parks, and tourist attractions of the urban core. When it is complete, half a million people, 820,000 jobs, and twenty-six Metro stations will be within walking distance (1/2 mile) of the National Capital Trail

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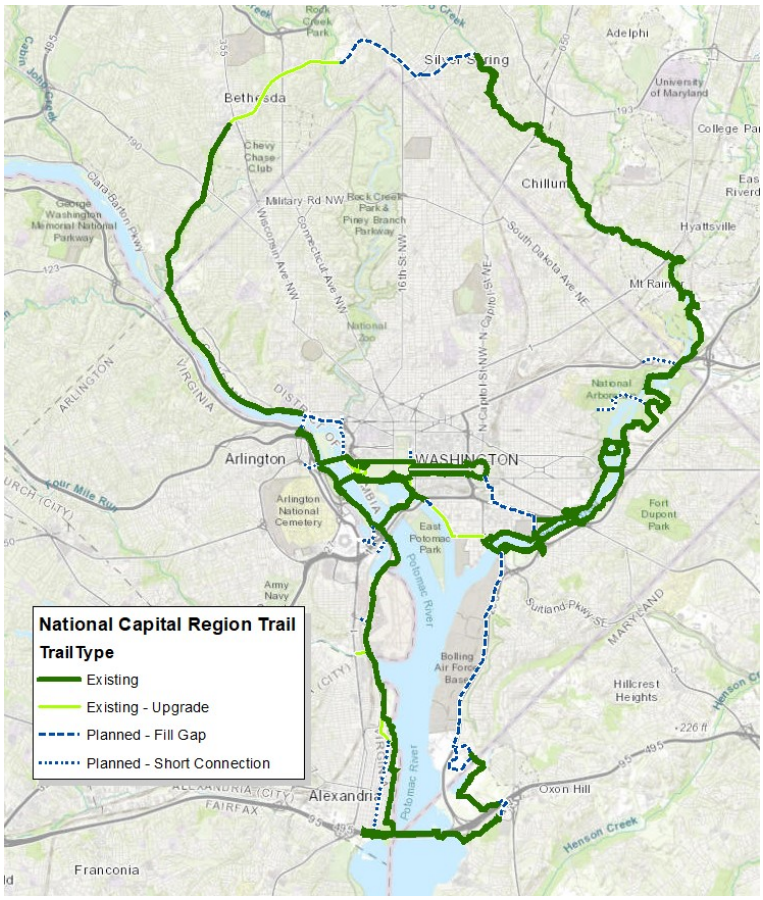


Figure 5: National Capital Trail (National Park Service)

The concept for a circumferential route, or "bicycle beltway" was originally proposed by the TPB. Atlanta's circumferential Beltline trail was the inspiration.

The TPB Bicycle and Pedestrian Subcommittee developed a draft route in 2014, which a few changes was adopted into the National Park Service's paved trails plan in 2016. The Park Service also suggested renaming it the "National Capital Trail". The Bicycle and Pedestrian Subcommittee approved the Park Service's changes.

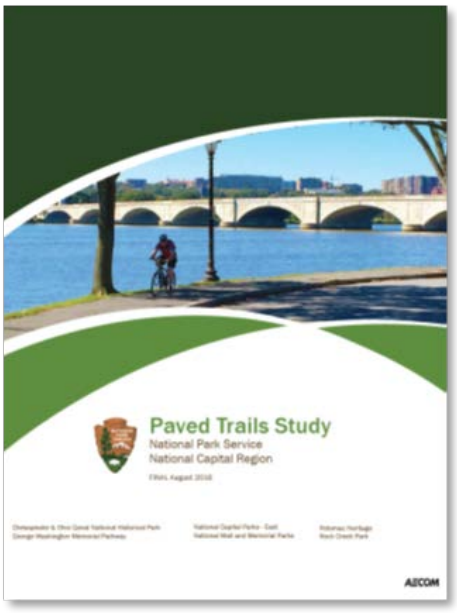


Figure 6: Paved Trails Plan

CAPITAL TRAIL NETWORK

In August 2018, the Capital Trails Coalition announced a trails plan encompassing the District of Columbia, City of Alexandria, Arlington and Fairfax counties in Virginia, and Prince George's and Montgomery counties in Maryland. The Capital Trail Network includes 456 miles of existing trails, and 386 miles of planned trails, for a total 842 mile regional trail network.

The plan incorporates the National Capital Trail route, along with most of the goals and facility selection criteria. An interactive version of the network map has been made available, along with printable maps for all the jurisdictions.

The Coalition is composed of agencies, municipalities, departments of transportation, local nonprofits and other entities who recognize the importance of trails for the Washington DC region. Staff for the Coalition are housed at the Washington Area Bicyclist Association (WABA) and the Rails to Trails Coalition. Funding was provided by REI, the outdoor gear retailer.

Figure 7: Capital Trail Network (Capital Trails Coalition)

The goal of the Capital Trails Coalition is to create a world-class network of multi-use trails that are equitably distributed throughout the Washington D.C. metropolitan region. The trail network will provide

healthy, low-stress access to open space and reliable transportation for people of all ages and abilities.

The Capital Trail Nework plan took nearly three years to develop. National Park Service and TPB staff participated in the plan development.

To keep the task of creating a regional trail plan manageable, the footprint of the Capital Trail Network was limited to the urban core and inner suburbs, which is the Washington Area Bicyclist Association service area.

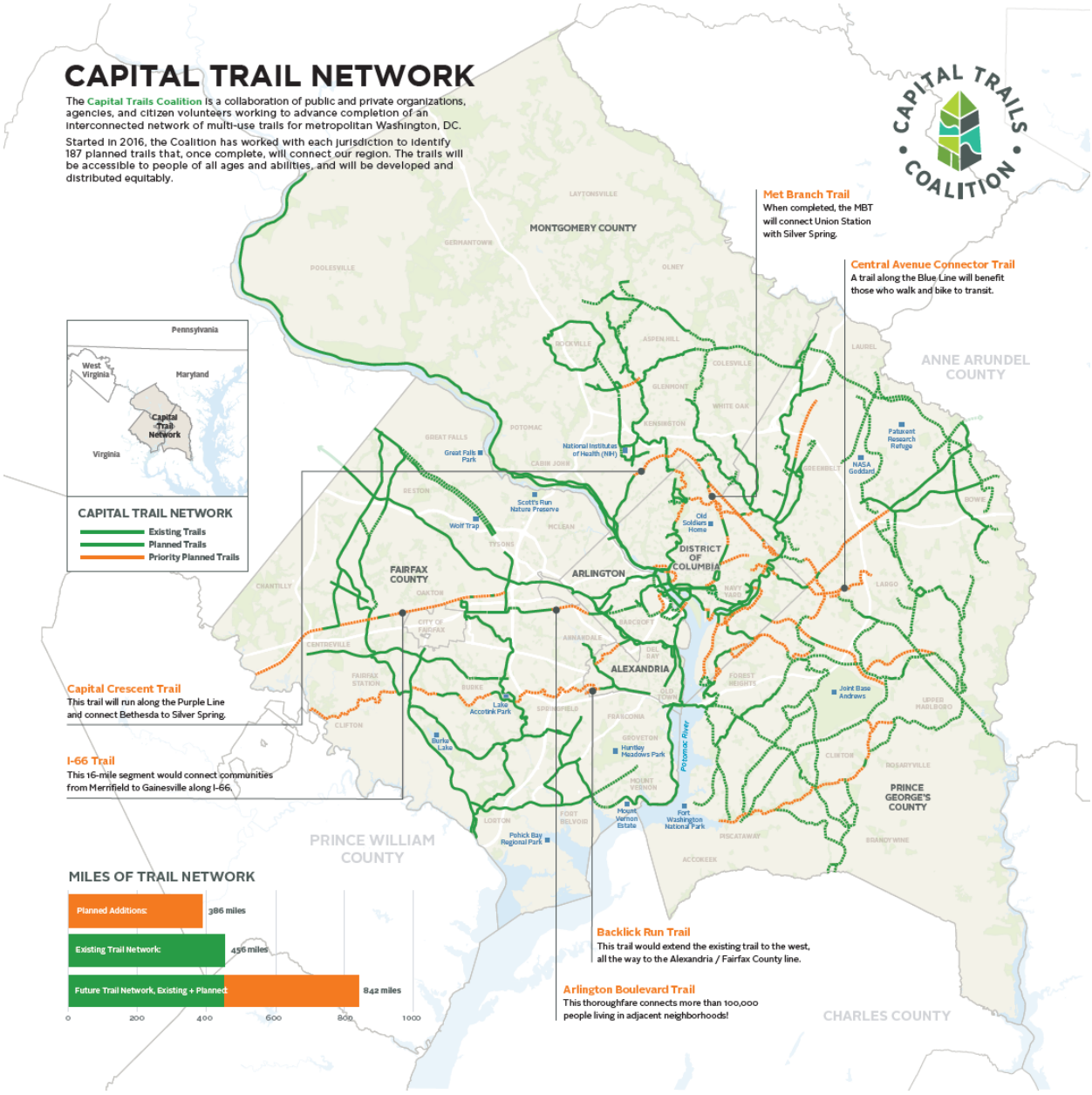


Figure 8: Capital Trail Network (Capital Trails Coalition)

NATIONAL CAPITAL TRAIL NETWORK

Although the original, circumferential National Capital Trail route would serve a large number of people, jobs, and destinations, by the time it was formally adopted as part of Visualize 2045, there was a growing interest from the public and board members in expanding it into a regional trail network that would build on the work done by the Capital Trails Coalition.

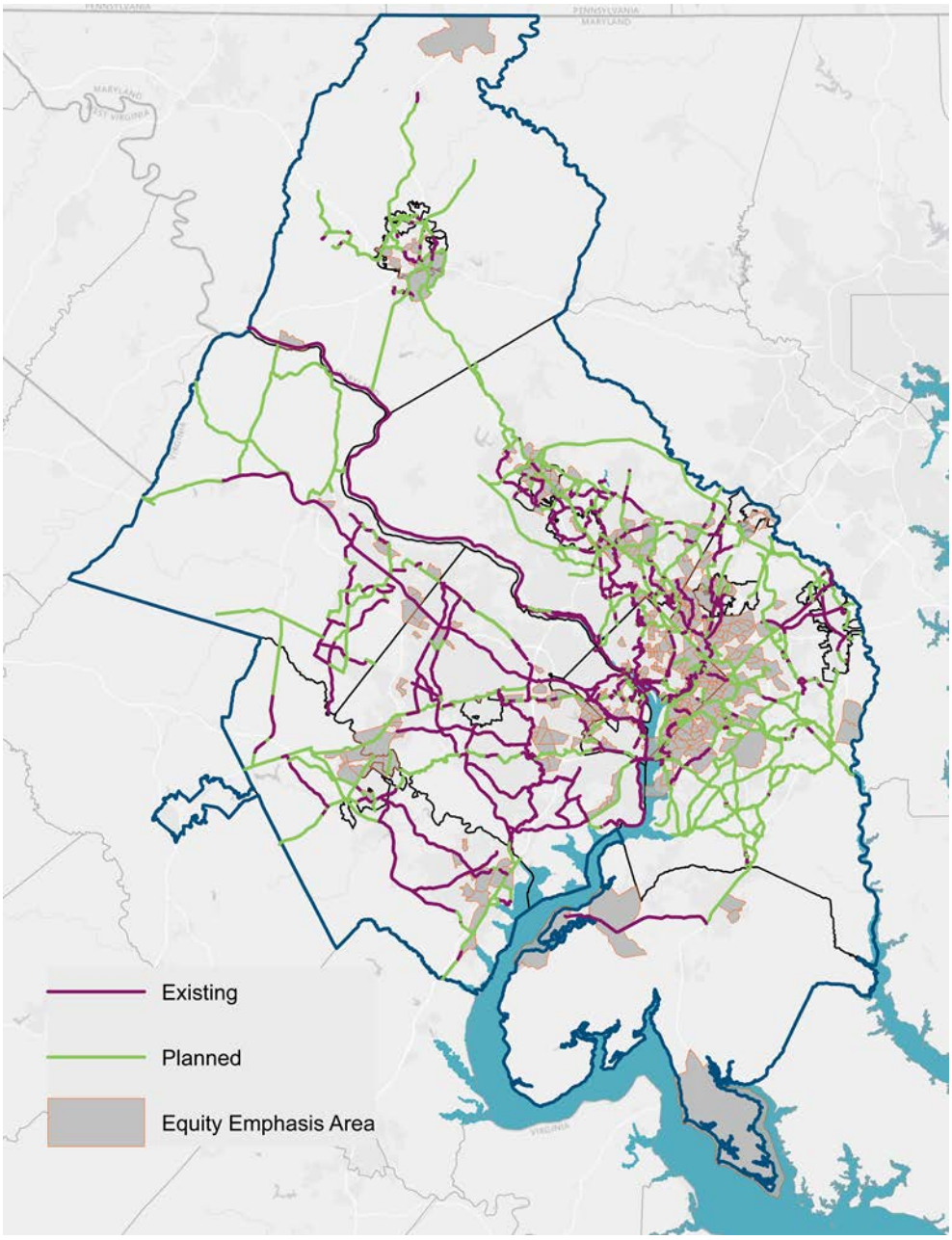


Figure 9: National Capital Trail Network

Accordingly, in December 2018 TPB directed staff to build upon the National Capital Trail to create a trail network that would extend into all TPB member jurisdictions, making use of existing planning efforts. Following an 18-month effort, TPB approved the National Capital Trail Network in July 2020. The COG Board of Directors also endorsed the network in August 2020.

The National Capital Trail Network is a 1,400-mile, continuous network of long-distance, off-street trails, serving the entire region. It includes both existing and planned segments.

The network will provide high-quality bicycle and pedestrian access for most of the region's people and jobs. 70% of the region's population lives within a half-mile of the network, and 98% of the jobs are within two miles of the network. 136 of the region's 141 Activity Centers are within a half-mile of the network, as are 308 of the 351 Equity Emphasis Areas.

The network will be used to prioritize funding for the Transportation Alternatives Program and the Transportation – Land Use Connections (TLC) Program. The network will also be included in the update of the overall Regional Bicycle and Pedestrian Plan in fiscal year 2021.

This regional, long-distance network will provide healthy, low-stress access to open space and reliable transportation for people of all ages and abilities, and an environmentally friendly alternative to driving and other motorized travel.

The network uses the following facility types and design criteria:

- Off-Street Paths:
    - 10'+ wide for new construction.
    - 8' minimum for existing facilities
    - Narrower in short segments if necessary
    - Paved, or firm surface such as crushed limestone
    - Designed for non-motorized users (<20 mph design speed)
- On-street:
    - Protected from moving traffic (i.e. parked cars, curb, flexposts)
    - Short unprotected connections where necessary for connectivity
    - Traffic-calmed, low-stress "bicycle boulevards" are also acceptable
- Connectivity
    - Directly connected to the regional network
    - Suitable for both transportation and recreation
    - Existing or planned facilities are acceptable
    - Planned facilities must be in an approved plan

To develop this network TPB staff gathered information from the Capital Trails Coalition; from areas not included in the Capital Trail Coalition's plan, such as Charles, Frederick, Loudoun, and Prince William Counties; and from those that had made major recent updates to their planned bicycle network, such as Montgomery County.

The network will be updated regularly to reflect the adoption of new agency bicycle and pedestrian plans.

TRANSIT ACCESS FOCUS AREAS

At its July 2020 meeting, the TPB adopted Resolution R4-2021 to approve a regional list of 49 Transit Access Focus Areas (TAFAs). The TAFAs include Metrorail stations, commuter rail, light rail, and selected bus transit centers. The TAFAs are rooted in the region's long-range transportation plan, Visualize 2045, and its aspirational initiative to "Improve Walk and Bike Access to Transit."

TPB was able to identify those stations that had the greatest potential for increasing ridership through improved pedestrian access, based on the stations' effective half-mile walksheds given their existing pedestrian network, and on their density of people and jobs.

COMPLETE STREETS

In May 2012 the TPB approved a *Complete Streets Policy for the National Capital Region.* The policy defines a Complete Street as a "facility that safely and adequately accommodates motorized and non-motorized users, including pedestrians, bicyclists, motorists, freight vehicles, emergency vehicles, and transit riders of all ages and abilities, in a manner appropriate to the function and context of the facility". The TPB endorsed the concept of Complete Streets, provided a sample policy template, and urged its members who had not already adopted such a policy to do so.

All three states and most of the TPB member governments and agencies have adopted some form of Complete Streets policy.

The significance of Complete Streets is that future pedestrian and bicycle projects are likely to be built as part of larger transportation projects. Therefore, far more such projects are likely to be built. Moreover, designing and building with pedestrians and bicyclists in mind from the start is far more cost-effective than retrofitting after the fact.

Follow-on actions to the policy included an implementation workshop, held on January 2013, and the establishment of an information clearinghouse, where links and information on state and regional planning processes and high-profile projects can be found.

As of 2020 all three State departments of transportation and 91% of local jurisdictions (including DC) had adopted a Complete Streets policy. Complete Streets is now standard practice.

GREEN STREETS

DC's Urban Forestry Program Helps Keep DC Cool and Green

In February 2012 the TPB adopted a voluntary regional Green Streets Policy. The policy defines a Green Street as an "alternative to conventional street drainage systems designed to more closely mimic the natural hydrology of a particular site by infiltrating all or a portion of local rainfall events". A green street uses trees, landscaping, and related environmental site design features to capture and filter stormwater runoff

within the right of way, while cooling and enhancing the appearance of the street.[5]

Green Streets benefit pedestrians and bicyclists by cooling and enhancing the appearance of the street, making it a more pleasant place to walk or bike. Green Streets treatments may compete with pedestrians and bicyclists for space, but can often be placed in traffic calming features such as bulb-outs and landscaped islands. Road diets and traffic calming projects can free up space for Green Streets treatments.[6]

Green Streets are mostly an urban phenomenon. Greening the streets and sidewalks is an effective mitigation for urban challenges such as the heat island effect, stormwater runoff, and combined sewage overflow.

On the other hand, suburban and rural areas have less impervious surface, more land available for large off-street stormwater detention basins, lower summer temperatures, and fewer pedestrians or bicyclists who would value greener streets.

As of 2020, half the local governments (including DC) had adopted a Green Streets policy.

AIR QUALITY AND GREENHOUSE GASES

The region has been very successful in reducing hazardous emissions. The number of bad air days (code orange or worse) have fallen by 97% between 1997 and 2020. The number of bad days for fine particulates has fallen to zero. These declines have come even as population and vehicle miles traveled have grown.

Within transportation, reductions in emissions of NOx and VOCs have resulted mostly from federal requirements for cleaner, more fuel-efficient vehicles and for cleaner-burning fuels. Efforts to reduce roadway congestion and to encourage less driving have also contributed.

Progress on greenhouse gas emissions, while significant, has been much less than for NOx, Volatile Organic Compounds, and particulates.[7] Transportation and mobile sources account for 40% of greenhouse emissions.[8]

Bicycling and Greenhouse Gases

[5] https://ddot-urban-forestry-dcgis.hub.arcgis.com/

[6] https://ddot.dc.gov/GreenInfrastructure

[7] https://www.mwcog.org/documents/2017/09/23/air-quality-trends-air-quality-air-quality-data-featured-publications/

[8] https://www.mwcog.org/documents/2018/02/08/metropolitan-washington-community-wide-greenhouse-gas-emissions-inventory-summary--featured-publications-greenhouse-gas/

Walk and bike trips do not contribute significantly to greenhouse gas emissions.

Bicycling is the most energy-efficient form of transport

Bicycling is the most energy-efficient mode of transportation. .Accounting for the life-cycle carbon emissions of the vehicle, a bicycle emits 1/30 the greenhouse gases of a fossil fuel vehicle, and 1/10 the emissions of an electric vehicle.[9]

To the extent that the region can divert motorized trips to walking and bicycling, it can help reduce these emissions.

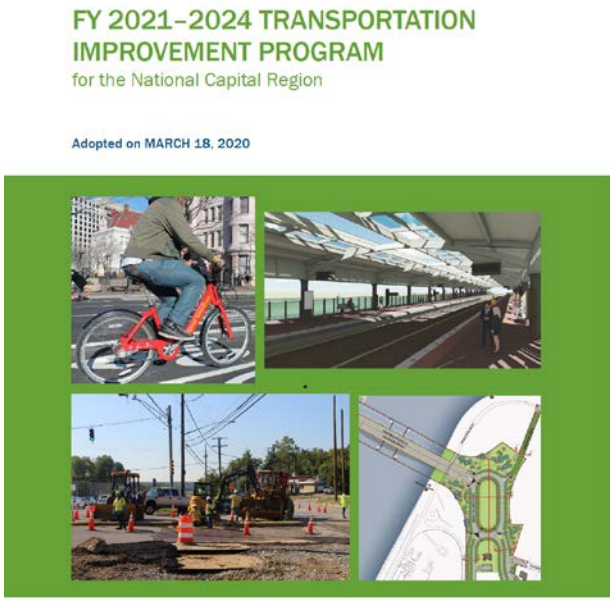
TRANSPORTATION IMPROVEMENT PROGRAM

The Transportation Improvement Program includes $1.475 billion for pedestrian and bicycle projects.

The Transportation Improvement Program (TIP) is a federal obligation document which describes the planned schedule in the next four years for distributing federal, state and local funds for state and local transportation projects. The TIP represents an agency's intent to construct or implement specific projects in the short term and identifies the anticipated flow of federal funds and matching state or local contributions. It is a multimodal list of projects that includes highway projects, rail, bus and streetcar projects, and bicycle and pedestrian improvements. It also includes roadway and transit maintenance projects, operational programs, and many other transportation-related activities.

[9] https://theconversation.com/cycling-is-ten-times-more-important-than-electric-cars-for-reaching-net-zero-cities-157163

The TPB's FY 2021–2024 TIP contains over 300 project records and more than $15 billion in funding across the region. The TIP is a dynamic budget document and is amended and modified on a weekly/monthly basis.



The TIP includes $1.475 billion for pedestrian and bicycle projects, or roughly 10% of total funding .

Funding for bicycle and pedestrian projects in the TIP has increased sharply. For example, the six-year Fiscal Year 2013-2018 TIP included $313 million for bicycle and pedestrian projects. Annual bike/ped project funding in the current TIP is seven times what it was in the FY 2013-2018 TIP.

This does not provide a complete picture of the region's planned investments in bicycle and pedestrian infrastructure, however. Every submitting agency reported that their jurisdiction had a Complete Streets policy, which implies pedestrian and bicycle accommodation. Costs of ped/bike accommodation that are part of larger road and transit projects are not reported.

BICYCLE AND PEDESTRIAN SUBCOMMITTEE OF THE TPB TECHNICAL COMMITTEE

The Bicycle and Pedestrian Subcommittee of the TPB Technical Committee advises the TPB, TPB Technical Committee, and other TPB committees on bicycle and pedestrian considerations in overall regional transportation planning. It meets six times per year. One its most important functions is information exchange, at regular meetings, and at sponsored training events.

The Subcommittee also helps coordinate planning efforts which require inter-jurisdictional coordination. It developed a vision for a regional circumferential bicycle route, or "bicycle beltway", which ultimately became the National Capital Trail Network. A working group of the Subcommittee advises the regional Street Smart Pedestrian and Bicycle Safety Campaign.

Street Smart Pedestrian and Bicycle Safety Campaign

Since 2002, The Metropolitan Washington Council of Governments' Street Smart program has worked to protect vulnerable road users by raising awareness about pedestrian and bicycle safety. The region-wide public safety campaign educates drivers, pedestrians, and bicyclists on about safe use of roadways in the District of Columbia, suburban Maryland, and Northern Virginia.

The campaign integrates several components, including broadcast and outdoor advertising, media relations, digital media, and outreach events. It is meant to complement, not replace, the efforts of state and local governments and agencies to build safer streets and sidewalks, enforce laws, and train better drivers, bicyclists, and pedestrians.

Figure 10: Street Smart Ad

BICYCLING, WALKING, AND THE REGIONAL TRANSPORTATION MODEL

Data relevant to walking and bicycling are gathered as part of the regional household travel survey, and are incorporated into regional transportation modeling and forecasting.

The regional travel forecasting model is based on traffic analysis zones, which are large enough that many pedestrian and bicyclist trips begin and end within a single zone, and thus are not modelled. Adding many more traffic analysis zones, to capture more pedestrian trips, would make the model much more complicated and require more computing power. Also, pedestrian and bicyclist trips are likely to occur on local streets or paths that are not part of the modelled network. Therefore the travel forecasting model which MWCOG currently uses does not assigned pedestrian or bicyclist trips to particular links in the transportation network, but only predicts in which traffic analysis zone in which they will start.

Regional Encouragement and Funding Programs

To help reduce automobile traffic, congestion and air pollution, COG and TPB have developed several programs to encourage bicycling and walking in the Washington region. TPB offers technical

assistance to its member governments, while the regional Commuter Connections program offers incentives to commuters to encourage them to use transit, carpooling, and walk/bike to get to work.

BIKE TO WORK DAY, THE BIKE TO WORK GUIDE, AND GUARANTEED RIDE HOME

As part of the Commuter Connections program, every year on the third Friday in May the TPB sponsors a regional Bike to Work Day. This event has grown into one of the largest of its kind in the country, attracting over sixteen thousand riders to seventy-nine "pit stops" or rallying points around the region. The event is meant to encourage first-time riders to try bicycling to work.

The Commuter Connections program also supports publication of *Biking to Work in the Washington Area: A Guide for Employers and A Guide for Employees*, which provides tips for employees and employers. For employees, there are tips on safe cycling, laws, equipment and clothing, and transit connections. For employers, the guide explains the benefits of bicycling to the employer, the types of bicycle parking, and the ways an employer can encourage an employee to bike to work.

Commuter Connections produces a regional Bike Route map. Google maps offers both pedestrian and bicycle routing. Other tools and resources for bicycle commuters are listed on the bicycling resources section of the Commuter Connections web site.

People sometimes drive to work because they need to be able to get home quickly in an emergency. To meet that need and help get more people out of their cars, the Commuter Connections program offers a free taxi ride home in an emergency for commuters who regularly (twice a week) carpool, vanpool, bike, walk or take transit to work. Commuters who sign up for the Guaranteed Ride Home program may use it up to four times per year.

TRANSPORTATION-LAND USE CONNECTIONS PROGRAM

The Transportation Land Use Connections (TLC) Program provides short-term consultant services to local jurisdictions for small planning projects that promote mixed-use, walkable communities and support a variety of transportation alternatives. The program provides consultant assistance of $30,000 to $60,000 for planning projects, and up to $80,000 for design or preliminary engineering projects.

Since 2007 dozens of pedestrian and transit access planning projects have been funded through the TLC program. Community response has been enthusiastic, and competition for the technical assistance has been stiff.

In addition to providing technical assistance, the TLC Program includes a Peer Exchange Network and provides support for the TPB's project selection role under the federal Transportation Alternatives Set Aside (TAP).

TRANSPORTATION ALTERNATIVES

The Transportation Alternatives Set-Aside (TA Set-Aside) Program provides federal funds for small-scale projects such as pedestrian and bicycle facilities, trails, safe routes to school (SRTS) projects, community improvements, and environmental mitigation. These kinds of projects are considered "alternatives" to traditional highway construction.

Under federal law, the TPB is responsible for selecting projects using sub-allocations of each state's TA Set-Aside funding.

The TPB encourages applications that support regional transportation priorities, including projects focused on Activity Centers, access to transit, regional trails, access for disadvantaged communities, and ADA improvements. In particular, the TPB is interested in applications focused on the region's Transit Access Focus Areas and the National Capital Trail Network.

The TPB encourages past recipients of TLC assistance to consider seeking TA Set-Aside funding.

TRANSIT WITHIN REACH

To encourage more projects that will provide pedestrian and bicycle access to high capacity transit, TPB launched the Transit Within Reach technical assistance program in Spring 2021

The Transit Within Reach Program funds design and preliminary engineering projects to help improve bike and walk connections to existing high-capacity transit stations or stations that will be open to riders by 2030. The program places special emphasis on projects that improve access in TPB Transit Access Focus Areas (TAFAs), which have been identified as prime locations for small capital improvements— such as sidewalks, trails, crosswalks— that will make it safer and easier to walk or bike to train stations and bus stops.

The program complements the Transportation Land-Use Connections (TLC) Program, which also funds technical assistance for local governments throughout the region. But unlike Transit Within Reach, the TLC Program funds planning projects, as well as design. And, while the TLC Program also promotes access to transit, it projects typically address other topics as well.

THE REGIONAL TRANSPORTATION SAFETY PROGRAM

The Regional Safety Program was formally established by the TPB as part of Resolution R3-2021 adopted on July 22, 2020. It is similar to the TLC program, and many of the projects it funds also deal with pedestrian or bicycle safety.

- Description: The Regional Safety Program provides short-term consultant services to individual member jurisdictions to assist with planning or preliminary engineering projects that address roadway safety issues. Examples include studies, planning, or design projects that will improve roadway safety and lead to a reduction in fatal and serious injury crashes on the region's roadways. The program provides consultant assistance of up to $60,000 for

studies or planning projects, and up to $80,000 for design or preliminary engineering projects.

- Funding: The Program is funded at $250,000 for fiscal year 2021. It is anticipated that similar levels of funding will be provided in future fiscal years.

- Application process: Any TPB member jurisdiction or agency that is a member of the Transportation Planning Board is eligible to apply. Projects are eligible to receive up to $60,000 in assistance for studies or planning projects and up to $80,000 for design or preliminary engineering projects. Recipients will receive short-term consultant services. They will not receive direct financial assistance.

Federal Policies

ROUTINE ACCOMMODATION OF WALKING AND BICYCLING

U.S. Department of Transportation guidance issued in 2000 calls for bicycling and walking facilities to be incorporated into all transportation projects unless exceptional circumstances exist. Further guidance issued in March 2010 urged agencies to go beyond the minimum standards to provide safe and convenient facilities for pedestrians and bicyclists, set mode share targets, and collect data on walk and bike trips. Bicycling and walking are to have equal importance to other transportation modes. Transportation projects using federal funds may not sever an existing bicycle or pedestrian route, unless an alternate route exists or is provided.

The US DOT headquarters in Washington, D.C. sets an example for other employers by encouraging employee bicycling.

Federal and State policies have evolved over the last few decades, from not requiring (or in some cases prohibiting) the use of transportation funds for pedestrian or bicycle facilities, towards requiring the provision of such facilities. These federal and state guidelines and policies have led to an increase in the number of pedestrian and bicycle facilities provided, with more facilities provided as part of larger transportation projects rather than as stand-alone projects.

Federal and State policies are also evolving away from encouraging single-use cul-de-sac development patterns typical of the last half of the 20th century, to encouraging mixed use development and a connected street grid that is far more accessible to pedestrians and bicyclists.[10]

AMERICANS WITH DISABILITIES ACT

[10] Southworth, Michael and Eran Ben-Josesph, *Street Standards and the Shaping of Suburbia,*

Journal of the American Planning Association, Volume 61, Number One, Winter 1995.

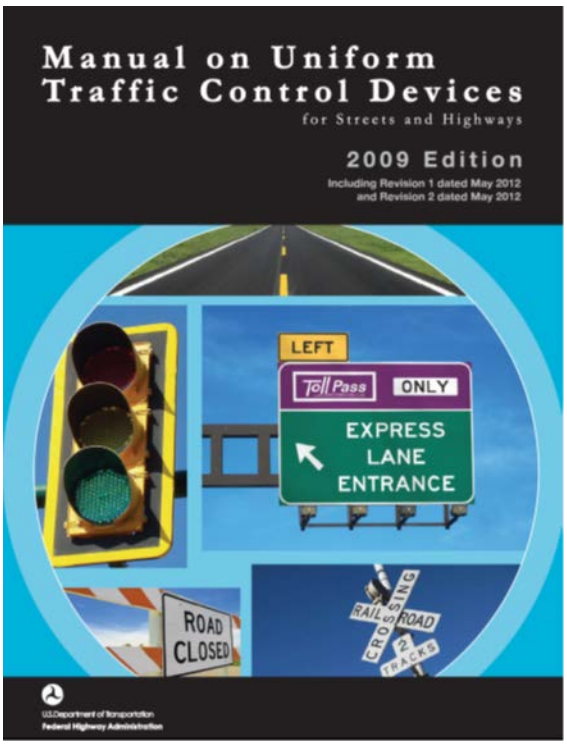
The ADA Requires that all New and Altered Pedestrian Facilities be made Accessible to the Handicapped

The Americans with Disabilities Act (ADA) is a federal civil rights statute that prohibits discrimination against people who have disabilities. Under the ADA, designing and constructing facilities that are not usable by people with disabilities constitutes discrimination. Public rights of way, including pedestrian facilities, are required by federal law to be accessible to people with disabilities.

Both new and altered pedestrian facilities must be made accessible to persons with disabilities, including those who are blind or visually impaired. The courts have held that if a street is to be altered to make it more usable by the general public, it must also be made more usable for those with disabilities.

Government facilities which were in existence prior to the effective dates of the ADA and which have not been altered are not required to be in full compliance with facility standards developed for new construction and alterations. However, they must achieve 'program access.' That is, the program must, when viewed in its entirety, not deny people with disabilities access to government programs and services. For example, curb ramps may not be required at every existing walkway if a basic level of access to the pedestrian network can be achieved by other means, e.g., the use of a slightly longer route. Municipalities should develop plans for the installation of curb ramps and accessible signals such that pedestrian routes are, when viewed in their entirety, accessible to people who are blind or visually impaired within reasonable travel time limits. [11]

Design standards for the disabled, such as smoother surfaces, adequate width, and limits on cross-slope, are also beneficial for the non-disabled pedestrian. Good design for persons with disabilities is good design for all. More information on the Americans with Disabilities Act is available from the US Access Board.



MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

The *Manual on Uniform Traffic Control Devices for Streets and Highways*, or MUTCD defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public travel. It includes pedestrian and bicycle signs and signals.

The MUTCD is published by the Federal Highway Administration (FHWA) under 23 Code of Federal

[11] American Council for the Blind, *Pedestrian Safety Handbook: A Handbook for Advocates*. www.acb.org

Regulations (CFR), Part 655, Subpart F. It can be found at http://mutcd.fhwa.dot.gov/. The 11th edition of the manual is currently in the public comment process.

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THE FAST ACT AND THE TRANSPORTATION ALTERNATIVES PROGAM

All Federal Transportation Funds may be used for Bicycle and Pedestrian Projects

Under the FAST act (Fixing America's Surface Transportation Act) the federal transportation legislation signed in December 2015, bicycle and pedestrian projects remained broadly eligible for nearly all funding categories, including transit funding, either for projects incorporated into something larger, or for stand-alone bicycle and pedestrian projects.

The FAST Act built on MAP-21 (Moving Ahead for Progress in the 21st Century Act), which was enacted in 2012, to strengthen the role of Metropolitan Planning Organizations in regional planning. MPOs now have an enhanced role in transportation safety planning and goal-setting, and more control over Transportation Alternatives funds, which are often used for walking and bicycling projects.

Transportation Alternatives

The FAST Act eliminates the MAP-21 Transportation Alternatives Program (TAP) and replaces it with a set-aside of STBG (Surface Transportation Block Grant) funding for transportation alternatives. These set-aside funds include all projects and activities that were previously eligible under TAP, encompassing a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity.

The FAST Act sets aside an average of $844 million per year for TA. Unless a State opts out, it must use a specified portion of its TA funds for recreational trails projects.

Similar to MAP-21, after the set-aside for the Recreational Trails Program, the FAST Act requires FHWA to distribute 50 percent of TA funds to areas based on population (suballocated), with the remainder available for use anywhere in the State.

States and MPOs for urbanized areas with more than 200,000 people are required to conduct a competitive application process for the use of TA funds; eligible applicants include tribal governments, local governments, transit agencies, school districts, and a new eligibility for nonprofit organizations responsible for local transportation safety programs. The Act also newly allows each urbanized area of this size to use up to half of its suballocated TA funds for any STBG-eligible purpose (but still subject to the TA-wide requirement for competitive selection of projects).

Under Map-21 and the FAST act large MPOs, including the Transportation Planning Board, play an enhanced role in project selection for a portion of program funds now sub-allocated to large metropolitan regions. For the National Capital Region, this new program offers an opportunity to fund regional priorities and complement regional planning activities. In the National Capital Region, the TA

Program is framed as a complementary component of the TPB's Transportation/Land-Use Connections (TLC) Program, which provides technical assistance for small planning studies to TPB member jurisdictions, and a potential implementation tool for the Visualize 2045 plan.

State Policies

DISTRICT OF COLUMBIA

As the center of the Washington region, a major employment center, and one its most walkable and bikeable jurisdictions, the District of Columbia's policies have a significance larger than its population would suggest.

The District of Columbia is to become a "walk-centric, bike-centric" city.

Reflecting its urban character, the District of Columbia is doing much to encourage walking and bicycling. District of Columbia Department of Transportation intends to create a "walk-centric, bike-centric" city. DDOT's 2010 "Action Agenda" called for safety, sustainability, and increasing livability and prosperity by creating great spaces that are the "living room" of the city.

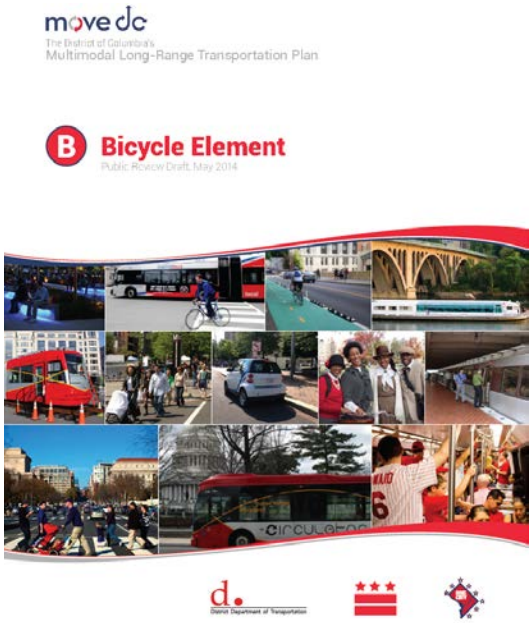
Streetscaping projects and traffic calming projects are a high priority. By providing pedestrians with plenty of well-designed, safe, and comfortable space, the city hopes to increase retail sales and property values. Business Improvement Districts are to have considerable input into transportation projects.

Due to the built-up character of the District of Columbia, DDOT aims to shift travel from less space-efficient modes, such as single occupant vehicles, to more space efficient modes, such as walking, bicycling, and public transportation.

DDOT's strategy for shifting auto trips to transit, walk, and bike trips encompasses both transportation and land development elements. The District of Columbia will encourage mixed use development projects that promote and support non-auto mobility. Reduced auto parking, increased bike parking, on-site car and bike sharing, and transportation demand management plans will reduce auto trips generated by new development.

On a citywide basis there is to be car sharing, bike sharing, new transit service, streetcars, reduced off-street parking requirements, required off-street bike parking, and rapid construction of new pedestrian and bicyclist infrastructure. The Bicycle Master Plan (2005) and Pedestrian Plan have been succeeded by the pedestrian and bicycle elements of the city's latest Transportation Plan, MoveDC.

MoveDC



In May 2014 DDOT released the current version of District's Transportation Plan, MoveDC, for public comment. The MoveDC plan continues in the same direction as previous planning documents, but in greater detail, and with more ambitious goals and methods. MoveDC is a 25 year plan. It proposes to:

1. Achieve 75% of all commute trips in the District by non-auto modes
2. Achieve zero fatalities and serious injuries on the District transportation network
3. Support neighborhood vitality, public space, and economic development.
4. Manage streets to increase person-carrying capacity and reliability, through signal changes, parking management, pricing, and vehicle occupancy requirements
5. Reduce travel demand through various Transportation Demand Management strategies
6. Invest in better maintenance and asset management
7. In accordance with DC's Complete Streets policy, every street will accommodate all legally permitted users, but different streets will have different modal priorities.

Pedestrian Element

The Pedestrian Element promises to reduce the number of pedestrian injuries and fatalities, prioritize pedestrians, and create a pedestrian environment that accommodates people of all ages and abilities. To that end,

8. All roadway reconstruction and development projects are to include **safe and convenient pedestrian facilities**. All projects should meet the standards identified in DDOT's **Public Realm Design Manual** and the **Design and Engineering Manual**.
9. Identified priority corridors are to be improved.
10. **Sidewalks** should be provided on **at least one side** of every street and preferably on both sides of every street.
11. **Pedestrian crossings should be provided across all legs** of an intersection unless a special exception can be clearly justified.
12. Improve **crossing safety**
13. Create new street connections
14. Expand **pedestrian education**, including the **Street Smart** campaign, which is carried out in partnership with the Metropolitan Washington Council of Governments

15 Expand **automated red-light** and **speed enforcement**

Bicycle Element

DDOT expects a 12% bike mode share for trips within the District

The Bicycle Element of MoveDC is more ambitious than the 2005 Bicycle Master Plan. MoveDC recommends adding 213 miles of bicycle infrastructure. The system will eventually total 136 miles of bike lanes, 72 miles of protected bike lanes (cycle tracks), and 135 miles of trails, as well as more public and private bike parking, expanded bike sharing, and signed neighborhood bike routes.

The objective is to make bicycling a "principal and preferred" mode for travel, with a 12 % bicycle mode share for all trips that start and end in the District.

MoveDC will fill major gaps in the regional bicycle network, and improve connections between the District, Maryland and Virginia. MoveDC proposes two new bicycle and pedestrian crossings of the Potomac River, and three new crossings of the Anacostia. Other bridges that currently have outmoded bike and pedestrian facilities will be upgraded.

MoveDC 2021 Update

An updated version of MoveDC will be released in 2021.

The update plan promises to speed construction of a protected bike lane network, bring more efficient management of curb space, expand street tree coverage, and install more car-free zones and plazas. DC will improve the pedestrian environment, and make streets into people-focused places.

MARYLAND

"Maryland will be a great place for biking and walking that safety connects people of all ages and abilities to life's opportunities."

Maryland adopted its first Bicycle and Pedestrian Access Plan in 2002. Under that plan the State made numerous advances in promoting bicycling and walking. MDOT invested more than $283 million in non-motorized transportation projects to improve bicycling and walking conditions over the last decade. The proportion of total highway expenditures dedicated to bicycle or pedestrian programs increased from 2% to 4% over the last decade.

The State also created a number of grant programs, including the **Maryland Bikeways Program,** which provides $3 million per year in technical assistance to a wide range of bicycle network

improvements, and **Maryland Bikeshare Program** provides grants to communities interested in adding a bikeshare system, notably Montgomery County.

Maryland State Highway Administration adopted Complete Streets policy in 2012.

The current Maryland Twenty-Year Bicycle and Pedestrian Master Plan (2019) calls for a Complete Streets approach. Complete Streets in Maryland means that the state transportation network will address the needs of all users, regardless of travel mode. It does not, however, mean that all users will have equal priority on all roadways. Design is to be appropriate for the land use and context, including Urban Centers, Towns and Suburban Centers, Rural and Agricultural Areas, and Natural Areas.

The initial focus will be to support biking and walking in urban centers and main streets. MDOT will pilot a Bicycle and Pedestrian Prioritization Area (BPPA) program to foster collaboration with local jurisdictions and support the development of connected bicycle and pedestrian networks in high need locations.

Maryland hast also published *Accessibility Policy and Design Guidelines for Pedestrian Facilities along State Highways* (2010), *Bicycle Policy and Design Guidelines* (2015), the *Maryland Context-Driven Design Guide* (2020), a *Strategic Trails Implementation Plan* (2009), a bicyclist education video, and other materials designed to share information on best practices with respect to the engineering, education, and enforcement aspects of walking and bicycling.

A Bicycle and Pedestrian Advisory Committee advises State government agencies on issues directly related to bicycling and pedestrian activity including funding, public awareness, safety and education.

VIRGINIA

In 2004, the Virginia Department of Transportation released its Policy for bicycle and pedestrian accommodation, which commits VDOT to routinely accommodating pedestrians and bicyclists as part of all new construction and reconstruction projects, unless exceptional circumstances exist.[12]

"VDOT will initiate all highway construction projects with the presumption that the projects shall accommodate bicycling and walking."

[12] www.virginiadot.org

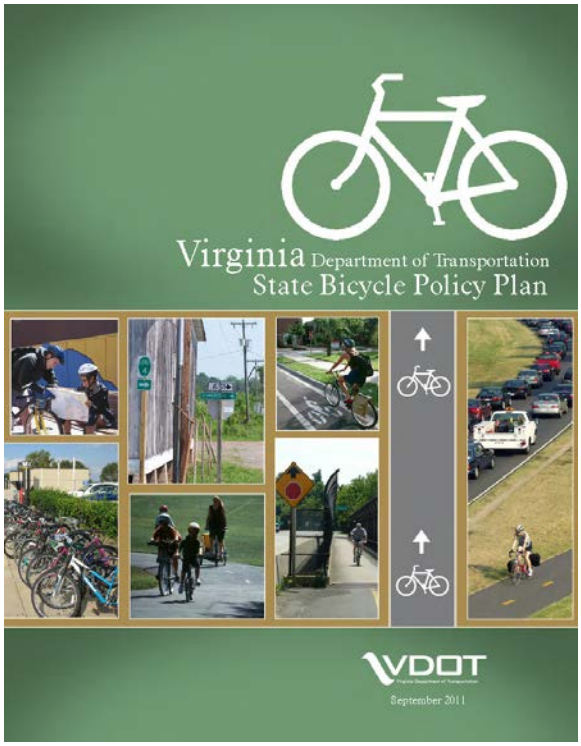
Since 2004 VDOT has developed a process to ensure that bicycle and pedestrian accommodations are provided in accordance with the policy. The Bicycle and Pedestrian Accommodations Decision Process gives designers a step by step process to determine if bicycle / pedestrian accommodations are appropriate for the characteristics of a particular roadway, and a Bicycle and Pedestrian Accommodations list and a design guide provides project managers with a menu of possible accommodations. A series of implementation guidance documents for localities have also been developed to improve communication between agencies regarding planning and accommodation of pedestrians and cyclists under terms of the 2004 policy.

VDOT maintains all roads in Virginia outside of urban areas, including thousands of miles of residential streets originally built by developers. In view of the importance of secondary streets for vehicular, pedestrian, and bicycle movement, VDOT has revised its Secondary Street Acceptance Requirements (SSAR) to mandate higher levels of street connectivity in urban areas, as well as adequate pedestrian accommodation. New streets and developments are required to connect to the surrounding streets and future developments in a way that adds to the capacity of the transportation network.

Virginia requires new developments to connect with the surrounding streets

The policy divides Virginia into "compact", suburban, and rural areas, with graduated connectivity requirements for each. Narrower streets, traffic calming and "context-sensitive" design are encouraged where appropriate.
New development proposals initially submitted to counties and VDOT after June 30, 2009, must comply with the requirements of the SSAR.
Cul-de-sac development patterns have long been an obstacle to walking or bicycling in suburban areas. More direct, traffic-calmed secondary streets will allow more people to walk or bike to local destinations.

Virginia has adopted a fairly stringent set of requirements mandating accommodation of pedestrians and bicyclists on both public roads and private developments which are accepted by State for maintenance, which in Virginia means almost all development. As the economy recovered from the late 2000's recession, and new development applications have come under the new rules, we have seen results.



Virginia State Bicycle Policy Plan

VDOT completed a State Bicycle Policy Plan in April, 2010, which incorporates the policies discussed above, as well as the most recent federal guidance. The plan calls for bicycling for increased bicycling for all trip purposes, and a transportation system that "accommodates and encourages" bicycling by providing facilities for bicyclists of all ages and abilities. It also calls for better data gathering and benchmarking of bicycling, coordination with

various stakeholders, and recommends a number of strategies to improve implementation of VDOT's 2004 policy for bicycle and pedestrian accommodation.

The plan provides some guidance on bicycle facilities to be used. Bicycle lanes and paved shoulders are recommended over other bicycle facilities. Restriping travel lanes, or "road diets" are recommended as a way to provide bicycle lanes within the current right of way. Actuated traffic signals should be able to detect bicycles, and bicycle compatible drain grates should be used on all roads where bicycles are permitted. A signed bike route should have at least a bicycle level of service "C".

Virginia State Pedestrian Policy Plan

VDOT completed the Pedestrian Policy Plan. Released in September 2014, this document is a complement to the Bicycle Policy Plan, which was released in September 2011.

The purpose of this plan is to establish a vision for the future of walking in Virginia and to advance the walking element of the Commonwealth Transportation Board's Policy for Integrating Bicycle and Pedestrian Accommodations consistently, appropriately and cost-effectively. The plan addresses implementation of both the Bicycle and the Pedestrian Policy Plans.

Northern Virginia Bikeway Study

This study and network map, which were completed in 2004 and updated in 2015, used latent demand analysis to determine the most promising portions of a network of regionally significant bicycle routes in Northern Virginia. As of 2015, 108 miles of the 544 mile network had been built.

LOCAL BICYCLE AND PEDESTRIAN PLANNING

Nearly every jurisdiction in the region has completed a bicycle or pedestrian plan, and most have at least part time bicycle or pedestrian planner. Table 2 shows local and state plans and studies and the year published. Jurisdictions and agencies drew projects from these individual plans and submitted them for incorporation into the Regional Bicycle and Pedestrian Plan. Local plans may include unfunded projects.

Table 2: Local Bicycle and Pedestrian Plans and Studies

Jurisdiction/ Agency	Plan/Study	Year
Arlington County	Arlington Master Plan - Pedestrian Element, Bicycle Element	2011, 2019
City of Alexandria	Transportation Master Plan – Pedestrian and Bicycle Chapter	2016

District of Columbia	District of Columbia Bicycle Master Plan, District of Columbia Pedestrian Master Plan, MoveDC	2005, 2009, 2014
Charles County	Charles County Bicycle and Pedestrian Master Plan	2012
City of Fairfax	Bike Fairfax City Plan	2021
City of Falls Church	Bicycle Master Plan	2015
Fairfax County	Fairfax County Bicycle Master Plan	2014
Frederick County	Frederick County Bikeways and Trails Plan	2018
City of Gaithersburg	Transportation Plan, Bikeways and Pedestrian Plan	2010
Greenbelt	Greenbelt Bicycle and Pedestrian Master Plan	2013
Town of Herndon	Bicycle Network Master Plan	2019
City of Laurel, Maryland	Bikeway Master Plan	2009
Loudoun County	Loudoun County Bicycle and Pedestrian Master Plan	2003
City of Manassas	City of Manassas Transportation Master Plan	2019
Maryland Department of Transportation	Maryland Twenty Year Bicycle and Pedestrian Master Plan SHA Complete Streets Policy 2009 Maryland Trails Strategic Implementation Plan	2019, 2014, 2012, 2008
M-NCPPC – Prince George's County	County Master Plan of Transportation – Bikeways and Trails	2009
Montgomery County	Montgomery County Bicycle Master Plan	2018
National Capital Planning Commission	Comprehensive Plan for the National Capital - Transportation	2020

National Capital Region Transportation Planning Board	Priorities 2000: Metropolitan Washington Greenways & Circulation Systems, Bicycle and Pedestrian Plan for the National Capital Region	2001, 2006 2010 2014 2021
National Park Service	Paved Recreation Trails Plan, Paved Trails Plan	1990 2016
Prince William County	Transportation Plan – Nonmotorized	2016
City of Rockville	Bikeway Master Plan	2017
Virginia Department of Transportation	Virginia Pedestrian and Bicycle Policy Plans	2014 2011
Virginia Department of Transportation, Northern Virginia Office	Northern Virginia Regional Bikeway and Trail Network Study	2015
WMATA	Metrorail Bicycle & Pedestrian Access Improvements Study, WMATA Station Area Access Guide	2010 2017

The Washington Region is fortunate to host a community of consultants and agencies that are advancing the national practice of bicycle and pedestrian planning.

For example, the Montgomery County Bicycle Master Plan uses the concept of a "low-stress bicycle network". Low stress bike routes are accessible to people of all ages and abilities.

Montgomery County will increase the share of bike trips that can be accomplished entirely on low stress streets from 16% to 50%.

While about 75 percent of the roads in the county are already low-stress, they are often surrounded by high speed and high volume roads or difficult intersections, effectively creating islands of bikability, cut off from most useful destinations.

The goal is to connect these islands of bikability, and increase the share of bicycle trips that can be accomplished entirely on low-stress facilities from 16% to 50%. The County will also sharply increase the percentage of residences within two miles of a high-capacity transit station that have low-stress bike access to that station, as well as the percentage of schools and other public facilities that are easily accessible by bike.

The proposed 1,125-mile network of bikeways will 585 miles of sidepaths, 174 miles of trails, 130 miles of bikeable shoulders, 95 miles of separated bike lanes and 49 miles of neighborhood greenways. More than one-quarter of this network currently exists. Much of the County's proposed

long-distance “Breezeway” bike network has been incorporated into the planned National Capital Trail Network.

Figure 11: Bike/Ped/Trail Planner FTE's

Jurisdiction/ Agency	Bicycle Planner FTE's	Pedestrian Planner FTE's	Trails Planner FTE's
Arlington County	1	1	1
City of Gaithersburg	0.5		
City of Alexandria	1	0.5	0.5
City of College Park	0.5		
City of Frederick	0.5	0.5	
City of Rockville	0.5	0.5	
District of Columbia	2	1	1
Fairfax County	1	1	2
Frederick County	0.25	0.25	
Loudoun County	0.5		
Maryland Department of Transportation	1	2	1
M-NCPPC Montgomery County	0.33	0.33	1
M-NCPPC Prince George's County	1	1	1
Montgomery County	1	1	1
National Capital Region Transportation Planning Board	0.5	0.5	
National Park Service			1
Prince William County			0.5
WMATA	0.5	1	
Virginia Department of Transportation, Northern Virginia Office	1	1	

Safe Routes to School

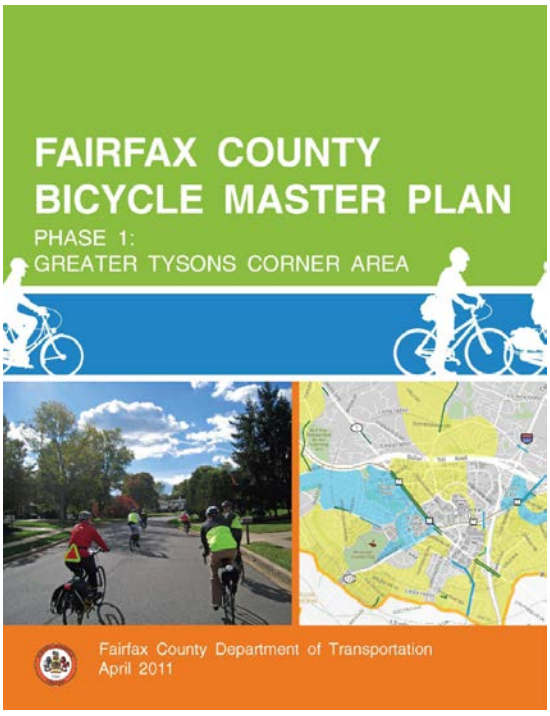
Safe Routes to School is a national movement that encourages students to travel to and from school by walking or bicycling. Safe Routes to School efforts are supported by parents, schools, community leaders, Safe Routes to School coordinators and local, state, and federal governments to improve the health and well-being of children by enabling and encouraging them to walk and bicycle to school. The Safe Routes to School movement in the United State grew exponentially with a federal funding program starting in 2005. In 2012, Safe Routes to School was incorporated into the Transportation Alternatives program, but Safe Routes to School programs continue to grow.

DC Schools Teach Students How to Ride Bikes

In the Washington DC region, Safe Routes to School programs have flourished. The majority of school systems in the region have access to a Safe Routes to School coordinator either within the school district or in the department of transportation.

Metrorail Silver Line

Since 2010 one of the most significant changes in the region has been the extension of the Metrorail to Tysons Corner in Fairfax County to Dulles Airport and beyond. This Metrorail extension is generating new, walkable development.



Tysons, already the second-largest commercial center in the region, is undergoing a dramatic transformation from an auto-oriented commercial “edge city” to a mixed-use urban downtown. The four new Metrorail stations in Tysons will provide the foundation for this shift. Pedestrian and bicycle access will be critical to making a redeveloped Tysons work.

Future Silver Line stations along the Dulles Tollway will serve park and ride commuters, but will also incorporate some development and some pedestrian and bicycle access, in an area which has been overwhelmingly oriented towards driving. Plans call for an eventual extension further into Loudoun County, which has been working on station-area pedestrian and bicycle access plans.

WMATA Bicycle and Pedestrian Access Planning

In recent years WMATA has become a regional leader in pedestrian and bicycle access and safety, both on and off WMATA property. WMATA's priorities include:

Passenger safety and security: Examples of safety-related projects include signage and crosswalk striping on and around stations, designated and improved bicycle access routes into stations, resurfacing deteriorated sidewalks, lighting, and high security bicycle parking.

Metrorail Access needs: Improving pedestrian and bike access at and around stations is often a more cost-effective way to boost ridership than to add car parking or connecting bus service. Approximately 45% of Metrorail customers live within walking or bicycling distance from a station (up to 3 miles).

Transit Oriented and Joint Development: Walkable and bikeable station areas will have a positive and mutually reinforcing impact on Metro's Joint Development programs and local government's encouragement of Transit Oriented Development (TOD). Bringing more people out into the streetscape will increase visibility and safety of those on foot and bike, while also demonstrating the viability of similar future developments.

Figure 12: Station Access/WMATA

In its 2010 *Metrorail Bicycle and Pedestrian Access Improvements Study* WMATA identified pedestrian and access problems at its Metrorail stations. A number of the projects identified as part of that process, totaling $25 million, have been funded in WAMA's Capital Improvement program. A few examples of completed projects are shown above. WMATA is no long builds fences to keep pedestrians out of its rail stations.

WMATA also identified "hot spots" of short distance auto access; i.e. places where people live close enough to walk to Metro, but don't, and studied those areas to find out what was missing.

WMATA's 2017 *Station Area Planning Guide* provides concise, clear design guidance for station site and access planning at Metrorail stations. The guide is meant to enhance user access and promote

transit-oriented development around the station. Access hierarchies are provided for different station types. Intended users include WMATA, jurisdictional planners, related government agencies, and WMATA's real estate partners.

The National Capital Region Transportation Planning Board built on WMATA's work to identify the Transit Access Focus Areas that were adopted in July 2020.

Regional Bicycle and Pedestrian Planning

Precursors to the Current Plan

The Washington region completed its first major bicycle study, the *Washington Regional Bikeways Study* in 1977. This study, created under the supervision of the Regional Bikeways Technical Subcommittee of the Transportation Planning Board Technical Committee, provided an overview of bicycling characteristics and the potential market for bicycle commuting.

In 1988 the Bicycle Technical Subcommittee began work on a bicycle element for incorporation into the region's transportation plan. The plan identified the extent to which bicycle facilities and planning processes already existed in the region, highlighted areas of concern for the future, and drafted a set of policy principles to be applied by the region's jurisdictions in updating their own transportation plans, as well as a list of recommended bicycle projects. The *Bicycle Element* was adopted by the Transportation Planning Board as part of the region's Constrained Long-Range Plan in November 1991.

In 1995, the Transportation Planning Board adopted an update to the 1991 *Bicycle Element*, the Bicycle Plan for the National Capital Region, as an amendment to the Constrained Long-Range Plan. The revised plan emphasized bicycling for transportation and recommended project lists and policy principles produced by the Bicycle Technical Subcommittee.

In February 2001, the TPB completed the *Priorities 2000: Greenways* and *Circulation Systems* reports, which identified greenway and pedestrian circulation systems priorities.

Except for the *Priorities 2000* reports, predecessors to the 2006 *Bicycle and Pedestrian Plan for the National Capital Region* were "bicycle" plans. The 2006 plan fully incorporated pedestrian elements for the first time. The 2006 plan was updated in 2010, and in 2014. This plan is an update to the 2014 plan.

Sources of the Regional Plan Projects

State, local, and agency bicycle and pedestrian plans and staff are the source of the projects in this plan. Every project in the regional plan must be in an agency plan, capital improvement program, or other elected official approved document. Apart from that requirement, agencies had discretion about what they wanted to put in the regional plan.

Agencies were encouraged to submit large projects, projects of regional significance, and anything that is part of the National Capital Trail Network should be included. Projects that will provide access to high capacity transit, or which serve an Equity Emphasis Area should also be considered

for inclusion. Agencies were urged to consider the maintainability of the database, and not include every project from their local plan in the regional plan.

Plan Development Process

The database of major Bicycle and Pedestrian Projects is the core of the plan. It was originally designed in 2006 as a list of projects with no associated GIS layers, and no connections to other project databases that the TPB uses, such as the Transportation Improvement Program (TIP). With the rapid adoption of new bicycle and pedestrian plans in the region, the 2014 plan database is badly out of date.

The goal for the current update was a visual, GIS map-based plan. Any project that can be mapped is mapped.

For the 2021 plan, we scrapped the 2014 plan database in favor of a blank slate approach. Instead of a separate database, we used the new TIP database, Project Infotrak. Projects were imported in bulk, with associated GIS layers, from agency bike/ped plans developed since 2013, and from the National Capital Trail Network. Additional edits to the database can be made directly by agency staff who have the necessary permissions. New TIP projects that include bicycle and pedestrian accommodation are automatically added to the bike/ped project database. The result is a database that will be easier to keep current.

GIS mapping enables better analysis of how the network of planned projects will serve regional goals, such as access to high capacity transit, activity centers, and equity emphasis areas.

Outlook

The Transportation Planning Board and the Council of Governments have a continuing and growing commitment to walking, bicycling, and the concentration of future growth in walkable, mixed-use activity centers. COG's *Region Forward 2050* shares the goals of the TPB's *Vision* and proposes specific performance indicators and a schedule for reporting progress. Increasing the rate at which projects in this plan are constructed is an explicit goal of the Council of Governments' *Region Forward 2050* vision.

The *Visualize 2045* re-affirms the commitment to bicycling and walking in the TPB *Vision*, while better explaining the role that increasing walk and bike mode share will play in supporting the growth of the regional activity centers, equity, and making better use of existing transit infrastructure.

The Federal, State, and local policy environment has been changing in ways that make it more likely that goals of the regional plans will be met. Complete Streets policies have been widely adopted, strengthened and implemented. Pedestrian and bicycle facilities are no longer be "amenities" which agencies will consider providing, but facilities that they will routinely provide as part of every project. At the same time, land use, parking, and urban design policies are changing in ways that will make walking and bicycling a viable choice for more trips.

Partnerships between WMATA, local government, and business are growing transit-oriented around existing and new Metrorail stations, notably at Tysons Corner, shifting more trips to walk and bike modes.

As the economy recovers and development restarts, the effects of the policy changes of the last few years will become evident in the way people live, work, and travel in our region.

CHAPTER 2: BICYCLING AND WALKING IN THE WASHINGTON REGION

Introduction

This chapter discusses what we know about bicycling and walking in the Washington region. It draws on a number of sources, including the TPB's Regional Travel Survey, the US Census American Community Survey, the National Household Travel Survey, the Commuter Connections *State of the Commute* survey, WMATA's Passenger Rail Survey, and various bicycle and pedestrian counting programs. It compares walking and bicycling in the Washington region with national trends, as well as trends in other major metropolitan areas.

Overview

Residents of the Washington region walk and bicycle slightly more than in the nation as a whole. Bicycling has grown faster in the Washington region than in other large Metro areas.

Nationally, 12% of all trips are made on foot or by bike

The walk and bike modes are more common than the census commute mode numbers would lead one to believe. Work trips account for about one quarter of all trips, and walking and biking are more common for other purposes. According to the National Household Travel Survey 12% of all trips taken in the U.S. are on foot or by bike.[13]

Geography/urban design, age, race, ethnicity, gender, and car ownership affect the decision to walk or bicycle.

People living in households without cars are more likely to walk or bicycle than those that have one, and those living in households with only one car are more likely to walk or bicycle than those owning two. Whites are more likely to bicycle than African-Americans or Hispanics.

Men are more than twice as likely to bike to work as women, 0.7% to 0.3%. [14]

Trips in the Urban Core are Mostly Short Enough to Walk or Bike

Regionally, bicycling and walking are concentrated in the core neighborhoods of the Washington region, especially areas near

[13] https://nhts.ornl.gov/assets/FHWA_NHTS_Brief_Bike%20Ped%20Travel_041520.pdf

[14]https://data.census.gov/cedsci/table?q=coummute%20mode%20united%20states&text=S0801&g=0100000US_0500000US51179&tid=ACSST1Y2019.S0801

downtown D.C. and certain Metro stations, as well as college campuses and military bases.

In the past decade walk mode share for all trips in the Washington region has stabilized, while bike mode shares have grown, especially in the urban core. Bicycling is rare in the outer jurisdictions. Trips in the outer suburbs are usually farther than most people are willing to walk or bicycle.

Most commute trips that are short enough to be bikable are still taken by car. The average trip distance to transit or carpool is short.

Transit and walking are interdependent, with 80% of bus and 60% of Metrorail access trips on foot. Pedestrian access to Metrorail has grown over the last decade, while motor vehicle access has fallen. Bicycling to transit is less common and varies greatly by Metro station, with the lowest rates of bicycle access found east of the Anacostia river.

Walking and Bicycling Trends According to the US Census

The 2010 decennial US census form was shortened, and the decennial census no longer provides information on journey to work. In place of the long form, the census bureau carries out an annual survey, the American Community Survey (ACS), which contains information on journey to work.

2020 US Census data is not yet available.

The ACS data is currently the most up to date source of information on walk and bike mode shares The five-year rolling averages are reasonably accurate down to the census tract level.

At a national level, in 2019 2.7% of Americans walked to work, and 0.5% bicycled to work. In the Washington region 3.3% of workers walked to work, while 0.9% bicycled to work.

Tables 3 and 4 show the share of walking and bicycling trips to work for the ten largest metropolitan areas.

Table 3: Pedestrian Commuting in Large Metro Areas

	Pedestrian Commuting in the Ten Largest Metropolitan Areas[15]	% Walk to Work 2006-2008	% Walk to Work 2000 Census	% Walk to Work 2008-2012	% Walk to Work 2015-2019
1	New York	6.2%	5.55%	6.2%	5.9%
2	Boston	4.8%	4.12%	5.3%	5.4%
3	San Francisco	4.2%	3.25%	4.3%	4.7%
4	Philadelphia	3.7%	3.88%	3.7%	3.6%
5	Washington	3.0%	3.10%	3.2%	3.3%
6	Chicago	2.9%	3.13%	3.1%	3%
7	Houston	1.5%	1.62%	1.4%	3%
8	Los Angeles	2.6%	2.56%	2.7%	2.5%
9	Detroit	1.5%	1.83%	1.4%	1.4%
10	Dallas-Fort Worth	1.3%	1.48%	1.2%	1.2%

[15] 2000 US Census, 2006-2008, 2008-2012 American Community Survey, 2015-2019 American Community Survey

	United States	2.8%	2.93%	2.8%	2.7%

Table 4: Bike Commuting in Large Metro Areas

	Bicycle Commuting in the Ten Largest Metropolitan Areas	% Bike to Work 2006-2008	% Bike to Work 2000	% Bike to Work 2008-2012	% Bike to Work 2015-2019
1	San Francisco	1.4%	1.12%	1.7%	1.9%
2	Boston	0.7%	0.38%	0.9%	1.1%
3	Washington	0.5%	0.30%	0.6%	0.9%
4	Los Angeles	0.7%	0.63%	0.9%	0.7%
5	Chicago	0.5%	0.31%	0.6%	0.7%
6	New York	0.4%	0.30%	0.5%	0.7%
7	Houston	0.3%	0.30%	0.3%	0.7%
8	Philadelphia	0.5%	0.33%	0.6%	0.6%
9	Detroit	0.2%	0.18%	0.2%	0.2%
10	Dallas--Fort Worth	0.2%	0.14%	0.2%	0.1%
	United States	0.5%	0.38%	0.6%	0.5%

Bicycling is growing faster in the Washington region than in other large Metro Areas

Throughout the second half of the 20th Century, driving increased, while walking bicycling, and public transportation declined. In 2000 2.93% of Americans walked to work, and 0.38% bicycled. By comparison, in 1960 9.9% of workers walked to work.[16] The number of people driving alone rose from 73.2% in 1990 to 75.7% in 2000, while use of public transportation fell by 0.5%.

In the 21st Century, growth in solo driving share appears to have slowed, and transit, walking and bicycling mode shares have stabilized. 76.3% of workers drove alone in 2019, which is essentially the same as in 2000, and public transportation grew from 4.7% to 5%.

The 20th Century trend towards less walking and bicycling also applied to the Washington Metropolitan Statistical Area (MSA). In 1990, 6,633 people (0.3 %) biked to work on an average day in the Washington area and 85,292 (3.9 %) walked. In 2000, 7,532 people (0.3%) biked to work and 72,700 (3.1%) walked. In the first decade of the 21st century walk mode stabilized around 3.2%, while bike mode share doubled, to 0.6%. In 2019 the walk mode share was 3.3%, and the bike mode share increased to 0.9%.

Figures 12 and 13 below show the changes in walking and biking to work by jurisdiction.

[16] 1960 Census of Population, Characteristics of Population, United States Summary

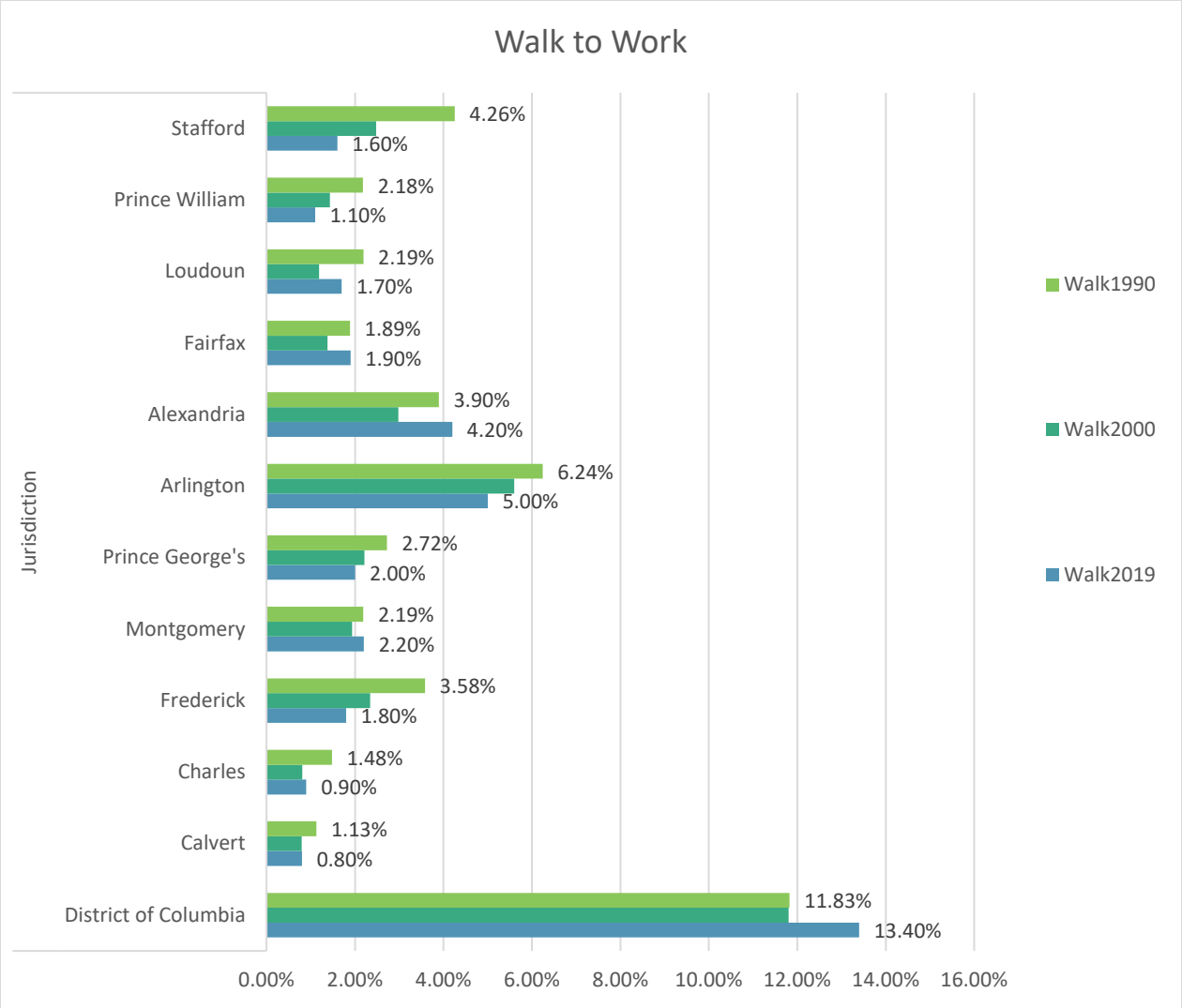


Figure 13: Walk to Work

Only DC and Alexandria saw much increase in walking to work between 1990 and 2019. Cuts in military personnel at bases after 1990 affected walk to work numbers in some jurisdictions.

The urban core of the Washington region, consisting of the District of Columbia, Arlington, and Alexandria saw major gains in bicycling between 1990 and 2019. The District of Columbia increased its bicycle commute mode share by a factor of six, and Arlington and Alexandria tripled theirs.

Bicycling mostly increased in the inner suburbs, but from a very low base. Montgomery County tripled its bike commute mode share, to 0.6%.

The exurban counties of Calvert and Stafford had few people bicycling to work in 1990, and that number fell further during the decades that followed. The American Community Survey counted 18 bicycle commuters in Stafford County in 2012, and 25 in Calvert County.

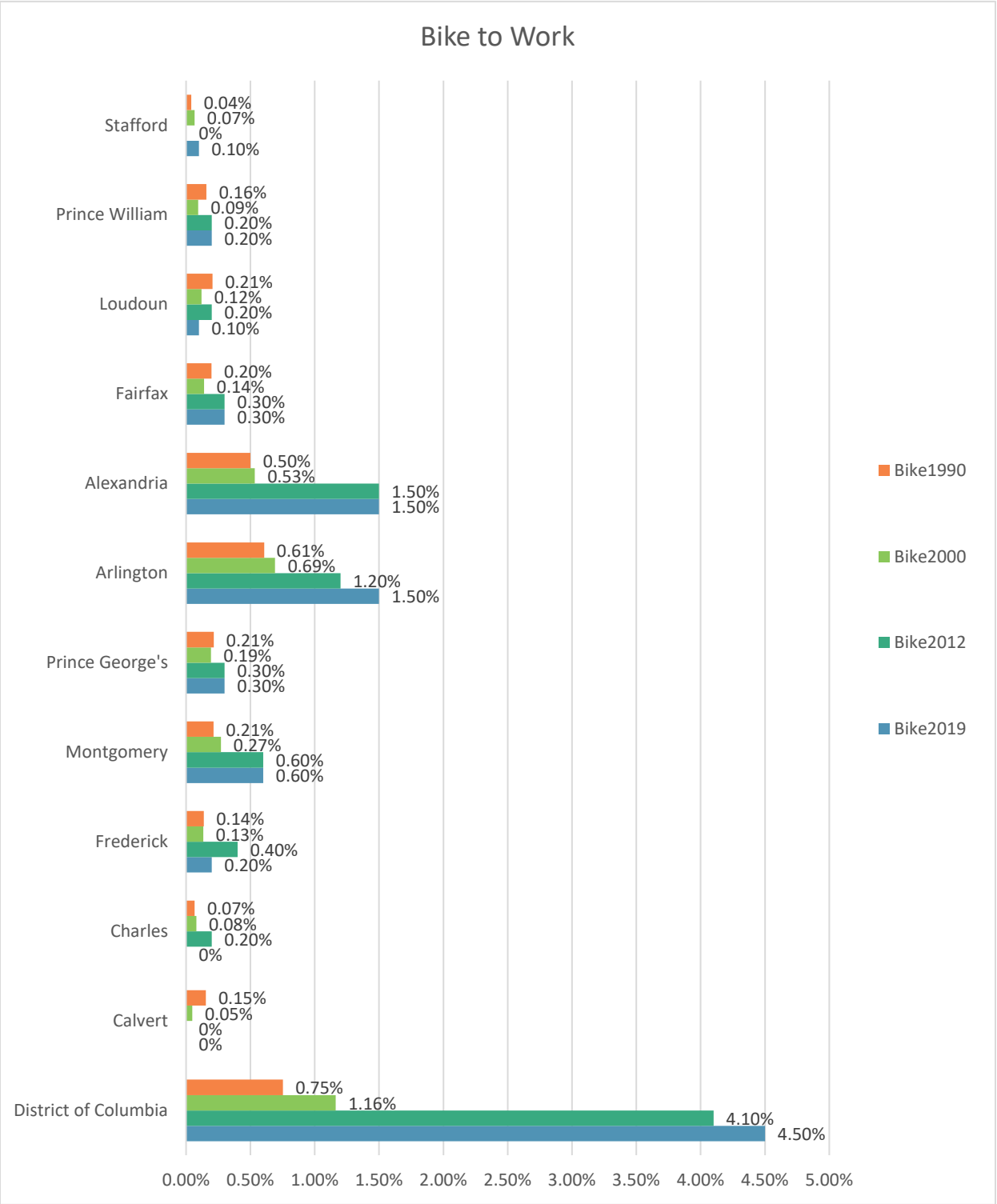


Figure 14: Bike to Work

The inner suburban jurisdictions of Fairfax, Montgomery, and Prince George's saw a decline in walking to work in the 1990's, which was reversed in the 2000's, leaving them roughly where they were in 1990. Bike mode share increased from 1990-2012, but from a low base.

Only DC and Alexandria saw much increase in walking to work. Cuts in military personnel at bases after 1990 affected walk to work numbers in some jurisdictions.

Bicycling mostly increased in the suburbs, but from a very low base. Frederick County more than doubled its bike mode share, to 0.6%.

The exurban counties of Calvert and Stafford had few people bicycling or walking to work in 1990, and that number fell further during the decades that followed. The American Community Survey counted 18 bicycle commuters in Stafford County in 2012, and 25 in Calvert County.

Mode Share by Census Tract

The Census Bureau has released an application that will shows American Community Survey five year data at the census tract level, including walk commuting numbers.[17]

Walking and bicycling are hyper-local, with big differences between census tracts even within the same city or county.

Zooming in to the Washington region, the maps show that bicycling and walking are concentrated in the neighborhoods surrounding downtown D.C., Capitol Hill, and North Arlington. Downtown DC and the surrounding neighborhoods show the highest walk mode shares, as much as 52%, while those a little further out have the highest bike mode shares. Outside DC, North Arlington, Old Town Alexandria, downtown Bethesda, and the City of Frederick the highest (non-campus) walk mode shares.

College campuses and military bases such as University of Maryland, Ft. Meyers, Bolling Air Force Base, the National Institute of Health, George Mason, Howard, Georgetown and Gallaudet all have high walk and bike mode share.

Census tracts abutting major facilities such as the W&OD, the C&O, and the Mt. Vernon Trails tend to show higher levels of bicycling than the surrounding suburban tracts. However, the highest bike mode share by far is in the ring of neighborhoods within easy biking distance of downtown DC, on the order of 10-15%. A dense network of on-street bicycle facilities, and proximity between housing and employment, seems to be more predictive of bicycling than an isolated trail.

[17] https://data.census.gov/cedsci/. A training video is also available at https://www.census.gov/data/academy/data-gems/2020/how-to-access-data-for-your-neighborhood.html.

National Household Travel Survey

Only 9% of weekday walk/bike trips in the US are trips to work

The Federal Highway Administration's Household Travel Survey is the best national source for non-work trips. It includes trips made by all modes of travel, and for all purposes.

According to the 2017 National Household Travel Survey (NHTS), Americans ages 5+ reported more than 42.5 billion trips by walking or biking These trips averaged 1 mile in length and 16 minutes in duration and comprised almost 12% of all trips annually (across all modes and purposes).[18]

Only 9% of weekday non-motorized trips were commute trips. Another 2% were work-related. Weekend work trips were only 4% of the total. 37% of weekday trips were social/recreational, as were 49% of week-end trips.

2017/2018 Regional Travel Survey

The TPB's once-in-a-decade Regional Travel Survey (RTS) helps paint a detailed picture of the daily travel patterns of people who call this region home. The survey, which has been conducted approximately every ten years since 1968, collects demographic and travel information from a randomly-selected representative sample of households in the region and adjacent areas. It is the primary source of observed data used to estimate, calibrate, and validate the regional travel demand model, which is used for the travel forecasting and air quality conformity analysis of the region's long-range transportation plan. The survey data are also used to analyze travel trends and for other key program activities. Over 16,000 households responded to the 2017/2018 survey.

Figure 15: Core, Inner Suburbs, Outer Suburbs

The initial results of the 2017/2018 RTS were made available in a series of presentations. TPB staff have prepared additional tabulations that provide insights on travel patterns in the region.

The Regional Transportation Data Clearinghouse (RTDC) RTS Tabulations are an online resource for the RTS data to be used by practitioners, researchers, and other stakeholders.

[18] https://nhts.ornl.gov/assets/FHWA_NHTS_Brief_Bike%20Ped%20Travel_041520.pdf

Advantages

The regional travel survey is the best overall source of data on non-motorized trips in the Washington region. Unlike the US Census, the regional travel survey includes information on non-work trips. Almost ¾ of the trips in the Washington region are non-work trips.

Mode Shares in 2017/2018

The RTS shows that commute trips are only about a quarter of the total trips in the region. Drive alone is less significant for all trips than it is for commuter trips, and walk is more significant.

Table 5: All Trips

	TPB Region	
Travel Mode	**N**	**%**
Drive Alone	40784	39.9
Drive Others	13141	15.8
Auto Passenger	15429	21.5
Rail Transit	5895	5.0
Bus Transit	2080	2.0
Walk	**10555**	**9.6**
Bike	**1292**	**1.4**
Ride-Hail/Taxi	1200	1.0
School Bus	2022	3.4
Other	461	0.4

Table 6: Commute Trips

	TPB Region	
Travel Mode	**N**	**%**
Drive Alone	10046	62.2
Drive Others	507	3.4
Auto Passenger	627	4.1
Rail Transit	3541	17.6
Bus Transit	861	4.6
Walk	**766**	**3.8**
Bike	**480**	**2.6**
Ride-Hail/Taxi	255	1.3
School Bus	9	0.1
Other	54	0.2

Median Trip Distances

People will travel farther for work. For non-commute purposes, the median distances that people walk or bicycle are short.

Table 7: Trip Distances in Miles

Travel Mode	All	Commute	Non-commute
Drive Alone	4.3	9.3	3.1
Rail Transit	8.6	9.3	6.9
Bus Transit	3.3	4.5	2.9
Walk	**0.3**	**0.7**	**0.3**
Bike	**1.6**	**3.0**	**1.0**
Ride-Hail/Taxi	3.6	4.6	3.3

Changes Since the 2007/2008 Survey

Bike Commute mode share in the Urban Core increased from 2.9% to 7.6%

- Bike mode share increased from 0.6% to 1.4% for all trips in the region.
- Walk mode share increased slightly, from 9.1% to 9.3%
- Dramatic increase in bicycle trips in the urban core
- Rail transit declined, and bus transit was stable.
- The differences between the urban core and the outer suburbs are becoming sharper. Walk/bike/ride hail increased in the urban core, while drive alone increased in the outer suburbs.

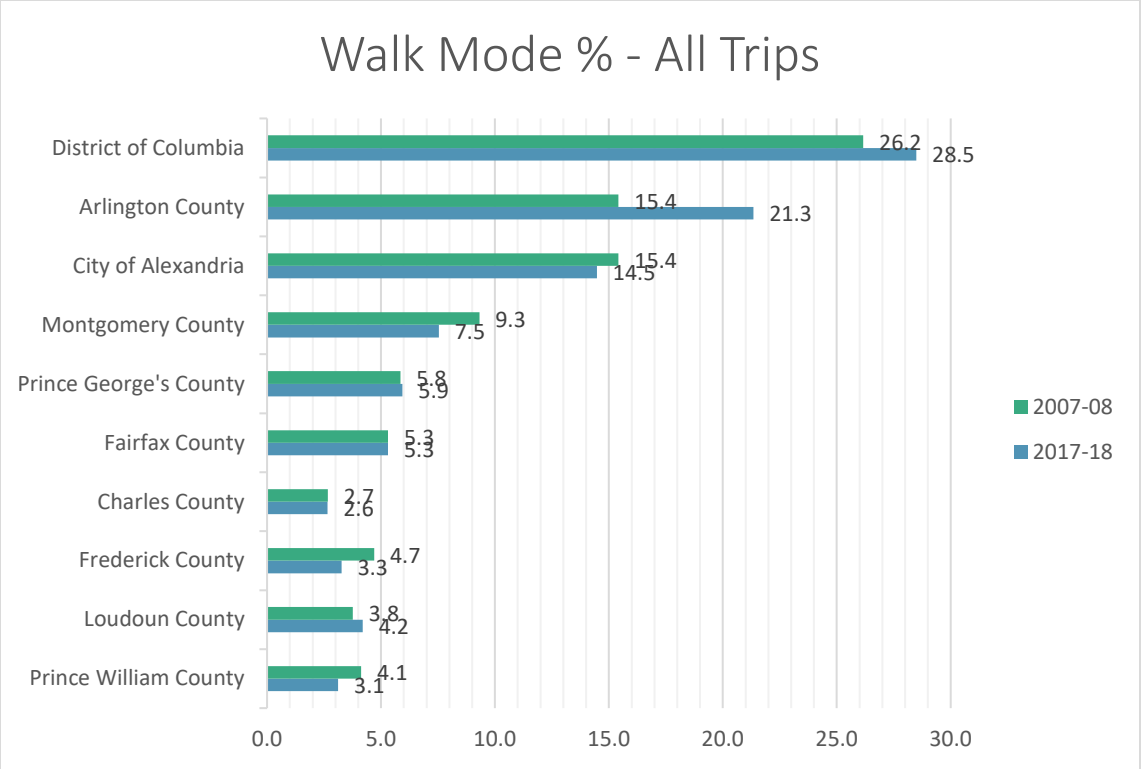


Figure 16: Walk Mode - All Trips

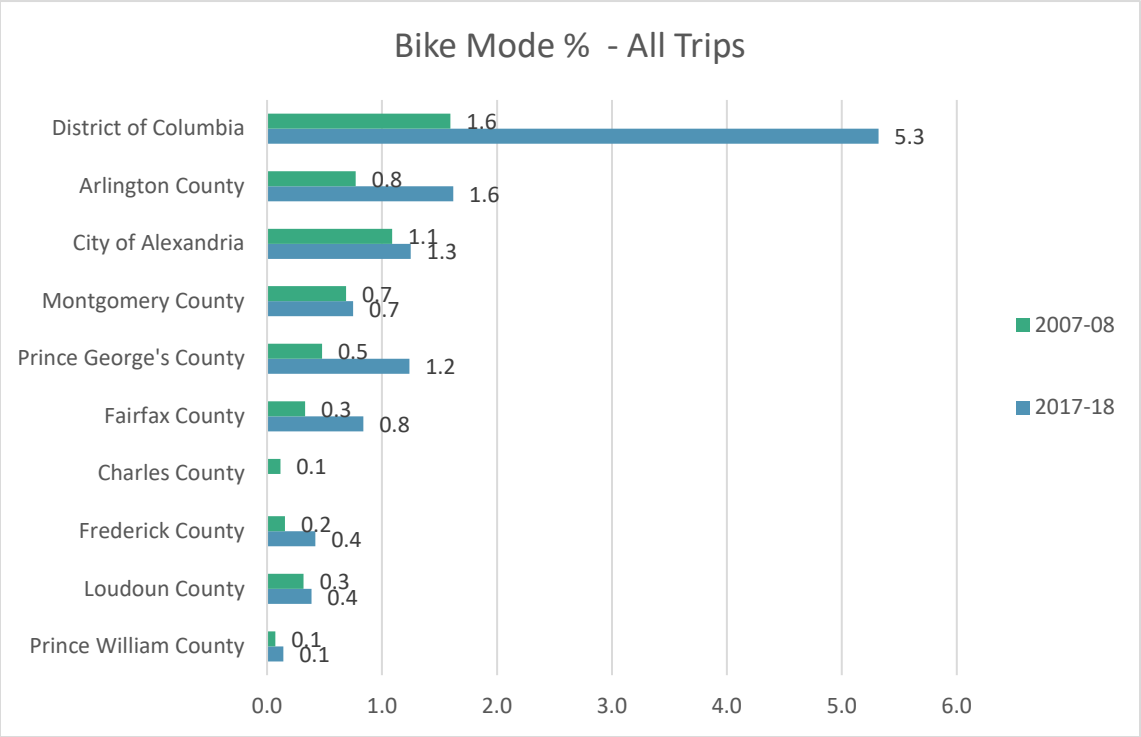


Figure 17: Bike Mode % - All Trips

BICYCLE/PEDESTRIAN COUNTS

Historically agencies have relied on manual counts of pedestrians and bicyclists, often carried out by volunteers. Manual counts have a number of disadvantages, notably cost, an inherently limited time window, unrepresentative counts due to weather events, and a lack of data on cyclists' and pedestrians' off-peak presence. As a result, there has been a move towards the use of automated bicycle and pedestrian counters.

On the downside, the counters require maintenance, and are occasionally out of order, resulting in gaps in the data.

Arlington County has by far the largest automated counting program in the region. Arlington's first two automated bike and pedestrian counters were installed in the fall and Spring of 2009-10 on the Custis and Four Mile Run Trails. They use a combination of in-ground inductive loops and passive infrared detectors to collect data on trail volumes and travel direction. The loops detect metal, which distinguishes a bicyclist from a pedestrian.

The County currently has 32 permanent installations, and six portable counters to gauge and monitor usage and demand. Mobile counters are used to estimate facility needs and guide negotiations with developers.

The data show that people continue to ride in bad weather, but are deterred by snow and ice on the trails, which are not plowed. Weekday bike traffic peaks during the morning and evening rush hours, while week-end traffic peaks mid-day.

BikeArlington Dashboard

Arlington automated counter data can be found on the BikeArlington dashboard, along with automated count data from Alexandria, DC, Montgomery County, and Prince George's County. The dashboard can be queried for pedestrians and/or bicyclists by time period, day of the week, direction, and a number of other variables.

National Park Service has completed an exploratory study on a regional bike/ped count system, which could include analysis of data collected by the counters, as well as possibly consolidation of maintenance.

DC Counters & Dashboard

The District Department of Transportation (DDOT) maintains a system of automated counters to measure the number of people walking and biking. DDOT began installing these counters in 2014,

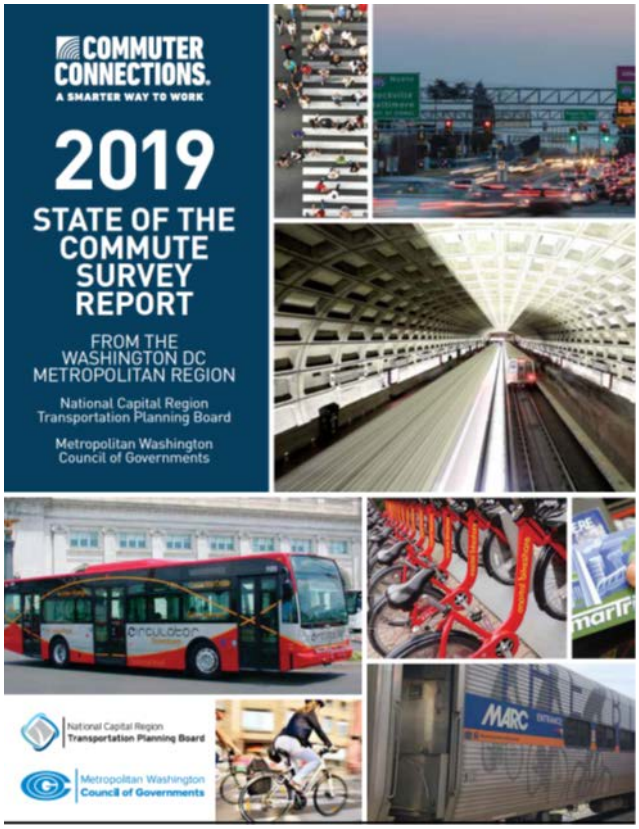
and now has 18 in operation. Counters have been installed in both bicycle lanes and trails. One location counts only pedestrians; 10 locations count only bikes; and 7 locations count people biking and walking.

DDOT monitors the continuous data stream to analyze trends in walking and biking, assess the value of its facility investments, and apply this data to plan for new bike lanes and trails. DDOT has created a dashboard where the public can view the counts at each counter.[19]

Regional Transportation Data Clearinghouse

Other bicycle and pedestrian counts from around the region, including both manual and automated counts, are posted on COG's Regional Transportation Data Clearinghouse.

COMMUTER CONNECTIONS STATE OF THE COMMUTE SURVEY



Ethnicity, geography, income, age, and car ownership affect the decision to walk or bicycle to work. The best recent source of this demographic information on pedestrian and bicycle commuters in the Washington region is the 2019 Commuter Connections *State of the Commute Survey*.

The SOC survey is conducted every three years and documents regional trends in commuting patterns, such as commute mode shares and distance traveled, and prevalent attitudes about transportation services. The resulting data is used to estimate the impacts of several Commuter Connections program services, such as carpooling incentives. Several new modes, such as ride-hail and scooters/bikeshare, were added to the 2019 survey.

The survey had 8,246 respondents. It included Calvert County, in addition to the TPB member jurisdictions.

The *State of the Commute Survey*, like the US Census, measures work trips only.

[19] https://ddot.dc.gov/page/dc-automated-bicycle-and-pedestrian-counters

All data in the following tables comes from the 2019 *State of the Commute Survey* unless otherwise noted. Walking and bicycling were not calculated separately in the *State of the Commute Survey* for the subcategories of ethnicity, income, age, and state of residence due to sample size issues. All mode shares are for primary commute mode, 3+ days per week. Walk/bike mode share varies state of residence, number of vehicles in the household, ethnicity, and age.

Walk/Bike Mode Share

Walk mode in 2019 was 1.7%, and bike/scooter was 1.6%. Weekly commute trips made by biking/scooter/walking were evenly divided between the two modes (1.7% walk and 1.6% bike/scooter). Scooters accounted for only 0.1% of total commute trips.

Nearly one in four bike commuters used a rented bike, either a Capital Bikeshare bicycle (16%) or a dockless bike (7%) on some days.

Trip Satisfaction

Bicyclists and Pedestrians are the Happiest with their Commutes

92% of bike/walk commuters reported being satisfied with their commutes, the highest of any commuter mode. Drive alone commuters were the least happy. Only 45% of drive alone commuters reported being satisfied with their commutes, a steep decline from 57% in 2013. Drivers and carpoolers were also more likely to report that their commutes were getting worse. Bike/walk commuters typically have shorter commutes and are able to avoid traffic congestion.

Of commuters who had recently moved, 3% reported that the availability of protected bike lanes was a factor. Three percent also reported that access to a bikeshare station was important. Access to Metrorail ranked far higher, at 44%.

People who walked or biked listed the major benefits as “get exercise” (80%), “avoid stress” (32%), and “save money” (23%).

Bike/Walk by Demographic

Whites are more likely to Walk or Bike to Work

Five percent of bike/walk commuters were under the age of 35. Two percent were 55 or older. Younger people are also more likely to use bike share and e-scooter services.

Sex and income had little effect on bike/walk.

Bike/walk use was highest among white respondents, at 6%. Hispanics reported a 2% bike/walk mode share, and African-Americans 1%. Drive alone shares were similar for all three groups.

Motor Vehicles per Household

Vehicles per household is a strong predictor of mode share – the more cars per adult, the more driving. Non-work trips also shift sharply away from walking in households that have at least one car per adult.

16% of People Without a Car Walk or Bike to Work

Not having a car is also associated with more use of bike share, scooting, transit, and ride-hailing apps. 23% of people living in household with no car had used bike share, and 13% had used an e-scooter service. Having less than one car per adult in the household also had a positive effect on the use of these modes. Having a least one car per adult is predictive of more driving.

Geography

17% of DC residents used bike/walk to go to work, versus 1% for Maryland residents, and 2% for Virginia residents. 13% of residents of the urban core jurisdictions used bike/walk to get to work, and only 37% drove alone.

Distance and Time

Average commute distance was 17.1 miles. About one-third (34%) of respondents commuted fewer than 10 miles one-way, and 16% commuted less than five miles.

16% of Commutes in the Region are less than 5 miles

Bicyclists reported an average commutee distance of 4.2 miles, and pedestrians reported an average distance of one mile. Trip times were 24 and 15 minutes respectively. Average commute time for the region for all modes was 43 minutes.

Travel distances to alternative meeting points, such as transit stations and park and rides, are short, typically less than three miles.

The use of bikes for commuting is still well below its potential.

WALKING AND BICYCLING TO TRANSIT

Mode of Access

62% of Metrorail Passengers Walk to the Station

Walking is the dominant mode of access to transit. The census walk to work mode share does not include walk trips to transit, since a walk trip to transit is counted as a transit trip rather than as a walk trip. In areas with high transit ridership the census walk to work numbers significantly undercount the amount of walking to or from work.

In 2016 WMATA surveyed passengers at all 91 of its Metrorail stations. The primary purpose of the survey was to estimate the percentage of total ridership residing in each jurisdiction. Passengers *entering* each Metro station were queried throughout the entire day, so the "mode of access" number for any given Metro station includes both people on their way to work or some other destination, and those on their way home. "Mode of Access" is the mode people use to get to the station, not to leave it.

In 2016 62% of all Metrorail passengers walked to the station and 0.6% arrived by bicycle essentially the same as in 2012.

However, the AM peak results, which are the best measure of how people access the system (as opposed to any particular station), show higher auto mode and bus mode of access. Pedestrian mode of access for the AM peak is 40%, up from 37% in 2012 , and 33.3% in 2007. Bike access is 1%, the same as in 2012. Drive mode fell from 25.6% in 2012 to 21.5% in 2016.

WMATA is making significant progress increasing walk mode and decreasing drive mode of access to the system.

Distribution

Mixed Use Development near stations has increased Pedestrian Access to Metrorail

Mode of Access varies greatly by station, from Capitol South, with 93% access by foot, to New Carrollton, with 6% access by foot. The thirty stations with the greatest share of pedestrian access (as a percentage of total passengers accessing that station) are all located in the District of Columbia, Arlington, or Alexandria.[20]

Stations with a very high share of pedestrians tend to be major employment centers, with people walking from work to the station, rather than from home to the station. However more than half the top twenty Metro stations for pedestrian access are mixed-use areas with significant residential, retail, or entertainment, which in many cases didn't exist twenty years ago.

[20] Appendix E: Origin Station Sorted by All Day Walk Mode of Access.

Figure 18: NOMA Station Area

The bicycle mode of access to Metrorail ranges from 4% at Medical Center, East Falls Church, and West Hyattlsville to zero at 35 stations.[21] Stations with more bicycling tended to be located in the western portion of the region, have access to a major shared-use path, be near a major University, and/or be located in an area with a bicycle-friendly street grid. Stations with no bicycling are either in dense urban employment centers with no bicycle parking, or are located in the southeastern portion of the region.

OUTLOOK

Rapid Growth in the Urban Core and Regional Activity Centers favors Walking and Bicycling

Walking and bicycling taken together are significant travel modes in the Washington region, especially for non-work trips, and for trips to transit. Walking is the larger mode, and is growing slowly. Cycling is less common, but is growing rapidly.

Exurban and outer suburban areas have developed in ways that often make utilitarian walking and bicycling difficult and dangerous, with long distances, lack of direct routes, heavy, fast automobile

[21] Appendix F: Origin Station Sorted by All Day Bike Mode of Access.

traffic, and incomplete facilities for walking or bicycling. They typically have low levels of walking and bicycling.

The story in the urban core is different. In the District of Columbia, Arlington, Alexandria, and portions of Montgomery County and Frederick County, walking and bicycling are growing rapidly.

Since 2010 the urban core jurisdictions have captured a larger share of the region's growth, and have expanded their share of the region's population, a trend which if it continues will help increase walking and bicycling.

It is likely that urban core and inner suburban communities will develop over the next thirty years in ways that will be conducive to walking and bicycling. Many inner suburban activity centers have already reached critical levels of traffic congestion, and regional projections call for rapid employment growth in these same areas.

From 2015 and 2045, 76 percent of job growth and 64 percent of household growth is expected to occur in Activity Centers.[22] Under "Complete Streets" policies most of this new development will be walkable and bikeable.

A prominent example is the ongoing transformation of Tysons Corner, a classic auto-oriented commercial center, into a walkable downtown built around Metrorail.

If growth occurs in ways that are consistent with the TPB's regional plans and forecasts, creating activity centers that mix jobs, housing and services in a walkable environment, we can expect rapid growth in walking and bicycling in the inner suburbs as well as in the core.

[22] https://www.mwcog.org/documents/2018/10/17/growth-trends-cooperative-forecasting-in-metropolitan-washington-cooperative-forecast-growth--development/

CHAPTER 3: PEDESTRIAN AND BICYCLE SAFETY

Pedestrian and bicycle fatalities and injuries are a serious problem in the Washington region. More than one quarter of all traffic fatalities in the region are pedestrian or cyclist. Every jurisdiction has a significant pedestrian safety problem. Pedestrian and bicyclist fatalities account for at least 7% of total traffic fatalities in every major jurisdiction.

While all areas and demographic groups are affected, some groups are more affected than others. Urban areas and inner suburban areas are more heavily affected than the outer suburbs, Hispanics and African-Americans more than Whites and Asians.

Adjusted for their high walk and bike mode shares, the urban core jurisdictions are the safest places to walk or bicycle.

This section will describe the scope of the pedestrian and bicycle safety problem, its distribution across the region by jurisdiction, a look at the factors associated with pedestrian crashes, and the legal rights and responsibilities of drivers, pedestrians, and bicyclists. It will also discuss the region's efforts to deal with the problem through the "Street Smart" pedestrian and bicycle safety campaign.

Pedestrian Fatalities in the United States

Pedestrian Fatalities are Up 46% since 2010

Pedestrian safety is a major problem nationally and in the metropolitan Washington region. Of the 36,408 traffic fatalities in the United States in 2019, 6,301, or 17%, were pedestrians.[23]

Pedestrian fatalities are up 46% since 2010. All other traffic fatalities are up 5%. This is a reversal of a decades-long trend towards reduced traffic and pedestrian fatalities. The last time pedestrians accounted for 17% of traffic deaths was in 1982.

The United States is an outlier in this respect. From 2010 to 2018 per-capita fatality rates in the USA rose by 19% for pedestrians and 11% for cyclists. Northern European countries either saw no increase or continued to see reductions in pedestrian fatalities during this period.[24] Walking and bicycling is much more dangerous in the United States than in its peer industrialized countries, and the gap is only getting wider.

Within the United States pedestrian fatalities vary widely by State and region, with sunbelt cities rated the most dangerous for pedestrians, and Florida as the most dangerous state. Maryland is ranked the 18th most dangerous state for pedestrians.[25]

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[23] https://www.ghsa.org/resources/Pedestrians21

[24] "The Growing Gap in Pedestrian and Cyclist Fatality rates between the United States and the United Kingdom, Germany, Denmark, and the Netherlands, 1990-2018". Ralph Buehler and John Pucher, *Transport Reviews, Volume 41, 2021.*

[25] *Daangerous by Design 2021 Update*, Smart Growth America,, page 23. https://smartgrowthamerica.org/wp-content/uploads/2021/03/Dangerous-By-Design-2021-update.pdf

2020: Covid Spring

2020 was an unusual year. Despite fewer cars on the road in the first half of 2020, the number of pedestrian fatalities stayed flat. From January through June 2020 there were 2,957 pedestrian deaths, while in 2019, there were 2,951 for the same time period.[26]

Pedestrian Fatalities by Age and Ethnicity in the United States

Pedestrians over age 75 are at high risk of Death

American Indians, African-Americans, and people over the age of 65 are over-represented among pedestrian fatalities relative to their share of the population.[27] Asians are under-represented. Ethnic risk varies significantly by State, so jurisdictions should not rely solely on national numbers when planning safety programs.

People over the age of 75 are at high risk; with six percent of the U.S. population, but more than 12 percent of pedestrian fatalities.

Adjusted for exposure, pedestrians over the age of 65 have a very high risk of dying, over six times as high as children under age 16.[28] For pedestrians over age 75 the risk is even higher, about eight times the risk for children.

American Indians are also over-represented among bicyclist fatalities. Blacks, Hispanics and Whites have roughly comparable per capita bicycle fatality rates.

Asians had the second-lowest per capita bicyclist fatality rate, after native Hawaiians. This was the only category of traffic fatality in which Asians did not have the lowest per capita rate.

PEDESTRIAN AND BICYCLIST FATALITIES IN THE WASHINGTON MSA

Pedestrians and Bicyclists account for 30% of the region's Traffic Fatalities

The Washington Metropolitan Area was rated 81st out of the 100 largest metro areas for pedestrian danger. Washington is one of the safer Metro areas for pedestrians.

Despite a decrease in traffic on our region's roadways in 2020, pedestrian fatalities held steady relative to 2019, reflecting national trends. In 2020

[26] Governors Highway Safety Association, Pedestrian Traffic Fatalities by State: 2020 Preliminary Data, published March 2021

[27] *An Analysis of Traffic Fatalities by Race and Ethnicity,* Governor's Highway Traffic Safety Association, June 2021. https://www.ghsa.org/resources/Analysis-of-Traffic-Fatalities-by-Race-and-Ethnicity21

[28] *Dangerous by Design 2014*, Smart Growth America, p. 13.

there were 93 pedestrian and 5 bicyclist fatalities, compared to 92 pedestrian and 7 bicycle fatalities in 2019.[29]

In 2018 there were 94 pedestrian fatalities, and 7 bicyclist fatalities.

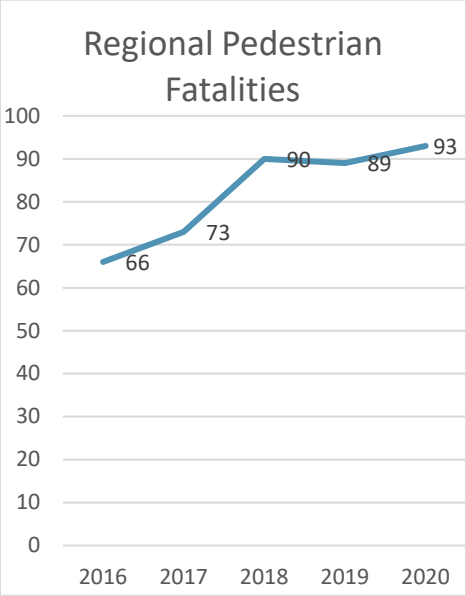
Table 8: Fatalities by Jurisdiction

2020	Alexandria City	Arlington Co.	Fairfax City	Fairfax Co.	Falls Church City	Loudoun Co.	Manassas City	Manassas Park City	Prince William Co.	Charles Co.	Frederick Co.	Montgomery Co.	Prince George's Co.	DC	TOTAL
FATALITIES															
Pedestrian	2	2	0	15	0	1	0	0	5	4	2	16	36	10	**93**
Bicyclist	0	0	0	0	0	0	0	0	0	0	0	2	2	1	5
All traffic	7	4	1	37	0	12	1	0	18	26	24	47	111	36	324
CRASHES															
Pedestrian	51	77	5	130	6	41	12	3	50	X	X	X	X	626	x
Bicyclist	**9**	**33**	**4**	**52**	**6**	**27**	**9**	**0**	**14**	**X**	**X**	**X**	**X**	**360**	x

While DC and Virginia pedestrian fatality rates have been roughly stable, in the Maryland Counties, especially Prince George's, fatalities are up sharply. The four Maryland Counties had 35 pedestrian fatalities in 2015, but 58 in 2020.

Pedestrian Fatalities by State and Jurisdiction

Figure 19: Regional Pedestrian Fatalities



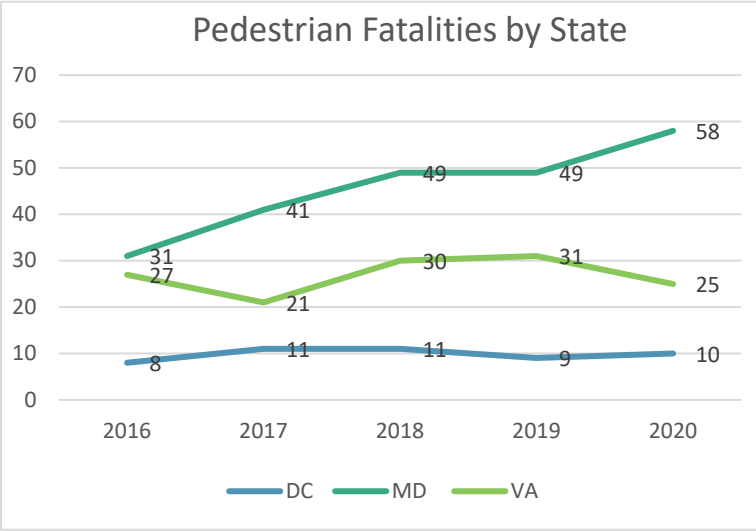
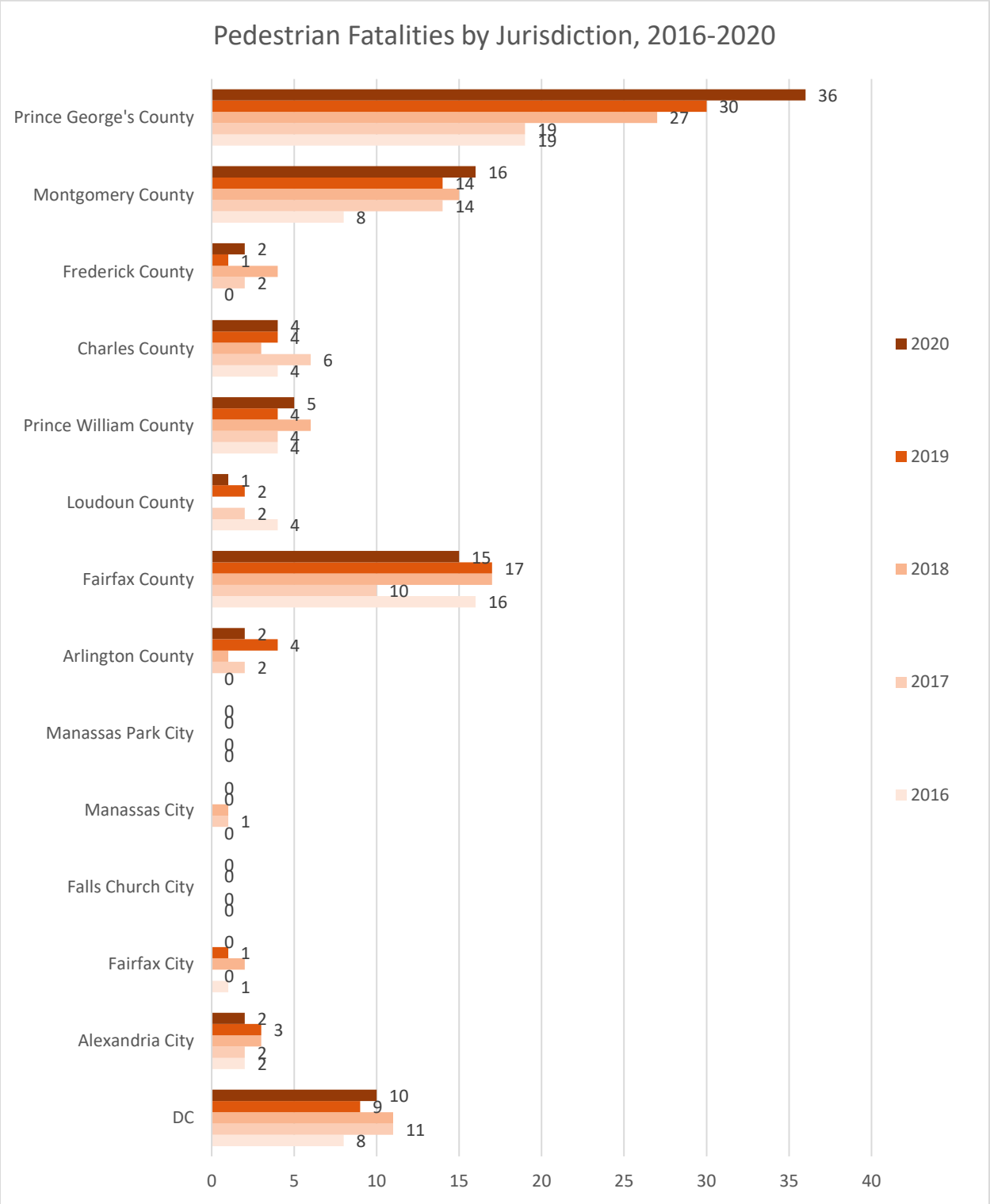


Figure 20: Pedestrian Fatalities by State

[29] *Data compiled from DDOT, MDOT, and VHSO*

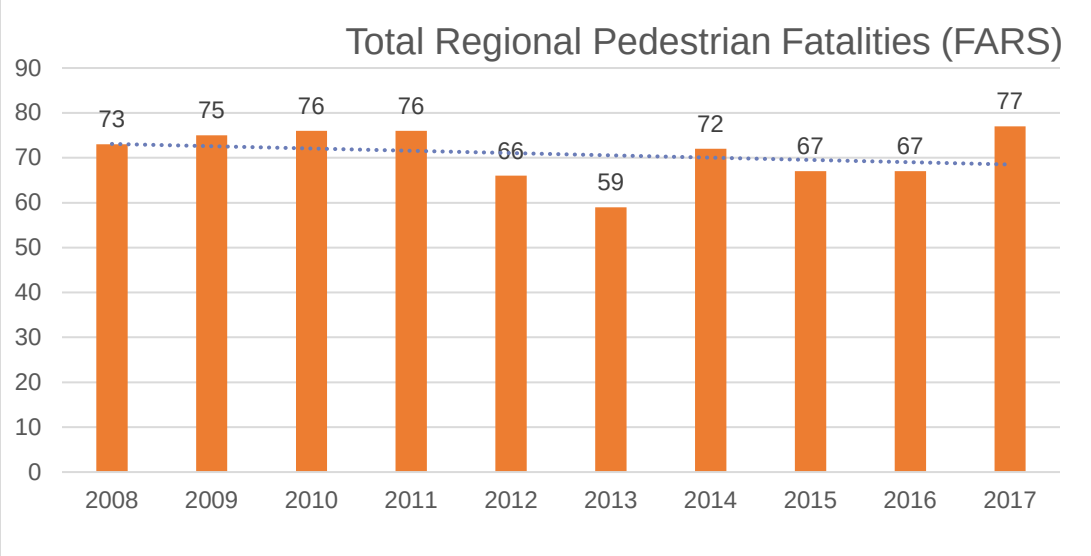
Figure 21: Pedestrian Fatalities by Jurisdiction

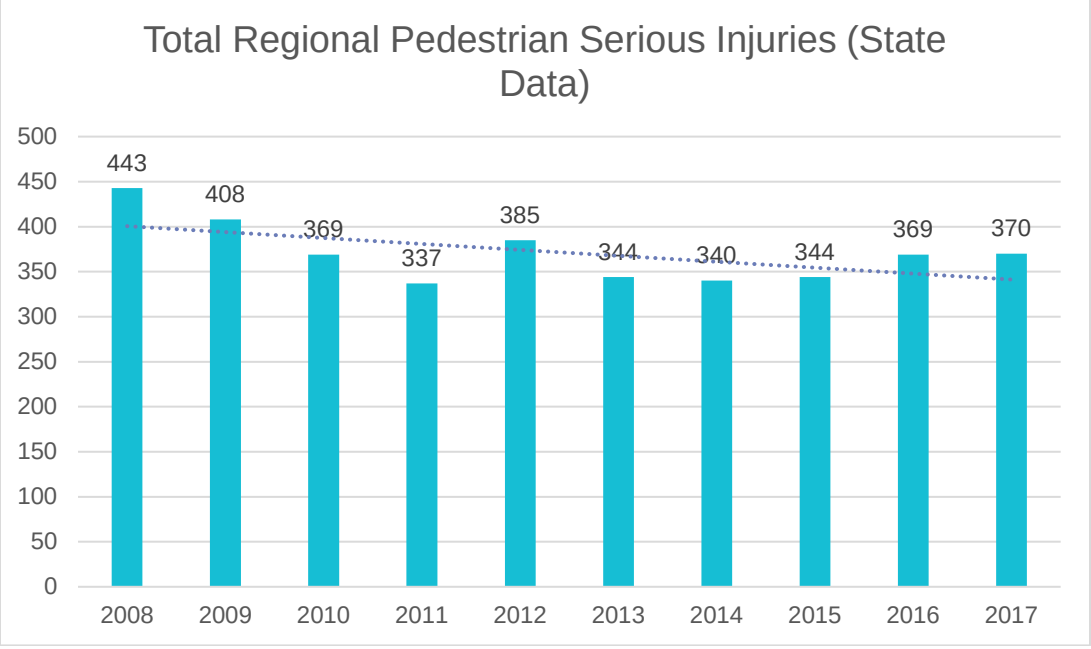


"DEEP DIVE" INTO PEDESTRIAN CRASHES IN THE WASHINGTON REGION

TPB carried out a study of traffic safety in the Washington region in 2019. The results relating to pedestrian crashes are summarized below. The region had a stable number of pedestrian fatalities and serious injuries through 2017, but the 2018-2020 fatality numbers are worse. Historically the combined pedestrian and bicyclist fatalities were roughly one quarter of the total traffic fatalities, but now they are at 30%.

Figure 22: Regional Pedestrian Fatalities and Injuries





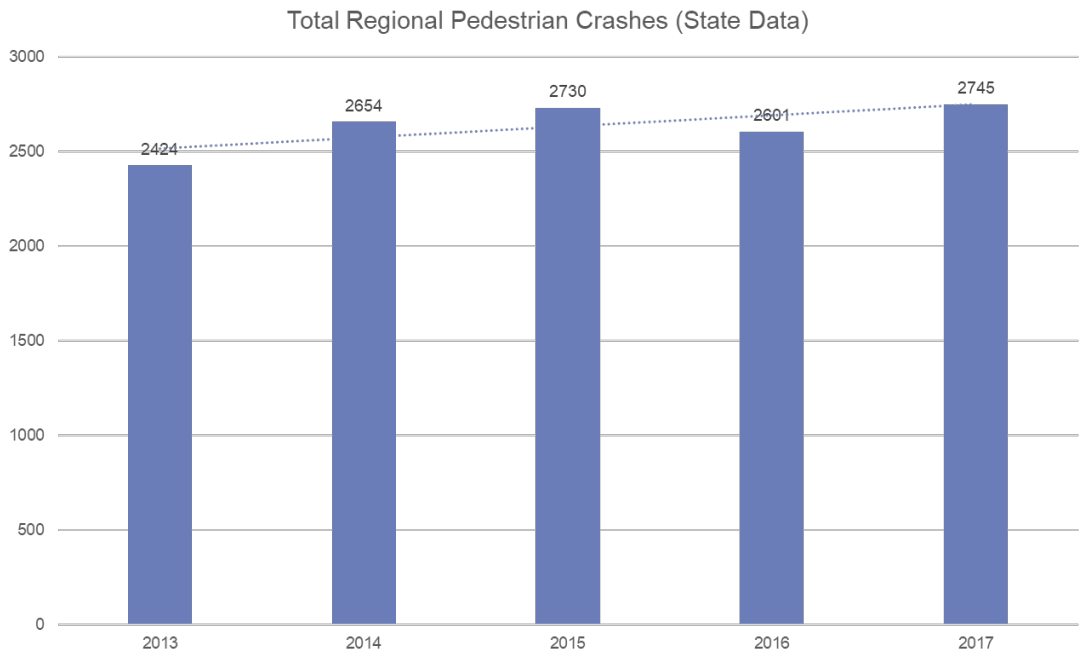


Table 9: Pedestrian Crash Severity

Pedestrian Crash Severity by Jurisdiction, 2013-2017			
Jurisdiction	Fatalities	Serious Injuries	Total Crashes
District of Columbia	50	399	5431
Charles County, MD	16	49	208
Frederick County, MD	7	36	284
Montgomery County, MD	56	318	2297
Prince George's County, MD	108	269	2156
Arlington County, VA	6	74	693
Fairfax County, VA	55	331	1024
Fauquier County, VA (urbanized area)	1	7	24
Loudoun County, VA	14	57	235
Prince William County, VA	20	96	299
Alexandria. VA	7	58	338
Fairfax City, VA	1	21	54
Falls Church, VA	0	13	30
Manassas, VA	1	39	74
Manassas Park, VA	0	0	7
District of Columbia	50	399	5431

Suburban Maryland	187	672	4945
Northern Virginia	105	696	2778
National Capital Region Total	**342**	**1767**	**13154**

The District of Columbia had the largest number of serious injuries and pedestrian crashes, while Prince George's the largest number of fatalities. Pedestrian activity is far more intense in DC than in Prince George's, but vehicle speeds are much higher in Prince George's.

Table 10: Pedestrian Injury Severity by Time of Day

Pedestrian Injury Severity by Time of Day			
Time of Day	**National Capital Region**		
	Fatalities	**Serious Injuries**	**Total Crashes**
Midnight - 0:59 a.m.	11	37	206
1:00 a.m. - 1:59 a.m.	13	35	161
2:00 a.m. - 2:59 a.m.	13	35	163
3:00 a.m. - 3:59 a.m.	7	31	131
4:00 a.m. - 4:59 a.m.	10	4	67
5:00 a.m. - 5:59 a.m.	15	29	187
6:00 a.m. - 6:59 a.m.	24	65	390
7:00 a.m. - 7:59 a.m.	12	85	623
8:00 a.m. - 8:59 a.m.	3	88	673
9:00 a.m. - 9:59 a.m.	7	57	543
10:00 a.m. - 10:59 a.m.	11	59	498
11:00 a.m. - 11:59 a.m.	8	64	547
12:00 p.m. - 12:59 p.m.	6	64	531
1:00 p.m. - 1:59 p.m.	5	68	588
2:00 p.m. - 2:59 p.m.	9	84	726
3:00 p.m. - 3:59 p.m.	11	107	872
4:00 p.m. - 4:59 p.m.	12	104	862
5:00 p.m. - 5:59 p.m.	12	151	1103
6:00 p.m. - 6:59 p.m.	25	166	1151
7:00 p.m. - 7:59 p.m.	26	137	911
8:00 p.m. - 8:59 p.m.	34	103	757
9:00 p.m. - 9:59 p.m.	33	99	632
10:00 p.m. - 10:59 p.m.	28	92	518
11:00 p.m. - 11:59 p.m.	18	65	311

Pedestrian injuries peaked during the evening rush hour, while deaths peak later, after 8 p.m.

Table 11: Pedestrian Injury Severity by Day of the Week

Pedestrian Injury Severity by Day of the Week			
Day of Week	National Capital Region		
	Fatalities	Serious Injuries	Total Crashes
Sunday	39	215	1272
Monday	41	277	1838
Tuesday	50	280	2076
Wednesday	51	278	2091
Thursday	66	249	2006
Friday	48	296	2183
Saturday	58	235	1688

October-December are the peak months for pedestrian fatalities, serious injuries, and crashes. October is pedestrian safety month.

Table 12: Pedestrian Injury Severity by Month

Pedestrian Injury Severity by Month			
Month	National Capital Region		
	Fatalities	Serious Injuries	Total Crashes
January	28	151	1162
February	28	136	929
March	27	145	984
April	23	149	1027
May	31	155	1101
June	23	150	1087
July	22	109	892
August	29	160	967

September	24	156	1117
October	40	180	1389
November	38	163	1242
December	40	176	1257

“Not at an intersection” is the most dangerous place to cross the street.

Table 13: Injury Severity by Pedestrian Location

Injury Severity by Pedestrian Location			
Pedestrian Location	**National Capital Region**		
	Fatalities	**Serious Injuries**	**Total Crashes**
Unknown	65	414	4270
Unmarked Crosswalk	6	54	386
Marked Crosswalk	61	536	3927
Sidewalk	7	33	252
In Roadway/Unmarked Midblock/Not at Intersection	197	675	3770
Median/Island	2	4	28
Outside Roadway	15	114	521

Figure 23: Pedestrian Non-Intersection Fatalities

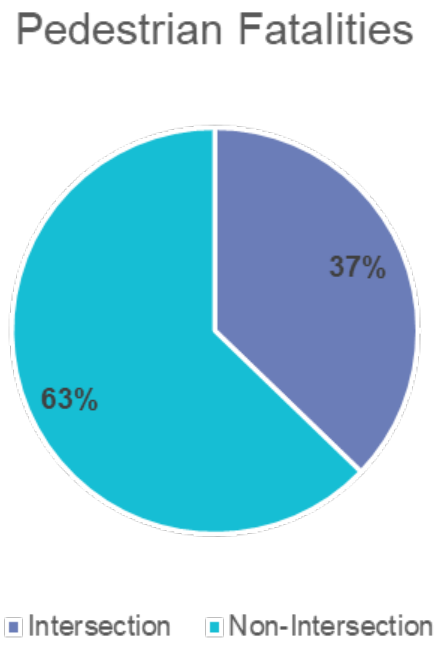


Table 14: Injury Severity by Pedestrian Age

Injury Severity by Pedestrian Age			
Pedestrian Age	TPB Region		
	Fatalities	Serious Injuries	Total Pedestrians in Crashes
Younger than 5	9	27	351
5-9	2	52	488
10-14	2	70	665
15-19	15	148	1088
20-24	28	205	1495
25-29	22	204	1584
30-34	30	145	1344
35-39	29	119	1057
40-44	20	94	828
45-49	24	132	905
50-54	33	129	928
55-59	33	114	843
60-64	35	104	766
65-69	13	80	490
70-74	20	48	314
75-79	16	39	216
80-84	10	14	119
Older than 84	10	25	147

Older pedestrians are much more likely to be killed if they are hit. It should be noted that the Washington region has a relatively young population, and these numbers are not adjusted for exposure. People over the age of 65 may be aware of their vulnerability and exercise greater caution in crossing, or avoid making dangerous crossings.

People aged 15-34 are heavily represented among pedestrian crashes, but are less likely to die when hit.

Table 15: Pedestrian Injury Severity by Lighting Condition

Pedestrian Injury Severity by Light Condition			
Light Condition	**National Capital Region**		
	Fatalities	**Serious Injuries**	**Total Crashes**
Dawn	7	41	245
Daylight	90	922	7443
Dusk	4	41	333
Dark (Lighted)	157	603	4033
Dark (Not Lighted)	86	188	716
Dark (Unknown Lighting)	4	22	128
Unknown	4	13	256

Far more crashes happen during daylight than at night, but the night-time crashes are much more likely to be fatal.

Table 16: Pedestrian Injury Severity by Functional Class

Pedestrian Injury Severity by Functional Class			
Functional Class	TPB Region		
	Fatalities	Serious Injuries	Total Crashes
Collector	38	288	2220
Expressway	10	40	250
Freeways	26	111	500
Major Arterial	146	674	4875
Minor Arterial	109	641	4650
Ramp	5	18	94

Major arterials are the most dangerous for pedestrians. They have the most crashes, and a higher likelihood of a fatal collision than a minor arterial.

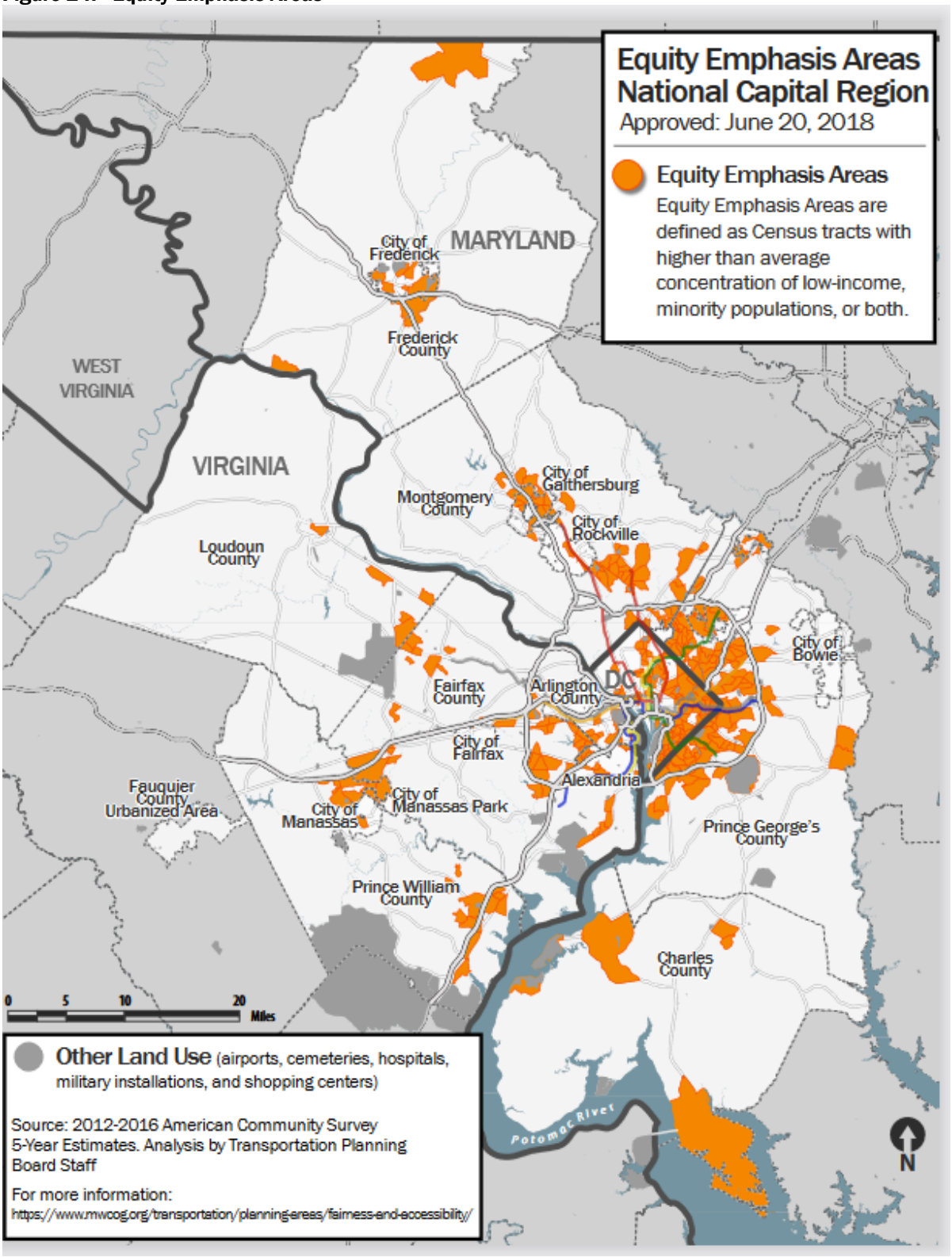
Safety in Equity Emphasis Areas

TPB defines equity emphasis areas as those containing high concentrations of low income and/or minority populations. These areas were approved by the Board in 2017, updated in June 2018 to reflect current census data.

The Equity Emphasis Areas contain 29 percent of the region's population yet they account for 34 percent of the region's fatalities. They have higher percentages of fatalities involving young drivers, pedestrians, crashes at intersections, and crashes on major arterials.

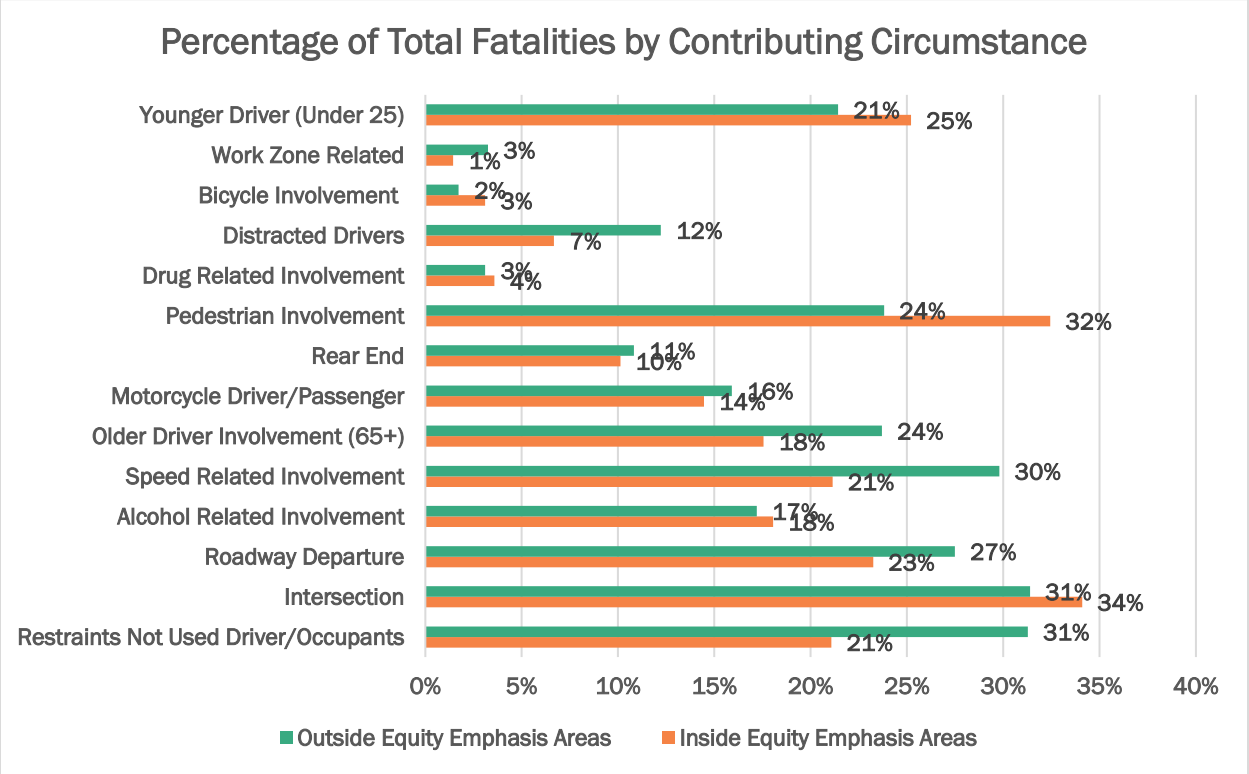
Not all categories of crash are more common in equity emphasis areas. Unbelted crashes, speeding-related crashes, and roadway departure crashes are more likely outside an equity emphasis area.

Figure 24: Equity Emphasis Areas



Equity emphasis areas have higher rates of pedestrian and bicycle crashes than areas outside of equity emphasis areas.

Figure 25: Fatalities by Contributing Circumstance



Safety in Numbers

Pedestrians find Safety in Numbers

In the Washington region the jurisdictions with the most pedestrians are the safest places to walk. The urban core has good pedestrian facilities and low traffic speeds, and drivers expect to see pedestrians and bicyclists. The pedestrian crash rate tends to fall as the number of pedestrians at a location increases. Doubling the number of pedestrians at an intersection already crowded with pedestrians will usually result in little, if any, increase in pedestrian crashes.[30] Similar effects have been noted for cyclists, with cities having the highest rates of bicycling also having the lowest crash rate per bicycle trip.[31] High levels of walking and bicycling are associated, in advanced industrialized nations, with very low auto-involved crash rates.[32] The Netherlands has half the overall traffic fatality rate of the United States, despite a very high walk and bike mode share.

Experience of other nations shows that it is possible to reduce pedestrian and bicycle fatalities while increasing walking and bicycling. On the other hand, it is not possible to eliminate pedestrian fatalities by eliminating pedestrian facilities and discouraging walking; even in our least pedestrian-oriented jurisdictions, pedestrian fatalities account for at least 7% of total traffic fatalities. For the

[30] Raford, Noah. *Space Syntax: An Innovative Pedestrian Volume Modeling Tool for Pedestrian Safety*. Presented at the 2004 TRB Conference, January, 2004. (TRB2004-000977) p. 8.
[31] Denmark Ministry of Transport (1994) *Safety of Cyclists in Urban Areas: Danish Experiences*.

[32] Pucher, John. "Making Walking and Bicycling Safer: Lessons from Europe," *Transportation Quarterly,* Summer 2000.

foreseeable future there will be people without cars, and there will always be some trips that will be made on foot. ii

Numbers alone do not guarantee safety, however. The region's most dangerous areas for walking have high-speed roads and poor pedestrian facilities, together with people who lack automobiles. Lower vehicle speeds in the urban core are a likely cause of the lower fatality rates there.

Differences in the pedestrian injury rates between the suburban jurisdictions are much smaller than differences in fatality rates.

The District of Columbia has seen rising bicycle crash rates as its rate of bicycling has increased, though the crash rate has risen more slowly than bicycling, indicating that riding is getting safer.

Walking is a necessary part of human life and health, and it is essential to the mobility of those who cannot drive. Through "Complete Streets" and other policies the region is striving to make walking safer everywhere.

Legal Status of Bicyclists and Pedestrians

Bicyclists have the same Rights and Responsibilities as Motorists when Riding on the Road

State traffic codes allow bicyclists to travel on most roadways with the general rights and responsibilities of drivers of vehicles. Bicyclists must ride in the same direction as traffic, use lights after dark, and yield to pedestrians. Like operators of other slow-moving vehicles, cyclists--when traveling at less than the normal speed of other traffic--should generally ride as far to the right as safely practicable, except when preparing to turn left, passing, avoiding obstructions, mandatory turn lanes or unsafe pavement conditions, or when the travel lane is not wide enough to safely split with a motor vehicle. Cyclists may use the full travel lane if the lane is too narrow to allow them to ride to the right of motor vehicles safely. Cyclists may usually ride on roadway shoulders, paths and sidewalks, except where prohibited. Cyclists have the rights and duties of pedestrians when traveling on paths, sidewalks, and crosswalks, however, they must yield to pedestrians in those locations.

Unlike bicyclists, pedestrians should walk facing traffic if they must walk in the road. If sidewalks are available pedestrians are usually required to use them. Mid-block crossings are usually legal unless both ends of the block are signal-controlled. However, pedestrians crossing mid-block must yield to motorists if they are present. An intersection is a legal crossing for pedestrians, regardless of whether the crosswalk is marked. However, a pedestrian may not cross an intersection diagonally unless that movement is specifically permitted. Pedestrians must obey the walk signals.

Rules relating to bicycles can be found on the Washington Area Bicyclist Association web site at https://waba.org/resources/bikelaws. Laws for motorists, pedestrians and bicyclists are also listed on http://www.bestreetsmart.net/laws/.

PEDESTRIAN AND BICYCLIST EDUCATION AND ENFORCEMENT: THE "STREET SMART" CAMPAIGN

Pedestrian and bicycle safety efforts generally fall into three broad categories of actions, the three E's: Engineering, Education, and Enforcement. Engineering deals with the design of safer roads, streets, and pedestrian and bicycle facilities. Education includes both classroom-based training and behavioral modification campaigns. Enforcement consists of enforcement of the traffic laws with respect to pedestrians and bicyclists. The regional pedestrian and bicycle safety campaign, Street Smart, deals primarily with education through mass media.

Street Smart was created in 2002 by the region's governments in response to an ongoing regional pedestrian and bicycle safety problem. Since the region is a single media market, a unified regional campaign is the most cost-effective approach. The program is supported by federal funds made available through state governments, from WMATA, and is administered by the National Capital Region Transportation Planning Board.

Figure 26: Street Smart Ad

The Street Smart campaign is a twice-yearly, month-long blitz of radio, transit, gas station, and internet advertising, supported by public relations activities and by concurrent law enforcement. The goal of the campaign is to change driver, pedestrian, and bicyclist behavior in order to reduce deaths and injuries. Motorists are urged to "Slow Down and Watch for Pedestrian", bicyclists to "Obey Signs and Signals", pedestrians to "Use Crosswalks. Wait for the Walk Signal" and transit riders to "Don't Run for the Bus". All materials, including radio spots, are translated into Spanish. Since 2007 campaigns have been held twice per year, in the fall and in the spring. Campaign materials can be found on the web site, http://bestreetsmart.net.

Efforts to enforce pedestrian laws are also stepped up in conjunction with the "Street Smart" pedestrian and bicycle safety campaign. Law enforcement has helped reinforce the campaign message, just as it has been used effectively as part of anti-drunk driving and seatbelt advertising campaigns. Public awareness of these heightened enforcement activities has been a key aspect of this campaign. Research shows that fear of fines and legal consequences is more effective at changing behavior than fear of death or injury. Also the TV and press media often covers enforcement stings, increasing the public's perception that they are likely to be ticketed for breaking the law.

The Street Smart campaign sponsors annual seminars on best practices in pedestrian enforcement for law enforcement officers. Participating agencies report the number of warnings and citations issued.

Figure 27: Fall 2013 Press Event

EVALUATION

Our survey of area motorists and pedestrians usually shows that the public is hearing and remembering the Street Smart messages. Our current year on year awareness, from 2019 to 2020, is flat.

OUTLOOK

Pedestrian and bicycle safety has drawn increasing attention in the Washington region and at all levels of government. To build walkable communities, walking and bicycling need to be made safer. Improved occupant protection and vehicle design have saved the lives of many motorists, but we have not made comparable progress for people outside motor vehicles.

In fact the situation, as discussed above, has gotten significantly worse over the last several years, both locally and nationally. Enforcement has decreased due to Covid precautions, and due to competing demands on police resources. There have also been calls from advocates to sharply reduce the number of police traffic stops and pedestrian stops.

Bicycling mode share has increased in the last decade, most notably in the District of Columbia, and that increase has been associated with increased numbers of injuries.

The Street Smart campaign is yielding positive results, but it is meant to complement, not replace, local three “E” safety efforts. States, cities, and counties need to continue engineering and building safer streets, enforcing the traffic safety laws, and educating motorists, pedestrians and bicyclists. We know that the streets can be made safe for pedestrians and bicyclists, because some of our jurisdictions have already done it. Agencies that make pedestrian safety a priority are getting positive results, or at least avoiding the recent increases in fatalities of all kinds that have affected most of the country.

CHAPTER 4: EXISTING FACILITIES FOR WALKING AND BICYCLING

OVERVIEW

The Washington region has excellent long-distance separated facilities for bicyclists and pedestrians, and an urban core and certain regional activity centers that have good pedestrian and bicycle facilities. The Washington region is at the forefront of innovation in bicycle facility design. On the other hand, many activity centers, not originally designed with pedestrians in mind, have grown dense enough to generate significant pedestrian traffic, and face challenges in terms of providing safe facilities and crossing locations for pedestrians and bicyclists. Other parts of the region have developed at low densities, with separated land uses and indirect routes, which increase pedestrian and bicycle travel time. Pedestrian and bicycle accommodations are not always provided.

Figure 28: Informal foot path/TPB

Bicycle connections with transit are generally good, with bicycle parking, bus bicycle racks, and bikes permitted on Metrorail at most hours. Walking is the primary mode of access to transit. Conditions for pedestrian access are excellent at many rail stations, though at some rail stations, originally designed primarily with auto and transit access in mind, pedestrian access could be improved. Bus stops in places originally designed primarily for automobiles often have access and safety problems.

Informal Foot-Paths Show where People Walk

Pedestrians are found throughout the region, and pedestrian traffic is increasingly found in places that were not built for it. This section highlights some of the region's successes in providing for bicycling and walking. These successes can serve as examples of what the region needs to serve its pedestrians and bicyclists.

Shared-Use Paths

Figure 6: Mount Vernon Trail/TPB/Michael Farrell

The Washington region is renowned for the quality and extent of its major shared-use paths. Shared-use paths are typically located in their own right-of-way, such as a canal, railway, or stream valley, or in the right-of-way of a limited-access highway or parkway, such as the George Washington Memorial Parkway. Shared-use paths are eight to twelve feet in width. The region has approximately 200 miles of major shared-use paths, either paved or level packed gravel surface suitable for road bikes.

Well-known trails include the W&OD and Mount Vernon Trails in Virginia, and the C&O Canal, Capital Crescent, and Rock Creek Trails connecting the District of Columbia and Maryland. Many of the region's shared-use paths go through heavily populated areas, connect major employment centers, and get significant commuter traffic. More information on trails in the Washington region can be found at http://www.commuterconnections.org/commuting-resources/bicycling-resources.

Figure 7: Fairfax Parkway Side Path/Unknown

The region continues to build new trails along stream valleys and in conjunction with major highway projects, but the remaining inventory of disused rail lines, which often provide the best opportunities for shared-use paths, is fairly small.

Side-Paths

Side-paths differ from shared-use paths in that they do not have their own right of way, but are closely adjacent to a non-limited access roadway and thus subject to more frequent conflict with driveways, side streets, and turning traffic. Side-paths differ from sidewalks in that they are at least eight feet wide (ten feet is the more recent standar) are typically made of asphalt, and are designed to meet the needs of bicyclists.

The Washington region has approximately 300 miles of side-paths, and there are plans to expand that mileage considerably.

Figure 4: Bike Lane/Pedbikeimages.org/Dan Burden

Side-paths meet the need for a separated pedestrian facility and provide separation from traffic that is valued by child and slow-moving cyclists, especially in places where the road has speeds of 40 mph or more and high traffic volumes, conditions often found on major suburban arterials. However, the AASHTO (American Association of State Highway and Transportation Officials) Guide for the Development of Bicycle Facilities offers a number of cautions regarding the use of side-paths or wide sidewalks for bicycles. Frequent driveways, especially with poor sightlines, are hazardous to bicyclists on side-paths. Side-paths remove bicyclists from the motorists' line of sight and allow travel against the flow of traffic, so they may increase the potential for conflicts with motor vehicles at intersections. Since the facility is shared with pedestrians, there is also a potential for cyclist-pedestrian crashes. Side-paths are most suitable where driveways and intersections are few and sight-lines are good. Intersection crossings should be designed carefully, with a protected signal phase providing the best level of protection.

Bicycle Lanes

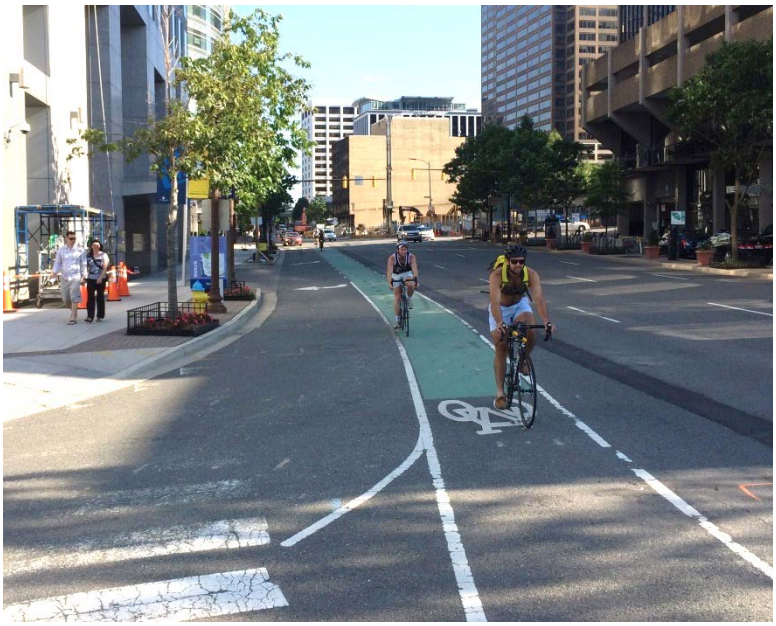


Figure 29: Green Bike Lane in Rosslyn/TPB/Michael Farrell

Bicycle lanes are marked lanes in the public right-of-way that are by law exclusively or preferentially for use by bicyclists. Bike lanes are one-way, with a bicycle symbol or arrow indicating the correct direction of travel. The minimum width is 5 feet for roadways with no curb or gutter; next to a curb or parked cars 6 feet, not including the gutter pan. Bike lanes are provided on both sides of the street, except for one-way streets, and allow travel only in the same direction as adjacent motor vehicle traffic. On-street bicycle lanes are generally much less expensive than separated paths. Bike lanes decrease wrong-way riding, define the road space that cyclists are expected to use, increase cyclists' comfort level, and call attention to the presence of cyclists on the roadway. Bicycle lanes are not generally considered safe or adequate for pedestrians, though in rural areas without sidewalks the roadway shoulder serves as both a bicycle lane and as a pedestrian facility.

Bike lanes may be colored green for conspicuity.

The number of bicycle lanes is growing rapidly. The District of Columbia currently has 97 miles of bicycle lanes, up from 19 miles in 2006, and three in 1995, Arlington County has 36 miles, up from three in 1995, and Montgomery County has 55 miles.[33] The regional mileage of bicycle lanes can be expected to expand significantly in the future as the core jurisdictions build out their planned networks, and suburban areas add more. Google maps shows existing bicycle paths, lanes, and on-road routes.

Figure 30: Buffered Bike Lane/TPB/Michael Farrell

Buffered Bicycle Lanes

A buffered bicycle lane is a bicycle lane with a spatial buffer to increase the distance between the bicycle travel lane and the automobile travel lane or the parking zone. The buffer zone is usually marked with striped paint. Buffered bike lanes are sometimes used where there is higher than normal speeds, traffic volumes or truck volumes, or high-turnover parking. It allows additional space to be provided for bicyclists without creating something that looks like a travel lane to motorists. The example above is from Arlington.

Contraflow Bike Lanes

On some one-way streets, if there is a need, a bike lane may be marked against the flow of traffic. In this case, a one-way single lane street has been marked with a contraflow bike lane, while the travel lane has been given speed humps and shared lane markings (sharrows) to encourage sharing the travel lane. The street is one-way for cars, but two ways for bikes. Side streets in DC have a 15 mph speed limit, which on this street is observed thanks to traffic calming features such as speed humps and a mature tree canopy.

Figure 31: Contraflow Bike Lane/TPB/Michael Farrell

[33] https://www.montgomerycountymd.gov/dot-dte/bikeways/index.html

Protected Bike Lanes (Cycle Track)

A protected bike lane or cycle track is a bicycle-only facility that provides physical separation within the right of way from vehicle travel lanes. Protected lanes can be either one-way or two-way, on one or both sides of a street, and are separated from vehicles by wands, bollards, curbs/medians, parked cars, or a combination of these elements. Protected bike lanes can either incorporate bicycle-only signal phases at intersections (for 100% separation) or utilize "mixing zones" to merge bicycle and motor vehicle traffic.[34] The District of Columbia Department of Transportation has been an innovator in the development of protected bike lanes in the United States.

Figure 32: 1st Street NE Protected Lane/TPB/Michael Farrell

Protected bike lanes can pose a design due to the potential conflicts with turning vehicles, and lack of visibility of cyclists to turning vehicles when separated by parked cars.
They have been used in numerous cities in Europe with mixed results.[35] Installation of protected bike lanes was found to result in an increase in collisions at intersections in Copenhagen, which more than offset a decrease in motorist-overtaking collisions and collisions with parked cars, for a net increase in the number of collisions of 9%. However, the same study showed that installing protected bike lanes increased bicycle (and moped) ridership 18 to 20 percent.[36] Installing bike lanes resulted in a 5 to 7% increase in ridership, and a 5% increase in crashes. For both protected bike lanes and bike lanes the number of riders can be expected to increase more than the number of crashes.

The 15th Street Cycle Track has increased Ridership by more than 200%

Riders perceive protected bike lanes as safer, and it should be noted that motorist-overtaking collisions, while relatively rare, account for a disproportionate number of serious and fatal injuries.

[34] Nactional Association of City Transportation Officials. http://www.nacto.org/cycletracks.html

[35] Jensen, Søren Underlien, Claus Rosenkilde and Niels Jensen. Road safety and perceived risk of cycle facilities in Copenhagen. *Available at http://www.ecf.com/files/2/12/16/070503_Cycle_Tracks_Copenhagen.pdf*

[36] *Cycle Tracks: Lessons Learned.* February 2009. Alta Planning and Design. Page 1.

Protected Bike Lanes Attract Users of All Ages and Abilities

Following New York City, and Cambridge, MA, the District of Columbia is actively installing protected bike lane, towards an eventual planned network of 72 miles.

The first segment of protected bike lane in the District of Columbia was installed in 2009 on 15th Street NW. In terms of ridership, the 15th Street Protected bike lane, which has been in operation the longest, has been a success. After the two-way protected bike lane was installed, there was a 205 percent increase in bicycle volumes during the p.m. peak hour.[37] More recent projects include one-way couplet of protected bike lanes on L Street and M Street NW (not yet complete) in downtown, ,and the 1st Street NE protected bike lane, which connects the Metropolitan Branch Trail to Union Station, and numerous others. DDOT has set a goal of adding 20 miles protected bike lane per year.

To help prevent turning conflicts, protected bike lanes may be equipped with separate signals for bicycles.

Figure 7: Protected Lane at Union Station/TPB/Michael Farrell

Figure 33: 15th Street NW Protected Lane/TPB/Michael Farrell

[37] *Bicycle Facility Evaluation, Final Report.* April, 2012, p. 12.

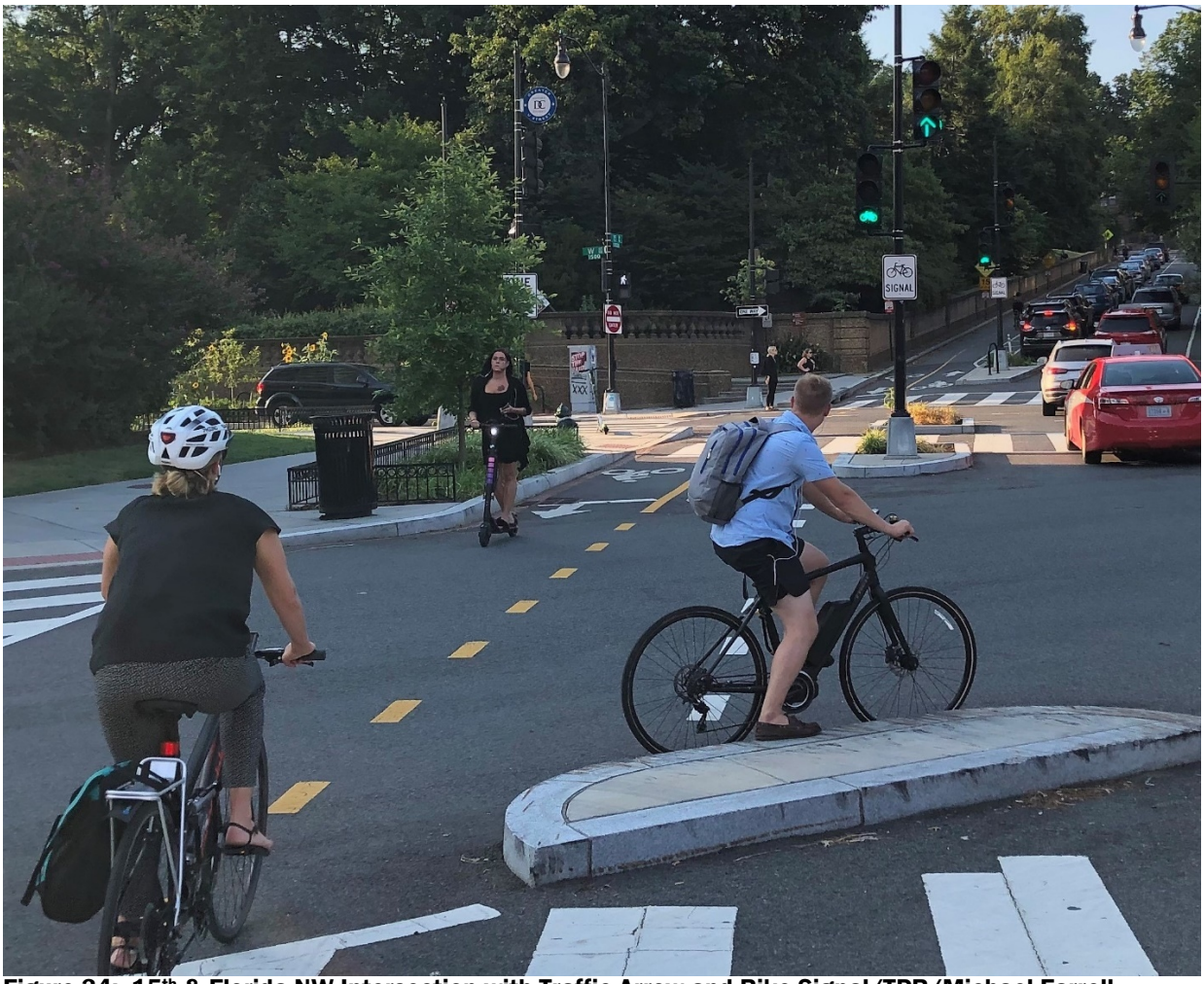


Figure 34: 15th & Florida NW Intersection with Traffic Arrow and Bike Signal/TPB/Michael Farrell

Dual Facilities

In recognition of the fact that fast-moving cyclists may be better off with an on-road facility, Montgomery County is planning many of its bicycle routes as dual facilities, with both an on-road bike lane and a side-path for pedestrians and slow bicyclists. VDOT's *Northern Virginia Bikeway and*

Regional Trail Study recommends that both on- and off-road accommodation be provided.[38] Under the routine accommodation policy, VDOT is to provide adequate facilities for pedestrians and bicyclists even if not called for in the local plan.

Figure 35: Virginia Avenue SE/TPB/Michael Farrell

Where bicycle and pedestrian volume warrant it, and right of way permits, multi-use paths may be split into parallel pedestrian and bicycle paths. This separation allows cyclists and rollerbladers to maintain speed without risk to pedestrians. The Washington & Old Dominion Trail in Northern Virginia includes several sections with gravel pedestrian paths that parallel the paved shared-use path. The Virginia Avenue SE Shared Use path includes an adjacent sidewalk for pedestrians, as does the bike path along Maine Avenue SW next to the Wharf.

Figure 36: The Wharf, DC/TPB/Michael Farrell

[38] *Northern Virginia Regional Bikeway and Trail Network Study*. November, 2003. Virginia Department of Transporation, Northern District Office. Page 19.

Protected Intersection[39]

At protected intersections, the bikeway is set back from the parallel motor vehicle traffic. Unlike at conventional bike intersections, people biking are not forced to merge into mixed traffic. Instead, they are given a dedicated path through the intersection, and have the right of way over turning motor vehicles. Protected intersections are a new treatment in the Washington region. The first fully protected intersection in the region is at Spring Street and Second Avenue in Silver Spring, MD.[40]

Figure 37: Partial Protected Intersection/TPB/Michael Farrell

Figure 38: Flexpost Bulbouts/TPB/MIchael Farrell

[39] https://nacto.org/publication/dont-give-up-at-the-intersection/protected-intersections/

[40] https://ggwash.org/view/73335/the-east-coasts-first-protected-intersection-is-coming-to-silver-spring-heres-how-it-works

"Tactical Urbanism"

Tactical urbanism is the use of inexpensive materials, like flexposts, rather than permanent curbs. With flexposts, traffic calming features such as bulbouts can be installed at low cost. Using such materials allows a treatment to prove itself without spending a lot of money on new curbs and drainage. If it fails or creates unanticipated issues, it can easily be removed or modified.

Signed Bicycle Routes

The region has hundreds of miles of signed bicycle routes. Signed routes have the advantage of being inexpensive and informative for cyclists. A signed route has not necessarily had any bicycle-related improvements apart from signing. However, bicycle-friendly features such as paved shoulders, a wide curb lane, or low traffic volumes or speeds *may* be present. Bicycle route signs often include information on distances to destinations.

Figure 39: DC Bike Route Sign

Long-Distance Bicycle Routes

Several notable long-distance routes promoted by national-level organizations pass through the Washington region. These include the East Coast Greenway, Bicycle Route 1, the Great American Rail-Trail and the American Discovery Trail.

The East Coast Greenway Alliance is promoting what will eventually be a mostly off-road path connecting all the major cities of the East Coast. Currently 20% open for public use, it will span 2,600 miles from Calais, Maine to Key West, Florida. Bicycle Route 1 is part of a national network of low-traffic road routes promoted by the Adventure Cycling Association. The Great American Rail trail is a cross-country trail trail, currently 50% complete, that starts on the Mall and follows the C&O Towpath west, ending on the Olympic Peninsula of Washington State. The American Discovery Trail is a coast-to-coast, recreational, non-motorized trail, which follows the C&O Canal Towpath and the Anacostia River Tributary Trails. All organizations promoting long-distance routes rely on local agencies and organizations to realize their vision.

Figure 41: East Coast Greenway in DC

Exclusive Bus/Bicycle Lanes

Exclusive bus lanes are sometimes used on streets with heavy bus traffic. Bicycles are sometimes permitted to use those lanes. Bus/Bike Lanes can be found in the District of Columbia. Conflicts can occur due to differences in speed between buses and bicyclists.

Bike Boxes

Figure 42: Bike Box/TPB/Michael Farrell

A bike box is a designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase.[41] They're often painted green, and are typically located between the stop bar and the crosswalk. Bike boxes are typically used at locations where bike volumes are high, and they are sometimes combined with an advanced phase for bicyclists, which allows the crowd of bicyclists to clear the intersection and make turns without conflicting with automobile traffic.

Bridges

The Woodrow Wilson Bridge trail, completed in 2009, allows cyclists to cross the Potomac River on the capital beltway at Alexandria. This multi-use path allows riders on the Mt. Vernon Trail to access the National Harborplace development in Prince George's County without going on street. Connections are also provided to an on-street network of bicycle routes in Prince George's County.

The 14th Street Bridge, the Memorial Bridge, the Theodore Roosevelt Bridge, the Key Bridge, and the Chain Bridge all have bicycle and pedestrian facilities. In the north, cyclists and pedestrians may use the ferry at White's Ferry, which connects Montgomery County and Loudoun County. Cyclists may

[41] https://nacto.org/publication/urban-bikeway-design-guide/intersection-treatments/bike-boxes/

Figure 43: Woodrow Wilson Bridge Trail/TPB/Michael Farrell

use the US 15 bridge at Point of Rocks and the MD 17 bridge at Brunswick to get across Frederick County and Loudoun County, though they have no separated facilities.

With the completion of the local traffic 11th Street Bridge in 2013, bicyclists and pedestrian now have a first rate multi-use path connection from Anacostia to the Navy Yard area of Southeast DC.

The District of Columbia is in the process of upgrading the remaining Anacostia River separated bicycle and pedestrian river crossings as these aging bridges are replaced and rebuilt.

Figure 44: 11th Street Bridge/TPB/Michael Farrell

On-Line Bicycle and Pedestrian Routing

The last few years have seen a flowering of on-line resources that enable cyclists and pedestrians to

locate facilities and plan their routes. Google Maps offers the most familiar interface.

BICYCLES AND PUBLIC TRANSIT

The region has made progress integrating bicycling and public transit, with secure bike parking available at most rail stations, bicycles permitted on Metrorail at all times (subject to crowding), and most of the buses in the region now equipped with bicycle racks. Specific agency policies and facilities are described below.

Metrorail Guidelines

- Bicycles are welcome on Metrorail during all hours; however,
- **Bikes are not allowed on crowded railcars.**
- May not block aisles or doors of the train.
- Senior citizens and people with disabilities always have priority.
- When boarding the train, use the doors at either end of the railcar - not the center doors.
- Bicycles may not be carried on escalators. Use elevators only.
- Do not ride bicycles in stations, on platforms or on trains.
- Metro reserves the right to disallow bicycles when there is crowding.
- For full Bike on Rail guidelines see: https://www.wmata.com/service/bikes/

Metrorail Bike Parking

Metro now has three secure Bike & Ride facilities at historically high bike-to-rail stations: College Park, which opened in 2012, East Falls Church, completed earlier this year, and Vienna. Together, Metro's Bike & Rides now offer secure parking for about 270 bikes, with space for expansion to meet future demand.

Metro currently owns and operates about 2,400 bicycle racks, and is replacing older racks with new inverted-U racks. Metro also offers 2400 bike lockers.

Figure 45: New Bike Racks/WMATA

Metrobus

- All Metrobuses have racks on the front that carry up to two bicycles. No permit is required. Instructions for how to use bus bike racks is available at http://www.wmata.com/getting_around/bike_ride/bikes_bus.cfm

- Metro has adopted guidelines for the design and placement of bus stops to improve their safety, comfort, accessibility, and efficiency.

Park and Ride

Of the 175 park and ride lots in the Washington DC-MD-VA Metropolitan Statistical Area, about 50 have bike lockers or racks. Commuter Connections lists information on Park and Ride lots.

Commuter Rail

Collapsible bicycles are permitted on all VRE trains. Full size bicycles will only be allowed on the last three northbound, the mid-day, and the last three southbound trains on each line.

MARC trains have bike racks on all trains. The racks will accommodate a full size bicycle. No bag or case is required.

PEDESTRIAN ACCESS TO TRANSIT

82% of Metrobus passengers walk to transit, and 62% of all Metrorail trips start with the passenger walking to the rail station. However, the a.m. peak walk mode of access, which is the best measure of how people originally get into the system, is 37%.

The quality of pedestrian access to Metrorail and Metrobus is uneven. Many suburban rail stations were built with an emphasis on automobile and bus access. Bus stops are often placed in areas with no sidewalks or available crosswalks. Inventorying conditions and making recommendations for specific locations is beyond the scope of this plan, but there have been a number of efforts to do so, such as MTA's Access 2000 Study, COG/TPB's Walkable Communities Workshops, and efforts in Fairfax County and Montgomery County to improve bus stop safety.

WMATA has developed a set of *Guidelines for Station Site and Access Planning*, and WMATA has plans to upgrade pedestrian access at Metrorail stations and carry out station-area development. WMATA also finished an inventory of conditions at all its bus stops in 2008. The inventory included information on the presence of bus shelters, sidewalks, and location at a controlled intersection.[42] Suburban bus stops often lack a nearby controlled intersection for safe street crossing, and may also be missing sidewalks. A study on bicycle and pedestrian access to Metrorail provides details on pedestrian access.

BIKE PARKING

The District of Columbia, Arlington, Alexandria, and other jurisdictions provide bike racks on public property for short-term bicycle parking. They also require secure long-term bicycle parking to be provided as part of new development.

Figure 46: Ad hoc bike parking

[42] *WMATA Bus Stop Inventory Project.* Kristin Haldeman, Presentation to TPB Access for All Subcommittee, November 2008.

Bike Corrals

As demand grows in congested areas, DC has added bike corrals, which are bike racks placed in the street, and protected by flexi-wands tire stops. Twelve bicycles can be parked in the space required to park one automobile. And because bicycles do not block motorists' sight lines, they can be placed near the intersection where parking is not permitted, result in no loss of car parking. New bike corrals include space for e-scooters.

Tire stops are necessary to prevent cars from backing into the racks at some locations.

Figure 47: Bike Corral

DC Bike Center

In response to demand for secure bicycle parking at Union Station, in 2009 the District of Columbia opened a Bike Station. The facility houses over 100 bicycles in 1,600 sq. ft. of free-standing ultra-modern glass and steel design. DDOT manages the Bike Center at Union Station, which has offered secure bike parking at Union Station since 2010.
The Bike Center is currently closed for repairs. Reopening is anticipated during the Fall of 2021.

Figure 49: DC Bike Center/TPB/Michael Farrell

Figure 48: DC Bike Center/TPB/Michael Farrell

The DC Bike Center is a unique structure designed for a particular site. It required an unusual degree of architectural review due to its location on the National Mall. Far less expensive, modular self-service bike parking structures are available.

CAPITAL BIKESHARE

Capital Bikeshare has over 4500 bicycles and 500 stations

Bike sharing is self-service public bicycle rental. It is similar to a car-sharing system, such as ZipCar, where members pay a fee and have access to any available bike throughout the regional system. Unlike earlier "public bicycle" or "yellow bike" programs, which failed due to lack of means of preventing theft, modern bicycle sharing links rentals to a user's credit card, which can be charged if the bicycle is not returned. Bike sharing became common and popular first in Europe and then the United States, with programs in dozens of cities. Options for low-income access are also available.

Since it opened in 2010, the regional bike sharing program, Capital Bikeshare has grown to include 4500 bicycles at over 500+ stations in 7 jurisdictions: Washington, DC.; Arlington, VA; Alexandria, VA; Montgomery, MD; Prince George's County, MD; Fairfax County, VA; and the City of Falls Church, VA.

Capital Bikeshare is one of the largest and most successful bike share systems in the United States. Its' solar-powered semi-mobile bike stations require no utility hook-up, which expedites installation. It operates year-round, with winter ridership a little more than one third the level of the warm weather months. It attracts many tourists as well as residents.

Capital Bikeshare now offers e-bikes at some stations. In 2019 e-bikes accounted for 10% of the fleet but 20% of the trips, which with the higher fees has made them a revenue driver.

Figure 50: Capital Bikeshare Station/TPB

MICROMOBILITY

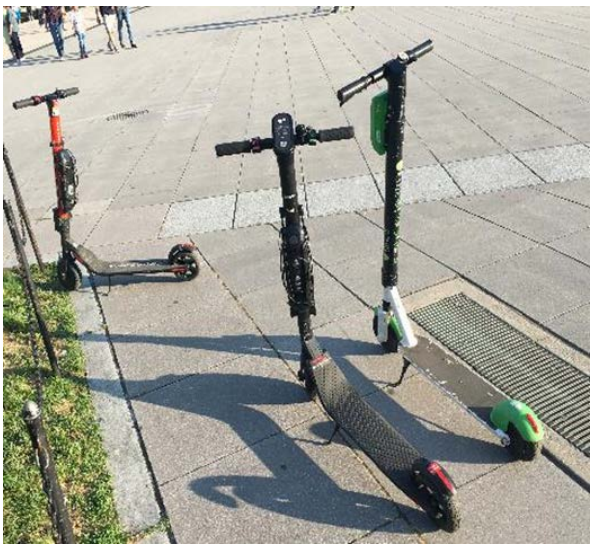


Figure 51: Shared E-scooters/TPB/Michael Farrell

"Shared micro-mobility" includes both station-based bikeshare such as Capital Bikeshare, and the various dockless e-scooter and e-bike rental services. There are major differences in the organization and operations of these systems.

Capital Bikeshare is a regional, publicly provided program, and its user base consists mostly of its long-term membership, along with some short-term passes, using a fob key or app QR code to unlock the bikes. Bikes must be returned to a station.

Dockless bikeshare is privately provided, and the bikes or e-scooters accessed with a Smart phone app. Trips are charged per minute. In the initial launch period the issue of where to park the bike

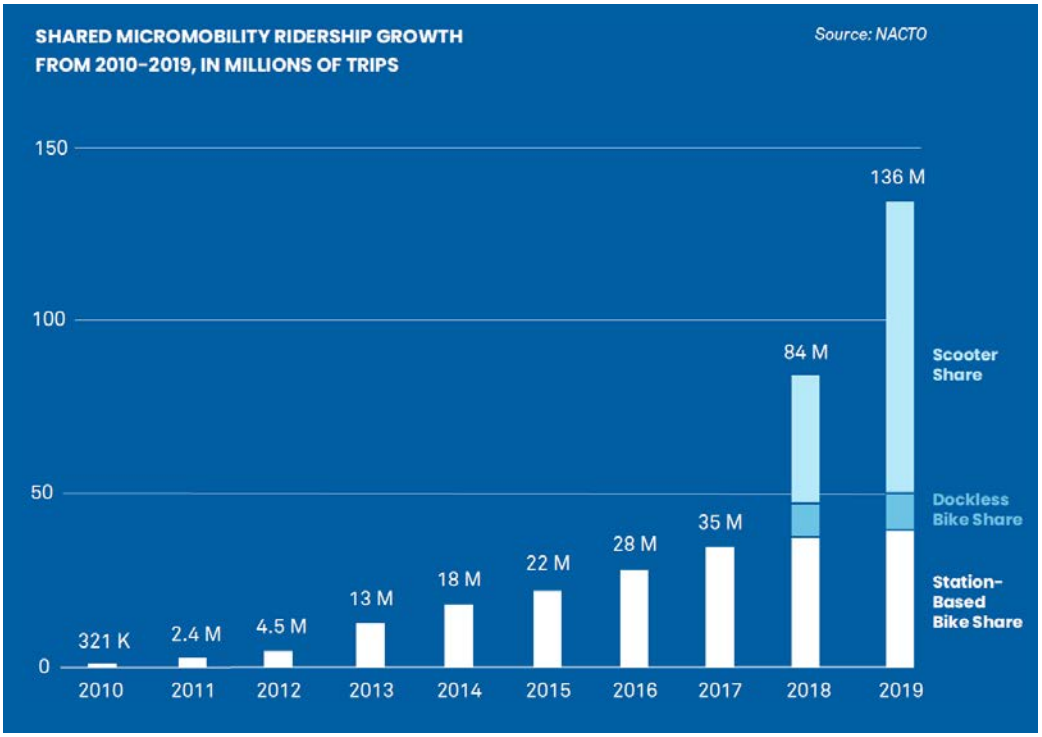


Figure 52: Shared Micromobility Ridership Growth

was left mostly unresolved, with non-binding recommendations to users not to block the sidewalk.

Each jurisdiction developed its own regulations for these services, although there was regular consultation between the jurisdictions, including workshops held every six months, while these regulations were being developed.

The initial roll-out in the Washington region happened in 2017-2018, with various companies putting dockless pedal bikes out on the street with little consultation.

THE E-SCOOTER BOOM[43]

In 2019, people took 40 million trips on station-based bike share systems (pedal & e-bikes). In 2019 the brand-new dockless systems dwarfed those numbers. There were 96 million trips on dockless e-bikes (10M trips) and scooters (86M trips). In 2019, 109 cities had dockless scooter programs, a 45 increase from 2018. E-scooter trips doubled compared to 2018.

Station-based bikeshare trip numbers increased by 10%, even as the number of systems fell by 4%.

THE WASHINGTON REGION

The DC area is a good market for shared micro-mobility. It has a young population, low car ownership. high smartphone use, high income and education, and congested traffic. Use is focused on the core of the Washington region, especially DC proper, along with Arlington, Alexandria, and portions of Montgomery County, which have active permit programs. The regional permitted fleet size is over 13,000, of which DC accounts for roughly half.

TRAINING

While Capital Bikeshare users typically know how to ride a bike, e-Scooter users often had never ridden an e-scooter. User training is mostly app-based, followed by trial and error. A third of incidents happen on the first use. Some agencies/operators sponsored training events, which are no longer possible. "Push" safety reminders from the app remind users of issues they may be facing based on time and location (i.e. don't drink and ride if they're out late).

REGULATION

E-scooters are privately provided at no cost to the agency However, agencies cannot avoid administrative costs from a scooter invasion. It must respond to calls from the public regarding

[43] *"Shared Micromobility in the US: 2019"* NACTO. Page 4.

badly parked scooters, sidewalk riding, crashes, etc. E-scooters generate demand for more infrastructure, such as bike lanes and e-scooter parking areas.

A permit program can help alleviate some of these issues. Fees on operators can generate revenue to pay for the agency's expenses, while requirements on operators to share anonymized trip data can assist with planning.

Built-in speed governors can enforce speed, while geo-fencing can enforce slow zones and no-service zones. Other common restrictions on users include age restrictions, driver's license requirements, and late night use restrictions (though this last is controversial, due to late night need for transport when transit service may be spotty).

Inconsistent regulations governing where and how e-scooters e-bikes can be used complicates enforcement and compliance. For example, a parks department might ban e-scooters on its trails, while the DOT in the same jurisdiction allows them.

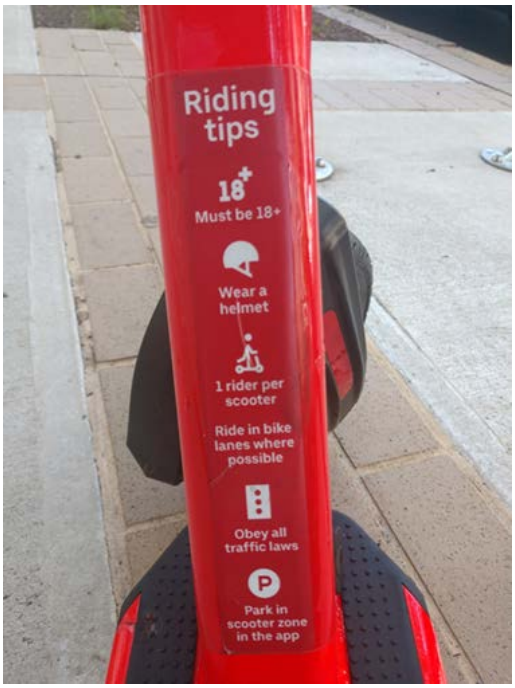


Figure 53: Safety Tips/Arlington

Maximum operating speed can be limited by the provider, while sidewalk riding and parking are harder to regulate. Agencies are providing parking corrals for e-scooter and bikes.

Arlington polled e-scooter riders and found that they strongly preferred riding in protected bike lanes and regular bike lanes over riding on the sidewalk. Only 9% of polled riders indicated that the sidewalk was their first choice.

Agencies have tracked crash rates and determined that safety was not a big enough problem to justify stopping the permit programs.

EQUITY

E-scooters are typically used in the densest neighborhoods, which have the highest volume of the short trips which micro-mobility can serve. In the Washington region that often means affluent areas with good Metro access and a well-developed network of bike lanes.

In Baltimore the user base was significantly less white and less affluent than in Arlington. Baltimore required that high-poverty close-in neighborhoods get minimum deployments of e-scooters. Hispanic residents of Baltimore were the most likely to use the e-scooters.

PROSPECTS

Shared micro-mobility serves the TPB's regional planning goals. It provides a valued option for short trips. On average, the typical scooter user or bike share annual/monthly pass-holder rides for 11-12

minutes and 1-1.5 miles per trip.[44] Growth in dockless mobility has come mostly at the expense of ride-hailing, driving, and walking.

Dockless shared mobility is likely to continue for the immediate future. Safety, sidewalk riding, parking issues can be mitigated.

However, there are long-term threats to the industry. Companies are not profitable, and they are dependent on venture capital. Theft and vandalism have led to a low vehicle lifespan. Permit fees and other regulatory demands are increasing, and operators may need to raise their rates, which could reduce the appeal of shared systems.

OUTLOOK

Facilities for bicycling and walking in the Washington region are likely to improve significantly in the future. Federal, regional, state and local policies and transit agency initiatives all call for better and more complete facilities. Bicycle lanes, protected bike lanes, and dual facilities for pedestrians and bicyclists will become more common, and bike sharing will continue to expand in the urban core and beyond.

[44] Ibid, page 8.

CHAPTER 5: GOALS AND INDICATORS

Introduction

This chapter highlights bicycling and walking related goals and policies from the TPB's various planning efforts. The goals reflect relevant bicycling and walking objectives and policy statements from previously adopted TPB documents, such as the Transportation Planning Board *Vision* (1998), the *Region Forward* (2010) vision plan of the Council of Governments, and *Visualize 2045*.

In addition to incorporating goals from previous plans, this plan summarizes targets and indicators identified through earlier planning efforts. Similar to documenting regional goals, the inclusion of targets and metrics is intended to provide agencies with additional guidance for evaluating the performance of local bicycling and walking programs.

Goals

REGIONAL VISION

The National Capital Region's vision for bicycle and walking is articulated in several planning documents, summarized in Chapter 1. This section summarizes their relevant goals and policies.

Transportation Planning Board Vision (1998)

The *TPB Vision* is based on eight policy goals, and it includes supporting objectives and strategies for each goal. Several of the goals and objectives address regional bicycling and walking planning needs.

> Goal 1: The Washington metropolitan region's transportation system will provide reasonable access at reasonable cost to everyone in the region.
>
> > Objective 4: Convenient **bicycle and pedestrian** access.
> >
> > Strategy 3: Make the region's transportation facilities safer, more accessible, and less intimidating for **pedestrians, bicyclists**, and persons with special needs.
>
> Goal 2: The Washington metropolitan region will develop, implement, and maintain an interconnected transportation system that enhances quality of life and promotes a strong and growing economy throughout the entire region, including a healthy regional core and dynamic regional activity centers with a mix of jobs, housing and services **in a walkable environment**.

Objective 2: Economically strong regional activity centers with a mix of jobs, housing, services, and recreation **in a walkable environment**.

Objective 4: Improved internal mobility with **reduced reliance on the automobile** within the regional core and within regional activity centers.

Goal 5: The Washington metropolitan region will plan and develop a transportation system that enhances and protects the region's natural environmental quality, cultural and historic resources, and communities.

Objective 3: Increased transit, ridesharing, **bicycling and walking** mode shares.

Strategy 7: Implement a regional **bicycle/trail/pedestrian plan** and include **bicycle and pedestrian facilities** in new transportation projects and improvements.

Region Forward (2010)

Compared to the TPB Vision, *Region Forward* provides a more comprehensive vision for the National Capital Region. Beyond outlining regional goals, *Region Forward* provides targets and indicators to help measure whether those goals are being met. Many of those goals relate to walking and bicycling:

- Transit-oriented, compact, walkable mixed-use communities emerging in Regional Activity Centers that will capture new employment and household growth.
- A transportation system than maximizes community connectivity and walkability, and minimizes ecological harm to the region and the world beyond.
- A broad range of public and private transportation choices for our Region which maximizes accessibility and affordability to everyone and minimizes reliance upon single occupancy use of the automobile.

Seven Aspirational Initiatives and Visualize 2045 (2017-2018)

In 2017, the TPB identified seven aspirational initiatives with the potential to elevate the performance of the region's transportation system. The TPB also incorporated the aspirational initiatives into its 2018 long-range transportation plan, *Visualize 2045*. Of the seven initiatives, two address bicycling and walking:

- Improve walk and bike access to transit
- Complete the National Capital Trail

SUPPORTING INITIATIVES AND POLICIES

Since the adoption of the *TPB Vision*, *Region Forward*, and *Visualize 2045*, the TPB has pursued initiatives that advance the bicycling and walking goals outlined in the documents. Each initiative is accompanied by policies that urge member jurisdictions to prioritize actions that advance the intent of each program.

National Capital Trail

On January 21, 2015 the TPB recognized that a circumferential bicycle route or routes around the Washington region would be an explicit goal consistent with the Region Forward and the TPB's Vision document. The Board unanimously supported adding the following explicitly as a goal of the Bicycle and Pedestrian Plan for the National Capital Region.

> *The TPB member jurisdictions and agencies shall work collaboratively to identify a circumferential bicycle route or routes around the Washington region, define the proposed character of the facilities comprising such a route or routes, and identify the steps required to complete such a route or routes.*

National Capital Trail Network

In December 2018, the TPB requested that the National Capital Trail be expanded into a regional trail network that spans all member jurisdiction. As a result of this directive, the Capital Trail Coalition, local jurisdictions, and TPB staff subsequently cooperated to identify a system of long-distance, off-road facilities based on the National Capital Trail. Known as the National Capital Trail Network, the 1,400-mile trail system is anticipated to support recreation and active transportation. In July 2020, the TPB adopted the trail network. It also approved a policy to implement the program across the region:

> *… Prioritize projects, programs, and policies that will implement portions of the National Capital Trail Network. All projects, programs, and policies must be implemented in an environmentally sensitive and sustainable manner, consistent with the TPB Vision*

Transit Within Reach

The Transit Within Reach program funds design and preliminary engineering projects that improve bicycling and pedestrian connections to existing or planned high-capacity transit stations. The program prioritizes capital improvements within Transit Access Focus Areas (TAFAs), locations identified by the TPB where bicycling and pedestrian connections would have the greatest potential to increase transit ridership. In July 2020, the TPB approved 49 TAFAs and also asked member jurisdictions to:

> *…Prioritize projects, programs, and policies that will implement improvements in the Transit Access Focus Areas. All projects, programs, and policies must be implemented in an environmentally sensitive and sustainable manner, consistent with the TPB Vision.*

Transportation Alternatives Set-Aside (TA Set-Aside) Program

The Transportation Alternatives Set-Aside Program provides federal funding for small-scale projects that are considered "alternatives" to traditional highway construction. Past program recipients include pedestrian and bicycle facility improvements, safe routes to school projects, environmental mitigation efforts, community improvements, and trails. The TPB selects grant awardees in consultation with local Departments of Transportations. While the program does not have specific goals, the TPB selects recipients based on how well the projects implement the policies in the Regional Transportation Priorities Plan and Visualize 2045.

Regional Safety Program

The Regional Safety Program provides member jurisdictions with technical assistance to implement planning or preliminary engineering projects that address local roadway safety concerns. The TPB established and funded the Regional Safety Program in July 2020, and it also approved several safety-related policies for member jurisdictions:

> *…To reaffirm road user safety as a top priority and prioritize the implementation of projects, programs, and policies, in an equitable and non-racist manner, consistent with the TPB's Equity Policy statement, that strive to reduce the number of fatal and serious injury crashes on the Region's roadways by taking the actions, working individually and/or collectively, described … below:*
>
> - *Increase seat belt use among all occupants in a motor vehicle;*
> - *Reduce unsafe vehicle speeds on all roadways in the region;*
> - *Reduce impaired and distracted driving.*
>
> *Identify and implement applicable countermeasures, especially those outlined in [Resolution R3-2021], as appropriate and on a case by case basis, in an equitable and non-racist manner, consistent with the TPB's Policy Statement on Equity.*
>
> *…To adopt safety goals consistent with Vision Zero or Towards Zero Death policies and develop local roadway safety plans and ensure their equitable impacts on all road users*
>
> *…To adopt procedures that increase the use of ignition interlock devices for impaired driving offenders.*

Targets and Indicators

The TPB has set specific targets for bicycling and walking related goals and suggested indicators, or performance metrics, to measure the region's progress. A discussion of the targets follow.

REGION FORWARD

Region Forward recommends that local agencies track appropriate indicators to measure progress towards regional transportation goals. Table 5-1 below shows some of the targets and primary indicators from *Region Forward* that relate to walking and bicycling. The table also features other corresponding indicators which the bicycle and pedestrian subcommittee believes will provide a more complete and timely picture of the region's progress. A (?) designates an indicator for which a practical data source has not yet been identified.

Region Forward 2050 Targets & Indicators **Suggested Supporting Indicators**

Region Forward Targets	Primary Indicators	Data Source/Freq.	Baseline	Suggested Supporting Indicators	Data Sources/Freq.	Baseline
Increase the share of walk, bike, and transit trips.	Mode split – Percent of Walk, Bike and Transit Trips	2007/2008 household travel survey/10 years	Bike: 0.5% Walk: 8.5% Transit: 6.1% Auto: 81.6%	1. Walk and bike commute mode share 2. Pedestrian and bicyclist counts 3. Pedestrian Access to Transit Mode Share *AM peak access 4. Bike Access to Transit mode share *AM peak access 5. Bike share trips Number of bike share trips per day & per bike share bike. 6. % Female cyclists 7. Walk and bike mode share for school children Adopt complete streets policies - Jurisdictions with complete streets policies	• US Census – American Community Survey (ACS) five year rolling average/ Annual • DC, Arlington counts/annual • WMATA rail passenger survey/5 years • Regional Bike Share trip numbers/annual • COG Household Travel Survey/10 years	• ACS available in 2010 • DC Average 2009 Peak hour count = 69 • female bicyclists = 19% • 0.55% bicycle mode of access to Metro in 2007 • 62.12% walk mode of access to Metro in 2007 • 33.3% am peak walk mode, 0.7% bike mode
Reduce VMT per capita	VMT per capita	2008 CLRP/Annual	Vehicle Miles Traveled per capita = 22.94	Share of VMT reduction attributable to increase in walking and bicycling	Estimate from mode shift to walking and bicycling/Annual	ACS 2010
Increase the rate of	Number of bicycle	Number of bicycle and pedestrian	CLRP/Annual	Pedestrian and Bicycle	• Bicycle and Pedestrian Regional	9 miles bike lane/year

construction of bicycle and pedestrian facilities from the TPB plan.	**and pedestrian projects from the CLRP**	**projects in the CLRP**		**Infrastructure Construction** **1. Centerline mileage of bike lane built** **2. Mileage of Side Path Built** **3. Mileage of Multiuse path built** **4. Bicycle and pedestrian bridges and underpasses built** **5. Public bicycle parking** • **Staffed bike stations** **7. Number of Streetscaping projects completed/ Number of pedestrian intersection improvement projects completed** **Access to Transit** **8. Bike share stations and bike share bikes at rail stations and transit hubs** **9. Bike share stations and bike share bikes within 3 miles of a transit hub** 10. Bike parking - Rack spaces, lockers **bike cage, bike parking structure spaces**	**Project Database/ Annual** • **WMATA rail passenger survey/5 years** • **WMATA web site – Bike 'N Ride** • **WMATA Bus Stop Inventory/?** • **Capital Bikeshare**	**13 miles shared use path/year** **5 bridges/tunnels** **1 staffed bike station** **9 streetscaping projects** **16 pedestrian intersection projects** **77 Metro Stations have racks and/or lockers.** **1,280 single bike lockers and about 1,600 bike racks - with capacity for about 3,150 bikes** **Zero bike cage spaces, bike parking structure spaces** **10 bike sharing stations** **100 bike sharing bikes**

				11. Parking usage rates (?) **Bike Sharing** **1. Number of bike sharing stations** **2. Number of bike sharing bicycles**		
Targets	**Primary Indicators**	**Data Source/Freq.**	**Baseline**	**Suggested Supporting Indicators**	**Data Sources/Freq.**	**Baseline**
Reduce pedestrian and bicyclist fatalities and injuries	**Pedestrian and Bicyclist Injuries and Fatalities**	**Virginia DMV, DDOT, and Maryland Office of Highway Safety/Annual**	**2004-2008: 84 pedestrian deaths 7 bicyclist deaths 2007: 1962 pedestrian injuries 653 bicyclist injuries**	**Education** **• Number of schools offering training in safe walking and bicycling** **• Recognition of key safety messages by the general public** **• Number of Bike to Work day participants** **Enforcement:** **Number of pedestrian-related and bicycle-related citations and warnings issued as part of the Street Smart campaign.** **1. Speeding** **2. Speeding, school zone** **3. Reckless driving** **4. Passing stopped school bus** **5. Failure to yield to pedestrian or bicyclist** **6. Cross against the signal (pedestrian)** **7. Walk into the path of motor vehicle outside**	**1. Safe Routes to School Program/Annual** **2. Street Smart Annual Report** **3. Bike to Work Day Annual Report** **4. Street Smart Enforcement Reports/annual**	**• 3500 children trained in DC in 2008, 2700 in Rockville. Virginia SRTS does not tally such numbers.** **• 8500 Bike to Work Day participants in 2010** **• 30,221 ped-related citations** **• 7,804 warnings**

				marked or unmarked crosswalk. 8. Ignore traffic signal (bicyclist) 9. Wrong way riding 10. Ride on sidewalk where prohibited		
Targets	**Primary Indicators**	**Data Source/Freq.**	**Baseline**	**Suggested Indicators**	**Data Sources/Freq.**	**Baseline**

Figure 54: Region Forward Targets and Indicators

REGIONAL HIGHWAY SAFETY TARGETS

In 2016, the Federal Highway Administration (FHWA) issued a rulemaking for State Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) to establish annual highway safety targets. Under the provision, State DOTs and MPOs are required to set data-driven targets for five performance measures: number of fatalities, rate of fatalities per hundred million vehicle miles traveled (VMT), number of serious injuries, rate of serious injuries per VMT, and number of combined non-motorized fatalities and non-motorized serious injuries.

In December 2019, the TPB adopted the following highway safety targets for the National Capital Region based on 2016-2020 data.

- Number of Fatalities: 253.0
- Fatality Rate (per 100 motor vehicle miles traveled): 0.588
- Number of Serious Injuries: 2,692.1
- Serious Injury Rate (per 100 motor vehicle miles traveled): 6.157
- Number of Non-motorist Fatalities and Serious Injuries: 508.6

It should be noted that these targets are NOT aspirational. They are projections of current trends.

CHAPTER 6: RECOMMENDED PRACTICES

The TPB Vision, Region Forward, and Regional Transportation Priorities plans call for a transportation system that allows convenient and safe bicycle and pedestrian access, with dynamic regional activity centers and an urban core that contain a mix of jobs, housing and services in a walkable environment. In order to achieve these goals, the Bicycle and Pedestrian Subcommittee has developed the following set of recommended best practices.

A. Incorporate bicycle and pedestrian elements in all jurisdictional planning and design policies. Adopt "Complete Streets" policies.

Include bicycling and walking, including provisions for persons with disabilities, in all stages of the transportation and land use planning process, from initial concept through implementation.

In particular, consistent with federal policy and the National Capital Region Transportation Planning Board's Complete Streets policy, every jurisdiction and agency should **adopt a Complete Streets policy** that includes elements that the TPB believes reflect current best practices.

Figure 55: Missing Sidewalk/TPB/Michael Farrell

Under Complete Streets policies pedestrians and bicyclists will be accommodated as part of all transportation projects, with a **few limited and well-defined exceptions**. A Complete Streets policy would typically not apply:

- To a new transportation facility construction or modification project for which, as of the effective date of the adoption of the policy, at least 30 percent of the design phase is completed.
- To a transportation facility which prohibits, by law, use of the facility by specified users, in which case a greater effort should be made to accommodate those specified users elsewhere in the travel corridor.

"A complete street safely and adequately accommodates motorized and non-motorized users, including pedestrians, bicyclists, motorists, freight vehicles, emergency vehicles, and transit riders of all ages and abilities, in a manner appropriate to the function and context of the facility."

- When the cost to the exempted project in achieving compliance with the applicable complete streets policy would be excessively disproportionate (as per FHWA guidance), as compared to the need or probable use of a particular complete street.

- When the existing and planned population and employment densities or level of transit service around a particular roadway are so low that there is a documented absence of a need (as per FHWA guidance) to implement the applicable complete streets policy.

- To passenger and freight rail projects, which shall not be required to accommodate other motorized users in the railway right of way, although safe and adequate rail crossings for motorized and non-motorized users should be provided.

- To transportation projects which do not provide for direct use by the public, such as maintenance facilities, drainage and stormwater management facilities, education and training, transportation security projects, beautification, and equipment purchase or rehabilitation.

"VDOT will initiate all highway construction projects with the presumption that the projects shall accommodate bicycling and walking"

Agencies should carry out periodic **audits to monitor compliance** with a Complete Streets policy once it is adopted.

An effective complete streets policy is critical, since retrofitting pedestrian and bicycle accommodations is far more expensive than designing them in from the beginning. Policies which urge agencies to "consider" or "encourage" the provision of pedestrian and bicycle facilities often do not provide clear guidance as to when pedestrian or bicycle facilities should or should not be provided. Absent a clear mandate, pedestrian and bicycle facilities tend to be omitted.

It's cheaper to do it right the first time.

In addition, agencies should:

1. **Take into account likely future demand** for bicycling and walking facilities in planning transportation projects; do not adopt designs that would preclude future improvements.

2. **Encourage public participation** by bicyclists, pedestrians the disabled, and other community groups in the planning process.

3. Ensure **adequate funding** for bicycle and pedestrian transportation staff and facilities, including land acquisition, design, construction, and proper maintenance.

4. **Integrate bicycling and walking** into new development, including new **schools**.

5. Require **land developers** to **finance and construct sidewalks**, shared-use paths, and bicycle parking facilities within their developments.

6. Require land developers to design developments in a way that facilitates internal and external bicycle and pedestrian access. New development should feature a **dense network of interconnected streets** to minimize trip distance and offer many low-speed, low-traffic routes. Superblock and cul-de-sac development patterns should be discouraged, and transit-oriented development should be encouraged. Use the Virginia Department of Transportation's Secondary Street Acceptance Requirements as a model.[45]

Students who walk to school behave and perform better

7. Locate new schools in walkable communities. Use the EPA school siting guidelines.[46] For existing schools, improve pedestrian and bicycle facilities whenever a school is renovated or the streets surrounding a school are repaved or reconstructed.

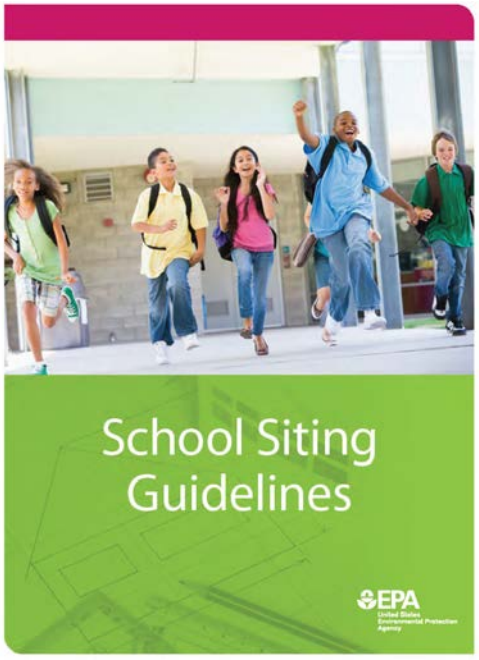


Figure 56: EPA School Siting Design Guide

8. Design, construct, operate, and maintain sidewalks, shared-use paths, street crossings (including over- and undercrossings), pedestrian signals, signs, street furniture, transit stops and facilities, and all connecting pathways so that all pedestrians, including **people with disabilities, can travel safely and independently**, in all seasons. Maintenance of pedestrian and bicycle facilities should include snow and ice removal.

B. Improve inter-jurisdictional coordination to develop a continuous bicycle and pedestrian transportation system throughout the Washington metropolitan area. To that end, agencies should:

1. Identify networks of existing bicycle routes (both on-street and off-street) in the urban core, suburbs, developing fringe, as well as connecting long distance inter-city routes. Ensure that these routes are included in land use and transportation plans, and not eliminated as development occurs.

[45] http://www.virginiadot.org/info/secondary_street_acceptance_requirements.asp

[46] http://www.epa.gov/schools/guidelinestools/siting/

2. Identify shared-use path corridors before they are developed, and preserve opportunities for development as shared-use paths.

3. Identify existing physical barriers to bicycling (such as rivers and streams, bridges, railroad tracks, highway crossings, and limited access highways with no crossing route) and identify solutions to overcome them.

4. Implement uniform wayfinding and/or designation for inter-jurisdictional routes that will provide easily understood instructions and information.

5. Convene and participate in a regional **working group** consisting of state and regional representatives to identify regional and long distance travel corridors for bicyclists, develop common guide signage guidelines, and develop of recommended bikeway alignments within travel corridors.

6. Identify **low-stress streets** for bicyclists and pedestrians in the street network, and identify ways to connect them to each other.[47]

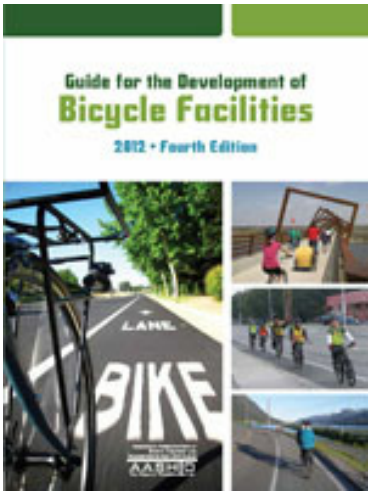


Figure 57: AASHTO Guide forthe Development of Bicycle Facilities

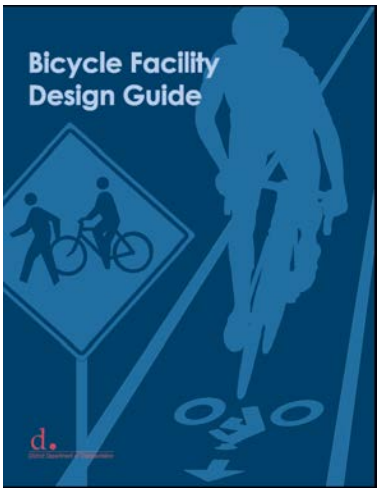


Figure 58: DC Bicycle Facility Design Guide

B. Develop and adhere to consistent bicycle and pedestrian facility design and construction standards in each jurisdiction:

1. Assure adequate planning, construction and maintenance standards for comfortable and safe bicycling on both on-street routes and off-street paths, as well comfortable and safe walking on paths and sidewalks.

- Adopt, as minimum standards for privately and publicly built facilities, the AASHTO *Guide for the Development of Bicycle Facilities*, AASHTO's *A Policy on Geometric Design of Highways and Streets,* and the AASHTO *Guide for the Planning, Design and Operation of Pedestrian Facilities,* the *ADA Accessibility Guidelines* from the U.S. Architectural and Transportation Barriers Compliance Board (Access Board), and the *Manual on Uniform Traffic Control Devices (MUTCD)* from the Federal Highway Administration.

- Establish and maintain **minimum design and maintenance standar**ds for each type of facility.

- In accordance with federal guidance, **go beyond the minimum requirements where necessary** to provide safe and comfortable accommodation for bicyclists and pedestrians. Agencies

[47] https://montgomeryplanning.org/awards/stress-map-award/

such as the District of Columbia Department of Transportation have developed their own design manuals to meet their specific needs, and which may incorporate experimental measures which are not found in the current AASHTO bicycle facility design guide. The National Association of City Transportation Officials (NACTO), an alliance of city transportation departments, including the District Department of Transportation, has developed guides for bikeways and for urban areas. The NACTO guides provide designs and treatments not currently found in the AASHTO guides.

- For dense urban centers with low-traffic speeds and relatively high levels of bicycling and walking, use the NACTO *Urban Street Design Guide* and *Urban Bikeway Design Guide* where appropriate. FHWA has endorsed the "appropriate" use of the *Urban Bikeway Design Guide* to help agencies fulfill the above-mentioned 2010 federal guidance. FHWA notes that most of the treatments in the NACTO guide are allowed or not precluded by the MUTCD. Non-compliant traffic control devices can still be used as pilot projects, under the MUTCD experimentation process. As a supplement to the Bikeway Design Guide, NACTO's *Designing for All Ages & Abilities* guide provides guidance for selecting bikeways in various urban street settings.

Figure 59: NACTO Urban Street Design Guide

- **Provide bicycle and pedestrian facility design and construction standards for various contexts.** Communities in low-density suburban and rural environments face different barriers to safe walking and bicycling than those in urban cores and require different design solutions to support safe bicycling and walking.

    - Incorporate guidance from FHWA's *Bikeway Selection Guide*, which provides a framework for selecting safe bikeways in various roadway contexts, including those found in suburban and rural environments. The guide suggests the safest bicycle facilities based on a roadway's traffic volume and speed. In general, the higher the roadway traffic volume and vehicular speed, the greater the separation of the facility from the roadway.
    - The US Department of Housing and Urban Development (HUD)'s *Creating Walkable and Bikeable Communities* features street and bicycle facility design guidelines for rural, suburban, and urban settings. The guide provides near-term actions as well as long-term recommendations, such as retrofitting community layouts.

2. Improve Access for Persons with Disabilities[48]

[48] "Lessons Learned" fact sheet for Disability Awareness Day. National Capital Region Transportation Planning Board Access for All Committee, October 20, 2004.

The Transportation Planning Board's Access for All Advisory Committee has identified the following recommended best practices for improving access for persons with disabilities to pedestrian facilities. More detailed recommendations can be found in the *Accessibility Guidelines* as noted above. With the exception of hand-rails on steep sidewalks, all of the following practices are legally required under the ADA for all new facilities and all reconstructed facilities:

- Sidewalks should have curb ramps. Ramps should be well-maintained, well-placed, and not too steep in order to permit their use by persons in wheelchairs.[49]
- The height of wheelchair users should be considered when placing shrubs or other objects where they might block them from the view of motorists.
- Objects such as security barriers, fences, fire hydrants, telephone poles, parking meters, newspaper boxes, signal control boxes, and other street furniture should be placed in locations where they will not block curb ramps.
- The placement of crosswalk buttons must take into consideration the needs of people with disabilities.
- Audible pedestrian signals make communities safer for all pedestrians, including seniors and children as well as people with visual impairments.
- Sidewalks with steep slopes are difficult for people with disabilities to navigate, especially for people who use manual wheelchairs or people who have trouble walking. Hand rails could help mitigate these difficulties.

C. Minimize roadway width, curb radii & crossing distance.[50]

To minimize pedestrian crossing distances and reduce impermeable, heat–absorbing asphalt coverage, the paved roadway of **all streets should be designed to be the minimum width — and have the minimum number of lanes** — that safely and cost– effectively allow for the desired operations of motor vehicles, buses, and bicyclists. Excess width should be reallocated to provide walking, transit, and bicycling facilities, public open space, green cover, and/or stormwater source control measures. If financial limitations preclude final implementation of street retrofits (e.g., curbing, streetscaping, etc.), the reallocation of space should still proceed with temporary or least costly approaches such as restriping.

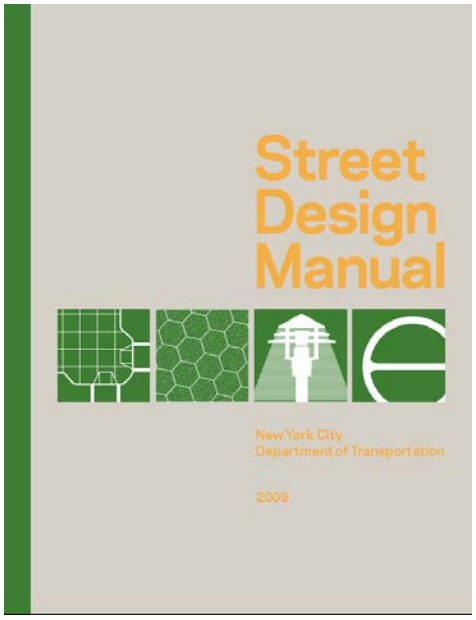


Figure 60: NYC Street Design Manual

To further reduce pedestrian crossing distances and slow turning vehicles, **all roadway corners should be designed with the smallest possible radius** that still accommodates the intended vehicle and emergency vehicles.

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[49] Wheelchair ramp photo: COG/TPB, Access for All Committee

[50] New York City Department of Transportation, *Street Design Manual,* 2009. Page 46.

D. Set target vehicle speeds appropriate to surrounding land use.

Urban streets should function as **public spaces for people** as well as arteries for traffic and transportation. The best street design adds to the value of businesses, offices, and schools located along the roadway.[51] Lower speeds are often needed to enable a street to serve as a comfortable place to gather, shop, work, or live.

Streets should be designed with target speeds and speed limits appropriate to their surrounding uses and desired role in the vehicular network. Slower target speeds and speed limits should be considered on local streets, residential streets, alleys; on streets adjacent to schools, senior or disabled pedestrian trip generators; waterfronts, parks, rail stations, and other significant pedestrian destinations.

Traffic calming features may be designed in from the beginning, or retrofitted where needed, to bring traffic speeds down to the desired level.[52]

E. Improve bicycle and pedestrian circulation within and between regional activity centers and the urban core.

- Improve sidewalks, bikeways, intersections, signage and links to transit for bicyclists and pedestrians in activity centers
- Improve access to and between regional activity centers.
- Provide access to activity centers from surrounding neighborhoods.
- Provide facilities to connect nearby activity centers

Figure 61: Bike Lockers and Racks at NOMA Metro Station/TPB/Michael Farrell

F. Integrate bicycling and walking into the public transportation system.[53]

Make it easier and safer to walk and bike to bus stop and rail stations.

All Metrobuses have been equipped with racks to carry up to two bikes per bus

[51] NACTO, *Urban Street Design Guide,* 2013.

[52] Ibid, pp. 76-91.

[53] Photo of NY Avenue Metro Bike Lockers: COG/TPB, Michael Farrell

- Build sidewalks and pedestrian crosswalks and/or overpasses that connect transit stops to nearby neighborhoods, commercial areas, and existing pedestrian infrastructure.

- Site and/or space bus stops along bus routes so that they are accessible within a comfortable walking distance for passengers (typically ¼ to ½ mile).

- Improve lighting, signage, and wayfinding around transit stations.

Figure 62: Bike on Bus/WABA/Eric Gilliland

- Improve bicycle parking at Metro, commuter rail stations, and park and ride lots. Replace broken and obsolete bicycle racks with current models. Add more Bike & Ride secure bicycle parking facilities at Metrorail stations.

- Improve customers' ability to make the "last mile" of their trip by locating bike sharing or increasing bike parking options at rail stations, and eliminate the need to bring a bike on the train during peak periods

- Provide bicycle racks on all transit buses.[54]

- Provide for more efficient accommodation of bicycles on future rail services, including commuter rail, Metro, and light rail, in the Washington region. Vertical storage racks such as those on Maryland's MARC trains, and on the MAX light rail line in Portland, OR are good examples.

G. Provide adequate bicycle support facilities.

- Enact zoning laws to **require bicycle parking and related facilities** as part of all new construction or major renovation, including office, retail, and housing developments.

    - Construct bicycle parking facilities in well-traveled and lighted areas. Facilities should be covered and secure.

    - Require placement of bicycle parking facilities in convenient locations; short-term parking should be as close as possible to building entrances; long term parking facilities should be located in secure areas.

[54] Photo of Bike on Bus by WABA/Eric Gilliland

The City of Cambridge, MA has developed a model bike parking ordinance.

- Ensure the provision of showers and changing facilities in all new or renovated commercial developments.

- Provide bicycle parking on public property. Jurisdictions should install bicycle parking in public spaces where there is demand, such as public libraries, parks, and sidewalks near storefront retail.55

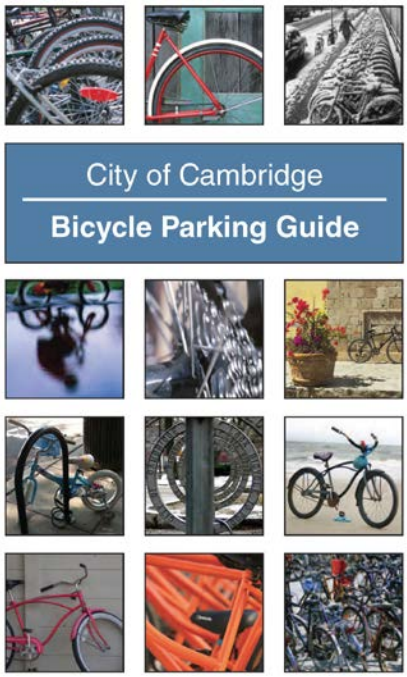

Figure 10: City of Cambridge Bike Parking Guide

H. Expand the Regional Bike Sharing Program

Bike sharing is self-service public bicycle rental. It is similar to a car-sharing system, such as ZipCar, where members pay a fee and have access to any available bike throughout the regional system. Unlike earlier "public bicycle" or "yellow bike" programs, which failed due to lack of means of preventing theft, modern bicycle sharing links rentals to a user's credit card, which can be charged if the bicycle is not returned. Bike sharing took hold first in Europe, but has now become common in North America, with programs in dozens of cities. The bike sharing system for the Washington region is Capital Bikeshare, currently one of the largest and most successful North American bike share systems. Their solar-powered docking stations have proven easier and faster to install than stations that require a utility hook-up.

The Institute for Transport Development Policy publishes a detailed bike share planning guide.

I. Realize the Transportation Benefits of Micromobility

Bikeshare is part of a rapidly expanding category of transportation called micromobility. While there is some disagreement about what constitutes micromobility, micromobility generally refers to travel across short distances using small, lightweight devices that operate at low speeds (typically 15 mph) such as e-scooters, hoverboards, and e-bikes.[56] Users access micromobility systems through a smartphone application that locates a device, tracks the start

[56] PBIC Brief does not include human-powered devices in its definition of micromobility (https://www.pedbikeinfo.org/cms/downloads/PBIC_Brief_MicromobilityTypology.pdf) while ITDP does (https://www.itdp.org/multimedia/defining-micromobility/).

and end of a trip, and collects payment. Micromobility has recently increased in popularity. As of August 2020, the United States had 71 docked bikeshare systems, 50 dockless bikeshare systems, and 145 e-scooter systems.[57]

Micromobility is changing the transportation landscape in communities where it is deployed. It enhances the efficiency of a transportation network by meeting travel needs at the individual trip level. It also supports TDM goals by reducing automobile trips. Moreover, the flexibility of micromobility systems enables service to reach locations currently lacking transportation alternatives. While micromobility is associated with positive outcomes, it also presents jurisdictions with questions about operator regulation, public safety, and curb space management. While cities have approached micromobility differently, some common practices have emerged, such as:

- Regulate shared micromobility vendors through permits or a pilot/demonstration program. Permits and pilots tie system operations to performance standards set by the municipality. NACTO's *Shared Mobility Guidelines* outlines recommended terms and conditions for city permits or contracts with shared mobility providers.

- Provide infrastructure so that users can safely ride devices. NACTO recommends that cities prioritize construction of bikeways and discuss what devices can operate in bikeways.

- Designate parking zones for shared micromobility devices in high volume areas. Seattle, Atlanta, and Washington, D.C., have "corrals" to limit devices parked in the public right-of-way.

- Develop micromobility laws to promote safe user behavior. Cities have passed laws that regulate where micromobility users can ride, operation speeds, device parking locations, adherence to traffic laws, riding while under the influence of drugs or alcohol, user age requirements, and helmet requirements among other topics. Some laws penalize users with fines for violations.

- To help enforce the rules, jurisdictions can request that vendors limit the function of devices, such as geofencing areas where devices are prohibited.

- Offer frequent education and training through different mediums on the safe use of devices.

- Obtain data from micromobility vendors to evaluate programs and inform planning.

- Coordinate with engineers, planners, and designers to determine how street design standards should be updated to accommodate low-speed devices.

I. Develop pedestrian and bicycle safety education and enforcement programs in all jurisdictions.

[57] Available from BTS: https://data.bts.gov/stories/s/fwcs-jprj

- Promote pedestrian and bicycle safety education programs for children, beginning at the early ages.
- Establish and maintain pedestrian and bicycle safety programs at the elementary school level, including classroom and on-bicycle instruction.
- Develop and distribute pedestrian and bicycle safety information materials designed to teach beginning cyclists and young pedestrians.
- Emphasize the use of bicycle helmets as a means of injury reduction, lights after dark, reflectors, and reflective clothing for pedestrians.

Volunteer Patrols can help with Trail Security

- Improve cycling skills and pedestrian safety habits of adults and young adults.
- Produce and distribute information on bicycle usage and safety.
- Emphasize the use of helmets for rider protection, lights after dark, reflectors, and reflective clothing for pedestrians.
- Increase motorist awareness and accommodation of bicyclists and pedestrians, and bicyclist and pedestrian awareness and accommodation of motorists.
- Include bicycle and pedestrian information in automobile drivers' training classes, driver's manuals, and license exams, and through the media.

The regional "Street Smart" Pedestrian and Bicycle Safety Campaign urges motorists and pedestrians to "Slow Down" and "Use Crosswalks"

- Coordinate public media campaigns with law enforcement
- Encourage jurisdictional uniformity of traffic laws relating to bicycling and walking. Encourage conformity with such regulations as the Uniform Vehicle Code.
- Encourage consistent bicycle law enforcement to assure safe bicycling and walking.
- Emphasize the enforcement of traffic laws dealing with offenses known to cause crashes between bicycles and motor vehicles, such as wrong way bicycling, and ignoring stop signs or stop lights.
- Emphasize enforcement of traffic laws dealing with offenses known to cause crashes between pedestrians and motor vehicles, such as motorists failing to yield to pedestrians, and pedestrians disobeying "Don't walk" signals.

- Improve bicycle and pedestrian accident reporting and analysis procedures at the state and regional levels, to provide jurisdictions with a better understanding of accident causes and countermeasures.

- Provide significant law enforcement presence along regional off-road trail networks and encourage inter-jurisdictional cooperation and coordination to provide for the safety and security of all pedestrians and bicyclists.

J. Encourage Walking and Bicycling

- Each jurisdiction and agency should encourage walking and bicycling, and promote the perception of both as legitimate forms of travel, in the way most appropriate to that organization. Examples include:

- Have walk and bike-friendly policies for employees. Let employees know that walking and bicycling is both permitted and encouraged. Organize/support/participate in events such as Bike to Work Day, Car-Free Day, etc.

- Carry out pedestrian and cyclist education programs that also encourage walking and bicycling, such as Safe Routes to School. Designate a Safe Routes to School coordinator for every community.

- Provide high-quality information to the public on the benefits of walking and bicycling, and where and how it can be done in your community, through programs such as WalkArlington and BikeArlington. Partner with employers, transportation demand managers, and advocacy groups.

- As part of a comprehensive transportation demand management program, provide financial incentives for employees to walk and bicycle.

- For States and Metro regions, consider investing in paid media campaigns.

K. Each jurisdiction should develop a high visibility bicycle or pedestrian project to demonstrate the effectiveness of bicycling and walking as a short distance transportation mode.

- Ensure that projects are feasibly implemented, and supported by the community and the government agencies responsible for implementation.
- Undertake extensive publicity and promotion for each facility or service included in the project.
- Conduct an extensive analysis of the effectiveness of each project following the demonstration period.

Figure 64: Lawyers Road Before Road Diet/VDOT

Figure 63: Lawyers Road After Road Diet/VDOT

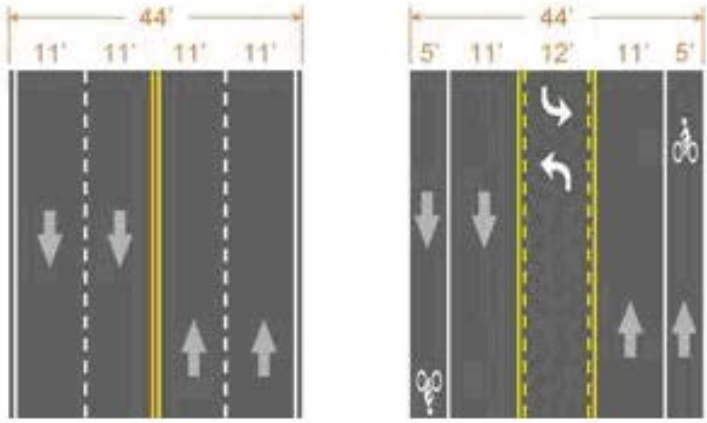

Figure 65: Road Diet/VDOT

VDOT completed a model Road Diet project in Reston, VA, shrinking Lawyer's Road from four lanes to two plus a turn lane and bike lanes

L. Each agency should designate a bicycle coordinator and a pedestrian coordinator to oversee bicycle and pedestrian programs.

Experience has shown that without a designated staff person or persons responsible over for overseeing their implementation, pedestrian and bicycle programs and policies are not implemented effectively. Staffing levels should be proportional to the size of the agency and volume of work.

All TPB member jurisdictions with active pedestrian and bicycle programs designate a lead staff person or coordinator.

M. Integrate equity in bicycle and pedestrian planning.

Transportation planning in the US has traditionally been driven by efficiency or cost. Since the 1990s, however, transportation professionals have increasingly recognized equity as a necessary consideration, among other factors. By focusing on equity, transportation professionals allocate transportation investments based on need, allowing services and infrastructure improvements to flow to the most under-resourced populations. In July 2020, the TPB Board of Directors affirmed equity as a fundamental value in the Metropolitan region. This commitment is consistent with federal policy.

Under-resourced populations may rely on alternative modes like walking and biking more than other segments of the population. Households in poverty have lower car ownership rates, and higher biking and walking rates compared to higher-income households.[58] Planning professionals can address the needs of under-resourced communities through several strategies, including:

- Hire agency staff of all levels who understand the community the agency serves.
- Train agency staff to effectively communicate with constituents about transportation equity issues, which can often be complex.
- Evaluate the metrics used to prioritize infrastructure projects to avoid unintentional bias in the allocation of resources. The Victoria Transport Policy Institute's *Evaluating Transportation Equity* guide discusses the various equity impacts resulting from transportation planning, and how planning assumptions and metrics affect outcomes. FHWA's *Performance Based Planning and Programming Guidebook* may offer additional guidance for incorporating equity and environmental justice into planning processes.
- Remove barriers for under-resourced communities to participate in the transportation planning process.
- Consider developing an inclusive public engagement planning guide, similar to those developed the cities of Seattle or Oakland, to assist planners.
- Locate public meetings in accessible and convenient locations and times.
- Host public meetings in informal settings that are conducive to participation and enable relationship-building.
- Communicate meetings through mediums that the community uses, such as social media, and provide ample advance notice of meetings. Partner with local community organizations to communicate meetings.

[58] FHWA, FHWA NHTS Brief: Mobility Challenges for Households in Poverty (2014). Available at: https://nhts.ornl.gov/briefs/PovertyBrief.pdf .

- Make meetings family-friendly or provide childcare at meetings.

CHAPTER 7: THE 2045 NETWORK (PLACEHOLDER)

THE REGIONAL BICYCLE AND PEDESTRIAN NETWORK IN 2045

The Bicycle and Pedestrian Plan for the National Capital Region includes 643 bicycle and pedestrian facility improvement projects from across the region. If every project in the plan is implemented, in 2040 the region will have added approximately 2100 miles of bicycle lanes and 2000 miles of shared-use path. The overall network length (allowing for some dual bike lane/sidepath facilities) will increase by approximately 4000 miles.

In addition, hundreds of miles of signed on-road bicycle routes will be created. In many cases roads are designated for improvement as bicycle routes, but the exact nature of the improvement – bike lane, widened shoulders, wide outside lane, shared lane markings, signs – has not yet been determined.

Thirty-one major pedestrian intersection improvements will be carried out, and fifteen pedestrian/bicycle bridges or tunnels will be built. Hundreds of intersections will receive new crosswalk signals, and ongoing sidewalk improvement programs will retrofit sidewalks in areas where they are missing.

A new bicycle and pedestrian crossing over the Potomac will be created at the American Legion Bridge, and the bridges over the Anacostia River will be improved for pedestrians and bicyclists. In addition, twenty-seven major streetscaping projects will improve pedestrian and bicycle access and amenities in places such as Atlantic Boulevard, Tysons, Maryland Avenue NE, and downtown Bethesda.

Table 7-1 below summarizes the new facility mileage that will be added by 2040 if this plan is implemented in full.

Table 7-1:
Miles of Bicycle/Pedestrian Facilities
in the Washington Region

Facility Type	Total in 2005	Completed 2006- May 2010	Completed June 2010 May 2014	Planned New Facilities/ Upgrades	Total in 2040
Bicycle Lane	56	35	45	2090	2226
Shared-Use Path	490	53	50	1990	2583
Total	546	88	95	4080	4809

PROGRESS SINCE 2010

Fifty-four projects from the 2010 Bicycle and Pedestrian Plan have been completed. This total does not count projects on which significant progress has been made, unless for reporting purposes the project was split into phases, and the earlier phases reported as complete.

Ten major pedestrian intersection improvements, seven streetscaping projects, and two pedestrian bridges or tunnels were completed.

Notable projects finished since 2010 include Capital Bikeshare in the District of Columbia and Arlington, and the L Street NW protected bike lane in DC.

Mileage of sidewalk construction was not tracked, but there are ongoing sidewalk retrofit and pedestrian safety programs in all the major inner jurisdictions. Privately provided facilities are generally not counted.

The region is currently adding about twelve miles of shared-use path and eleven miles of bike lane per year. At the current pace of construction the region will have completed about 420 miles of shared use path, and 385 miles of bike lane by 2040, or about one fifth of the planned network.

However, it should be noted that the planned network is twice as large as the one in the 2010 plan. The pace of implementation is increasing, but the agency plans are now much more ambitious.

FUNDING

While many of these projects have no identified funding source, and are not expected to be built soon, some are very close to being realized. Of the 485 planned projects, seventeen are under construction, ninety-one are fully funded, and another ninety-nine have some funding identified.

Under "Complete Streets" policies, most bicycle and pedestrian projects are now built as part of larger transportation projects. Of the transportation projects in the FY 2013-2018 Transportation Improvement Program, 133 include some form of bicycle and pedestrian accommodation, while 30 projects were identified as being specifically bicycle or pedestrian.

Cost Estimates

Cost estimates were provided by the agencies for about 30% of the planned projects. For most of the planned projects that have not yet been designed, no meaningful project-level estimates can be made. Many of the projects which have cost estimates are part of a larger project. In a combined project it is nearly impossible to disentangle the portion of the cost attributable to bicycle or pedestrian features.

Given the difficulties of getting actual cost estimates for each project, we have imputed a range of regional costs for the plan based on an assumed typical cost per mile or per project.[59] The total cost of improvements listed in the plan is estimated at about $2 billion (2014 dollars).

[59] *Costs for Pedestrian and Bicyclist Infrastructure Improvements"* UNC Highway Safety Research Center, October 2013.

	Table 7-2 Imputed Costs for Selected Bicycle Facilities (in thousands of dollars)			
Facility Type	Imputed Cost Range per Mile or per Project	Average	Miles or Number of Projects	Imputed Cost
Shared Use Path	$300 - $4,000	480	1990 miles	$500,000 - $6,500,000
Bicycle Lane	$5 $500	133	2090 miles	$7000 - $700,000
Pedestrian/Bicycle Bridge/Tunnel	$1,000 - $6,000		15 projects	$15,000 - $95,000
Pedestrian Intersection Improvement	$300 - $600		31 projects	$10,000 - - $15,000
Streetscape	$2,000 - $4,000		27 project	$50,000 - $100,000
Total				$600,000 - $6,000,000

No comparable "financially unconstrained" plan exists for other types of transportation projects over the next 30 years. The six-year, FY 2013-2018 Transportation Improvement Program includes $15.6 billion worth of transportation projects and programs, an amount which is widely seen as inadequate for the region's transportation needs. Assuming the region continues to fund transportation at the same real level for the next 30 years, fully funding the bicycle and pedestrian plan over the same period would cost about 4% of the total transportation budget.

EXPLANATION OF PROJECT LISTINGS

Appendix A lists the plan projects, organized alphabetically by state and jurisdiction. Facility type, responsible agencies, limits, length, and cost are also included. Note that due to the nature of bicycle and pedestrian facility improvements, the list in Appendix A is expected to change annually, as projects are added or removed.

The project list is drawn from a database that includes more extensive information, including project status, agency project ID number, facility lengths, facility alignment, description, project status, project web site, date of (projected) completion, date the record was last updated, and project manager name and contact information. Agency staff may enter via a password-protected web site to enter, edit, and delete project information, making the process of keeping the database accurate simple. A public access version of this on-line version of this database can be found at http://www.mwcog.org/bikepedplan/.

Over time the database has proven useful in tracking the progress of bicycle and pedestrian projects at a regional level. A sample database entry and a data dictionary are found in Appendix B.

This project list is intended to be a list of significant planned bicycle and pedestrian projects in the Washington region. Agencies were encouraged to submit projects for inclusion if they were

one mile or more in length, or cost more than $400,000. Small sidewalk projects are not included unless they were part of a larger pedestrian or bicycle project.

Figures 7-1 and 7-2 show the location of major bicycle and pedestrian projects throughout the region. Pedestrian/bicycle bridge or tunnel projects, multi-use paths greater than three miles in length, and projects estimated by their sponsors to cost more than $500,000 are mapped, except for area projects that cannot be mapped in a meaningful way. About a quarter of the plan projects are mapped. Project details can be found in the project list in Appendix A, which groups the projects by state and jurisdiction.