## Overview

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 2035 for major bicycle and pedestrian facilities. This plan is an update to the 2006 *Bicycle and Pedestrian Plan for the National Capital Region*, which was the first all-new regional plan specifically for bicycle facilities since 1995, and the first-ever regional pedestrian facilities plan.

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 Pla*n 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.

### 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 approximately xxx bicycle and pedestrian facility improvement projects from across the region. If every project in the plan were implemented, in 2030 the region will have added over xxx miles of bicycle lanes, over xx miles of shared-use paths, hundreds of miles of signed bicycle routes (signage without additional construction), more than xx pedestrian intersection improvements, and a number of pedestrian/bicycle bridges or tunnels. A new bicycle and pedestrian crossing over the Potomac would be created, at the American Legion, and bridges over the Anacostia River would be improved for pedestrians and bicyclists. In addition, major streetscaping projects would improve pedestrian and bicycle access and amenities in Ballston, Bethesda, Clifton, Haymarket, Manassas, Tysons Corner and other locations.

### Progress since the 2006 Bicycle and Pedestrian Plan

A number of projects from the 2006 plan have been implemented, notably the Woodrow Wilson Bridge Trail. Overall, …(to be added)

### Costs

Total estimated cost of projects in the draft plan is about $xxx million (2010 dollars). xx% of the plan projects have specific agency-submitted cost estimates, totaling about $xxx million of the $xxx million. About $xxx million of the $xxx million is for projects included in the CLRP. For the remaining xx% of draft plan listings project-specific cost estimates were not available. Total estimated cost for projects without an agency-submitted estimate was imputed on a mileage and project type basis at about $xxx million of the $xxx million. Cost estimates should be considered as order-of-magnitude 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.

## Bicycling, Walking and the Vision of the Transportation Planning Board

The National Capital Region Transportation Planning Board 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 part of the *Vision* 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 *Vision* also calls for the implementation of a regional bicycle and pedestrian plan. Recommendations in this plan will help realize the *Vision*.

**Figure 1: DC Bike Lane**

*The Urban Core has a Growing Network of Bicycle Lanes*

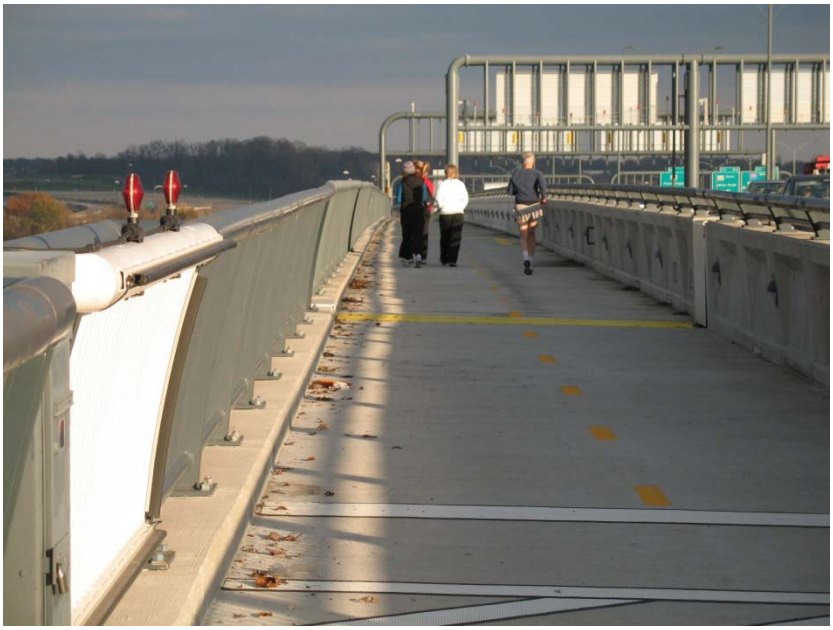


**Figure 2: Woodrow Wilson Bridge Trail**

*The Woodrow Wilson Bridge Trail opened in 2009*

## Region Forward 2050

The Council of Governments recently completed *Region Forward*, a vision for the National Capital region in 2050. *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.

This plan incorporates 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.

## 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]

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

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.

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 new state 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] A pilot bike sharing program, *Smartbike*, the first such program in the United States, has been implemented in the District of Columbia, and a large-scale regional bike sharing program, *Capital Bikeshare*,

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

[1] DC Bicycle Lane Photo: COG/TPB /Michael Farrell
[2] Woodrow Wilson Bridge Trail Photo: COG/TPB / Michael Farrell

is in the planning phases.

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 16.2 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 average trip distance to transit or carpool is only 3.1 miles.[4] Only 15% of transit riders and carpoolers travel more than five miles to the transit or carpool location.[5]

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.[6] 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 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*

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

[3] National Capital Region Transportation Planning Board, *2004 State of the Commute Survey Report*, November, 2004, p. 22.
[4] Ibid, p. 27.
[5] Ibid, p. 27.
[6] National Capital Regional Transportation Planning Board, *1994COG/TPB Household Travel Survey: Summary of Major Findings*, January, 1998. Page 5.

## Plan Development and Organization

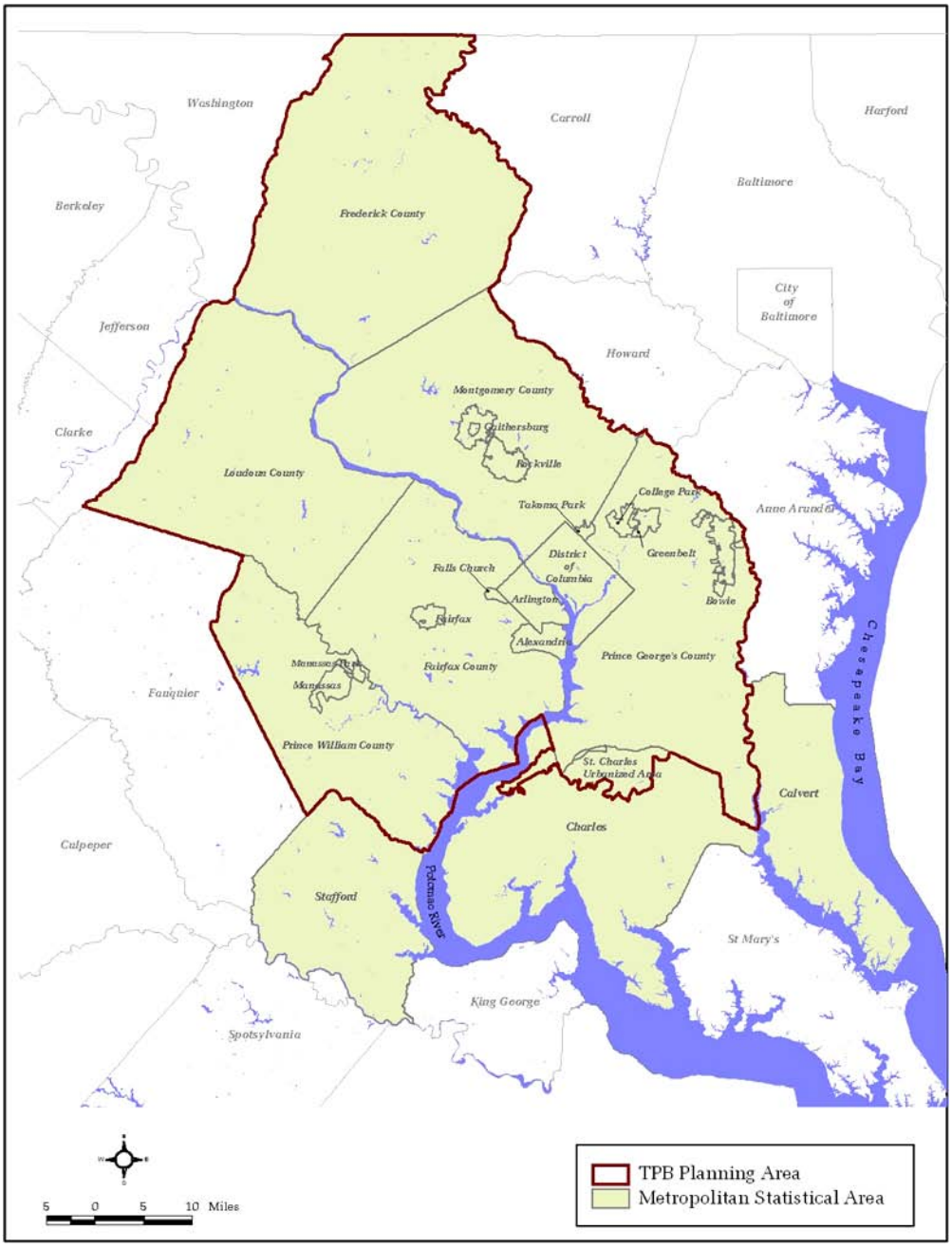
This plan has been prepared by the National Capital Region Transportation Planning Board, the federally designated Metropolitan Planning Organization (MPO) for the Washington region. The TPB is made up of representatives of 20 local governments, the departments of transportation of Maryland, Virginia, 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-5. The area of the TPB members plus Calvert County in Maryland and Stafford County in Virginia comprises the Washington, DC-MD-VA Metropolitan Statistical Area (MSA).

This document presents the long-range Bicycle and Pedestrian Plan for the Washington Region through the year 2035. 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* and *Region Forward 2050* 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 increased attention in this update, reflecting increased attention to pedestrian issues by the TPB member governments and agencies. . 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.

Figure i-A
TPB Planning Area, Washington DC-MD-VA Metropolitan Statistical Area (MSA)



## 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* of the Transportation Planning Board, the *Region Forward 2050* vision of the Council of Governments, federal and state guidance on provision of bicycle and pedestrian facilities, the Constrained Long Range Plan 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* and *Region Forward 2050* for bicyclists and pedestrians. It includes performance measures that will show progress towards the *Vision* and *Region Forward* goals.

## I. Regional Planning

### The Vision of the Transportation Planning Board

The National Capital Region Transportation Planning Board 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 Biking*

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 1-1.

## Table 1-1: Bicycle and Pedestrian Provisions of the 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.

Accompanying the *Vision* is a shorter action agenda with elements to be included in the year 2000 long range transportation plan for the region. Item four on the action agenda calls for a regional congestion management system to achieve significant reduction in single occupant vehicles (SOVs) entering the regional core and regional activity centers by:

- designing and developing circulation systems that maximize the use of transit (rail, monorail, bus, jitney, etc.) and **pedestrian and bicycle** facilities

## Region Forward 2050

The Council of Governments is a regional organization of Washington area local governments. COG is comprised of 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.

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

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 Table 1-2.

## Table 1-2:
## Bicycle and Pedestrian Provisions of Region Forward 2050

**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

## Constrained Long-Range Plan

The financially Constrained Long-Range Transportation Plan (CLRP) is a comprehensive plan of transportation projects and strategies that the TPB realistically anticipates can be implemented over the next 25 years. The region's transportation agencies and jurisdictions submit projects for the CLRP, which is developed and approved by the TPB. The CLRP is the primary vehicle for realizing the *TPB Vision* and the States' long-range plans. Federal law requires that the CLRP be updated every four years; the most recent version was adopted in 2010. To receive federal funding, a transportation project in metropolitan Washington must be included in the CLRP. Because funds must be reasonably anticipated to be available for all the projects in the CLRP, the CLRP is realistic plan based upon available resources.

Bicycle and pedestrian projects in the 2010-2015 CLRP are listed in Appendix XXX. Historically, less than 1% of the capital funding in the CLRP has been specifically for stand-alone bicycle and pedestrian projects. However, since bicycle and pedestrian projects are usually small projects, they are often added to the plan later than the major highway and transit projects. Moreover, much pedestrian and bicycle spending is subsumed within larger highway or transit projects, and thus is not reflected in the amount programmed for bicycle and pedestrian projects. Therefore, the CLRP may under-estimate the amount of bicycle and pedestrian spending that will occur over the next 25 years. State Departments of Transportation may also increase funding levels in the future as they implement policies to routinely accommodate pedestrians and bicyclists in all new transportation projects.

## Transportation Improvement Program

The Transportation Improvement Program (TIP) provides detailed information showing which projects in the CLRP will be completed over the next six-year period. The TIP is updated every year. Like the CLRP, the TIP is subject to federal review. Many projects in the TIP are staged, so a single CLRP project could end being split into multiple TIP projects.

*The Transportation Improvement Program includes $124 million for pedestrian and bicycle projects*

Bicycle and pedestrian projects, and transportation projects that include bicycle and pedestrian accommodation, are tracked in TIP.

For example, the Fiscal Year 2010-2015 TIP includes $124 million for bicycle and pedestrian projects. Of that, $23 million is programmed for FY 2010, which is less than one percent of the total capital funds for all transportation projects programmed for FY 2010. As with the CLRP, funds spent on bicycle and pedestrian accommodations as part of a larger highway or transit project are often subsumed in budget of the larger project.

**Top Priority Unfunded Bicycle and Pedestrian Projects**

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.

The Subcommittee periodically selects a short list of priority unfunded bicycle and pedestrian projects, which it recommends for inclusion in the TIP. These projects are selected from the regional bicycle plan, and from state and local plans. The subcommittee has compiled and forwarded lists to TPB regularly since 1995, to be included in the solicitation document for the TIP/CLRP. In essence, the TPB urges the jurisdictions to consider funding these projects, which the Bicycle and Pedestrian Subcommittee has judged to be regionally significant, within six years.

The following selection criteria are used:

- **Bicycle Network Connectivity:** priority is given to projects that enhanced connectivity of facilities on the regional bicycle facilities network.
- **Pedestrian Safety:** priority is given to projects that promoted pedestrian safety, especially in areas with documented pedestrian safety problems and no pending road project that could address them.
- **Access to Transit:** priority is given to projects that enhanced access to Metrorail stations and other major transit stops or facilities.
- **Time Frame:** all projects should be able to be completed by 2016, the end of the TIP time frame.
- **Local Support:** the project is a priority for the jurisdiction or jurisdictions in which it is located.
- **Still seeking funding:** the project does not yet have full construction funding committed to it.
- **Reasonable Cost:** the total cost of the list should be a reasonable fraction of the total spending in the region on highways and bridges.

While considerable weight is given to the preference of the representative of the jurisdiction, subcommittee members are urged to think in terms of the regional selection criteria when nominating projects.

Projects are dropped from the list when they receive funding, or if the subcommittee and nominating jurisdiction decide that priorities have changed.

Five projects on the November 2008 list received partial funding, totaling $2,023,000.

Projects funded since 1995 include:

- The Metropolitan Branch Trail in Washington, D.C.
- The Holmes Run Pedestrian/Bicycle crossing in Alexandria
- Pedestrian and Bicycle Safety Improvements on Route 1 in Fairfax County
- The Dumfries Road (Route 234) Bike Path in Prince William County
- The Rosslyn Circle Crossing in Arlington County
- The Eisenhower Trail in Alexandria
- The Matthew Henson Trail in Montgomery County
- The Falls Road Shared-Use Path in Montgomery County
- The Henson Creek Trail in Prince George's County
- The Millennium Trail in Rockville

**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.

**Encouraging Bicycling and Walking:**
**Bike to Work Day, the Bike to Work Guide, and Guaranteed Ride Home**

To help realize the *TPB Vision* and reduce congestion, air pollution, and single occupant vehicle traffic, the TPB has developed several programs to encourage bicycling and walking in the Washington region. As part of its 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 eight thousand riders to thirty five "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 also makes available on-line a regional map of existing bicycle facilities, park and ride lots with bicycle parking, transit, and HOV lanes. The Bicycle and Pedestrian Subcommittee publishes a map of regional bicycle facilities in cooperation with the ADC Map Company. Maps can be ordered at www.adcmap.com. Regional bike routing is available at www.ridethecity.com, and Google maps offers both pedestrian and bicycle routing.

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.

### Encouraging Walkable Development: the Transportation-Land Use Connections Program

The Transportation Land Use Connections (TLC) Program provides support to local governments in the Metropolitan Washington region as they work to improve transportation and land use coordination. Through the program, the TPB provides communities with technical assistance to catalyze or enhance planning efforts for planning for transit and pedestrian access. 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 grants has been stiff.

## II. 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.

### Americans with Disabilities Act

*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. [1]

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. For more information on the Americans with Disabilities Act, contact the US Access Board.

**SAFETEA-LU**

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

Under the SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: Legacy for Users) federal transportation bill signed in August 2005, bicycle and pedestrian projects remain broadly eligible for nearly all funding categories, either for projects incorporated into something larger, or for stand-alone bicycle and pedestrian projects. The bill authorized $286 billion for highways and transit from 2005 through 2009, a 22% increase over the previous federal transportation bill, TEA-21. SAFETEA-LU was scheduled for a full re-authorization in 2009, but is currently being extended with little substantive change in its provisions.

Transportation Enhancements, half of which historically have been spent on bicycle or pedestrian projects, was funded nationally at a level of $3.25 billion over five years. The Recreational Trails Program set aside $110 million for non-motorized trails. SAFETEA-LU also contained a number of high priority projects, sometimes known as legislative earmarks, many of which are bicycle or pedestrian projects.[2] Pedestrian and bicycle projects are *not*, however, limited to set-aside

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

[2] See www.bikeleague.org for further information on the Bicycle and Pedestrian provisions of SAFETEA-LU.

programs and high priority projects. They are broadly eligible for funding from highway and transit funds.

Under SAFETEA-LU bicyclists, pedestrians, and people with disabilities are explicitly required to be given an opportunity to comment on metropolitan transportation plans.

### Safe Routes to School

Aside from the general increase in funding under SAFETEA-LU, the most important new set-aside for bicyclists and pedestrians was the Safe Routes to School (SRTS) Program. The goals of the program are to enable and encourage children to walk and bike to school, improve safety, and reduce traffic and air pollution near schools. Eligible activities include both infrastructure and non-infrastructure projects. Infrastructure projects include bicycle parking, crosswalks, sidewalks, traffic calming, on and off-street bicycle facilities, etc. on any public road or trail in the vicinity of a school. Non-infrastructure projects include public awareness and outreach to encourage walking and bicycling to school, traffic education and enforcement near schools, student sessions, training, SRTS program managers, and a State Coordinator. Not less than 10% or more than 30% of SRTS funds must be set aside for non-infrastructure projects.

Funds are administered by State Departments of Transportation, with 100% federal share – no local match required. Each state is to receive funds in proportion to K-8 school enrollment, but not less than $1 million. The budget grew from $54 million in 2005 to $183 million in 2009.

As this program has developed, interest, and applications for funding have varied greatly between different schools and school districts. Some school districts have embraced the program, while others have maintained bus and drive-only policies. Urban school districts have been more receptive to the program. Growing emphasis on fighting childhood obesity has helped build support.

### American Recovery and Reinvestment Act

Signed into law on February 17, 2009, the American Recovery and Reinvestment Act of 2009 (ARRA) provided over $48 billion for transportation, including $27.5 billion for highway infrastructure investment, $8.4 billion for transit capital assistance, $8 billion for high speed rail, $1.5 billion for a competitive grant program for surface transportation, and $1.3 billion for Amtrak.

*The District of Columbia spent nearly half its stimulus funds on pedestrians and bicyclists*

The District of Columbia was allocated $123.5 million, Maryland $431 million ($129 million sub-allocated to urban areas) and Virginia $694.5 million ($208 million sub-allocated to urban areas) in

highway formula funds.

ARRA is a one time, "stimulus" bill, intended to promote recovery from the economic recession. Projects funded through ARRA are supposed to be capable of implementation within a relatively short time frame, which has in practice caused funds to be directed to those projects for which design was already complete, and which did not need additional right of way.

The District of Columbia spent nearly half its $123.5 million allocation on bicycle and pedestrian projects. Over $50 million will be spent on streetscaping and sidewalk construction, $4 million for Safe Routes to School, and a $3 million on an expanded bike sharing program. In addition bridge reconstruction projects will include upgraded sidewalks. Since projects are bid as a whole, the cost of the pedestrian portion of a project is not estimated separately.

Apart from $4.6 million for ADA improvements, Maryland had no identifiable pedestrian or bicyclist projects funded under ARRA. Maryland stimulus funds largely went to resurfacing and bridge rehabilitation projects, often on limited-access highways. Out of $160 million programmed so far in Northern Virginia, $10 million has been allocated to identifiable pedestrian and bicycle projects, such as pedestrian bridges and underpasses, trail reconstruction, streetscaping, and traffic calming.

The degree to which pedestrians and bicyclists benefit from the Act depends to a great degree on the extent to which the Departments of Transportation have included pedestrian and bicycle facilities in their project planning and design. An effective "routine accommodation" or "complete streets" policy is critical.

## III. State Policies

### District of Columbia

Reflecting its urban character, the District of Columbia is doing more to encourage walking or bicycling than is currently envisioned in Maryland or Virginia. District of Columbia Department of Transportation intends to create a "walk-centric, bike-centric" city. DDOT's two-year "Action Agenda" calls 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.

Pedestrian and bicyclist injuries are to be reduced by 10% per year. To reduce pedestrian injuries, the "Action Agenda" calls for traffic calming, traffic enforcement, speed and red light cameras, speed limits lower than 25 mph, lead pedestrian intervals at crosswalks, and reconstruction of high-crash intersections.

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

Due to the built-up character of the District of Columbia, DDOT rejects road widening as a means of increasing transportation capacity. Instead, DDOT aims to shift travel from less space-efficient modes, such as single occupant driving, 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 current Bicycle Master Plan (2005) is to be updated and expanded to reflect changed priorities.

Strategies to address congestion directly include congestion pricing, variable pricing for on-street parking, and double-parking and loading zone enforcement. Nearly all the proposed congestion reduction measures will increase the monetary cost of driving. None involve allocating additional space for travel lanes.

**Maryland**

*Maryland will "strive" to provide bicycle and pedestrian facilities "wherever possible"*

The State of Maryland's Bicycle and Pedestrian Access Act provides that "Access to and use of transportation facilities by pedestrians and bicycle riders shall be considered in all phases of transportation planning, including highway design, construction, reconstruction, and repair."[3] The Maryland Department of Transportation is to "work to ensure" that transportation options for pedestrians and bicycle riders will be enhanced and not negatively impacted by a project or improvement. The Twenty Year Bicycle and Pedestrian Access Master Plan (2002) calls for MDOT to "strive" to integrate bicycle and pedestrian facilities into routine roadway development "wherever possible".

[3] Maryland Department of Transportation, *Twenty Year Bicycle and Pedestrian Access Master Plan*, October, 2002. Pp. 13, 32.

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. MDOT has published pedestrian design guidelines, accessibility guidelines for pedestrian facilities, 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.

Overall Maryland's efforts to promote walking and bicycling are less ambitious than the District of Columbia's. Provision of accommodations for pedestrians and bicyclists in transportation projects is encouraged but not mandatory.

**Virginia**

*Virginia requires "routine accommodation" of pedestrians and bicyclists in transportation projects*

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.[4]

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.

*Virginia requires new developments to connect with the surrounding streets*

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.

[4] www.virginiadot.org

The policy divides Virginia into "compact", surburban, 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 recovers, and new development applications fall under the new rules, we will be able to see the results of the new policies.

### "Complete Streets"

Routine accommodation policies are sometimes known as "complete streets" policies.[5] "Complete streets" are defined as streets that are designed and operated to enable safe access for all users, including motorists, pedestrians, bicyclists, and transit users, as well as senior citizens, children, and persons with disabilities. The District of Columbia, Virginia, Arlington, Alexandria, and a number of other jurisdictions have adopted or are moving towards complete streets policies.

Federal and State policies have evolved, 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 lead 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.

[5] www.completestreets.org

### IV: 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 1-2 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 1-2:**
**Major Bicycle and Pedestrian Plans and Studies Of the Washington Region**

| Jurisdiction/ Agency | Plan/Study | Year |
|---|---|---|
| Arlington County | Pedestrian Transportation Plan, Bicycle Transportation Plan, Bike Lane Plan Arlington Master Plan - Pedestrian Element | 1997, 1994 2001, 2008 |
| City of Alexandria | Pedestrian and Bicycle Mobility Plan | 2008 |
| District of Columbia | District of Columbia Bicycle Master Plan, District of Columbia Pedestrian Master Plan | 2005, 2009 |
| Fairfax County | Countywide Trails Plan, County Bicycle Map | 2002, 2009 |
| Frederick County | Frederick County Bikeways and Trails Plan | 1999 |
| City of Gaithersburg | Bikeways and Pedestrian Plan | 1999 |
| City of Laurel, Maryland | Bikeway Master Plan | 2009 |
| Loudoun County | Loudoun County Bicycle and Pedestrian Master Plan | 2003 |
| Maryland Department of Transportation | Twenty Year Bicycle and Pedestrian Access Master Plan | 2002 |
| MNCPPC – Prince George's County | Transportation Priority List (Joint Signature Letter) Countywide Master Plan of Transportation | 1999 2009 |
| Montgomery County | Countywide Bikeways Functional Master Plan | 2005 |
| National Capital Planning Commission | Comprehensive Plan for the National Capital | 2004 |

| | | |
|---|---|---|
| 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 |
| National Park Service | Paved Recreation Trails Plan | 1990 |
| Prince William County | Thoroughfares Plan (part of Comprehensive Plan), Greenways and Trails Plan | 1998, 1993 |
| City of Rockville | Bikeway Master Plan | 2004 |
| Virginia Department of Transportation, Northern Virginia Office | Northern Virginia Regional Bikeway and Trail Network Study | 2003 |
| WMATA | Metrorail Bicycle & Pedestrian Facilities Planning Study. | 2010 |
| **Jurisdiction/ Agency** | **Plan/Study** | **Year** |

Table 1-3 shows the approximate number of full-time planners each agency has working on bicycle, pedestrian, and trails planning.

**Table 1-3:**
**Agency Bicycle/Pedestrian Planning Staff**
**Full-Time Equivalents (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 | 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 | 0.5 | 0.5 | |
| Loudoun County | 0.5 | | |
| Maryland Department of Transportation | 1 | 2 | 1 |
| MNCPPC – Montgomery County | 0.33 | 0.33 | 1 |
| MNCPPC – Prince George's County | | | 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 | 0.5 | |
| Virginia Department of Transportation, Northern Virginia Office | 1 | 1 | |
| **Jurisdiction/ Agency** | **Bicycle Planner FTE's** | **Pedestrian Planner FTE's** | **Trails Planner FTE's** |

### V: 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.

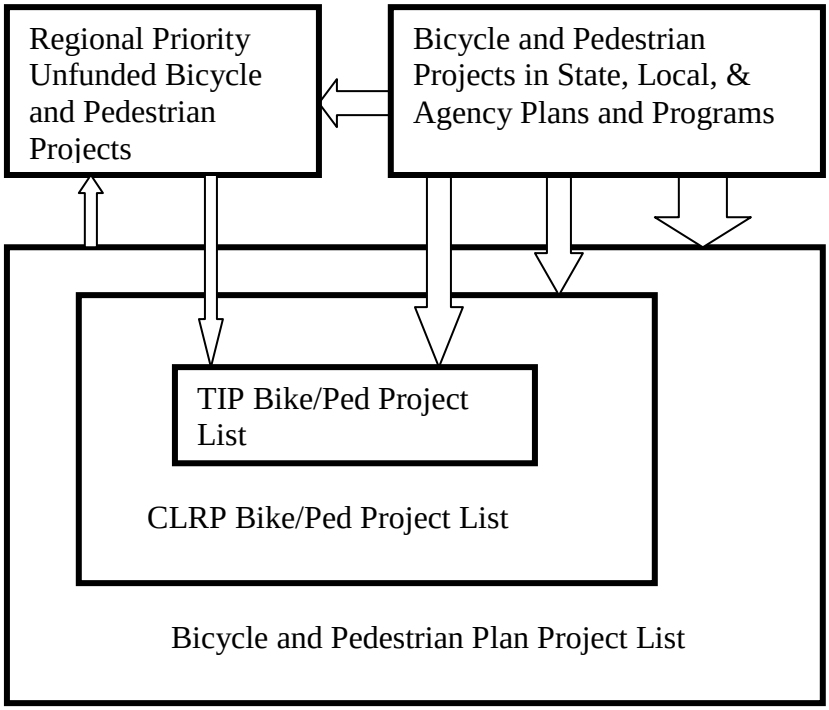
In February 2001, the TPB completed the *Priorities 2000: Greenways* and *Circulation Systems* reports, which identified greenway and pedestrian circulation systems priorities.

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. This plan is an update to the 2006 plan.

#### Sources of the Regional Plan Projects

State, local, and agency bicycle and pedestrian plans are the source of the projects in this plan. All bicycle and pedestrian projects that are programmed in the TIP are also in the CLRP and in this plan. The plan, however, includes many projects that are not in the TIP or the CLRP. Figure 1-1 illustrates the relationships between the various project lists.

**Figure 1-1**




**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 Coucil of Governments' *Region Forward 2050* vision.

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 are being adopted, strengthened and implemented. Pedestrian and bicycle facilities in most jurisdictions will 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.

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.

## Overview

Residents of the Washington region walk and bicycle at about the same rate as the nation as a whole. Tables 2-1 and 2-2 show the share of walking and bicycling trips to work for the ten largest metropolitan areas.

| | Table 2-1 Pedestrian Commuting in the Ten Largest Metropolitan Areas[1] | % Walk to Work 2000 Census | % Walk to Work 2006-2008 |
|---|---|---|---|
| 1 | New York | 5.55% | 6.2% |
| 2 | Boston | 4.12% | 4.8% |
| 3 | San Francisco | 3.25% | 4.2% |
| 4 | Philadelphia | 3.88% | 3.7% |
| 5 | Washington | 3.10% | 3.0% |
| 6 | Chicago | 3.13% | 2.9% |
| 7 | Los Angeles | 2.56% | 2.6% |
| 8 | Detroit | 1.83% | 1.5% |
| 9 | Houston | 1.62% | 1.5% |
| 10 | Dallas-Fort Worth | 1.48% | 1.3% |
| | United States | 2.93% | 2.8% |

*Nationally, 10% of all urban area trips are made on foot or by bike*

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.[2] 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%.

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

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

In the first decade of the 21st Century, growth in solo driving share appears to have stopped, and transit, walking and bicycling mode shares have stabilized. 75.8% of workers drove alone in 2006-2008, which is essentially the same as in 2000, and public transportation grew from 4.7% to 4.9%.

The walk and bike modes are more common than the census commute mode numbers would lead one to believe. Work trips account for less than 20% of all trips, and walking and biking are more common for other

1 2000 US Census, 2006-2008 American Community Survey
2 1960 Census of Population, Characteristics of Population, United States Summary

purposes. Nationally, 9.5% of all urban area trips were made on foot, and 0.9% by bicycle in 2001. In the Mid-Atlantic region, 15.8% of all trips are made on foot, and 0.8% by bicycle.[3]

Regionally, bicycling and walking are concentrated in the core neighborhoods of the Washington region, especially areas near downtown D.C. and certain Metro stations, as well as college campuses and military bases.

In the past decade walk mode shares for all trips have grown, while bike mode shares have stabilized. Walking and bicycling have grown in the core. Bicycling, however, suffered a steep decline in the outer jurisdictions, resulting in no net increase between 1994 and 2007/2008.

Ethnicity, geography, age, and car ownership affect the decision to walk or bicycle. People under the age of 44 are more likely to walk or bicycle than people older than age 44, and people over age 65 have the lowest rates of walking and bicycling. 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. Middle-income groups are slightly less likely to walk or bicycle than either low-income or high-income groups. Whites are more likely to bicycle.

Distance is a major barrier to commuter cycling, along with absence of safe routes, and lack of end-of-trip facilities such as showers and lockers.[4] Trips in the outer suburbs are usually farther than most people are willing to walk or bicycle. However, most commute trips that are short enough to be bikable or walkable are still taken by car. The average trip distance to transit or carpool is very short.

Transit and walking are interdependent, with 80% of bus and 60% of Metrorail access trips on foot. Mode of access varies tremendously by Metro station. 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.

3 Pucher, John, "Socioeconomics of Urban Travel: Evidence from the 2001 NHTS". *Transportation Quarterly*, Vol. 57, No. 3, Summer 2003 (49-77). Page 54.

4 Metropolitan Washington Council of Governments, *2004 Bike to Work Day Survey- Summary of Results*, June, 2005. Page 6.

## Walking and Bicycling According to the COG/TPB Household Travel Survey

The household travel survey is a roughly once in a decade survey of households in the greater Washington region. The survey was done in 1994, and again in 2007-2008. It is the best available source of information on travel mode shares in the Washington region.

For the most recent survey, 11,000 randomly selected households in TPB Region and adjacent areas (+3,500 in the Baltimore Region) were surveyed. Higher numbers of samples were taken in higher density, mixed use urban areas, and regional activity centers. The sample was address-based. Interviews were conducted between February 2007 and March 2008. Travel is weekday travel only; week-end travel was not counted.

Comparing the results of the 1994 and the 2007/2008 surveys, walk commuting has fallen from 3% to 2.7%, but bicycle commuting has increased slightly, from 0.7% to 1%. Bicycling grew by the same amount as walking declined. Auto commute trips remained stable, while auto passenger (carpooling) declined steeply, and transit use grew.

These results are generally consistent with the 2000 US Census and 2006-2008 American Community Survey results for the Washington region, which also show walk commuting decreasing and bicycle commuting increasing.

**Chart 2-1: Change in Commuting Mode Shares 1994-2007/2008**

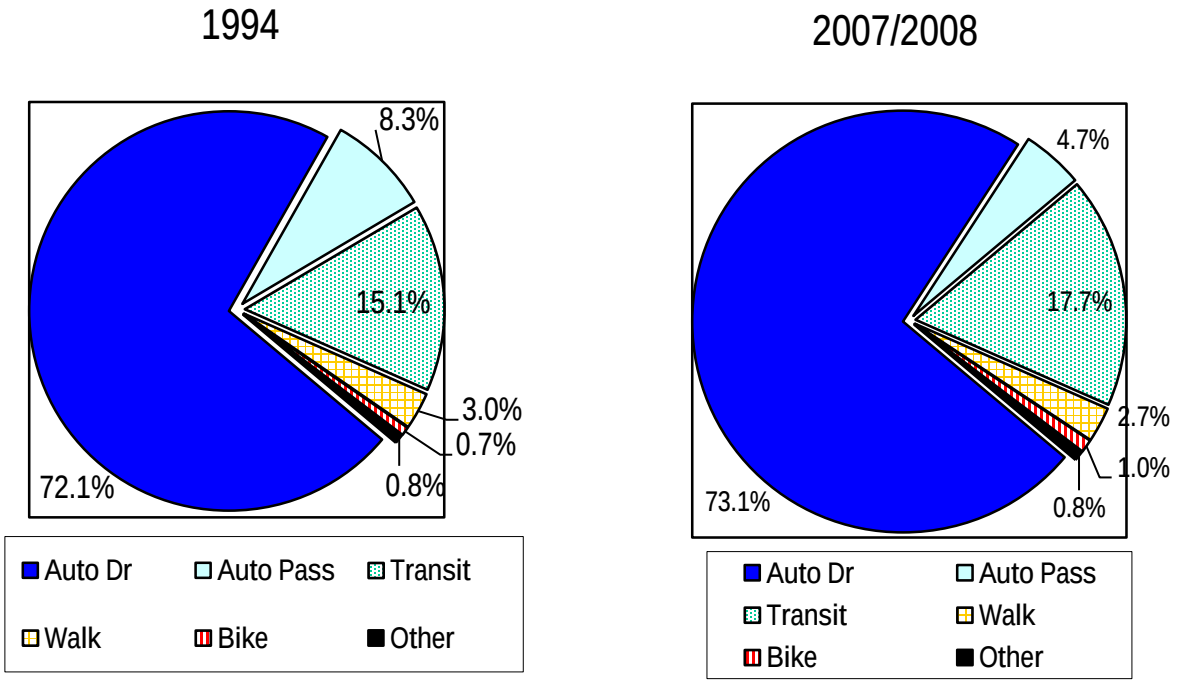


**Chart 2-2: Walk Commute Share by Jurisdiction**

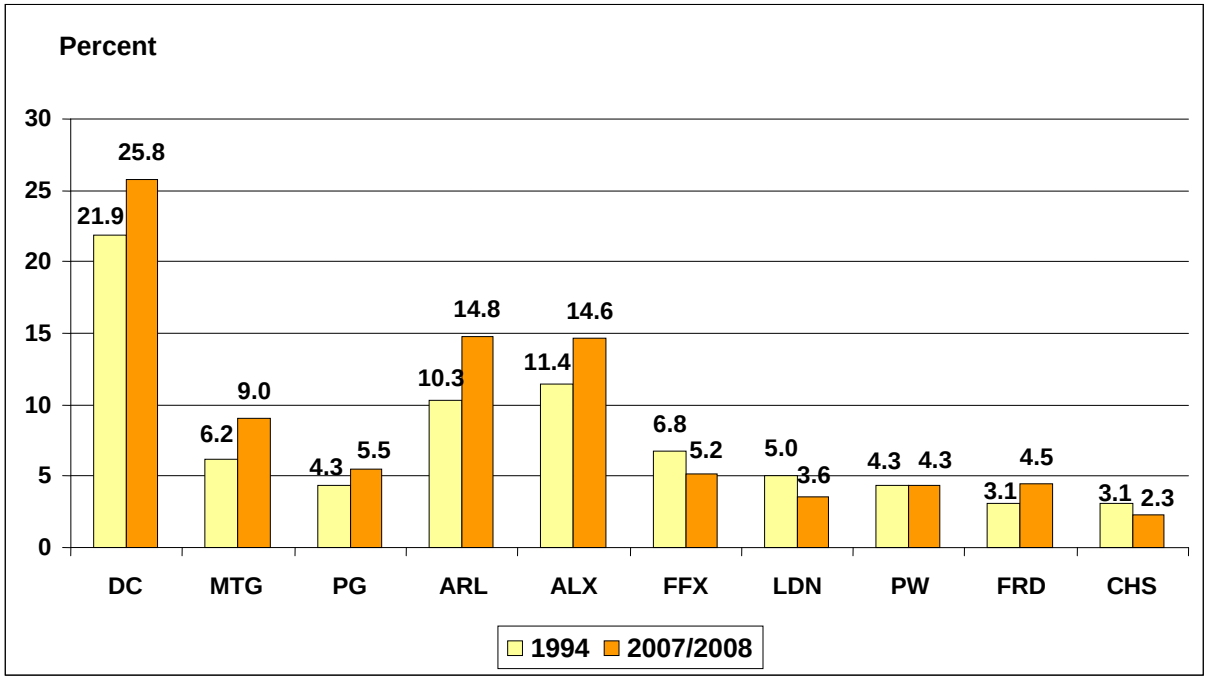
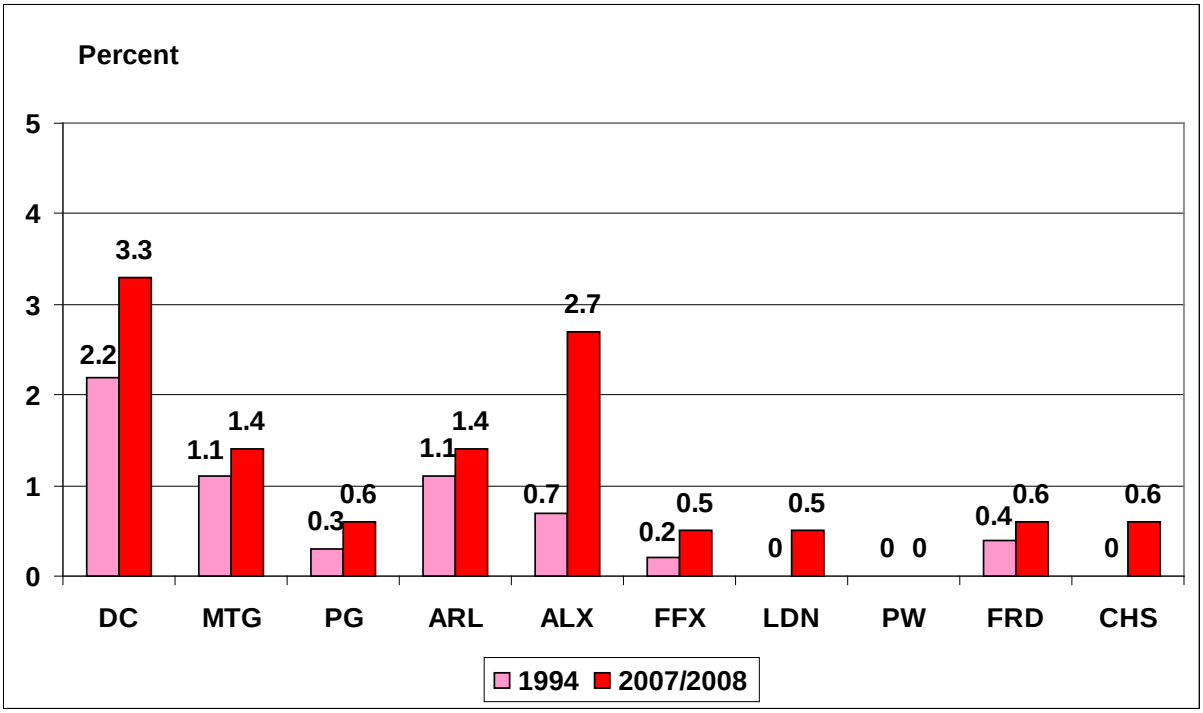



**Chart 2-3: Bike Commute Mode Share by Jurisdiction**



Walk commuting grew in urban core, and in Montgomery and Frederick Counties, but fell in other suburban areas, notably Fairfax and Loudoun Counties, which experienced considerable auto-oriented suburban growth.

Bike commuting grew in most jurisdictions from a low base, with the biggest increases in the District of Columbia and Alexandria.

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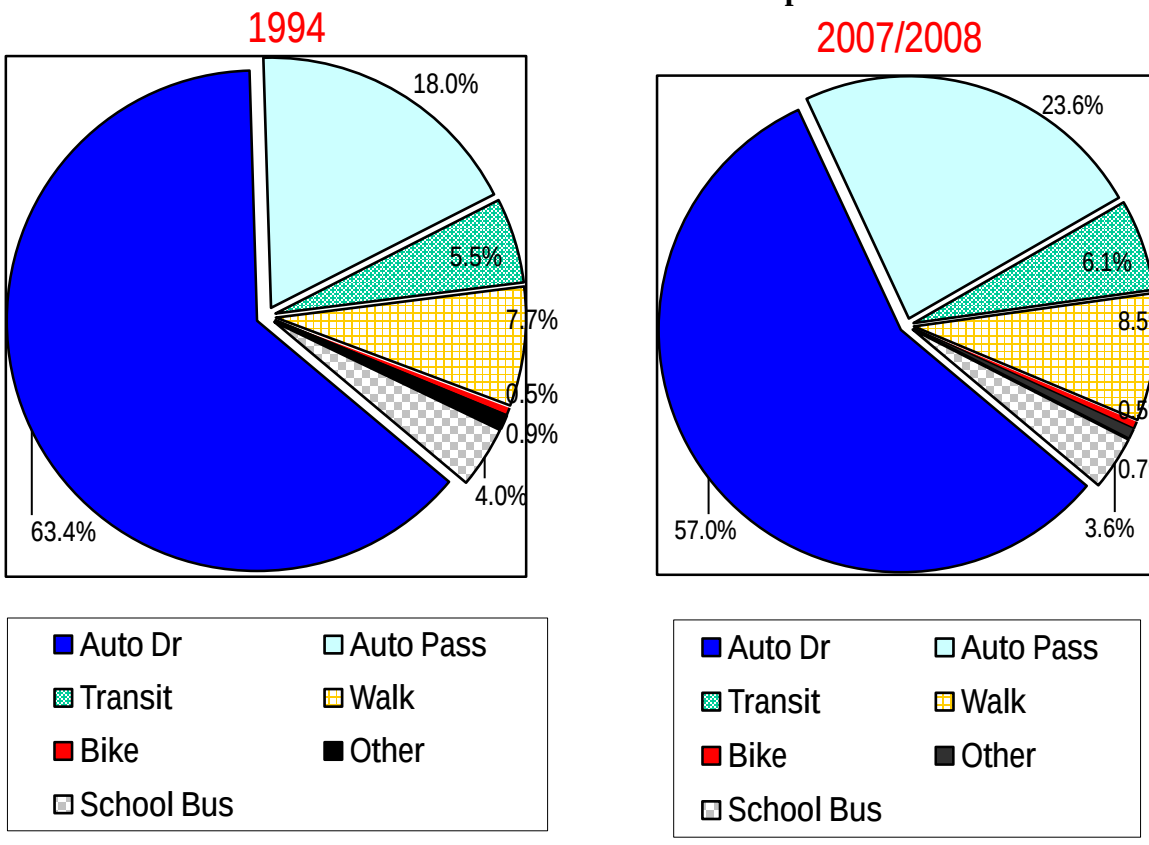
## Mode Share Trends for All Trips in the Washington Region

Commute trips, while they get a lot of attention, account for less than 20% of all trips in the Washington region. Nonwork trips have different characteristics than work trips, and overall trends in mode share are different from trends in commuter mode share.

Solo driving declined significantly in the Washington region between 1994 and 2007/8, while auto passenger, transit, and walk modes increased. Bicycling remained stable at the regional level.

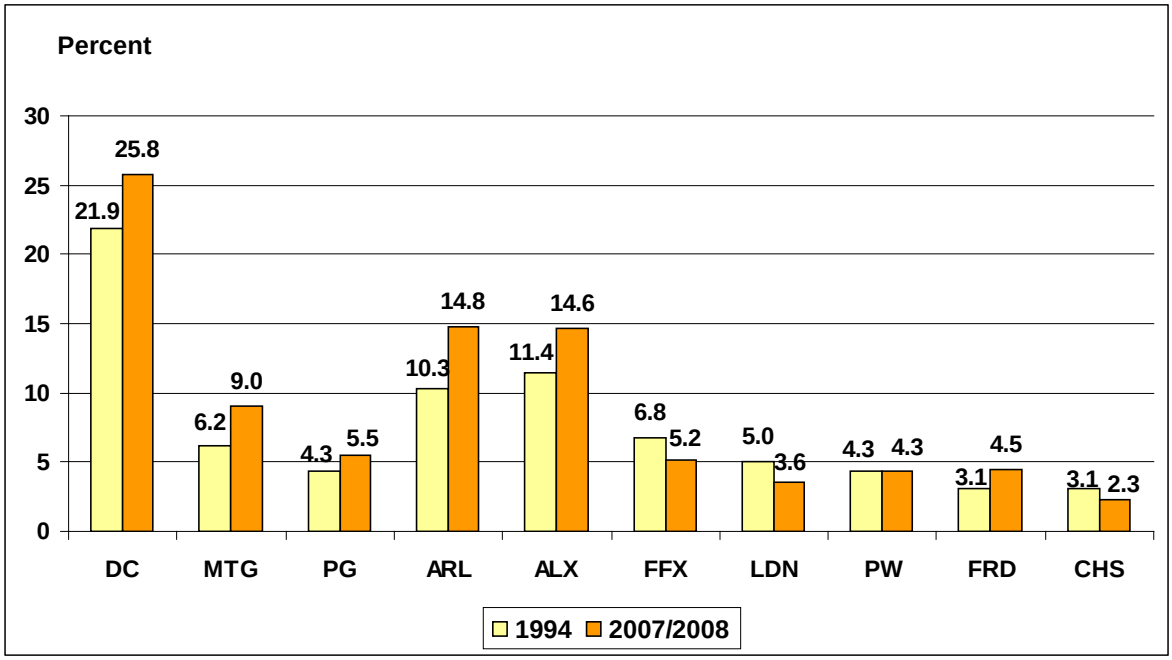
**Chart 2-4: Mode Share for All Trips**



### Walk and Bike Mode Share by Jurisdiction

Walking has increased most jurisdictions, with the notable exceptions of declines in Fairfax and Loudoun Counties. The biggest increases were in the urban core and in Montgomery County.

**Chart 2-5: Daily Walk Trip Share by Jurisdiction of Residence (1994 – 2007/2008)**




Bike mode share grew in the urban core, but fell steeply from low starting levels in the outer surburban counties. .Growth in bicycling in the core has been offset by an equal decline in the outer suburbs, adding up to zero growth at the metropolitan level. The outer counties have experienced greatly increased auto traffic, much of it on narrow country roads without bike lanes or other accommodation. Fear of traffic is a commonly cited reason in surveys for not riding.

Alexandria had the largest increase at .5% followed by Arlington at .3%.

**Chart 2-6: Daily Bike Trip Share by Jurisdiction of Residence (1994 – 2007/2008)**

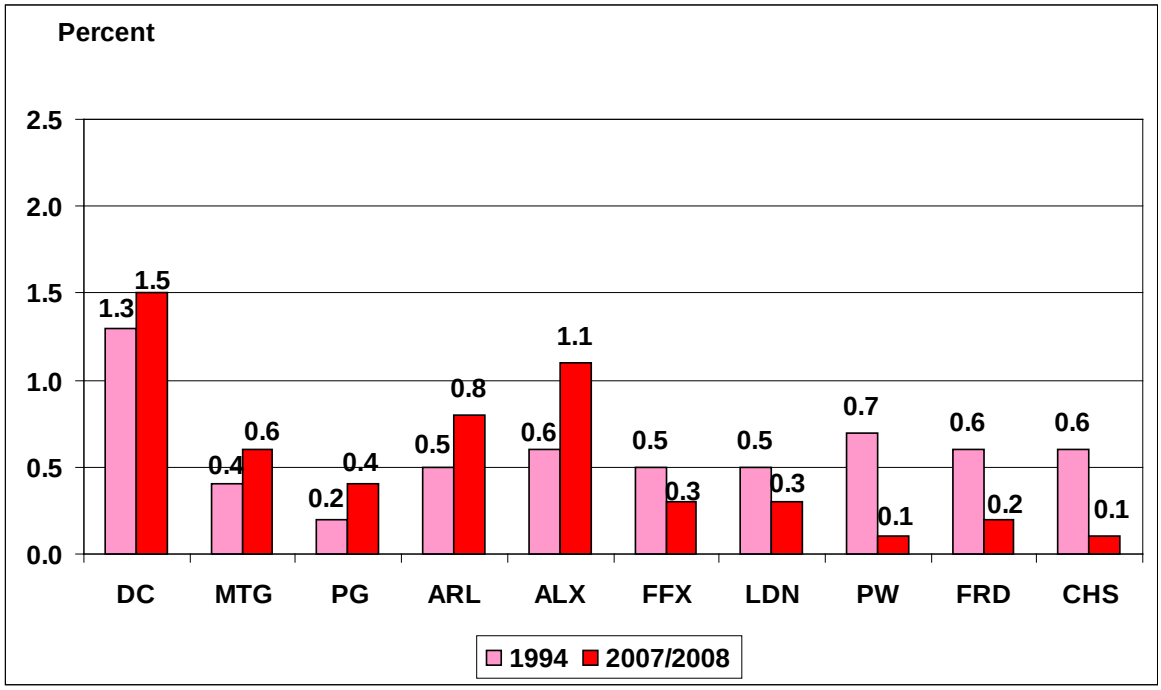



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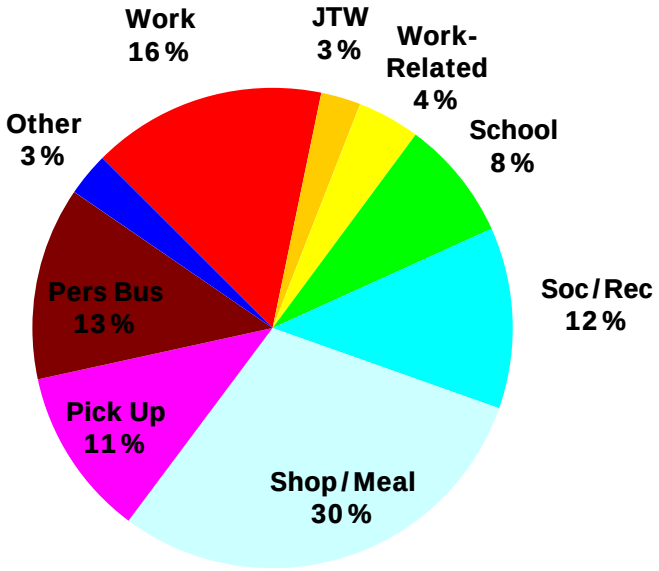
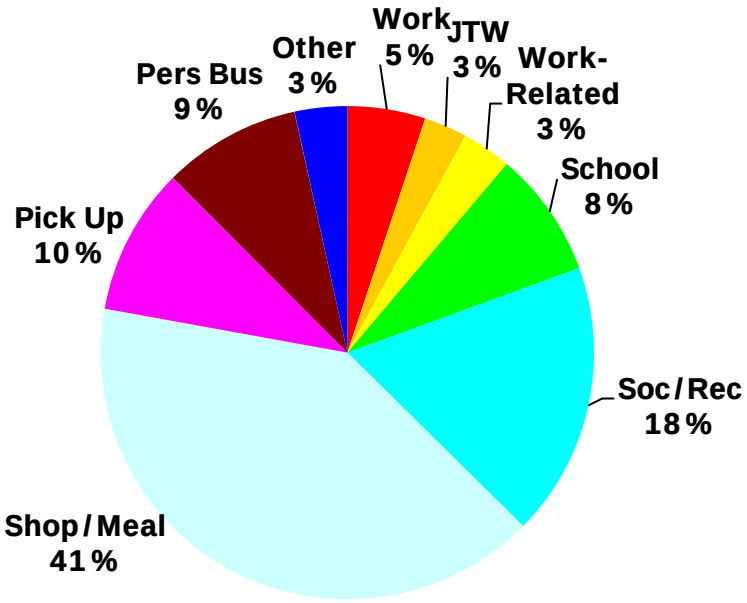
**Chart 2-7: Daily Trips by Trip Purpose**




**Daily Trips by Trip Purpose in the Washington Region**

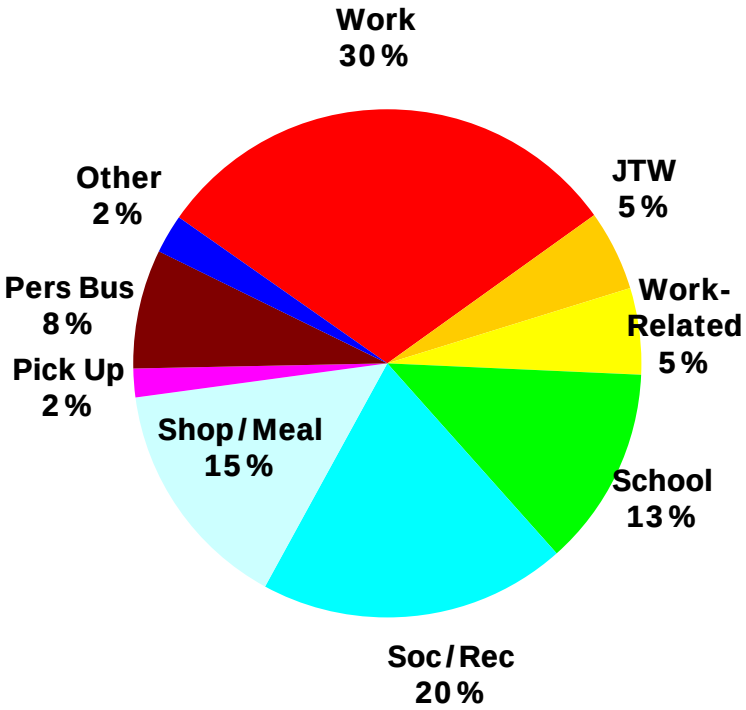
Commute trips account for less than 20% of total daily trips in the Washington region, but have average trip lengths 3 times the distance of other trips for non-work purposes. Commute trips also have the highest median trip length, at 9.3 miles.

**Chart 2-8: Walk Trips by Purpose**




The vast majority of walking trips are for shopping, meals, recreation, or social visits. Compared to all trips, pedestrians are more likely to be doing a shopping, dining, or social/recreational trip, and less likely to be going to work.

**Chart 2-9: Bike Trips by Purpose**




Bicyclist are more likely to be going to work or school than either "all trips" or "walk trips", and are less likely to be on shopping, dining, or social/recreational trips. This is the opposite of what one might expect based on median trip lengths. A possible explanation is that most bicyclists now live in walkable urban areas and have short, but not quite walkable commutes, so they will commute to work by bicycle but are more likely to walk for other purposes. Alternately, it may be

that bicyclists, while few

in number, tend to stick with their chosen means for all different types of trips (like car drivers). Walking is more conducive to being an access mode or being used for only some legs of a trip chain.

### Trip Lengths by Purpose

Based on trip lengths and number of trips shown below, school, shopping/meal, social/recreational, and personal business trips might be more susceptible to being shifted to walk or bike modes than commute trips.

**Table 2-1: Trip Length Distribution by Purpose (Distance in Miles, 2007/2008 Household Travel Survey)**

| Purpose | 25% | Median | 75% | 90% |
|---|---|---|---|---|
| Work | 4.3 | 9.3 | 17.1 | 25.8 |
| To Work after other stop (JTW) | 1.5 | 4.8 | 12.9 | 22.1 |
| Work-Related | 1.8 | 5.6 | 13.4 | 24.8 |
| School | 0.9 | 2.1 | 4.7 | 9.3 |
| Social/Recreational | 1.0 | 2.9 | 6.7 | 13.7 |
| Shop/Meal | 0.7 | 2.1 | 5.4 | 12.0 |
| Pick-Up | 0.8 | 2.2 | 5.2 | 11.2 |
| Personal Business | 1.4 | 3.5 | 7.5 | 14.9 |
| Other | 0.8 | 1.5 | 4.1 | 7.3 |

### Trip Lengths by Mode

The median auto trip length in the Washington region is only four miles, and 25% of auto trips are 1.5 miles or less. The median auto passenger trip, which includes many child passengers, is only 2.2 miles, with 25% of auto passenger miles being 1.5 miles or less.

The median walk distance of 0.3 miles is consistent with most estimates of people's willingness to walk. The median bike trip distance of 1.5 miles is brought down in the household travel survey by some short trips that are part of trip chains. Other sources show typical bike trip lengths as being five miles or less.

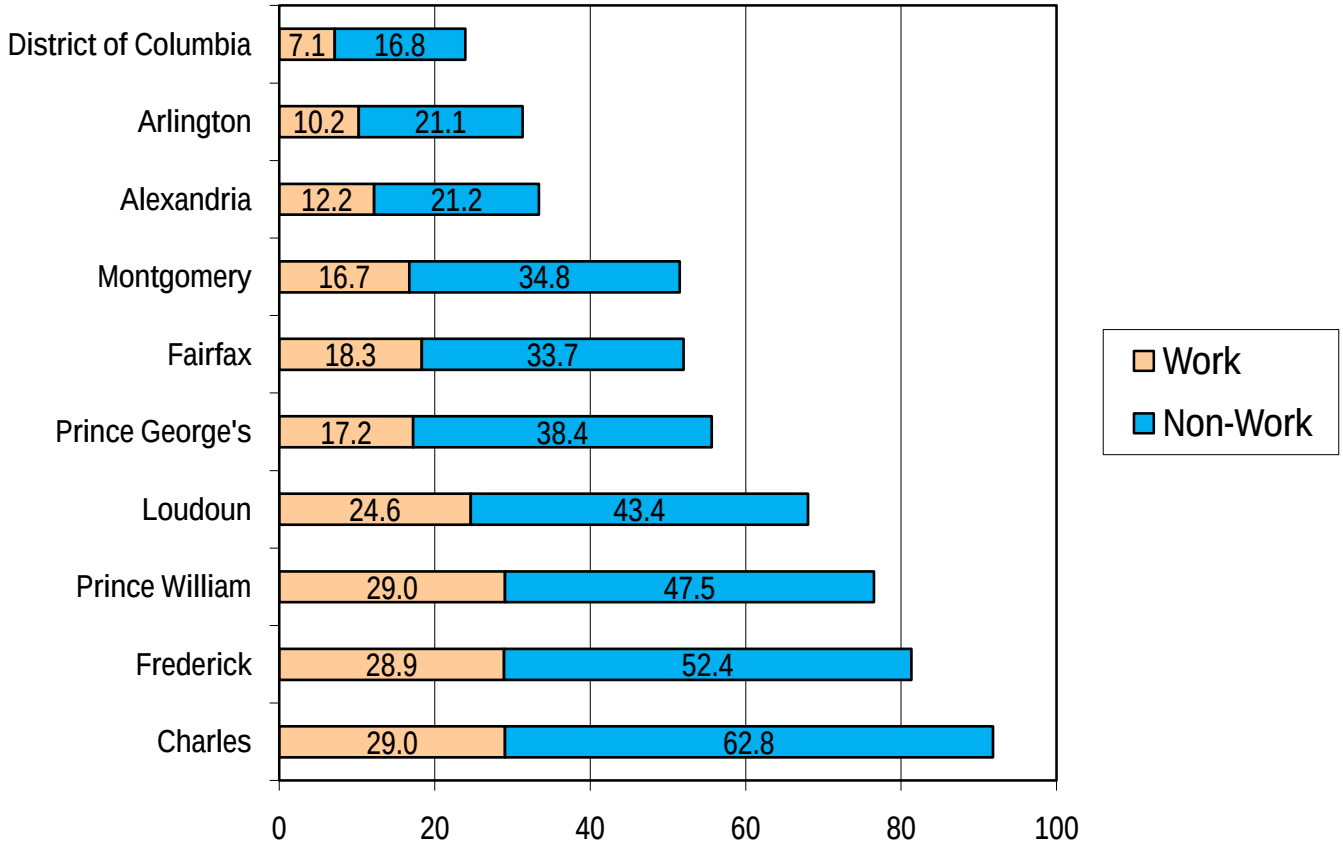
**Table 2-2: Trip Length Distribution by Mode (Distance in Miles)**

| Mode | 25% | Median | 75% | 90% |
|---|---|---|---|---|
| **Auto Driver** | 1.5 | 4.0 | 9.7 | 18.7 |
| **Auto Passenger** | 1.2 | 2.8 | 6.4 | 12.9 |
| **Transit** | 3.5 | 6.9 | 14.1 | 23.4 |
| **School Bus** | 1.2 | 2.3 | 4.6 | 8.2 |
| **Walk** | 0.1 | 0.3 | 0.5 | 0.9 |
| **Bike** | 0.8 | 1.5 | 4.1 | 7.3 |

### Average Daily Miles Traveled By Jurisdiction

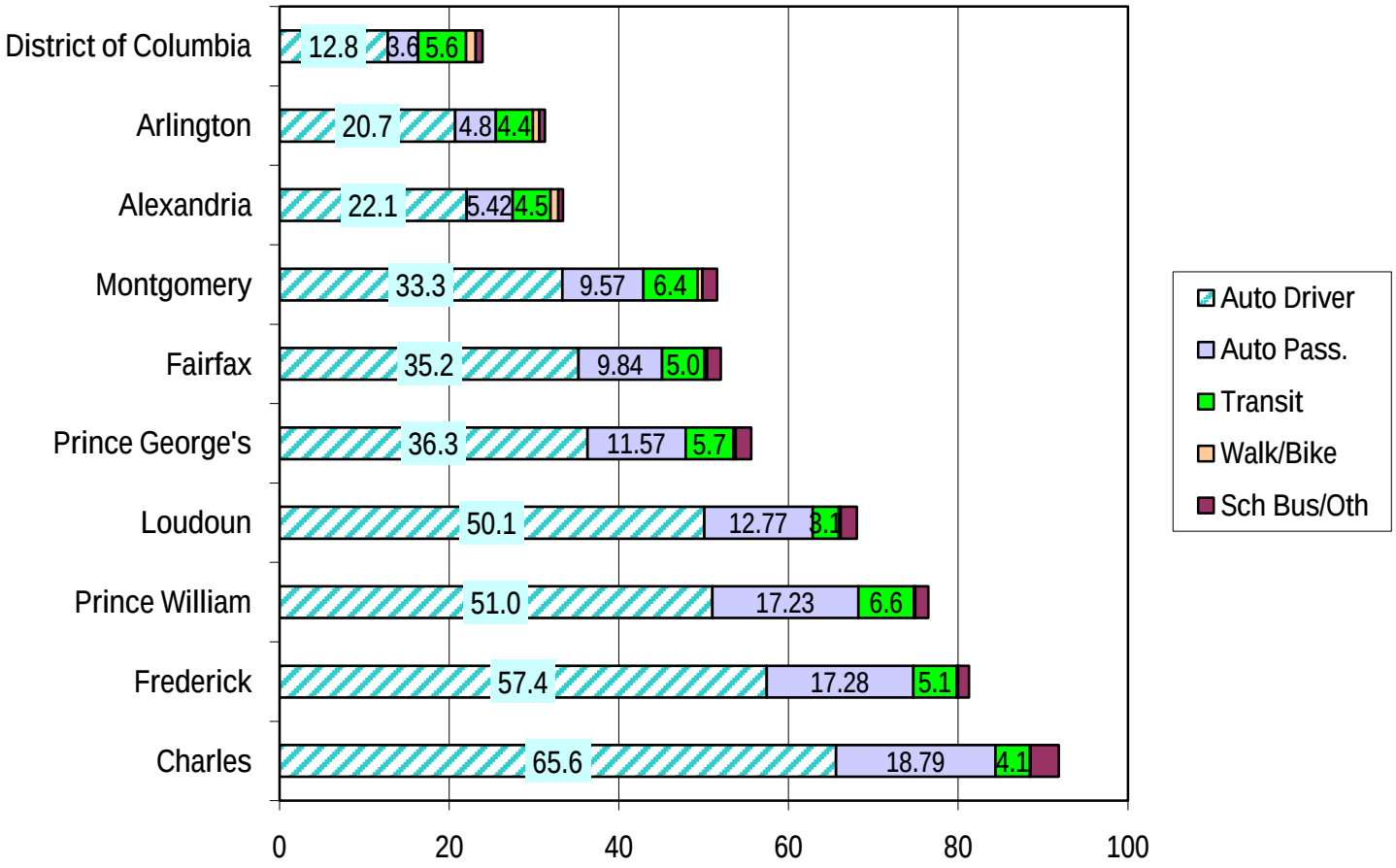
Households in the urban core make slightly fewer trips per day, anbd travel far fewer miles per day than households in the outer jurisdictions. The average DC household makes seven trips per day and travels 23.9 miles, while the average Charles County household makes nine trips per day, and travels 91.8 miles, or nearly four times as far.

**Chart 2-10: Average Daily Miles Traveled Per Household by Jurisdiction and Purpose**




Nor are all the long trips in the outer suburbs commute trips; outer suburban households travel three to four times as many non-work miles as DC households. Low-density development patterns in the outer suburbs appear to be generating trip distances which are significantly longer than what most people are willing to walk or bicycle.

**Chart 2-11: Average Daily Miles Traveled Per Household by Jurisdiction and Mode**




DC residents use an automobile for about half the miles they travel, while more than 90% of outer suburban residents' travel mileage is in a car, with transit and school buses accounting for the rest.

**Table 2-3: Total Weekday Walk and Bike Trips by Type in the Washington Region (in Thousands)**

| Type of Trip | Walk | Bike |
|---|---|---|
| **Primary Travel Mode** | 1,370.0 | 87.5 |
| **"Loop" Trips** | 123.8 | 6.9 |
| **Metrorail Access** | 464.3 | 4.3 |
| **Metrorail Egress** | 469.0 | 4.0 |
| **Total** | 2,427.1 | 102.7 |

Access to transit accounts for a high proportion of the walk trips in the region, especially in the urban core.

**Chart 2-12: Weekday Walk Trips by Jurisdiction of Residence and Type Per 1,000 Population in Households**

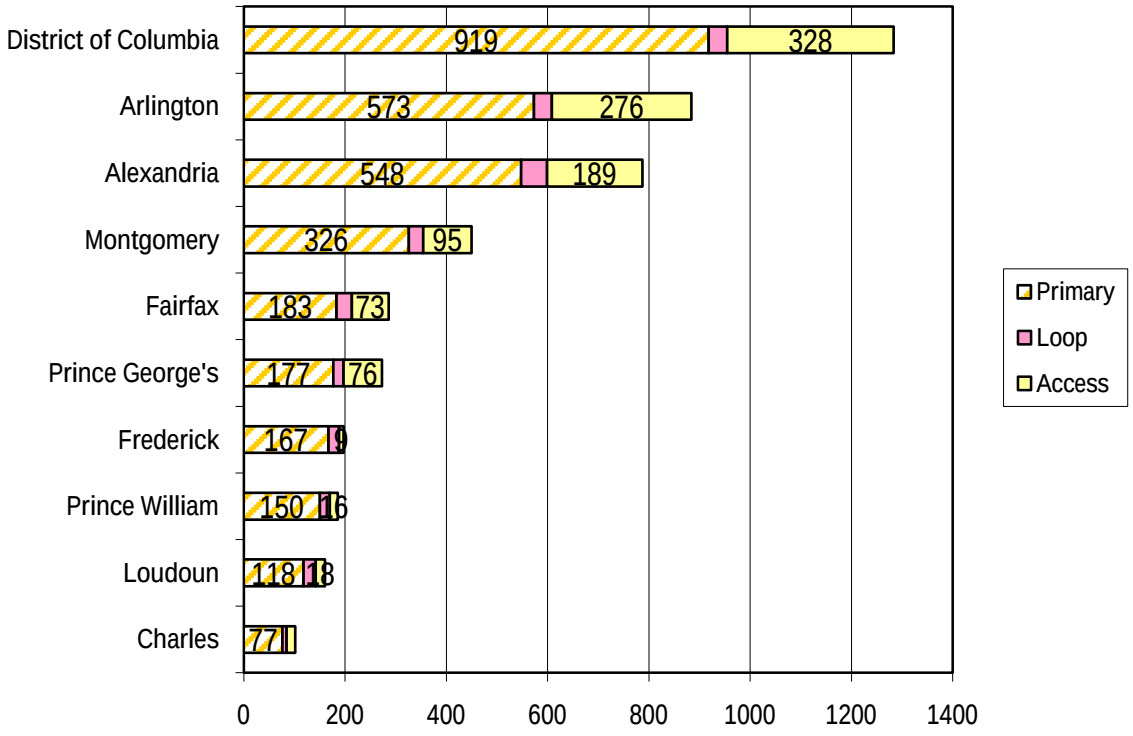
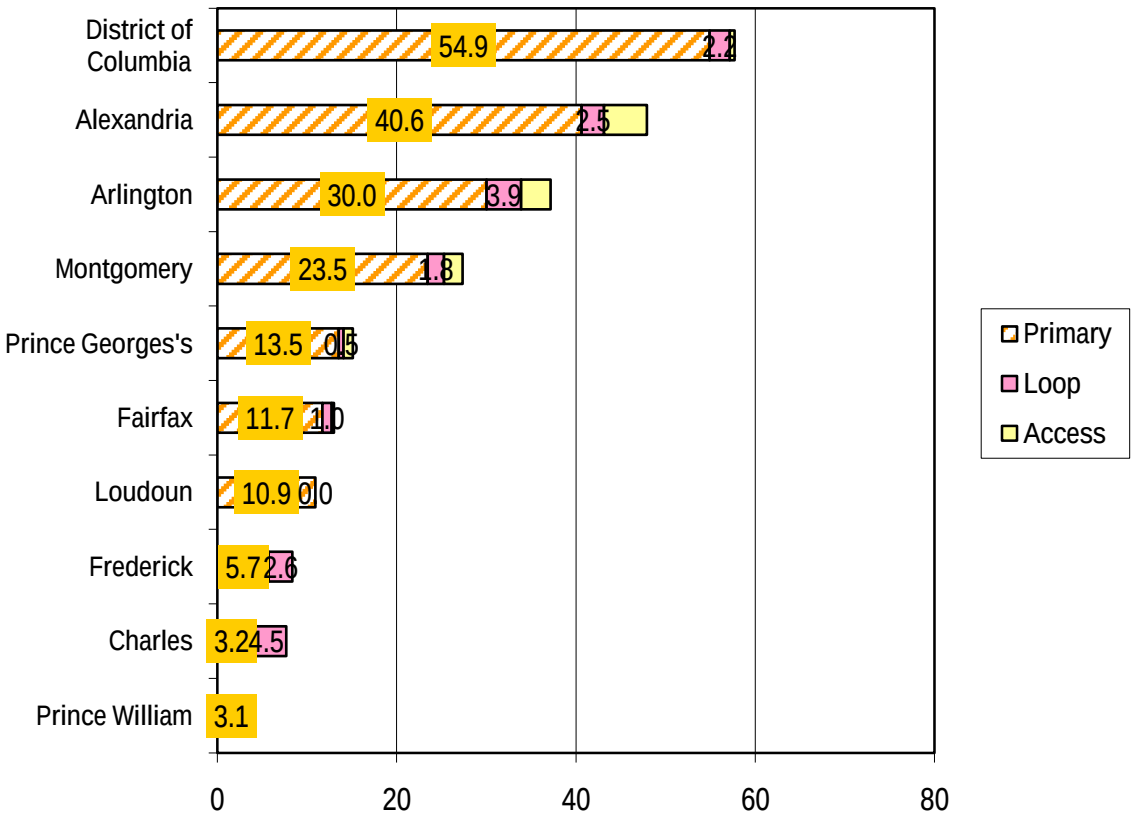


**Chart 2-13: Weekday Bike Trips by Jurisdiction of Residence and Type Per 1,000 Population in Households**



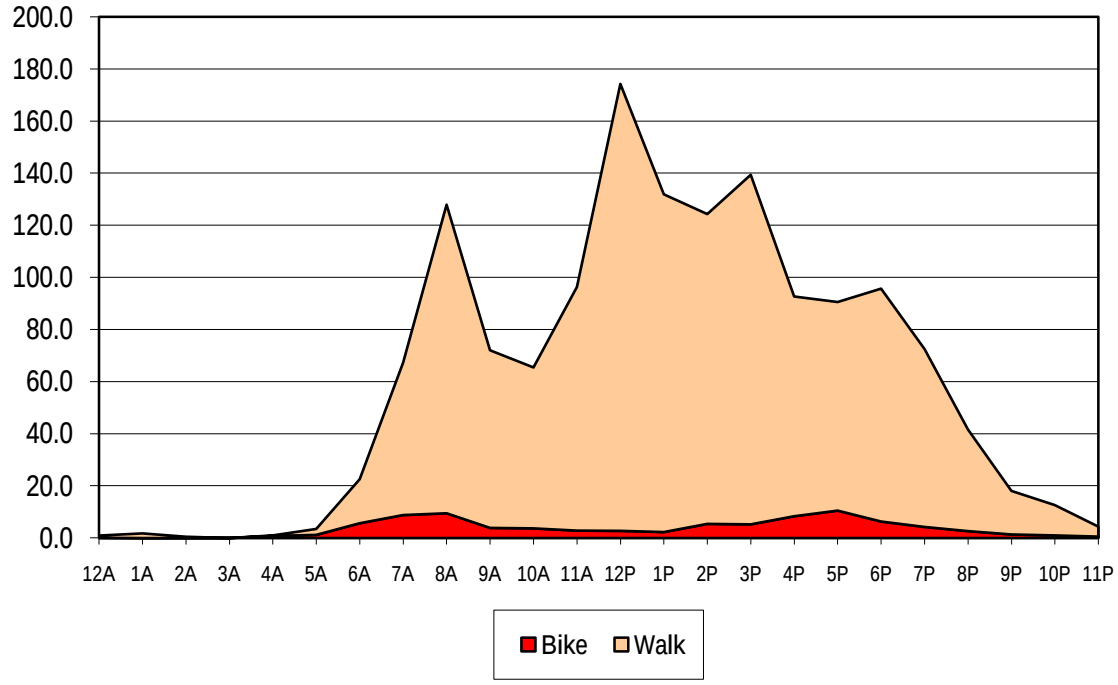

While DC residents are most likely to bicycle, Alexandria and Arlington are most likely to use bicycle to access Metrorail. Charles County has the highest rate of "loop" bicycle trips.

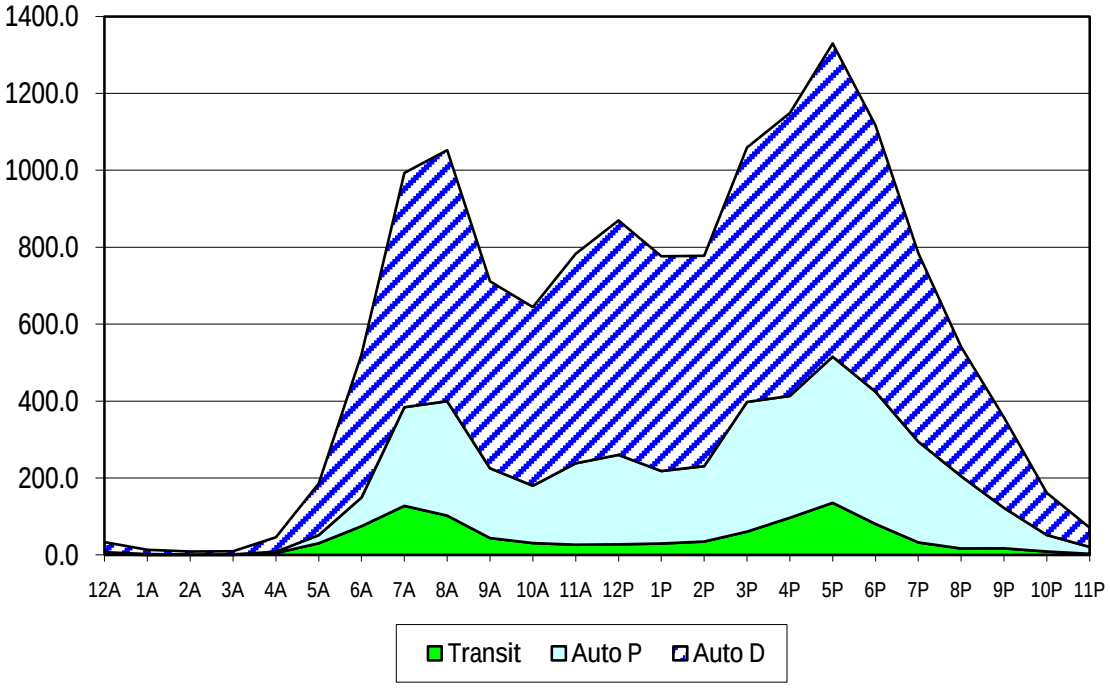
## Walking and Bicycling by Time of Day

Walk trips peak at lunch hour, then around 3 p.m. when school lets out, and then during the morning rush hour just before 8 a.m. This is different from auto, auto passenger, and transit modes, which are highest at 5 p.m, and next highest at 8 a.m.

Bike trips are much more evenly distributed throughout the day than other modes. Bike trips peak at the evening and morning rush

**Chart 2-14: Walking and Bicycling by Time of Day**



### Walking and Bicycling Trends According to the US Census

The last United States census was the 2000 census. The Census contains no information on travel in general, but does gather data on journey to work. The main thing the census can offer which the COG/Household Travel Survey does not is accurate information on journey work as the census tract level. Since bicycling and walking vary a lot by neighborhood, even block to block, this kind of fine-grained information is useful. However, at this point the 2000 census information is somewhat dated.

The 2010 census form will be shortened, and the decennial census will no longer provide 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. However, the ACS sample is too small to be reliable on a census tract level. Currently a three-year rolling average of data is available. When five-year averages become available, in about a year, it will be possible to say something about bike and mode share at the census tract level.

The 20th Century trend towards less walking and bicycling also held for the Washington Metropolitan Statistical Area. 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. It should be noted that the census numbers tend to undercount pedestrian trips, since a walk trip to transit is counted as a transit trip, not as a walk trip. Charts 2-15 and 2-16 below show the changes in walking and biking to work by jurisdiction.

**Chart 2-15: Percentage of Workers Walking to Work**

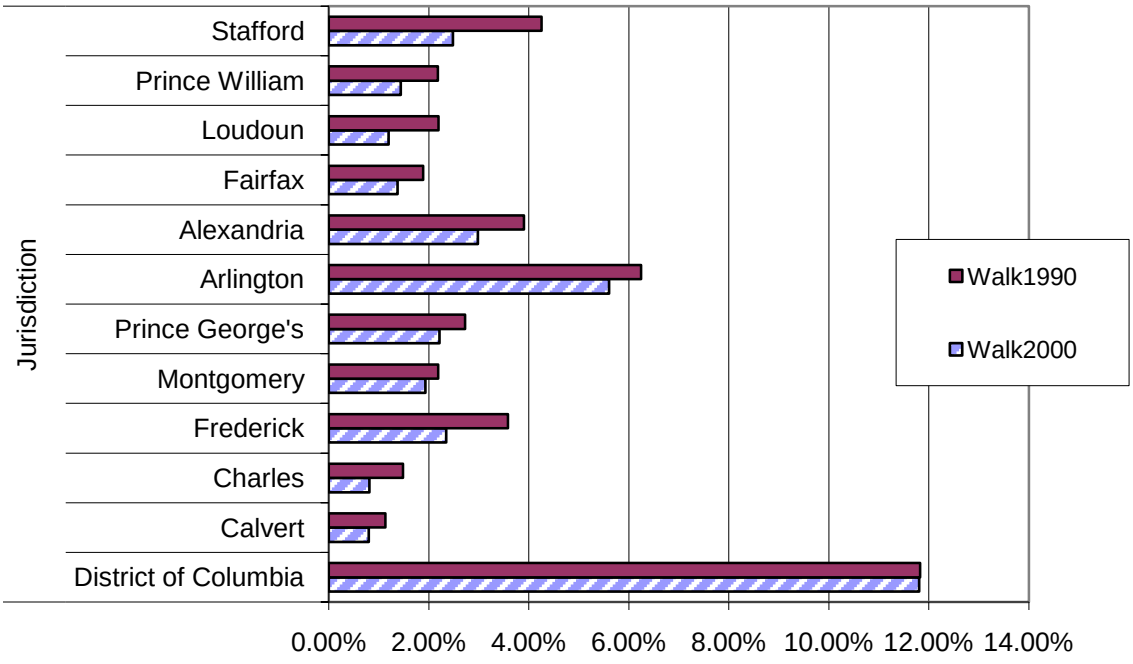
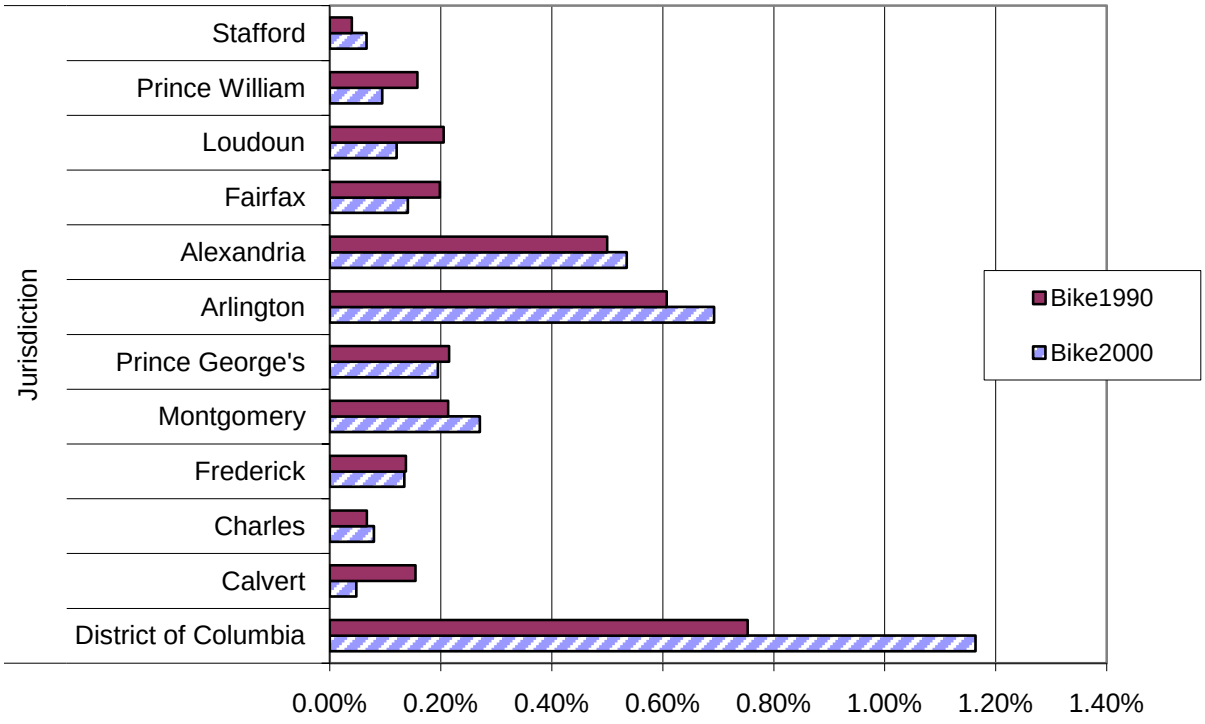



**Chart 2-16: Percentage of Workers Biking to Work**



Generally, the urban core of the Washington region, consisting of the District of Columbia, Arlington, and Alexandria, has experienced modest losses in pedestrian mode share and considerable gains in bicycling. The District of Columbia has maintained its pedestrian mode share for the journey to work, while increasing its bicycle mode share considerably. The outer suburban jurisdictions had relatively few people bicycling or walking to work in 1990, and that number fell further during the decade that followed.

### Mode Share by Census Tract

Figure 2-1 shows the percentage of home-based work trips by bicycle for each census tract within the TPB member jurisdictions. Figure 2-3 shows the percentage of home-based work trips by foot. Figures 2-2 and 2-4 show bicycle and walk work trips respectively for the area served by Metrorail. The maps show that bicycling and walking are concentrated in the neighborhoods surrounding downtown D.C., Capitol Hill, and North Arlington. The neighborhoods closest to downtown show the highest walk mode shares, while those a little further out have the highest bike mode shares. 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. College campuses and military bases such as University of Maryland, Ft. Meyers, Bolling Air Force Base, the National Institute of Health, Walter Reed, Howard, Georgetown and Gallaudet all have high walk or bike mode share.

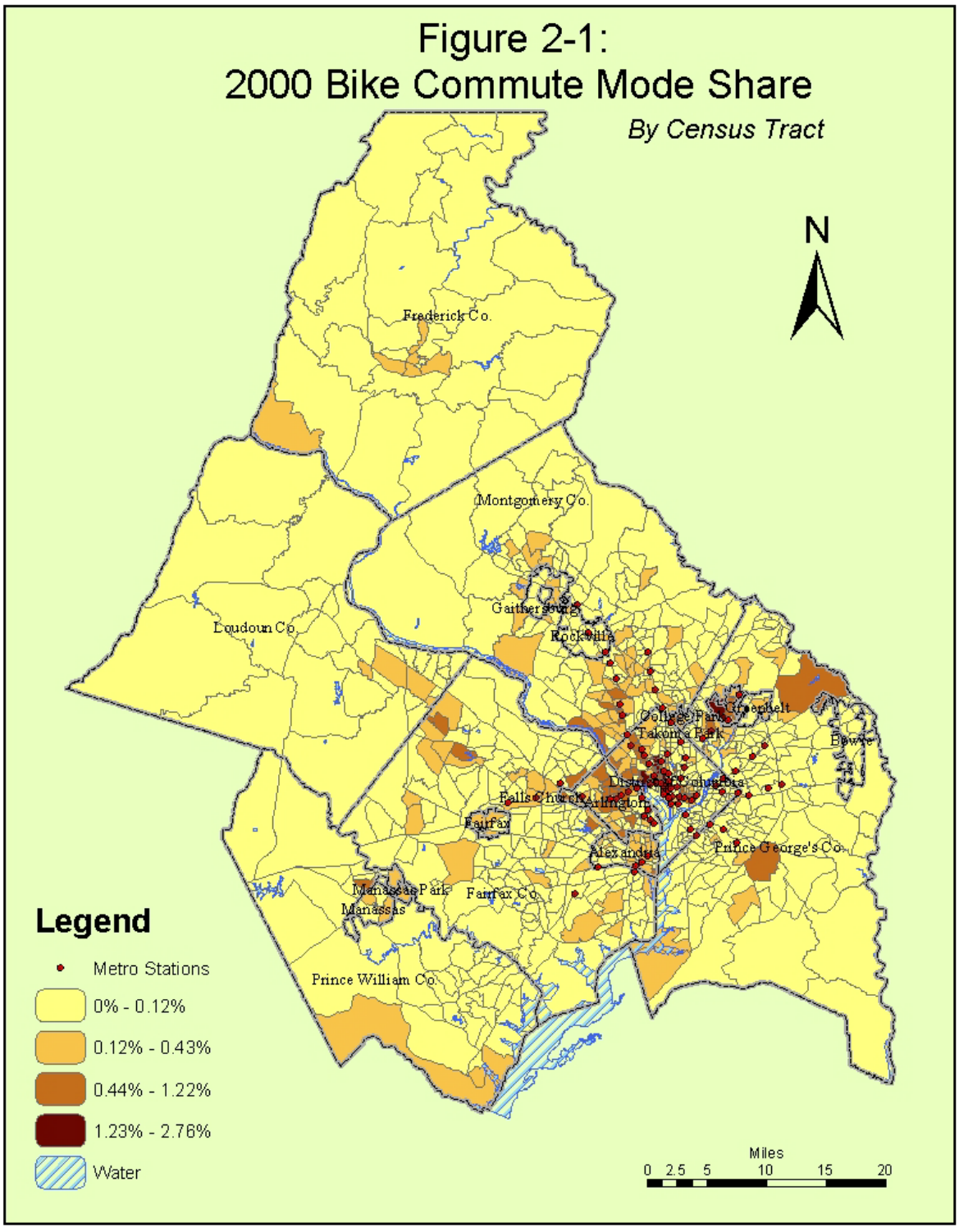


Figure 2-1:
2000 Bike Commute Mode Share
By Census Tract
N
Frederick Co.
Montgomery Co.
Loudoun Co.
Gaithersburg
Rockville
College Park
Takoma Park
Greenbelt
Bowie
Falls Church
Arlington
Fairfax
Alexandria
Prince George's Co.
Manassas Park
Manassas
Fairfax Co.
Prince William Co.
Legend
Metro Stations
0% - 0.12%
0.12% - 0.43%
0.44% - 1.22%
1.23% - 2.76%
Water
Miles
0 2.5 5 10 15 20

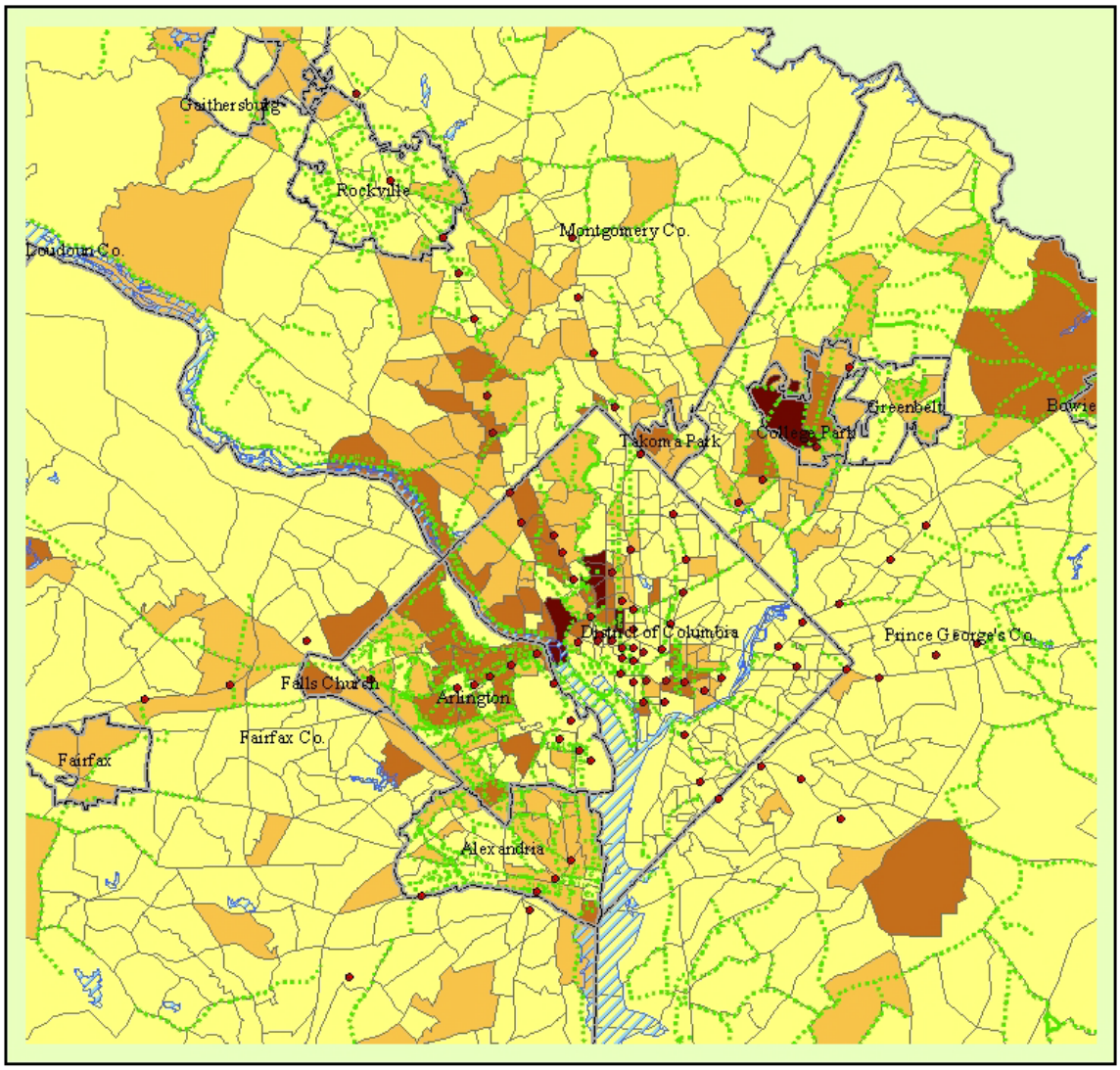



Figure 2-2:
2000 Bike Commute Mode Share
*By Census Tract*

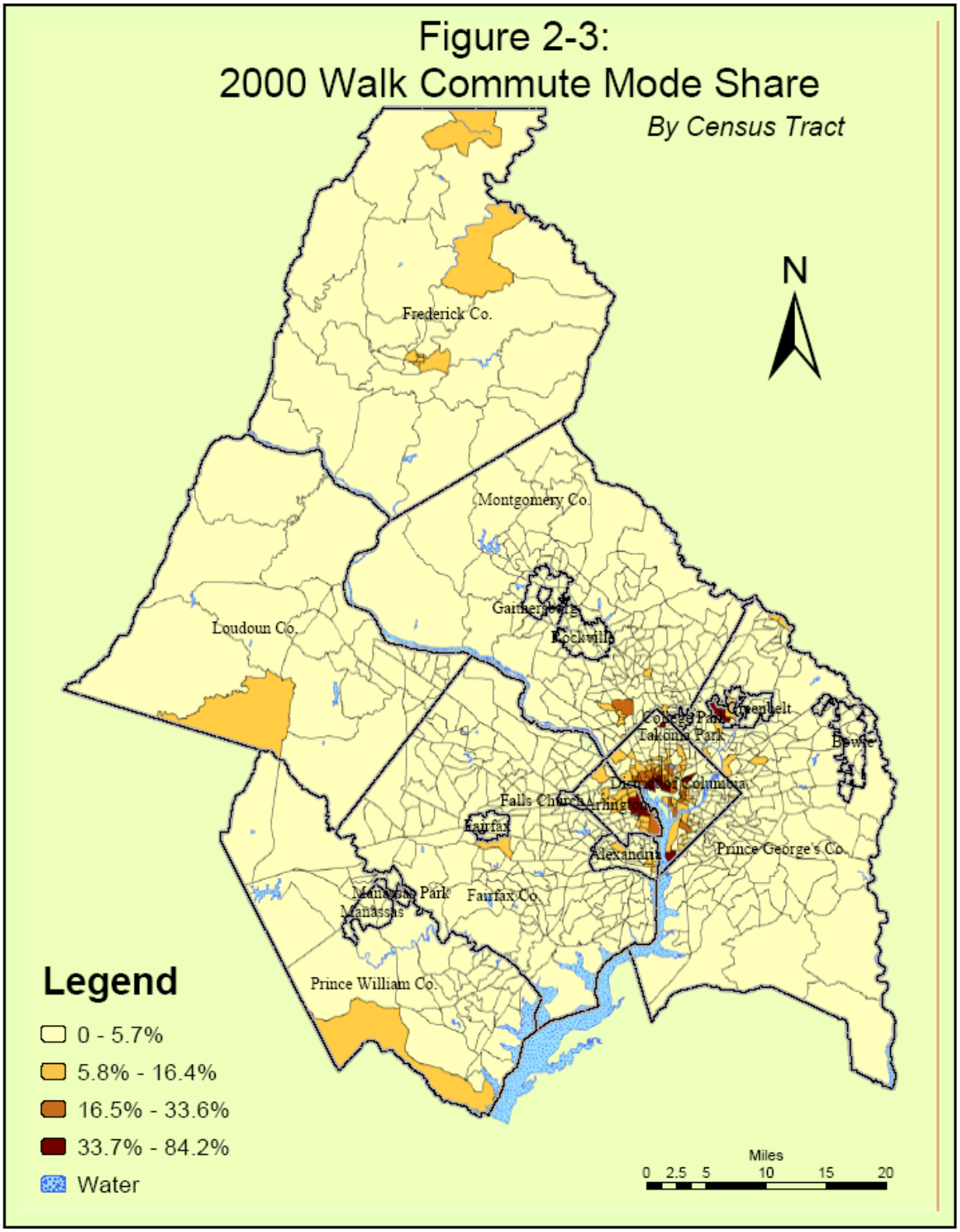


Figure 2-3:
2000 Walk Commute Mode Share
By Census Tract
N
Frederick Co.
Montgomery Co.
Loudoun Co.
Gaithersburg
Rockville
College Park
Takoma Park
Greenbelt
Bowie
Falls Church
Fairfax
Alexandria
Prince George's Co.
Manassas Park
Manassas
Fairfax Co.
Prince William Co.
Legend
0 - 5.7%
5.8% - 16.4%
16.5% - 33.6%
33.7% - 84.2%
Water
Miles
0 2.5 5 10 15 20

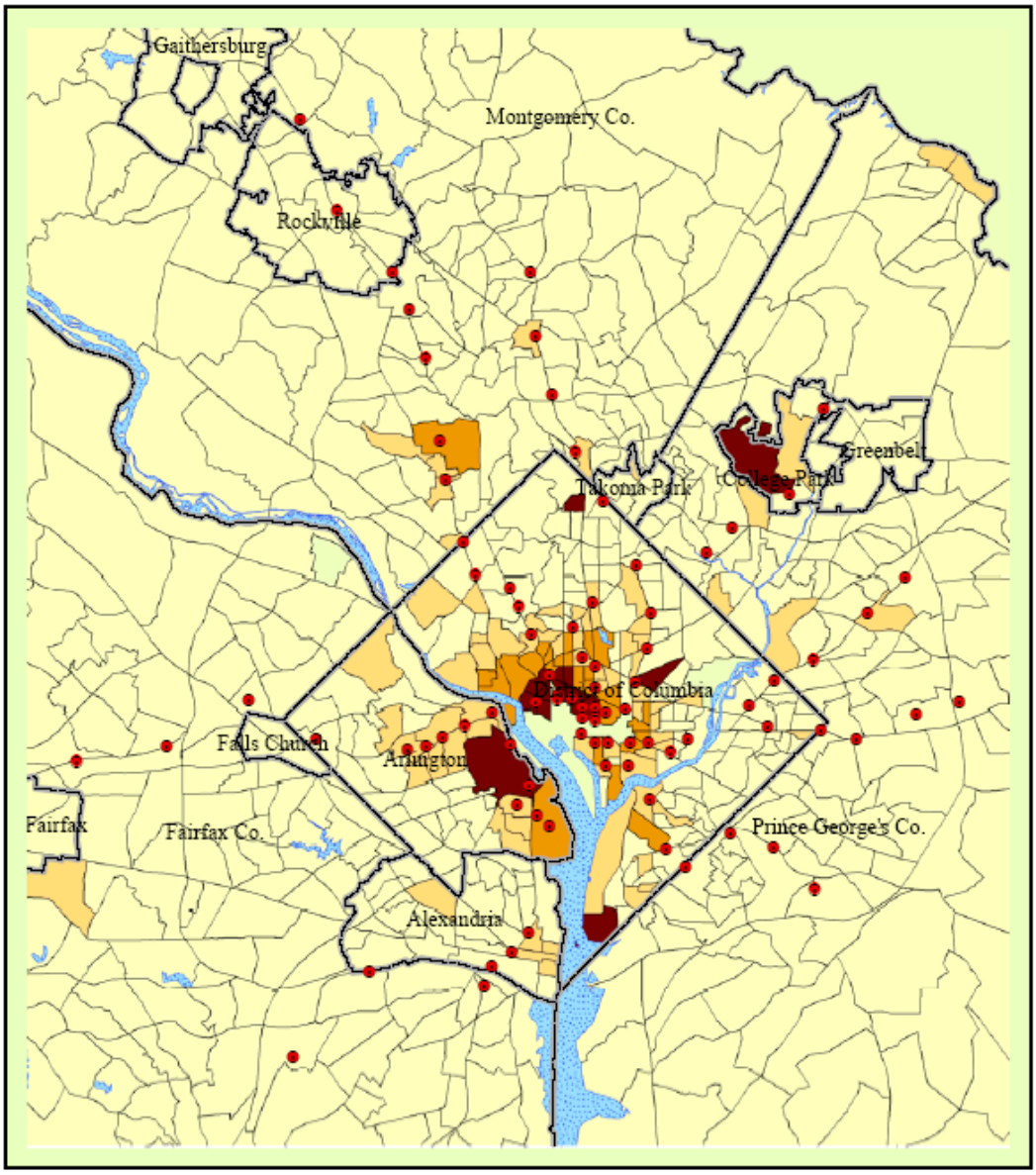



Figure 2-4:
2000 Walk Commute Mode Share
*By Census Tract*

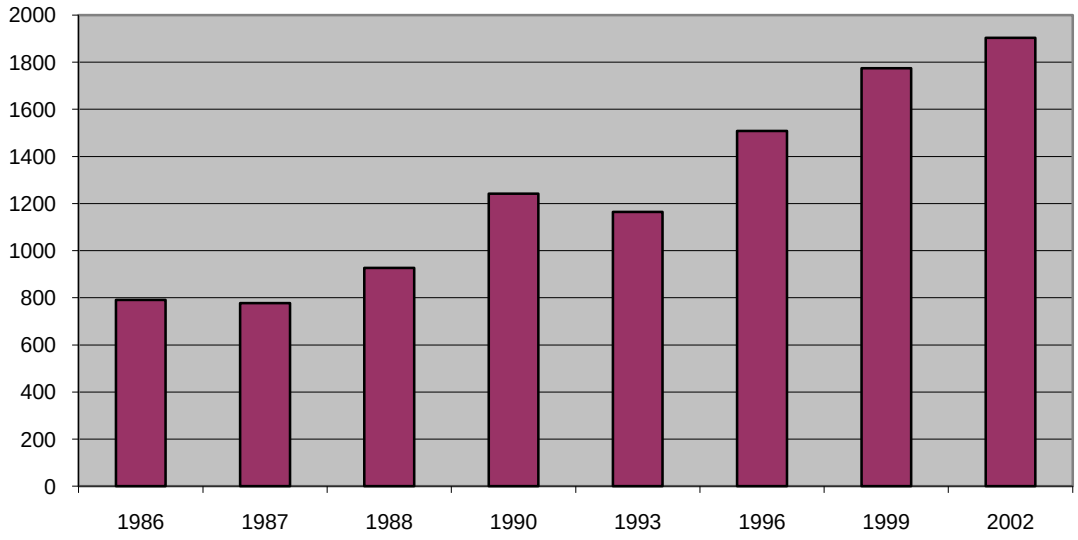
**Bicycling in the Metro Core**

COG/TPB periodically takes a count of vehicular traffic, including bicycle traffic but excluding pedestrian traffic, entering downtown D.C. and Arlington, as well as traffic crossing the beltway. Cordon counts are not done in other parts of the region. COG/TPB's cordon counts confirm the census data indicating a concentration of bicycling in the neighborhoods close to downtown D.C., Arlington, and Alexandria.

*Bicycling is Growing Rapidly in Downtown D.C. and North Arlington*

The counts show that bicycle traffic into the downtown Metro core is growing rapidly, with bicycle traffic into the D.C. section of the Metro core more than doubling from 1986 to 2002. The number of bicyclists entering the Metro core within the District of Columbia has grown steadily from 474 in 1986 to 1,379 in 2002. The number of cyclists crossing the Potomac bridges grew from 317 in 1986 to 525 in 2002. Bicycle traffic into the Arlington section of the Metro core increased from 409 to 645 bicyclists between 1999 and 2002, while Potomac bridge traffic declined slightly over the same period, indicating that more people are bicycling to destinations, probably employment, within Arlington in the morning. Chart 2-17 shows the number of bicycles entering the D.C. section of the Metro core from 1986 to 2002.

Chart 2-17:
Bicycles Entering D.C. Section of the Metro Core




Bicycle traffic is also counted on the beltway cordon, including traffic on shared-use paths, but the a.m. volumes recorded are a fraction of the numbers entering the Metro

core.

### District of Columbia Bicycle Counts

The Distict of Columbia Department of Transportation has an annual bicycle count program since 2004, which in 2008 and 2009 was performed under contract by COG/TPB. Counts are taken at selected locations in the District Columbia, and on the bridges entering the District of Columbia. Numbers varied a lot by location; bridge locations and some central locations had hundreds of bicyclists per hour, others, in the outer wards, had few or none.

**Figure 2-5: DC Bicycle Count Locations**

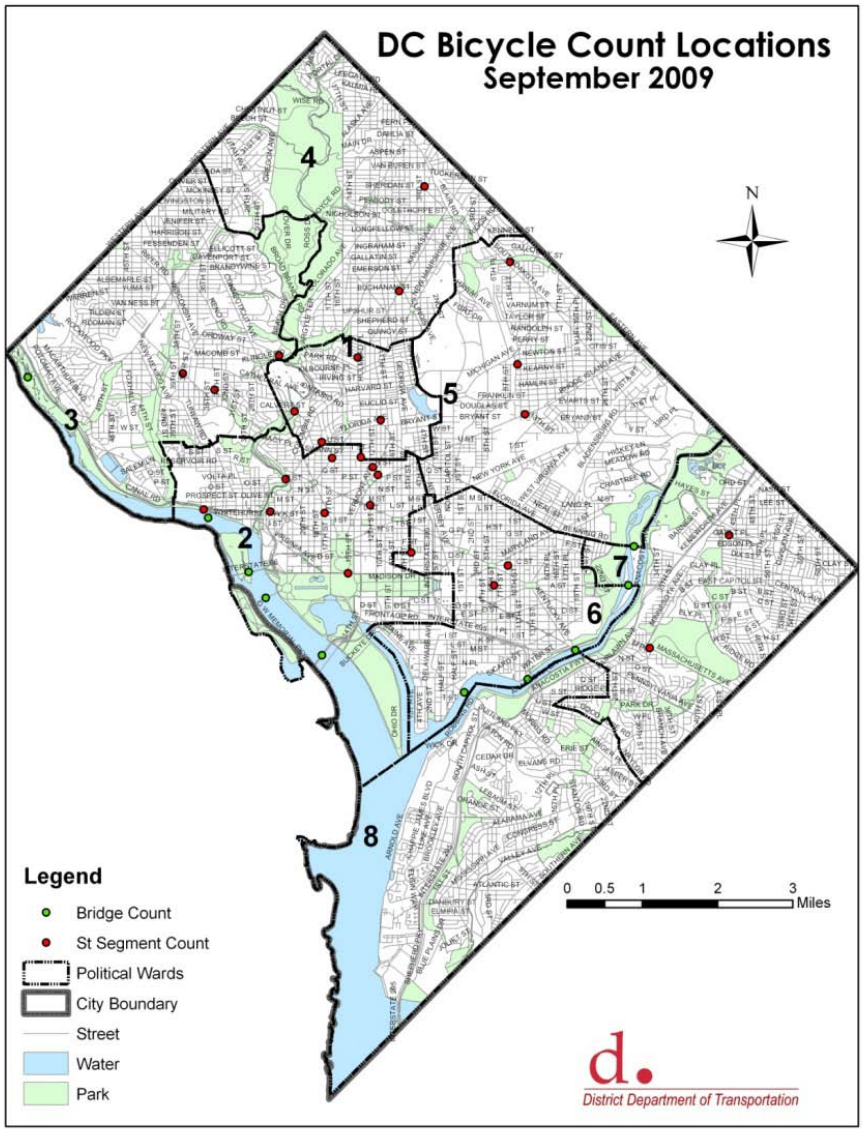
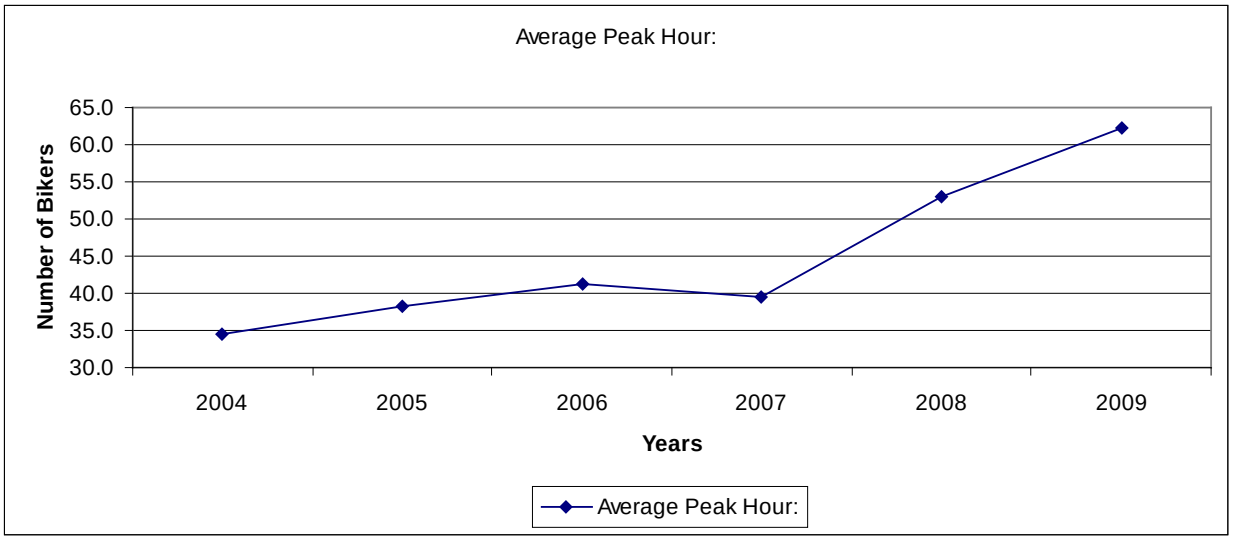


**Chart 2-18: Average Peak Hour Bike Counts in DC**




Overall, peak hour bicycle counts have increased 84% since 2004. The period since 2007 has seen the most rapid growth.

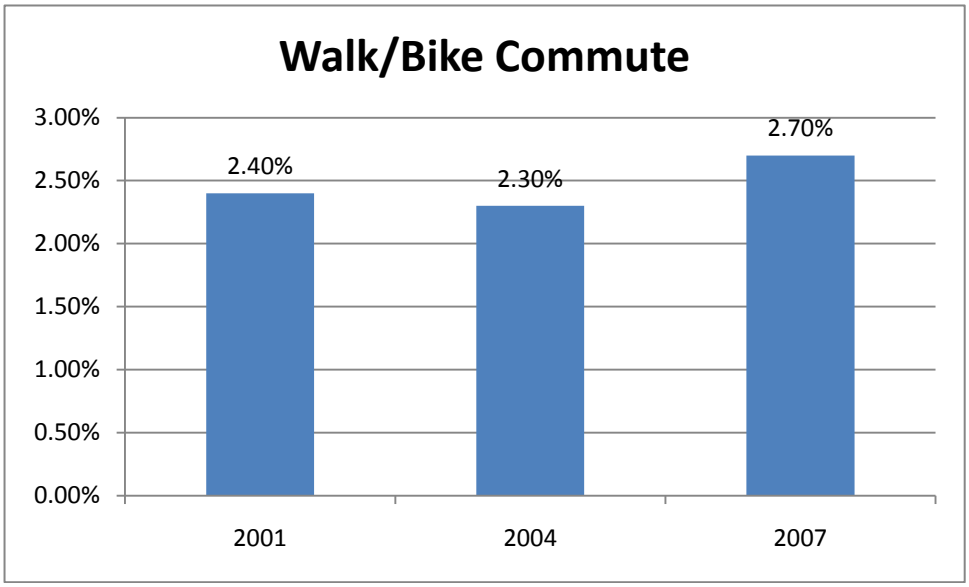
## Demographic Characteristics of Pedestrians and Bicyclists

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 2007 Commuter Connections *State of the Commute Survey*. However, the *State of the Commute Survey* and the US Census both measure work trips only, and the conclusions in terms of both the prevalence and distribution of walking and bicycling can be quite different for all trips than for work trips. Nationally, the 2001 *National Household Personal Transportation Survey* is the best source of demographic data on pedestrians and bicyclists for all types of trips.

All data in the following tables comes from the 2007 *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 by household income, state of residence, number of vehicles in the household, ethnicity, and age.

The 2007 *State of the Commute* shows a modest increase in walking and bicycling, from 2.4% in 2001 to 2.7% in 2007. *State of the Commute Surveys* show lower mode share for walking and bicycling than does the 2000 Census, a discrepancy probably explained by differing methodologies.

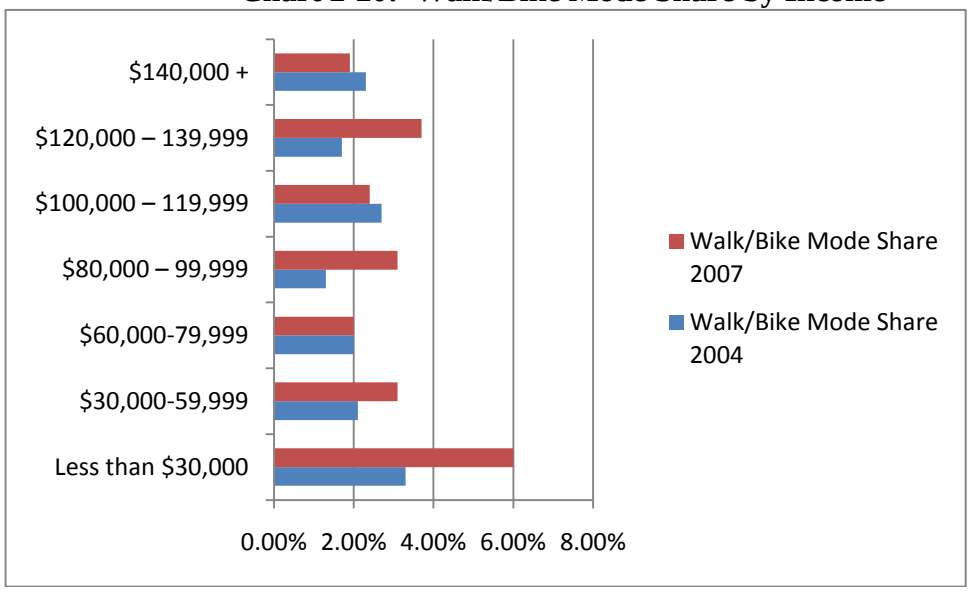
**Chart 2-19: Walk/Bike Commute Mode Share**




## A. Household Income

Chart 2-4 shows walking and bicycling commute mode share by income. Walking and bicycling to work are somewhat more prevalent among the low-income (less than $30,000 household income per year) than among the very high-income (more than $140,000 per year). Bicycling and walking are slightly more common at the top and the bottom of the income distribution than in the middle. This is roughly consistent with the national data for all trips.

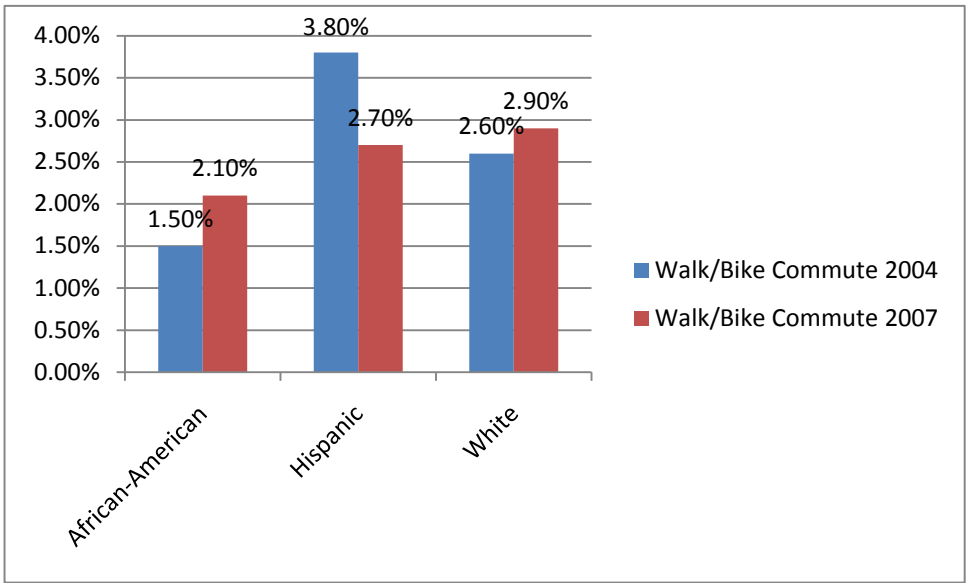
**Chart 2-20: Walk/Bike Mode Share by Income**




## B. Ethnicity

Walk/bike commute mode share differs more by ethnicity than by income. Whites have the highest walk/bike mode share at 2.9%, African-Americans the lowest at 2.1%.

**Chart 2-21: Walk/Bike Commute Mode Share by Ethnicity**

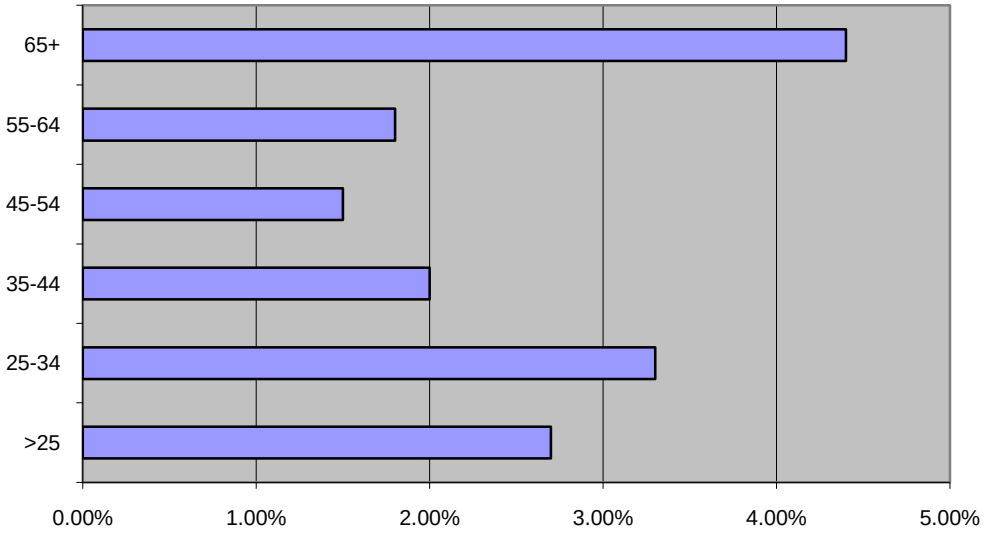


National data for all trips, however, show African-Americans and Hispanics both walking for about 12% of all trips, though African-Americans bicycle less. Whites walk less than any other ethnic group, but take 0.9% of their trips by bike, the same as Hispanics.[5]

### C. Age

Chart 2-6 shows walk/bike commute mode share by age. People under 35 and over 65 are more likely to walk or bike to work than the middle-aged. Nationally the elderly have a lower than average mode share for bicycling, so we can presume that most of the elderly are walking rather than bicycling.

**Chart 2-22: Walk/Bike Commute Mode Share by Age**




### D. Motor Vehicles per Household

Vehicles per household is another strong predictor, as shown in Table 2-4. People in households without any vehicles are much more likely to walk or bike to work than households that own one, while those living in households with one vehicle are more likely to walk or bicycle to work than those owning more than one vehicle. Non-work trips also shift radically away from walking in households that have at least one car.

5 Ibid, p. 68.

**Table 2-4**
**Walk/Bike Mode Share by Number of Vehicles**

| Number of Vehicles in the Household | 0 | 1 | 2 | 3 | 4+ |
|---|---|---|---|---|---|
| Walk/Bike Commute Mode Share 2004 | 11.40% | 3.70% | 1.20% | 1.40% | 0.60% |
| Walk/Bike Commute Mode Share 2007 | 12.40% | 4.0% | 1.20% | 1.40% | 0.60% |
| Walk Mode Share – All Trips (NPTS)[6] | 41.1% | 12.5% | 7.8% | 6.3% (3 or more) | |
| Bike Mode Share – All Trips (NPTS) | 2.4% | 0.7% | 0.9% | 0.8% (3 or more) | |

## Trip Distances

Distance was the third most frequently cited reason, by 28% of respondents, to COG/TPB's 2007 Bike to Work Day survey to explain why they were *not* riding to work. Reasons One and Two were "Don't ride in cold/winter" (34%) and "No safe route" (33%). So trip distance is of great interest when gauging the potential for increasing bicycling (or walking). The 2007 SOC survey asked respondents about the length of their commutes. Commute mileage is shown in Table 2-5 below.

**Table 2-5: Commute Distance**

| Distance | Less than 5 miles | 5 to 9 miles | 10 to 14 miles | 15 to 19 miles | 20+ miles |
|---|---|---|---|---|---|
| Percentage | 17% | 20% | 17% | 12% | 33% |

17% of commutes in the Washington region are less than five miles and therefore potentially bikable on a daily basis. The average commute distance for Bike to Work Day survey respondents was 10.1 miles.

Another major potential source of walk or bike trips is the trip to transit, park and ride lot, or vanpool and carpool pick-up point. As shown in Table 2-6, access trips to alternative mode meetings points tended to be short. Respondents traveled an average of 3.1 miles. The majority of respondents (51%) traveled one mile or less to the meeting point. Another 14% said they traveled between two miles. Only 11% of respondents traveled more than five miles. Based on the distances being traveled, many of the 28% of

6 Ibid, p. 57.

respondents who are currently driving to their alternative mode meeting point might be able to walk or bicycle instead.

**Table 2-6**
**Distance Traveled from Home to Alternative Mode Meeting Point**
(n=1,230)

| Distance | 2004 | 2007 |
|---|---|---|
| 1 mile or less | 59% | 51% |
| 2 miles | 10% | 14% |
| 3 miles | 7% | 8% |
| 4 to 5 miles | 9% | 12% |
| 6 to 10 miles | 10% | 11% |
| 11 miles or more | 5% | 4% |

**Table 2-7**
**Means of Getting from Home to Alternative Mode Meeting/Transfer Point**
(n=1,577)

| Access Mode to Alternative Mode | 2004 | 2007 |
|---|---|---|
| Walk | 39% | 35% |
| Picked up at home | 15% | 12% |
| Drive to a central location (e.g., Park & Ride) | 18% | 18% |
| Drive alone to driver's/passenger's home | 11% | 10% |
| Bus/transit | 9% | 12% |
| I am the carpool/vanpool driver | 5% | 10% |
| Dropped off/another CP/VP | 1% | 1% |
| Other* | 1% | 2% |

## Walking and Bicycling to Transit

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. According to the 2004 *State of the Commute Survey*, 83% of bus commuters walk to the bus.[7]

In 2007 WMATA surveyed passengers at all 86 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. Table 2-9 in Appendix G shows mode of access to Metrorail.[8]

*60.7% of Metrorail Passengers Walk to the Station*

In 2007 62.1% of all Metrorail passengers walked to the station, which is slightly more than in 2002. 0.55% arrived by bicycle, an increase from the 0.31% who arrived by bicycle in 2002. 13.7% drove, and another 6.1% arrived as auto passenger or were dropped off by someone. 15.6% arrived at the Metro station by bus.

| **Table 2-8 Mode of Access to Metrorail in 2007** | **Percent of Total** |
|---|---|
| Bus | 15.6 |
| Auto Driver | 13.7 |
| Auto Passenger | 5.5 |
| Rode with someone who Parked | 0.6 |
| Bike | 0.5 |
| Walk | 62.1 |
| Commuter Rail | 1.7 |
| Taxi | 0.2 |

Mode of Access varies greatly by station, from Capitol South, with 95% access by foot, to Branch Avenue, with 3.7% access by foot. The thirty stations for pedestrian access (as a percentage of total passengers accessing that station) are all located in the District of Columbia, Arlington, or Alexandria. Stations with a very high share of

7 *2004 State of the Commute Survey Results*. Metropolitan Washington Council of Governments, p. 63.
8 2007 WMATA Rail Passenger Survey,from the table "Origin Station by Mode of Access".

pedestrians tend to be located in major employment centers, with people walking from work to the station, rather than from home to the station. However, largely residential-area stations such as Cleveland Park, Eastern Market, and Columbia Heights are found in the top twenty. Dense, mixed-use areas such as Bethesda, Foggy Bottom, Crystal City, Pentagon City, Friendship Heights, Van Ness, Dupont Circle, Shaw, and the Rosslyn-Ballston Corridor have high percentages of pedestrian access as well.

The bicycle mode of access to Metrorail ranged from 4% at West Hyattsville to zero at 14 stations.9 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 eastern portion of the region. Brookland CUA was a notable exception, with no bicycle access despite the presence of a university.

Of the sixteen stations located east of the Anacostia River in 2007, ten had bicycle access that rounded to zero. All stations in Fairfax and Montgomery Counties had some bicycle use. The WMATA *Rail Passenger Survey* confirms what the census tells us about the distribution of walking and bicycling in the region, with walking and bicycling heavily concentrated in the Metro core and at certain inner suburban stations.

## Outlook

*Growth in Walking and Bicycling will likely occur in the Urban Core and Regional Activity Centers*

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 it is growing, while cycling is less common, and is stable at the regional level.

Commutes are getting longer across the region, and the fastest population growth is taking place in outer jurisdictions that have low and declining levels of walking and bicycling. Those areas have developed in ways that make utilitarian walking and bicycling difficult and dangerous, with long distances, lack of direct routes, heavy, fast automobile traffic, and incomplete facilities for walking or bicycling.

9 2007 WMATA Rail Passenger Survey, Table "Mode of Access"

The story in the urban core is different. In the District of Columbia, Arlington, Alexandria, and portions of Montgomery County, walking and bicycling are growing rapidly. In mixed-use activity centers people walk and bicycle. Where land uses are separated and development densities are lower, walking and bicycling are much less common.

It is likely that the urban core and inner suburban communities will develop over the next thirty years in ways that will be conducive to walking and bicycling. In 2005 73% of the region's employment was found within a series of "regional activity clusters", or concentrations of employment and housing identified by the TPB. 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. Seventy-two percent of regional employment growth to 2030 is planned to take place within these clusters, as well as fifty-four percent of household growth.[10] Under "Complete Streets" policies new development should accommodate pedestrians and bicyclists. If growth occurs in ways that are consistent with the TPB *Vision* and *Region Forward 2050*, creating activity centers that mix jobs, housing and services in a walkable environment, we can expect walking and bicycling to increase.

10 Metropolitan Washington Council of Governments, *Growth Trends to 2030: Cooperative Forecasting in the Washington Region,* October, 2005. Pp. 2, 14-15.

**Summary of Data Sources**

Major sources of data for bicycling and walking in the Washington region include the 1994 and 2007/2008 COG/TPB *Household Travel Survey*s, the US Census, the Commuter Connections *State of the Commute Survey*, COG/TPB's cordon counts, DDOT's bicycle counts, pedestrian and bicycle crash data from the Departments of Transportation, WMATA's 2002 and 2007 *Rail Passenger Surveys*, and the 2007 *Bike to Work Day Survey*.

### A. COG/TPB Household Survey

The household travel survey is a roughly once in a decade survey of households in the greater Washington region. The survey was done in 1994, and again in 2007-2008. It is the best available source of information on travel mode shares in the Washington region.

For the most recent survey, 11,000 randomly selected households in TPB Region and adjacent areas (+3,500 in the Baltimore Region) were surveyed. Higher numbers of samples were taken in higher density, mixed use urban areas, and regional activity centers. The sample was address-based. Interviews were conducted between February 2007 and March 2008. Travel is weekday travel only; week-end travel was not counted.

### B. 2000 US Census

The most fine-grained data on travel behavior comes from the Census. Every 10 years the Census Bureau asks roughly one in seven individuals (those who fill out the 'long form') how they get to work. People are polled at their home, not at their place of work. The most recent data available is from the 2000 Census. The biggest limitation of the Census data is that it only contains commute trips. Only one quarter of all trips in the Washington region are commute trips.[11] However, commute trips occur at the most congested time of day.

For the 2010 census there will be no long form. Instead, a five-year rolling average of the annual American Community Survey will be used to discover travel mode shares.

### C. Bike Counts

COG/TPB's cordon counts are conducted by machine or in person, on specific roads or trails.

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

In cordon counts, COG/TPB counts the volume of traffic crossing a series of points along an imaginary circle. For example, one cordon line is the Capital Beltway. At approximately 60 points along the Beltway, COG/TPB counts all vehicles crossing over or under the Beltway. Another cordon line is known as the Metro Core, circling downtown DC and part of Arlington. Counts take place on a single day, so results may vary widely depending on weather, transportation incidents, security emergencies, or other factors. Pedestrians are not counted. Bicyclists crossing the cordon line may or may not be commuters; they are counted but not stopped or asked their trip purpose. In most cases the numbers represent only one day of counting and can not be viewed as a daily average.

The District of Columbia also contracts with COG/TPB to do bicycle counts within the District, as described on page 2-24.

### D. 2007 Commuter Connections State of the Commuter Survey

The *State of the Commute Survey* is a random sample survey of 6,610 employed persons in the 11 jurisdictions of the Washington Metropolitan designated (air quality) non-attainment region. Commuter Connections commissions this survey in order to evaluate the effectiveness of its programs. The region polled is the Washington Metropolitan Statistical Area, shown in figure i-1 on page i-4, minus Stafford County but adding Calvert and Charles Counties. The sample size of the *State of the Commute Survey* permitted the calculation of walk/bike mode shares by annual income, ethnicity, age, and state of residence.

The SOC survey does not provide any information on non-work trips. Surveys were carried out from Janaury 31st to April 28th, 2007, by telephone, and asked about behavior "last week". This methodology differs somewhat from U.S. Census, which asks about behavior during the first week in April. The 2001 and 2004 SOC surveys show lower numbers for walking and bicycling than does the census.

### E. 2007 WMATA Rail Passenger Survey

In 2007, Metro conducted a survey of its rail passengers. Surveys were distributed to rail patrons entering stations on weekdays between April 17 and May 24, 2007. Data were collected for the full day, divided into a.m. and p.m. peak and off-peak periods. Riders could drop off responses in collection boxes stationed throughout the system or return them by mail. The primary purpose of the survey was to allow Metro to estimate the percentage of total ridership residing in each jurisdiction. However, the survey also asked riders what

mode of transportation they used to access or egress the station. 66,321 valid survey responses were obtained.

### F. 2007 Bike to Work Day Survey

The *Bike to Work Day Survey* is a survey of participants in the regional Bike to Work Day of May 18, 2007. It is not a random sample, but it provides a portrait of a self-selected group of cyclists. In November 2004, COG/TPB mailed surveys to all 6,600 registered participants, and got back 2,411 completed surveys, a response rate of 37%.

Participants in Bike to Work Day often rode considerable distances for the event, with 26% riding 10-15 miles, and another 17% riding more than 15 miles. However, the post-ride survey indicates that people may be willing to ride farther for a one-day event than they will on a daily basis. Several months after the event participants were asked if they still biked to work, and if not why not. Of the 444 respondents who did not continue riding to work after participating in Bike to Work Day, 38% cited weather, while another 33% cited lack of a safe route, 28% cited distance, 16% cited lack of showers or changing facilities, 9% cited lack of bike parking/storage, and 8% cited the need for a car to take care of personal business.

## Overview

Pedestrian and bicycle fatalities and injuries are a serious problem in the Washington region. Nearly a 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 9% 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 and ethnicity, 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.

## The Scope of the Problem: Fatalities

Pedestrian safety is a major problem nationally and in the metropolitan Washington region. Of the 37,261 traffic fatalities in the United States in 2008, 4,378, or 8.5%, were pedestrians.[1] 69,000 pedestrians were injured in 2008. Urban areas have higher pedestrian fatality rates than rural areas. The Washington-Baltimore region ranks 32nd out of the 50 largest metropolitan areas in terms of pedestrian deaths per capita.[i2]

Pedestrians and bicyclists account for nearly a quarter of those killed on the roads in the Washington region. Over 2,600 pedestrians and bicyclists are injured every year, and 89 are killed. On average, there are 395 traffic fatalities per year in the Washington region.[3] Chart 3-1 shows average annual pedestrian and bicycle fatalities in the Washington Region, as a proportion of total traffic fatalities.

[1] www.nhtsa.dot.gov

[2] *Mean Streets 2004*, Surface Transportation Policy Project, p. 17.

[3] Regional totals compiled from data provided by the District Department of Transportation, the Maryland Office of Highway Safety, and the Virginia Department of Motor Vehicles.

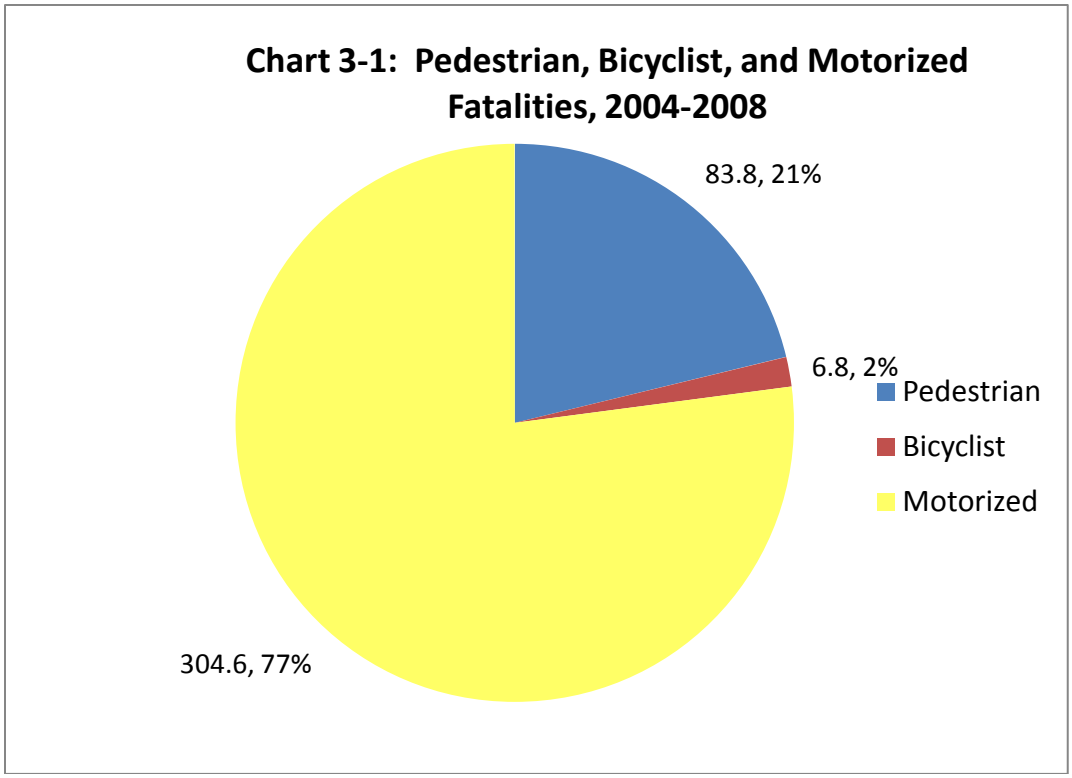
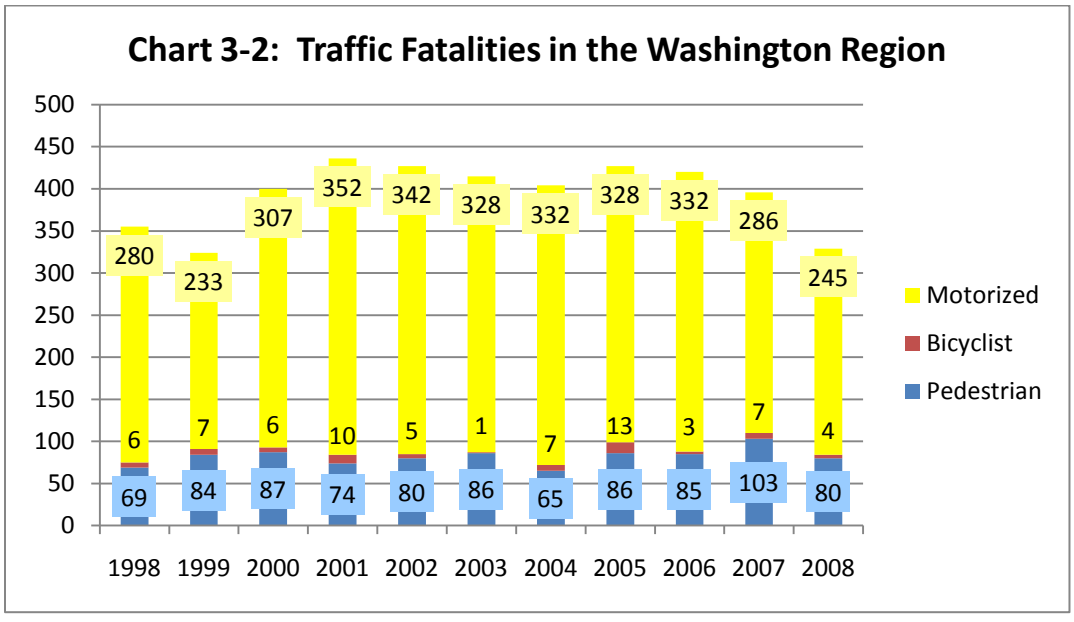


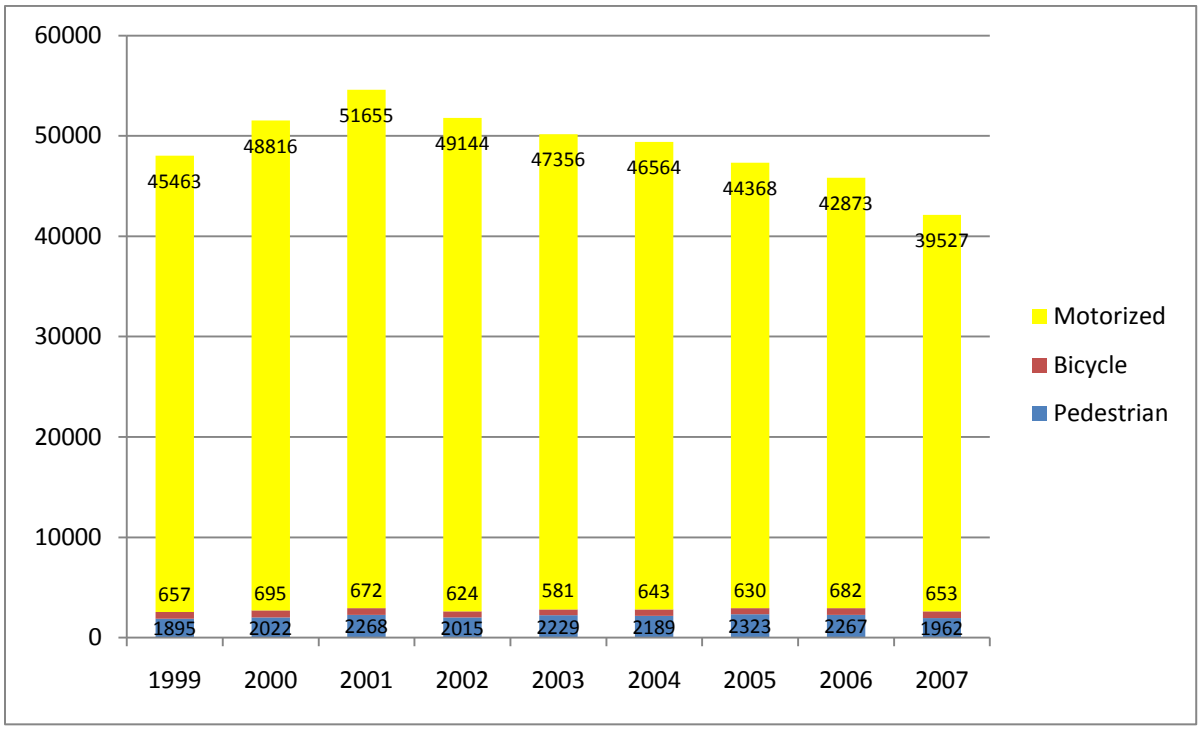

Chart 3-2 shows the yearly variations in traffic fatalities from 1998-2008. Overall traffic fatalities have been declining since 2005, while pedestrian and bicyclist fatalities have remained roughly flat. The *proportion* of total fatalities that are pedestrian or bicyclist out total fatalities is rising.



## Injuries

Pedestrian injuries exact a steep toll as well. Of the approximately 3000 persons hit by motor vehicles every year in the region, 90% suffer some sort of injury. Approximately 500 injured pedestrians every year require more than 24 hours of hospitalization, which at an average cost of about $25,000 leads to more that $12 million in hospitalization charges alone.[4] This is probably only a fraction of the total financial costs, which would include costs for those hospitalized for less than 24 hours, further medical care, disability, and lost time at work. Many of the people being hit can ill afford such a setback.

**Chart 3-4: Traffic Injuries in the Washington Region**

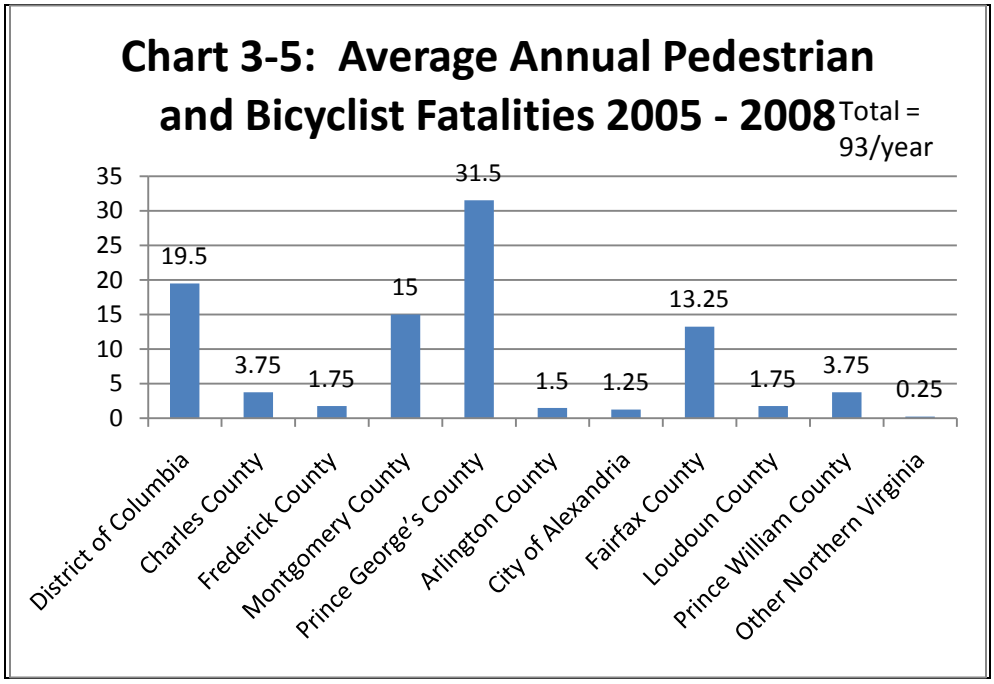



Pedestrian injuries in the Washington region declined steadily from 2001 to 2007. However, total traffic injuries declined much faster, so the proportion of traffic injuries that are pedestrian or bicyclist is rising.

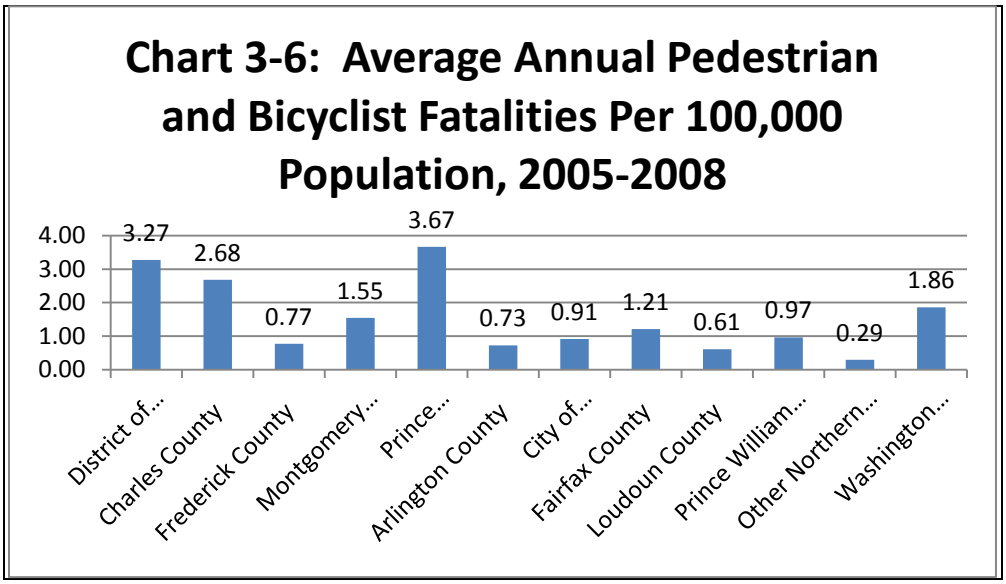
[4] Northern Virginia Injury Prevention Prevention Center, INOVA Regional Trauma Center (2005). *Pedestrian Injury in the Washington, D.C. Metropolitan Region.* Page 37.

### Distribution of Pedestrian and Bicycle Fatalities by Jurisdiction

The region is often divided into an urban core, consisting of Arlington, Alexandria and the District of Columbia, the inner suburbs of Fairfax, Montgomery, and Prince George's Counties, and the outer suburbs, such as Frederick, Loudoun, and Prince William Counties. Manassas, Manassas Park, the City of Falls Church, and the City of Fairfax are shown as "Other Northern Virginia".[5] Outer suburban jurisdictions had fewer pedestrian fatalities than inner jurisdictions, as seen in Chart 3-5.

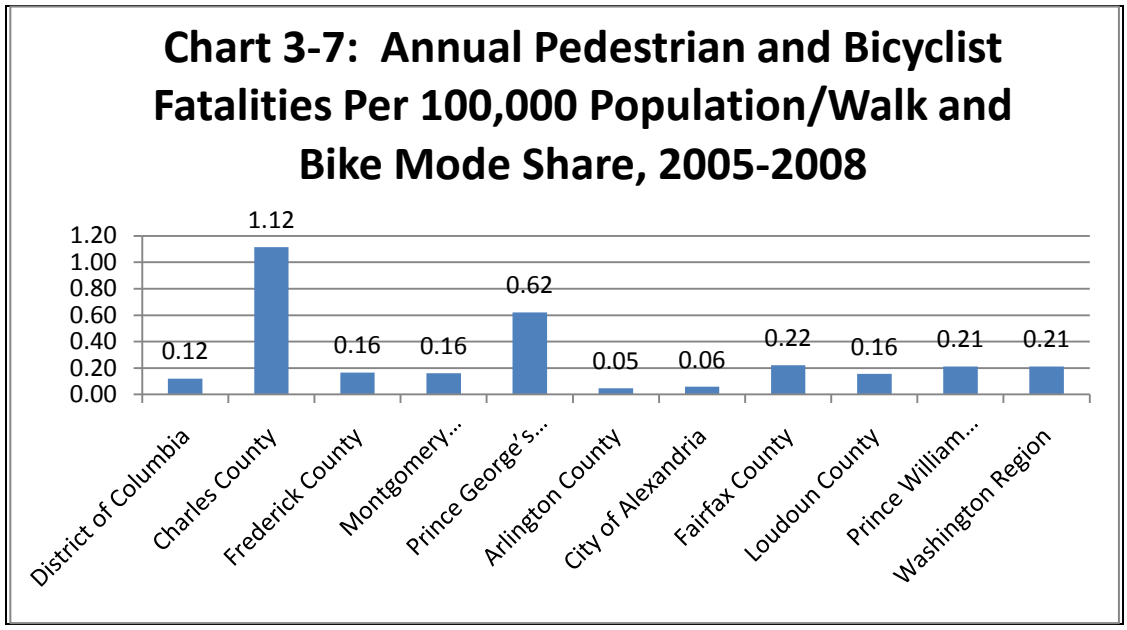



[5] Towns in Northern Virginia are not included in the surrounding Counties; their traffic fatalities are tallied separately.




Evem when calculated as a rate per 100,000 population as in Chart 3-6, the outer jurisdictions mostly have below-average pedestrian and bicyclist fatality rates. The Virginia jurisdictions all have fatality rates below the regional average, while Prince George's County, the District of Columbia, and Charles County have the highest rates in the region.

A fair comparison should take into account exposure as well as fatalities per population. Dividing pedestrian and bicyclist fatality rates by walk and bike mode share gives a more accurate impression of the risk.



Corrected for exposure, walking and bicycling appear to be safer in the urban core areas with numerous pedestrians than in the inner or outer suburbs.

### 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.[6] Similar effects have been noted for cyclists, with cities having the highest rates of bicycling also having the lowest crash rate per bicycle trip.[7] High levels of walking and bicycling are associated, in advanced industrialized nations, with very low auto-involved crash rates.[8] 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 9% of total traffic fatalities. For the foreseeable future there will be people without cars, and there will always be some trips that will be made on foot. The region's most dangerous areas for walking have high-speed roads and poor pedestrian facilities, together with people who lack automobiles.

### Ethnicity and Hospitalization Rates

*Hispanics are three times as likely as Whites to be hospitalized for a Pedestrian Injury*

There are large differences in the rates of hospitalization for pedestrian injury by ethnicity. The rate of hospitalization per 100,000 population for pedestrian injuries for Hispanics is nearly three times as high as that for Whites, and twice that for African-Americans. [9]

Geographically, the highest rates of hospitalization are found

[6] 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.
[7] Denmark Ministry of Transport (1994) *Safety of Cyclists in Urban Areas: Danish Experiences*.
[8] Pucher, John. "Making Walking and Bicycling Safer: Lessons from Europe," *Transportation Quarterly*, Summer 2000.
[9] Northern Virginia Injury Prevention Prevention Center, INOVA Regional Trauma Center (2005). *Pedestrian Injury in the Washington, D.C. Metropolitan Region.* Page 35.

in the area east of the Anacostia river in the District of Columbia, most of Prince George's County inside the beltway, the Columbia Pike corridor in Arlington, the area between Fairfax City and Falls Church in Fairfax County, and Dumfries in Prince William County.[10]

## Factors contributing to Pedestrian and Bicycle Crashes

Data from the Washington region indicate that drivers are about as likely as pedestrians to be at fault in a crash. Drivers were cited for a violation in about half the crashes.[11] Males aged 25 to 34 are most likely to hit pedestrians, while pedestrians who are hit are most likely to be males aged 25 to 44. Pedestrian crashes are most likely to occur at the evening rush hour, 5-7 p.m., with 6-9 a.m. the second most likely.[12] Alcohol is a serious problem for both pedestrians and motorists, affecting approximately one third of crashes.

## Legal Status of Bicyclists and Pedestrians

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. Rules relating to bicycles are summarized on page E-4 of the Metropolitan Washington Council of Governments' *Bike to Work Guide*, on the Washington Area Bicyclist Association web site, and in Table 3-1 below.[13]

[10] Ibid, pp. 40-42.
[11] INOVA study, page 23.
[12] Ibid, page 12.
[13] See www.commuterconnections.org

**Table 3-1: Selected Bicycle Rules in the Washington Area[14]**

| | DISTRICT OF COLUMBIA | MARYLAND | VIRGINIA |
|---|---|---|---|
| **General** | **Bicyclists traveling on roadways have all the general rights and duties of drivers of vehicles.** | | |
| **Where to Ride** | Ride **with the flow** of traffic as closely as practicable to the right-hand curb or edge of roadway or left-hand curb on one-way streets. | Ride **with the flow** of traffic as closely as practicable to the right side of roadway. | Same as DC. |
| | Full lane use allowed when traveling at the normal speed of traffic, passing, preparing for a turn, avoiding hazards, traveling in a lane 11 feet wide or less, avoiding a mandatory turn lane and when necessary for the bicyclist's safety. | Full lane use allowed when traveling at the normal speed of traffic, operating on a one-way street, passing, preparing for a turn, avoiding hazards, traveling in a lane too narrow to share and avoiding a mandatory turn lane. | Full lane use allowed when traveling at the normal speed of traffic, passing, preparing for a turn, avoiding hazards, traveling in a lane too narrow to share and avoiding a mandatory turn lane. |
| **Restricted Roads** | Prohibited from interstate and controlled access highways, as marked | Prohibited from expressways, toll bridges, toll tunnels, and other marked roads. | Prohibited from interstate and controlled access highways, as marked. |
| **Passing Cars** | Allowed to pass on left or right, in the same lane or changing lanes, or pass off road. | Exercise due care when passing. | Same as DC. |
| **Cars Passing Cylists** | | Motorists must give cyclists three feet of clearance when passing | |
| **Dooring** | No person shall open any door of a vehicle unless it is safe to do so and can be done without interfering with moving traffic. | A person may not open the door of any motor vehicle with intent to strike, injure or interfere with any bicyclist. | Not mentioned. |
| **Bicycling Two Abreast** | Allowed when it does not impede traffic. May not ride more than two abreast. | | |

[14] See http://www.waba.org/areabiking/bikelaws.php

| | | | |
|---|---|---|---|
| **Mandatory Use of Bike Lanes and Paths** | Not required. | Use of bike lanes required when available except when passing, preparing for a turn or avoiding hazards. No required use of separated paths. | Not required. |
| **Cycling on Sidewalks** | Yield right of way to pedestrians. | | |
| | Prohibited in the central business district (bounded by Massachusetts Ave. NW, 2nd St NE-SE, D St SE/SW, 14th St NW, Constitution Ave and 23rd St NW). Allowed where posted in this area, and prohibited where posted outside this area. View Map>> | Allowed where permitted by local ordinance (such as in Montgomery County). | Allowed except where prohibited by local ordinance, such as Prince William County and Alexandria. Must give audible signal before passing pedestrian. |
| **Audible Warning Devices** | Bell or other device required, sirens prohibited. | Bells allowed (not required), sirens and whistles prohibited. | Bell not required. |
| **Helmets** | Required for any operator or passenger under 16 years of age. | Same as DC. | Required by local ordinance for any operator or passenger 14 years of age or younger in Alexandria, Arlington Co., Fairfax Co. Falls Church, Vienna and other jurisdictions. |
| **Lights at Night** | Front white light and rear red reflector (or rear red light) required when dark, may be attached to operator. | Front white light and rear red reflector (or rear red light) required when dark. | Front white light and rear red reflector required when dark, may be attached to operator; rear red light required on roads 35 mph and up. |
| | **District of Columbia** | **Maryland** | **Virginia** |

Pedestrians are not vehicle operators and are not subject to the same rules. Persons on rollerblades, skateboards, etc. operating on the street are considered pedestrians, but bicyclists are not. Motorists must yield to pedestrians when making turns across adjacent crosswalks. "Jaywalking" is legal in most locations, but pedestrians must yield to motorists if they are crossing at a location other than a crosswalk. Pedestrians may not cross at mid-block if they are between two signal-controlled intersections; they must use the crosswalk. Tables 3-2 and 3-3 summarize the rules in each state regarding pedestrians.

**Table 3-2: Pedestrian Traffic Law—Motor Vehicles Drivers**

| | DISTRICT OF COLUMBIA | MARYLAND | VIRGINIA[15] |
|---|---|---|---|
| Crosswalk Definition | Same as Maryland | Any intersection of two roadways is a legal crosswalk, whether marked or not. Pedestrians have the same rights in marked crosswalks as in unmarked crosswalks | Same as Maryland |
| Blocking a Crosswalk | Pedestrians have the right of way in the sidewalk. Parking on the sidewalk prohibited. | A motorist may not park or stop in a crosswalk | Same as Maryland |
| Sidewalk | Same as Maryland | Pedestrians have the right of way in the sidewalk | Pedestrians have the right of way in the sidewalk. |
| Right Turn on Red | Same as Maryland | Vehicles turning right on red must yield to pedestrians in the crosswalk | Same as Maryland |
| Turn on Green | A pedestrian who has begun crossing on the walk signal shall be given the right-of-way by the driver of any vehicle to continue to the opposite sidewalk or safety island, whichever is nearest. | Vehicles turning either right or left on a green light must yield to pedestrians in the adjacent crosswalk | Same as Maryland |
| Red Light | The driver of a vehicle shall **STOP** and give right of way to a pedestrian crossing the roadway within any marked crosswalk or unmarked crosswalk at an intersection. | Motorist should stop before the crosswalk, or if no crosswalk is striped, before the intersection | Same as Maryland |
| Stop-Controlled or Uncontrolled Intersection | | Motorist must stop for any pedestrian in the same half of the roadway as the motorist, or who is approaching from the adjacent lane in the other half of the roadway. No motorist may pass another vehicle which has stopped for a pedestrian | The drivers of vehicles entering, crossing, or turning at intersections shall change their course, slow down, or *stop if necessary* to permit pedestrians to cross such intersections safely. Pedestrians have the right of way unless the speed limit is more than 35 mph, in which case the motorist has the right of way. |

[15] http://virginiadot.org/infoservice/bk-laws.asp, www.bikewalkvirginia.org

**Table 3-3:**
**Pedestrian Traffic Law—Pedestrians**

| | DISTRICT OF COLUMBIA | MARYLAND | VIRGINIA |
|---|---|---|---|
| Green light | A pedestrian facing a green light (other than a turn arrow) may cross the roadway, within a marked or an unmarked crosswalk | A pedestrian facing a green light (other than a turn arrow) may cross the roadway, within a marked or an unmarked crosswalk | Same as Maryland |
| Red light | Pedestrians shall not enter the roadway on a steady red light. | Pedestrians shall not enter the roadway on a steady red light | Same as Maryland |
| Pedestrian Control Signal | Pedestrians shall not enter the roadway when there is a flashing "Don't Walk" or "Wait" indicator | Pedestrians shall not enter the roadway when there is a flashing "Don't Walk" or "Wait" indicator | Same as Maryland |
| Stop-controlled or uncontrolled intersection | Essentially the same as Maryland, but with a specific prohibition on walking suddenly into the path of a vehicle:<br><br>(a) No pedestrian shall suddenly leave a curb, safety platform, safety zone, loading platform or other designated place of safety and walk or turn into the path of a vehicle which is so close that it is impossible for the driver to yield. | Pedestrians may cross the roadway within a marked or unmarked crosswalk | Same as Maryland, except the pedestrian must yield to motor vehicle traffic if the speed limit is 35 mph or more. Pedestrians may not disregard approaching traffic when entering or crossing an intersection |
| Crossing at Other Than Crosswalks | Same as Maryland | (a) If a pedestrian crosses a roadway at any point other than in a marked crosswalk or in an unmarked crosswalk at an inter section, the pedestrian shall yield the right-of-way to any vehicle.<br>(b) If a pedestrian crosses a roadway at a point where a pedestrian tunnel or overhead pedestrian crossing is provided, the pedestrian shall yield right of way to any vehicle.<br>(c) Between adjacent intersections at which a traffic control signal is in operation, a pedestrian may cross a roadway only in a marked crosswalk. | Same as Maryland, except that pedestrians may not enter the roadway at any point where drivers view of them is blocked by a parked vehicle or other obstruction. |

| | | | |
|---|---|---|---|
| | | (d) A pedestrian may not cross a roadway intersection diagonally. | |
| Pedestrians on Roadways | | (a) A pedestrian may not walk on a roadway where sidewalks are provided.<br>(b) Where no sidewalk is provided, a pedestrian may walk only on the left side of the roadway, facing traffic. | Same as Maryland |

**Pedestrian and Bicyclist Enforcement and Education: 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.

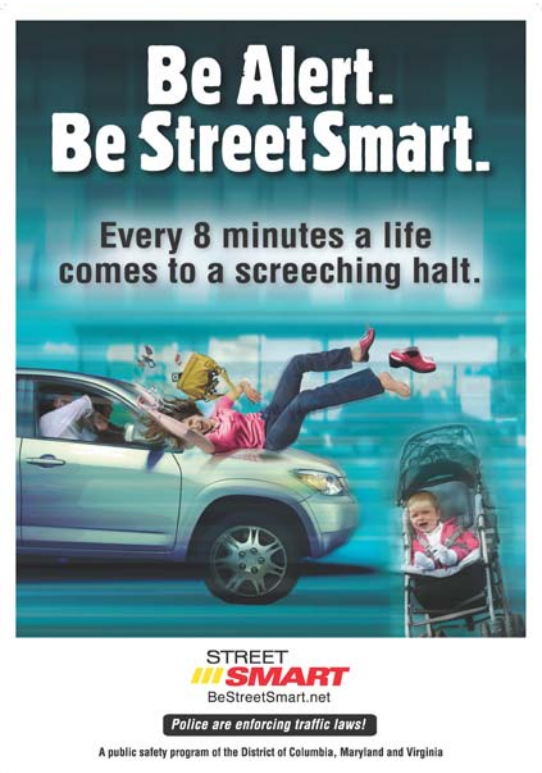



**Figure 1: Street Smart Poster**

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, with local funds matching the federal funds, and is administered by the National Capital Region Transportation Planning Board.

The Street Smart campaign is a one-month blitz of radio, cable, transit, and internet advertising, supported public relations activities and by concurrent law enforcement. The goal of the campaign is to change driver and pedestrian behavior in order to reduce deaths and injuries. Motorists are urged to "Be Alert", bicyclists to "Obey Signs and Signals", and transit riders to "Cross after the bus leaves the stop". 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 have also been 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.


**Figure 2: Spring 2010 Press Event and Speed Demonstration**
Photo Credit: Stratacomm

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

**Evaluation**

Pre and post-campaign surveys show that the public is hearing and remembering the Street Smart messages. For example, surveys taken before and after the campaign of April, 2009 show that awareness of the "Yield to Pedestrians" message rose by 30 percentage points among drivers, and awareness of law enforcement increased by 25 percentage points.

**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. As the population of car-less immigrants and poor people grows in suburban areas that were designed for driving, pedestrian and bicyclist safety will remain a challenge.

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 pedestrian safety laws, and educating motorists and pedestrians. 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 results, while those that do not, are not.

[i] *Mean Streets 2004*, Surface Transportation Policy Project, p. 17.

## 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. 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.[1]

**Figure 1: Informal foot path**

*Informal Foot-Paths Show where People Walk*

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.

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.

[1] Photo of Informal Path, Southern Avenue, Prince George's County, MD: COG/TPB, Michael Farrell

## Shared-Use Paths[2]

**Figure 2: Mount Vernon Trail**

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 www.bikewashington.org.

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[3]

**Figure 3: Side Path on Fairfax County Parkway**

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

[2] Photo of Mt. Vernon Trail, Arlington, VA: COG/TPB, Michael Farrell
[3] Photo of Sidepath on the Fairfax County Parkway: Photographer Unknown

with driveways, side streets, and turning traffic. Side-paths differ from sidewalks in that they must be at least eight feet wide 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.

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. 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

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 next to a curb is 4 feet for roadways with no curb or gutter, next to a curb or parked cars 5 feet. 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.[4]

**Figure 4: Bicycle Lane**

[4] Bike lane photo: www.pedbikeimages.org / Dan Burden

The number of bicycle lanes is growing rapidly. The District of Columbia currently has 60 miles of bicycle lanes, up from 19 miles in 2006, and three in 1995, Arlington County has 24 miles, up from three in 1995, and Montgomery County has 17 miles.[5] The regional mileage of bicycle lanes can be expected to expand significantly in the future as the District of Columbia, Arlington County, and Montgomery County all have ambitious plans to build more. A map of regional bicycle paths, lanes, and on-road routes can be ordered at www.adcmap.com.

### 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. There are currently none in the Washington region, though that may change soon.

### Cycle Tracks

A cycle track is a bicycle-only facility that provides physical separation within the right of way from vehicle travel lanes. Cycle tracks 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. Cycle tracks can either incorporate bicycle-only signal phases at intersections (for 100% separation) or utilize "mixing zones" to merge bicycle and motor vehicle traffic.[6]


**Figure 5: 15th Street NW Cycle Track**

Cycle tracks have long been viewed skeptically in the United States, and notably in the AASHTO Guide for the Development of Bicycle

[5] *Countywide Bikeways Functional Master Plan,* March 2005. Maryland-National Capital Park and Planning Commission. Page 12.

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

Facilities, due to the potential conflicts with turning vehicles, and lack of visibility of cyclists to turning vehicles where separated by parked cars.

Cycle tracks have been used in numerous cities in Europe with mixed results.[7] Installation of cycle tracks 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 cycle tracks increased bicycle (and moped) ridership 18 to 20 percent.[8] Installing bike lanes resulted in a 5 to 7% increase in ridership, and a 5% increase in crashes. For both cycle tracks and bike lanes the number of riders can be expected to increase more than the number of crashes.

*Cycle Tracks Increase Ridership by 18-20%*

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

New York City, Portland, OR, Cambridge, MA, and now the District of Columbia are installing cycle tracks. The first segment of buffered bicycle lane in the District of Columbia was installed in 2009 on 15th Street NW. The District of Columbia is planning a network of such facilities in downtown DC. Space for them is being made by removing travel lanes, as was done on 15th Street NW, which was reduced from four lanes to three.

**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.[9] Under the new routine accommodation policy, VDOT is to provide adequate facilities for pedestrians and bicyclists even if not called for in the local plan.

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

[7] 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*

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

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

& Old Dominion Trail in Northern Virginia includes several sections with gravel pedestrian paths that parallel the paved shared-use path.

### 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. The trend with bicycle route signs is to include information on distances to destinations.


**Figure 6: 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, 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. With the exception of the National Capital Mall, the proposed route through the Washington region is not yet signed. Bicycle Route 1 is part of a national network of low-traffic road routes promoted by the Adventure Cycling Association. 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.

### 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.

### Bridges

With the completion of the Woodrow Wilson Bridge trail, cyclists may now cross the Potomac River on the capital beltway at between Alexandria.

**Figure 7: Woodrow Wilson Bridge Trail**

This new 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 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 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.

On the Anacostia River separated bicycle and pedestrian facilities of uneven quality are available on the South Capitol Street (Frederick Douglas Memorial) bridge, the 11th Street bridge, the Pennsylvania Avenue Bridge, the East Capitol Street Bridge, and the Benning Road Bridge. The District of Columbia is in the process of upgrading these crossings as these aging bridges are replaced and rebuilt.

## 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. For bicyclists, RidetheCity (www.ridethecity.com/dc) is a tool that allows cyclists to point and click their proposed origins and destinations, and choose between a "direct route", a "safe route" and a "safer route". The results show whether a trail, on-street bike lane, or street is being used. "Safer" routes use trails and bike lanes at the expense of increased distance. Ride the City is available only in the New York and DC regions.

Google maps also provides walking and bicycling directions. The bicycling directions show paths, bike lanes, and on-street bike routes, but offer no options for selecting more direct or safer routes.

Accessed via smart phone, these and other on-line applications can replace paper maps for most purposes.

## Bicycles and Public Transit

The region has made tremendous progress integrating bicycling and public transit, with secure bike parking available at most rail stations, bicycles permitted on Metrorail at most times, 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 permitted on Metrorail (limited to two bicycles per car) weekdays except 7-10 a.m. and 4-7 p.m. Bicycles are permitted all day Saturday and Sunday as well as most holidays (limited to four bicycles per car). Bicycles are not permitted on Metrorail on July 4th or other special events or holidays when large crowds use the system.
- Folding bikes are permitted on Metrorail during rush hours if fully enclosed in a carrying bag.
- No tricycles, training wheels, tandem bicycles or recumbent bicycles are allowed on Metrorail.
- For other Bike on Rail guidelines see: http://www.wmata.com/getting_around/bike_ride/bikes_rail.cfm

### Metrorail Facilities

- For the most up to date information on bicycle parking at Metrorail, go to the WMATA web site and click on the stations tab. You can see which stations have bike racks and lockers. Or go to http://www.wmata.com/getting_around/bike_ride/parking.cfm for a list of stations with bike racks and lockers, and information on how to rent a bike locker.

- Systemwide, WMATA maintains about 1,280 single bike lockers and about 1,600 bike racks - with capacity for about 3,150 bikes. Racks are first come, first

served. At many downtown stations, local jurisdictions provide additional bike parking near stations.

### 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.

## Pedestrian Access to Transit

82% of Metrobus passengers walk to transit, and 60% of all Metrorail trips start with the passenger walking to the rail station. However, 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.[10] Suburban bus stops often lack a nearby controlled intersection for safe street crossing, and may also be missing sidewalks. A soon to be completed study on bicycle and pedestrian access to Metrorail will provide details on pedestrian access to rail transit.

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

### 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.

### DC Bike Station


**Figure 8: DC Bike Station at Union Station**
**Photo Credit: COG/TPB**

**Figure 9: DC Bike Station Interior**

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. It is staffed 66 hours per week and available to members 24/7 for self-service parking. In addition to secure bike parking, the facility also provides a changing room, lockers, bike rental, bike repair, bike rental, and retail sales. The Bikestation location at Union Station allows commuters to take public transportation to the station, pick up their bicycles and go to work, shopping or entertainment.

The DC bike station 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.

### Bike Sharing

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 has become common and popular in Europe, with programs in dozens of cities.

The District of Columbia has a pilot bike sharing program, Smartbike, with 100 bikes at ten docking stations in downtown DC. The first bike sharing system in North America, Smartbike is a precursor to a much larger system, which will be known as Capital Bikeshare.

Capital Bikeshare will likely (funding permitting) incorporate more than 3000 bicycles at over 300 docking stations in the District of Columbia, Arlington, Alexandria, Fairfax County, Montgomery County, and the City of College Park. The majority of bicycles and stations are expected to be in the District of Columbia and in Arlington. Capital Bikeshare will use the Bixi bikeshare system developed in Montreal. Bixi's solar-powered semi-mobile bike stations require no utility hook-up, which will expedite installation. Capital Bikeshare is currently the largest planned bike share system in the United States.

*Capital Bikeshare will have over 3000 bicycles and 300 stations*

**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, Cycle Tracks, and dual facilities for pedestrians and bicyclists will become more common, and a major regional bike sharing program will soon be in place in the urban core jurisdictions.

## Introduction

As seen in Chapter One, both the Vision of the Transportation Planning Board (1998) and the Region Forward (2010) vision plan of the Council of Governments encourage walking and bicycling. *Region Forward*, a vision for the National Capital region in 2050, was adopted in January 2010. *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. 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. New development is to be concentrated in walkable, mixed-use activity centers.

## Goals

Region Forward 2050 includes a set of goals, and targets and indicators that will help measure whether those goals are being met. Many of those goals relate to walking and bicycling:

### Transportation

1. 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.**
2. A transportation system that maximizes community connectivity and walkability, and minimizes ecological harm to the region and the world beyond.

### Land Use

1. Enhancement of established neighborhoods of differing densities with **compact, walkable infill development**, rehabilitation and retention of historic sites and districts, and preservation of open space, farmland and environmental resource land in rural areas.
2. **Transit-oriented and mixed-use communities** emerging in regional activity centers that **will capture new employment and household growth**.

### Energy & Environment

1. Significant **decrease in greenhouse gas emissions**, with substantial reductions in the built environment and transportation sector.
2. Protect and enhance region's environmental resources by meeting and exceeding standards for our air, water, and land.

### Public Safety & Health

1. Safe communities for residents and visitors.

2. …protect the public health, safety, welfare, and preserve the lives, property, and economic well-being of the region and its residents.
3. Healthy communities with …a **focus on wellness and prevention**

## Targets and Indicators

In order to measure progress towards the broad transportation goals, *Region Forward* recommends that certain indicators be tracked. Table 5-1 below shows some of the targets and primary indicators from *Region Forward* that relate to walking and bicycling as well as corresponding, additional indicators which the bicycle and pedestrian subcommittee believes will give 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.

**Table 5-1:**
**Region Forward 2050 Targets & Indicators**
**Suggested Supporting Indicators**

| 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%<br>Walk: 8.5%<br>Transit: 6.1%<br>Auto: 81.6% | 1. Walk and bike commute mode share<br>2. Pedestrian and bicyclist counts<br>3. Pedestrian Access to Transit Mode Share<br>4. Bike Access to Transit mode share<br>5. Bike share trips<br>Number of bike share trips per day & per bike share bike.<br>6. % Female cyclists<br><br>Adopt complete streets policies<br>1. Jurisdictions with complete streets policies<br>2. Percentage transportation projects compliant with Complete Streets policies (feasible?). | • US Census – American Community Survey five year rolling average/ Annual<br>• DC, Arlington counts/annual<br>• WMATA rail passenger survey/4 years<br>• Regional Bike Share trip numbers/annual | • ACS available in 2010<br>• DC Average 2009 Peak hour count = 69, % female bicyclists = 19%<br>• .55% bicycle mode of access to Metro in 2007<br>• 62.12% walk mode of access to Metro in 2007 |
| 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 | N/A |
| Increase the rate of construction of bicycle and pedestrian facilities from the TPB plan. | Number of bicycle and pedestrian projects from the CLRP | Number of bicycle and pedestrian projects in the CLRP | CLRP/Annual | Pedestrian and Bicycle Infrastructure Construction<br>1. Centerline mileage of bike lane built<br>2. Mileage of Cycle Track built<br>3. Mileage of Side Path Built<br>4. Mileage of Multiuse path built<br>5. Bicycle and pedestrian bridges and underpasses built<br>6. Bike share bicycles/stations added<br>7. Public bicycle parking<br>• # of Short-term rack spaces<br>• # of long-term sheltered | • Bicycle and Pedestrian Regional Project Database/Annual<br>• WMATA rail passenger survey/4 years<br>• WMATA Bus Stop Inventory/?<br>• Capital Bikeshare | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | spaces provided<br>• Bike lockers<br>• Bike cages/bike parking structures (?)<br>• Staffed bike stations<br>7. Number of Streetscaping projects completed/funds expended.<br>8. Funds expended on sidewalk programs.<br>9. Number of pedestrian intersection improvement projects completed<br>10. Funds expended on traffic calming programs<br>Access to Transit<br>11. % of bus stops with sidewalks<br>12. % of bus stops at controlled street crossings<br>13. Bike share stations and bike share bikes at rail stations and transit hubs<br>14. Bike share stations and bike share bikes within 3 miles of a rail station or transit hub<br>15. Bike parking - Rack spaces, Lockers<br>Bike cage, bike parking structure spaces<br>Bike Sharing<br>1. Number of bike sharing stations<br>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:<br>84 pedestrian deaths<br>7 bicyclist deaths<br>2007:<br>1962 pedestrian injuries<br>653 bicyclist injuries | Education<br>• Number of school children trained in safe walking and bicycling (?)<br>• Recognition of key safety messages by the general public<br>• Number of Bike to Work day participants<br>Enforcement: Number of pedestrian-related and bicycle-related citations and warnings issued as part of the Street Smart campaign.<br>1. Speeding | 1. Safe Routes to School Program/Annual<br>2. Street Smart Annual Report<br>3. Bike to Work Day Annual Report<br>4. Street Smart Enforcement | • 3500 children trained in DC in 2008, 2700 in Rockville. Virginia SRTS does not tally such numbers.<br>• 8500 Bike to Work Day participants in |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | 2. Speeding, school zone<br>3. Reckless driving<br>4. Passing stopped school bus<br>5. Failure to yield to pedestrian or bicyclist<br>6. Cross against the signal (pedestrian)<br>7. Walk into the path of motor vehicle outside marked or unmarked crosswalk.<br>8. Ignore traffic signal (bicyclist)<br>9. Wrong way riding<br>10. Ride on sidewalk where prohibited | Reports/annual | 2010 |
| **Targets** | **Primary Indicators** | **Data Source/Freq.** | **Baseline** | **Suggested Indicators** | **Data Sources/Freq.** | **Baseline** |

The *TPB* Vision and *Region Forward* 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.

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

**Figure 1: Missing sidewalk near Ft. Totten Metro**

1. 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.[1]

*Many Agencies involve Walking and Biking Advocates in the Planning Process*

2. In particular, consistent with federal policy, every jurisdiction and agency should adopt a "complete streets" or routine accommodation policy such as the Virginia Department of Transportation has adopted. Under "complete streets" policies pedestrians and bicyclists will be accommodated as part of all transportation projects, with a few limited and well-defined exceptions. Typical exceptions drawn from Oregon's "Bicycle Bill", which has been the model for such ordinances, are listed below:

    a. Bicyclists and pedestrians are prohibited by law from using the roadway, as with a tunnel or limited-access highway. In this instance, a greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the right of way or within the same transportation corridor.

[1] Ft. Totten, DC Photo: COG/TPB, Michael Farrell

b. The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Excessively disproportionate is defined as exceeding twenty percent of the cost of the larger transportation project.

c. Where sparsity of population or other factors indicate an absence of need. This exception is meant for remote rural areas that are not likely to experience development within the life span of the investment. Since the life span of a bridge may be 50 years or more, the existing sparsity of population should be expected to continue for that long; otherwise pedestrian and bicycle facilities should be provided.

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.

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

4. Encourage public participation by bicyclists and pedestrians and other community groups in the planning process.

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

*In 2010, the region budgeted roughly $23 million for bicycle and pedestrian projects, or about 1% of transportation capital expenditures*

6. Integrate bicycling and walking into new development.

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

   b. 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.

7. 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.

8. Improve inter-jurisdictional coordination to identify, plan, construct and preserve **multi-jurisdictional routes**, and provide connecting links for existing routes to assure the establishment of a continuous bicycle and pedestrian transportation system throughout the Washington metropolitan area.

   a. 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.

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

   c. 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.

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

   e. To help further these goals, create a regional **working group** consisting of state and regional representatives. The working group could identify regional and long distance travel corridors for bicyclists, develop common guide signage guidelines, and develop of recommended bikeway alignments within travel corridors.

**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. Assure that safety is the primary consideration in all design standards.

   a. 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* from the Federal Highway Administration.

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

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

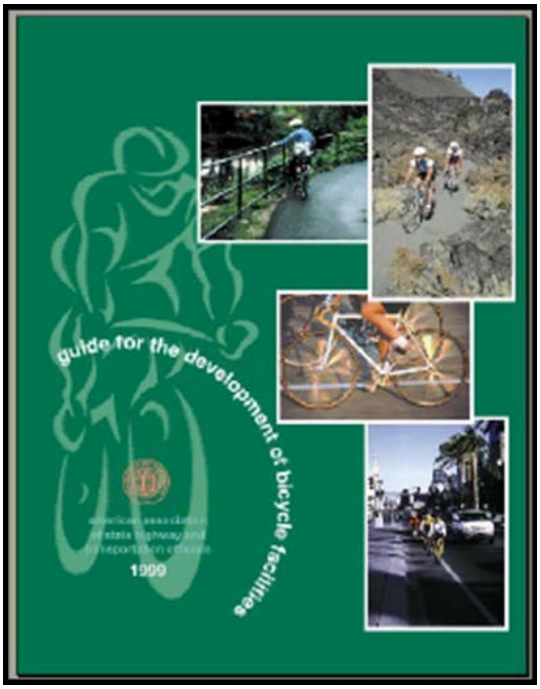



**Figure 2: AASHTO Guide for the Development of Bicycle Facilities**

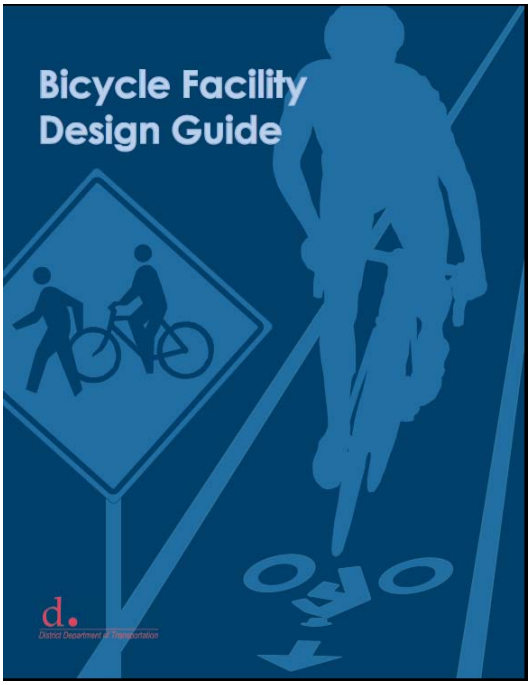



**Figure 3: DDOT Bicycle Facility Design Guide**

2. Improve Access for Persons with Disabilities to Pedestrian Facilities[2]

*Poorly Placed Curb Ramps and Rough Pavement can be Difficult to Navigate in a Wheelchair*

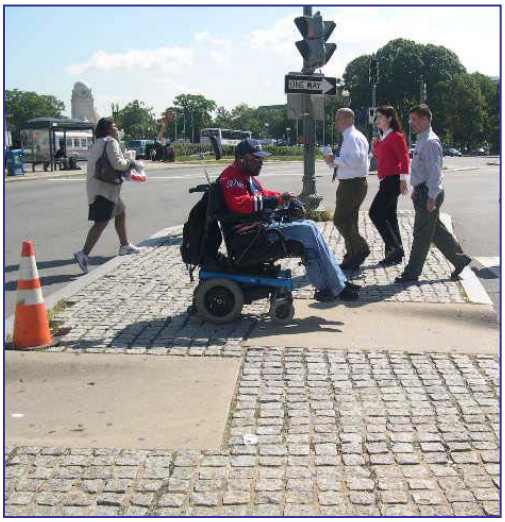


**Figure 4: Pedestrian Island near Union Station**

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 *ADA 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:

a. 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.[3]
b. The height of wheelchair users should be considered when placing shrubs or other objects where they might block them from the view of motorists.
c. 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.
d. The placement of crosswalk buttons must take into consideration the needs of people with disabilities.
e. Audible pedestrian signals make communities safer for all pedestrians, including seniors and children as well as people with visual impairments.
f. 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.

[2] "Lessons Learned" fact sheet for Disability Awareness Day. National Capital Region Transportation Planning Board Access for All Committee, October 20, 2004.
[3] Wheelchair ramp photo: COG/TPB, Access for All Committee

## C. Minimize roadway width, curb radii & crossing distance.[4]

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.

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 design vehicle and emergency vehicles.

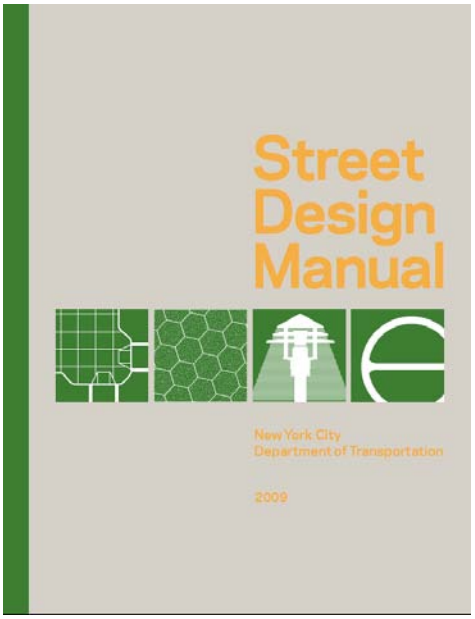



**Figure 5: New York City Street Design Manual**

## D. Set target vehicle speeds appropriate to surrounding land use.[5]

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.[6]

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

[6] Ibid, pp. 76-91.

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

1. Improve sidewalks, bikeways, intersections, signage and links to transit for bicyclists and pedestrians in activity centers

2. Improve access to and between regional activity centers.

   a. Provide access to activity centers from surrounding neighborhoods.

   b. Provide facilities to connect nearby activity centers.

**Figure 6: Bike Racks and Lockers at New York Avenue Metro Station**

**F. Integrate bicycling and walking into the public transportation system.**[7]

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

1. Provide safe and convenient access for pedestrians and bicyclists to all Metro and commuter rail stations and park-and-ride lots.

2. Improve bicycle parking at Metro and commuter rail stations with well-designed racks, covered racks, and lockers. Replace broken and obsolete bicycle racks with current models. Investigate the possibility of improving commuter access to bicycle lockers and increasing usage rates by establishing automated, hourly rental service.

3. Improve the convenience of bringing bicycles on the Metrorail. Evaluate the possibility of allowing reverse commuting with bicycles on


**Figure 7: Bike on Metrobus. Photo Credit: WABA**

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

Metrorail during rush hours.

4. Provide bicycle racks on all buses.[8]

5. Provide for accommodation of bicycles on future rail services in the Washington region. Vertical storage racks such as those on the River light rail line in New Jersey are a good model.

## G. Provide adequate bicycle support facilities.

1. 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.

*The District of Columbia requires Bicycle Parking in any building with Automobile Parking, and Installs Bike Racks on Public Sidewalks on Request*

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

**Figure 8: On-Street Bike Parking, Seattle**

b. 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.

*A keypad-controlled bike cage with racks is very secure*

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

**Figure 9: Bike Cage, Stanford University**

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

2. 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.[9]

The Washington, D.C. Department of Transportation has established the following bicycle parking requirements for property owners:

- Bicycle parking is required for office, retail and service uses that provide car parking
- The required number of bike parking spaces is five percent (5%) of the required number of automobile parking spaces
- Bicycle parking must be convenient, secure, and well-lit
- For older buildings, one percent (1%) of the amount of required parking spaces may be converted to bicycle parking spaces
- DDOT offers free technical advice and racks for existing garages and off-street parking lots

## H. Develop a 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 has become common and popular in Europe, with programs in dozens of cities.

See Chapter 4, pp. 10-11 for details on bike sharing in the Washington region.

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

1. Promote pedestrian and bicycle safety education programs for children, beginning at the earliest possible age.
   a. Establish pedestrian and bicycle safety programs at the elementary school level, including classroom and on-bicycle instruction.


**Figure 10: Cyclist training**
**Photo Credit: WABA**

[9] Photo of bike cage on Stanford Campus, COG/TPB, Michael Farrell

b. Develop and distribute pedestrian and bicycle safety information materials designed to teach beginning cyclists and young pedestrians.

c. Emphasize the use of bicycle helmets as a means of injury reduction, lights after dark, reflectors, and reflective clothing for pedestrians.

2. Improve cycling skills and pedestrian safety habits of adults and young adults.

a. Produce and distribute information on bicycle usage and safety.

b. Emphasize the use of helmets for rider protection, lights after dark, reflectors, and reflective clothing for pedestrians.

3. Increase motorist awareness and accommodation of bicyclists and pedestrians, and bicyclist and pedestrian awareness and accommodation of motorists.

a. Include bicycle and pedestrian information in automobile drivers' training classes, driver's manuals, and license exams, and through the media.

b. Coordinate public media campaigns with law enforcement

**Figure 11: Trail Patrol, C & O Canal Park**

4. Encourage jurisdictional uniformity of traffic laws relating to bicycling and walking. Encourage conformity with such regulations as the Uniform Vehicle Code.

*Volunteer Patrols can help with Trail Security*

5. Encourage consistent bicycle law enforcement to assure safe bicycling and walking.

a. 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 and stop lights.

b. 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.

6. 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.

7. Provide increased 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.

*The regional "Street Smart" Pedestrian and Bicycle Safety Campaign urges motorists and pedestrians to "Be Alert"*


**Figure 12: Street Smart Poster**

**J. 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.**

1. Projects should be easily implemented and supported by the community.

2. Each project should enjoy the full and enthusiastic support of the government agencies responsible for implementation.

3. Extensive publicity and promotion should be provided for each facility or service included in the project.

4. An extensive analysis of the effectiveness of each project should be conducted following the demonstration period.

**J. 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.