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.

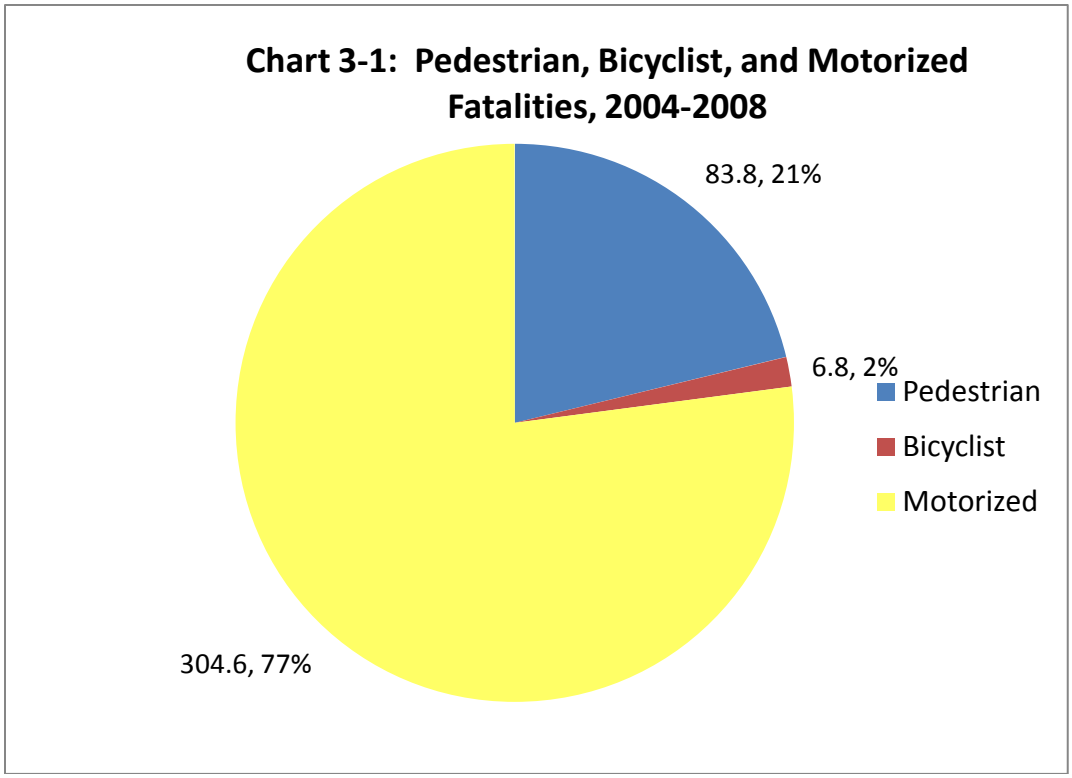
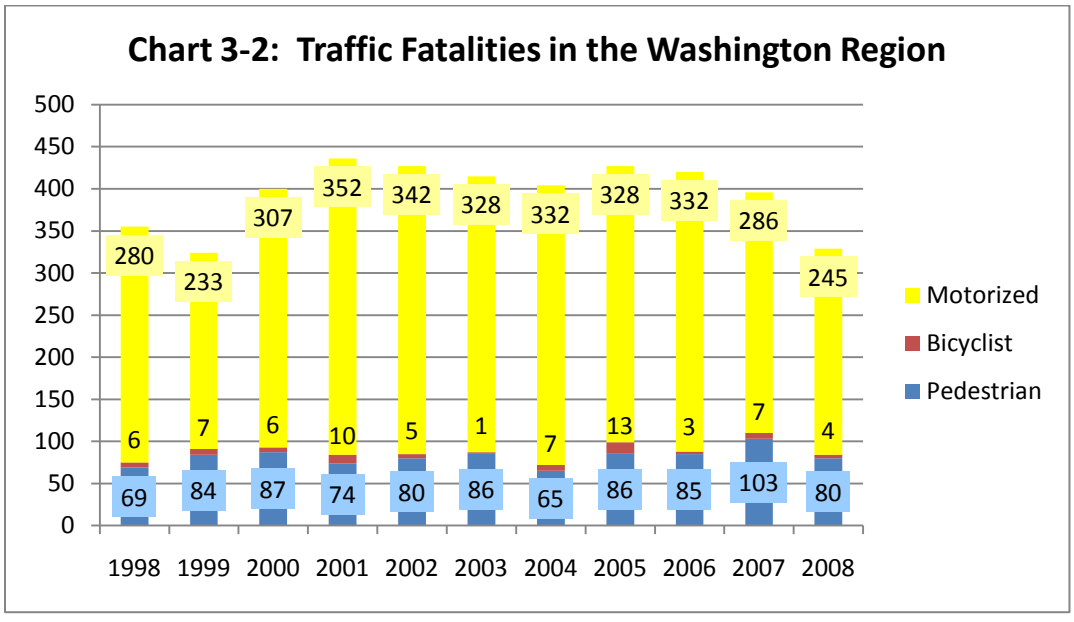


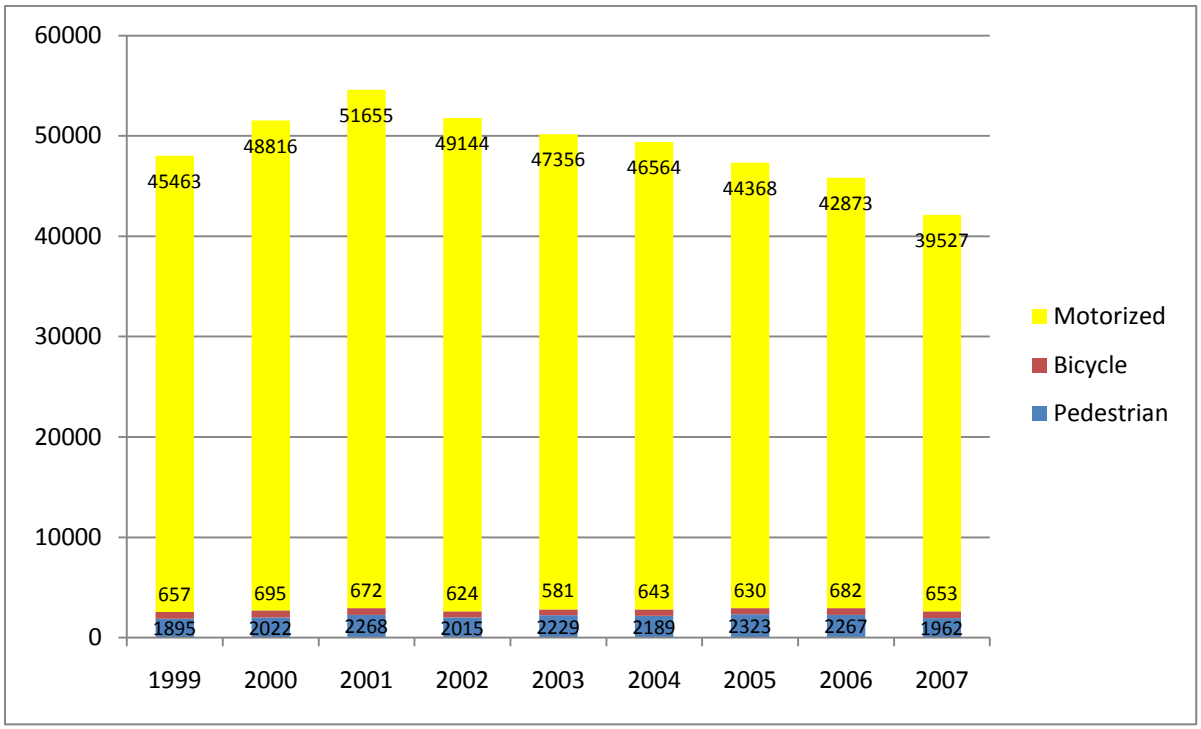
Chart 3-2 shows the yearly variations in traffic fatalities from 1998-2008. Overall traffic fatalities have been declining since 2005, while pedestrian and bicyclist fatalities have remained roughly flat. The *proportion* of total fatalities that are pedestrian or bicyclist out total fatalities is rising.



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

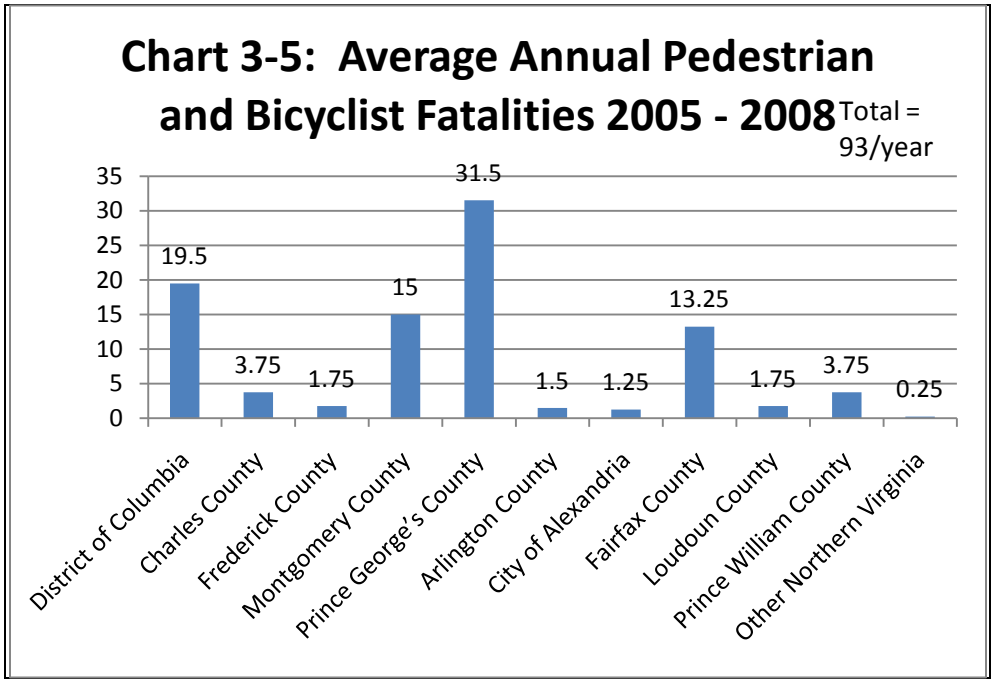


Pedestrian injuries in the Washington region declined steadily from 2001 to 2007. However, total traffic injuries declined much faster, so the proportion of traffic injuries that are pedestrian or bicyclist is rising.

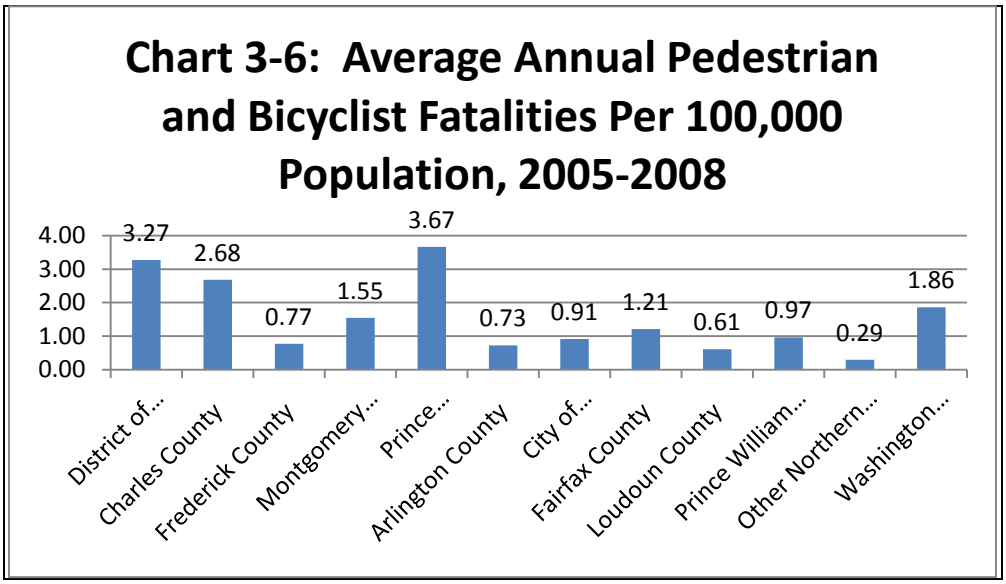
[4] Northern Virginia Injury Prevention Prevention Center, INOVA Regional Trauma Center (2005). *Pedestrian Injury in the Washington, D.C. Metropolitan Region.* Page 37.

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.

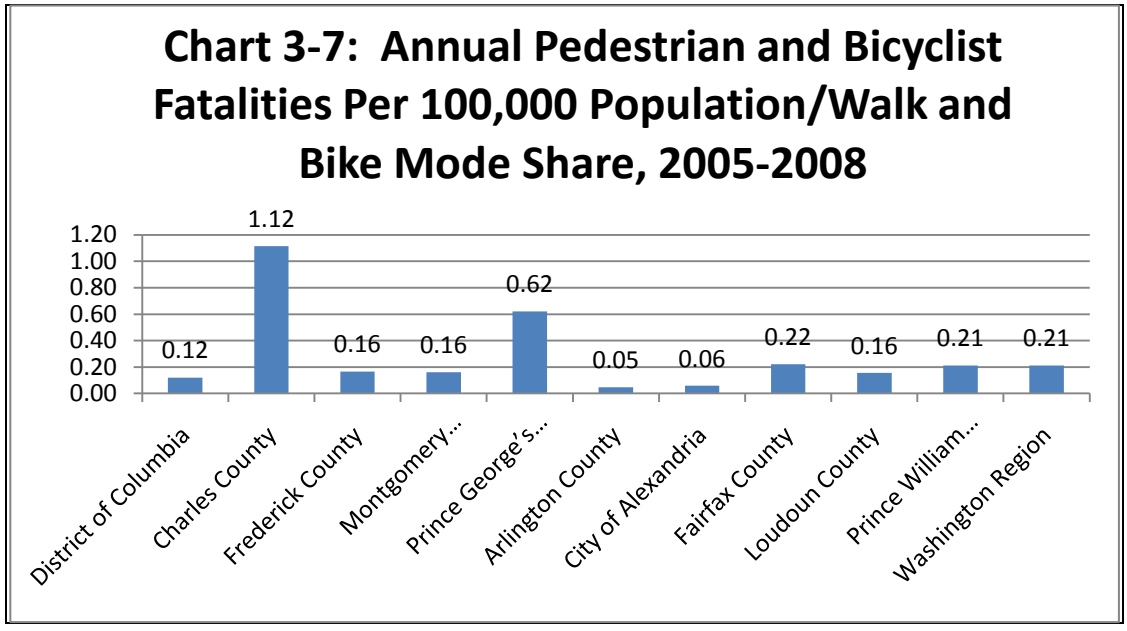


[5] Towns in Northern Virginia are not included in the surrounding Counties; their traffic fatalities are tallied separately.



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: (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. (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. (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. (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.

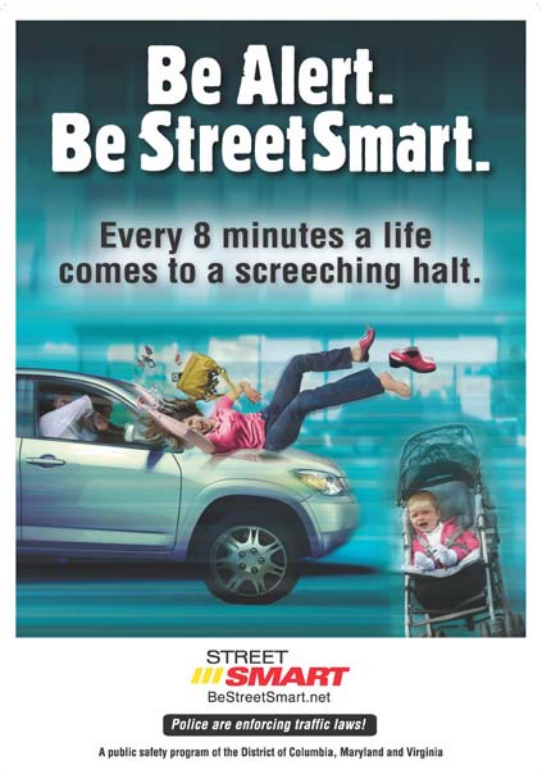


Figure 1: Street Smart Poster

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.