

Street Smart for Metrobus Operators Pedestrian/Bicycle Component



2007



City of
Alexandria, VA



This is fiction...

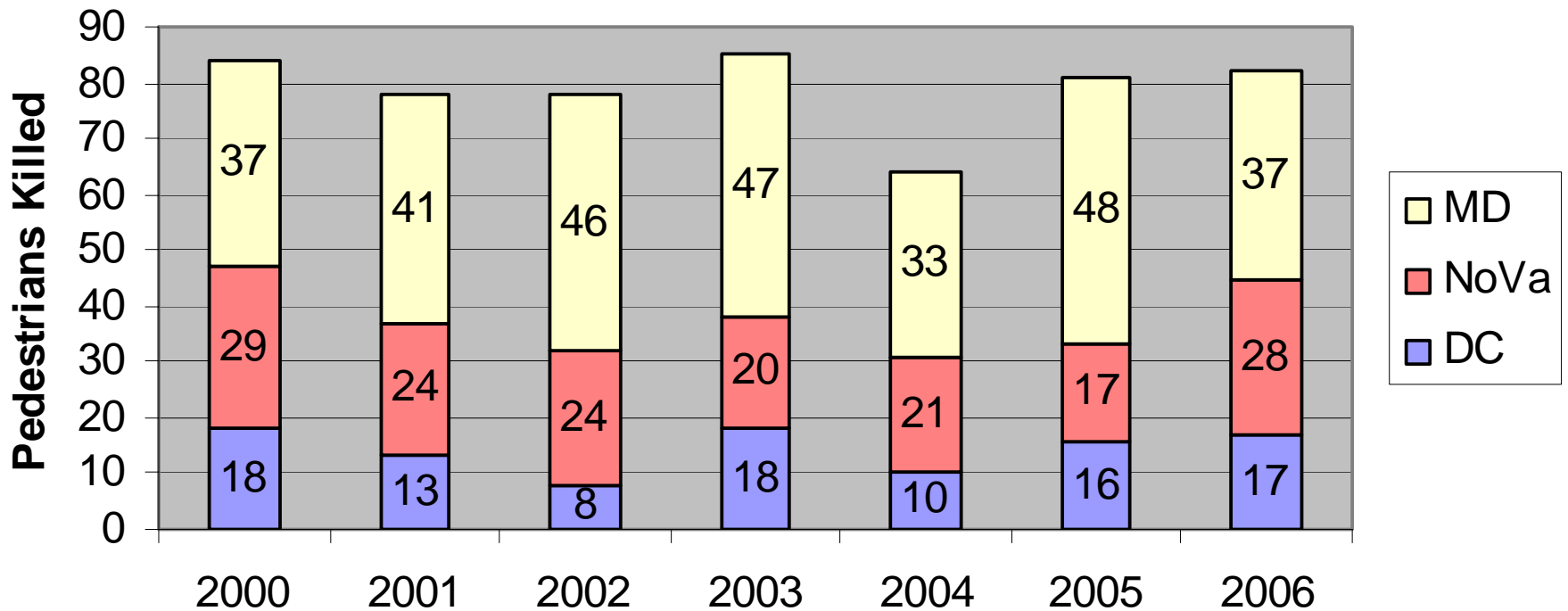


This is real.



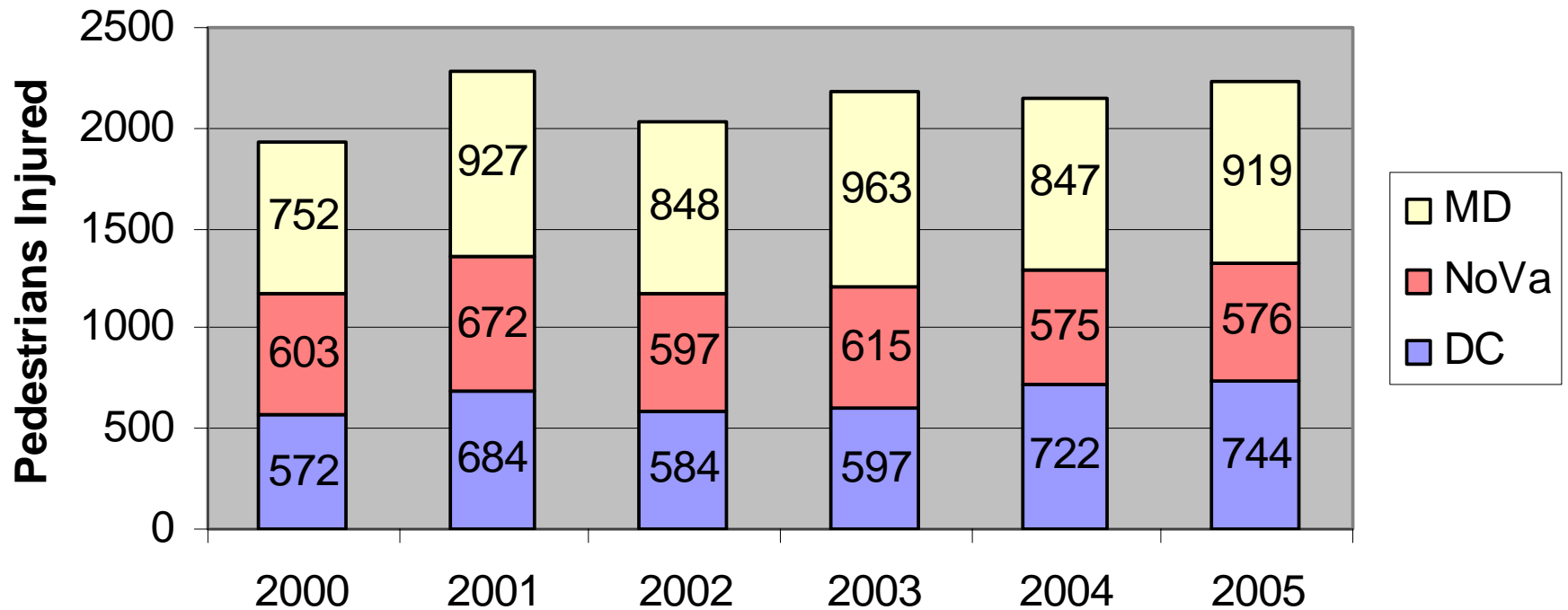
Regional Pedestrian Fatalities

Regional Pedestrian Fatal, 2000-2006



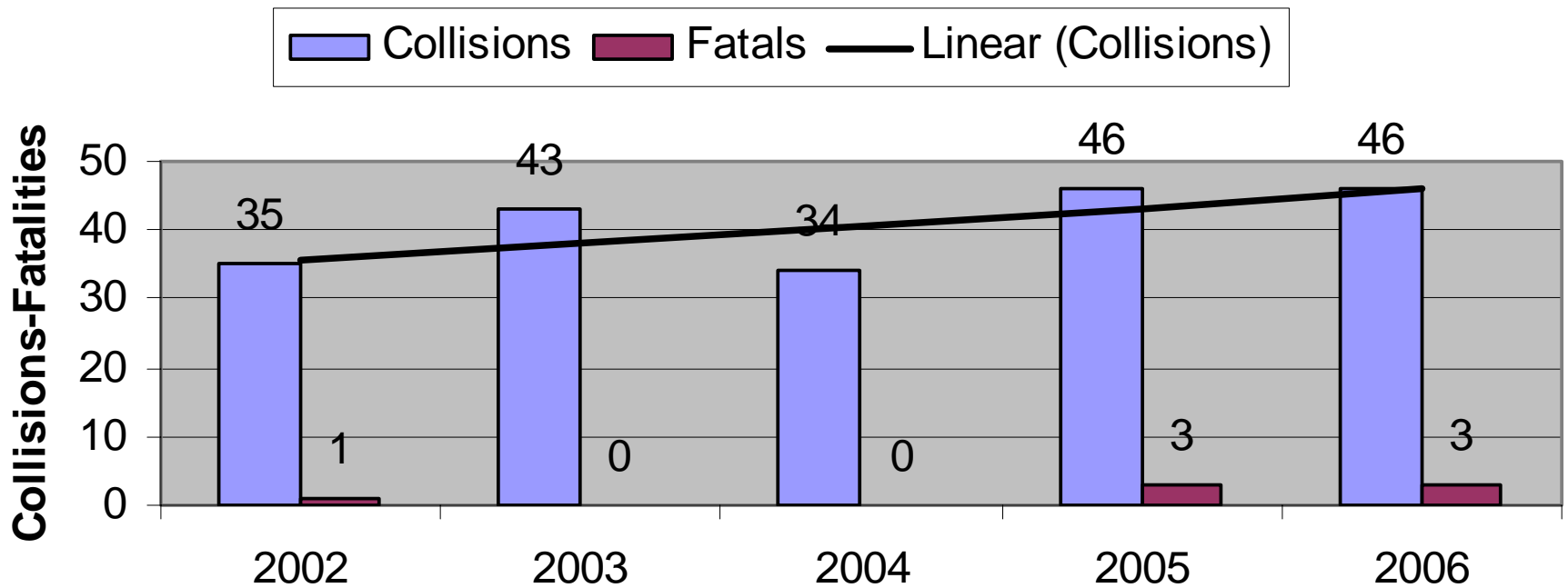
Regional Pedestrian Injuries

Regional Pedestrian Injuries, 2000-2005



Metrobus-Involved Pedestrian Crashes & Fatalities

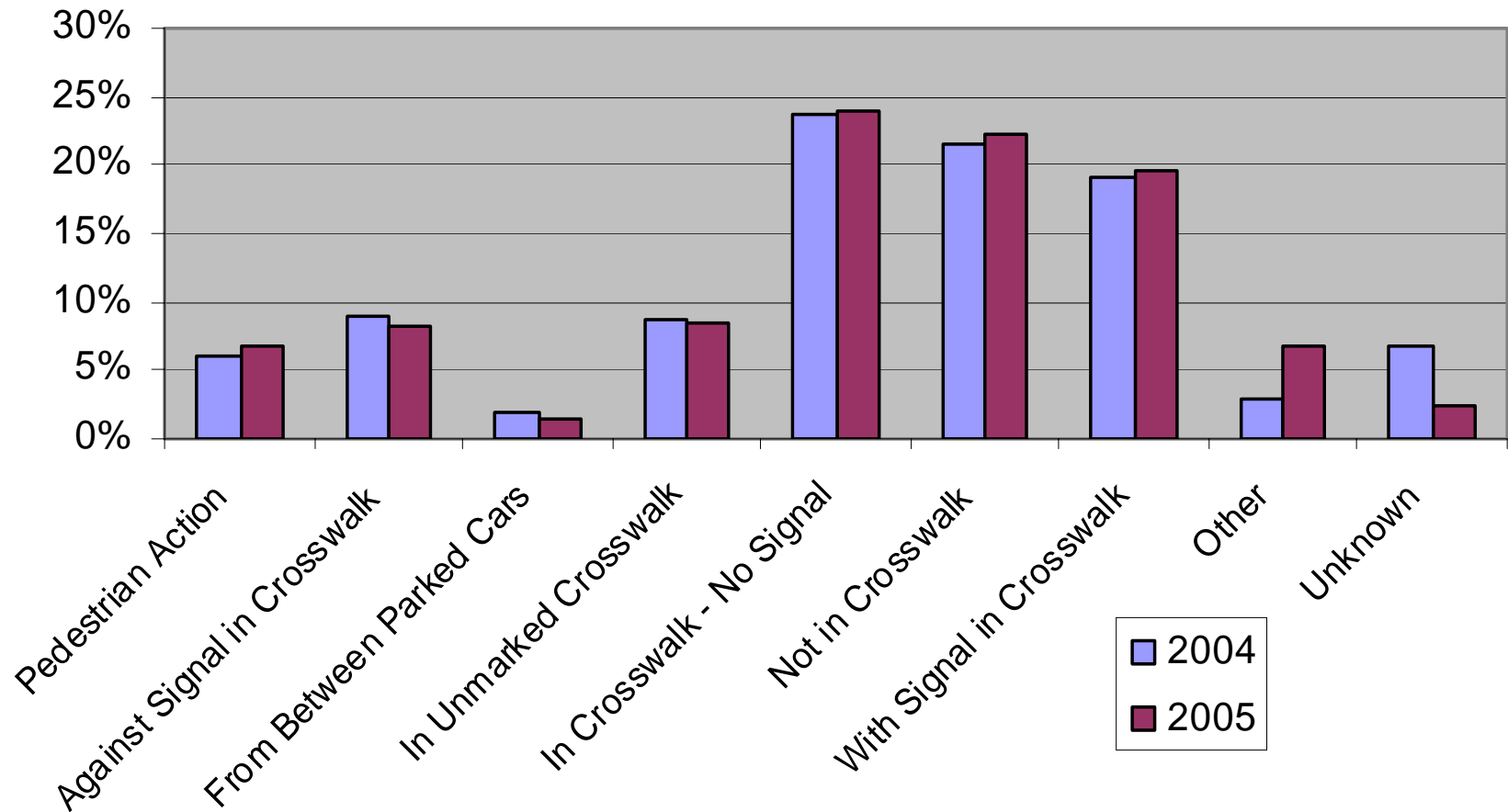
Metrobus-Pedestrian Crashes & Fatalities 2002-2006



Pedestrian Action prior to Crash

DC Only

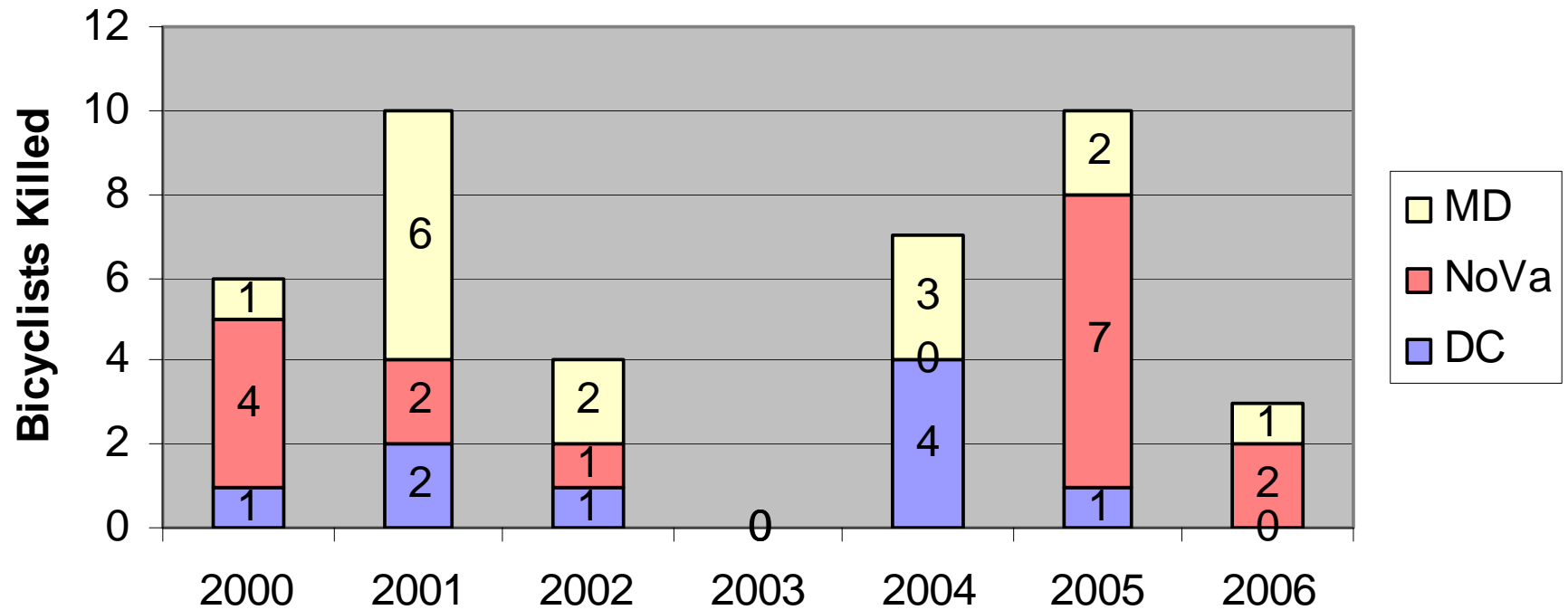
Crashes Involving Pedestrians 2004-2005
Pedestrian Action



Regional Bicyclist Fatalities (2000-2006)

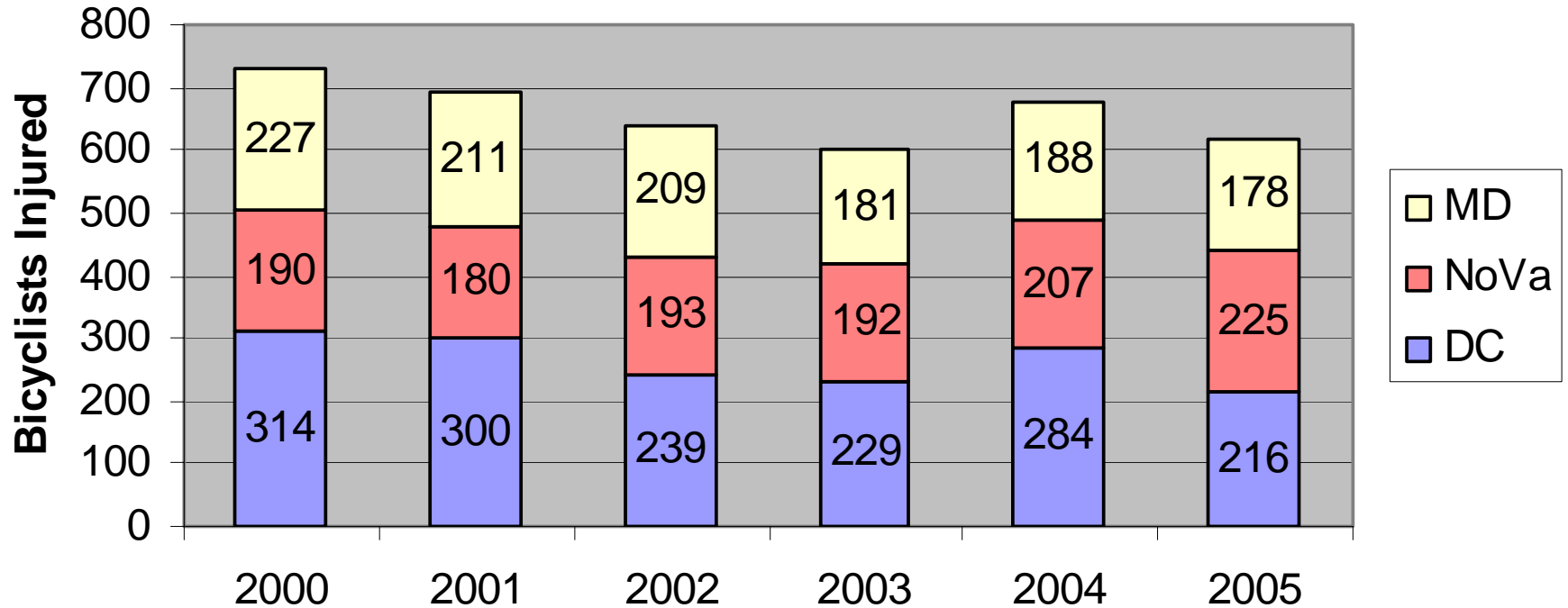


Regional Bicyclist Fatalities, 2000-2006



Regional Bicyclist Injuries (2000-2005)

Regional Bicyclist Injuries, 2000-2005



**It's all
about your
Perspective:**

- If you see the city through a windshield, you see pedestrian and cyclist violations.







- If you see the city on foot or bike, you see motorist violations.





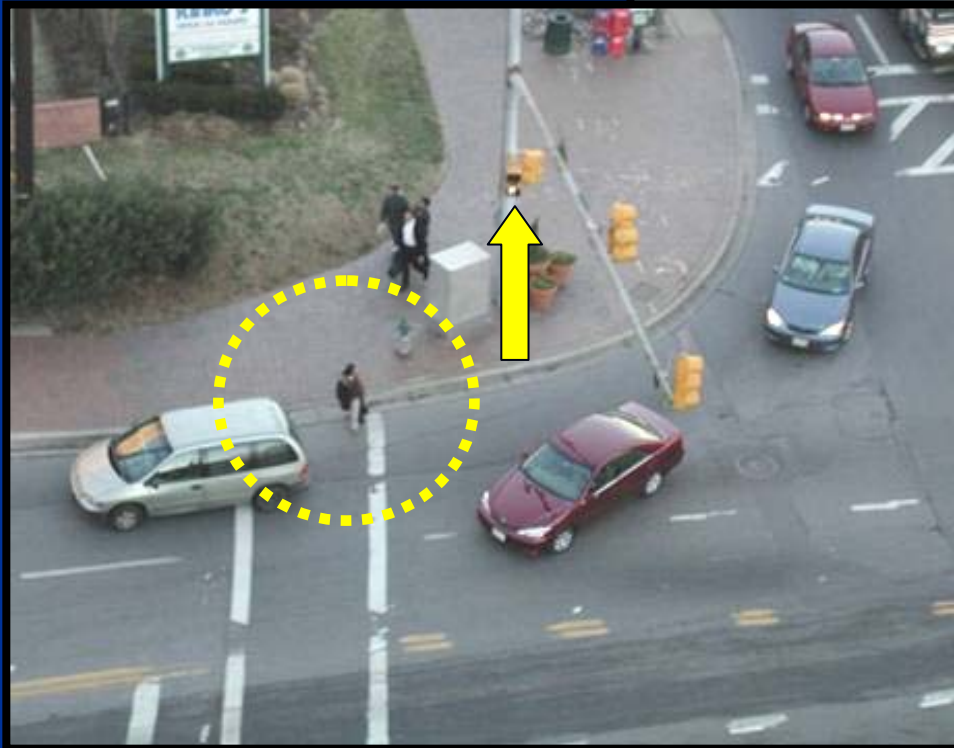
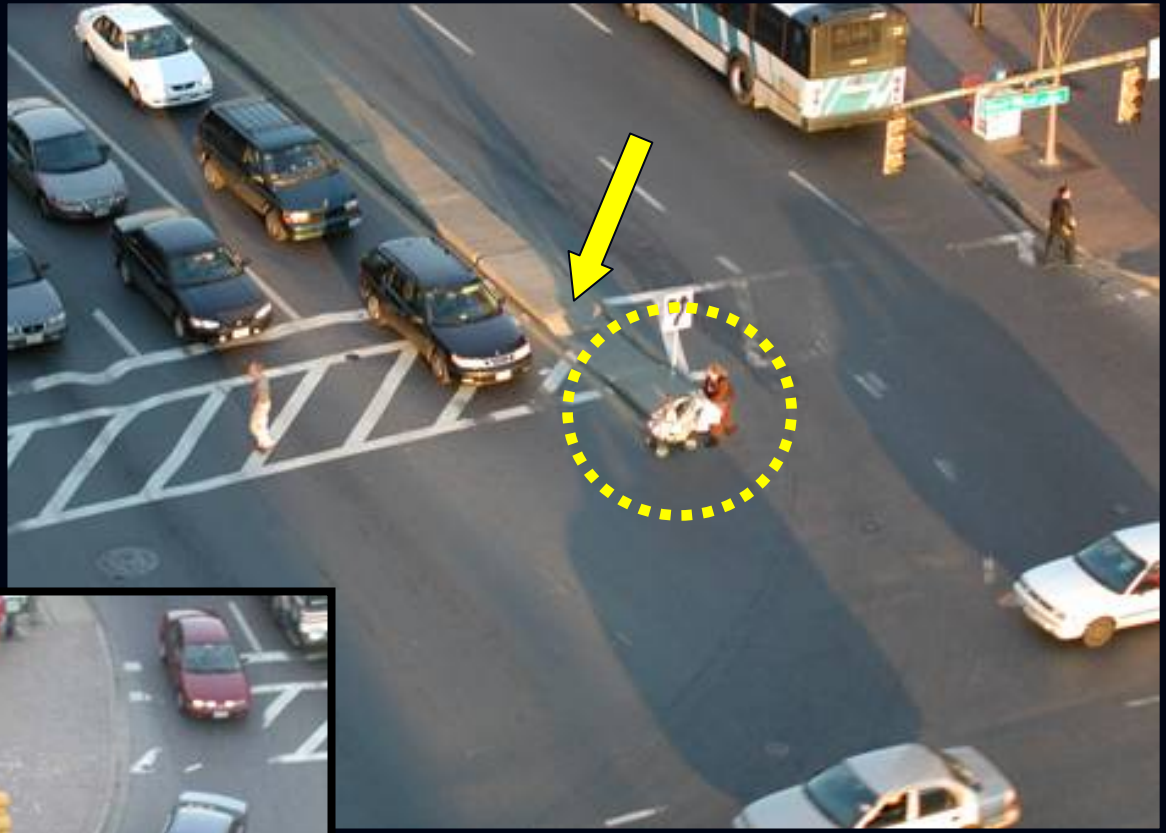
ARROWHEAD
U-PUMP-UM
NO LEAD 122

GREEN LIGHT
YELLOW LIGHT
RED LIGHT

WALK

ARROWHEAD
U-PUMP-UM

7N-5333

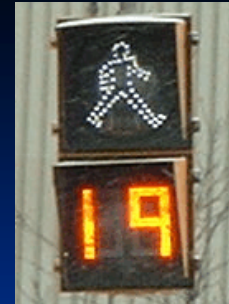




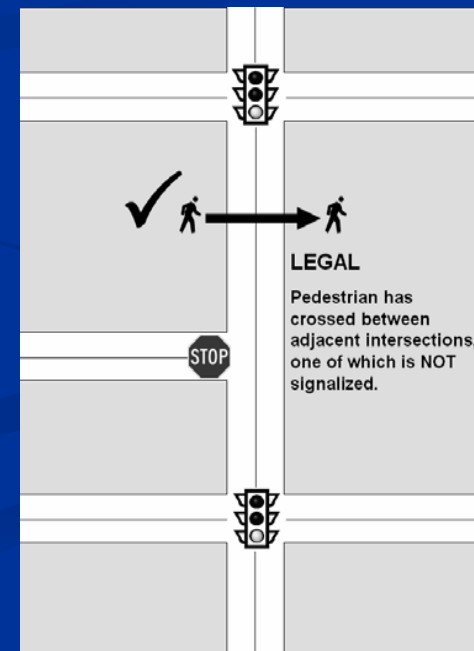
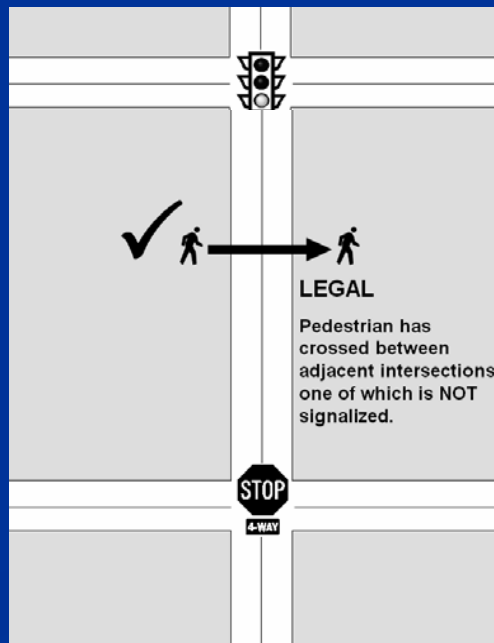
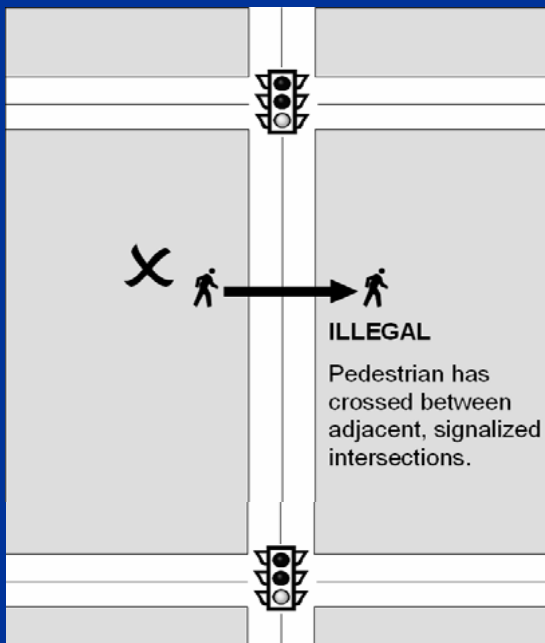
Metrobus-Pedestrian Issues



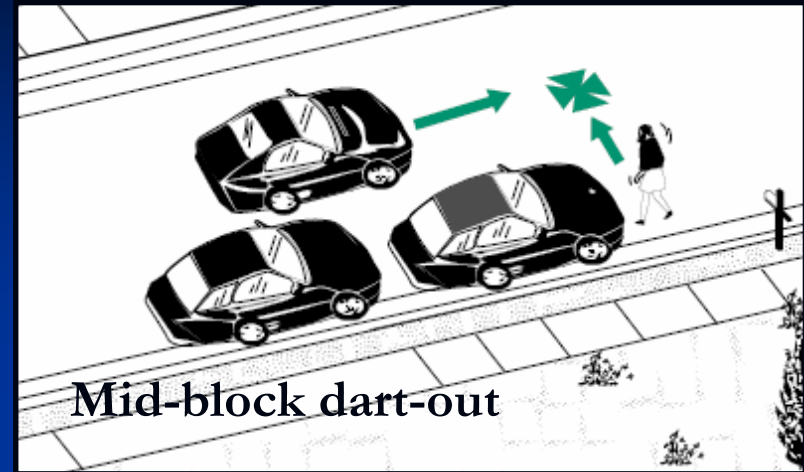
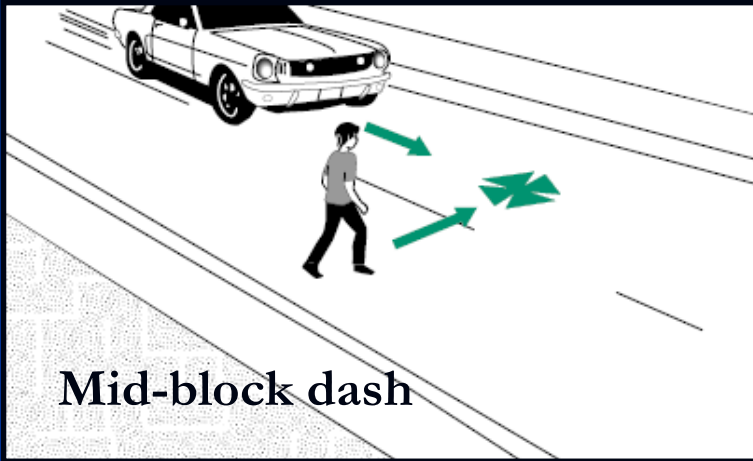
Laws for Pedestrians:



- Do not walk suddenly into the path of a vehicle.
- Do not walk against a “Don’t walk” signal.
- Do not cross mid-block between adjacent signalized intersections
- Permitted crossings between intersections:
 - Each pedestrian crossing a roadway at any point other than within a crosswalk shall yield the right-of-way to all vehicles upon the roadway.



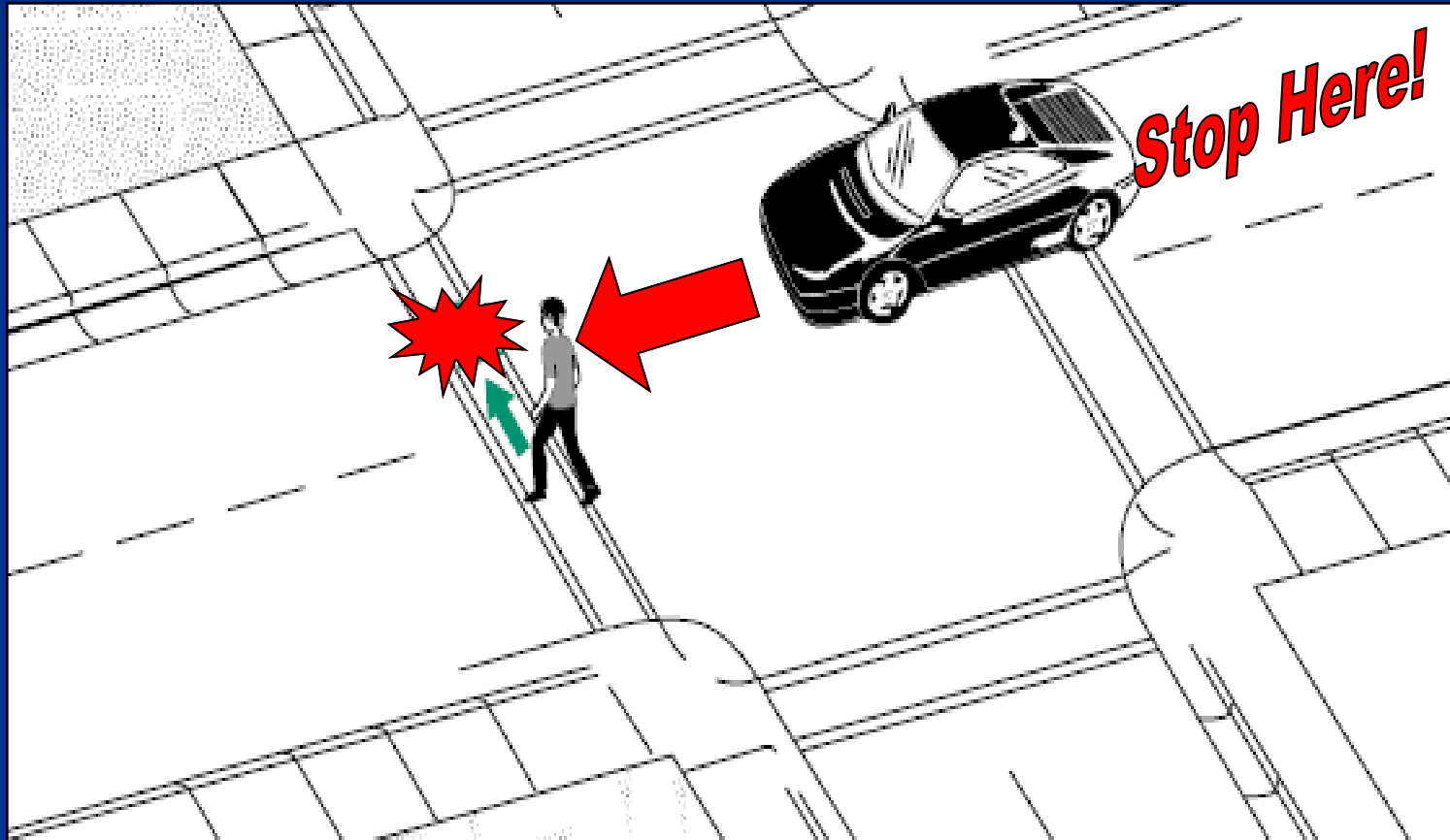
Frequent Ped At-Fault Crash Types:



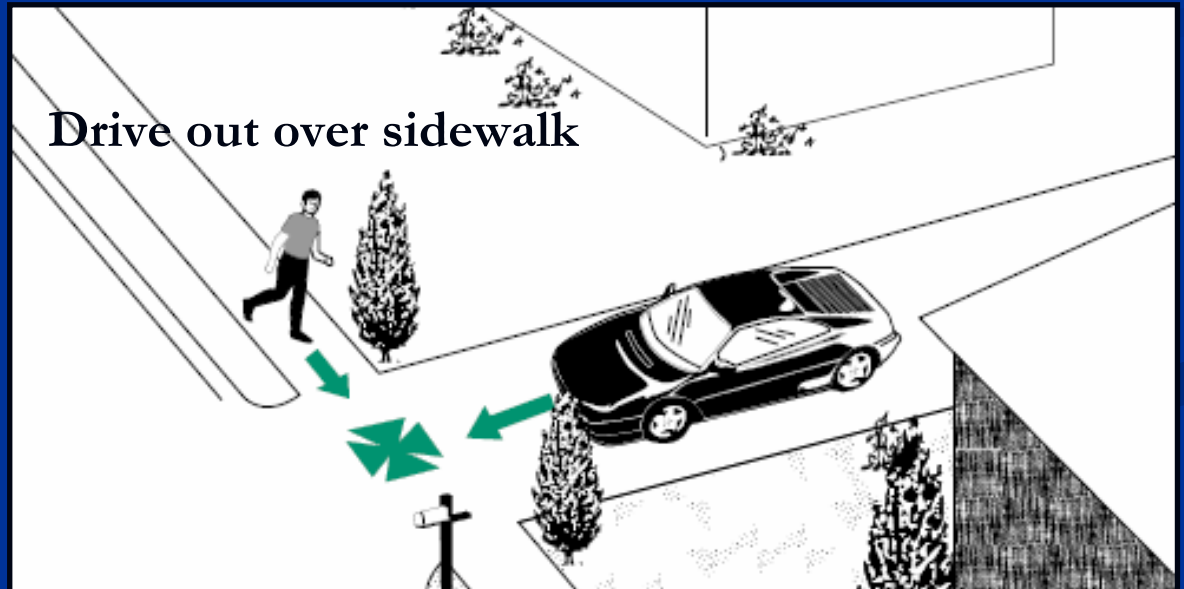
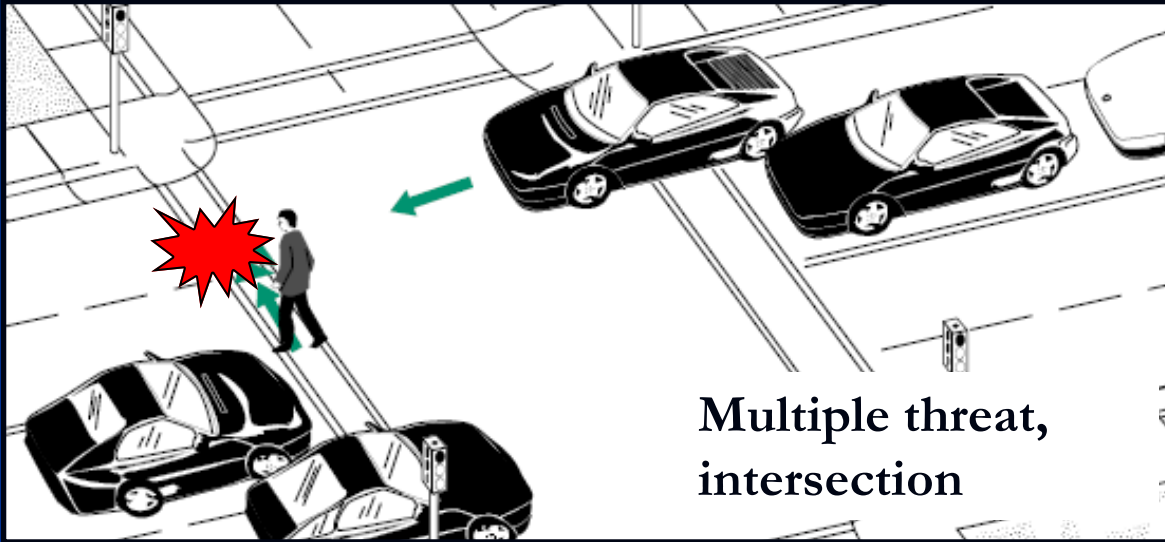
Pedestrian Safety Laws for Motorists:

<u>Statute Number</u>	<u>Subject</u>	<u>Description</u>
50-2201.58 (dc code)	Yielding right of way to pedestrian at signalized intersection	b) 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.
50-2201.28(a)	Yielding right of way to pedestrian at un-signalized crosswalk	(a) 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.
2013.7(c)	Yielding right of way to vehicle or pedestrian while turning right on red	A vehicle facing a steady red signal may cautiously enter the intersection to turn right after stopping. The vehicle shall yield right-of-way to pedestrians within an adjacent crosswalk and to other traffic lawfully using the intersection.
2221.5	Passing a vehicle stopped for a pedestrian	Whenever any vehicle is stopped at a marked crosswalk or at an unmarked crosswalk at any intersection to permit a pedestrian to cross the roadway, the driver of any vehicle approaching from the rear shall not overtake and pass the stopped vehicle.

Frequent Motorist At-Fault Crash Type:



Frequent Motorist At-Fault Crash Types:

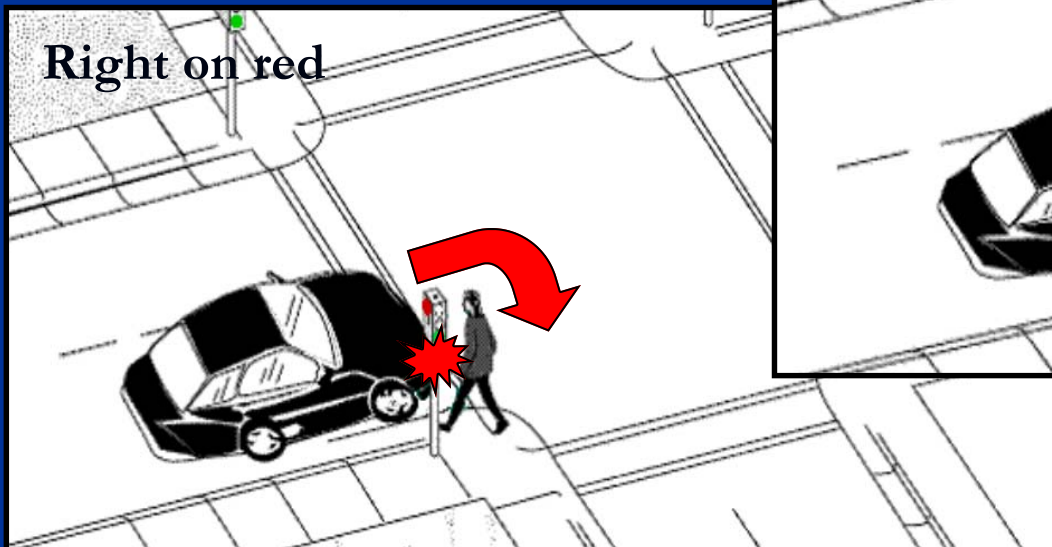
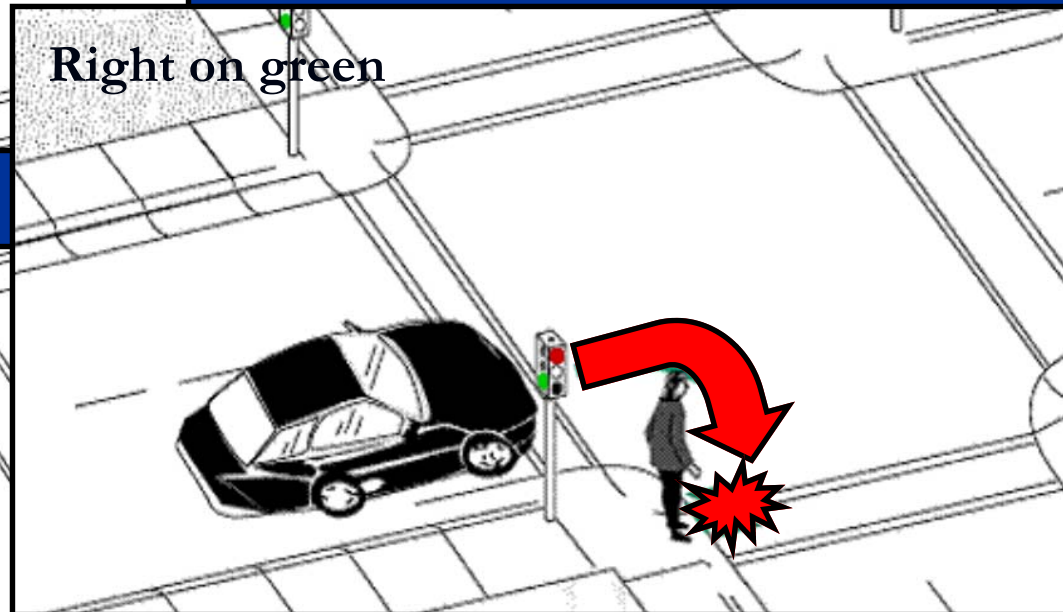
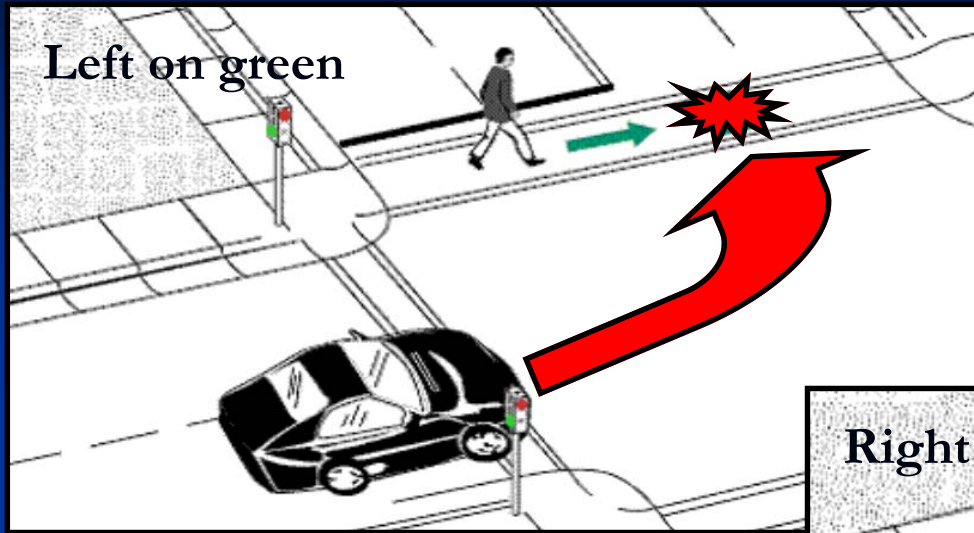


Local Example:

- 14th and Shepherd St., NW

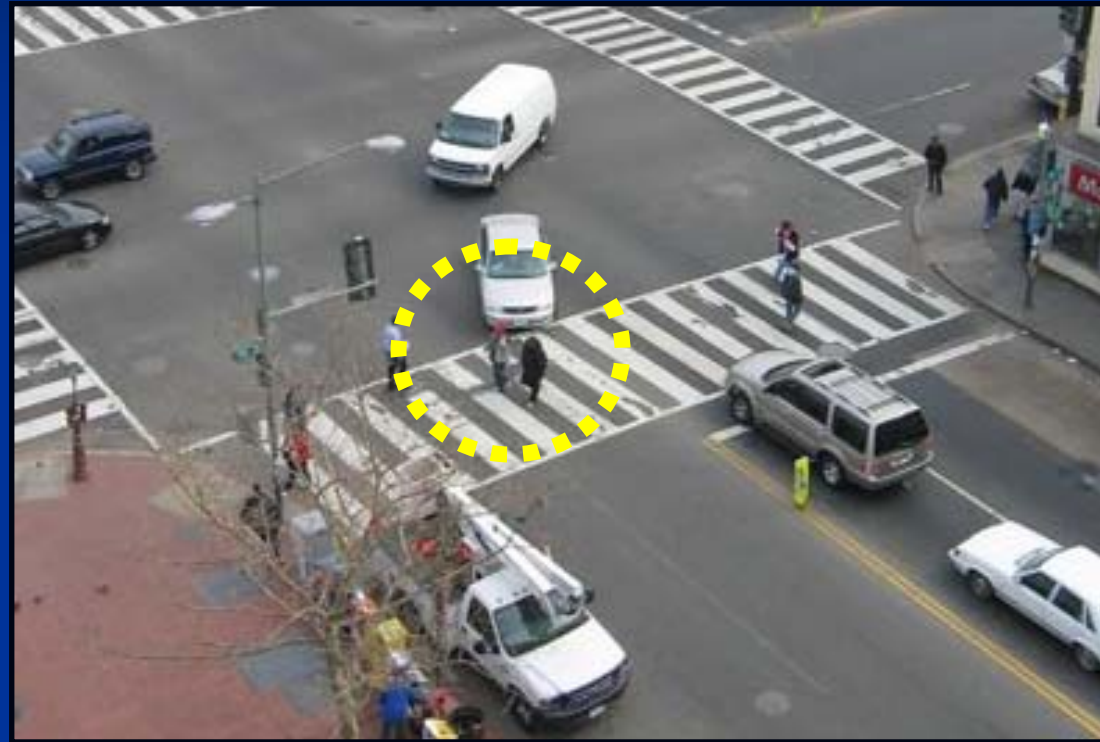
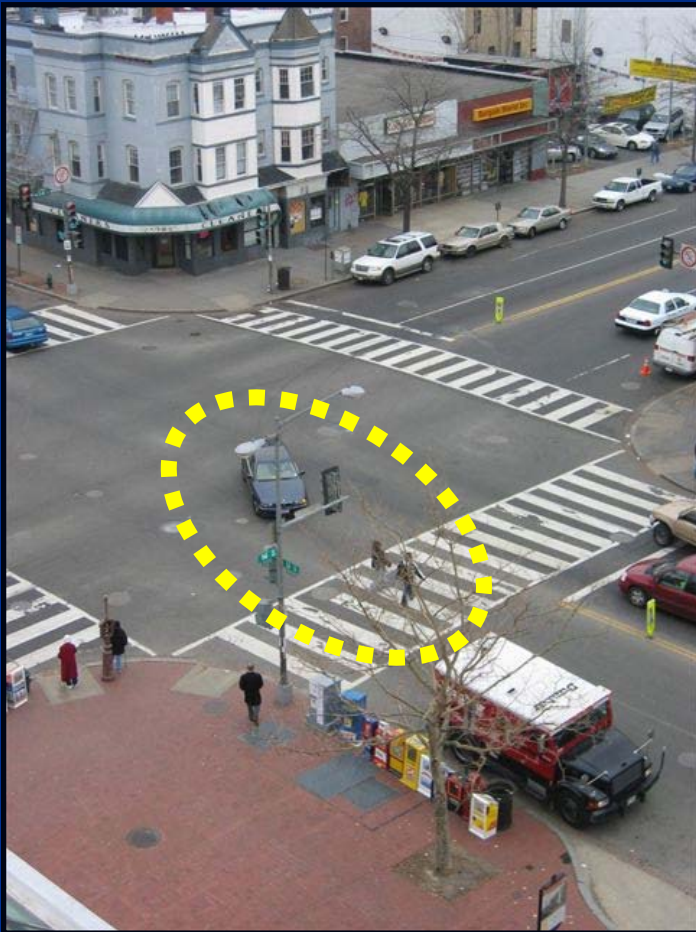


Frequent Motorist At-Fault Crash Types:



Local Example:

- 14th and U St. NW



- Left arrow/Don't Walk phase

Mistakes Can Be Deadly

- A bus is long enough to sweep across the pedestrian's path when turning.
- A pedestrian who is following the law requires no unusual attention from the bus driver, but
- Bus drivers' only defense with pedestrians who do not follow the rules of the road, is to be cautious and vigilant.

Metrobus-Bicyclist Issues



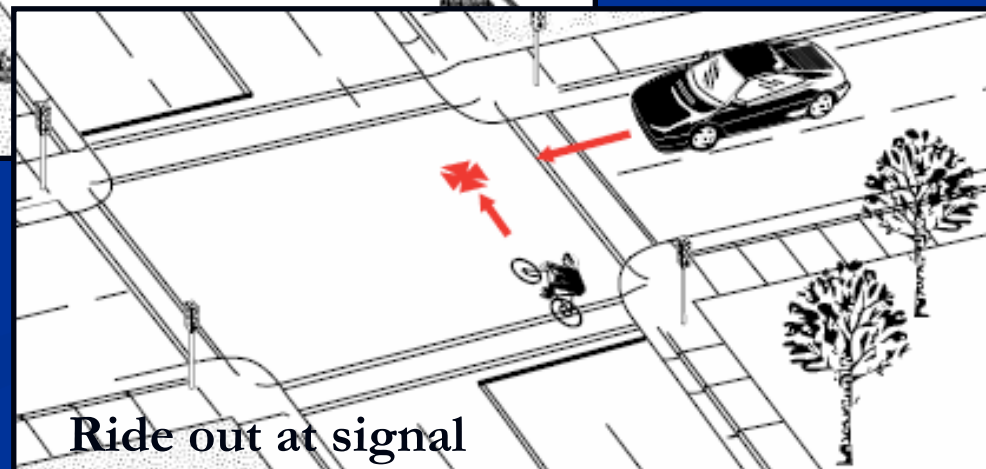
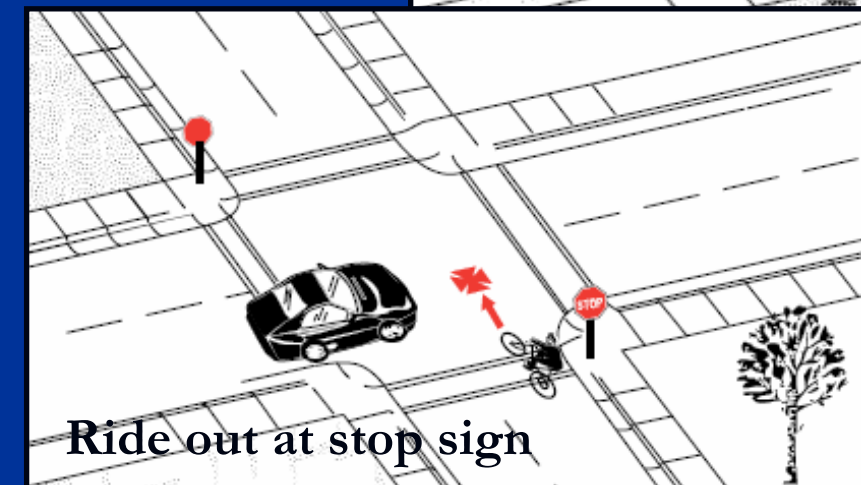
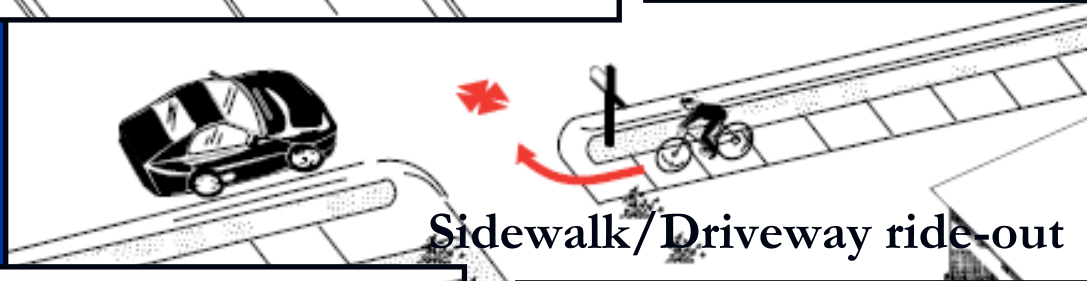
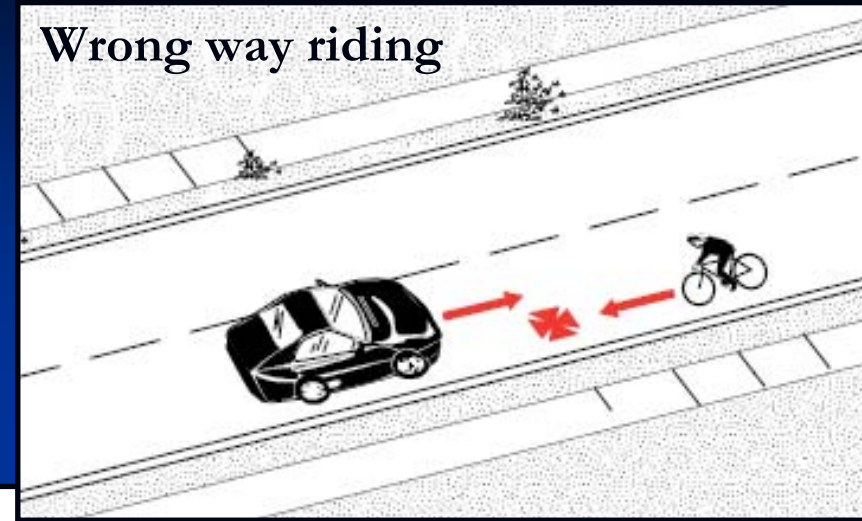
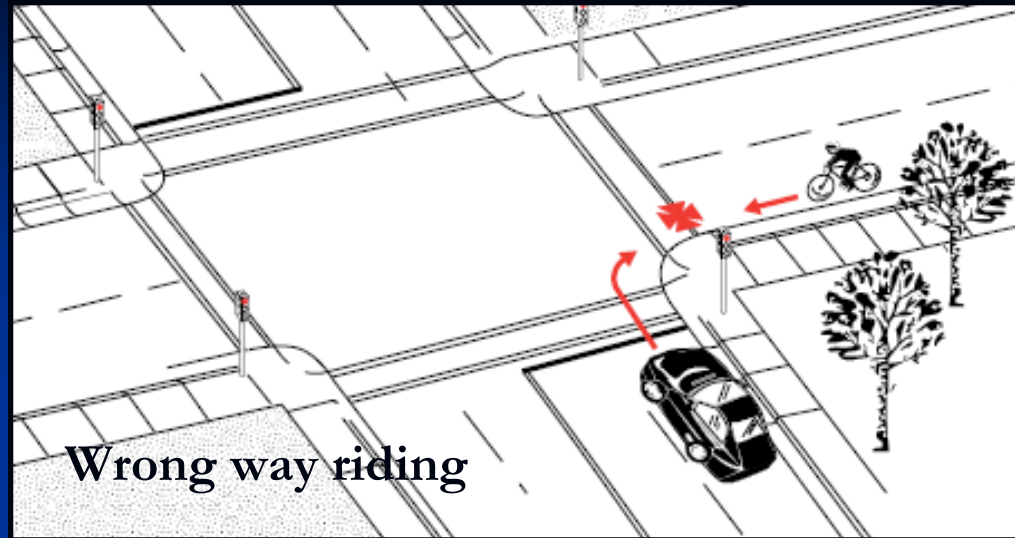
DC Law for Bicyclists:

<u>Statute Number</u>	<u>Subject</u>	<u>Description</u>
1201.1	Basic vehicle rules	Every person riding a bicycle on a highway shall be subject to all the duties applicable to drivers of motor vehicles....
1201.2	Keeping to the right side of the roadway	<p>Any person operating a bicycle upon a roadway at less than the normal speed of traffic shall travel as closely as practicable to the right-hand curb or edge of the roadway.</p> <p>A bicyclist may move away from the right-hand curb under any of the following situations:</p> <ol style="list-style-type: none">(1) When overtaking and passing another bicycle or other vehicle proceeding in the same direction;(2) When preparing for a turn;(3) When encountering road hazards, parked vehicles, or a "substandard" lane (11 ft. wide or less)(4) When necessary to comply with lane use restrictions; or(5) When necessary for the bicyclist's safety.
1201.3 (c)	Passing stopped vehicles	If a lane is partially occupied by vehicles that are stopped, standing, or parked in that lane, a person operating a bicycle may ride in that or in the next adjacent lane used by vehicles proceeding in the same direction.

DC Law for Bicyclists, cont'd:

<u>Statute Number</u>	<u>Subject</u>	<u>Description</u>
2103.7(a)	Passing red light	A steady red signal shall have the following meaning: a) vehicular traffic facing the signal shall stop before entering the crosswalk on the near side of the intersection or, if none, then before entering the intersection.
1201.13	Suddenly leaving a sidewalk	No bicyclist shall suddenly leave a sidewalk and ride into the path of a vehicle which is so close that it is impossible for the driver to yield.
1204.2	Headlight and rear reflector required at night	Each bicycle, when in use at night, shall be equipped with a white lamp on the front...visible from at least 500 feet and a red reflector on the rear...(a rear red lamp may be used [1201.3])
1201.10	Riding on sidewalks prohibited within CBD	There shall be no prohibition against any person riding a bicycle upon a sidewalk within the District, so long as the rider does not create a hazard; provided, that no person shall ride a bicycle upon a sidewalk within the Central Business District....

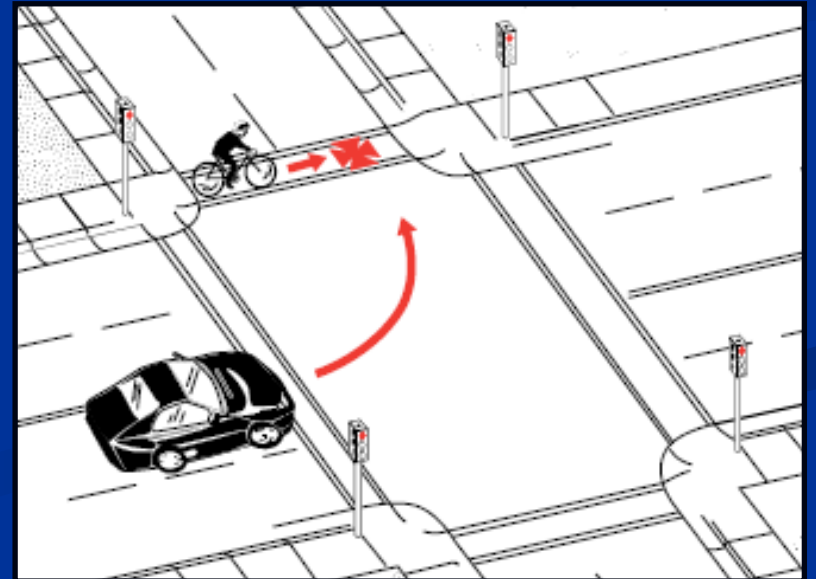
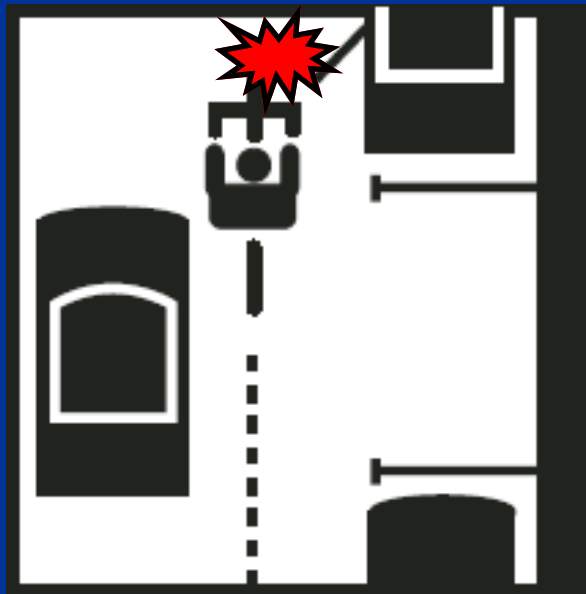
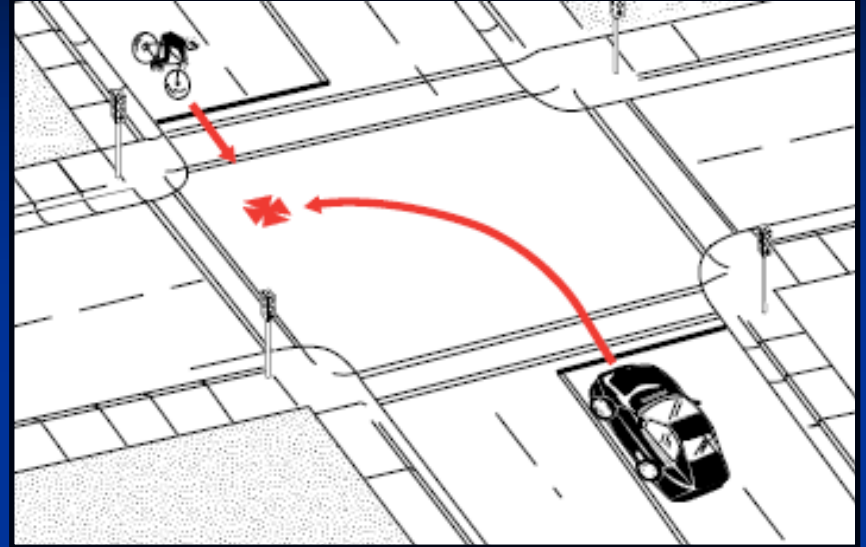
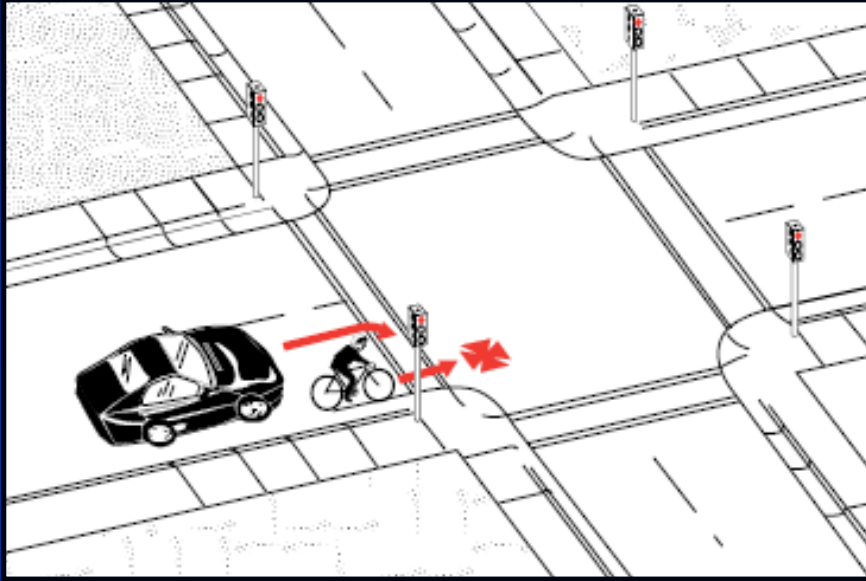
Frequent Cyclist At-Fault Crash Types:



Bicycle Safety Laws for Motorist:

<u>Statute Number</u>	<u>Subject</u>	<u>Description</u>
2208.2	Yielding right of way to vehicle at intersection	The driver of a vehicle intending to turn to the left shall yield right of way to any vehicle approaching from the opposite direction which is so close as to constitute an immediate hazard.
2214.4	Opening door or permitting door to open on traffic side	No person shall open a door of a vehicle on the side where traffic is approaching unless it can be done without interfering with moving traffic or pedestrians and with safety to himself or herself and passengers.
2202.2	Passing at a safe distance	The driver of a vehicle overtaking another vehicle proceeding in the same direction shall pass to the left at a safe distance....

Frequent Motorist At-Fault Crash Types:



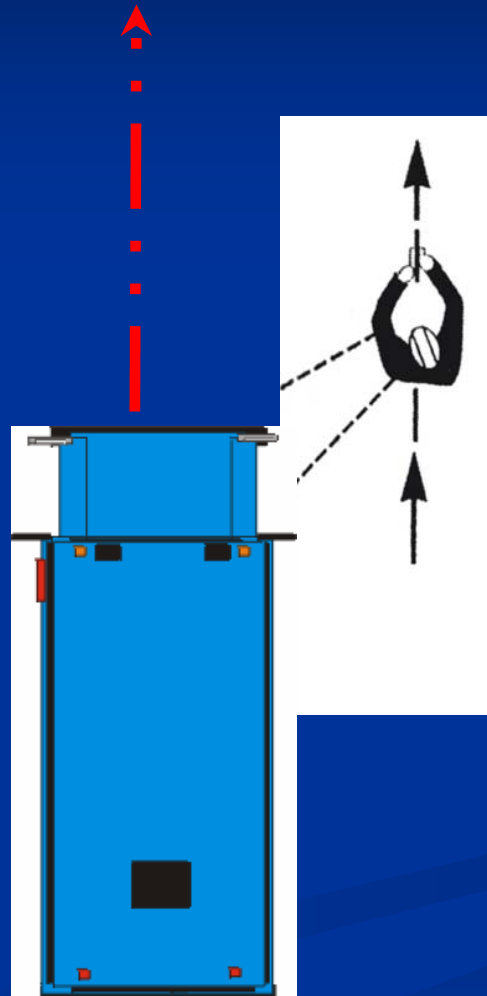
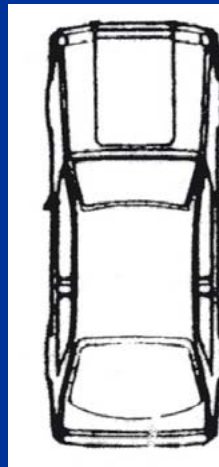
Bikes and Buses

Sharing the Road

- Bicyclists and buses can coexist well as long as the bus drivers act professionally and the bicyclists operate in the vehicular and predictable manner.
- Each must overtake the other with about 5 feet of lateral clearance, and avoid getting on the wrong side of the other.

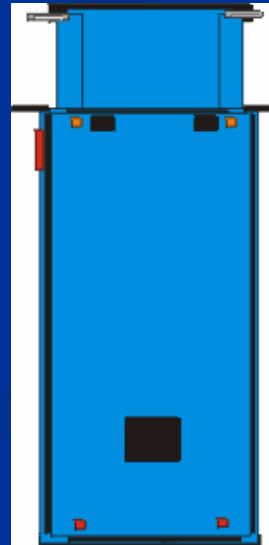
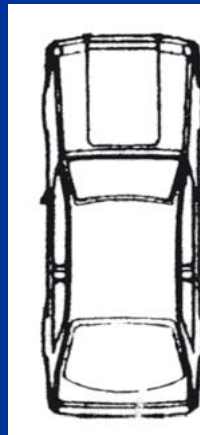
Normal Positioning with Wide Outside Lane

Pass with 5' of clearance



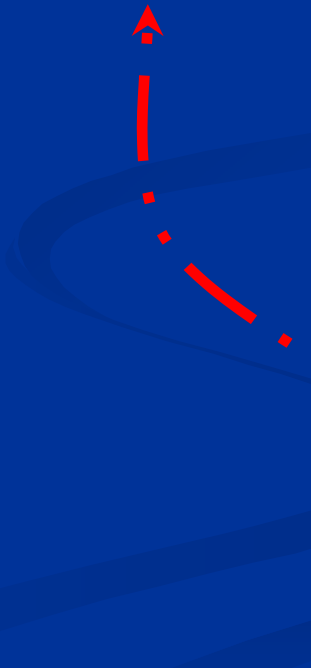
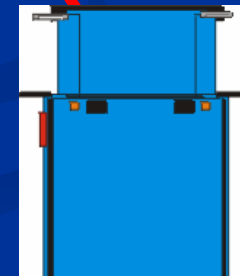
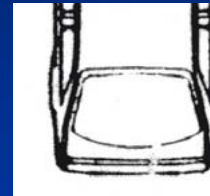
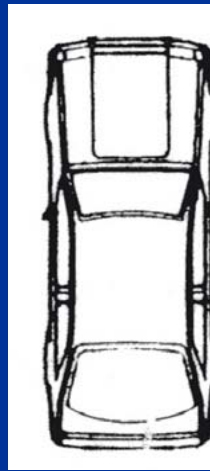
Shared Lane Positioning

Narrow Lane: Cyclist may take the whole lane.



Bus Overtaking A Cyclist in a Narrow Lane

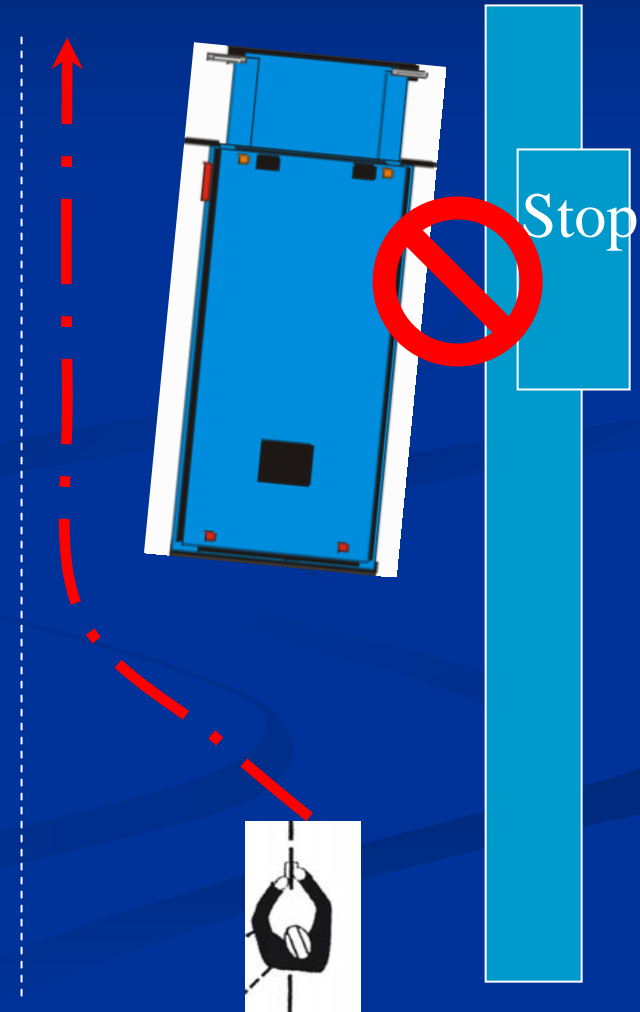
- Use turn signals
- Change lanes
- Give 5 feet of clearance



Bike Overtaking Bus

Bicyclist should:

- Give 5 feet
- Stay back, in view of operator, avoid the blind spot.
- Pass on the left!



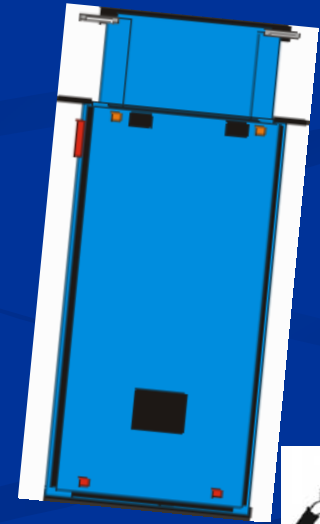
Turn Signals are Important to Bicyclists

- Right signal tells cyclist to pass on L
- Hazards tell cyclist to pass on L
- Left signal tells cyclist stay behind and don't pass



Bus Operator Challenges

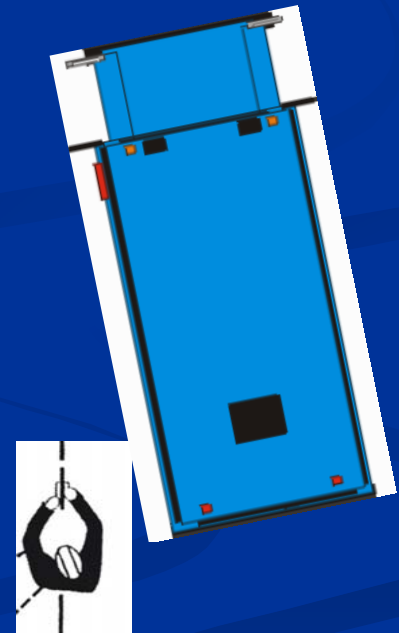
- Turning or merging (toward the bicyclist) before having finished overtaking.



Stop

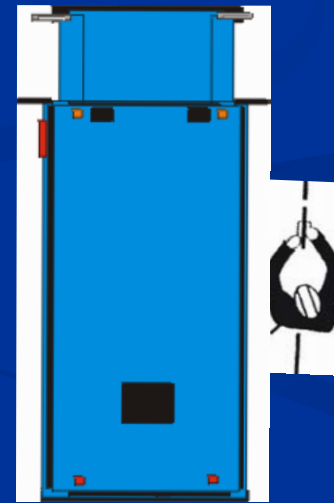
Bus Operator Challenges

- Merging into the path of a bicyclist when pulling out from a bus stop.



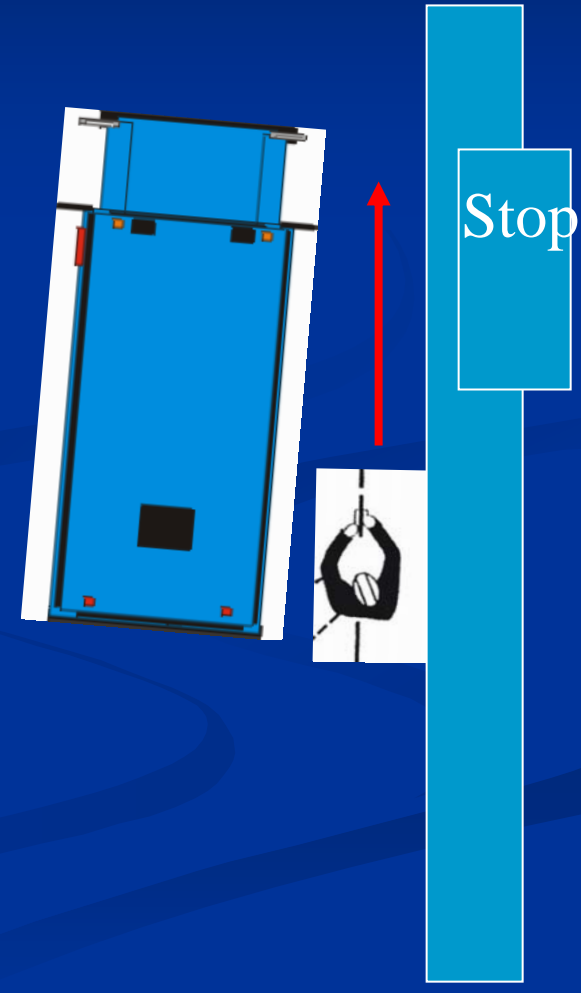
Bus Operator Challenges

- Passing too close, leaving the bicyclist too little room to avoid obstacles without the risk of colliding with the side of the bus.



Bus Operator Challenges

- Not pulling close to the curb at a bus stop, thereby encouraging bicyclists to overtake between the bus and the curb and in the path of passengers alighting from or getting onto the bus.



Cyclist Errors Near Buses

Common errors by bicyclists around buses:

- overtaking on the curb side of a stopped bus.
- overtaking too close to the side a bus.



Mistakes Can Be Deadly

- A bus is long enough to sweep across the bicyclist when turning.
- If the bus is going faster than the bicyclist, and the bicyclist's handlebar end strikes it, the bicyclist will fall toward the bus.
- A bicyclist who operates as recommended requires no unusual attention from the bus driver, but
- Bicyclists can prevent bus drivers from making mistakes by means of lane positioning and hand signals.
- Bus drivers' only defense with bicyclists who do not position themselves to be visible, and who violate the rules of the road, is to be cautious and vigilant.

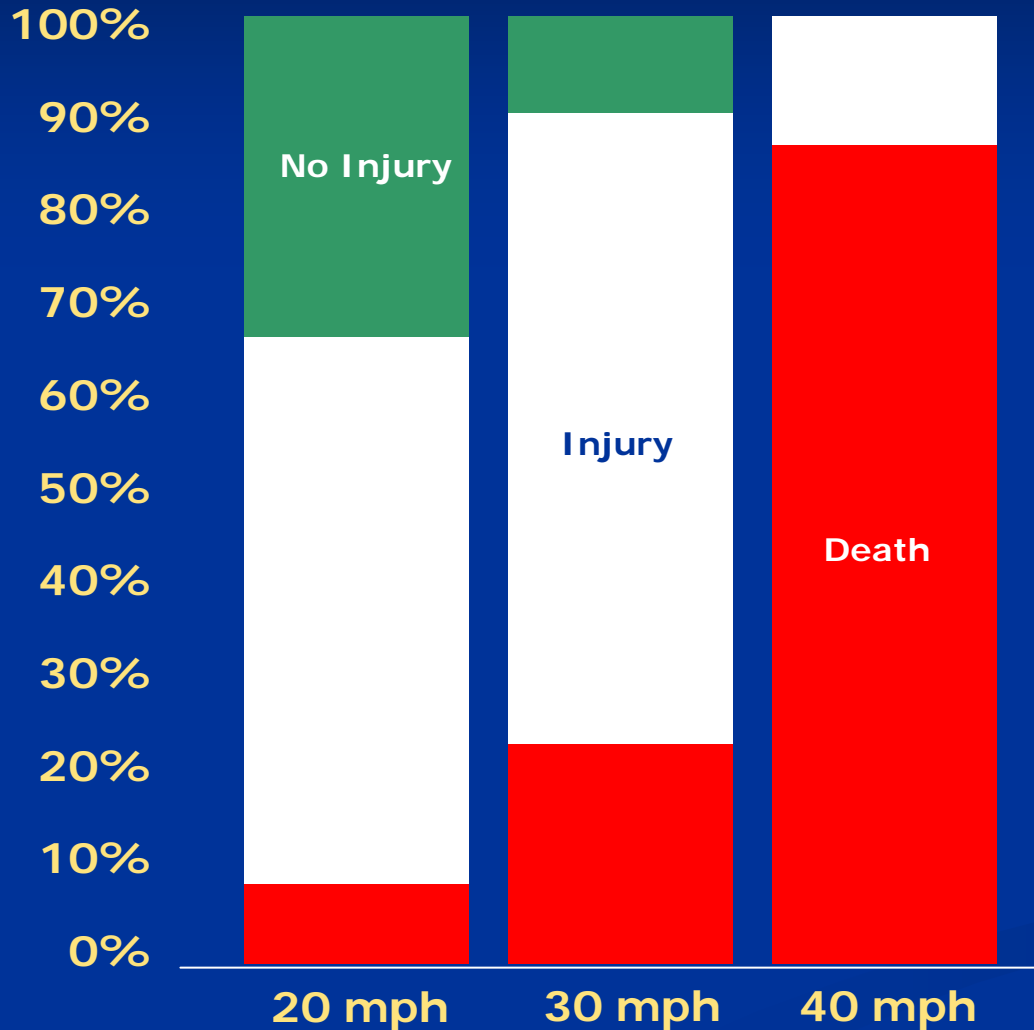


Speed-

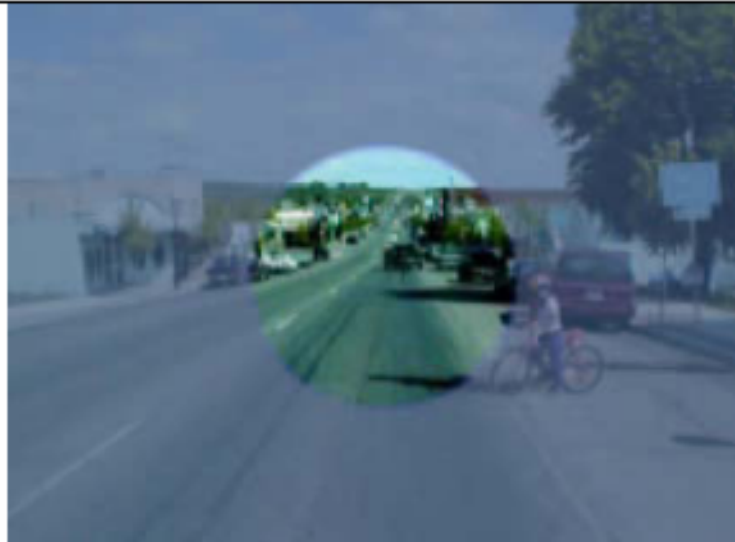
The Critical Factor

Fatalities based on speed of vehicle

A pedestrian's chance of death if hit by a motor vehicle



Driver Focus at Different Speeds



Driver focus at 40 mph



Driver focus at 30 mph



Driver focus at 20 mph



Driver focus at 15 mph

Target Motorist Citations- Speed:

<u>Statute Number</u>	<u>Subject</u>	<u>Description</u>
2300.2	Due care provision	Every driver of a vehicle shall: <ul style="list-style-type: none">■ exercise due care to avoid colliding with any <u>pedestrian</u> upon any roadway;■ give warning by sounding the horn when necessary; and■ exercise proper precaution upon observing any child or any confused or incapacitated person upon the roadway.
2200.5	Special hazards as to pedestrians	The driver of every vehicle shall drive at an appropriate reduced speed when special hazards exists with respect to <u>pedestrians</u> , road or weather conditions.

Case Study



Let's Avoid This:



Thank you for your attention.

- Question or Comments?

