



Old Georgetown Road Pedestrian Road Safety Audit Montgomery County, Maryland

Prepared For:
Department of Transportation
Montgomery County, Maryland



In partnership with the Maryland State Highway Administration

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1. Introduction

1.1 Objective

The objective of this study was to complete a Pedestrian Road Safety Audit (PRSA) for Old Georgetown Road (MD 187) between Wisconsin Avenue (MD 355) and Cordell Avenue in Bethesda, Maryland (Figure 1). This corridor was selected for a PRSA based on its inclusion on Montgomery County's list of High Incidence Areas (HIA), and the audit was conducted to identify safety issues related to pedestrian and bicycle safety in the study area. As a result of the audit, the PRSA team has developed a number of suggestions to improve the overall safety of the corridor.

1.2 Background

The study area is an approximately 0.35-mile segment of Old Georgetown Road located in a densely populated, mixed land use area in Bethesda, Maryland. The study area includes four signalized intersections at Wisconsin Avenue, Edgemoor Lane, Woodmont Avenue, and Wilson Lane. Old Georgetown Road and Wisconsin Avenue are both heavily traveled major highways. Wilson Lane (MD 188) is an arterial through residential land use while Edgemoor Lane and Woodmont Avenue are both arterials through commercial land use.

Old Georgetown Road serves as a major commuter route in Montgomery County between and within Bethesda and North Bethesda. For the purpose of this study, Old Georgetown Road is assumed to run in the north-south direction. The study area experiences significant pedestrian activity, generated by the adjacent commercial and residential land uses and several transit bus stops. Bethesda Elementary School is located west of the intersection of Old Georgetown Road and Wilson Lane. Bethesda-Chevy Chase High School, located on East West Highway east of Old Georgetown Road, generates significant lunch-time pedestrian traffic within the study corridor.

The Old Georgetown Road study area was identified as an HIA for pedestrian-related collisions, as part of the Montgomery County Executives' Pedestrian Safety Initiative. Based on collision data provided by Montgomery County and the Maryland State Highway Administration, 20 pedestrian collisions occurred in the study area between January 2006 and December 2010. The purpose of this PRSA was to identify safety issues that may be contributing to the observed pedestrian collisions in the study area.

The PRSA was performed on May 1 and May 2, 2012 during daytime and nighttime hours. The PRSA team consisted of nine members, representing the following:

- Montgomery County Department of Transportation (MCDOT) Division of Traffic Engineering and Operations
- MCDOT Division of Transit Services
- Maryland State Highway Administration (MDSHA)
- Montgomery County Police Department (MCPD)
- City of Laurel
- STV Incorporated, the PRSA consultant



Figure 1: Study Area and Adjacent Land Use

1.3 Organization of the Report

This report first presents a description of the existing geometric, operational, and safety conditions for the study area based on field reviews and available data. Next, the report identifies the existing conditions and general issues identified at various locations within the corridor by the PRSA team. These locations include:

- Old Georgetown Road at Wisconsin Avenue / East West Highway (MD 410)
- Old Georgetown Road at Edgemoor Lane / Commerce Lane
- Old Georgetown Road at Woodmont Avenue
- Old Georgetown Road at Moorland Lane
- Old Georgetown Road at Fairmont Avenue
- Old Georgetown Road at Arlington Road / St. Elmo Avenue / Wilson Lane
- Old Georgetown Road at Cordell Avenue
- Wilson Lane at Cordell Avenue

For each location, the assessment identifies issues, possible contributing factors, and suggestions for improvement. The report concludes with an overall assessment of the PRSA findings and considerations.

This report has served as a resource to MDSHA and MCDOT, as well as other stakeholders, for implementing pedestrian safety improvements within the audit area. There has been an ongoing vetting of the suggestions and recommendations in this report with collaboration among agencies and stakeholders to implement short- and intermediate-term recommendations and assess the feasibility and constructability of long-term projects. Ultimately, as a result of this process, a range of pedestrian safety recommendations will be implemented.

1.4 Existing Conditions

1.4.1 Site Characteristics

Old Georgetown Road is designated as a north-south major highway providing access to Bethesda from the north. Between Wisconsin Avenue and Woodmont Avenue, Old Georgetown Road is a two-lane, one-way northbound roadway with on-street parking. Between Woodmont Avenue and Cordell Avenue, Old Georgetown Road is an undivided, five-lane roadway. The posted speed limit on Old Georgetown Road is 25 miles per hour (mph). Based on a spot speed study provided by MDSHA, the median vehicular speed, both north- and southbound along Old Georgetown Road, is 26 mph with an 85th percentile speed of 30 mph. As shown in Figure 2, the study area includes four signalized intersections along Old Georgetown Road:

1. Wisconsin Avenue / East West Highway
2. Edgemoor Lane / Commerce Lane
3. Woodmont Avenue
4. Wilson Lane / Arlington Road / St. Elmo Avenue

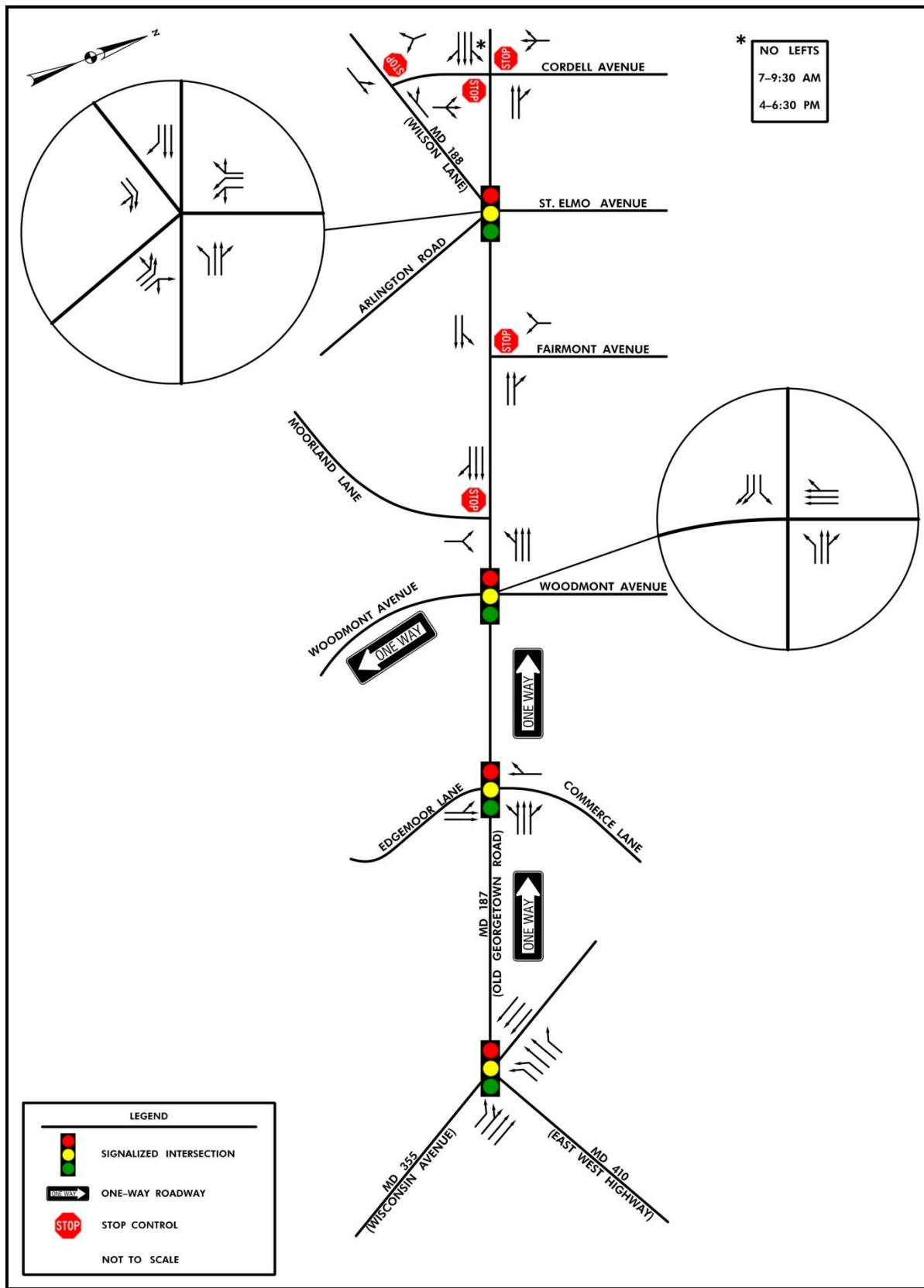


Figure 2: Old Georgetown Road Study Area Lane Configurations

The roadways intersecting Old Georgetown Road at signalized intersections are summarized below:

Wisconsin Avenue

- Six-lane divided roadway that runs in the north-south direction
- Consists of three exclusive through lanes in the southbound direction
- Consists of two exclusive through lanes, one shared through/left-turn lane, and an exclusive left-turn lane in the northbound direction

East West Highway

- One-way westbound roadway
- Consists of two exclusive through lanes to Old Georgetown Road, an exclusive right-turn lane and two channelized exclusive left-turn lanes

Edgemore Lane

- Four-lane roadway that runs in the east-west direction
- Originates at Old Georgetown Road and extends through residential land use to Hampden Lane, approximately 0.7 miles west of the study corridor
- Consists of an exclusive through lane and a shared through/left-turn lane in the eastbound direction

Commerce Lane

- Two-lane roadway extending approximately 350 feet between Wisconsin Avenue and Old Georgetown Road
- Consists of a shared through/right-turn lane in the westbound approach

Woodmont Avenue

- Four-lane roadway that runs parallel to Wisconsin Avenue as a cardinal north-south roadway
- Considered to have an east-west orientation for this study because Old Georgetown Road is assumed to be north-south
- Consists of two exclusive through lanes and a shared through/right-turn lane in the westbound (cardinal southbound) direction
- West (cardinal south) of Old Georgetown Road, it becomes a four-lane, one-way southbound roadway for approximately 0.2 miles between Old Georgetown Road and Montgomery Lane

Wilson Lane

- Two-lane roadway that runs in the east-west direction
- Eastbound approach consists of an exclusive through lane to southbound Old Georgetown Road and a shared through/right-turn lane to southbound Old Georgetown Road and Arlington Road
- Left-turns are prohibited from Wilson Lane to northbound Old Georgetown Road and eastbound St. Elmo Avenue

Arlington Road

- Four-lane roadway that runs in the north-south direction
- Considered to have an east-west orientation for this study
- The eastbound (cardinal northbound) approach at Old Georgetown Road consists of a shared left-turn lane to Wilson Lane and Old Georgetown Road, an exclusive left-turn lane to Old Georgetown Road, and a shared through/right-turn lane to St. Elmo Avenue and Old Georgetown Road

St. Elmo Avenue

- Two-lane roadway that runs in the northeast-southwest direction between Old Georgetown Road and Woodmont Avenue
- Considered to have an east-west orientation for this study
- The westbound (cardinal southwestbound) approach consists of a shared left-turn lane to Old Georgetown Road and Arlington Road, an exclusive left-turn lane to Arlington Road, and a shared through/right-turn lane to Wilson Lane and Old Georgetown Road

1.4.2 Traffic Data

Average annual daily traffic (AADT) volumes for Old Georgetown Road, Wisconsin Avenue, East West Highway, and Wilson Lane were obtained from MDSHA traffic count records. AADT data is provided in Table 1. Peak hour vehicular and pedestrian volumes from MDSHA traffic volume count records for the Old Georgetown Road study area are shown in Table 2.

Table 1: 2011 AADT

Road	Location	AADT
Old Georgetown Road	Between Wisconsin Avenue & Woodmont Avenue (One-Way)	10,550 vpd
Old Georgetown Road	Between Woodmont Avenue & Arlington Road	19,000 vpd
Wisconsin Avenue	0.1 miles north of Old Georgetown Road / East West Highway	33,100 vpd
East West Highway	0.1 miles east of Old Georgetown Road / Wisconsin Avenue	15,300 vpd
Wilson Lane	Between Bradley Boulevard and Old Georgetown Road	10,000 vpd

Table 2: Traffic Count Data

YEAR	LOCATION	AM PEAK HOUR			PM PEAK HOUR		
		Peak Hour	Vehicular Volume (vph)	Pedestrian Volume (pph)	Peak Hour	Vehicular Volume (vph)	Pedestrian Volume (pph)
2011	Old Georgetown Road at Wisconsin Avenue	8 – 9 AM	3,907	820	6 – 7 PM	4,379	817
2009	Old Georgetown Road at Commerce Lane/Edgemoor Lane	8 – 9 AM	1,359	392	4 – 5 PM	1,683	475
2005	Old Georgetown Road at Woodmont Avenue	8 – 9 AM	2,963	365	5 – 6 PM	2,757	552

Public transportation is heavily utilized in the study area. Eight bus stops are located on Old Georgetown Road, Wilson Lane, and Edgemoor Lane. WMATA bus routes J2, J3, J7, and J9 and Montgomery County Ride On routes 29, 30, 32, 34, 36, 47, and 70 have stops within the study area. A summary of bus stop locations and ridership data is shown in Figure 3. Also within the study area is a transit center and the Bethesda Metro station. The Metro station is the greatest generator of pedestrian traffic within the study corridor with an average weekday boarding at this station of approximately 10,800 passengers. As such, there is significant pedestrian-vehicular interaction along the corridor, especially at the intersection of Old Georgetown Road and Wisconsin Avenue/East West Highway. The pedestrian volumes generated by the Metro station affect traffic operations as well as pedestrian safety at this intersection as pedestrians take direct routes toward the station at locations other than marked crossings. There is also a high volume of taxi cabs near this intersection which often affect operations and create safety issues.



Figure 3: Old Georgetown Road Study Area Daily Transit Ridership

1.4.3 Crash Data

The PRSA team reviewed all collision records collected by Montgomery County Police in the study area during the five-year period from 2006 through 2010, and identified the location of all reported pedestrian and bicyclist crashes within the corridor (Figure 4). Between 2006 and 2010, a total of 68 vehicular, 17 pedestrian, and three (3) bicyclist crashes were reported in the study area. Pedestrian and bicyclist crash data is summarized in Figure 5.

Old Georgetown Road Pedestrian Road Safety Audit

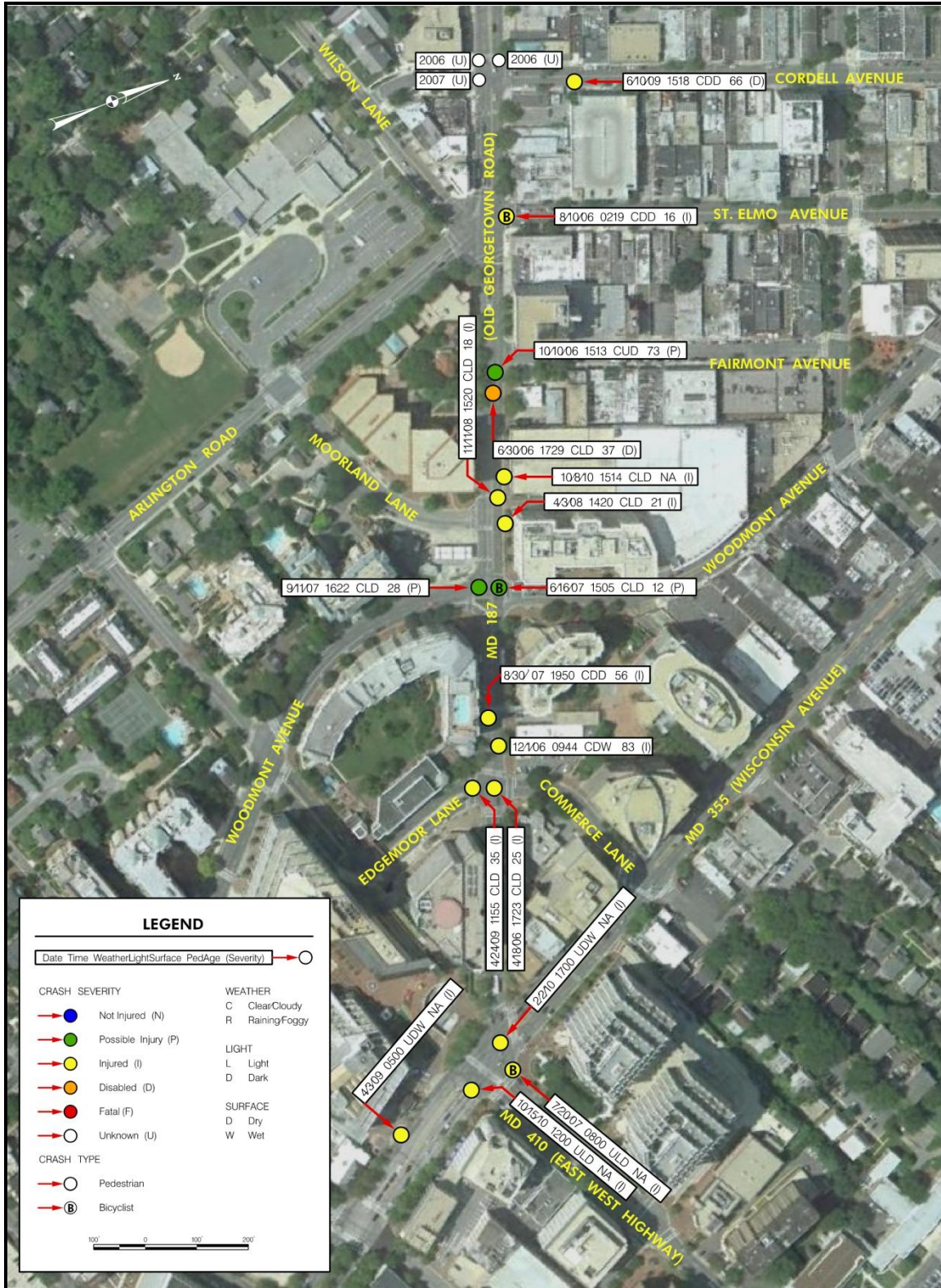


Figure 4: Pedestrian and Bicyclist Crashes – Old Georgetown Road 2006-2011

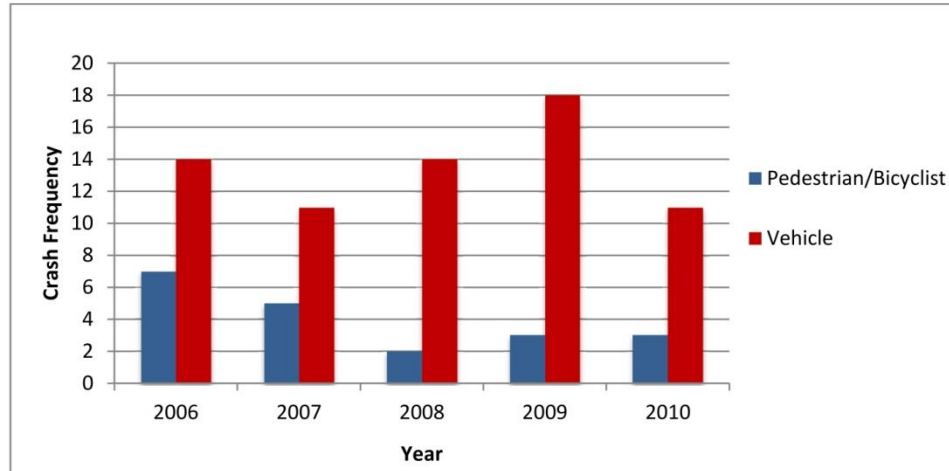


Figure 5: Study Area Crash Frequency 2006 – 2010

Crash data indicates that of the 20 pedestrian and bicyclist crashes, 17 resulted in injuries or possible injuries (Figure 6). Although there were no pedestrian or bicyclist fatalities, two (2) crashes resulted in disabling injuries, 12 crashes resulted in non-incapacitating injuries, and three (3) crashes resulted in possible injuries. In addition to the total number of pedestrian collisions, the large proportion of moderate to severe injury crashes supports the need for additional pedestrian safety measures throughout the corridor.

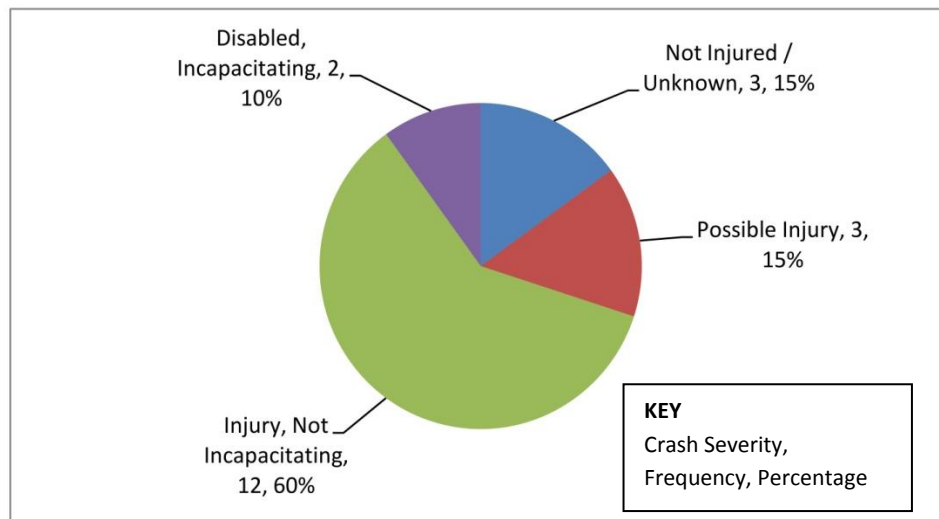


Figure 6: Pedestrian/Bicyclist Crashes by Crash Severity

Figure 7 shows vehicle movements prior to the pedestrian crashes at all study locations. Seven (7) of 20 crashes involved vehicles moving at a constant speed. This finding suggests that drivers typically may not have seen pedestrians in the roadway or may not have expected pedestrian activity at the location of the crash. Of these seven (7) crashes with vehicles moving at a constant speed, five (5) involved pedestrians crossing/entering the roadway at a location other than at an intersection. Uncontrolled midblock crossing activity contributed to seven (7) of the 20 crashes, as shown in Figure 8.

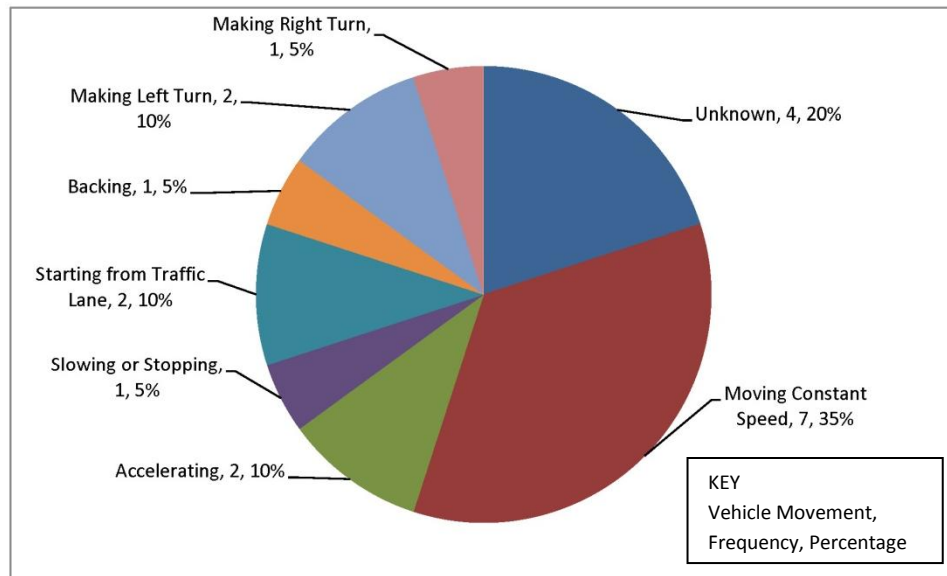


Figure 7: Vehicle Movement Prior to Pedestrian/Bicyclist Crash

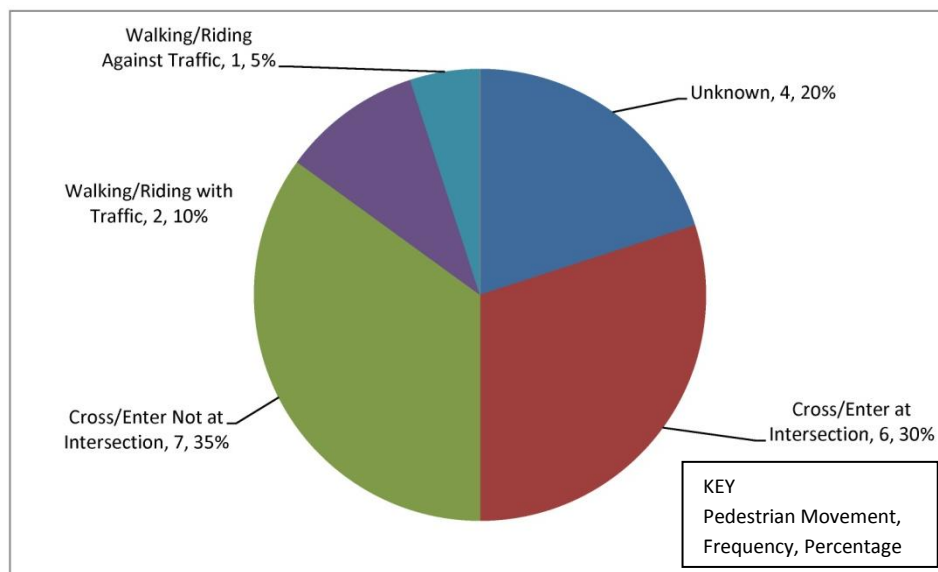


Figure 8: Pedestrian Movement Prior to Pedestrian/Bicyclist Crash

Figure 9 shows the distribution of pedestrian crashes by age group. The number of crashes involving pedestrians between the ages of 20 through 39 and 70 through 79 is higher than the predicted distribution of crashes based on study area demographics obtained from census data. However, due to the small number of crashes in each age group, it can not be concluded that age was a primary factor in the pedestrian crashes on Old Georgetown Road.

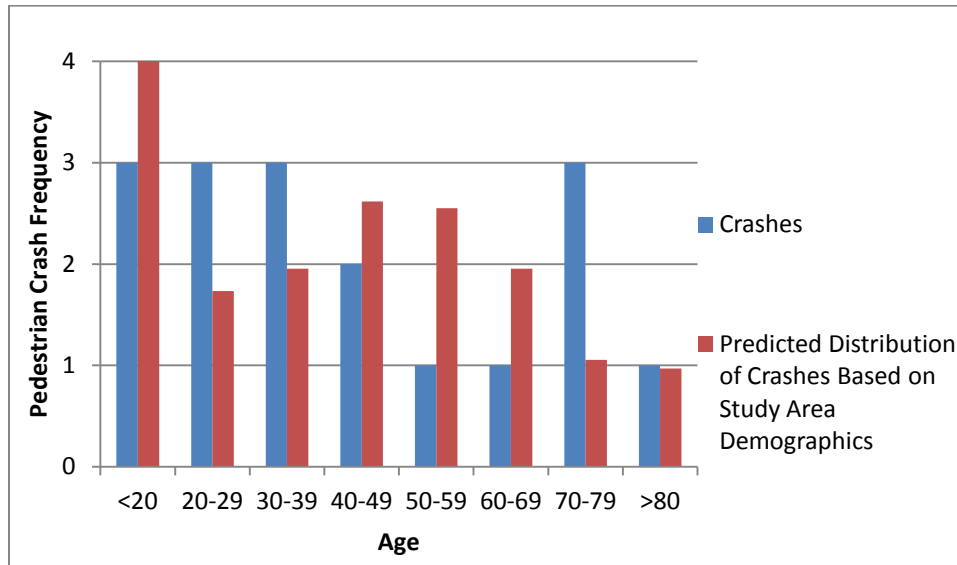


Figure 9: Pedestrian/Bicyclist Crashes by Age

The majority of pedestrian and bicyclist crashes occurred during daylight hours (Figure 10). Eleven (11) of the 20 crashes occurred during daylight hours, four (4) occurred during nighttime conditions while street lights were on, and five (5) crashes occurred under unknown lighting conditions. Thirteen (13) of the 20 crashes occurred under dry surface conditions, three (3) occurred under wet surface conditions, and four (4) occurred under unknown surface conditions (Figure 11).

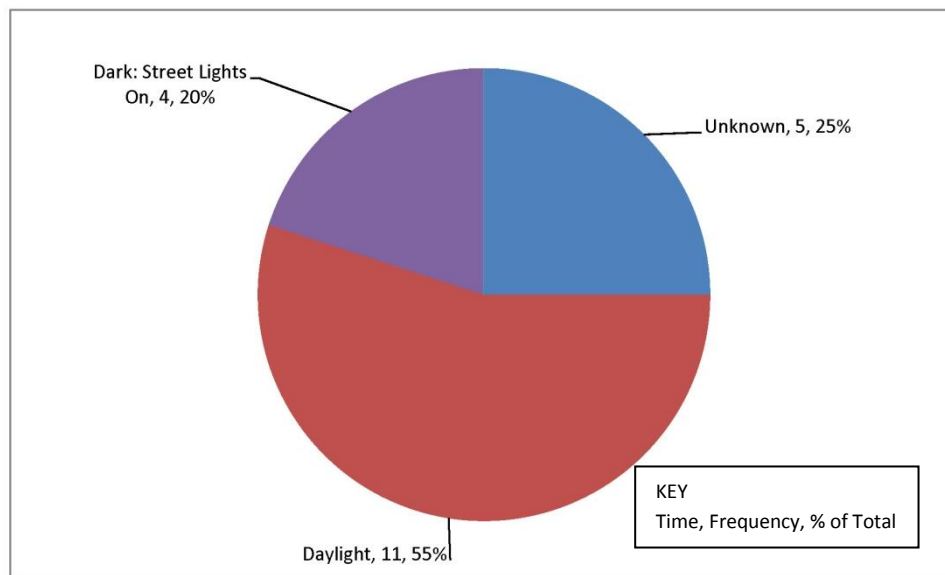


Figure 10: Pedestrian and Bicyclist Crashes by Time of Day

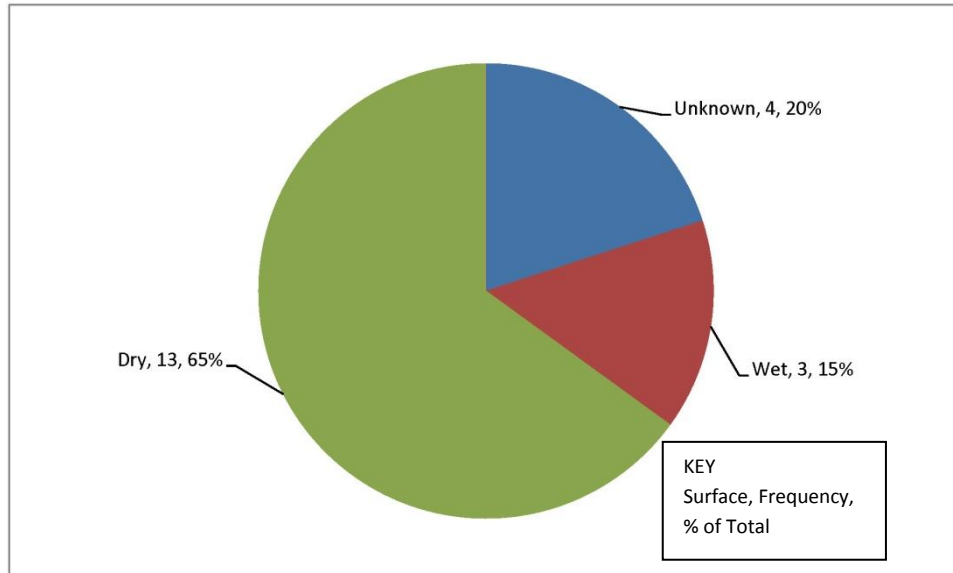


Figure 11: Pedestrian and Bicyclist Crashes by Road Surface Conditions

Police crash reports stated that pedestrians or bicyclists were at fault in eight (8) of the 20 crashes (40%). While the PRSA team does not consider determination of fault a justification for minimizing the importance of pedestrian and bicycle facility and safety improvements, this data suggests that community-based education efforts and increased police enforcement throughout the study area could be particularly beneficial.

2. Road Safety Audit Findings

2.1 Safety Benefits of Existing Roadway Features

Notable existing roadway features that enhance pedestrian safety in the study area include, but are not limited to:

- **Continuous sidewalks:** Sidewalks along Old Georgetown Road, Wisconsin Avenue, Edgemoor Lane, Commerce Lane, Woodmont Avenue, Moorland Lane, Arlington Road, St. Elmo Avenue, Wilson Lane, and Cordell Avenue within the study area are continuous and provide a designated space for pedestrians in the corridor. Generally, sidewalks are of sufficient width; however, portions of the sidewalk within the study area are limited to an effective width of less than the MDSHA-required five feet, due to utility poles, signs, and street furniture.
- **Countdown pedestrian signals (CPS):** Countdown pedestrian signals are provided at the intersections of Old Georgetown Road at Wisconsin Avenue/East West Highway, Old Georgetown Road at Woodmont Avenue, and Old Georgetown Road at Arlington Road/St. Elmo Avenue/Wilson Lane. Countdown pedestrian signal research has shown that pedestrians easily understand how the signal works, that more pedestrians start during



Countdown Pedestrian Signal

the Walk phase, and that fewer people initiate walking late in the clearance phase. Studies have also shown that fewer pedestrians remain in crosswalks during the steady “Don’t Walk” phase where countdown signals are used. Countdown pedestrian signals have also been found to reduce pedestrian injury crashes and improve pedestrian compliance to traffic controls in several national studies (Stollof, McGee & Eccles, 2007).

- **Accessible pedestrian signals (APS):** Accessible pedestrian signals are provided at the intersection of Old Georgetown Road at Arlington Road/St. Elmo Avenue/Wilson Lane. Accessible pedestrian signals provide direction through audible and tactile signals which improve the ability of pedestrians with hearing and visual impairments to cross the street safely.



Accessible Pedestrian Signal

- **Turn restrictions:** Left-turn movements from northbound Old Georgetown Road onto Cordell Avenue and Arlington Road are prohibited. Left-turn movements from southbound Old Georgetown Road onto St. Elmo Avenue are prohibited, effectively eliminating all left-turn conflicts on the east leg (i.e., St. Elmo Avenue) crosswalk at the intersection. Left-turns from Wilson Lane to northbound Old Georgetown Road and eastbound St. Elmo Avenue are also prohibited, effectively eliminating all left-turn conflicts on the north leg (i.e., Old Georgetown Road) and east leg (i.e., St. Elmo Avenue) crosswalks at the intersection. Left-turns from southbound Old Georgetown Road to Cordell Avenue are restricted during the hours of 7:00 to 9:30 AM and 4:00 to 6:00 PM, Monday through Friday.
- **Additional Signage:** Pedestrian crossing and advance pedestrian crossing signs are located along northbound and southbound Old Georgetown Road leading to the unsignalized pedestrian crossing at Cordell Avenue.
- **School Zones**
A school zone is designated on Arlington Road between Old Georgetown Road and Montgomery Lane. This includes flashers with signage indicating a regulatory speed of 25 mph and separate “fines doubled” signs. There are also school crossing signs at the intersection of Old Georgetown Road and Arlington Road/Wilson Lane/St. Elmo Avenue for crossing Wilson Lane.
- **Bike Route Signage**
There are bike route signs designating shared routes along Old Georgetown Road and Woodmont Avenue. The bike route signage is placed along northbound Old Georgetown Road, eastbound and westbound Woodmont Avenue (east of Old Georgetown Road), and westbound (cardinal southbound) Woodmont Avenue (west of Old Georgetown Road).
- **Raised medians:** While primarily intended for vehicle separation and turning movement control, the raised medians along Wisconsin Avenue and East West Highway also provide

refuge areas for pedestrians at the marked crossings. However, the presence of raised medians along both Wisconsin Avenue and East West Highway encourages midblock pedestrian activity within the median.

- **Below-grade Facilities:** A pedestrian access tunnel is provided at the intersection of Old Georgetown Road at Wisconsin Avenue/East West Highway from the southeast corner of the intersection (7475 Wisconsin Avenue) to the Metro station in the southwest quadrant of the intersection. This grade-separated crossing accommodates the desired pedestrian path to the Metro station from the east side of Wisconsin Avenue.

- **Non-traversable Features:** Chain and bollards are present on the southeast corner of the intersection of Old Georgetown Road at Wisconsin Avenue/East West Highway to enforce the prohibited crossing of the south leg of Wisconsin Avenue. Pedestrian traffic can either utilize the below-grade access tunnel or the marked pedestrian crossing from the East-West Highway median to traverse the south leg of Wisconsin Avenue.



Chain and Bollards

- **Hatched Pedestrian Crossings:** There are several hatched pedestrian crosswalks throughout the study corridor. SHA typically provides hatching at established school crossings. These high-visibility crossings are located at the intersections of Old Georgetown Road and:
 - *Wisconsin Avenue/East West Highway:* Hatched crossings on each pedestrian crosswalk.
 - *Edgemoor Lane/Commerce Lane:* Hatched crossings on the north and south leg crosswalks of the intersection.
 - *Arlington Road/St. Elmo Avenue/Wilson Lane:* Hatched crossings on the Arlington Road and Wilson Lane approach crosswalks.
 - *Cordell Avenue:* Hatched crossing on the north leg crosswalk.
- **Pedestrian Connections to Private Properties:** Some of the land uses within the study area provide amenities intended to aid in pedestrian connectivity and safety, including a pedestrian bridge midblock between Edgemoor Lane and Woodmont Avenue. This pedestrian bridge connects a desired pedestrian path between two mixed use land uses on either side of Old Georgetown Road. However, the bridge was under construction as of the date of the field surveys conducted for this PRSA, which resulted in many midblock crossings of Old Georgetown Road near the bridge. With the pedestrian bridge open, the frequency of midblock pedestrian crossings at this location may be reduced from that observed.

2.2 Observed Issues, Contributing Factors, and Opportunities for Improvements

The Old Georgetown Road PRSA team identified a number of pedestrian safety issues in the study area during the audit. These issues were discussed by the team and prioritized to identify the issues presenting the greatest challenges to pedestrian safety in the study area. This section describes the observed safety issues identified by the PRSA team.

Uncontrolled Midblock Crossings

Uncontrolled midblock crossing activity was observed at multiple locations throughout the study area and was identified as a contributing factor to several pedestrian crashes. The location of various land uses, location of bus stops, distances between marked crossings, signal cycle lengths, and the lack of street furniture or planter boxes contribute to midblock crossings.



Left: Pedestrians crossing midblock on Old Georgetown Road near the pedestrian bridge.

Right: Pedestrian crossing Wilson Lane east of the intersection.

Figure 12: Uncontrolled Midblock Crossings

The audit team recommends the installation of pedestrian and bicycle warning signage at midblock locations in addition to the installation of continuous planter beds with barriers/fencing with landscaping in sidewalk areas along Old Georgetown Road to reduce the amount of uncontrolled midblock crossing activity. Further, the potential to provide designated midblock crossings at select locations should be coordinated with MDSHA. In order to promote the use of the pedestrian bridge that crosses Old Georgetown Road, the need for trailblazing signage within the Montgomery County parking garage directing patrons to use the bridge should be evaluated. Lastly, a pedestrian education program should be considered at adjacent land uses as well as coordination with the Montgomery County Police Department to ensure appropriate levels of enforcement.

Pedestrian-Vehicle Conflicts

Pedestrian-vehicle conflicts, not including those involving uncontrolled midblock crossings, often involve vehicles turning at the intersection and nearby access points. In many locations, drivers appeared to place more focus on finding acceptable gaps in traffic to make their maneuver than to potential pedestrian and bicycle activity. A combination of factors including frequency of turning movements, pedestrian volume, vehicle speeds, signal phasing/timing settings, and sight distance limitations also contribute to conflicts.



Upper-left: Conflict between pedestrians in Old Georgetown Road crosswalk and northbound queued vehicles encroaching on the crosswalk. Upper-right: Conflict between pedestrians in crosswalk and a northbound left-turning bus. Lower-left: Vehicle exiting Woodmont Corner Garage and waiting for an acceptable gap in Old Georgetown Road traffic. Lower-right: Pedestrians crossing at crosswalk through traffic on Old Georgetown Road.

Figure 13: Pedestrian-Vehicle Conflicts

The PRSA team identified a number of suggestions to reduce pedestrian-vehicle conflicts including but not limited to installing signage to improve driver awareness of pedestrians at intersections; installing high visibility crosswalks where necessary; installing pavement markings to provide additional guidance to motorists; and considering potential geometric roadway improvements to reduce pedestrian crossing distances, improve pedestrian refuge spaces, and/or reduce vehicle turning speeds. Potential signal improvements to be evaluated and coordinated with MDSHA include traffic signal reconstruction to improve signal head visibility, signalization at the intersection of Old Georgetown Road at Cordell Avenue, restriction of select turning movements during peak periods, and the implementation of lead pedestrian intervals.

Pedestrian Signal Timings

Observations during the PRSA and a review of the pedestrian signal timing plans indicated that the existing pedestrian clearance intervals at various intersections may be shorter than recommended by guidance from the 2011 Maryland Manual on Uniform Traffic Control Devices (MD-MUTCD). The MD-MUTCD guidelines, which is the State standard for pedestrian signal timings, recommends assuming a 3.5 feet per second walking pace to cross the curb-to-curb distance for Flashing Don't Walk (FDW) intervals and 3.0 feet per second to cross from the pedestrian landing area to the far curb (for Walk plus FDW). It should be noted that the State and County are currently transitioning to the 3.5 feet per second standard recommended in the MD-MUTCD. The audit team suggests working with the Transportation Management Section (TMS) to confirm the pedestrian signal timings and modify as necessary to comply with the current MD-MUTCD guidelines.

Pedestrian Compliance with Signals

Pedestrians were frequently observed violating pedestrian signals throughout the study area. In many instances, pedestrians were observed crossing during Don't Walk intervals. Pedestrian confusion at intersections with unique signal phasing may have contributed to the violation of pedestrian signals.



Left: Pedestrian crossing diagonally through the intersection. Right: Pedestrians crossing during the Don't Walk phase.

Figure 14: Limited Pedestrian Compliance with Signals

In order to improve pedestrian compliance with signals, the PRSA team recommends coordinating with MDSHA to pursue installing APS with education signs, audible messages and push-buttons that indicate when the pedestrian call is actuated. Also, it is recommended that community-based educational efforts be considered in addition to ensuring that appropriate levels of enforcement are provided to deter pedestrians from violating signals.

Pedestrian Facility Limitations

A number of issues related to pedestrian facilities were observed during the audit. Examples include a lack of detectable warning surfaces, narrow effective sidewalk widths caused by obstructions, crosswalk skew, and congested median refuge areas.



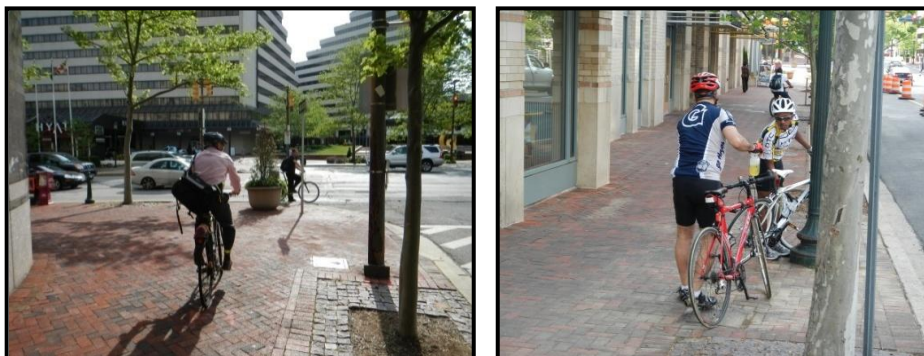
Left: Newspaper distribution bins blocking the south leg pedestrian crossing. Right: Parking curb on the south side of Moorland Lane.

Figure 15: Pedestrian Facility Limitations

In order to comply with the Americans with Disabilities Act (ADA) requirements, it is recommended that detectable warning surfaces be installed, where necessary. Objects that currently block pedestrian sidewalks and crosswalks should also be removed to provide a clear path of travel without obstructions.

Limited Bicycle Facilities

The team observed many cyclists riding on the sidewalks throughout the study, and it was noted during the stakeholder meetings that this is largely due to the lack of bicycle facilities. Although bikes are not prohibited on sidewalks, the behavior presents a safety issue for both cyclists and pedestrians. During the field review, cyclists were observed both on sidewalks and within the roadway.



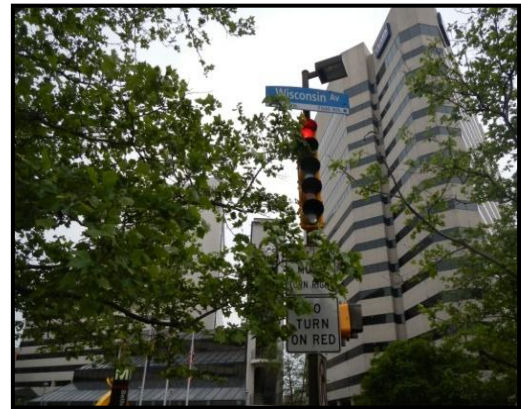
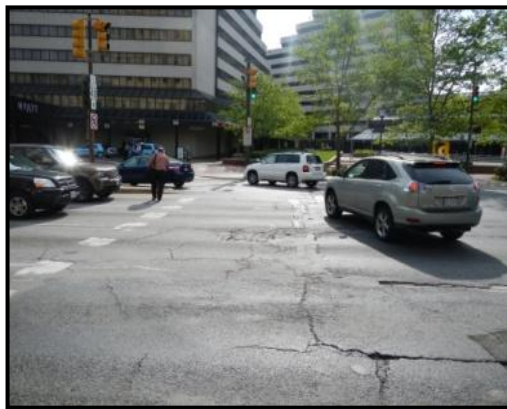
Left: Bicyclist activity along the sidewalk. Right: Bicycles chained to poles on the northwest corner of the intersection.

Figure 16: Bicycle Facility Limitations

In order to reduce the number of bicyclists utilizing sidewalks, it is recommended that the potential to incorporate bicycle facilities along Old Georgetown Road be evaluated with applicable stakeholders. Signage and pavement markings should also be installed to designate shared roadway status between vehicles and cyclists. Lastly, bicycle racks should be installed along Old Georgetown Road to provide short-term parking for bicyclists.

Maintenance

A number of conditions potentially contributing to pedestrian safety issues that could be resolved through maintenance improvements were observed. Such issues include deteriorating pavement and pavement markings, faded signage, overgrown vegetation, and a non-functioning pedestrian signal head.



Left: Pavement conditions within the intersection of Old Georgetown Road at Wisconsin Avenue/East West Highway. Right: Overgrown trees near the signal head for East West Highway approach.

Figure 17: Bicycle Facility Limitations

The safety concerns listed above can be improved with periodic maintenance measures including replacing faded signage when necessary, trimming overgrown vegetation around signal heads, restriping faded and missing pavement markings and crosswalks, and replacing non-functioning pedestrian signal heads. To improve areas with deteriorated pavement, the feasibility and constructability of resurfacing should be considered.

Lighting Conditions

During the study period, four pedestrian crashes occurred during dark conditions while the street lights were on. Limited lighting conditions may reduce visibility of pedestrians near unsignalized crosswalks, uncontrolled midblock crossing locations, and along sidewalks. During the nighttime site visit, the team observed insufficient lighting in multiple areas throughout the study area.



Upper-left: Lighting Conditions at Woodmont Avenue/ Old Georgetown Road. Upper-Right: Lighting Conditions at Fairmont Avenue/ Old Georgetown Road. Lower-left: Lighting Conditions at Wilson Lane/ Arlington Road/ St. Elmo Avenue/ Old Georgetown Road.

Figure 18: Lighting Conditions

Lighting throughout the study area can be improved with the replacement of non-functioning lamps. The audit team also recommends that the need for additional street-lighting be evaluated.

2.3 Summary of Issues and Suggestions

The following section provides a summary of the issues identified during the PRSA process and the suggestions for improvements at each location discussed in this report. The anticipated timeframe for completion [Short Term (ST), Intermediate (I) and Long Term (LT)] is referenced after each suggestion.

Safety Issue	Suggestion(s)
Pedestrian-Vehicle Conflicts	<ul style="list-style-type: none"> ▪ Install signage to improve driver awareness of pedestrians and reduce turning movement conflicts at intersections (ST). ▪ Explore implementing lead pedestrian intervals (I). ▪ Consider installing high visibility crosswalks, where necessary (I). ▪ Consider installing additional way-finding signage for the pedestrian tunnel to the Bethesda Metro Station (ST). ▪ Work with M-NCPPC, MCDOT and Bethesda Downtown Partnership to consider exceptions/revisions to the Bethesda Streetscape Plan to allow for colored bricks within the sidewalk at select locations to delineate the pedestrian path (LT). ▪ Consider pavement marking modifications to provide additional guidance to motorists (ST). ▪ Work with the Transportation Management Section (TMS) to evaluate adjusting the coordination plan for the Old Georgetown Road corridor and signal timing at select intersections to minimize northbound queuing encroachment on crosswalks during the AM and PM peak hours, respectively (LT). ▪ Work with MDSHA and MCDOT to evaluate the feasibility of restricting select turning movements during peak periods (I). ▪ Work with MDSHA to pursue some form of signalization for the intersection of Old Georgetown Road at Cordell Avenue. (LT) ▪ Work with MDSHA to pursue traffic signal reconstruction to improve signal head visibility, including mast arm design and near-side signal indications (LT). ▪ Determine the constructability and feasibility of geometric roadway improvements to reduce pedestrian crossing distances, improve pedestrian refuge spaces and/or reduce vehicle turning speeds (LT).

Safety Issue	Suggestion(s)
Uncontrolled Midblock Crossings	<ul style="list-style-type: none"> ▪ Consider installing pedestrian (and bike) warning signage at midblock locations (ST). ▪ Determine the feasibility and constructability of installing continuous planter beds with barriers/fencing and hardy landscaping in sidewalk areas along Old Georgetown Road (LT). ▪ Evaluate the need for trailblazing signage within the Montgomery County parking garage directing patrons to use the pedestrian bridge to cross Old Georgetown Road (I). ▪ Work with MDSHA to study the feasibility of providing designated midblock crossings at select locations (LT). ▪ Consider conducting a pedestrian education program at adjacent land uses, particularly the Bethesda-Chevy Chase High School (I). ▪ Work with the Montgomery County Police Department to ensure appropriate levels of enforcement (I).
Pedestrian Signal Timings	<ul style="list-style-type: none"> ▪ Work with the Transportation Management Section (TMS) to confirm pedestrian signal timings and modify as necessary to comply with MD-MUTCD guidance (ST).
Pedestrian Compliance with Signals	<ul style="list-style-type: none"> ▪ Work with MDSHA to pursue installing accessible pedestrian signals (APS) with education signs, including audible messages for pedestrians and push-buttons that indicate when the pedestrian call is actuated (I). ▪ Consider community-based educational efforts and ensure the appropriate levels of enforcement to improve pedestrian compliance with signals (LT).
Pedestrian Facility Limitations	<ul style="list-style-type: none"> ▪ Install Detectable Warning Surfaces (DWS) where necessary (I). ▪ Pursue relocation of objects that currently block pedestrian crosswalks (I). ▪ Work with the TMS to confirm pedestrian signal timings and modify as necessary to comply with MD-MUTCD guidance (ST).
Limited Bicycle Facilities	<ul style="list-style-type: none"> ▪ Work with MDSHA on installing appropriate signage and pavement markings to designate shared roadway status between vehicles and cyclists (LT). ▪ Consider the installation of bicycle racks for short-term parking (ST). ▪ Work with applicable stakeholders to evaluate the potential to incorporate bicycle facilities along Old Georgetown Road (LT).

Safety Issue	Suggestion(s)
Maintenance	<ul style="list-style-type: none"> ▪ Replace faded signage, where necessary (ST). ▪ Trim vegetation around signal heads (ST). ▪ Consider refreshing faded hatched crosswalk markings (ST). ▪ Determine the feasibility and constructability of resurfacing areas of deteriorating pavement (ST). ▪ Replace non-functioning pedestrian signal head (ST). ▪ Consider restriping faded and missing pavement markings (ST).
Lighting Conditions	<ul style="list-style-type: none"> ▪ Replace non-functioning lamps. (ST) ▪ Evaluate the need for additional street-lighting. (I)

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