

Downtown Raleigh Pedestrian Safety Study



MAY 2020

Acknowledgments

Several partners collaborated to lead the Downtown Raleigh Pedestrian Safety Study. Representatives from the following agencies and departments worked together to analyze conditions and develop recommendations for the study area described in this report. VHB Engineering NC, P.C. provided technical support to this study as a consultant to NCDOT.



Traffic Safety Unit
North Carolina Department of Transportation



Raleigh

Transportation Department
City of Raleigh



Office of State Human Resources

OSHR Pedestrian Safety Initiative Committee
North Carolina Office of State Human Resources

Introduction

This section describes the study's purpose, context, and schedule. The study began in Summer 2019 and concluded in Winter 2020. The study area extended from Peace Street to Hargett Street and from Dawson Street to Bloodworth Street.

Study Purpose

The purpose of the Downtown Raleigh Pedestrian Safety Study (hereafter "the study") was to develop a consensus framework for the study area that utilizes a systems-based approach to address pedestrian safety through short-term improvements. State agencies located within the study area formed an OSHR Pedestrian Safety Initiative Committee to address concerns voiced by many state employees. This study sought to collectively address safety concerns within downtown with a strong focus on the State Government Complex.

The study was funded by the NCDOT Traffic Safety Unit. The Traffic Safety Unit manages NCDOT's Highway Safety Improvement Program and partners with stakeholders to implement and evaluate strategies to reduce fatal and serious injury crashes on North Carolina's roadways. The Study Team, facilitated by VHB, included NCDOT and the City of Raleigh. Together the Study Team focused on three primary activities:

- Assessing the existing pedestrian environment within the study area through analyzing both quantitative and qualitative data.
- Identify priority locations for short-term traffic and safety impacts.
- Develop pedestrian safety improvements within the study area with a short-term implementation timeframe.

Study Context

As the state capital of North Carolina, the City of Raleigh employs 20,000 state-employees in the downtown. These employees generate a lot of pedestrian activity, much of which is focused around the State Government Complex. The objective of this study is to improve pedestrian safety in downtown Raleigh with a focus on the State Government Complex. The scope of this effort includes approximate boundaries from Hargett Street in the south to Peace Street in the north and from Dawson Street in the west to Bloodworth Street in the east.

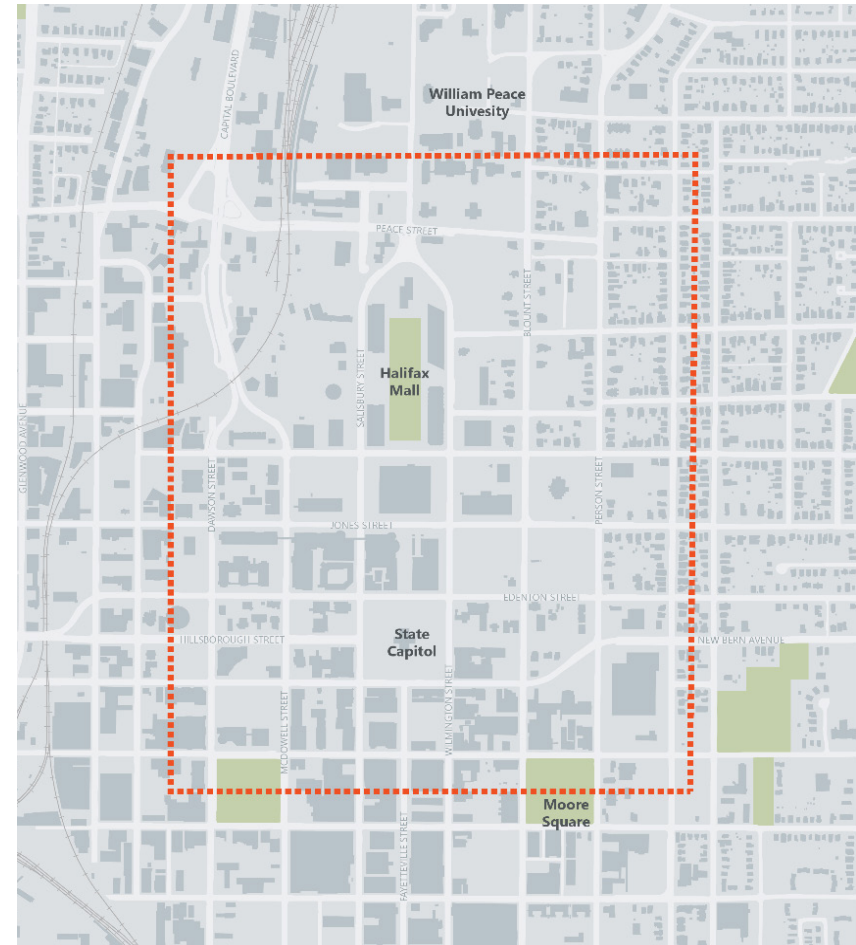


Figure 1. Map of Study Context

The highest volume roads through the study area are Dawson Street and McDowell Street which carries US 70 / 401 traffic through downtown Raleigh (approximately 20,000 vehicles daily). Peace Street and the north end of Person also carry significant volumes with AADTs ranging from 11,000 to 26,000. The rest of the roadways within the study area have low vehicle volumes.

The northern half of the study area encompasses the majority of the State Government Complex, including both the office buildings and parking lots. With little commercial or residential activity north of Edenton Street, both vehicle and pedestrian volumes decrease significantly outside peak hours. Land uses south of Edenton Street are more diverse, including State Government Buildings, other office buildings, retail, and residential. Fayetteville Street is lined with office buildings and restaurants, all buzzing with activity during the workday, but with additional after-hour uses such as bars, gyms, retail, and residential, this part of downtown sees higher vehicle and pedestrian volumes off-peak.

Study Approach

The study used a combination of unconventional and customary methods to work with stakeholders and develop recommendations. Traffic volume, pedestrian volume, and speed data collected across the study area was foundational to describing current conditions and prioritizing sites for near-term improvements. Public input helped verify or explain human behaviors that influence traffic conditions. The field review involved and educated a large number of local stakeholders, many with no prior experience with surveying a site for pedestrian safety issues. The study team referenced national guidance, site-specific conditions, and local best-practices to identify recommendations.



Figure 2. Process followed for Downtown Raleigh Pedestrian Safety Study

Current Conditions

This section summarizes the study area’s transportation infrastructure, operations, crash history, relevant plans, public input, and results from the field review. Additional details and analyses are included within in the Appendix.

Traffic Operations

Traffic Counts

The study team collected 13-hour counts at 19 intersections within the study area during a typical workweek under acceptable weather conditions. Additional peak-hour data collected by the City of Raleigh was utilized at intersections where 13-hour data was not collected. All counts were extrapolated to 24-hour numbers through applying ratios based on 24-hour tube counts collected at midblock locations through the study area. See the Appendix for additional maps and data for pedestrian and vehicle counts for each leg of these intersections, respectively. The highest pedestrian volumes are seen along Hargett Street, as well as two intersections along Jones Street that connect State Employee parking lots to office buildings. Vehicle counts are highest along Dawson and McDowell – correlating strongly with AADTs taken along these routes.

Exposure Index

The counts collected by both the City and VHB were used to develop an exposure index, providing a direct comparison between intersections within the study area. The two highest exposures are at the intersections of Hargett Street with Dawson Street and McDowell Street. These are due to both the high pedestrian and vehicle traffic. Other locations with high scores on the index are the intersection of Jones Street and McDowell Street and the intersection of Hillsborough Street and Dawson Street. In addition to other data collected, exposure ratings should help inform the City and NCDOT in what intersections and countermeasures to prioritize.

Intersection-Level Exposure:
 (24-hour pedestrian count x 24-hour vehicle count)^{1/2}

Exposure Index:
Divide each exposure by the highest within the study area

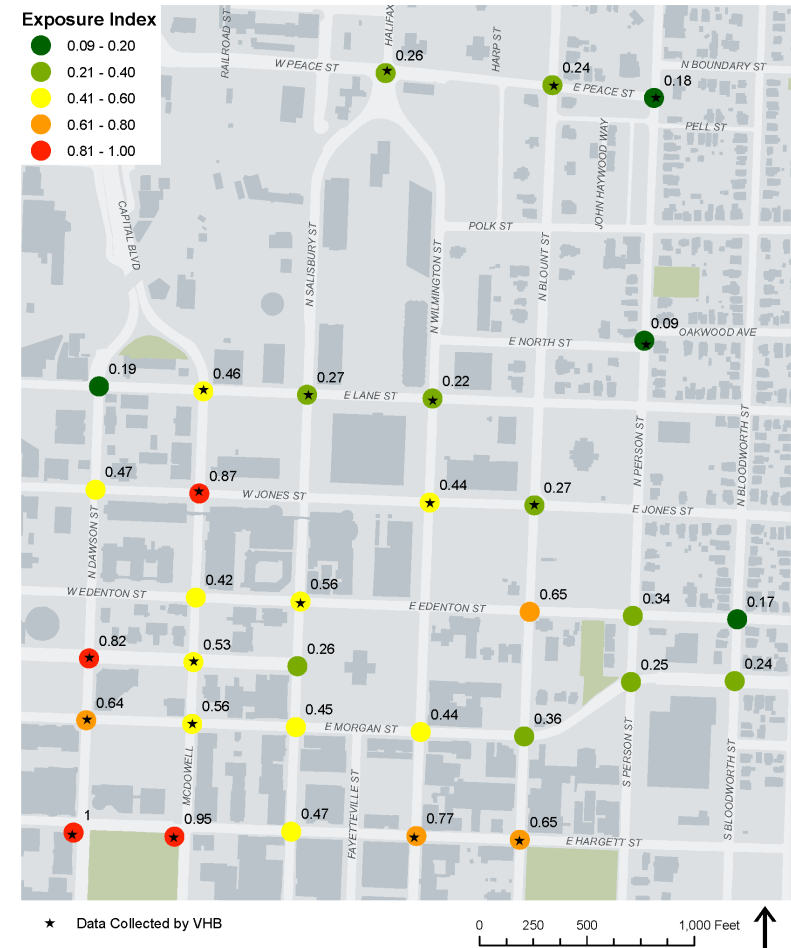


Figure 3. Map of Pedestrian Exposure Index

Speed Data

In addition to collecting traffic and pedestrian data at 19 intersections, the study team also collected midblock counts at 16 locations to collect both counts and speeds. While the speed limits throughout the study area range slightly, the actual speeds vary more. Refer to the Technical Appendix for maps and data summarizing 85th percentile speeds on each road. The highest average speeds were recorded westbound on Peace Street at 45.5 mph and eastbound on New Bern Avenue at 41.6 mph. These high speeds correlate with two major routes out of downtown for vehicles. The stakeholders should consult speed data when prioritizing projects, especially between intersections and along corridors with a coordinated signal system. Increased speeds can create substantially higher risk for serious injury or fatal pedestrian crashes¹.

Safety and Crash Analysis

Within the study area, there have been 137 reported pedestrian crashes between the years of 2007 and 2018. Crash hotspots correlate significantly with areas of higher pedestrian traffic. The intersections of Hargett Street with Dawson Street and Wilmington Street see the highest number of pedestrian crashes, most of which resulted in an evident injury according to the crash report. Most crashes involving pedestrians were turning related (either left-turn, blue, or right-turn, purple). In addition to examining pedestrian crashes within the study area, the study team also analyzed locations for patterns of all traffic crash types to identify potential patterns that could pose increased risk to pedestrians at the intersection. Some crash patterns found indicated higher speeds, red light running, and conflicts with dual-turn lanes. All of these can have harmful implications on pedestrians navigating the intersection. These crash analyses have been summarized in the recommendation section, for a limited number of intersections examined, and detailed TEAAS analyses are in the Appendix.

Blount & Person Street Corridor Plan

With the plan completed in 2013, and the first phase of reconfiguration almost complete, the Blount and Person Street corridors have been reduced to a two-lane cross-section with bike lanes. Because the roads were being repaved during this study, counts were not taken along Blount and Person Streets. The City of Raleigh is currently undergoing planning and design for the second phase of the plan to convert Blount Street and Person Street into two-way corridors. The reconfiguration phase was not accounted for in the safety evaluation or recommendations due to uncertainty in future traffic operations.

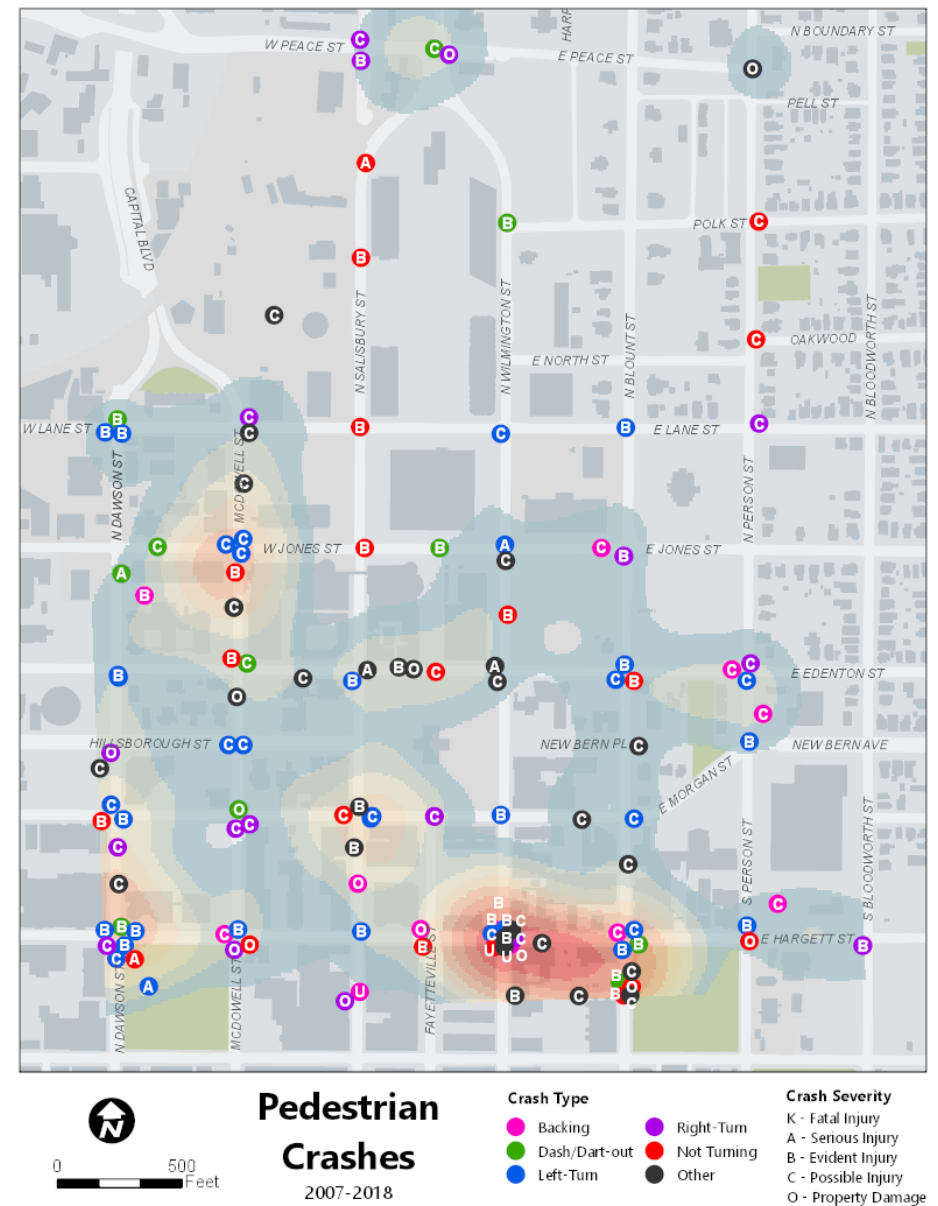


Figure 4. Map of Pedestrian Crashes

Bus Rapid Transit (BRT)

In 2016, Wake County voters passed an investment plan that would implement the Wake County Transit Plan – including the implementation of four (4) Bus Rapid Transit (BRT) routes from Downtown Raleigh in the four cardinal directions. The New Bern Avenue BRT has been designed to include dedicated lanes for the bus on the road segments identified in the map below. While the other three BRT corridors have not been identified, multiple alternatives for each evaluated. The dashed lines identify roads that may carry a BRT route in the future. BRT will change roadway configurations and traffic patterns when implemented. However, due to uncertainties about specific traffic patterns, BRT was not accounted for in the safety evaluation. Recommendations have been identified along the future BRT corridors.

Future Development Plans

Several properties have recently been redeveloped or improved in the study area, changing pedestrian travel patterns. Two examples include the following:

- Moore Square Park Renovations, including increased programming and food sales, completed in the fall of 2019.
- Longleaf, a boutique hotel with adjoining bar and restaurant at the intersections of Lane Street with McDowell Street and Dawson Street, opened in late 2019.

Several significant private developments are under review or planned within the study area, including:

- A mixed-use development at Seaboard Station including ground-level retail, multi-family residential, and hotel uses.
- The Smokey Hollow development along Peace Street and Capital Boulevard planned to include office and residential uses with parking.
- The purchase and renovation of the Heck-Andrews House on Blount Street by the North Carolina Realtors Association.
- The redevelopment of the block that was previously occupied by the News & Observer building, which will be completed in phases and include a mix of commercial, office, and residential uses.
- A mixed-use tower with retail, office, parking, residential, and hotel uses has broken ground at 301 Hillsborough Street.

Each of these projects will increase traffic in the study area, including motor vehicle and walking trips. This study did not take site plans into account when developing recommendations due to insufficient data and unknown traffic impacts. The City should consider incorporating pedestrian safety recommendations within these development projects.

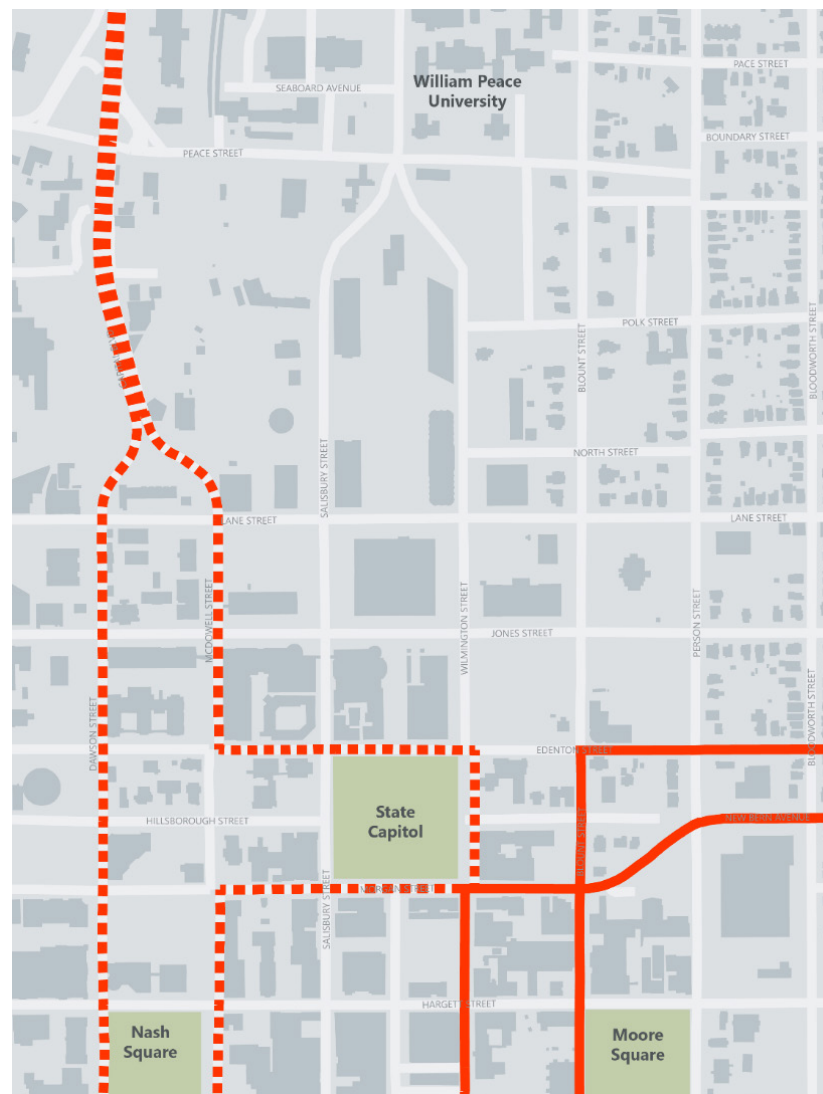


Figure 5. Future BRT Corridors

Field Assessment

On September 11, 2019, the study team and approximately 50 volunteers completed a full-day field assessment of the entire study area. Split into 5 sections, volunteers and study-team members walked the study area taking detailed notes on the condition of pedestrian facilities and behaviors of all roadway users. The following are the most common findings from the field assessment.

- Behavioral:
 - Vehicles not yielding to pedestrians in the crosswalk.
 - Vehicles driving at 35mph felt too fast to volunteers on the sidewalks nearby.
 - Pedestrians crossing the street outside of crosswalks.
- Maintenance:
 - Many crosswalk markings and stop bars were worn out and in need of repainting.
 - Most curb cuts were not ADA compliant, and many in very poor shape.
- Visibility:
 - Lighting was sporadic in some areas of the study area, providing little light for pedestrians, especially at uncontrolled crossings.
 - Vehicles were often parked close to or within the crosswalk, significantly reducing the visibility of pedestrians attempting to cross.

The findings from the field assessment were used alongside public outreach results and data collected to develop recommendations. The detailed observations from the field assessment are in the Appendix.

Public Input

Occurring during the months of October and November 2019, the outreach strategies included 1) an online survey, 2) an interactive map, 3) a WalkRoute app, and 4) parking attendant focus groups. Detailed results of all public outreach are in the Appendix.

- The Online survey received a total of 1,687 responses. The survey was distributed by OSHR Pedestrian Safety Initiative Committee members. Respondents were asked about behavioral and infrastructure issues that impact pedestrian safety in the downtown Raleigh government complex area.
- The interactive map had 400 pins dropped. It was distributed via the study website. The interactive map asked respondents to place a pin drop with a comment at locations of pedestrian concern.
- The WalkRoute app recorded a total of 64 miles of routes. It was distributed by OSHR Pedestrian Safety Initiative Committee members. The WalkRoute app was downloaded by volunteer participants and it identified their walking patterns within the downtown Raleigh government complex area.
- The Parking Attendant Focus Group Sessions were held on November 21st and 22nd, with five attendees in total. The parking attendants represented two parking decks and one parking lot. Parking attendants were asked about pedestrian and driver behavior and issues, as well as recommendations for improvements.

Outreach Overarching Themes

The following issues were the top three concerns seen across multiple public input strategies.

Issue	Online Survey	Interactive Map	Parking Attendant Focus Group
<i>Turn Conflicts</i>	X	X	X
<i>Drivers not yielding to pedestrians</i>	X	X	X
<i>Drivers speeding</i>	X	X	

Turn conflicts: Left and right turn conflicts primarily result from drivers turning into the crosswalk while a pedestrian has the right-of-way. Turn conflicts also occur when drivers exit a parking structure and enter the sidewalk zone where a pedestrian is crossing.

Drivers not yielding: In midblock crossings and at intersections, drivers not yielding to pedestrians or not aware that a pedestrian is in the right-of-way was a top item from public respondents.

Drivers speeding: Speed, particularly on one-way streets, was a repeated item among public comments. Drivers running red lights or performing unsafe maneuvers was often cited with speeding.

Date and time are important. Most online survey participants, 65%, stated Monday through Friday from 3:00pm-6:00pm as the time when they felt least safe while walking. Parking attendants also felt the Monday through Friday PM timeframe has more frequent issues for pedestrians.

Context sensitive recommendations. While global themes such as speeding, turn conflicts, and drivers not yielding to pedestrians occurred, site specific feedback was also captured. For example, in certain areas limited visibility is an issue, while not in others. Additionally, parking decks and parking lots face different safety challenges.

Online Survey

The survey was open from October 1st to November 24th and received a total of 1,687 responses. The survey was distributed by OSHR Pedestrian Safety Initiative Committee members. Respondents were asked about behavioral and infrastructure issues that impact pedestrian safety in the downtown Raleigh government complex area.

Who took the survey?

Responses were primarily from State government employees. Most responses were from individuals who drove alone to the study area, and then walked or biked within the study area. Most feedback was submitted during the week of October 7 – 13.

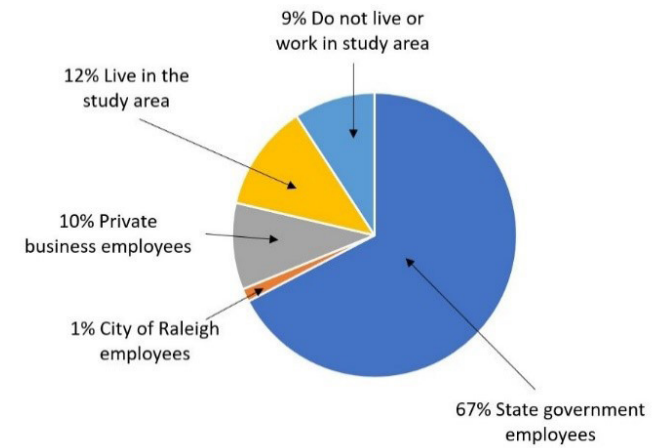


Figure 6. Pie Chart for Location of Survey Respondents

How survey respondents felt about behaviors. Most responses about hazardous behaviors focused on how drivers interacted with pedestrians.

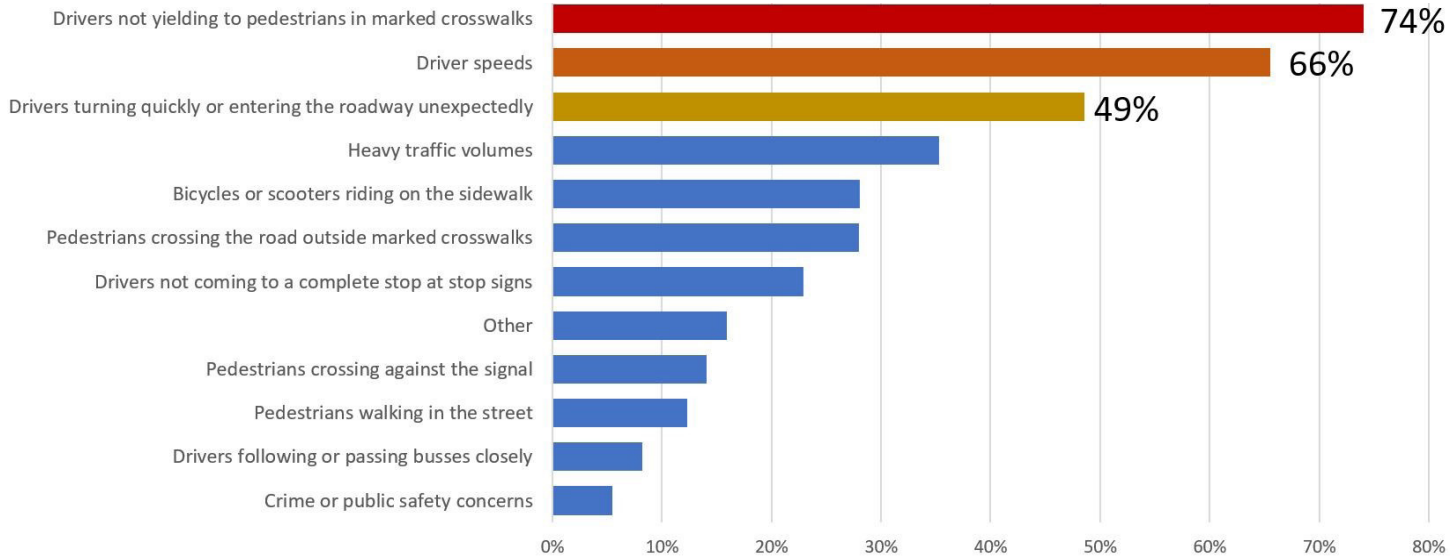


Figure 7. Survey Responses for Unsafe Behaviors

How survey respondents felt about characteristics. Sidewalks are the biggest hazard for pedestrians, but intersection amenities for pedestrians making up the remaining top three concerns.

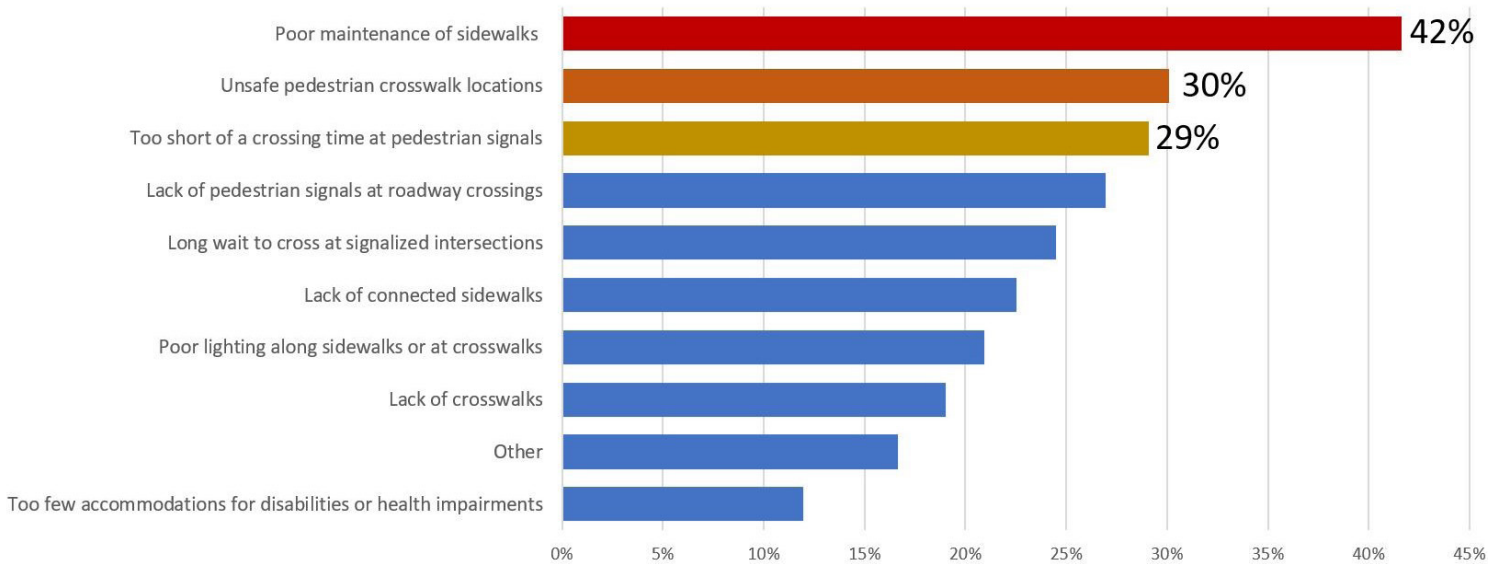


Figure 8. Survey Responses for Hazardous Characteristics

What respondents felt could improve pedestrian safety within the study area. Respondents felt that increased enforcement would make the largest impact, followed by improved deck crossings, and traffic calming.

How respondents described pedestrian safety issues or concerns in the study area. Turning conflicts, driver awareness of pedestrians, and speed were among the top cited issues.

More survey results are available in the Appendix to this report.

Interactive Map

Respondents indicated the following hot spots based on their point drops and feedback.

Jones at McDowell (Bubble 27): Drivers turning left into a crosswalk with pedestrians, drivers speeding, and drivers running red lights were the top three concerns at this site.

"This intersection is very dangerous. I turn left at this intersection on my way to the parking garage. I have had more than one driver lay on the horn when I wait for a pedestrian to cross before turning. We need a safer way for people to cross McDowell."

Lane at McDowell (Bubble 18): Drivers speeding, drivers running red lights, and drivers turning right into crosswalk with pedestrians were the top three concerns at this site.

"Cars on McDowell often run the red light here, and when they do, they are speeding, trying to get on Capitol Blvd."

Salisbury Midblock Crossing A (Bubble 16): Drivers not yielding to pedestrians, blind curve for drivers, and drivers speeding were the top three concerns at this site.

"I was almost hit twice. Cars drive too fast around the curve and they do not see the [crosswalk] lines. Caution lights would help."

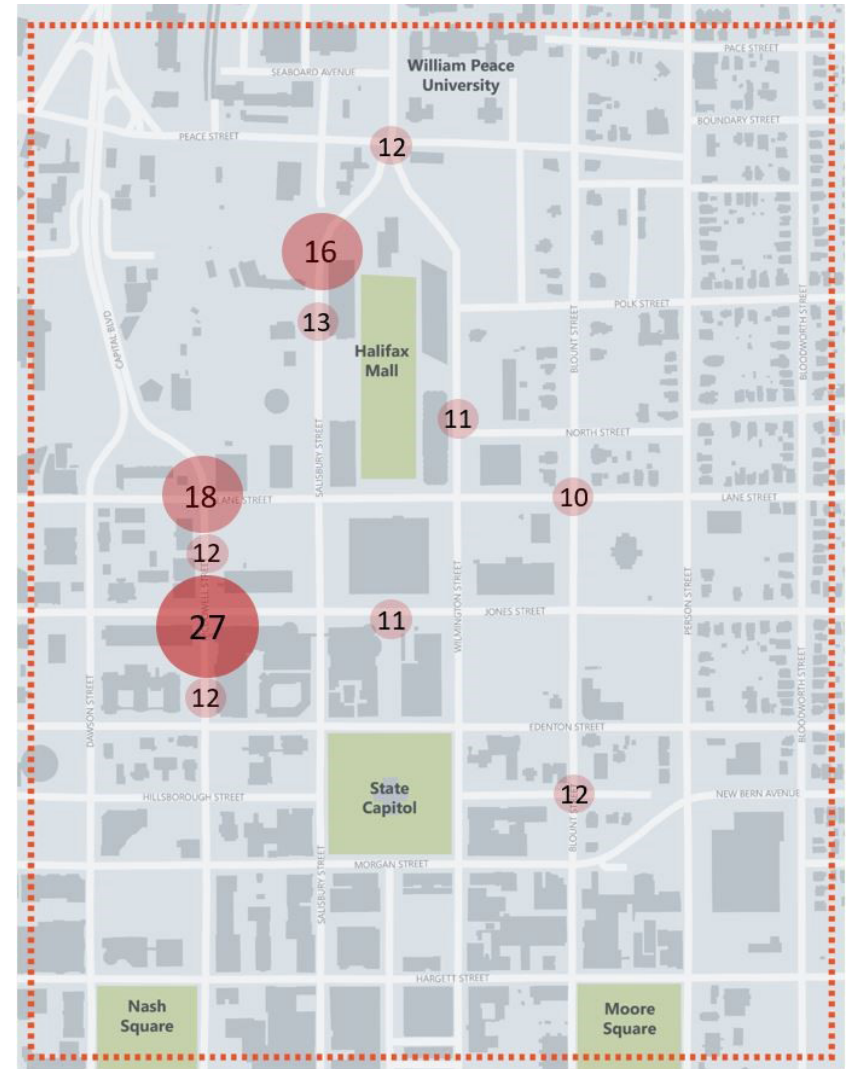


Figure 9a. Hot Spots Indicated on Interactive Map

Feedback Site	Feedback Themes	Comments
Jones & McDowell	Left turn conflicts, speeding, running red lights	27
Lane & McDowell	Speeding, running red lights, right turn conflicts	18
Salisbury Midblock Crossing A	No yield to pedestrians, blind curve for drivers, speeding	16
Salisbury Midblock Crossing B	Aggressive drivers, speeding, missing or blocked sidewalk	13
Peace & Halifax	Turning conflicts, long pedestrian wait, short crossing signal	12
New Bern & Blount	No yield to pedestrians, limited visibility, not enough street lights	12
McDowell Midblock Crossing A	Work trucks block sidewalk, jaywalking, parking deck driveway conflict	12
McDowell Midblock Crossing B	Parking deck driveway conflict, jaywalking, speeding	12
Jones Midblock Crossing	Capitol police block pedestrian visibility, limited visibility due to parked cars and school buses	11
Wilmington Midblock Crossing	Speeding, no yield to pedestrians, limited visibility on hill	11
Lane & Blount	Missing crosswalk signal	10

Figure 9b. Description for Hot Spots Indicated on Interactive Map

WalkRoute Phone Application

Top pedestrian paths in study area. The map below displays walking patterns within the study area generated by individuals who participated in the WalkRoute app.

Top Sites Generated by WalkRoute App. Based on the walking patterns of participants, two sites that were most often traveled were also identified as a top safety concern site in the interactive map.



Figure 10. Walking Patterns Generated From *WalkRoute* App

Parking Attendant Focus Groups

Feedback representing decks and lots. One parking manager and four attendants from two parking decks and one parking lot identified behaviors and issues that impact pedestrian safety.

- *Time of day:* Pedestrian safety issues and driver behaviors seem generally worse in the PM.
- *Turn conflicts and driver awareness of pedestrians:* Drivers turning onto one-way streets (e.g., Salisbury) are focused on oncoming traffic and finding a gap, not on downstream pedestrian crossings.
- *Enhanced crossing:* Crosswalks, lane lines, and sharks' teeth need to be repainted (e.g., Jones St.), Garage exits need better placed signage.
- *Context sensitive recommendations:* Parking decks and parking lots face different safety challenges. Parking lots handle significant tourist and bus traffic.

Prioritization

Across the dozens of intersections and road segments in the study area, field conditions are similar. The study team used several data and criteria to prioritize locations for further evaluation. Exposure (as calculated for this study) was the most important measure, as it described relative risk for conflicts between pedestrians and motorists across the study area. Speed data and crash history were secondary measures, but key to describing specific risks for severe or fatal pedestrian crashes. Public input and information about locations likely to change in the near term were qualitative metrics used to support other prioritization criteria. The study team focused developing recommendations for priority locations.

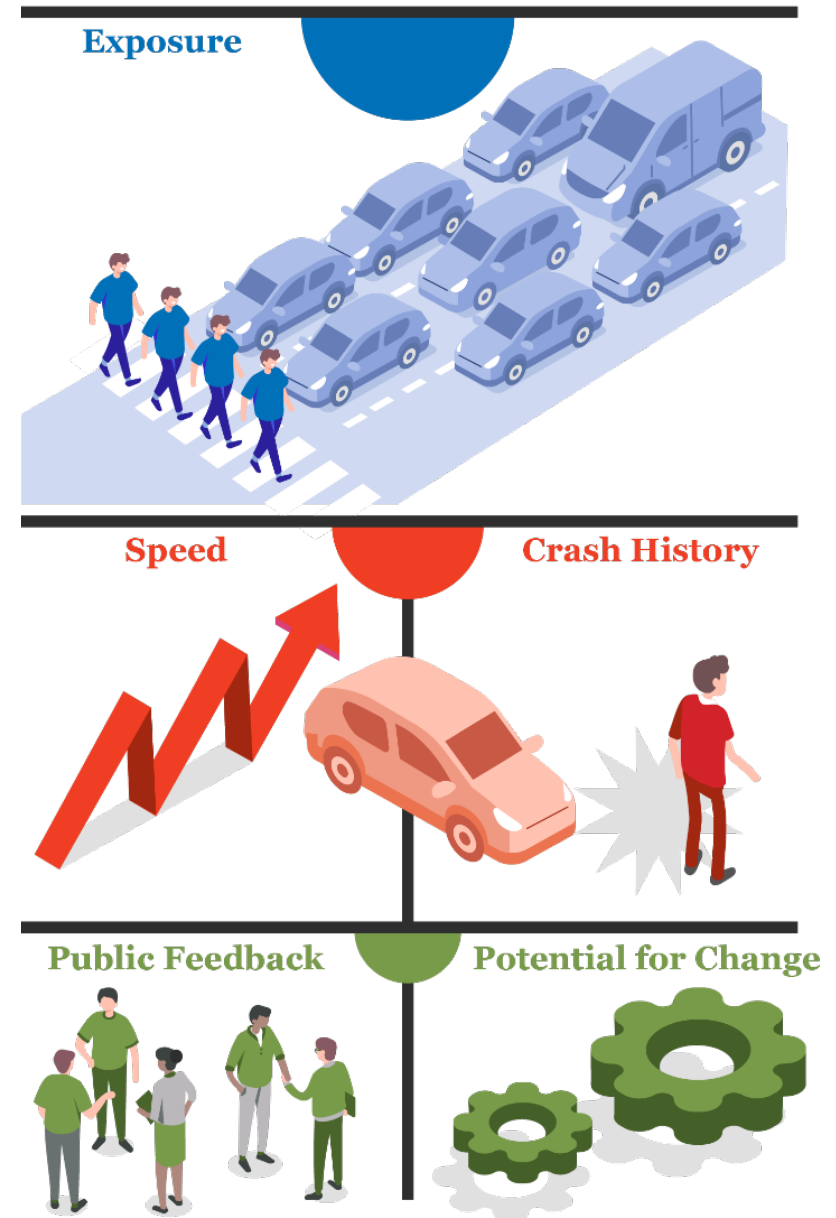


Figure 11. Data and criteria used to prioritize sites for detailed evaluation

Recommendations

This section summarizes the study team’s recommendations, including selection methodologies and additional considerations.

Non-Infrastructure Recommendations

The North Carolina Office of State Human Resources (NC OSHR) worked with other state agencies to form a committee to respond to pedestrian safety concerns in the Downtown Raleigh State Government Complex, as expressed by state employees in 2019. The primary focus of the committee is to identify strategies to educate state employees, both as drivers and pedestrians, to encourage safer conditions for walking in the study area. The committee was awarded a grant from the NC Governors Highway Safety Program in 2019 to establish Walk Smart NC – a state-employee led campaign focused on pedestrian safety.

Research and recognized traffic safety education campaigns, such as Watch for Me NC and Booze it or Lose It, focus messages on traffic behaviors that reflect safety issues documented by data. These campaigns develop slogans, marketing materials, and outreach methods that encourage positive travel behaviors that address the underlying traffic safety conditions. The OSHR committee should select a limited set of specific behaviors and related safety messages for an education campaign.

The committee may consider selecting behaviors as identified by people who responded to the public outreach survey, interactive maps, and focus group discussions. These stakeholders frequently mentioned the following pedestrian safety concerns for the study area:

- Drivers not yielding to pedestrians, especially at mid-block crosswalks
- Drivers speeding, primarily along one-way roads
- Turning-movement conflicts between drivers and pedestrians at intersections and garage exits
- Heightened concern in dark conditions or during peak travel periods

Crash and speed data collected for the study support a history of driver failure to yield at crosswalks, pedestrians entering the roadway outside of marked crosswalks, and vehicle speeds that may contribute to serious injury or fatal crashes with pedestrians.

Infrastructure Recommendations - Selection Methodology



Infrastructure, or engineering treatments, designed to improve pedestrian visibility or decrease crashes are selected based on several criteria. The effectiveness of the treatment, in comparison with feasibility to implement and unique design constraints of each site, was considered. The study team also considered



Figure 12. Considerations for Selecting Countermeasures

expected pedestrian volume and travel paths, motor vehicle volumes, and traffic speeds. Where a crash pattern has been observed, study team members considered engineering “countermeasures” that have researched crash reduction factors.

The matrix below illustrates how decision-makers generally selected countermeasures that align with the common pedestrian safety issues noted in the study area. Some were not selected for any sites, while others were assigned to many locations across the study area. A glossary of terms used is included in the Appendix to this report.

 SAFETY OBJECTIVES							
Reduce Crashes			Increase yielding	Improve Visibility	Address Accessibility	Support Overall Traffic Safety	
 PROBLEMS OR ISSUES							
	Head-On/ Parallel	Left Turn	Right Turn	Poor yielding compliance	Poor visibility of pedestrians crossing	Challenges for disabled/older pedestrians	Inconsistent traffic flow and speeds
COUNTERMEASURES	Add sidewalk	Eliminate dual left turn lane	No Right on Red restriction (sign)	RRFB	High visibility crosswalk/warning sign	Widen sidewalk	Redefine appropriate travel lane continuity and width
	Install or widen buffer between travel lanes and sidewalk	Permissive/Protected LT phase	Curb extension	Raised crosswalk	Parking restrictions (setback) from crossing	Modify curb ramps/tactile surface	Clarify intended traffic movements with bike lanes
	Mark crosswalks	Leading Pedestrian Interval (LPI)	Decreased corner radii/mountable curb	Advance yield marking/signs (R1-5)	Yield warning signage at parking lot/garage exits	Consider Accessible Pedestrian Signal (APS) installations	Redefine crosswalk and lane markings
	Move bus stops	—	Eliminate dual right turn lane	In-street yield to sign (R1-6)	Wide crosswalk/recessed stop line	Replace push buttons with automated pedestrian detection or coordinated signal	Raised median/refuge island
	PHB/Signal at crosswalk	—	—	—	Overhead lighting	LPI or extended pedestrian WALK phase	Retime signals to reduce traffic speed
	NOT APPLIED	LIMITED APPLICATION	MULTIPLE APPLICATIONS	FREQUENT APPLICATION	ASSUMED APPLICATION		

Study Area Countermeasure Matrix: For each objective listed in the matrix (top row), there is a corresponding safety issue (second row), and multiple countermeasures identified to help address each issue. Also, several countermeasures can address multiple pedestrian safety issues. Countermeasures are coded per the frequency of recommended application in the study area (see color scheme described by the legend). The matrix can be applied to other sites in Downtown Raleigh to help identify potential countermeasures, using appropriate data and metrics.

Limited Application Recommendations

Some treatments are more often selected per site-specific constraints, crash history, or traffic patterns. These may be used at a limited number of sites. The following summarizes some of the key selection considerations used for countermeasures that fit unique conditions and the locations where each is recommended.

No Right on Red (Sign Restrictions)



Considerations

- Limited visibility due to buildings or streetside obstructions
- One-way roads (left-to-right across the approach to the intersection)
- Right turn crash history
- Higher relative exposure

Locations

- Hargett Street (all intersections)
- Edenton (where visibility is limited)
- Morgan (where visibility is limited)

Rectangular Rapid-Flashing Beacons (RRFBs)



Considerations

- Multi-lane crossings
- Low yielding compliance (reported)

Locations

- Salisbury near State Capitol Police
- Wilmington near North
- Blount near New Bern

Raised Crosswalks



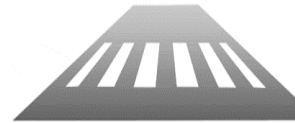
Considerations

- Low yielding compliance (reported)
- Limited crosswalk visibility
- High volume (mid-block) crossings + lower vehicle volumes

Locations

- Midblock crosswalks on Lane and Jones between McDowell and Salisbury

Wide High Visibility Crosswalks



Considerations

- Higher relative exposure
- Crash history
- Coupled with NRTR restrictions

Locations

- All intersections on Hargett

Area-wide Recommendations

Some traffic or safety conditions are more typical across the study area, such as traffic speeds above posted limits and turning movement conflicts with crossing pedestrians. Some engineering treatments can be applied more consistently in the study area, than where currently installed. The following three treatments have been identified for widespread application, for varying reasons listed below each treatment.

Leading Pedestrian Intervals

- Higher pedestrian exposure across the study area
- Crash history at intersections with left-turning vehicles
- Tourists and older pedestrians are less familiar with the environment and may be slower to cross

Curbs Ramps and Accessibility Improvements

- Many sidewalks originally constructed prior to ADA requirements
- Reconstruction or resurfacing projects may trigger upgrades
- Consistent expectations for and by pedestrians crossing

Retimed Signals for Reduced Traffic Operating Speeds

- Pre-timed system includes major US routes and minor cross streets
- One-way roads are noted to allow excessive speeds during various times of day
- Signal timing can be adjusted to balance phase and cycle lengths to reduce excessive speeds

Corridor or Site-Specific Recommendations

The project team considered each intersection, crossing, and corridor for a more tailored selection of engineering treatments. While the recommendations were informed by field observations, engineering surveys or designs were not prepared as part of this study. As the City of Raleigh and NCDOT proceeds toward implementation of the conceptual recommendations recorded in this study, more detailed engineering studies and plans will be required. The Appendix outlines these more specific recommendations.

As of early 2020, NCDOT and the City of Raleigh began coordination on area-wide recommendations such as implementation of Leading Pedestrian Intervals and other adjustments to the traffic signal system to better moderate speed and support pedestrian safety in the study area. NCDOT and the City of Raleigh will evaluate each of the site-specific improvements for eligibility through the Highway Safety Improvement Program (HSIP) and other local funding sources. The City of Raleigh should review this study's findings and incorporate the recommendations into current and future transportation plans, where appropriate.

City and NCDOT should continue to collaborate to move toward consistent application elsewhere in the Downtown area. The process and criteria described in this summary report may be used as a guide for identifying recommendations for improving pedestrian safety. Additionally, the City and NCDOT should partner to develop additional guidance for installation of countermeasures currently implemented on a limited basis in Raleigh.

