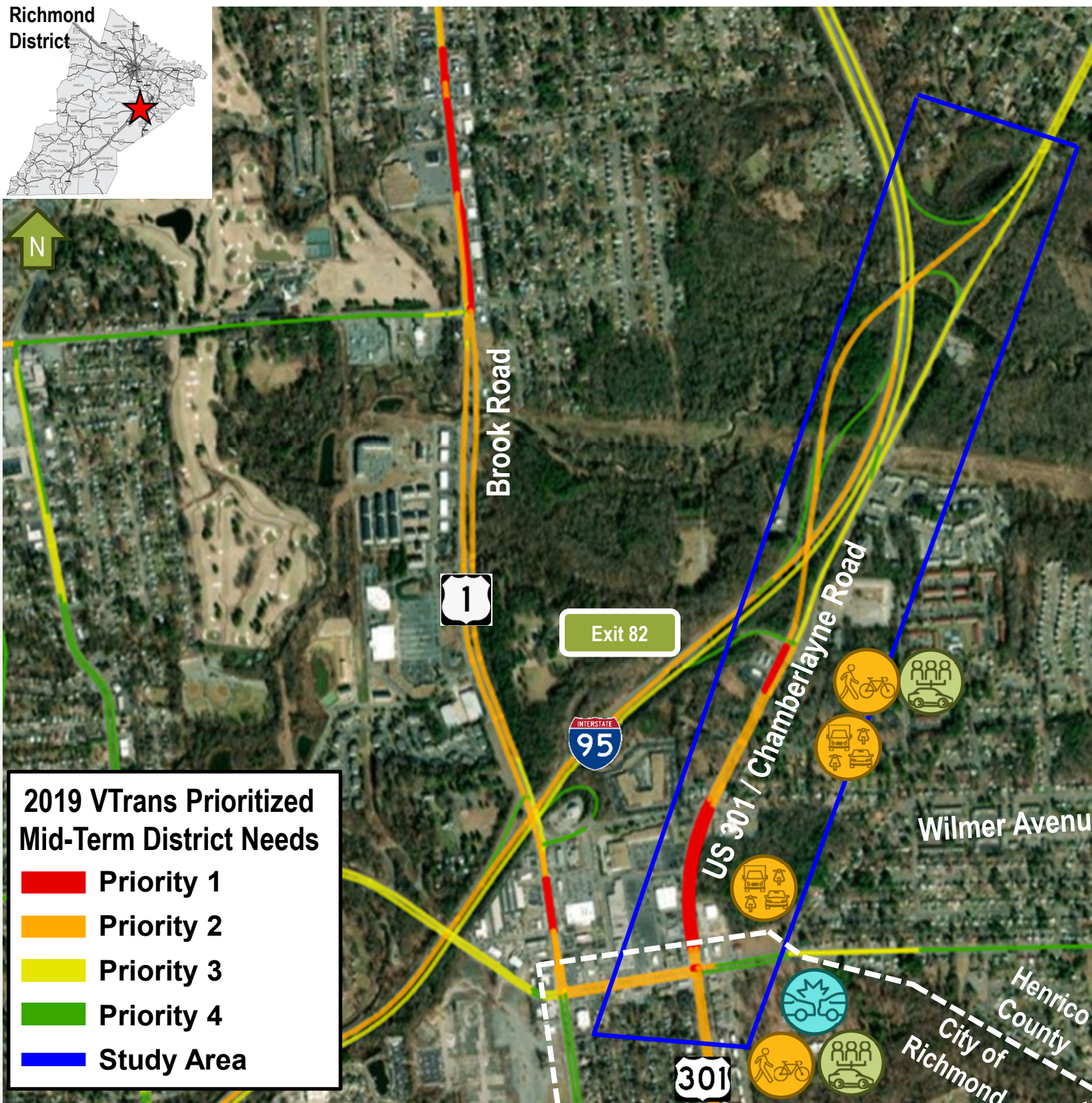


Project Overview | RI-23-08

US-301 (Chamberlayne Road) Corridor

Study Corridor Includes:

- US 301 / Chamberlayne Road from Azalea Avenue to I-95 SB On-Ramp, 1.20 mile



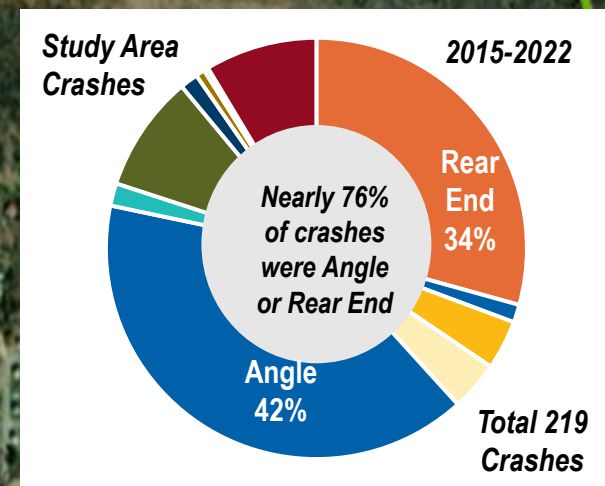
Project Purpose, Goals, & Objectives

Analyze the operational and safety issues identified along the Chamberlayne study corridor with a focus on providing enhanced Transportation Demand Management, bicycle, and transit access.

Identify cost-effective preferred improvement alternatives that address the deficient conditions and prioritize safety for vulnerable users.

Identified Issues in the Study Area

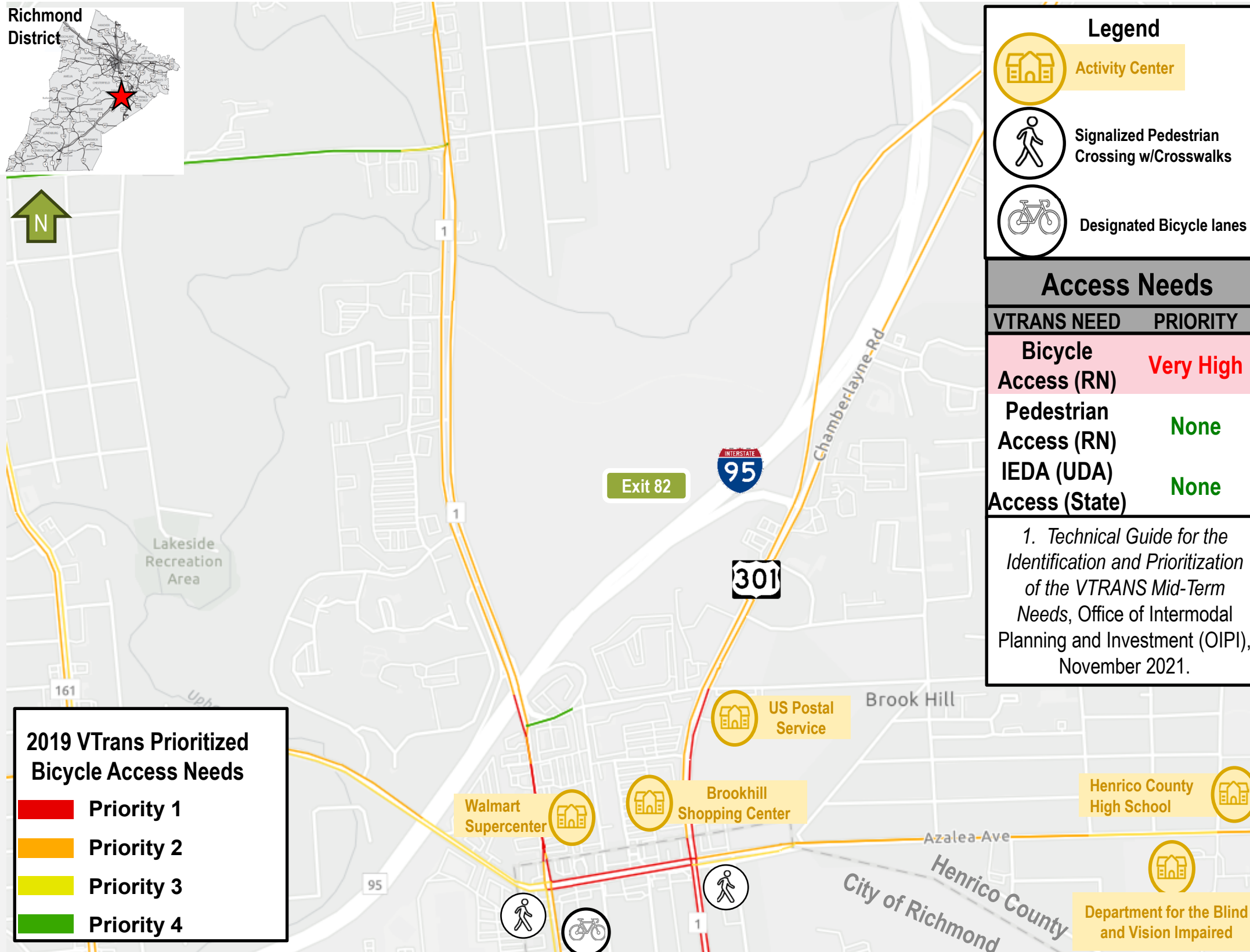
- Significant angle and rear-end crash trend related to intersections; No fatalities recorded during the study period.
- 5% pedestrian crashes within the study area; No existing bike lanes or shared-use paths. Limited crosswalks and sidewalks;
- No existing park and ride facilities present along the corridor. There are existing transit routes with limited stops.
- Congestion due to shopping center along Northbound and Southbound Chamberlayne Road at Azalea Avenue Travel Time Index > 1 in AM / PM peak hours;



Project Fact Sheet	
VDOT District	Richmond
Locality	Henrico County
# of Study Intersections	8
Transit Routes Greater Richmond Transit Company (GRTC)	1 Chamberlayne/Downtown – 2 SB Stops 14 Hermitage/East Main – 2 SB Stops (same as above) 93 Azalea Connector – 1 NB Stop, 1 SB Stop
Intermodal Connections	None
Nearby Bikeways	On-Road Designated bike lanes along Brook Road south of Azalea Avenue
Functional Classification	Other Principal Arterial
Speed Limit	35 mph to 45 mph

Operations / Access Needs

Bicycle/Pedestrian Access Needs Identification Summary



Bicycle Accessibility Summary

- No existing bike lanes / shared-use paths along study corridor.
- Closest bike lanes are along Brook Road, south of Azalea Avenue.
- The **Bicycle Access** VTrans Need is based on "Applicable roadway segments within biking distance (seven miles) of VTrans Activity Centers, fixed-guideway transit stations, or BRT lines.¹"

Pedestrian Accessibility Summary

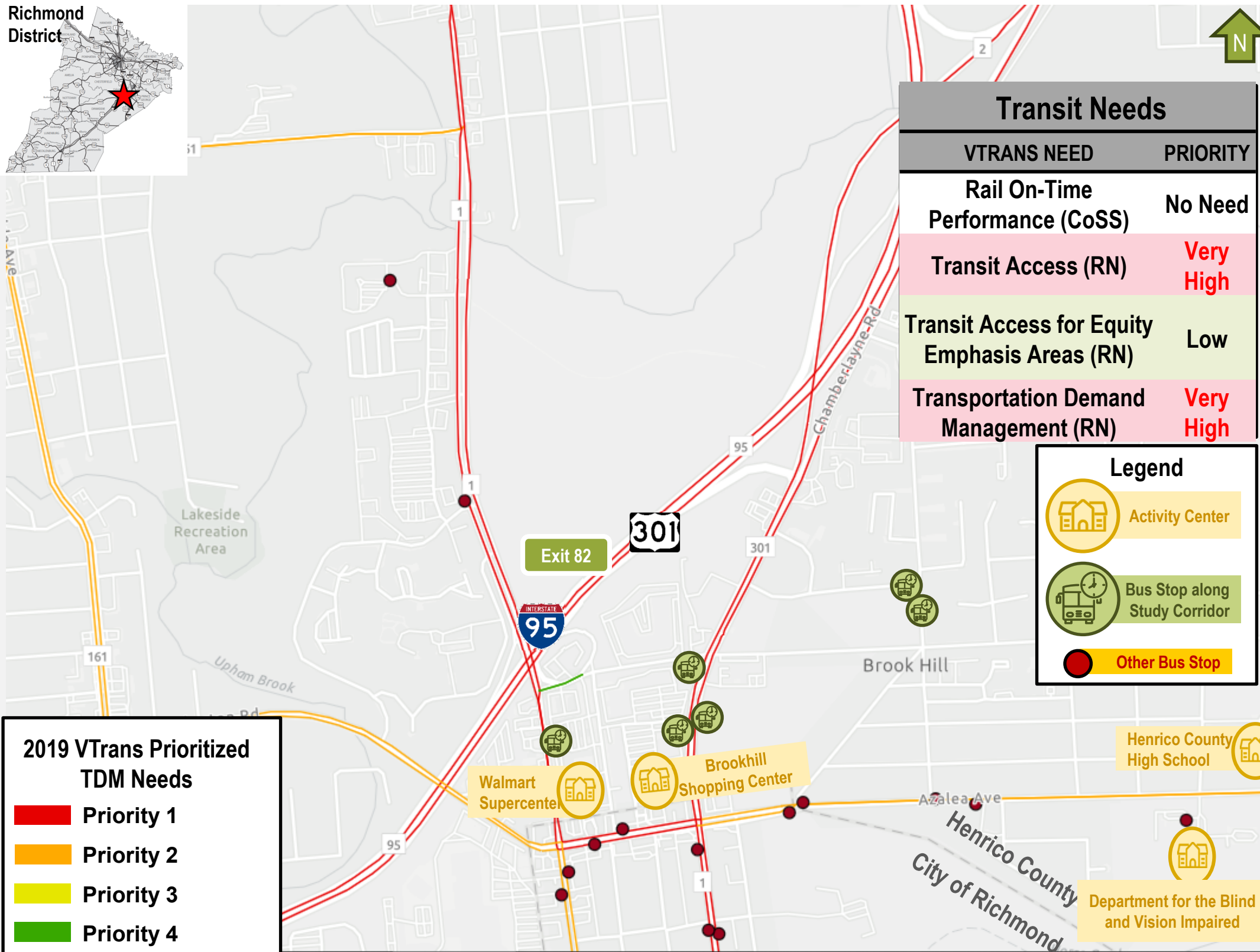
- No sidewalks present on both sides of study corridor except for just north of Azalea Avenue.
- A sparse, inconsistent network of existing sidewalks along Brook Road between Azalea Avenue and Wilmer Avenue.
- Crosswalks only at the intersection of US-301 (Chamberlayne Road) at Azalea Avenue, signalized with pedestrian push buttons.
- Four-percent crashes involved pedestrians during the study period.
- The **Pedestrian Access** VTrans Need is based on "Applicable roadway segments within walking distance (one mile) of VTrans Activity Centers, fixed-guideway transit stations, or BRT lines.¹"

ACCESS MANAGEMENT SUMMARY	ACCESS POINTS
Corridor-Wide	23
US 301 / Chamberlayne Road Northbound	14
US 301 / Chamberlayne Road Southbound	14
Brook Road Northbound*	10
Brook Road Southbound*	17

* Between Azalea Avenue and Wilmer Avenue

Operations / Access Needs

Transit Access Needs Identification Summary



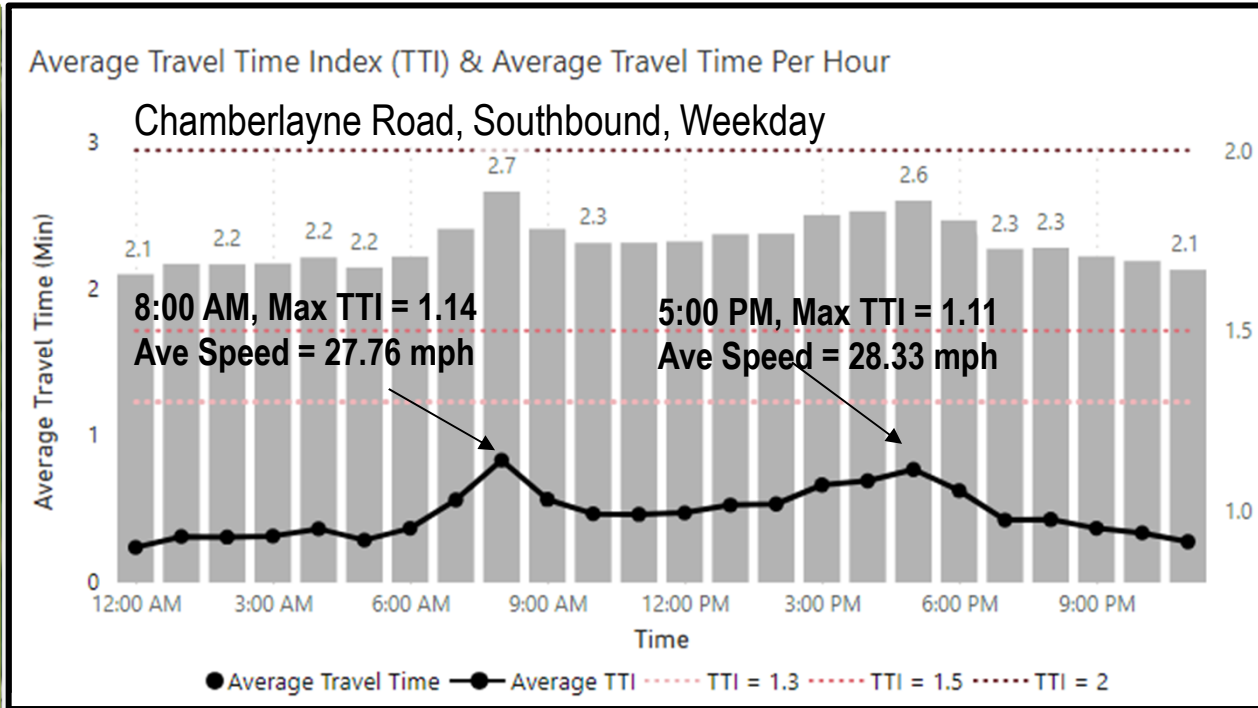
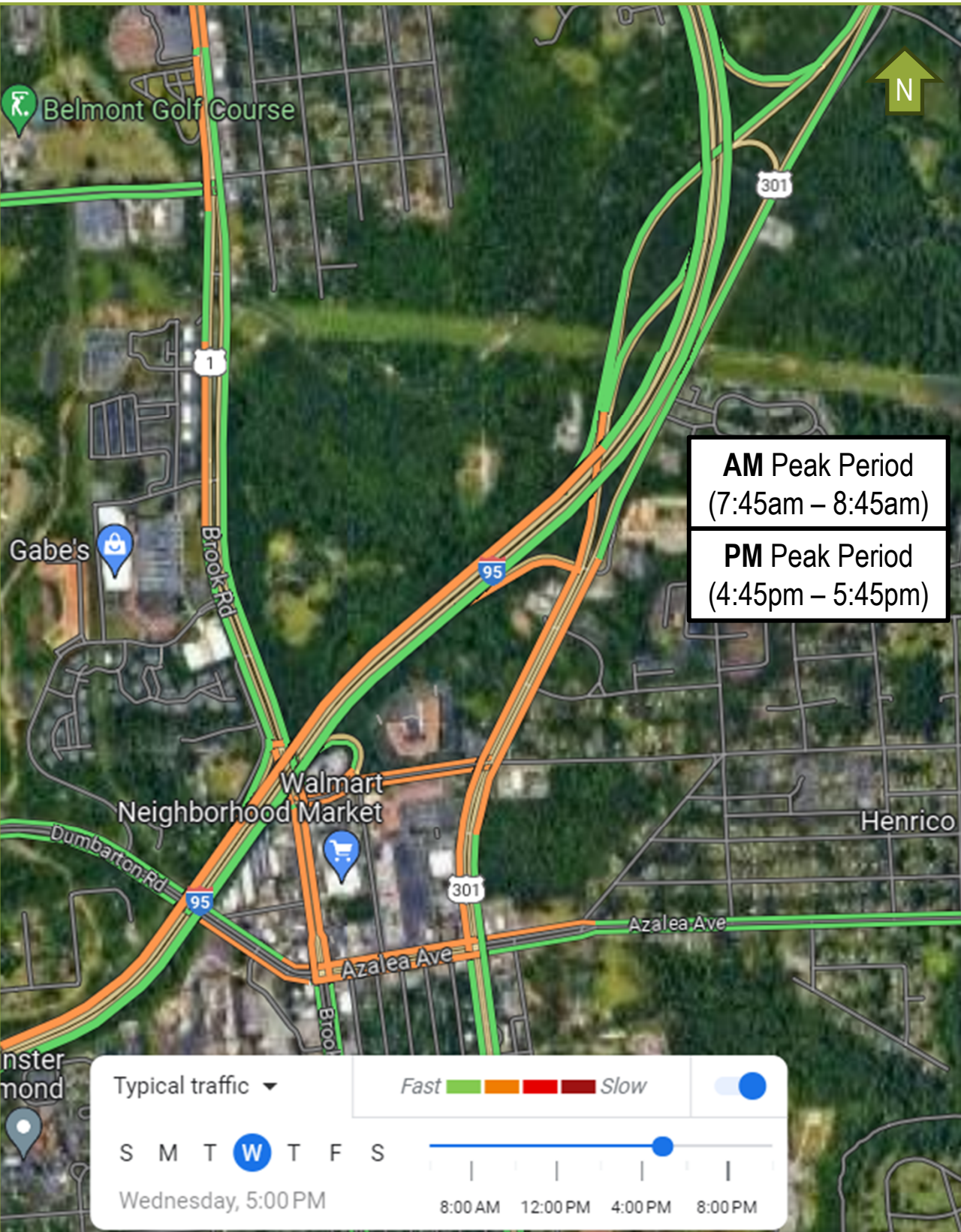
Transportation Demand Management Summary

- No existing park and ride or other intermodal facilities exist along or near the study area.
- The **Transportation Demand Management (TDM)** VTrans Need is based on "Roadway segments where TDM strategies such as new or expanded public transportation services/facilities, new or expanded bicycle and pedestrian facilities, or coordination of commuter assistance programs can be beneficial to reduce vehicle miles traveled."¹

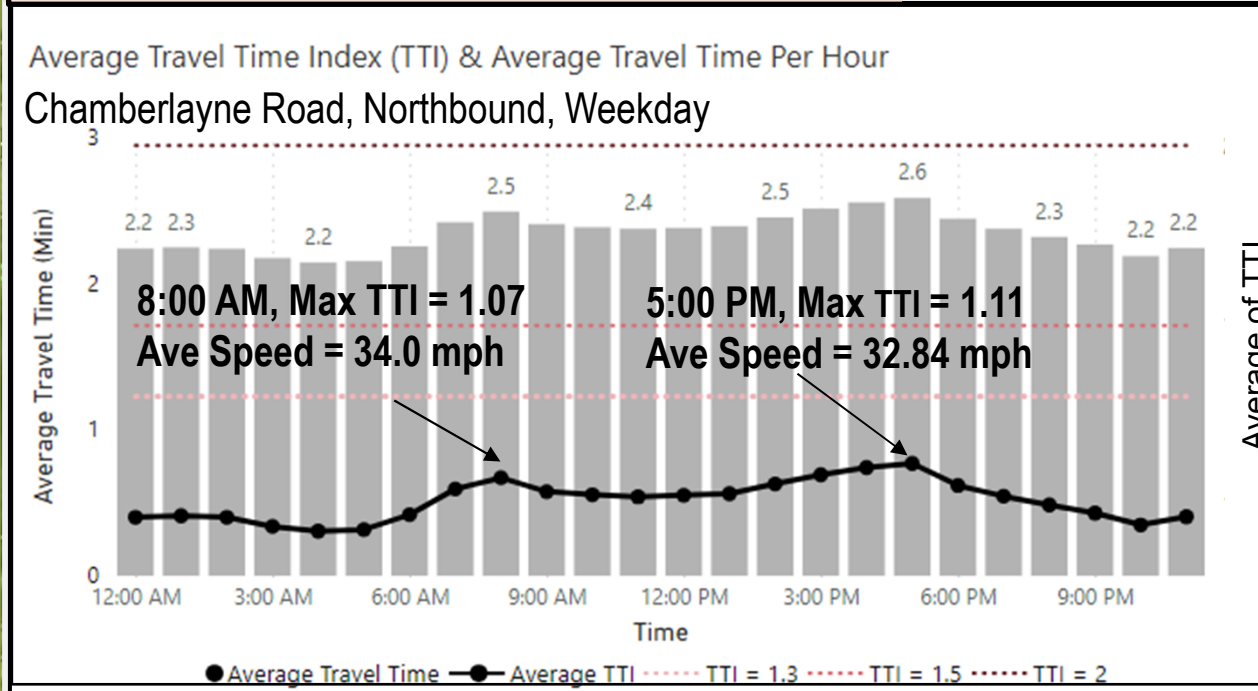
Transit Accessibility Summary

- Three (GRTC) Routes exist in the study area
- Three existing bus stops are located along the study corridor:
 - 1 stop along NB US-301 (Chamberlayne Road) at Brook Hill Shopping Center. No benches, shelter or sidewalks
 - 2 stops along SB US 301 between Wilmer Avenue and Azalea Avenue; no sidewalks for the stop close to Wilmer Avenue. No shelters for both stops, but bench available for stop close to Wilmer Avenue.
- Route 93 Connector - 2 stops at Brook Hill Circle / Crenshaw Rd
- A few other stops along Brook Road, Azalea Avenue and US 301/ Chamberlayne Road (South of Azalea Avenue) as shown.
- The **Transit Access** VTrans Need is based on "The number of workers that can access a given VTrans Activity Center via public transit within 45 minutes versus a private automobile. Any transit deficit greater than zero constitutes a need."¹
- The **Transit Access for Equity Emphasis Areas (EEAs)** VTrans Need varies from Low to High Priority between Pump Road and N. Parham Road. These are "Areas identified as EEAs, considered transit viable, and underserved by transit."¹

¹ Technical Guide for the Identification and Prioritization of the VTRANS Mid-Term Needs, Office of Intermodal Planning and Investment (OIPI), November 2021.



Operations Needs		1. Technical Guide for the Identification and Prioritization of the VTRANS Mid-Term Needs, Office of Intermodal Planning and Investment (OIPI), November 2021.
VTRANS NEED	PRIORITY	
Congestion Mitigation (RN)	High	
Capacity Preservation (CoSS/ RN)	High	



Operations Summary

- Chamberlayne Road has a **High** Congestion Mitigation VTrans Need at the intersection of Chamberlayne Road and Azalea Avenue and **Medium** Congestion need north of Azalea Avenue to the intersection of Chamberlayne Road and Wilmer Avenue based on Travel Time Index (TTI), travel speeds, and the percentage of travel taking place in congested conditions during the AM and PM peak periods.
- “Roadway segments along Regional Networks (RNs) or Corridors of Statewide Significance (CoSS), and included in VDOT’s Arterial Preservation Network, are identified as those with a Capacity Preservation Need.”¹
- The **Congestion Mitigation and Reliability** VTrans Needs are located near the major intersections. “Congestion Mitigation Needs

Travel Time Index Summary

- Travel Time Index (TTI) is the ratio of travel time during a specified time period to the time required to make the same trip at typical speeds. A higher value indicates more congestion.
- Along Chamberlayne Road, a maximum TTI of 1.14 occurs in the 8 AM hour along southbound direction. A TTI of 1.11 occurs in the 5pm hour along both northbound and southbound directions.
- The average speed per hour along northbound during AM/PM peak hours was recorded to be 32-34mph. However, along southbound, average speed was recorded to be 27-29mph.

Safety Needs

Safety Improvement Needs Identification Summary – Corridor-wide

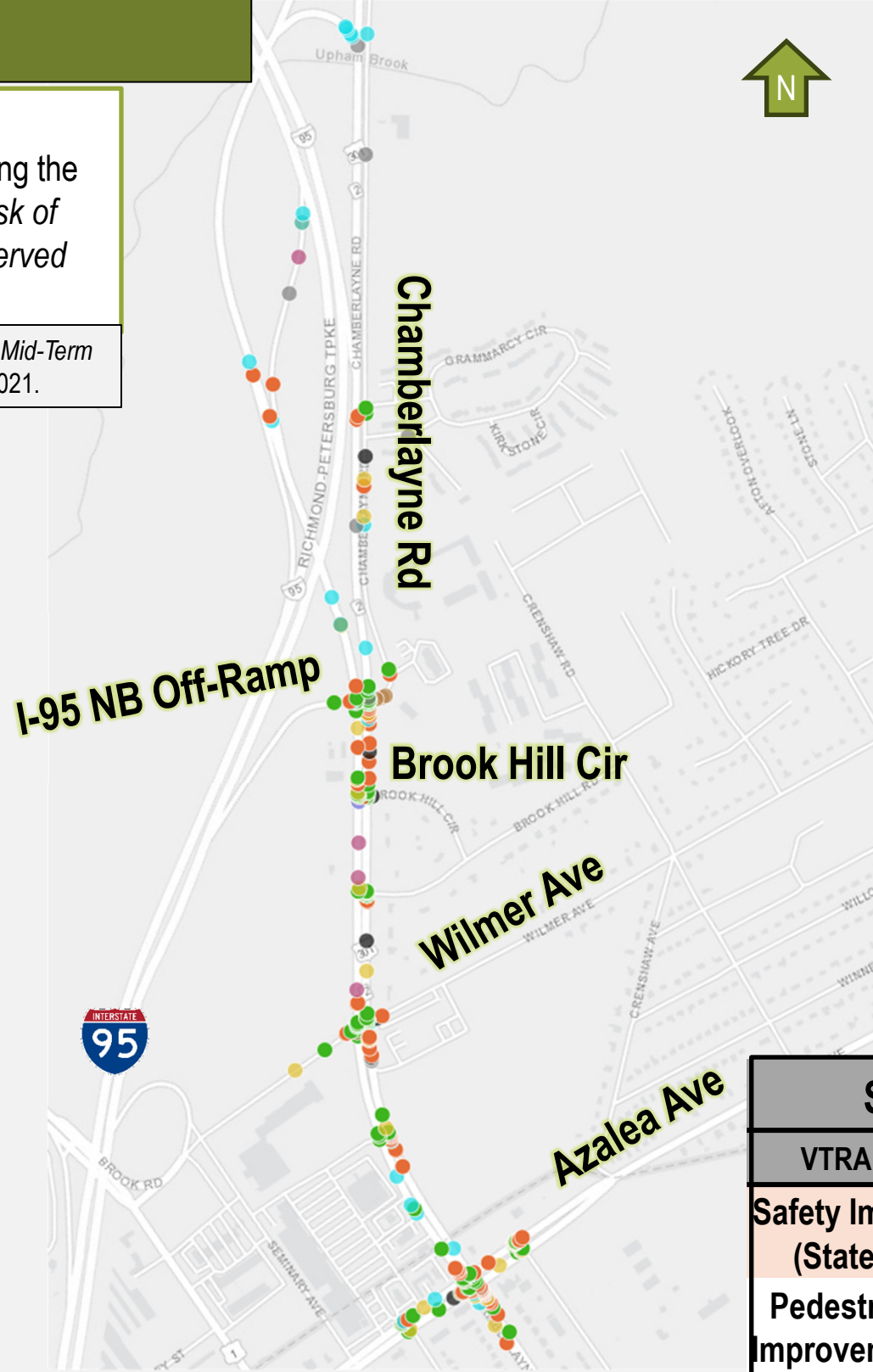


Study Area Crashes (2015-2022)

Roadway Safety Improvement Summary

- The **Safety Improvement** VTrans Need is High along the corridor based on “Areas with a higher calculated risk of crashes based on roadway characteristics and observed crash data.”¹

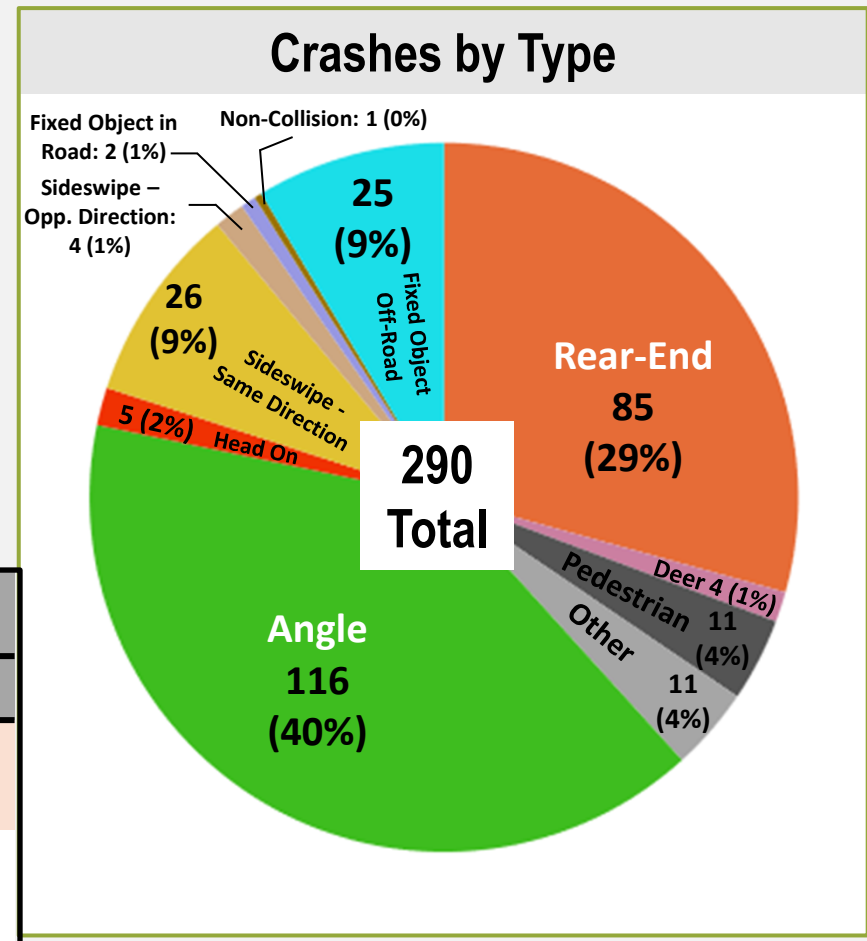
1. Technical Guide for the Identification and Prioritization of the VTRANS Mid-Term Needs, Office of Intermodal Planning and Investment (OIP&I), November 2021.



VDOT 2015-2022 Crash Data		Crashes by Severity				
Intersection Crashes		A	B	C	O	Total
Azalea Avenue*		2	26	7	35	70
I-95 NB Off-Ramp*		0	12	1	26	39
Wilmer Avenue		2	16	1	30	51
Brook Hill Circle (N)		2	5	1	13	21
Brook Hill Circle (S)		1	2	1	16	20
Shopping Center Driveway		1	6	2	9	18

*Top 100 “Potential Safety Improvement” (PSI) Intersections

- Collision Type
- 4. Sideswipe - Same Direction
 - 9. Fixed Object - Off Road
 - 12. Ped
 - 16. Other
 - 3. Head On
 - 5. Sideswipe - Opposite Direction
 - 6. Fixed Object in Road
 - 8. Non-Collision
 - 1. Rear End
 - 2. Angle
 - 10. Deer



Safety Needs	
VTRANS NEED	PRIORITY
Safety Improvement (State/District)	High
Pedestrian Safety Improvement (State)	No Need

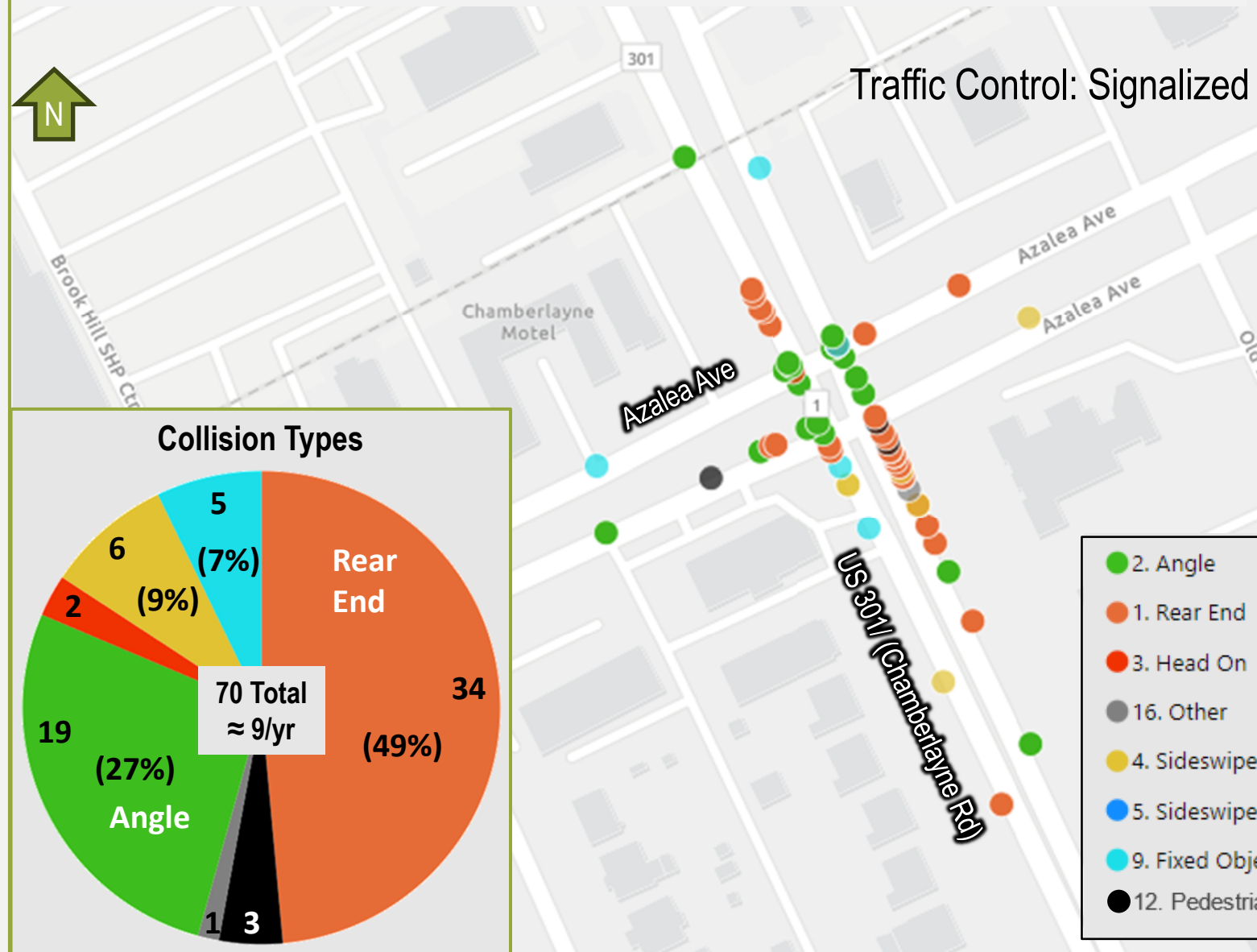
Safety Needs

Intersection Crash Analysis (2015 – 2022 Data)



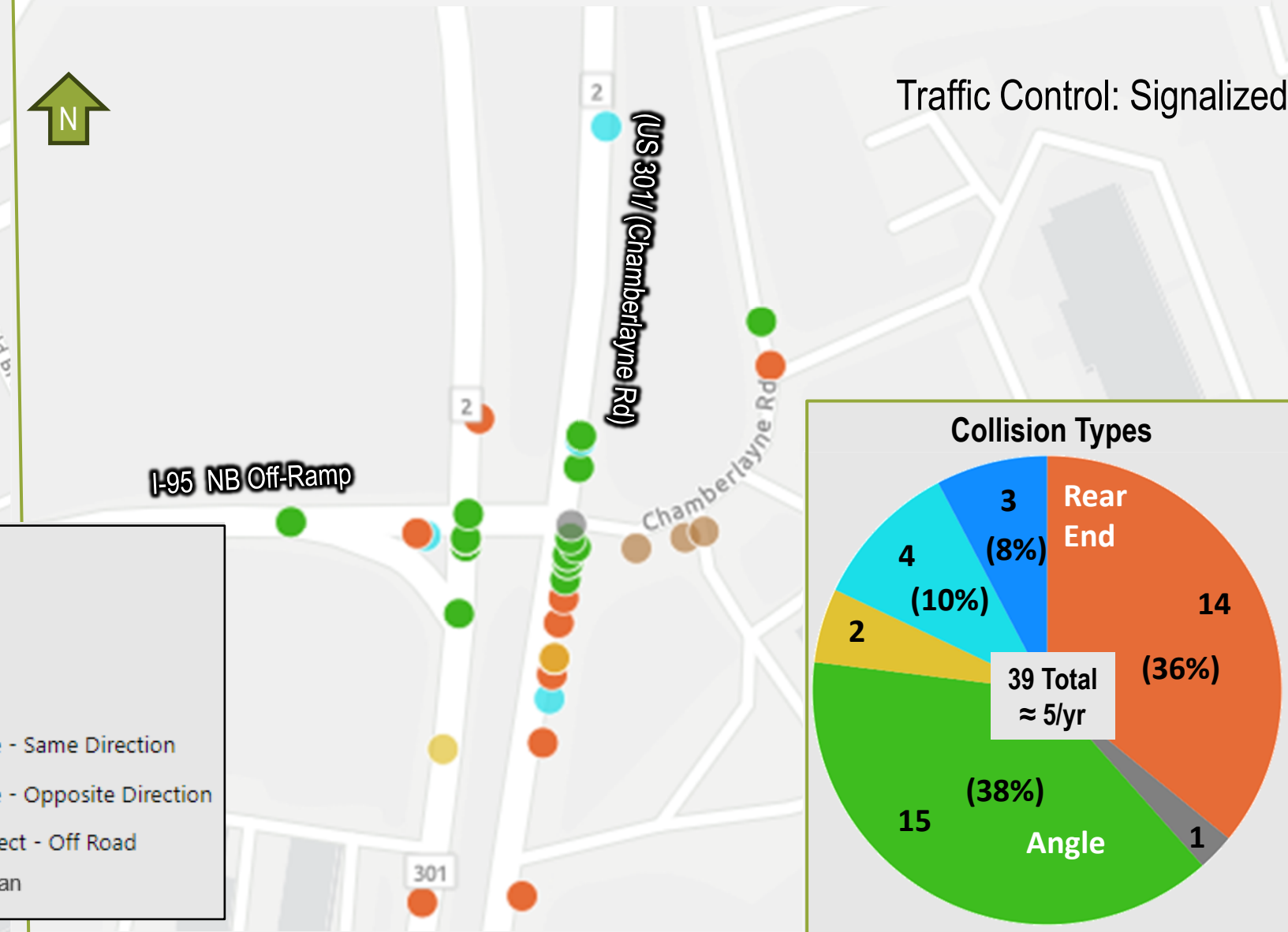
Crashes at US 301 (Chamberlayne Road) & Azalea Avenue

P4P Potential for Safety Improvement (PSI) Intersection



Crashes at US 301 (Chamberlayne Road) & I-95 NB Off-Ramp

P4P Potential for Safety Improvement (PSI) Intersection



- 27% of crashes were angle collisions, 49% of crashes were rear-end collisions.
- 53% of angle crashes involved a SB vehicle on US301(Chamberlayne Road), 47% NB.
- 62% of rear-end collisions occurred along NB US 301 (Chamberlayne Road), 32% SB.
- Other Trends: 86% No Adverse Conditions, 30% Night-time.

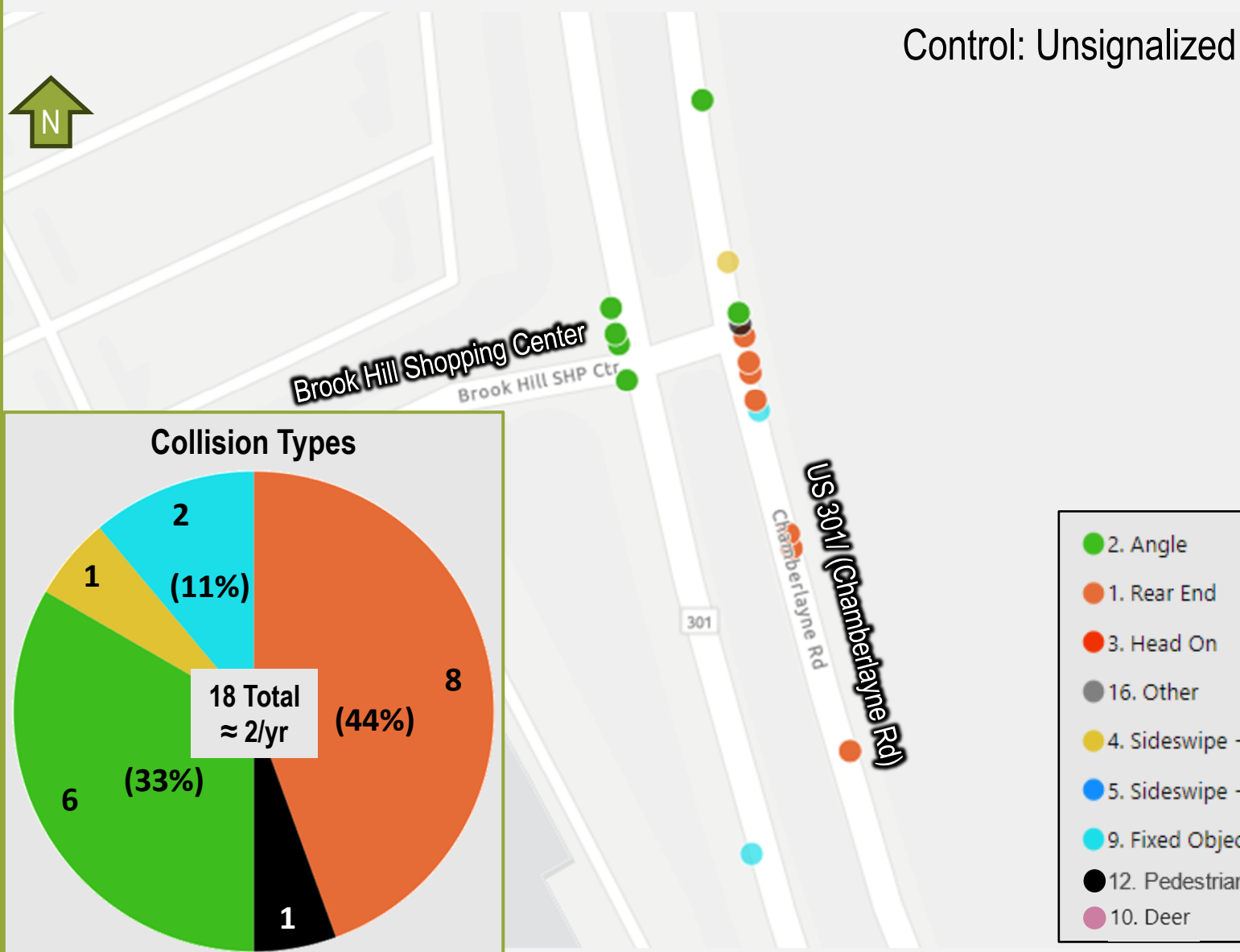
- 38% of crashes were angle collisions, 36% of crashes were rear-end collisions.
- 53% of angle crashes involved a NB vehicle on US 301 (Chamberlayne Road), 20% SB.
- 50% of rear-end collisions occurred along NB US 301 (Chamberlayne Road), 29% SB.
- Other Trends: 87% No Adverse Conditions, 33% Night-time.

Safety Needs

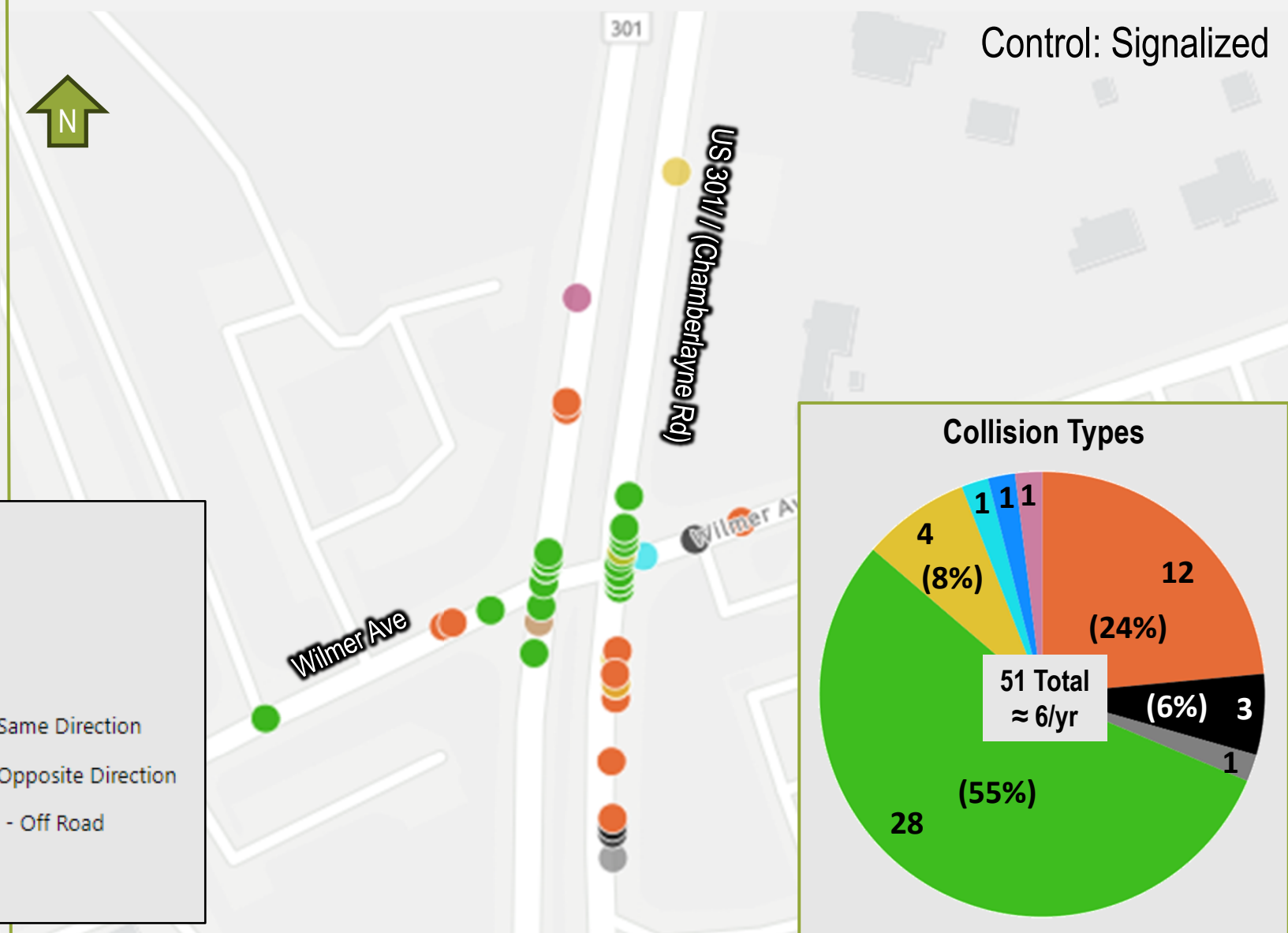
Intersection Crash Analysis (2015 – 2022 Data)



Crashes at US 301 (Chamberlayne Road) & Brook Hill Shopping Center



Crashes at US 301 (Chamberlayne Road) & Wilmer Avenue



- 33% of crashes were angle collisions, 44% of crashes were rear-end collisions.
- 33% of angle crashes involved a NB vehicle on US301(Chamberlayne Road), 67% SB.
- 100% of rear-end collisions occurred along NB US 301 (Chamberlayne Road).
- Other Trends: 83% No Adverse Conditions, 17% Night-time.







- 55% of crashes were angle collisions, 24% of crashes were rear-end collisions.
- 50% of angle collisions involved a NB vehicle on US 301 (Chamberlayne Road), 43% SB.
- 58% of rear-end collisions occurred along NB US 301 (Chamberlayne Road), 17% SB.
- Other Trends: 82% No Adverse Conditions, 24% Night-time.

Phase 1 Scoping - Level Improvement Concepts



US-301 (Chamberlayne Road) Corridor



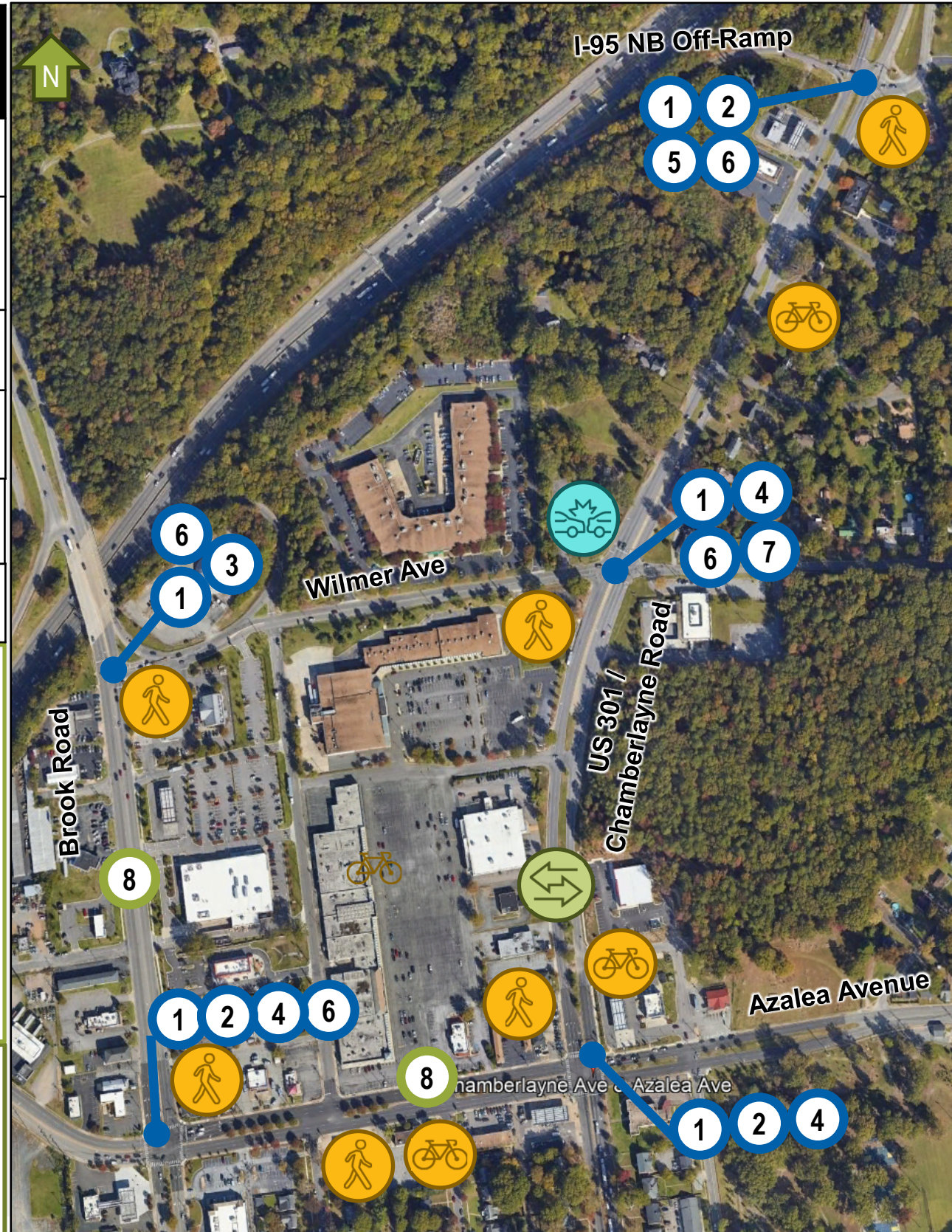
Legend: VTrans Needs Addressed

-  Bicycle Access
-  Congestion Mitigation/ Capacity Preservation
-  Pedestrian Access
-  Safety Improvement
-  Transit Improvement
-  TDM Improvement



Transit and TDM Improvements

-  
- Improve Bus STOP locations along with sidewalk connectivity.
- Micro-transit route to replace Azalea Connector Route 93



* Denotes an innovative intersection concept. More information on innovative intersections and real-world examples can be found at <https://www.virginia.gov/transportation/intermodal-planning-and-investment/innovative-intersections/>



Safety and Operations Improvements

-  
- 1** Signal timing and phasing optimization
- 2** Conventional – Lane Additions
- 3** Continuous Green-T*
- 4** Median U-Turn*
- 5** Thru-cut*
- 6** Roundabout*
- 7** RCUT*
- 8** **Corridor Wide Operations and Safety Improvements**
- Access management review – Drive-way consolidation along US 301 / Chamberlayne Road, Brook Road, Azalea Avenue

Pedestrian and Bicycle Improvements

-  
- High intensity crosswalks with pedestrian push buttons and ADA ramp compliance review
- Intersection tightening/ pedestrian refuge islands/ traffic calming
- Adding sidewalks to improve pedestrian access
- Tie-into upcoming/ planned bicycle lanes