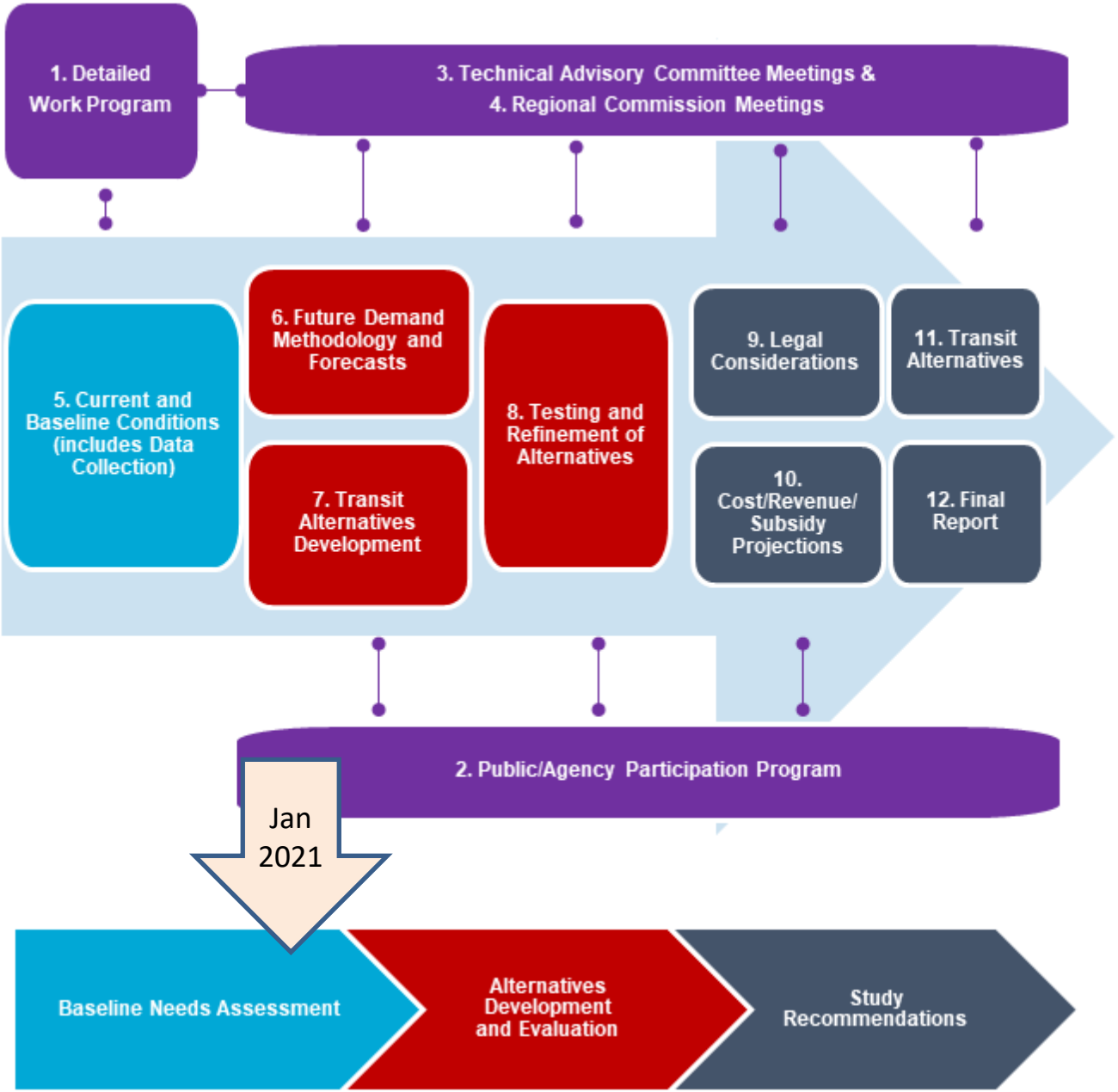
Springfield to Quantico Enhanced Public Transportation Feasibility Study

Technical Advisory Committee Meeting #3
January 21, 2021

Virginia Department of Rail and Public Transportation

Meeting Agenda

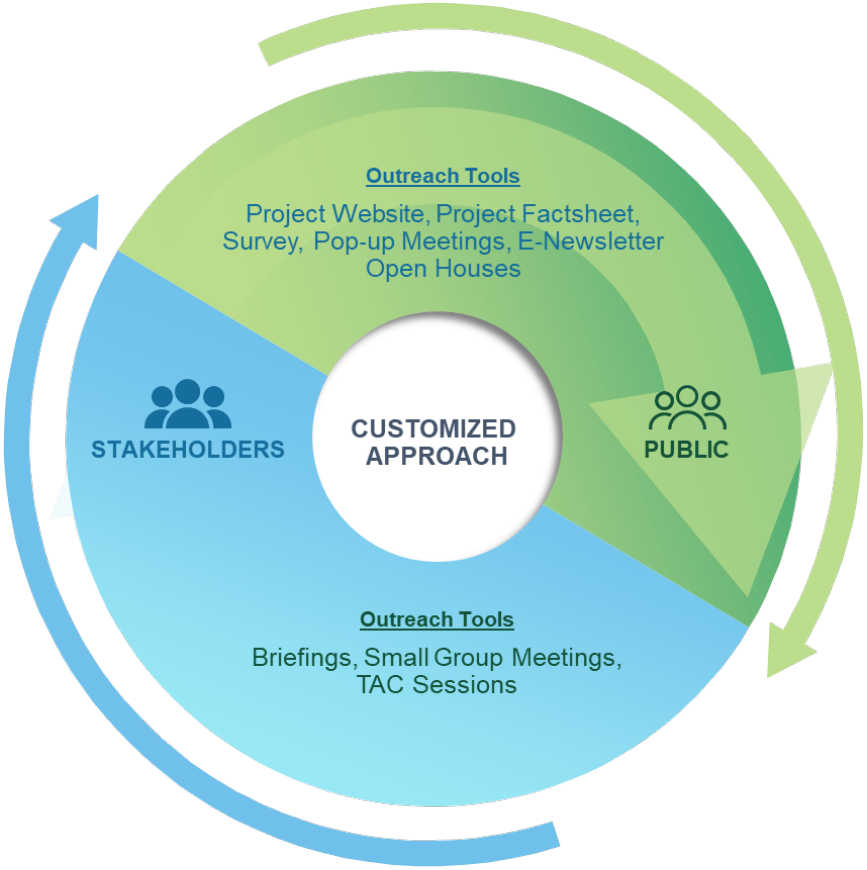
- Introductions / Welcome
- Meeting Objectives
- Public/Stakeholder Outreach Status
- Baseline Conditions Review
  - Existing Conditions
  - Future Baseline
- Needs Assessment
- Next Steps – Future TAC Meetings



New: Land Use Assessment Task

Public/Stakeholder Outreach Status

- Elected officials briefing postponed
- Public outreach materials under development:
  - Project Factsheet
  - DRPT Website Information
  - Potential survey questions



Baseline Conditions Review

Existing Conditions

- Land Use and Demographics
- Travel Patterns
- Transit Quality of Service and Ridership
- Highway Travel Time Analysis

Land Use and Demographics

CHANGE IN POPULATION DENSITY (2020 TO 2045)

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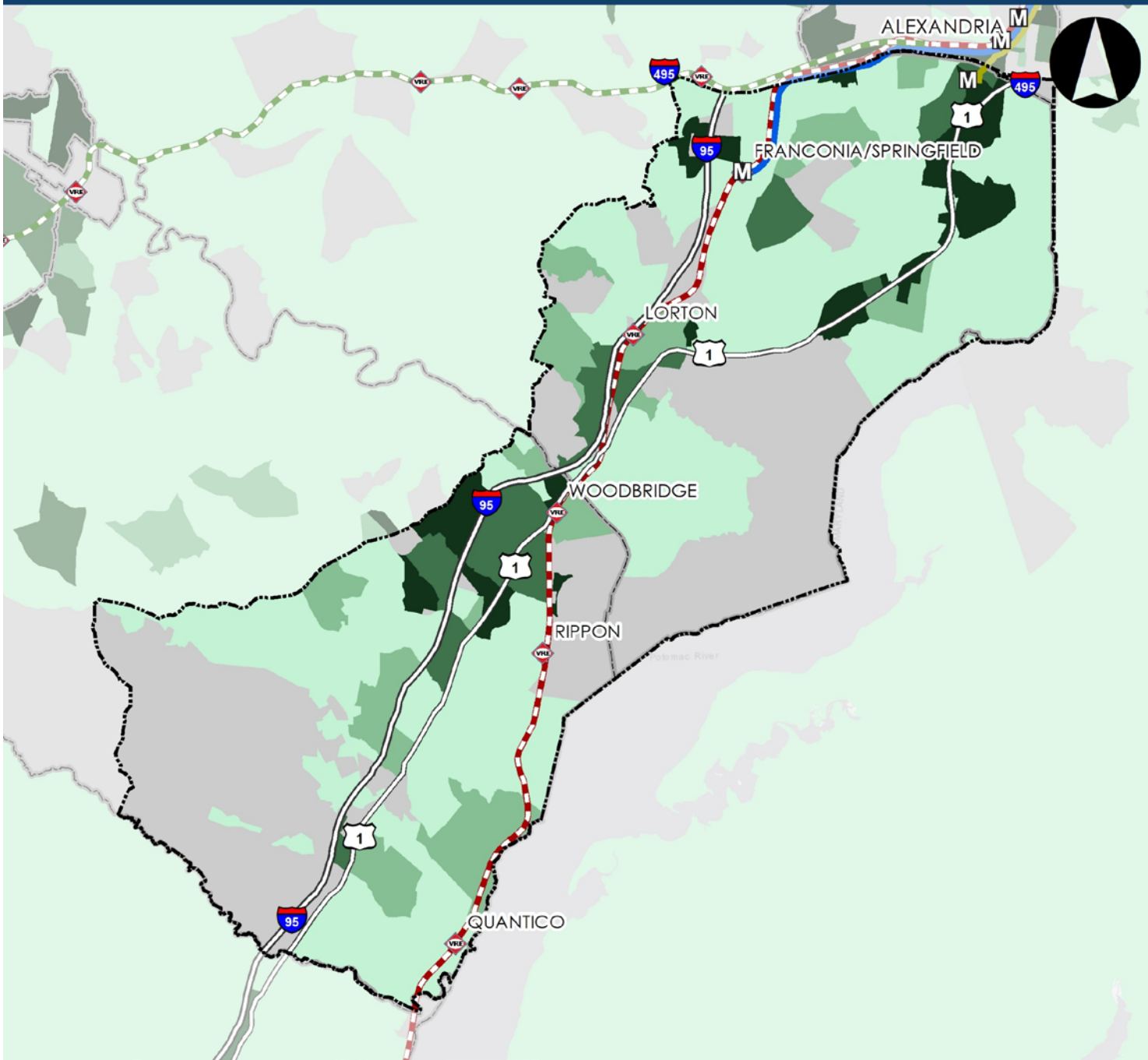


- Metrorail Stations
- Virginia Railway Express (VRE) Stations
- Study Area
- County Boundary
- I-95
- US Route 1

Metrorail Routes

- Blue
- Yellow

VRE Routes

- Fredericksburg
- Manassas

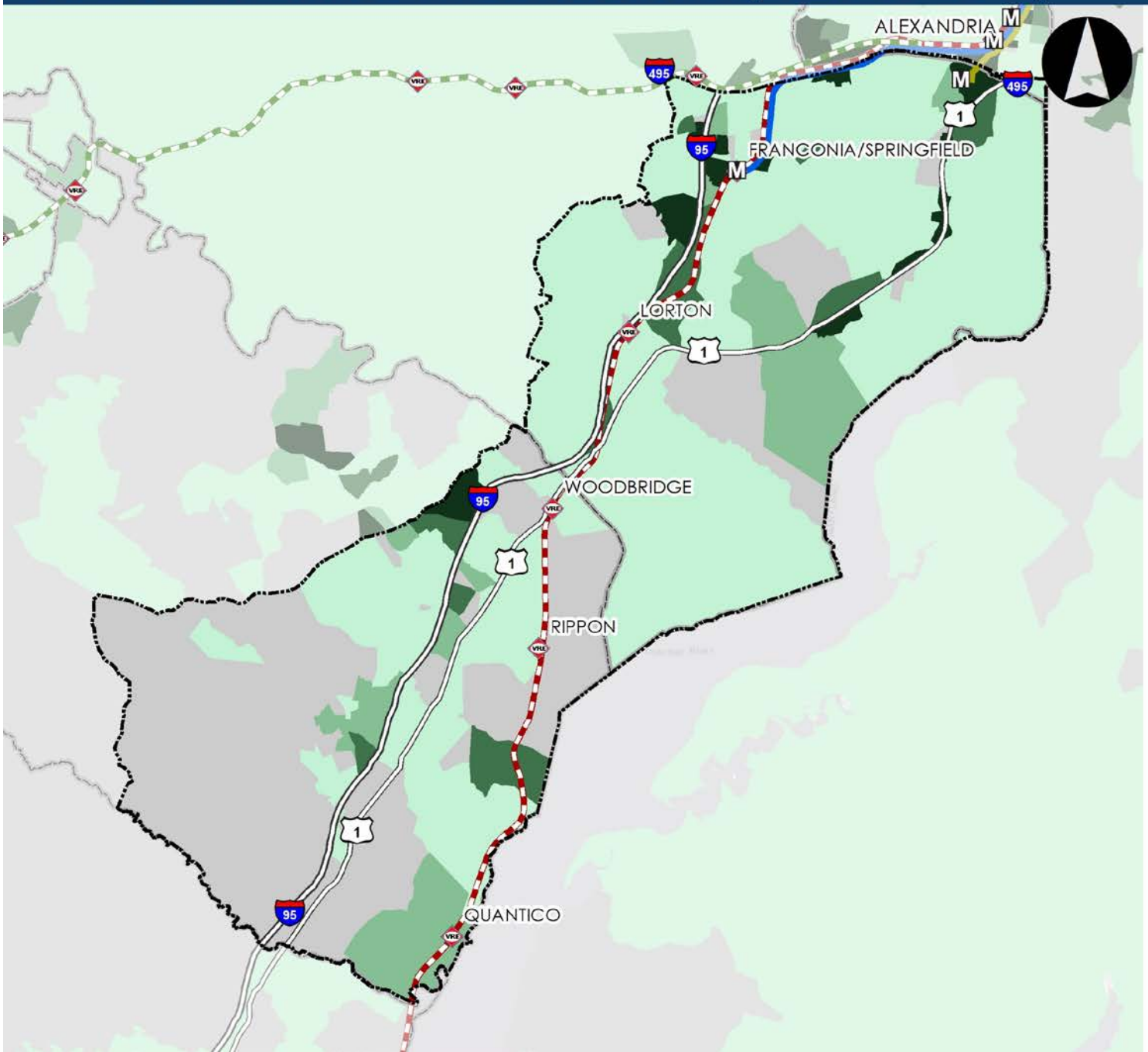
Change in Population per Sq. Mi (2020 to 2045)

- No Change/Decrease
- 0 - 500
- 500 - 1,000
- 1,000 - 2,500
- > 2,500

0 1 2 4 Miles

CHANGE IN EMPLOYMENT DENSITY (2020 TO 2045)

DRPT



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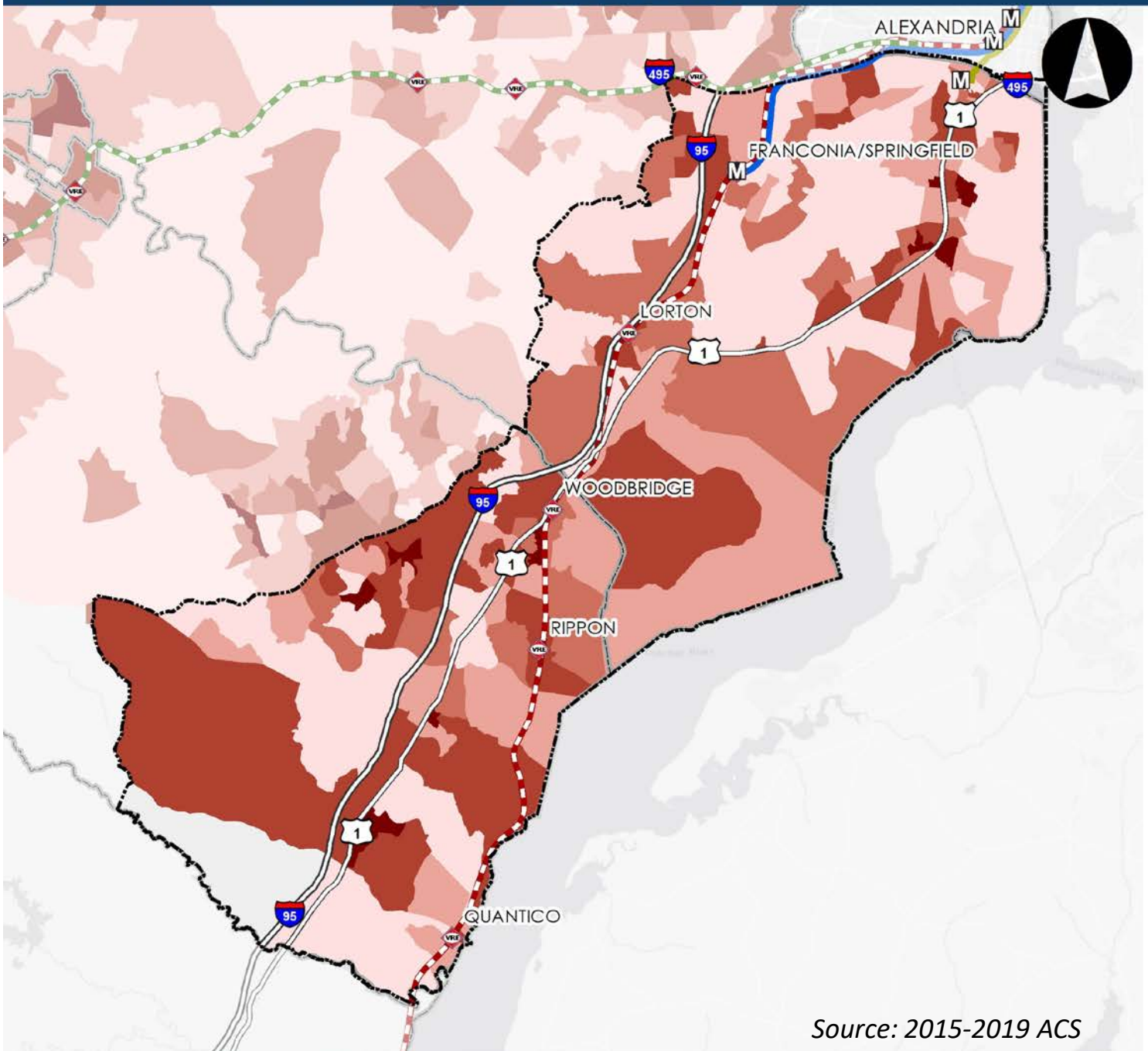
Change in Employment per Sq. Mi (2020 to 2045)

- No Change/Decrease
- 0 - 500
- 500 - 1,000
- 1,000 - 2,500
- > 2,500

0 1 2 4 Miles

POPULATION BELOW POVERTY LINE



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VRE Routes

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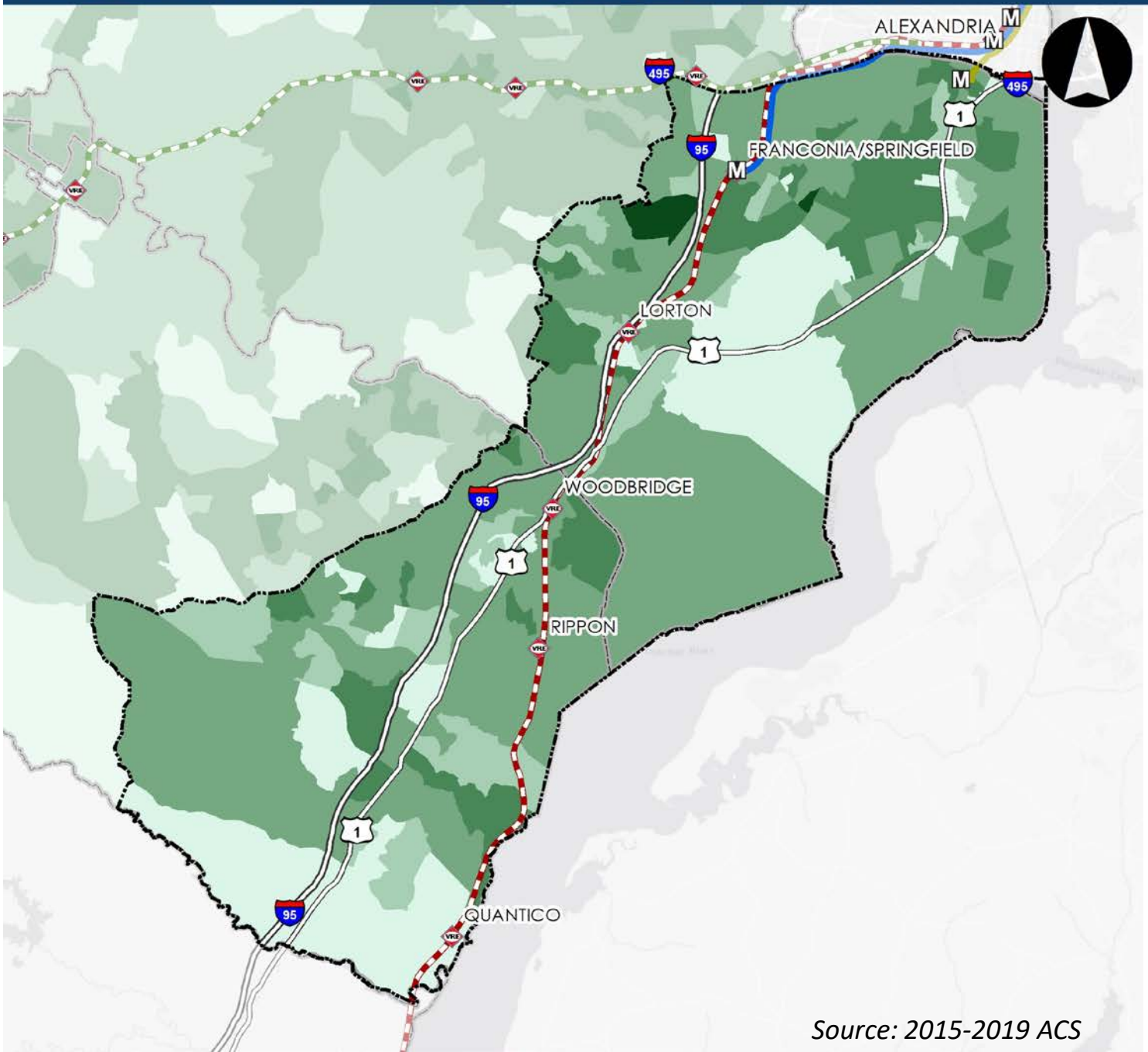
Percentage of Population Below the Poverty Line

- 0 - 2.5%
- 2.5% - 5.0%
- 5.0% - 10%
- 10.0% - 25.0%
- 25.0% - 100.0%

0 1 2 4 Miles

Source: 2015-2019 ACS

HOUSEHOLDS WITH LOW VEHICLE OWNERSHIP



Metrorail Stations

Virginia Railway Express (VRE) Stations

Study Area

County Boundary

I-95

US Route 1

Metrorail Routes

Blue

Yellow

VRE Routes

Fredericksburg

Manassas

Percentage of Households that Own 0-1 Vehicles

0% - 5%

5% - 10%

10% - 25%

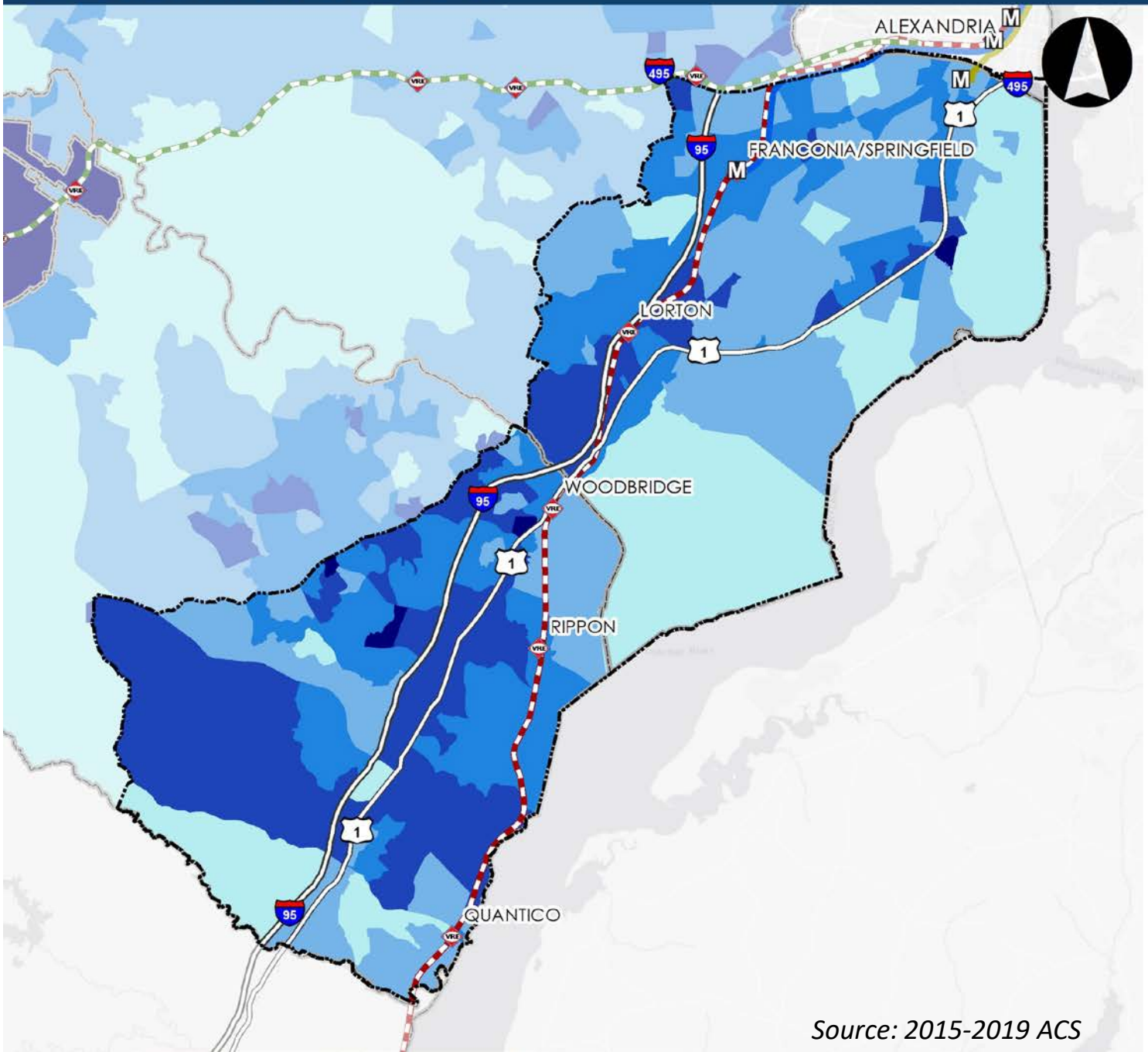
25% - 50%

50% - 100%

0 1 2 4 Miles

Source: 2015-2019 ACS

MINORITY POPULATION



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VRE Routes

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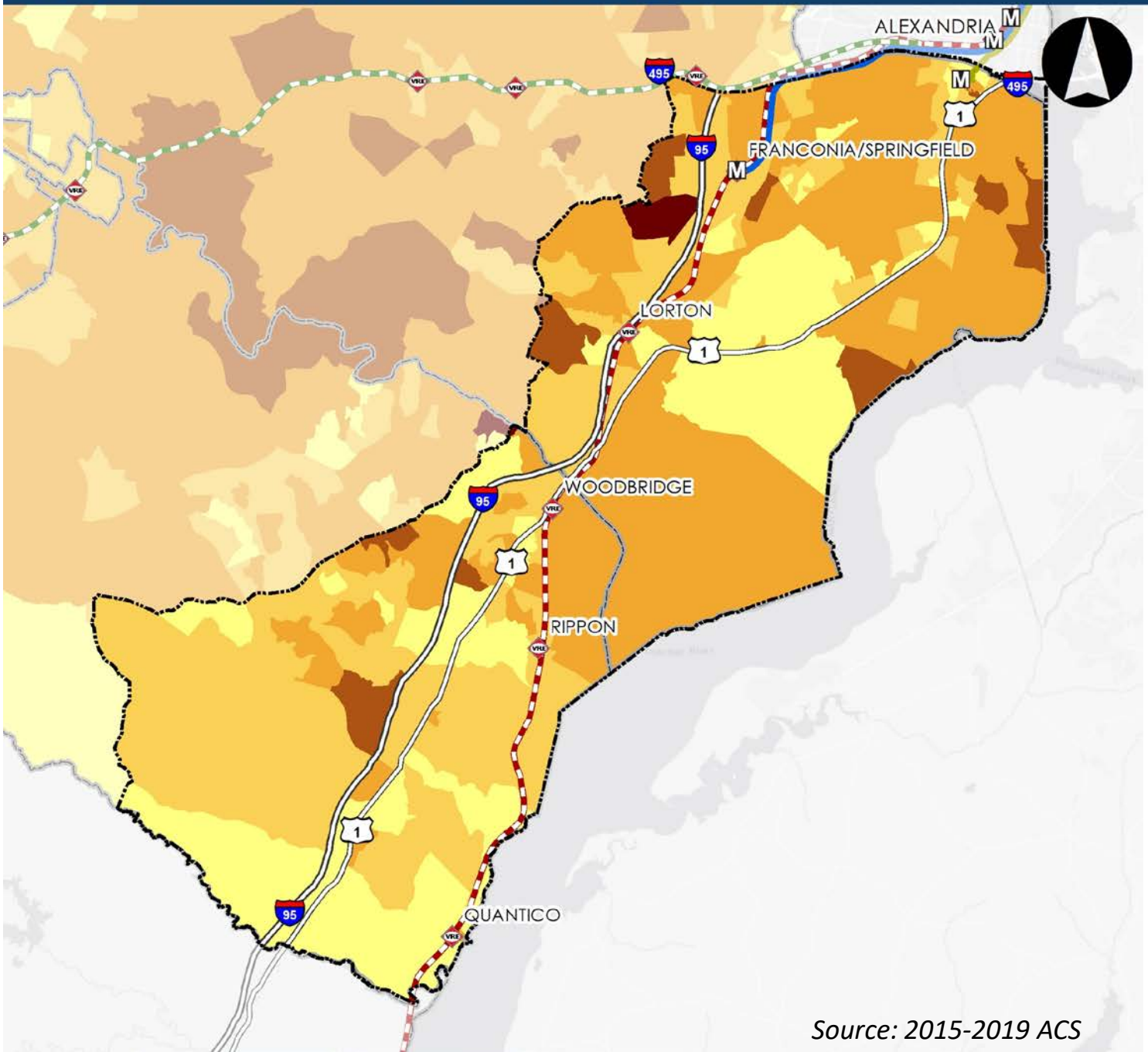
Percentage of Population that Isn't Only White

- 0% - 20%
- 20% - 40%
- 40% - 60%
- 60% - 80%
- 80% - 100%

0 1 2 4 Miles

Source: 2015-2019 ACS

POPULATION OVER 65 YEARS OLD



Metrorail Stations

Virginia Railway Express (VRE) Stations

Study Area

County Boundary

I-95

US Route 1

Metrorail Routes

Blue

Yellow

VRE Routes

Fredericksburg

Manassas

Percentage of Population over 65 Years Old

0 -5%

5% - 10%

10% - 25%

25% - 50%

50% - 100%

0 1 2 4 Miles

Source: 2015-2019 ACS

LIMITED ENGLISH PROFICIENCY (LEP) POPULATION

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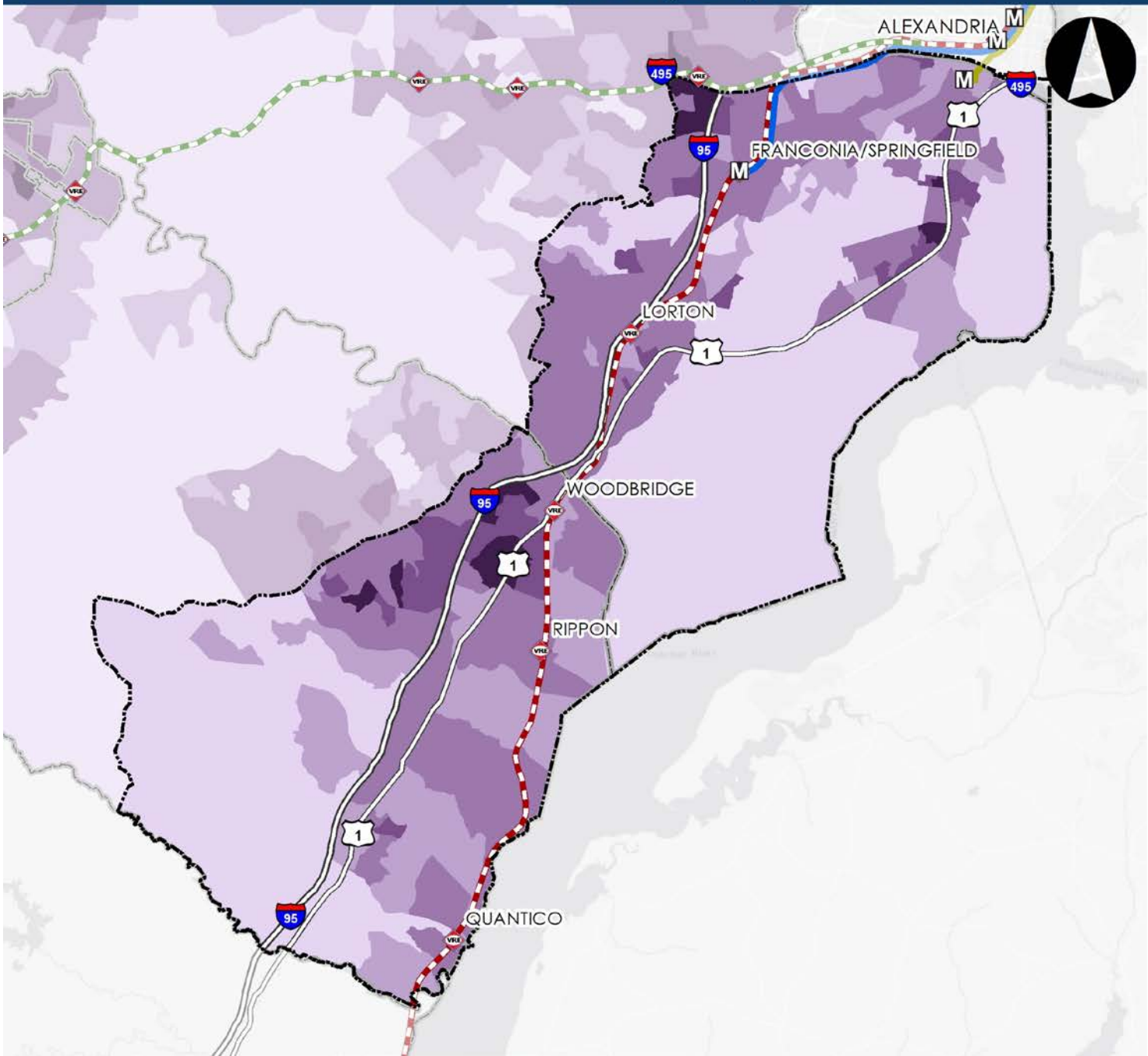

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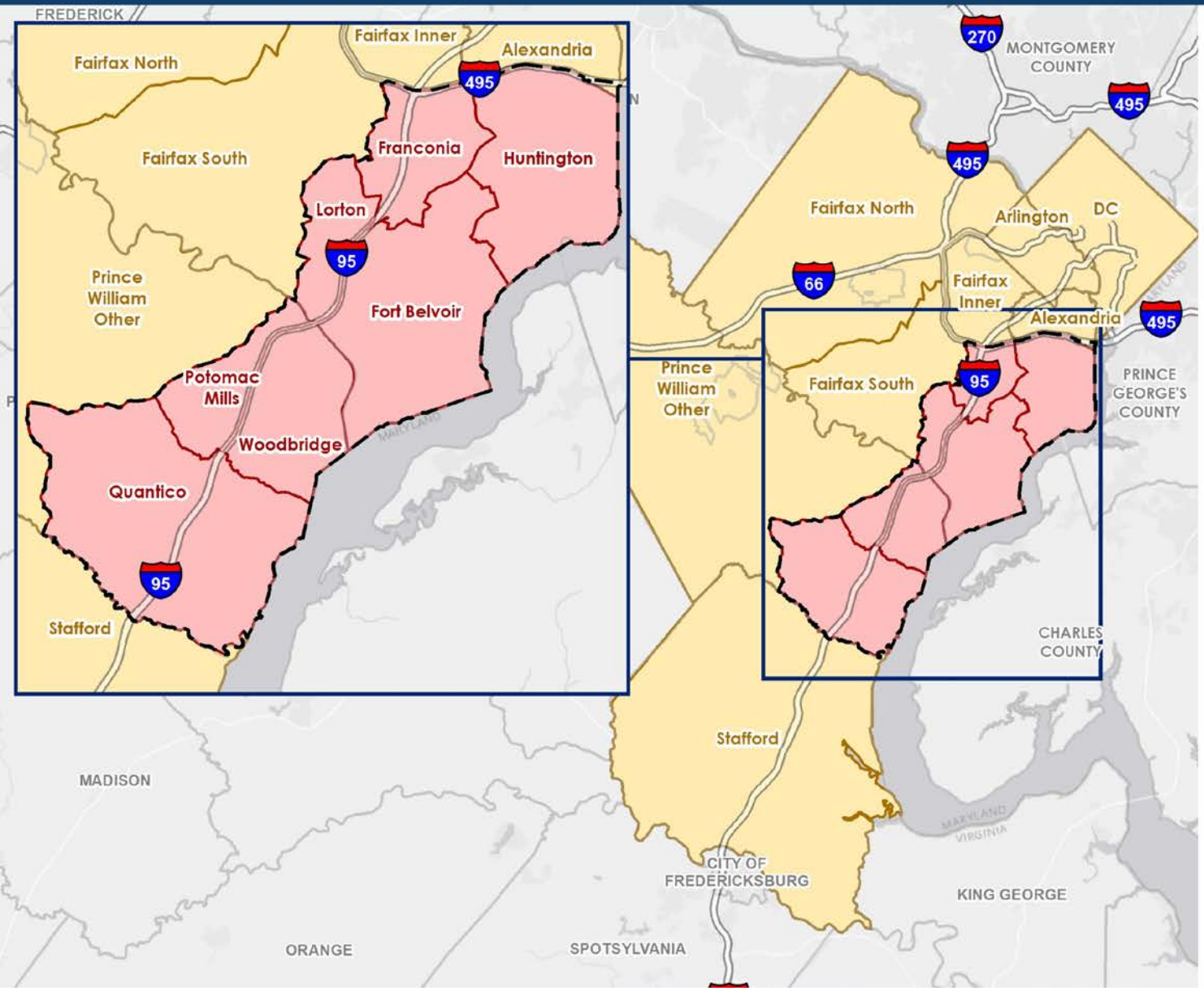
Percentage of Population Over 5 Who Don't Speak English "Very Well"

- 0% - 5%
- 5% - 10%
- 10% - 25%
- 25% - 40%
- 40% - 100%

0 1 2 4 Miles

Travel Patterns

TRAVEL PATTERN ANALYSIS DISTRICTS



County Boundaries

Study Area

Interstates

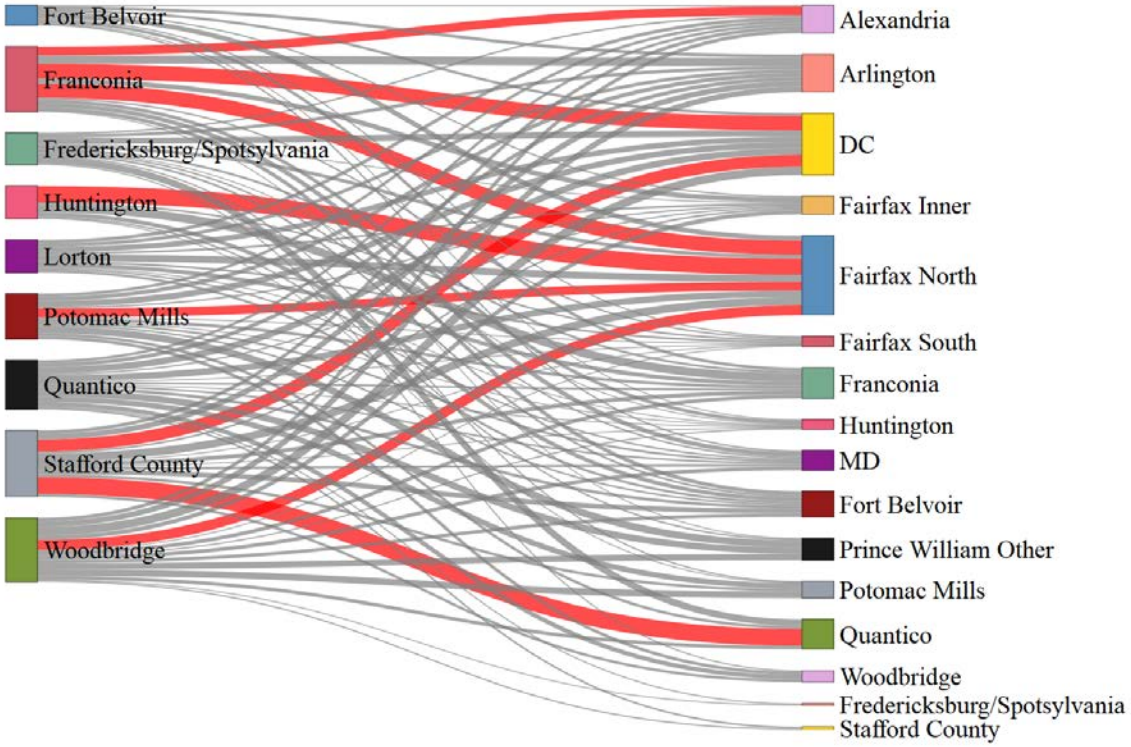
Districts

Outside Study Area

Inside Study Area

Existing Travel Patterns

From the Study Corridor and further south



Red lines show flows with >3,000 daily trips

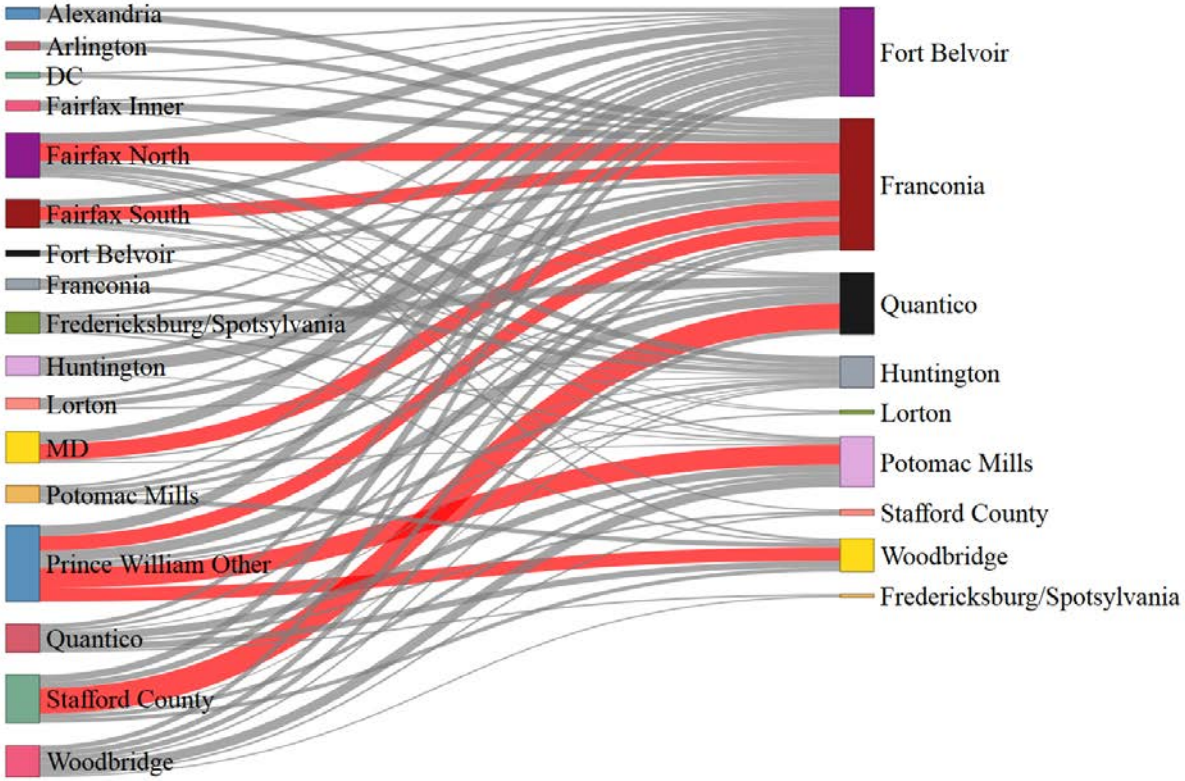
- > 280,000 daily commute trips
- 28% to destinations in the corridor
- Biggest commute destinations:
  - **Fairfax North (Tysons, Reston, etc.)**
  - **DC**
  - Quantico
  - Arlington
  - Franconia
  - Alexandria

DRPT

Source: 2012-16 CTPP

Existing Travel Patterns

To the Study Corridor



Red lines show flows with >3,000 daily trips

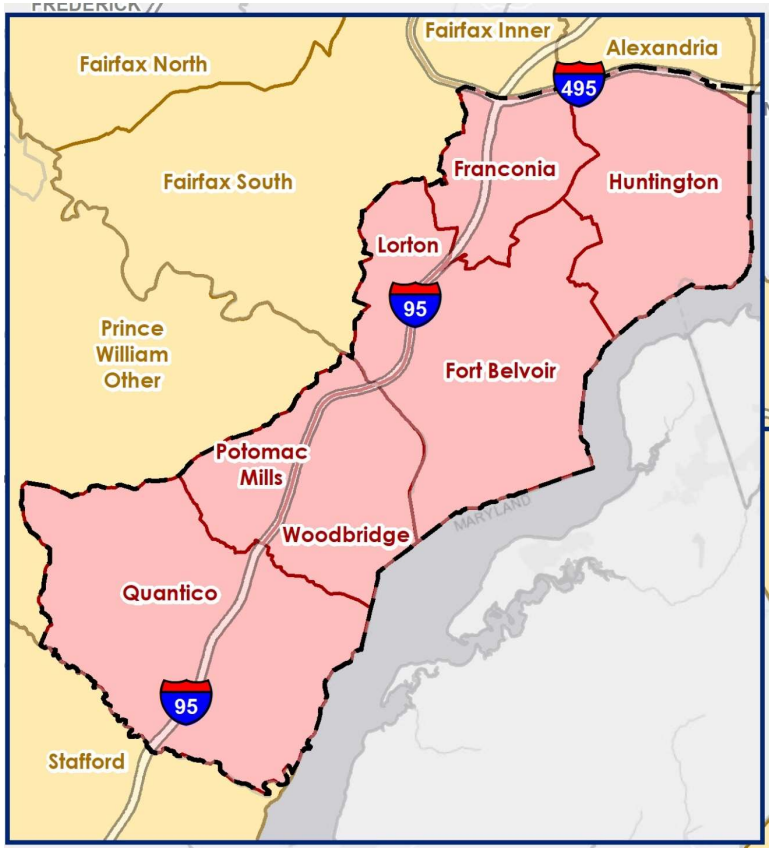
- > 63,000 daily commute trips
- 46% come from within the Study Corridor
- Biggest commute origins:
  - **Prince William County Other**
  - Stafford County
  - Fairfax North (Tysons, Reston, etc.)
  - Maryland
  - Fairfax South
  - Woodbridge

DRPT

Source: 2012-16 CTPP

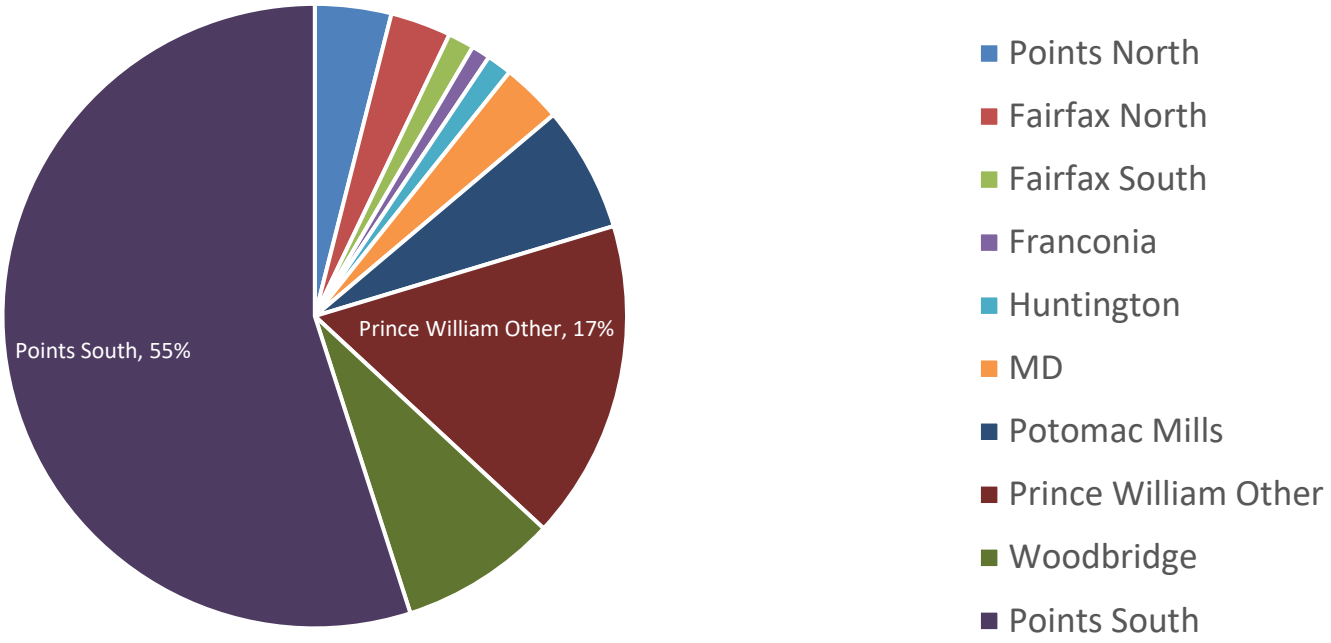
Existing Commute Patterns

- 36% of the commute trips that start in the Study Corridor, stay in the Study Corridor
  - Includes 19% of commute trips that start and end in the same District
  - More than 60% of total trips stay within the Study Corridor
- 38% of commute trips that start in the Study Corridor (or further south) are heading to points north including Inner Fairfax, DC, Alexandria & Arlington
- 23% of commute trips that start in the Study Corridor (or further south) may be using the corridor to access the Beltway



Existing Commute Patterns

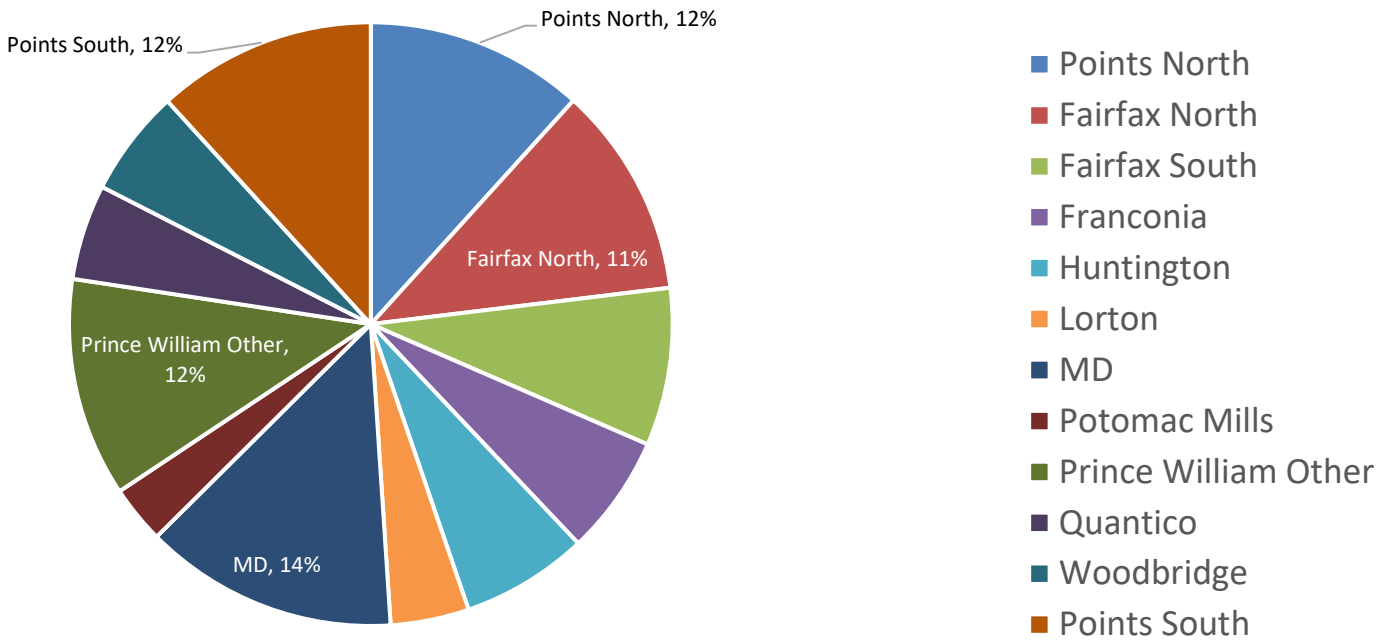
Commute Trips to Quantico



Does not include internal trips within the district

Existing Commute Patterns

Commute Trips to Ft Belvoir



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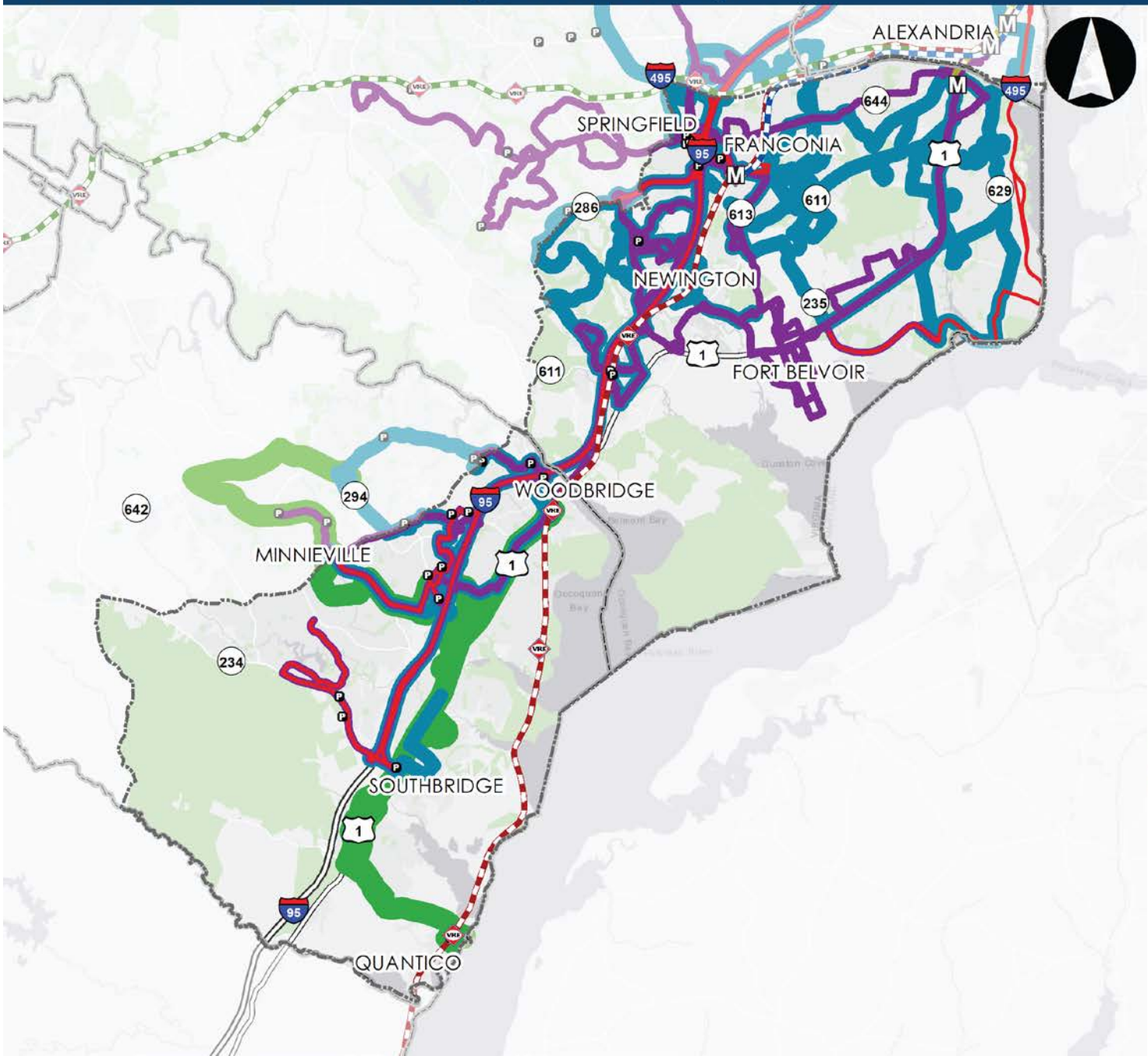
Transit Quality of Service and Ridership

Peak Services: Average Headways



- Study Area
- County Boundary
- Metrorail Stations
- Virginia Railway Express (VRE) Stations
- Park and Rides

Metrorail Routes

- Blue
- Yellow

VRE Routes

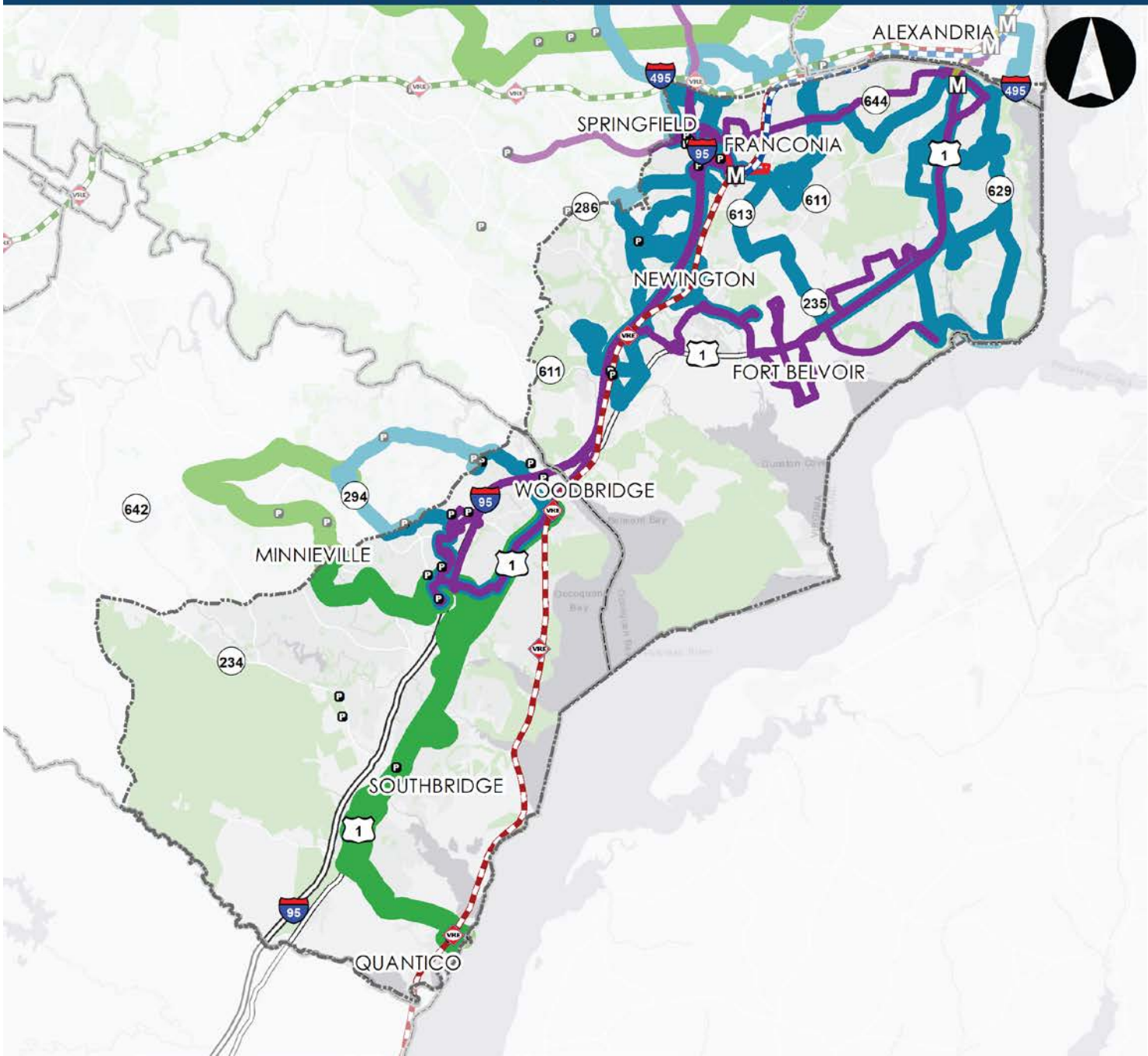
- Fredericksburg
- Manassas

Routes by Average Headway

- 15 minutes or less
- 16-30 minutes
- 31-45 minutes
- Over 45 minutes
- I-95
- US Route 1

0 1 2 4 Miles

Off Peak Services: Average Headways



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Metrorail Routes

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VRE Routes

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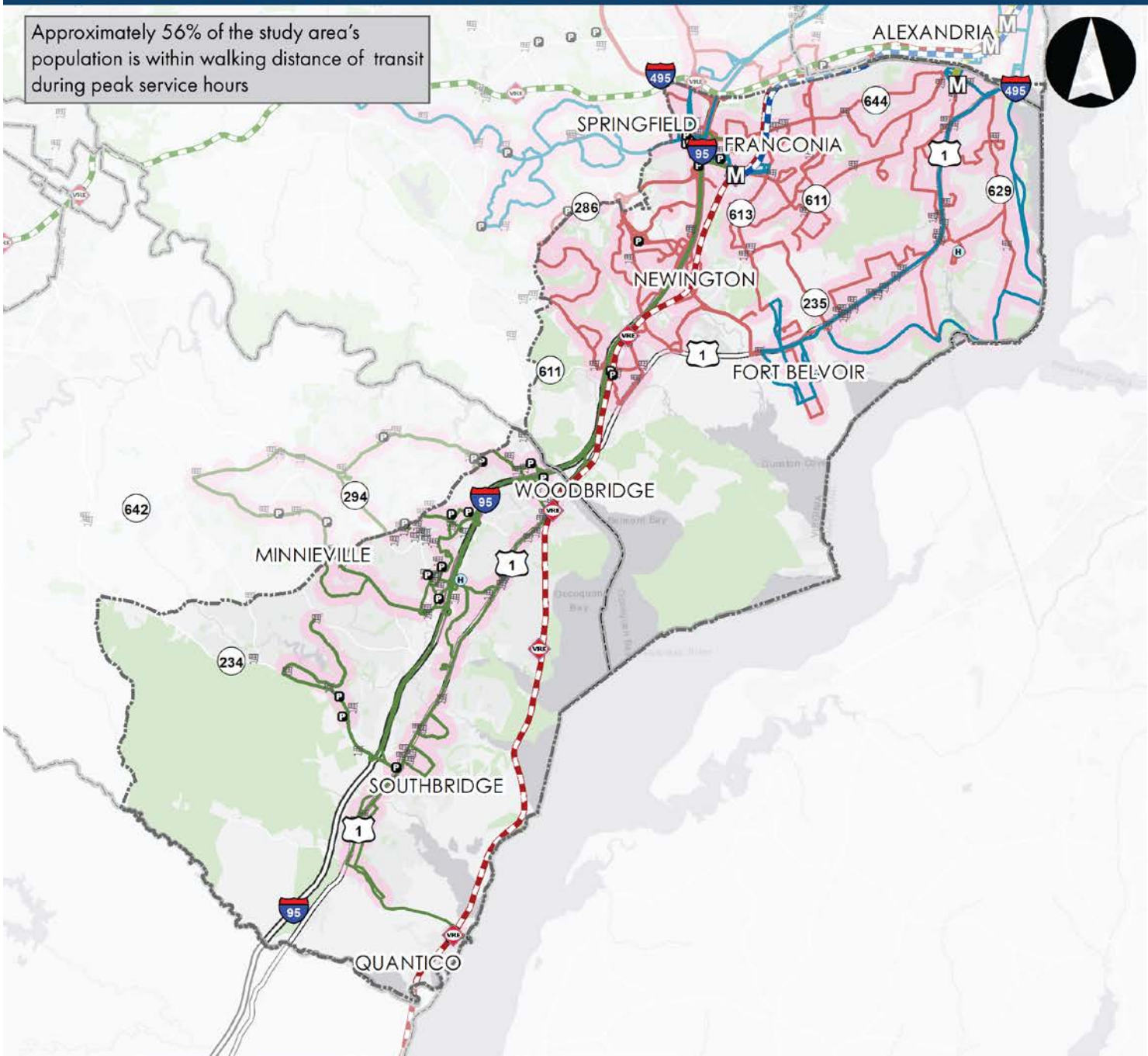
Routes by Average Headway

- 15 minutes or less
- 16-30 minutes
- 31-45 minutes
- Over 45 minutes
- I-95
- US Route 1

0 1 2 4 Miles

Peak Walkable Area within 1/4 Mile

Approximately 56% of the study area's population is within walking distance of transit during peak service hours



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- Park and Rides
- Shopping Centers
- Hospitals

Metrorail Routes

- Blue
- Yellow

VRE Routes

- Fredericksburg
- Manassas

Study Area Bus Routes

- Fairfax Connector
- OMNIRIDE
- WMATA

- Peak 1/4 Mile Buffer
- I-95
- US Route 1

0 1 2 4 Miles

Off Peak Walkable Area within 1/4 Mile

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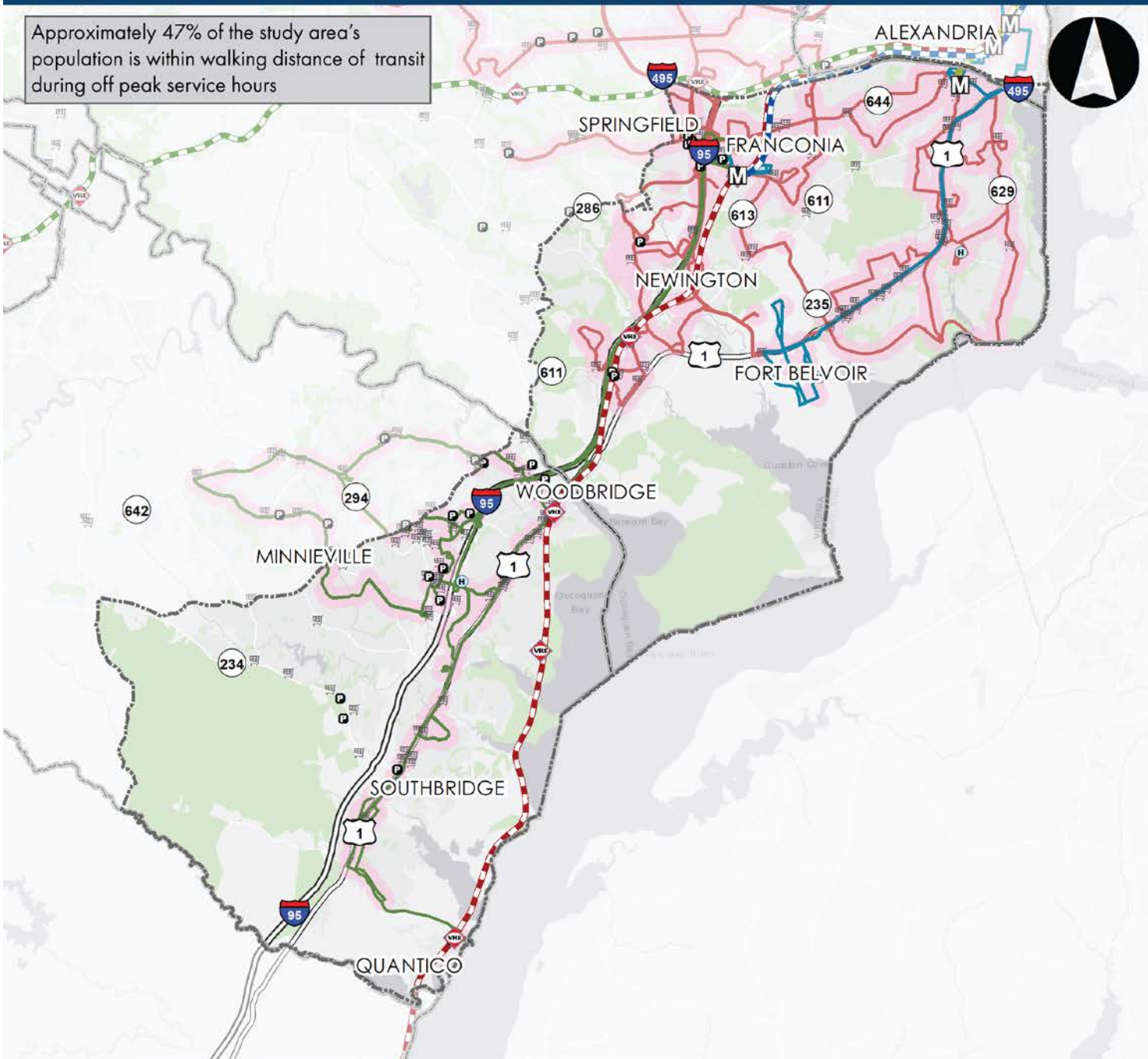
Virginia Department of Rail and Public Transportation

Approximately 47% of the study area's population is within walking distance of transit during off peak service hours



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- Hospitals

Metrorail Routes

- Blue
- Yellow

VRE Routes

- Fredericksburg
- Manassas

Study Area Bus Routes

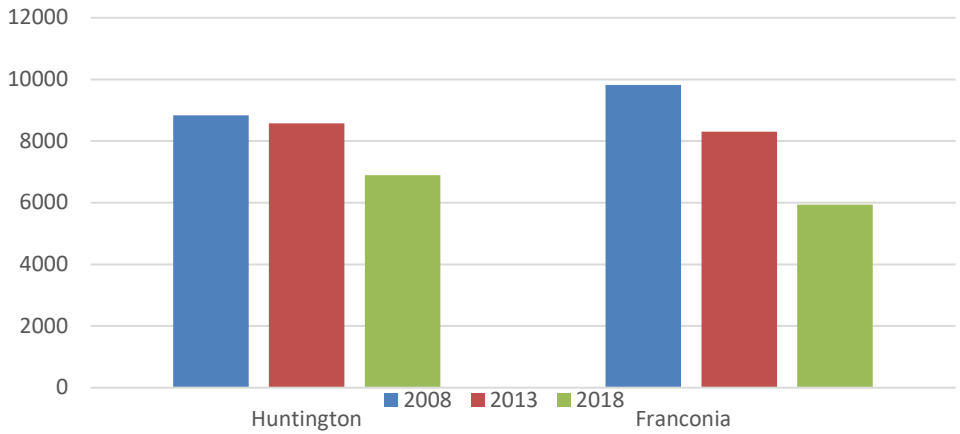
- Fairfax Connector
- OMNIRIDE
- WMATA

- Off Peak 1/4 Mile Buffer
- I-95
- US Route 1

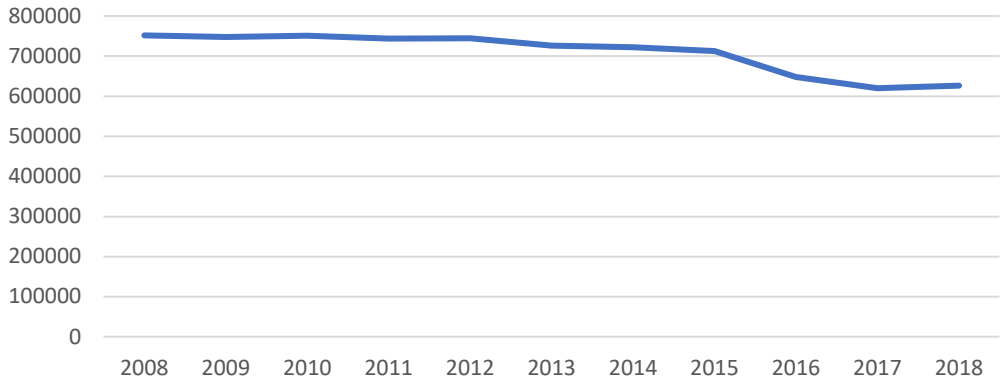
0 1 2 4 Miles

Metrorail Ridership

Average Weekday Boardings, 2008-2018 (May)

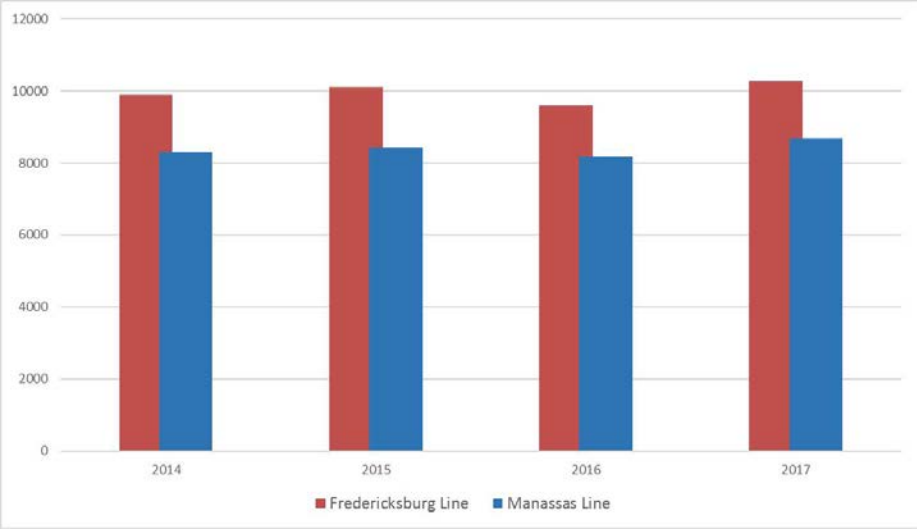


Metrorail System Total



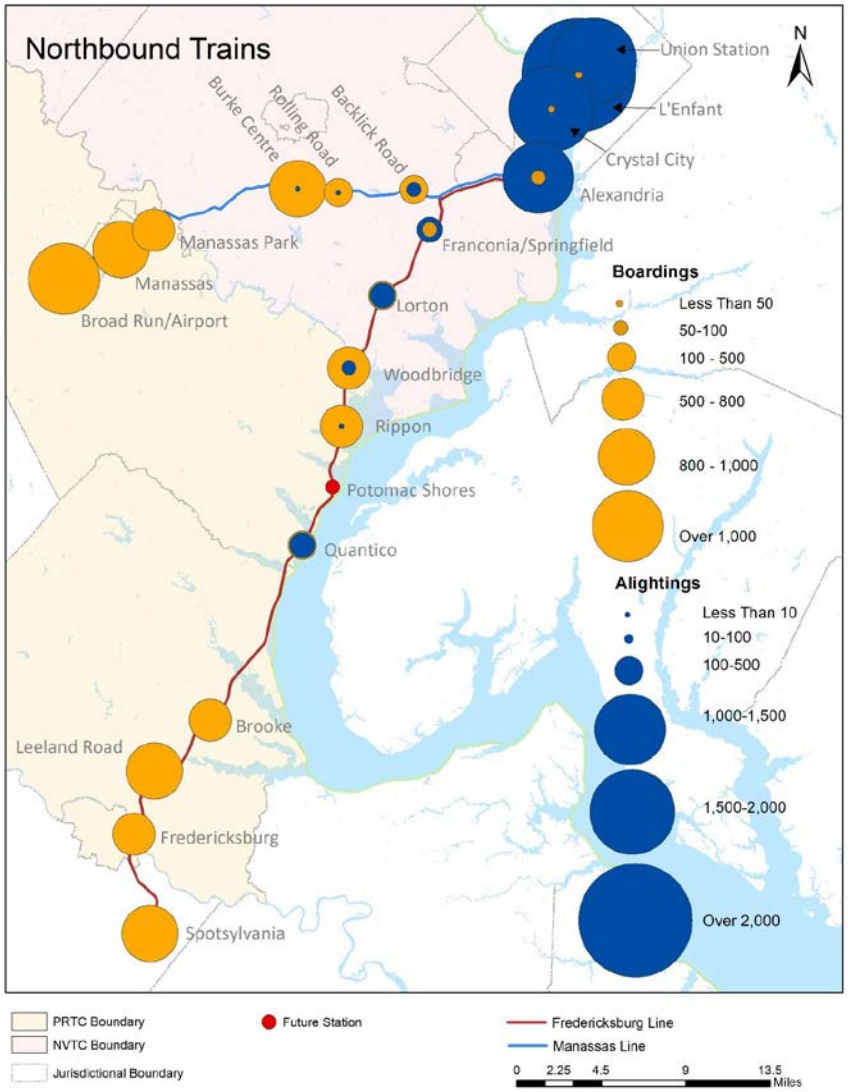
VRE Ridership

FY2014-FY2017 Annual Average Daily Ridership by Line



Source: FY2020 – FY2025 Transit Development Plan

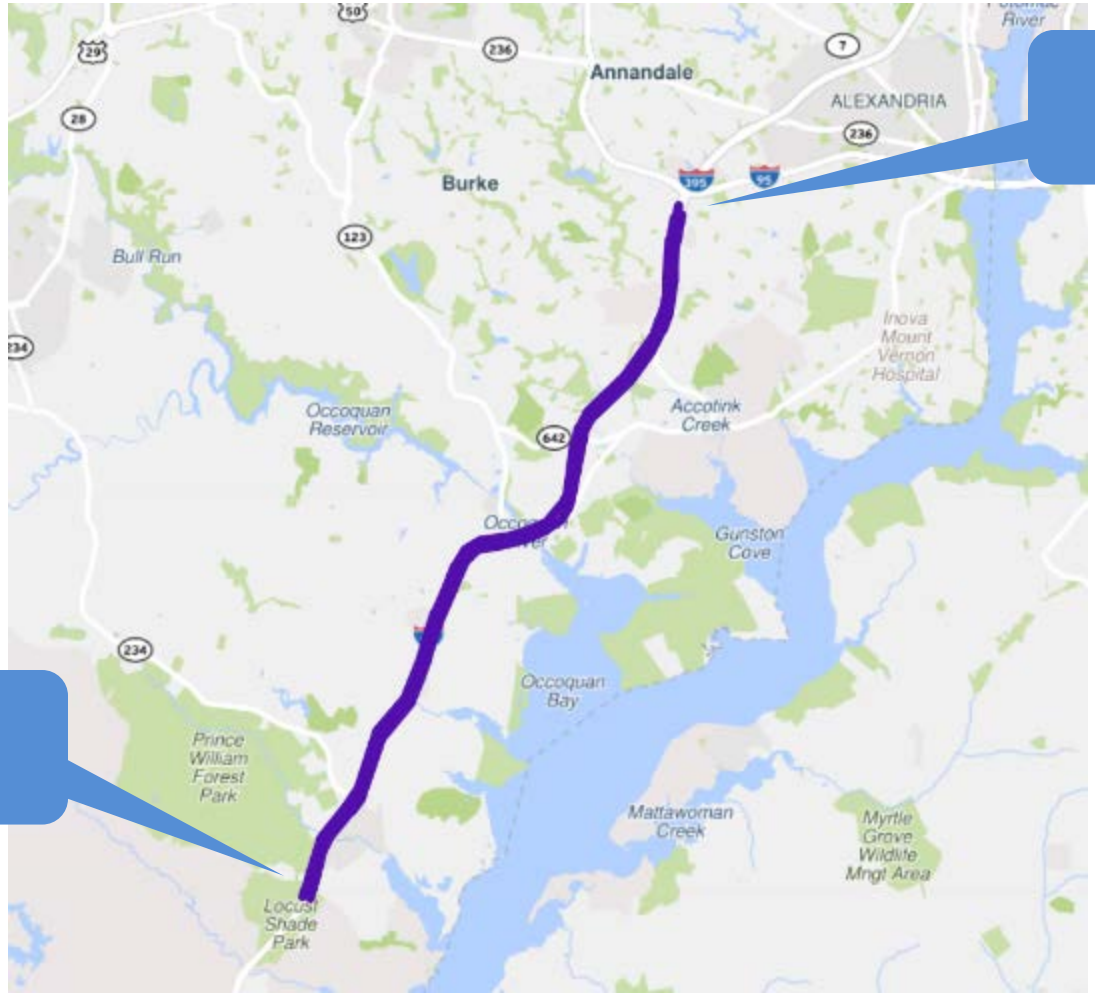
2018 Boarding and Alighting at VRE Stations



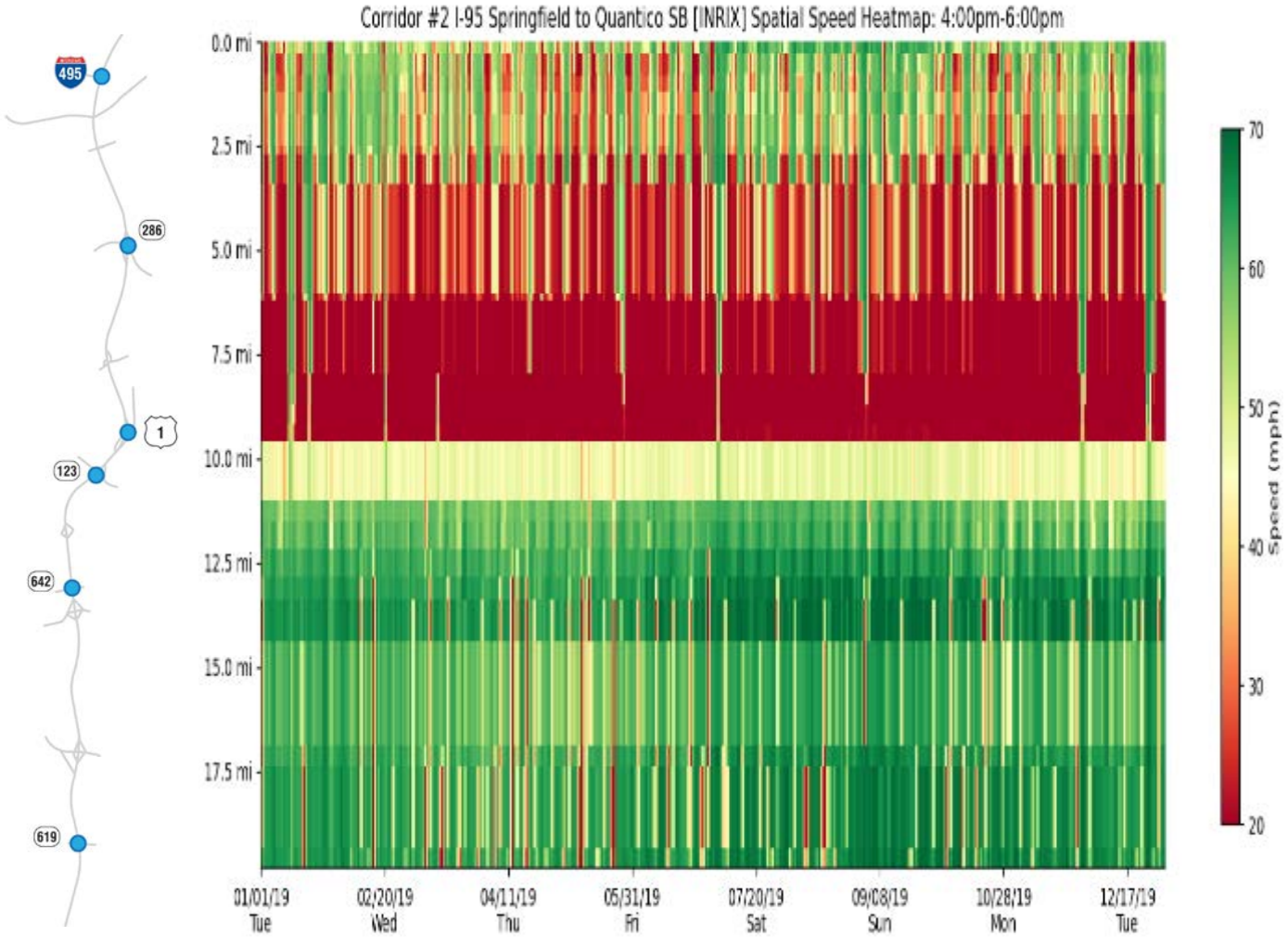
Highway Speeds and Reliability

Highway Travel Time Analysis using Vehicle Probe Data

- I-95 Highway Analysis Boundaries



Interstate-95 Southbound Vehicle Speeds



- Congestion is daily
- It is focused on Occoquan weave and lane drop
- Traffic can be slow to the Beltway

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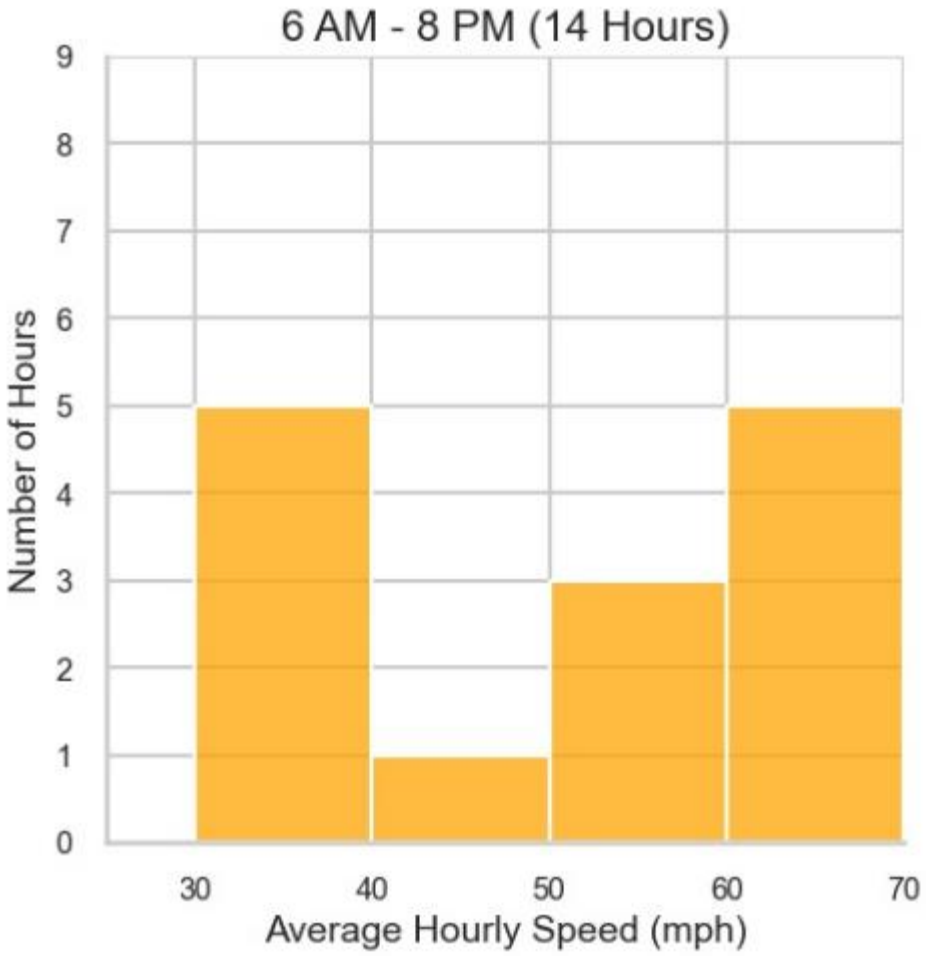
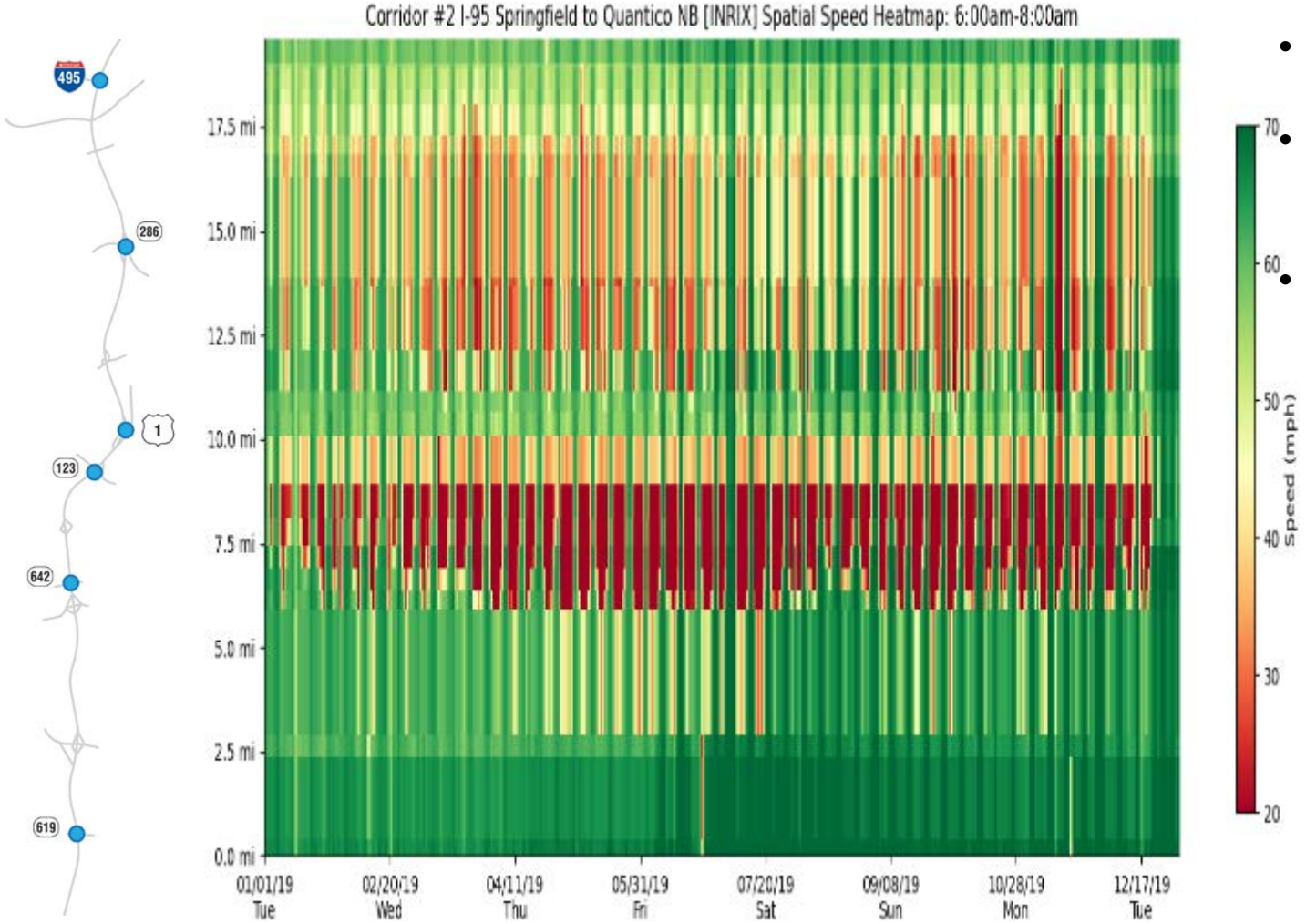
Interstate-95 Southbound: Congestion Duration

Measure	Value
Springfield to Quantico Distance	19.8 miles
Free-flow speed	65 mph
Free-flow travel time	18 minutes



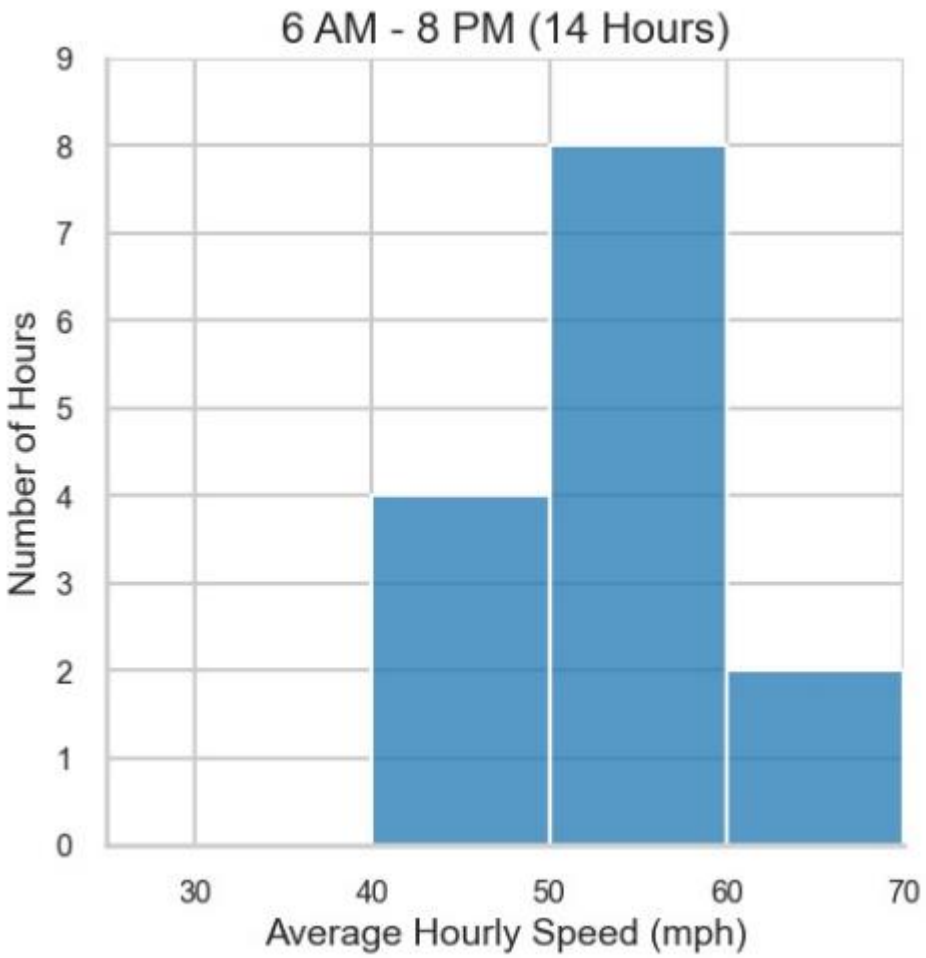
Interstate-95 Northbound Vehicle Speeds



- Congestion on weekdays
- It is focused on Occoquan weave and I-495 ramps
- Traffic can be slow for multiple miles for both

Interstate-95 Northbound: Congestion Duration

Measure	Value
Springfield to Quantico Distance	19.6 miles
Free-flow speed	67 mph
Free-flow travel time	18 minutes



Future Baseline Travel Forecasts

Travel Forecasts: 2019-2045

Regional and Study Area Growth Forecasts (2019-2045)

	Population	Jobs	Transit Trips	Total Motorized Trips
Study Area	25.3%	36.8%	37.2%	18.2%
TPB Model Region	23.0%	28.8%	37.4%	19.2%

Traffic and Transit Volumes at Cutlines

Peak Period Traffic Volume Growth at Cutlines (2019-2045)

Cutline	AM PK Volume NB	AM PK Volume SB	PM PK Volume NB	PM PK Volume SB
Franconia-Springfield Parkway (VA289)-Dogue Creek	7%	19%	18%	10%
Occoquan River	10%	13%	16%	12%
Prince William/Stafford Line	25%	18%	18%	22%

Daily Volume by Mode Growth at Cutlines (2019-2045)

Cutline	Vehicles	Transit	Total
Franconia-Springfield Parkway (VA289)-Dogue Creek	15%	38%	17%
Occoquan River	17%	67%	19%
Prince William/Stafford Line	25%	95%	26%

Transit Ridership and Access Modes

Study Area Ridership (Boardings), 2019-2045

	Change
Fairfax Connector	-0.1%
Metrobus	41.6%
Richmond Highway BRT	
Commuter Buses (PRTC and MARTZ)	58.3%
Metrorail (2 stations)	
Franconia-Springfield	7.5%
Huntington	85.8%
Commuter Rail (VRE and Amtrak)	73.9%
Study Corridor Total	**61.1%**

2019 Transit Access Mode

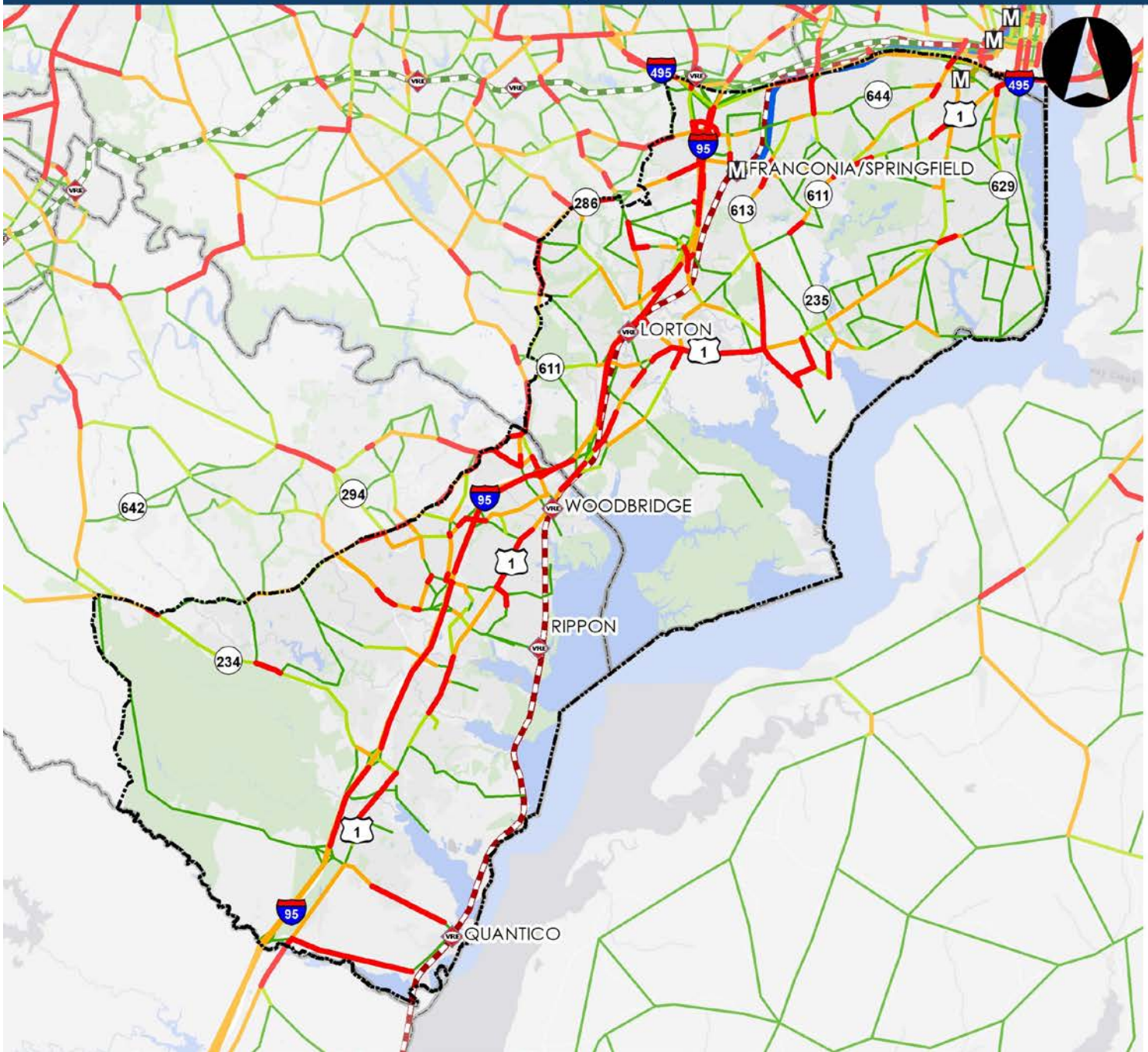
	Walk	Drive	Bus Transfer
Metrorail	25%	49%	25%
Commuter Rail	20%	80%	

2045 Transit Access Mode

	Walk	Drive	Bus Transfer
Metrorail	33%	39%	28%
Commuter Rail	17%	83%	

2019 CONGESTION LEVELS (AM)

DRPT



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Metrorail Routes

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VRE Routes

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- Manassas

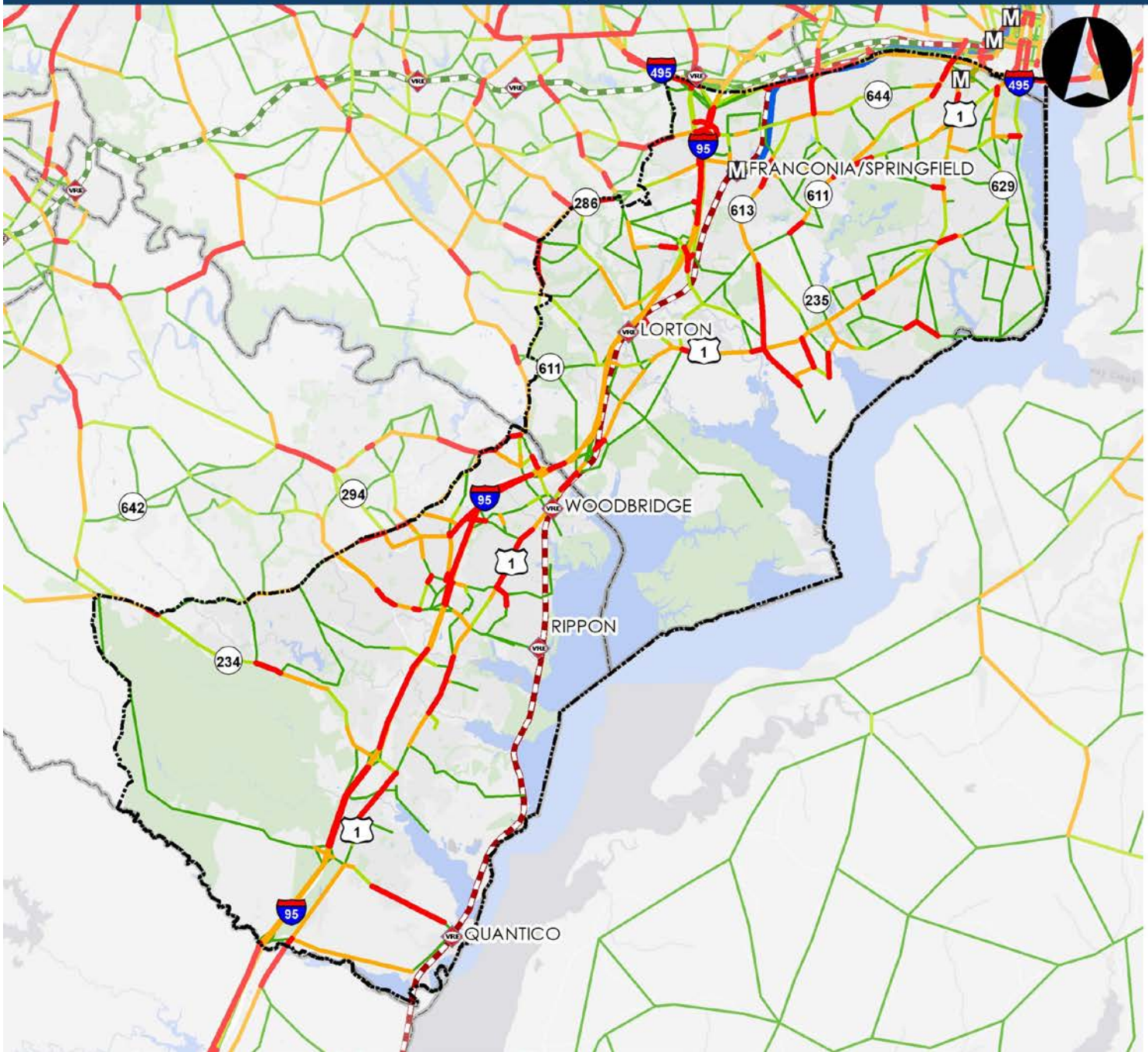
Volume/Capacity Ratio (AM Peak)

- < 0.63
- 0.63 - 0.79
- 0.79 - 1.00
- > 1.00

0 1 2 4 Miles

2019 CONGESTION LEVELS (PM)

DRPT



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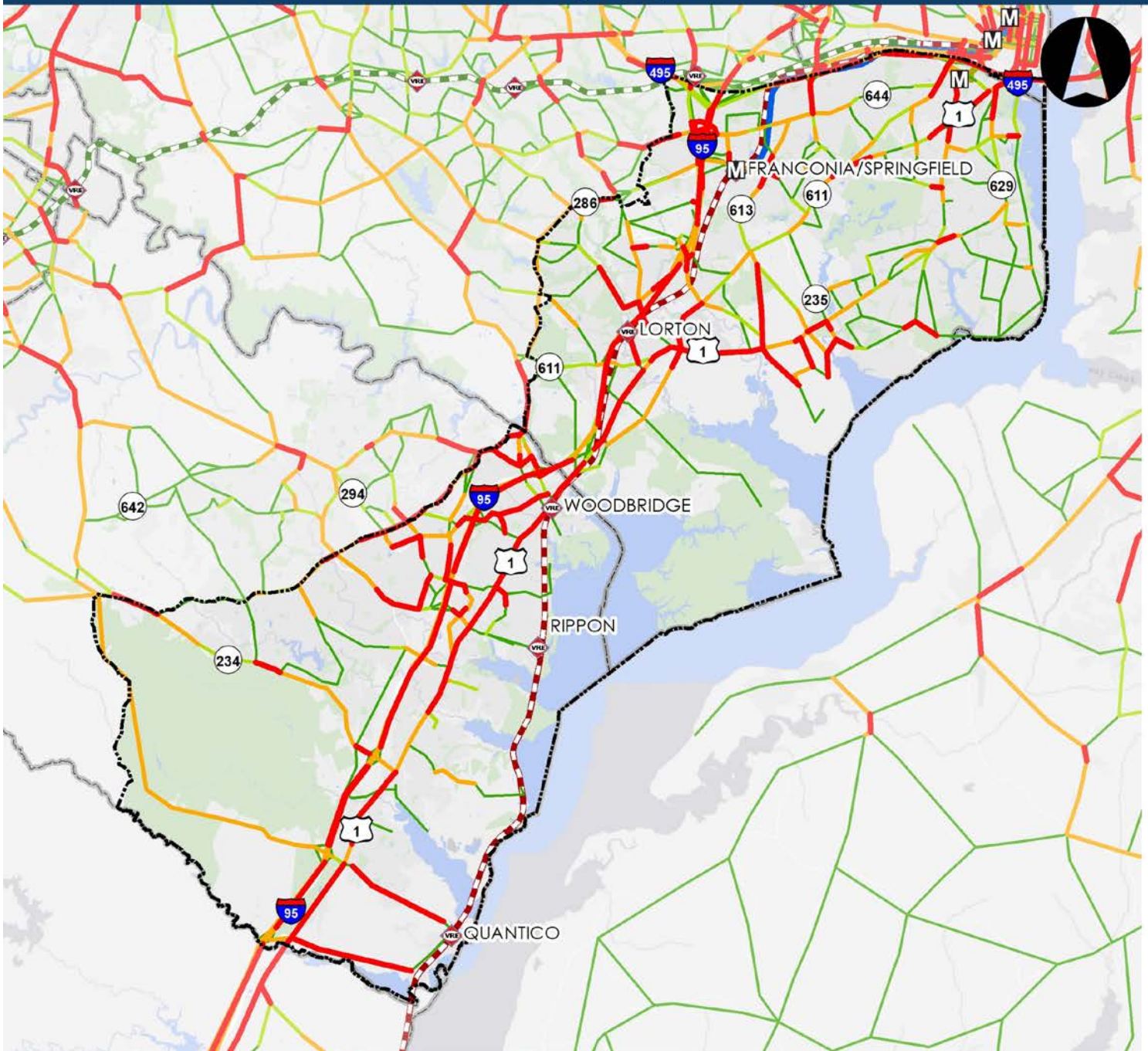
2045 CONGESTION LEVELS (AM)

DRPT



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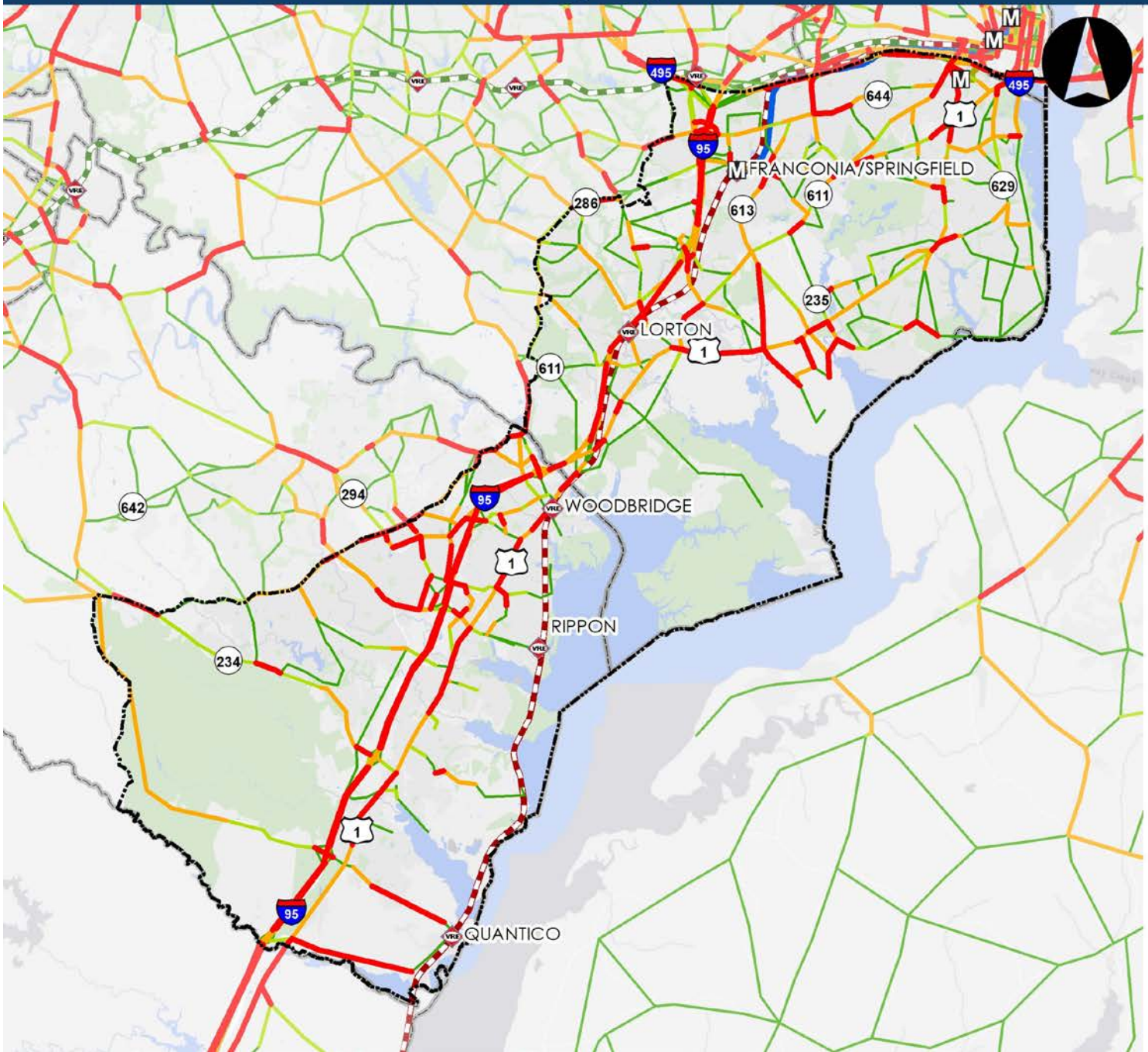

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0 1 2 4 Miles

Needs Assessment

Need for Enhanced Transit

Needs are identified through three primary inputs:

1. Review and analysis of past plans and studies and current policy guidance
2. Assessment of existing and forecasted/desired conditions for transportation and land use
3. Engagement with the community and solicitation of public and stakeholder input

Enhanced Public Transportation is Needed Because …

- Land Use and Demographics: Growth projections for the corridor show that the corridor will increase in population and jobs. This corridor has a specific need to connect low-income and minority population to job opportunities
- Future Development: Existing transportation services and networks may need enhancements to support planned land uses and economic development
- Travel Markets Served by Transit: While the corridor has multiple transit options for commuting trips to the DC/Arlington core, gaps remain for intra-corridor and suburb-to-suburb trips

Enhanced Public Transportation is Needed Because …

- Connections to Activity Centers: Transit connections to key regional activity centers, such as Fort Belvoir and Quantico bases, are limited and infrequent
- Transit Service Quality and Ridership: Transit service quality is more competitive for commute trips to the core.
- Access to Transit Services: Access is reliant on park & ride or longer walks to bus routes, posing a particular challenge for transit-dependent riders
- Traffic Congestion and Travel Times: Traffic congestion is severe and continuing to get worse, resulting in slow and unreliable travel times for drivers and buses in mixed-traffic

Schedule for Future TAC Meetings

TAC #	Month	Topics to Be Covered
4	Feb. 2021	• Approach to Transit Alternatives Development (Task 7) • Cost/Revenue/Subsidy Methodology (Task 10)
5	Mar. 2021	• Transit Alternatives Development (Task 7)
6	Apr. 2021	• Transit Alternatives Development (Task 7)
7	May 2021	• Testing of Alternatives – Initial Results (Task 8)
8	Jun. 2021	• Testing of Alternatives – Refinements and Sensitivity Tests (Task 8) • Legal Considerations (Task 9) • Cost/Revenue/Subsidy Projections (Task 10)
9	Jul. 2021	• Summary of Transit Alternatives Results (Task 11)
10	Aug.2021	• Draft Study Findings and Recommendations (Task 12)

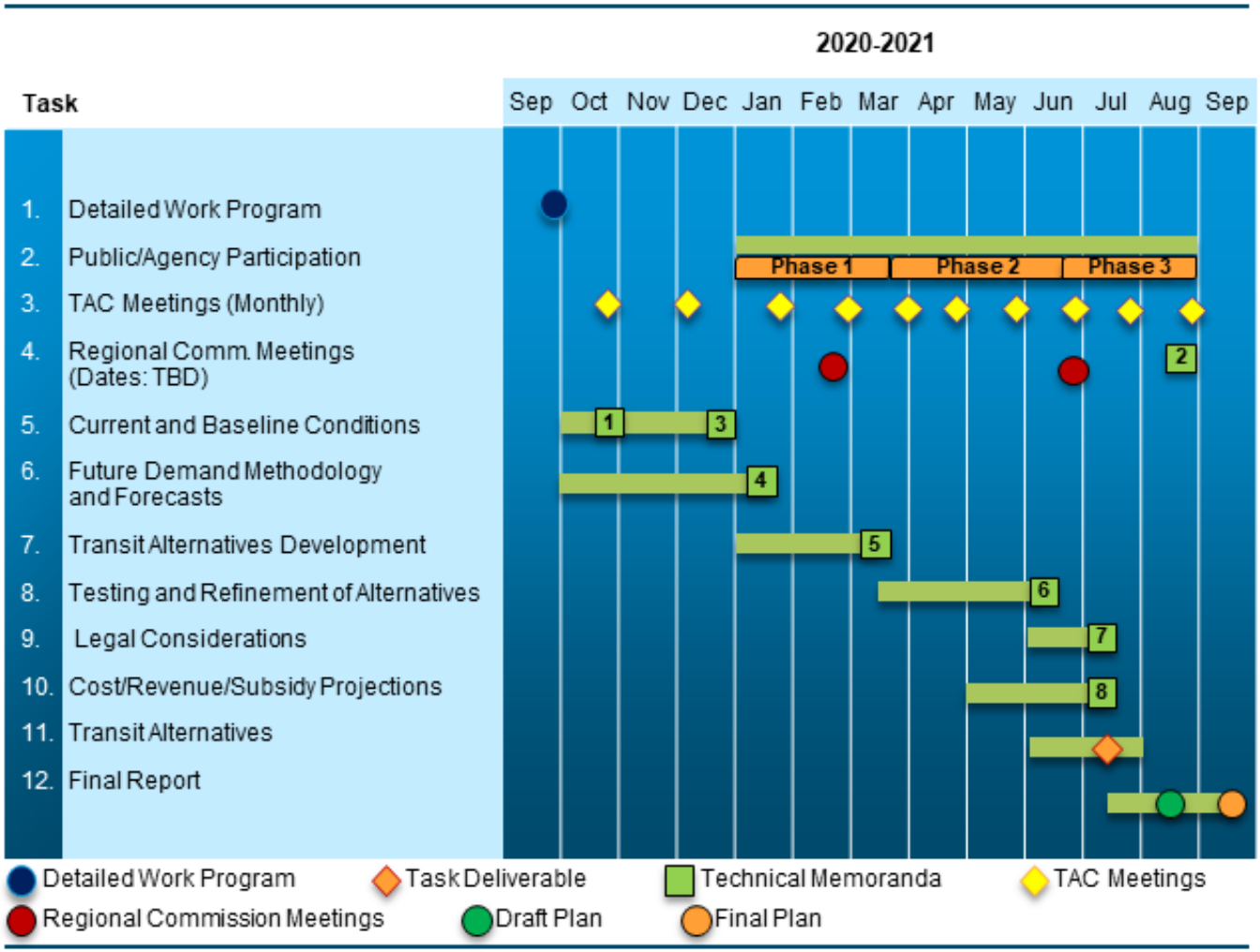
Additional Slides

Study Purpose

This study will provide a comprehensive, objective evaluation of a range of potential future enhanced transit alternatives that compares the cost, benefits, and impacts of each option to inform recommendations about future investment in the corridor.

DRPT

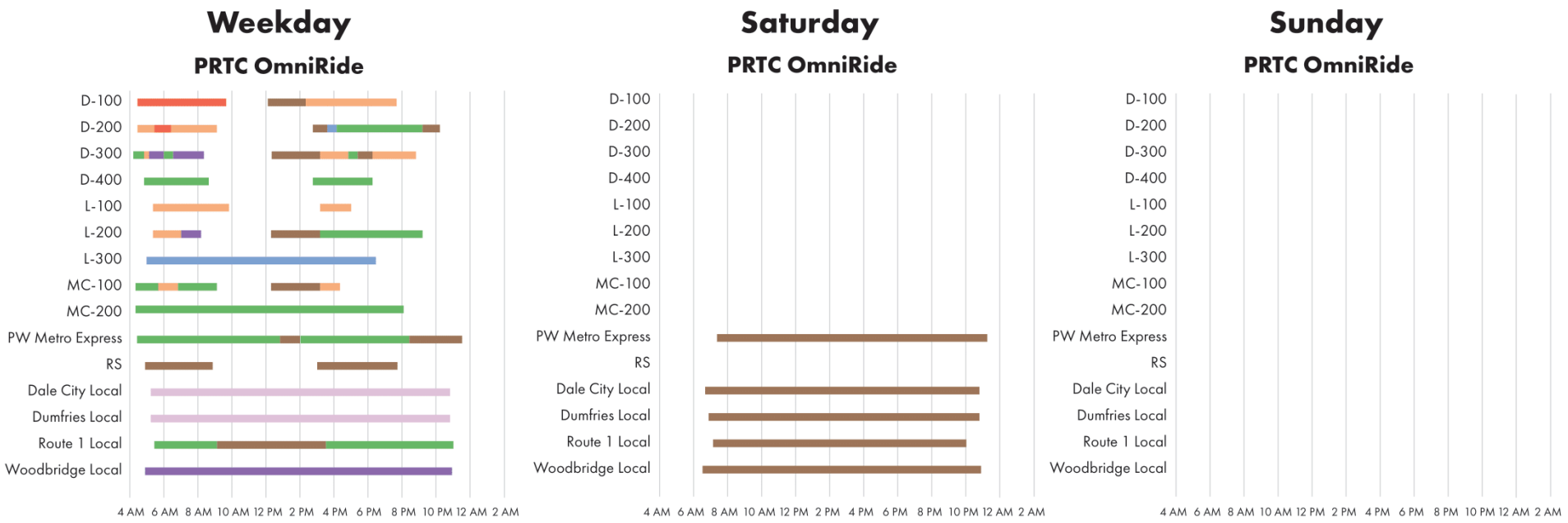
Study Schedule



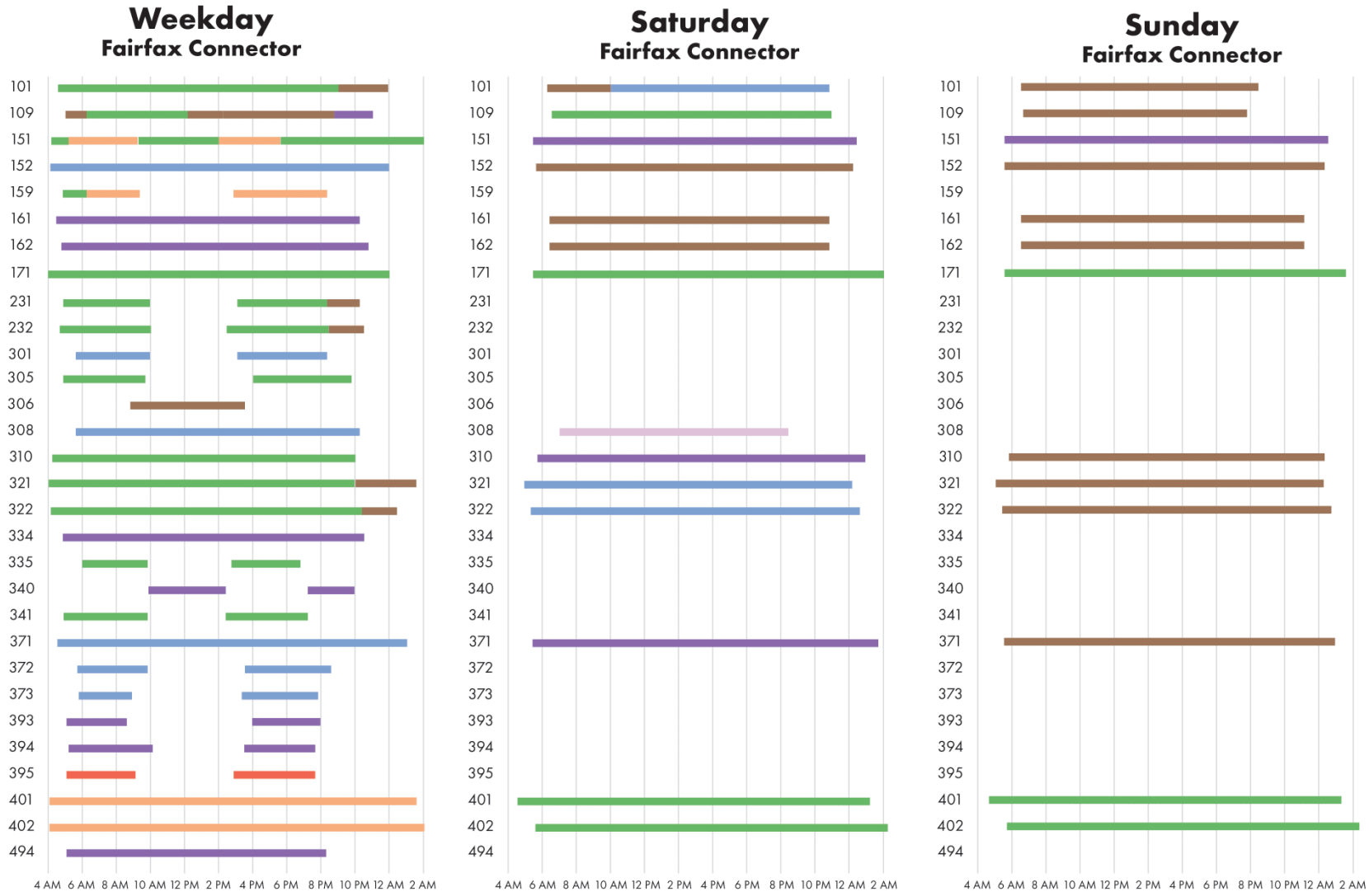
Transit Quality of Service and Ridership

Prince William County: Level of Bus Service

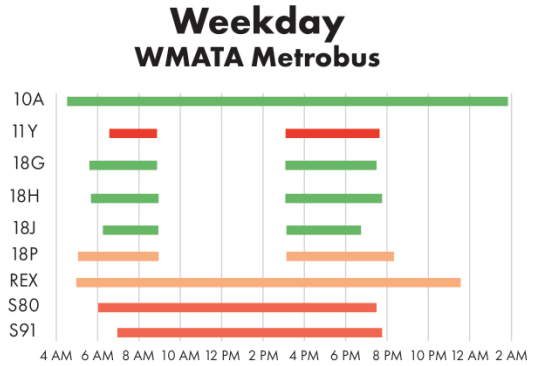
PRTC is the lone bus operator in Prince William County's portion of the I-95 corridor. Most services operating in this corridor are peak commuter services, including the D, L, and MC series. Local routes serve during peak and off-peak hours at lower frequencies. Only local services operate on Saturdays, and no services operate on Sundays. This data was collected from NVTC's pre-COVID October 2019 dataset as well as available online schedules from PRTC. The following page includes Fairfax Connector and WMATA routes that serve the I-95 corridor from Fairfax County's southern border to I-495. Several peak commuter services of varying frequencies are supplemented by high frequency local routes. NVTC data, as well as available schedules were used to create these materials

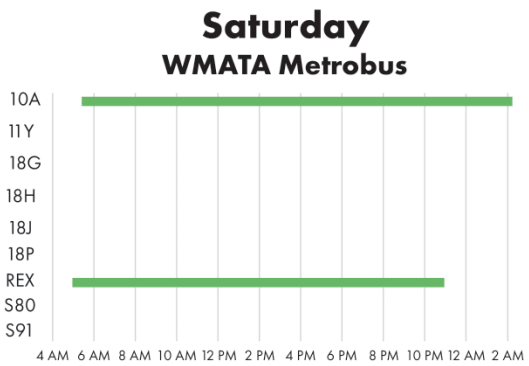


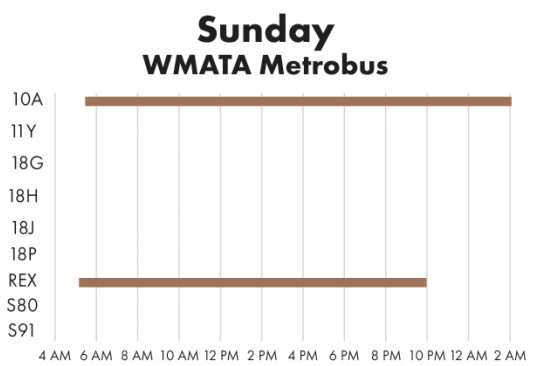
Fairfax County South of I-495: Level of Bus Service



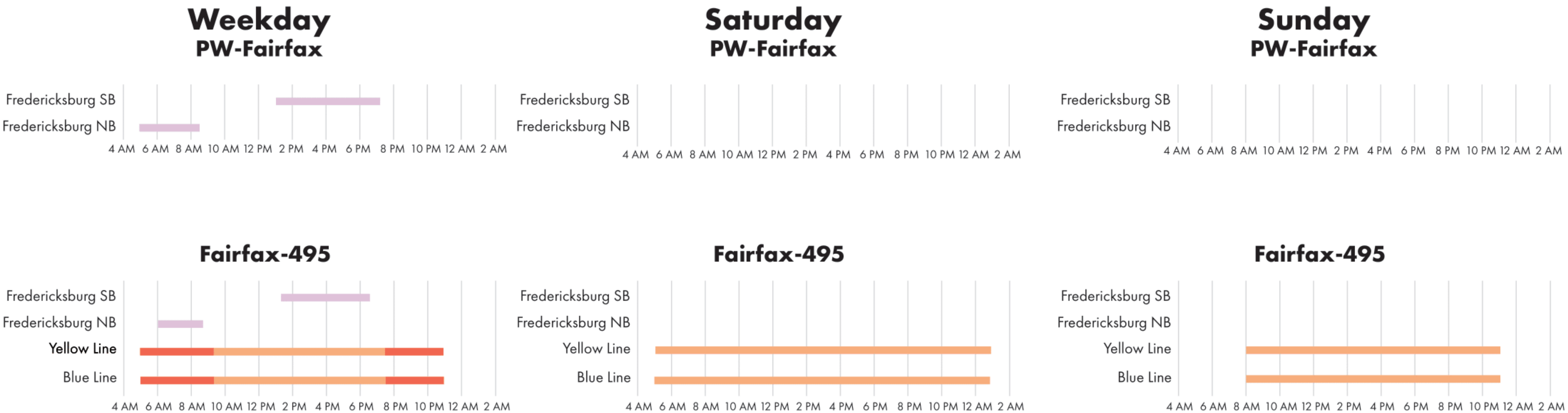
Fairfax County South of I-495: Level of Bus Service





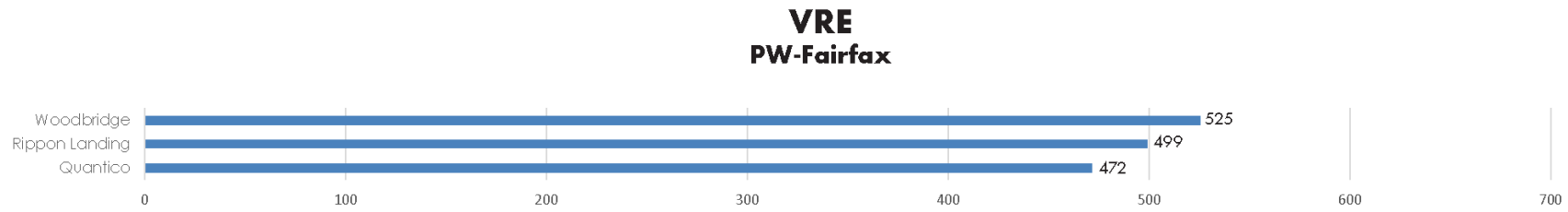


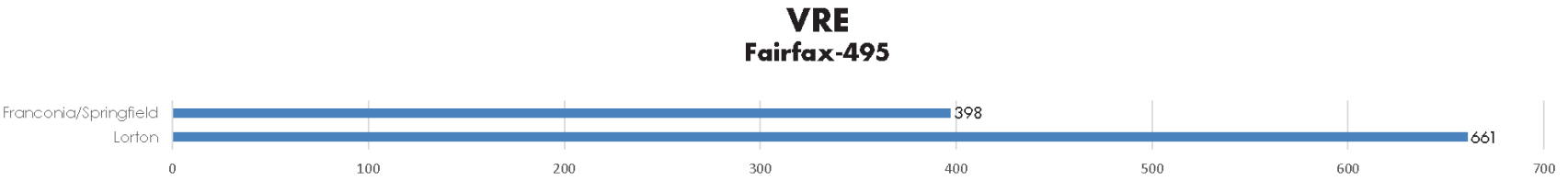
VRE service provides AM and PM peak commuter service from Fredericksburg to DC, making intermediate stops at stations throughout the study area. WMATA Blue Line and Yellow Line services are available within the area at Franconia, the Blue Line's southern terminus, and Huntington, the Yellow Line's southern terminus. These high frequency services are available during both peak and off-peak areas. The Franconia-Springfield Transit Center has both VRE and WMATA Blue Line service.

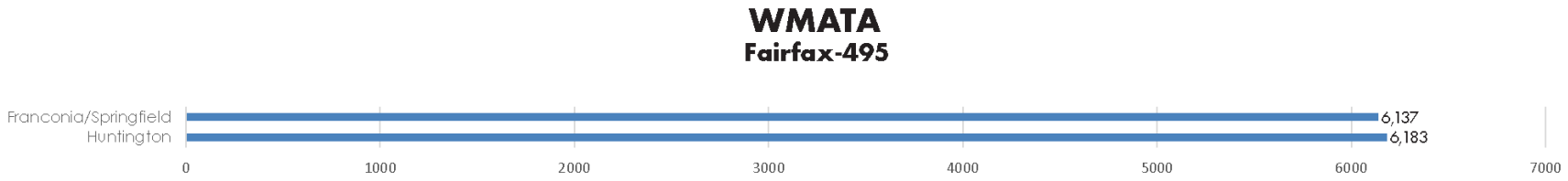


Average Weekday Rail Ridership by Station

Rail service is available at 5 VRE stations and 2 Metrorail stations. The Lorton station had the highest average daily boardings of any VRE station, while Woodbridge has the highest daily boardings in Prince William County. Metrorail weekday ridership at Franconia/Springfield and Huntington were very similar. Franconia/Springfield had 6,137 average daily boardings while Huntington had 6,182 average daily boardings. Average ridership data from all of 2019 was used for the VRE analysis. October 2019 ridership data was used for Metrorail.

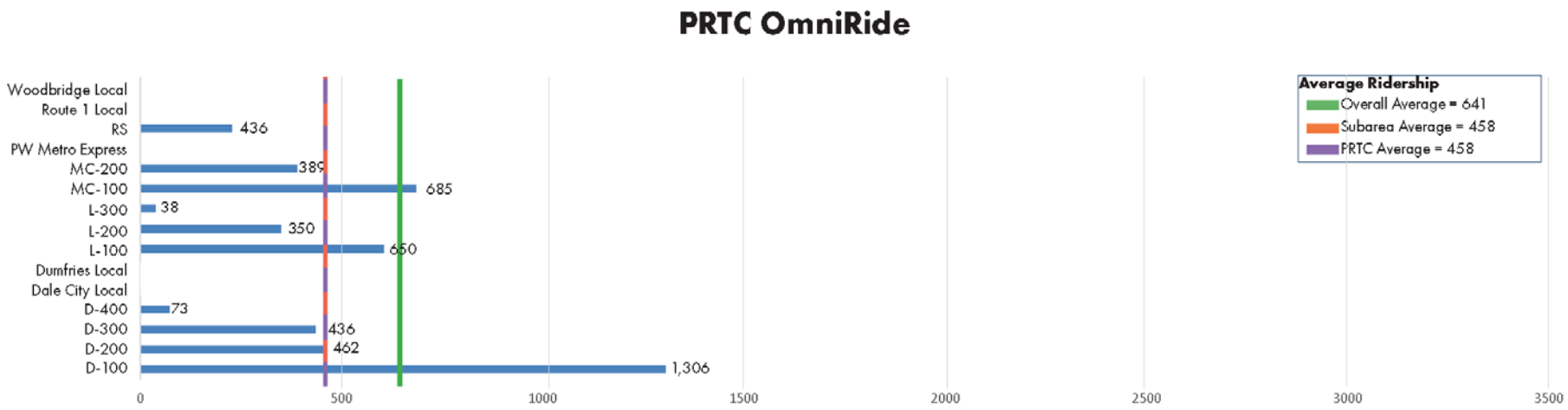






Prince William-Stafford Border to Prince William-Fairfax Border: Average Weekday Boardings

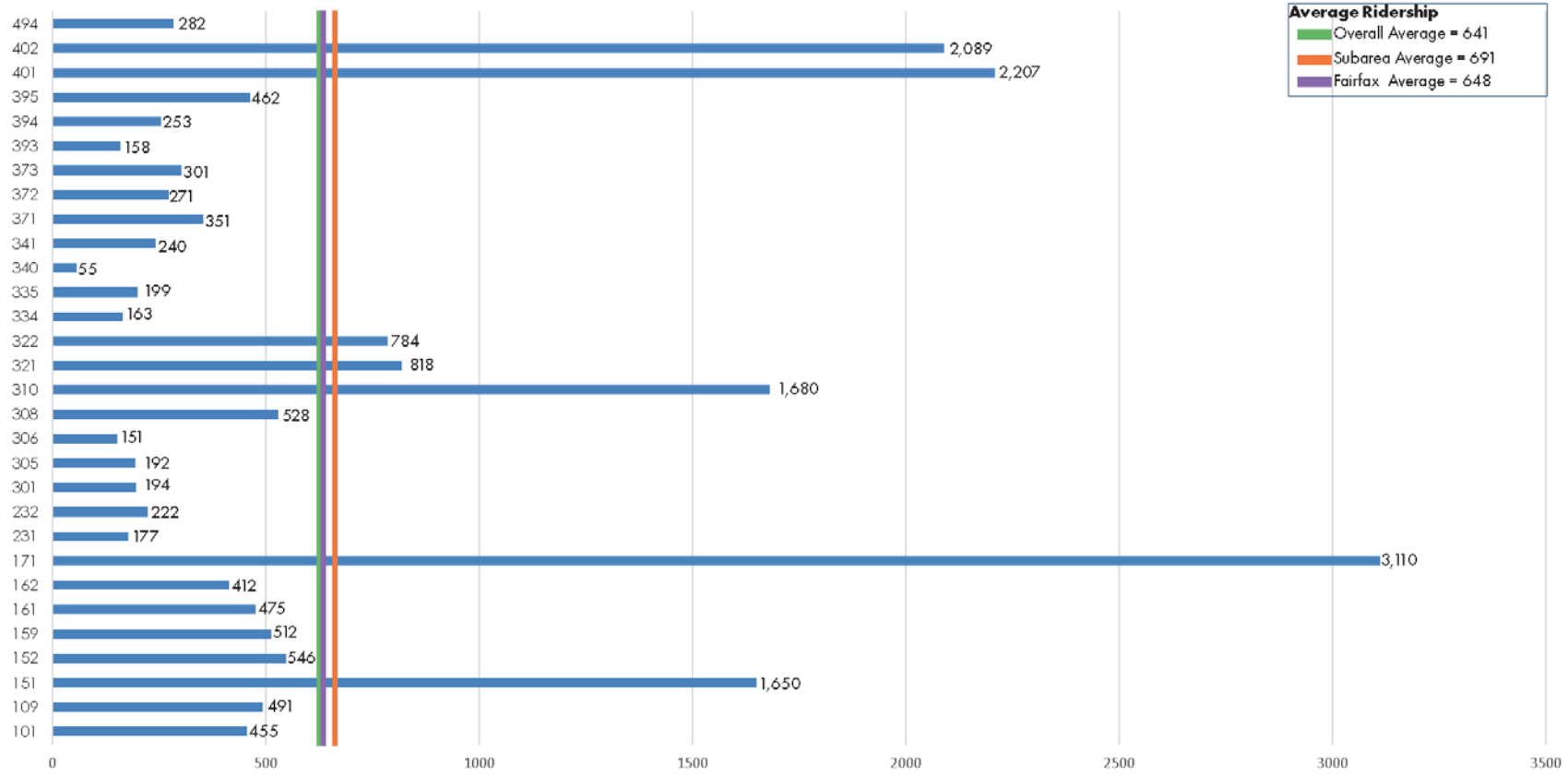
Between Prince William County's southern and northern borders, higher ridership is located on OmniRides commuter and express style services. The D-100 route, connecting Dale City to Washington, has the highest ridership in this subsection of the study area, with 1,306 average weekday boardings in September 2018, the most recent pre-COVID month provided by PRTC. The only services with above average daily weekday ridership in the study area are D-100 and MC-100, both peak commuter services that use I-95.To reflect pre-Coovid ridership numbers, average weekday boardings from September 2018 were used for this analysis.



Prince William-Fairfax Border to I-495: Average Weekday Boardings

Between Fairfax County's southern border and I-495, a high number of Fairfax Connector and WMATA services operate. The highest ridership Fairfax Connector route is route 171, which serves the Huntington Metro Station. Other high ridership routes include routes 401 and 402. WMATA route 10A serves the Huntington Metro Station, and REX service operates along the Route 1 corridor in Fairfax County. These are the WMATA services with the highest ridership. WMATA services have higher ridership on average, but Fairfax Connector has more total ridership in the study area. Ridership data from January and February 2020 was used for the Fairfax Connector analysis, while October 2019 ridership estimates were used for Metrobus.

Fairfax Connector



WMATA Metrobus