THE EASTERN TRANSPORTATION COALITION

CONNECTING FOR SOLUTIONS

TETC Truck Parking Working Group

May 5, 2023

Today's Agenda

TETC Truck Parking Working Group	
Welcome and Introductions	Marygrace Parker, The Eastern Transportation Coalition/TPWG
Spotlight Presentation – Virginia DOT Truck Parking Study	Erik Johnson, Freight Planning Specialist, Virginia DOT Fatemeh Ranaiefar, Ph.D., Fehr & Peers
TETC Update	Marygrace Parker
Agenda Roundtable	TPWG Members
TETC TPWG Calendar – Meeting Schedule, Future Topics	TETC Staff/TPWG Members
Wrap Up	TETC Staff/TPWG Members

Spotlight Presentation:
Virgina DOT Truck Parking Study

VDOT TRUCK PARKING STUDY

TETC Truck Parking Working Group Quarterly Meeting

May 5, 2023

VDOT Virginia Department of Transportation

KITTELSON & ASSOCIATES

AGENDA

1. Project Need
2. Data Analysis
3. Hot Spots
4. Travel Patterns
5. Dashboard

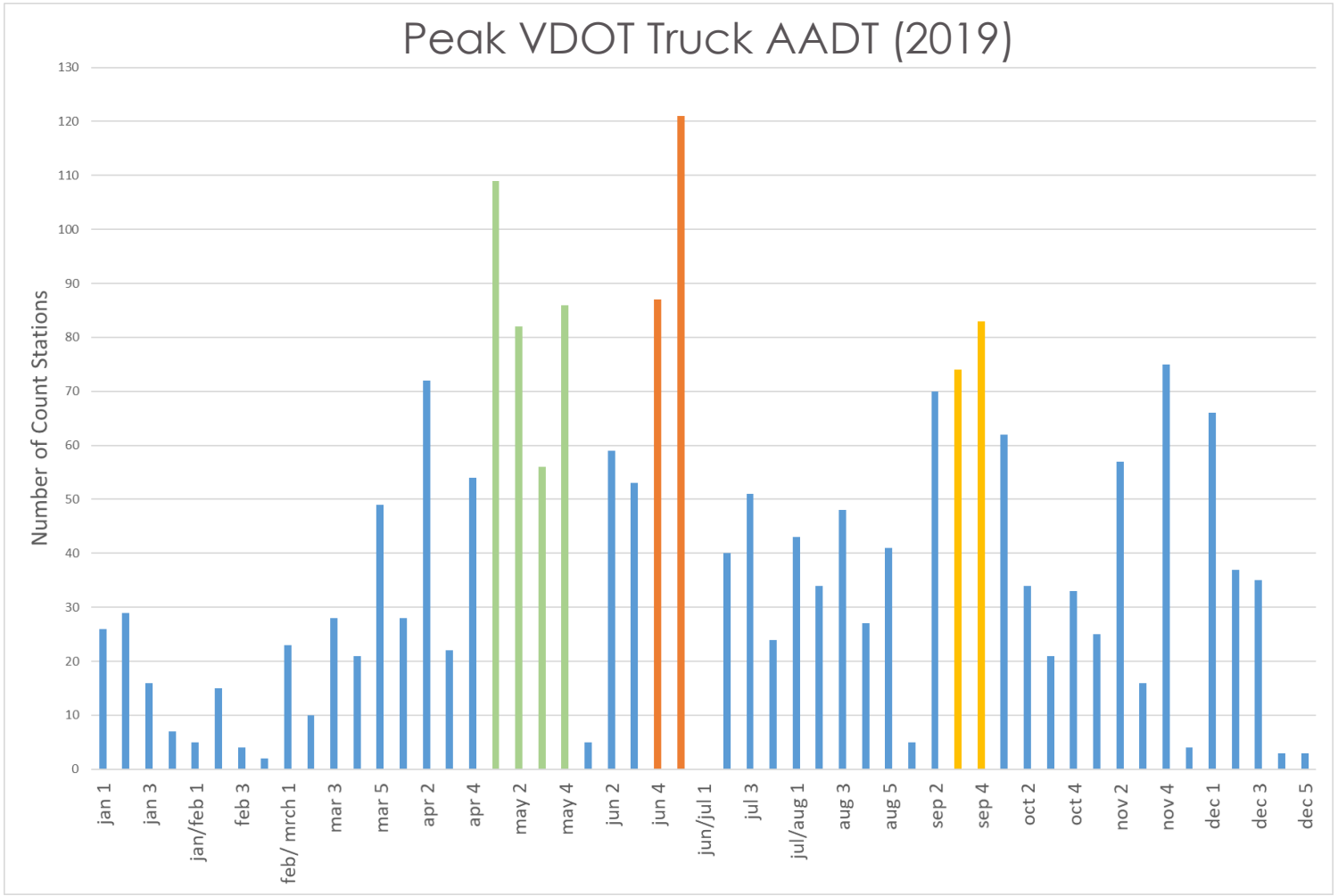
1 PROJECT NEED

- **Where** are trucks parking?
- **When** are the peak truck parking seasons?
- **Where** do we need to add more truck parking spaces?
  - Today?
  - In 2045?

2 DATA ANALYSIS

Data	Use
Truck Parking Facilities from 2015 Study	Truck parking inventory
InfoUSA land use data	Freight generators
VDOT Truck AADT truck counts	Seasonal peaks
ATRI GPS-based location data	Parking events and duration
StreetLight GPS-based location data	Origin-Destination travel patterns

SEASONALITY OF TRUCKING ACTIVITIES IN VIRGINIA

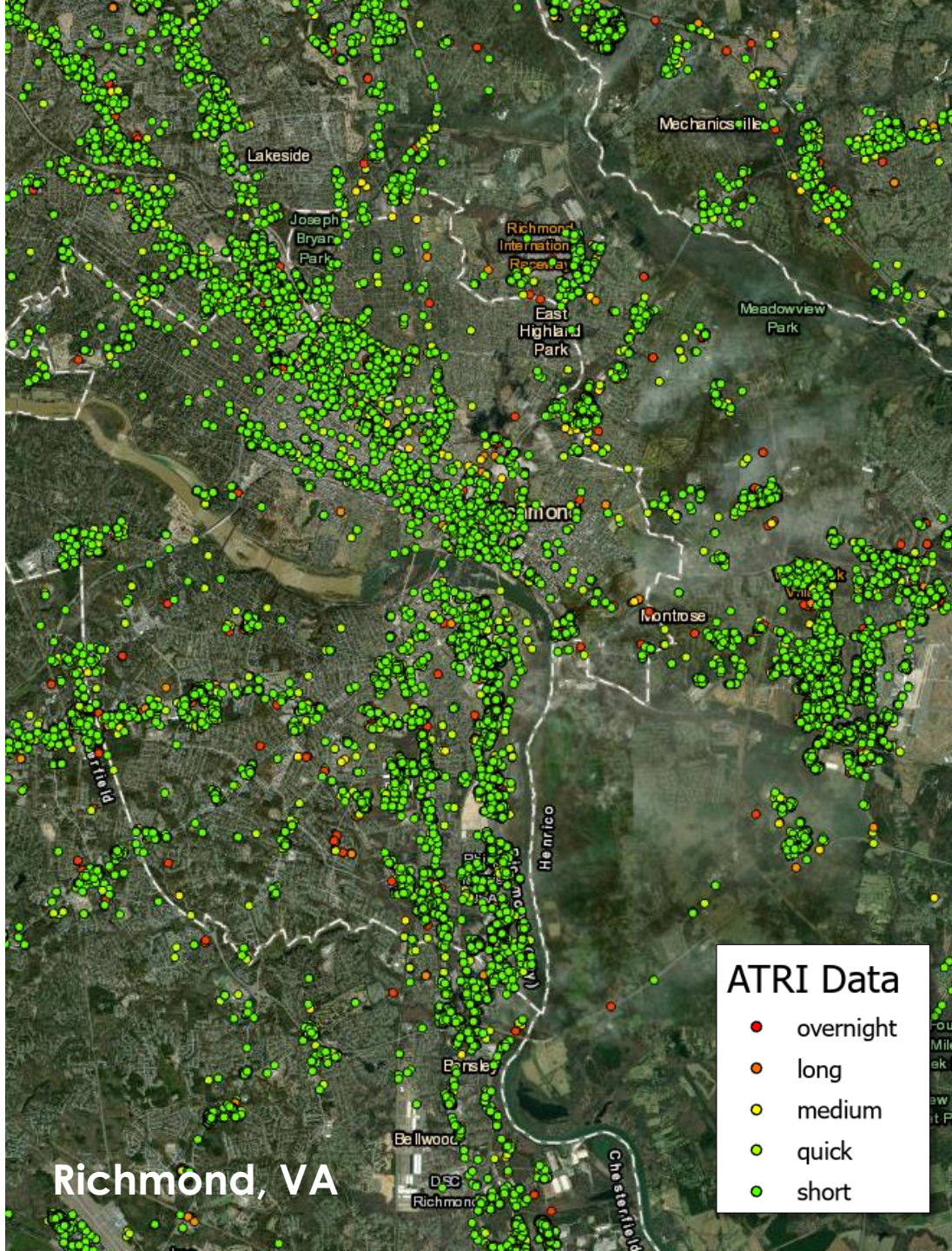


8 weeks of 2019 ATRI Data Purchased for study:

- **MAY** 3-31 (4 weeks)
- **JUN** 16-29 (2 weeks)
- **SEP** 15-28 (2 weeks)

PARKING EVENT ATRI DATA

- GPS probe data for 8 weeks (2019)
  - May (4 weeks)
  - June (2 week)
  - Sept (2 weeks)
- More than 1.3 million data points
- Each data point:
  - Truck parking activity
  - Date of parking activity
  - Start and end time of activity



PARKING EVENTS PUBLIC FACILITIES

VDOT Public Facilities:

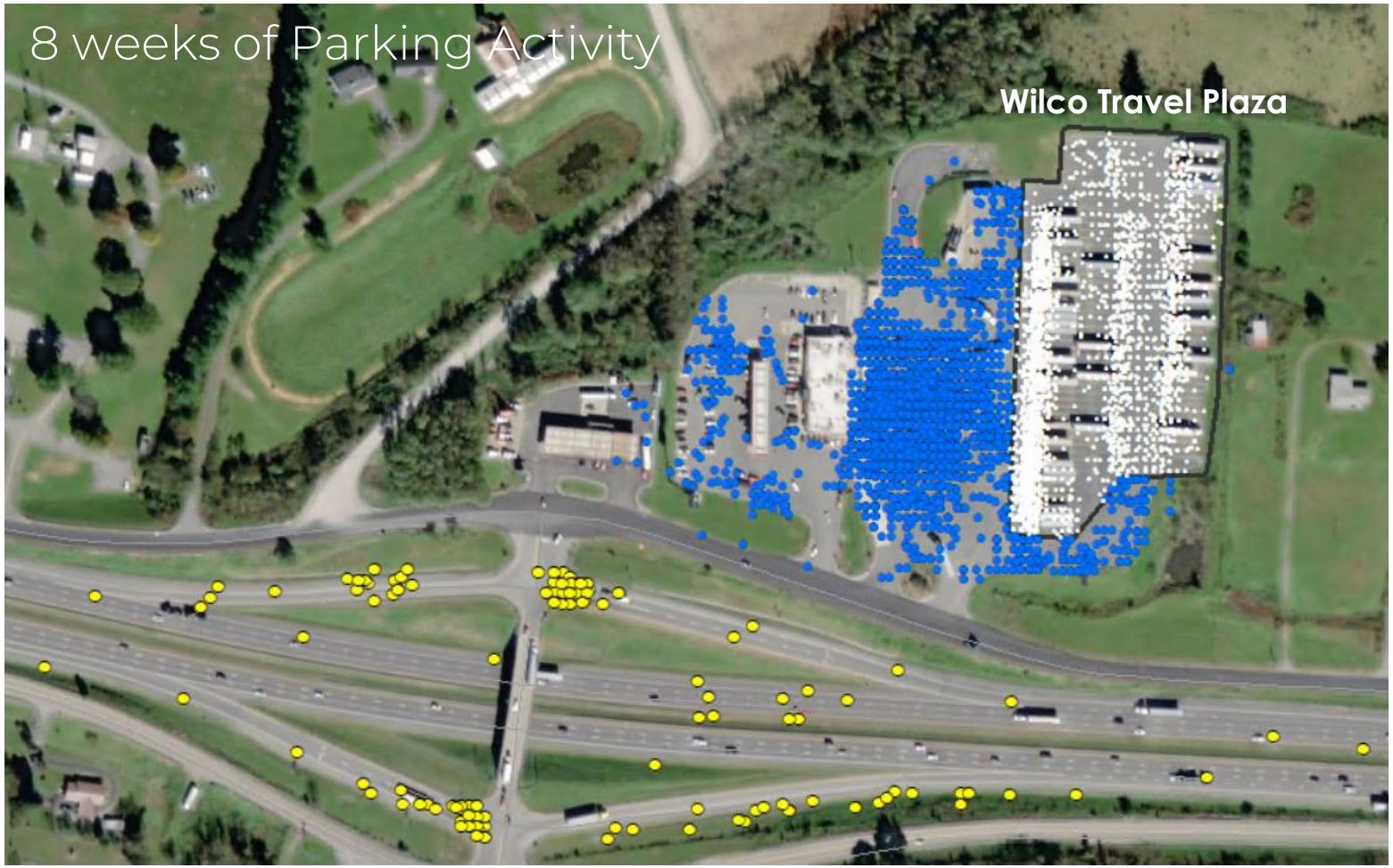
- Identify authorized parking
- Overflow parking

8 weeks of Parking Activity at Radford Rest Area Northbound on I-81

PARKING EVENTS PRIVATE FACILITIES

Private Facilities:

- Identify authorized parking
- Overflow parking
- Ramp/Shoulder parking



PARKING FACILITY REPORT CARDS

are available for download on project Dashboard

Davis Travel Center, Stony Creek

Private Parking Facility I-95 Milepost 34

Private Truck Parking Facility Report Card

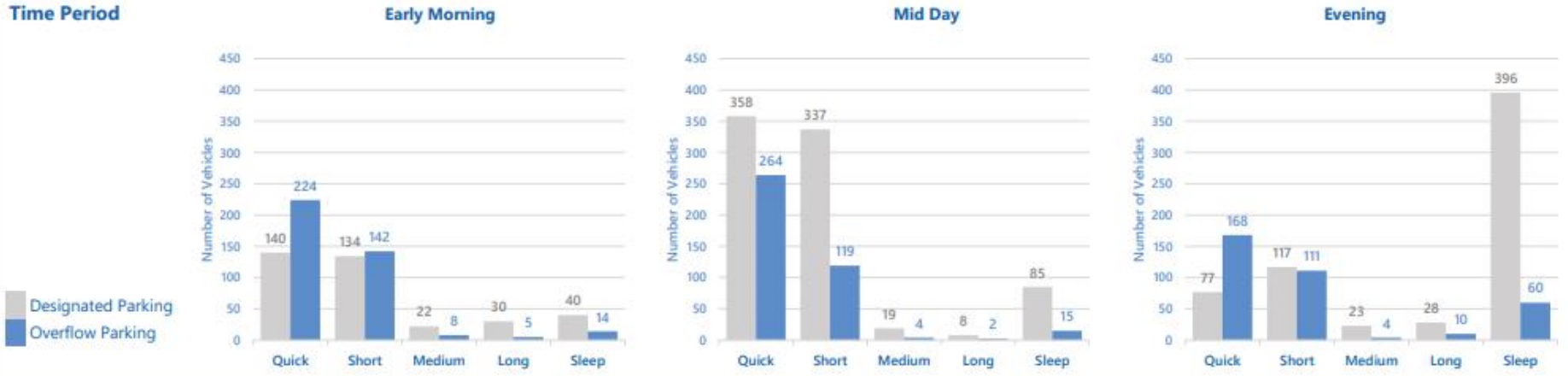
VDOT Virginia Department of Transportation

Parking Facility Summary

District:			Hampton Roads	
Total Spots Available:			80	
Range of Additional Spots Needed:			15 - 38	
Overall Priority:			Medium	
Private Facility Priority:			Medium	
Facility Amenities:				
	Restroom	X	Fuel	X
	Shower	X	Lighted	X
	Wifi	X	Overnight Parking	X

Time Period	Early Morning	Mid Day	Evening	Daily
Percent Overflow Parking Activity	47%	25%	18%	23%

57-Day Observed Sample of Designated and Overflow Parking Activity



Notes: Time Periods: Early Morning: 12 AM - 8 AM; Mid Day: 8 AM - 4 PM; Evening: 4 PM - 12 AM

Parking Activity Category: Quick Stop: 10 min - 30 min; Short Stop: 30 min - 2 hours; Medium Stop: 2-4 hours; Long Stop: 4 - 8 hours; Sleep Stop: >8 hours

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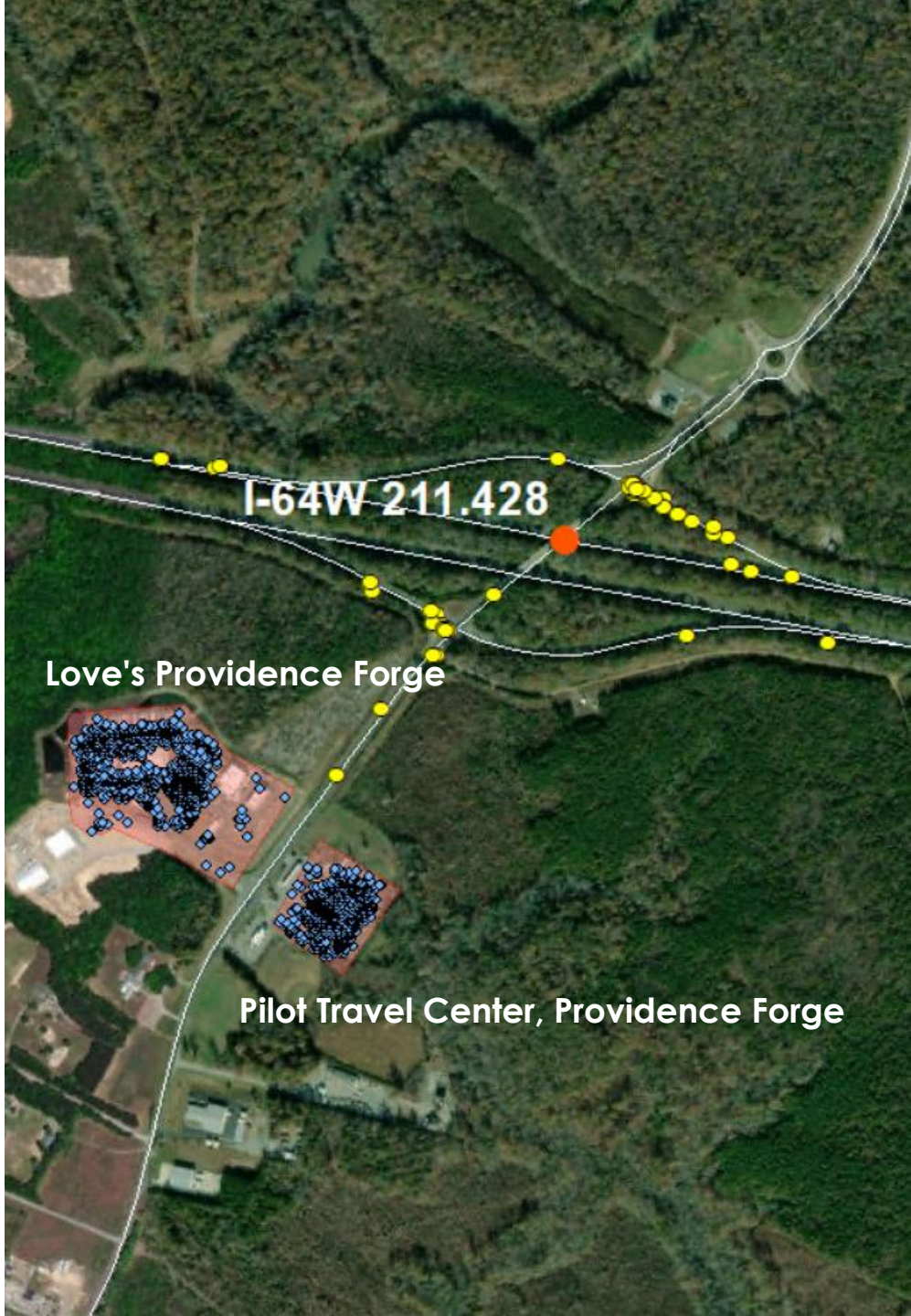
PARKING EVENTS JUNCTION ANALYSIS

- Identify junctions along each corridor
- Private and Public Parking Facilities
  - **Supply**: # of spots at each facility
  - **Unmet-Demand**: Range of additional spots needed (Minimum and Maximum)
- Ramp and Shoulder Parking
  - **Extra demand**: # of parking activities that happened at the same hour at the same junction
- Junction Summary
  - **Total supply**: sum of # of spots of all facilities
  - **Total unmet-demand**: unmet-demand at parking facilities + extra demand from ramp and shoulder parking activities



JUNCTION ANALYSIS SUMMARY

SUPPLY:

- 142 parking facilities provide 8,071 designated truck parking spaces in Virginia
  - 37 VDOT public parking junctions (rest areas)
  - 82 private parking junctions

DEMAND:

- Today: 3,244 additional spaces needed to meet peak demand
  - 3 junctions were not overutilized at some point during the 8-week peak demand period (overflow, unauthorized, ramp, or shoulder)
- By 2045: if no additional truck parking spaces are added:
  - 8,574 additional spaces will be needed
  - All junctions will be over capacity by 2045

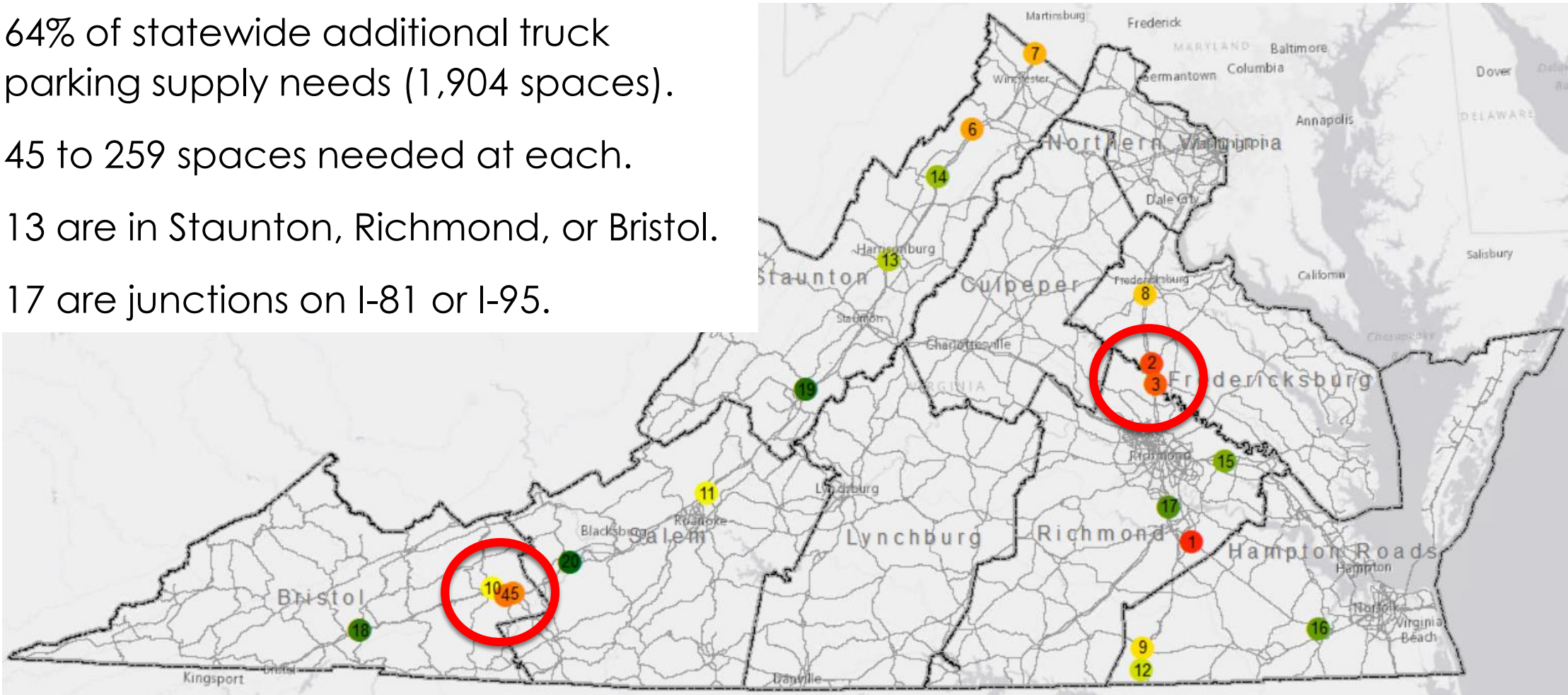
3 HOT SPOT ANALYSIS

- Rank junctions by maximum additional spots needed
  - Statewide (VDOT facilities and all facilities)
  - Districtwide

- Hot Spot: overutilized junction where at least 10 extra spots are needed

TOP 20 HOT SPOTS

- **Top 20 Hot Spots:** junctions with the largest unmet truck parking demand.
- 64% of statewide additional truck parking supply needs (1,904 spaces).
- 45 to 259 spaces needed at each.
- 13 are in Staunton, Richmond, or Bristol.
- 17 are junctions on I-81 or I-95.



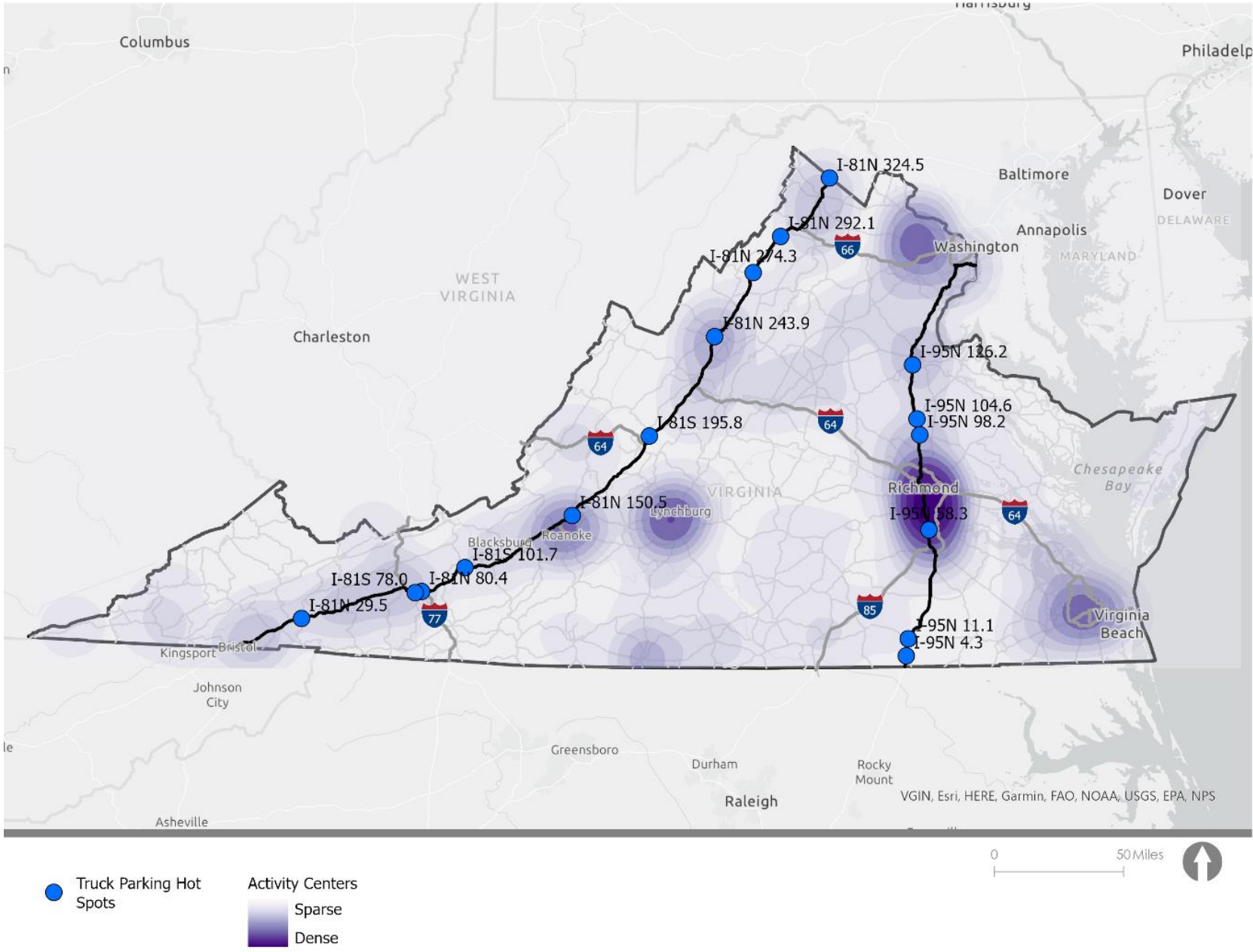
4 TRAVEL PATTERNS

Where are trucks coming from / going to from the top 20 hot spots?

- Are additional spaces needed at that junction?
- Are there opportunities to expand truck parking at surrounding junctions?
- Are there opportunities to expand truck parking along intersecting roadways?

TRAVEL PATTERN DATA

- StreetLight Data
- Hot Spot Locations
- Truck-Oriented Facilities



VDOT Truck Parking
Distribution of Truck Oriented Activity Centers in Virginia

TRAVEL PATTERN RESULTS

A. LONG-HAUL / THROUGH-TRIPS

- Relatively longer trips arriving/departing from the parking.
- Trips start or end along the corridor where the parking facilities are located (I-81 or I-95).

B. CROSSING TRUCK ROUTES

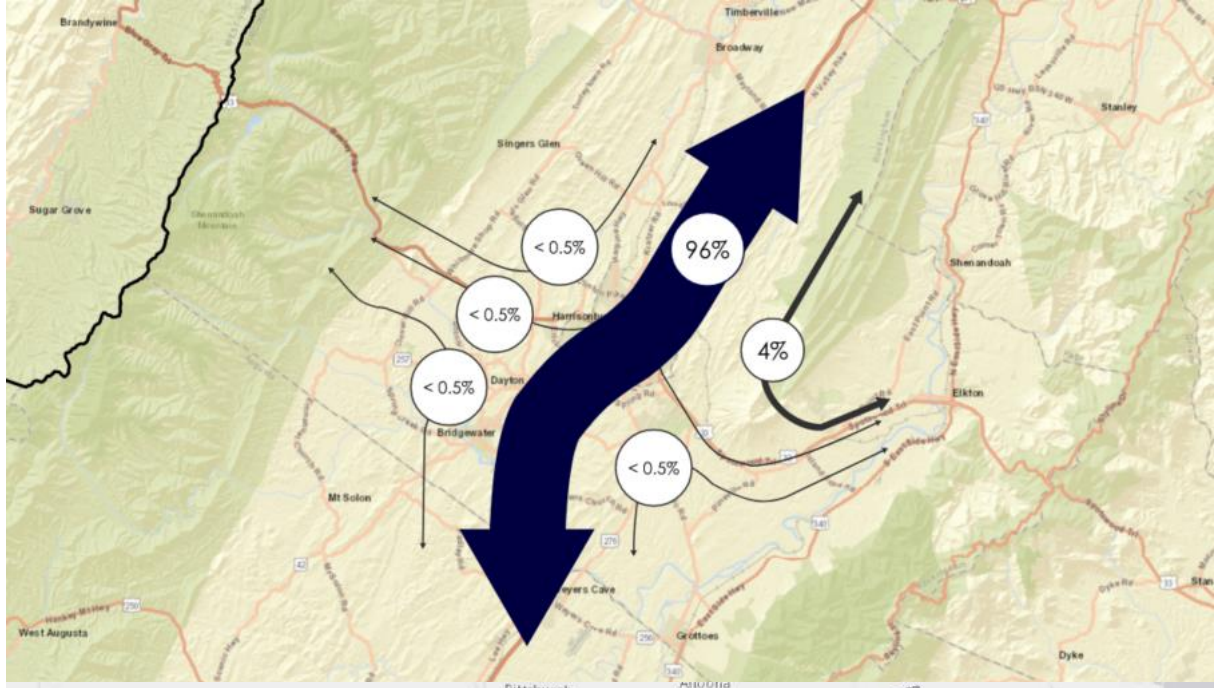
- Interchanges where I-95 or I-81 intersect with another highway serving substantial truck volumes.

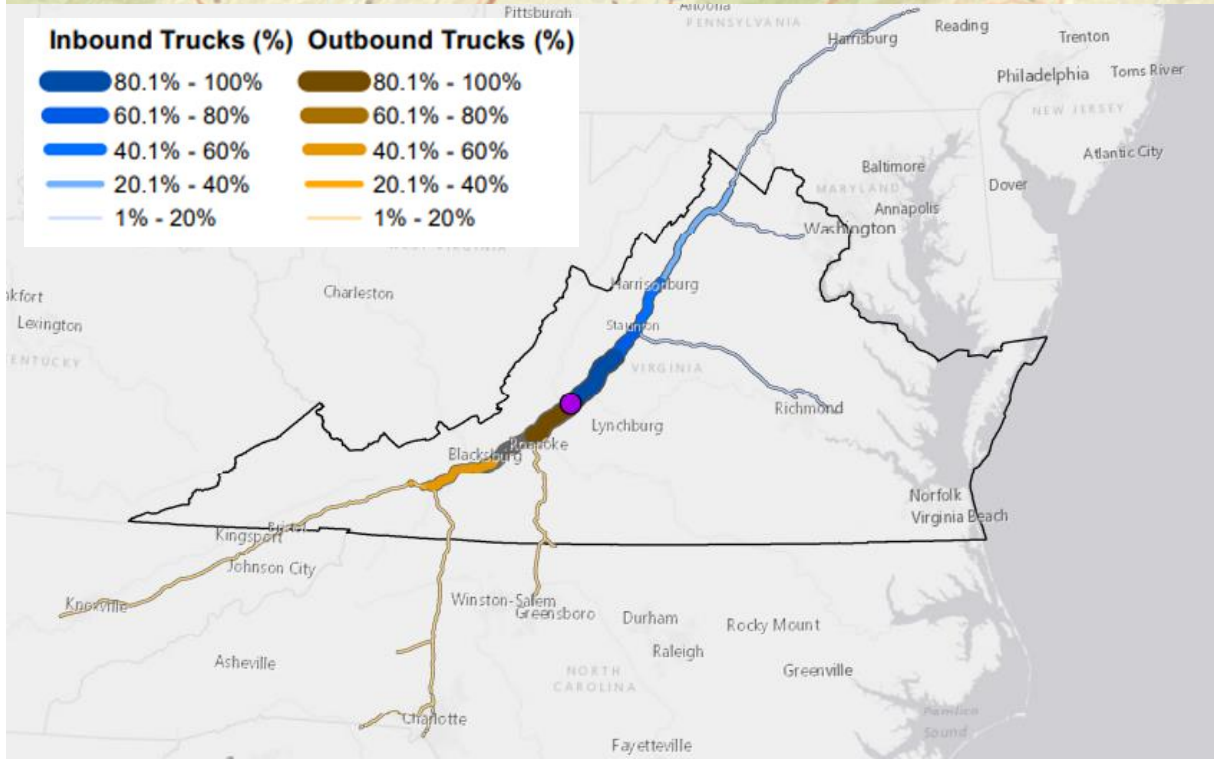
C. SERVING SPECIFIC DESTINATIONS

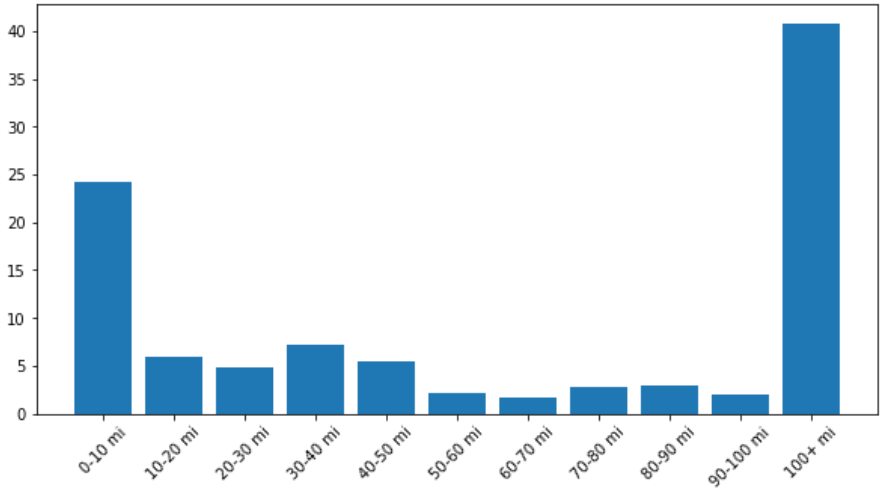
- Strong origin-destination connection with truck-oriented businesses or land uses.
- May have relatively shorter trip distances than other hot spots.

Type A: Long-Haul / Through-Trips

- Ex: I-81 at US-33, Harrisonburg
- Add parking along corridor
- Communicate parking availability to drivers on corridor



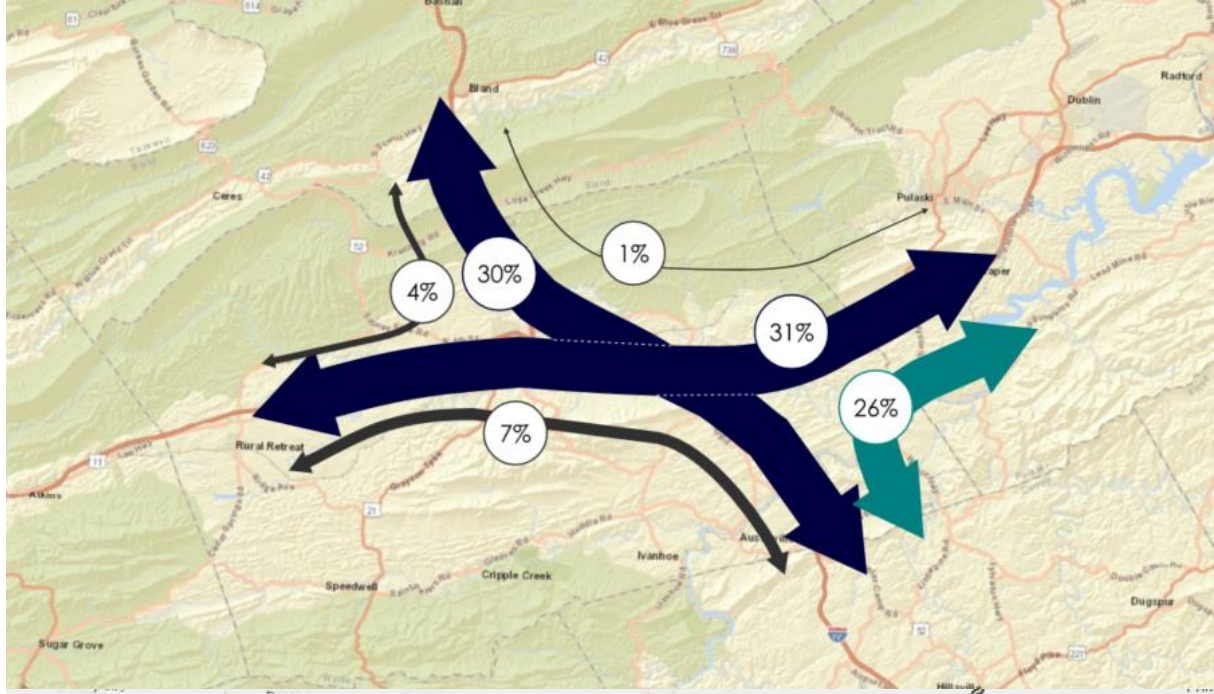


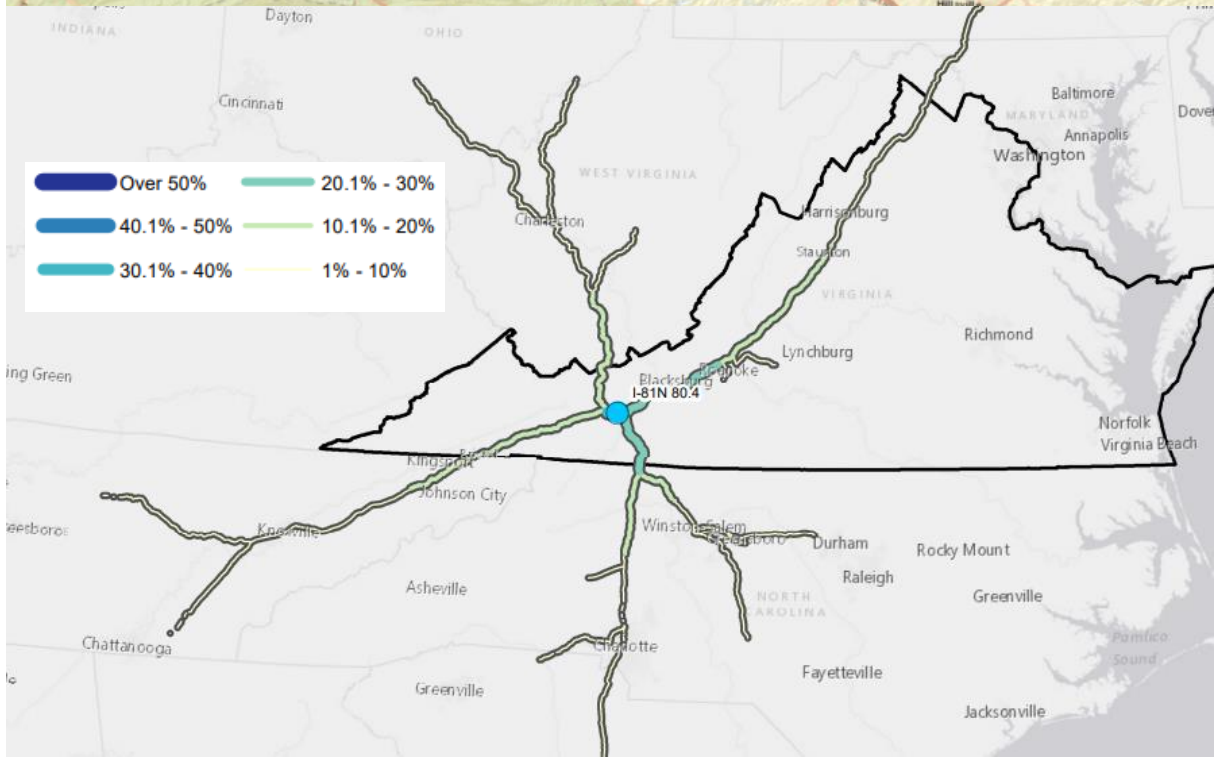


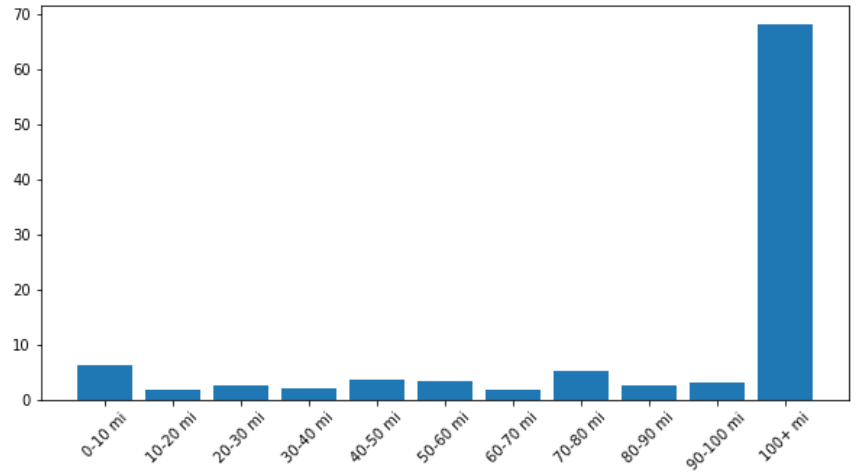
Type B: Crossing Truck Routes

- Ex: I-81 at I-77, Wytheville

- Add Parking on Intersecting Route

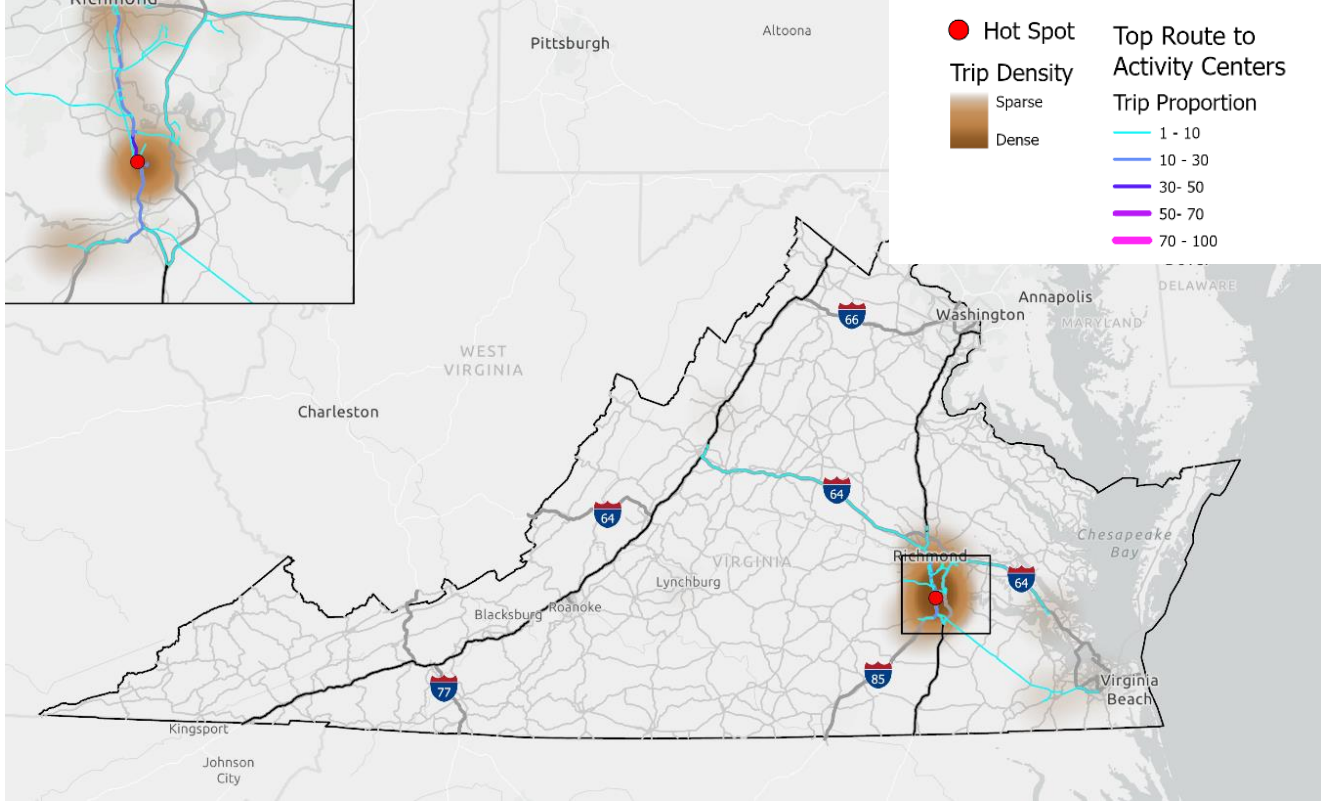


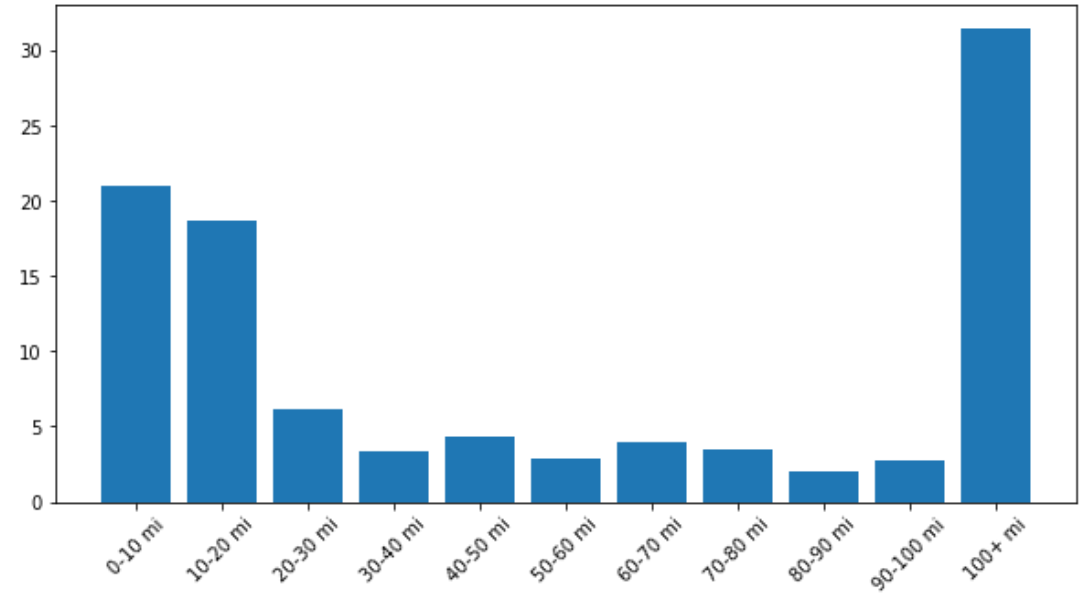




Type C: Serving Specific Destination(s)

- Ex: I-95 at MM 58.3, Colonial Heights
- Collaborate with Local Jurisdictions
- Learn and share local needs

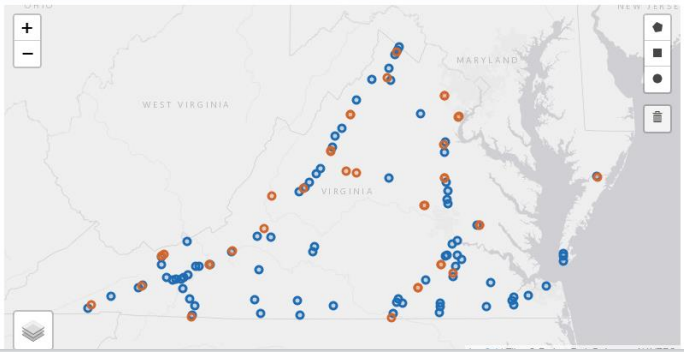




5 DASHBOARD

- Download project reports
- Search by district, area, junction, facility type

VDOT Truck Parking Dashboard



Filter Junction Data

Filter by Districts

Public/Private Ownership:

Publicly Owned

Privately Owned

Include:

Hotspots Only

Top 20 Hotspots

Bottom 20 Hotspots

Filter Junction Data

Filter by Districts

Public/Private Ownership:

Publicly Owned

Privately Owned

Include:

Hotspots Only

Top 20 Hotspots

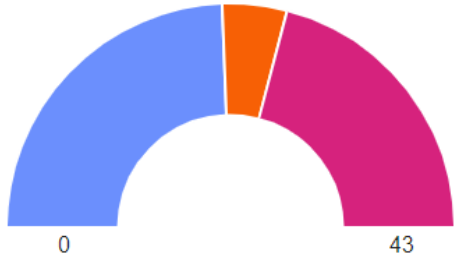
Bottom 20 Hotspots

ID	Name	Total Spaces	Max Spaces Needed	Max Ratio	District Rank	Statewide Rank	Public Rank
106	I-81S 109.2	14	18	128.6%	8	50	9
107	I-66E 4.1	12	27	225.0%	7	30	1
108	I-81S 320.9	15	7	46.7%	18	86	23
109	I-95S 108.2	21	22	104.8%	3	42	3
110	I-81N 129.4	23	9	39.1%	14	77	18
111	I-77N 0.1	14	18	128.6%	7	49	8

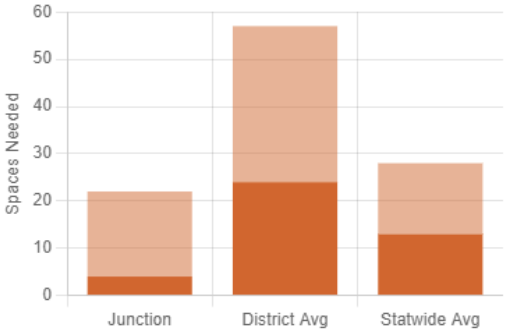
Junction: I-95S 108.2

CLEAR

Total Spaces Available & Spaces Needed



Additional Spaces Needed



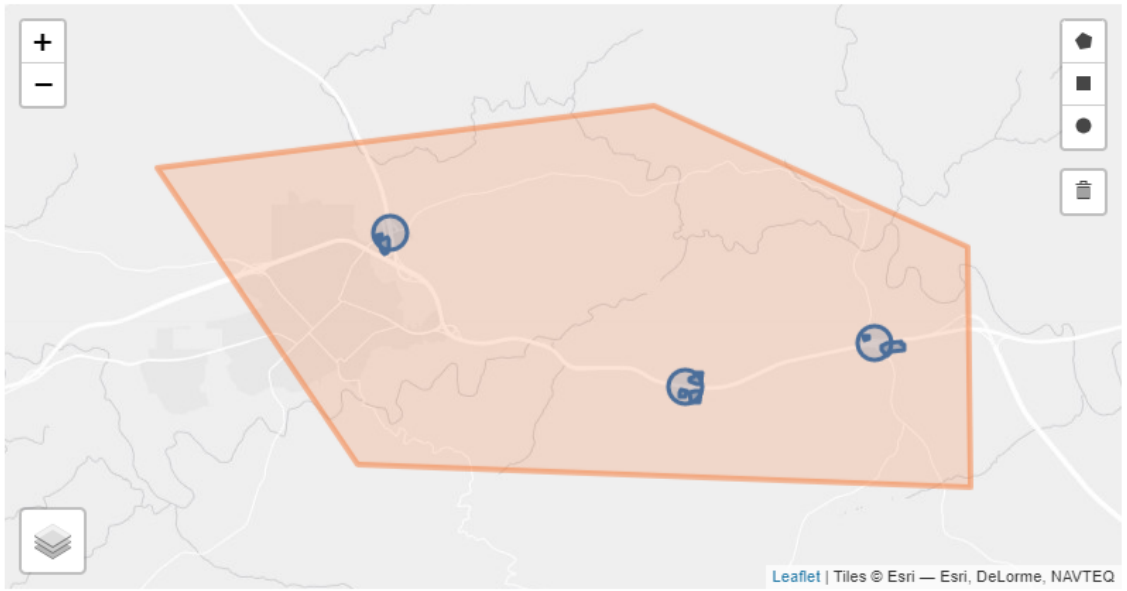
Total Spaces Available:	21	**Minimum Spaces Needed:**	4
		Maximum Spaces Needed:	22
Hotspot Junction:	Yes	District Ranking	3
Statewide Ranking	42	Statewide Public Ranking	3

Junction Parking Facilities:

LADYSMITH SOUTH

District:			Fredericksburg (District 6)
Total Spaces Available:			21
Owner:			Public
Range of Additional Spaces Needed			4 - 22
Facility Amenities	*Restroom* ✓		*Fuel* ✗
	Shower ✗		*Lighted* ✓
	Wifi ✗		*Overnight Parking* ✗

VDOT Truck Parking Dashboard



Filter Junction Data

Filter by Districts

Public/Private Ownership:

- Publicly Owned
- Privately Owned

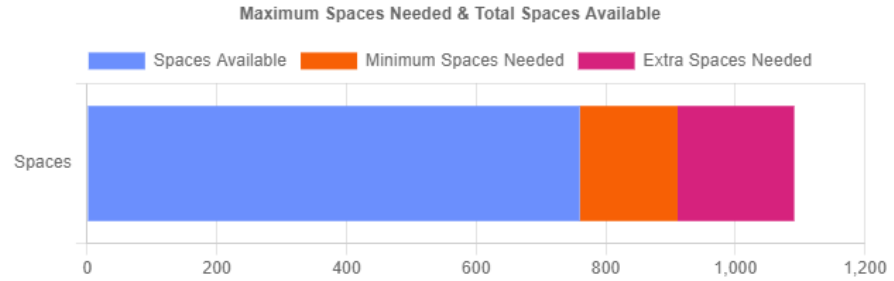
Include:

- Hotspots Only
- Top 20 Hotspots
- Bottom 20 Hotspots

ID	Name	Total Spaces	Max Spaces Needed	Max Ratio	District Rank	Statewide Rank	Public Rank
10	I-77S 41.4	136	66	48.5%	3	10	N/A
28	I-81N 80.4	272	129	47.4%	2	5	N/A
37	I-81S 78.0	352	136	38.6%	1	4	N/A

Map Select Summary

RECENTER CLEAR



Total Spaces Available: 760 **Total Min Spaces Needed:** 151

Total Max Spaces Needed: 331

Junctions Summary

Selected Total Area:	41.69 mi²
Total Number of Junctions:	3
Number of Private Owned Junctions:	3
Number of Public Owned Junctions:	0
Number of Hotspots:	3

NEXT STEPS

1. Project Need
2. Data Analysis
3. Hot Spots
4. Travel Patterns
5. Dashboard

- I-81 and I-95 specific briefings
- Update dashboard with origin-destination maps

THANK YOU!

QUESTIONS?

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DATA CHALLENGES & LIMITATIONS (1)

Study Challenges	Additional Research Needs
COVID-19 Pandemic Limitations: By analyzing 2019 data, we avoided COVID-19 impacts on truck parking supply and demand.	VDOT may want to monitor truck parking demand changes over the next few years to see if trends have changed since the pandemic.
Data Validation Limitations: We cancelled site visits and aerial data collection, because travel patterns and volumes during the pandemic were not representative of the 2019 ATRI data's pre-pandemic patterns.	Further investigation is required to validate the data and to review the ATRI sample size coverage.

DATA CHALLENGES & LIMITATIONS (2)

Study Challenges	Additional Research Needs
2045 Future Trends: Future demand was estimated using VDOT AADT growth per year, which may have changed since the pandemic.	Identify post-pandemic travel patterns and demands. Adjust future demand estimates. Further investigate future land uses near each hot spot to find local opportunities to solve the unmet demand issue for each hot spot specifically.
Origin-Destination Data: The ATRI origin-destination dataset provided truck flows at the county level within the state and at the state level outside the state boundary. The county level and state level origin-destinations are too broad for facility- and junction-level analysis.	Conduct origin-destination analysis for individual hot spots or focus areas using StreetLight data to answer: • Can the unmet demand be allocated to other facilities with enough supply based on the traffic pattern? • Does the high truck demand come from the same corridor or a connecting corridor?

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THANK YOU!

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