



## **COVID-19: Transportation Impacts and Opportunities**

**Northern Virginia Transportation Authority Meeting**

**July 9, 2020**

# Agenda

- **Overall Goals**
- **Scenario Analysis & Context**
- **Scenario Definitions**
- **Scenario Results & Comparison**
- **Conclusions**



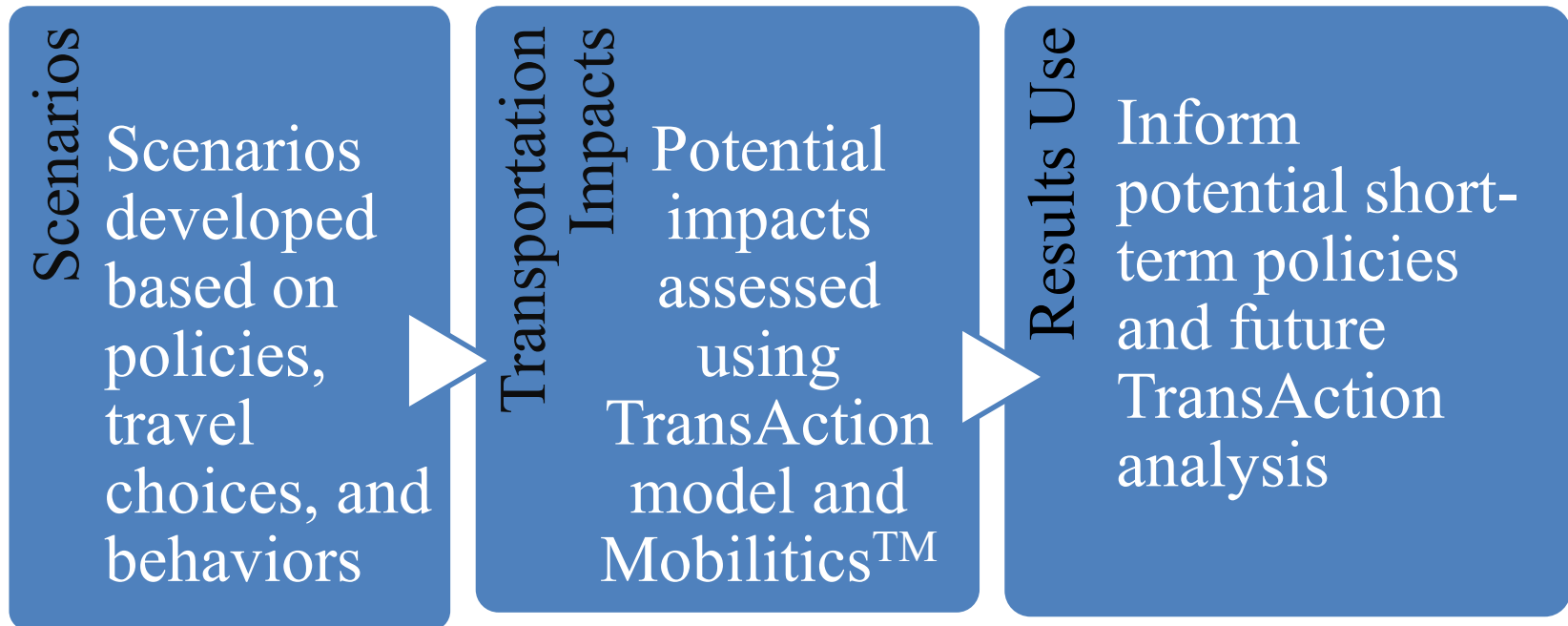
NVTA's  
**TransAction**

# Overall Goals

- Explore impacts to operating conditions & future transportation project investment considerations
  - Model different recovery scenarios to compare impacts
  - Use this analysis to structure future planning efforts

# Scenarios & Impacts

Analyze plausible possible future scenarios, not intended to predict the future or imply any preferences

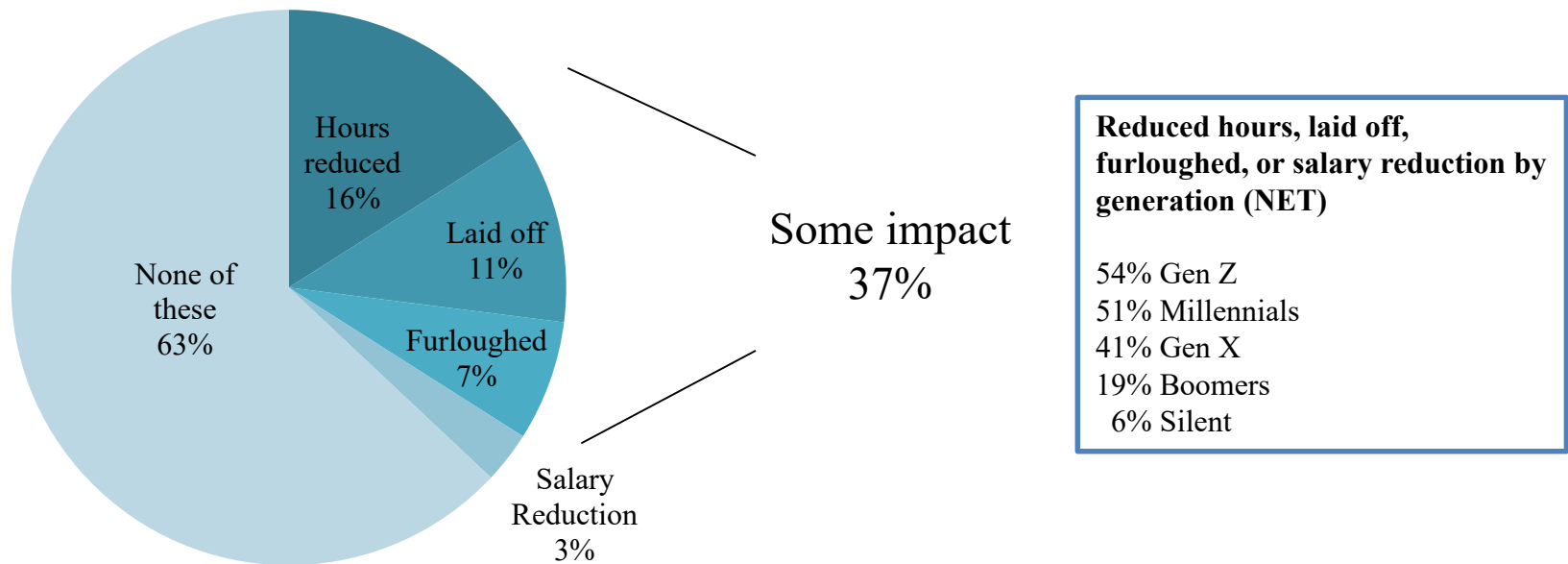


# Background

- Through response to and recovery from COVID-19, trip behavior has been impacted starting in March 2020
- As a result:
  - Telework increased
  - Schools and many businesses closed
  - Travel decreased throughout the region
  - Safety concerns about transit and shared-rides

# National Trends: Employment

Gen Z, Millennials, and Gen X are feeling the brunt of the economic impact from job or wage impacts due to COVID-19; decreasing their sense of personal security, happiness, productivity, success and sense of accomplishment.



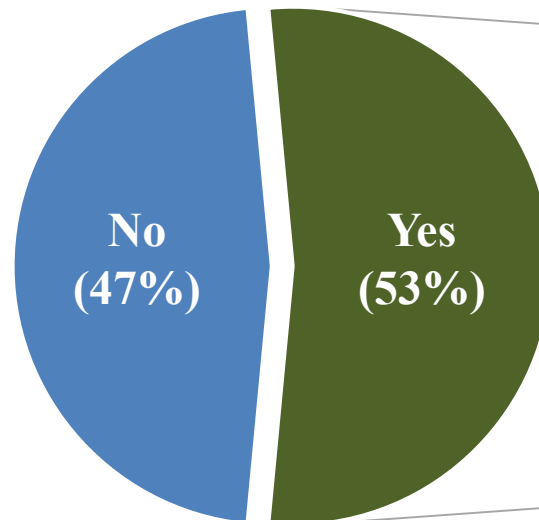
BASE: All Respondents (n=1,001)

Q1046C. Which of the following has happened to you in the past month?

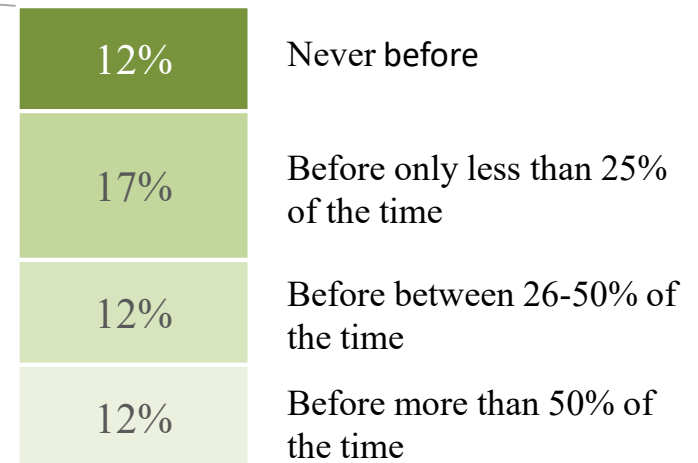
Source: Heart+Mind June 5<sup>th</sup> Roundtable

# National Trends: Working from Home

Q: Are you currently working from home?



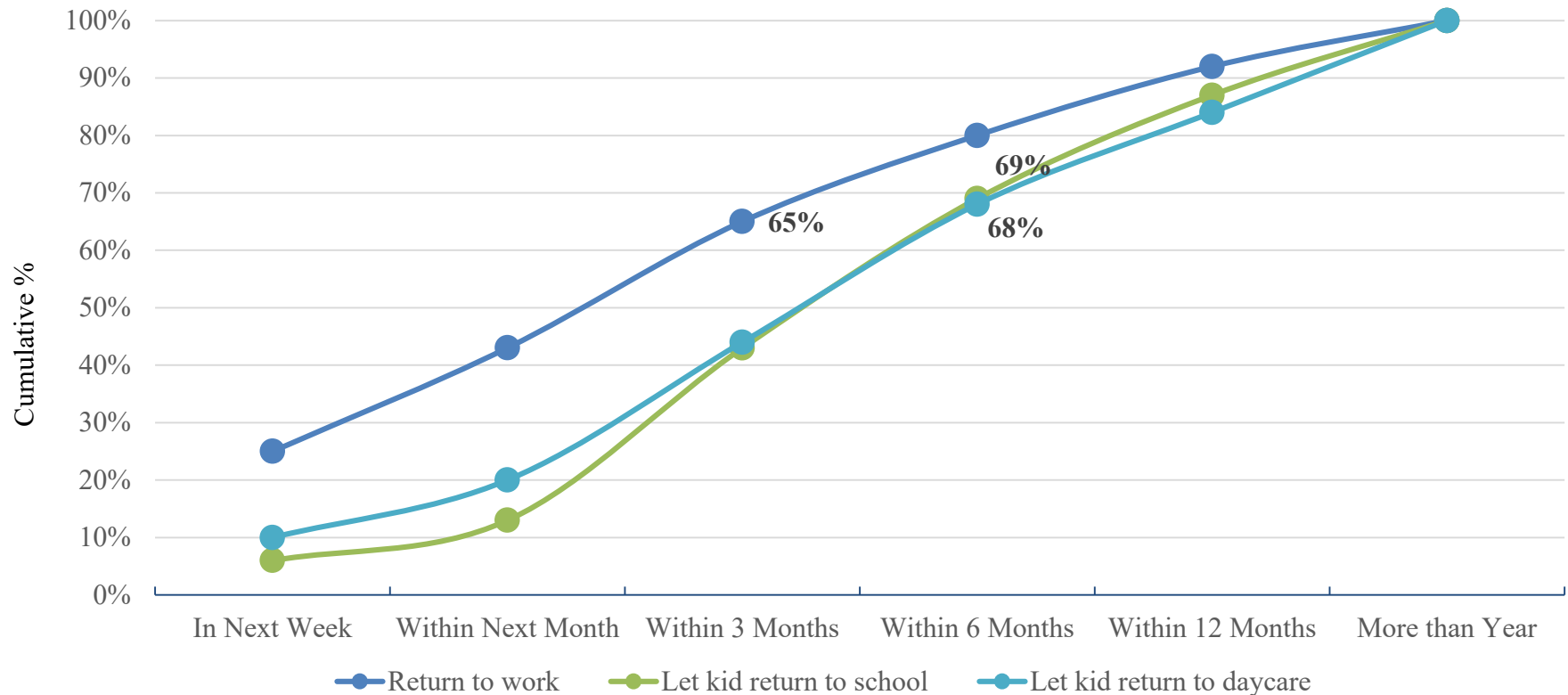
Q: Thinking of your job before the coronavirus outbreak, how often were you able to work from home?



Source: Heart+Mind May 27<sup>th</sup> Roundtable

# National Trends: Work Will Return Well in Advance of Childcare

Q: When are you likely to do each of the following?

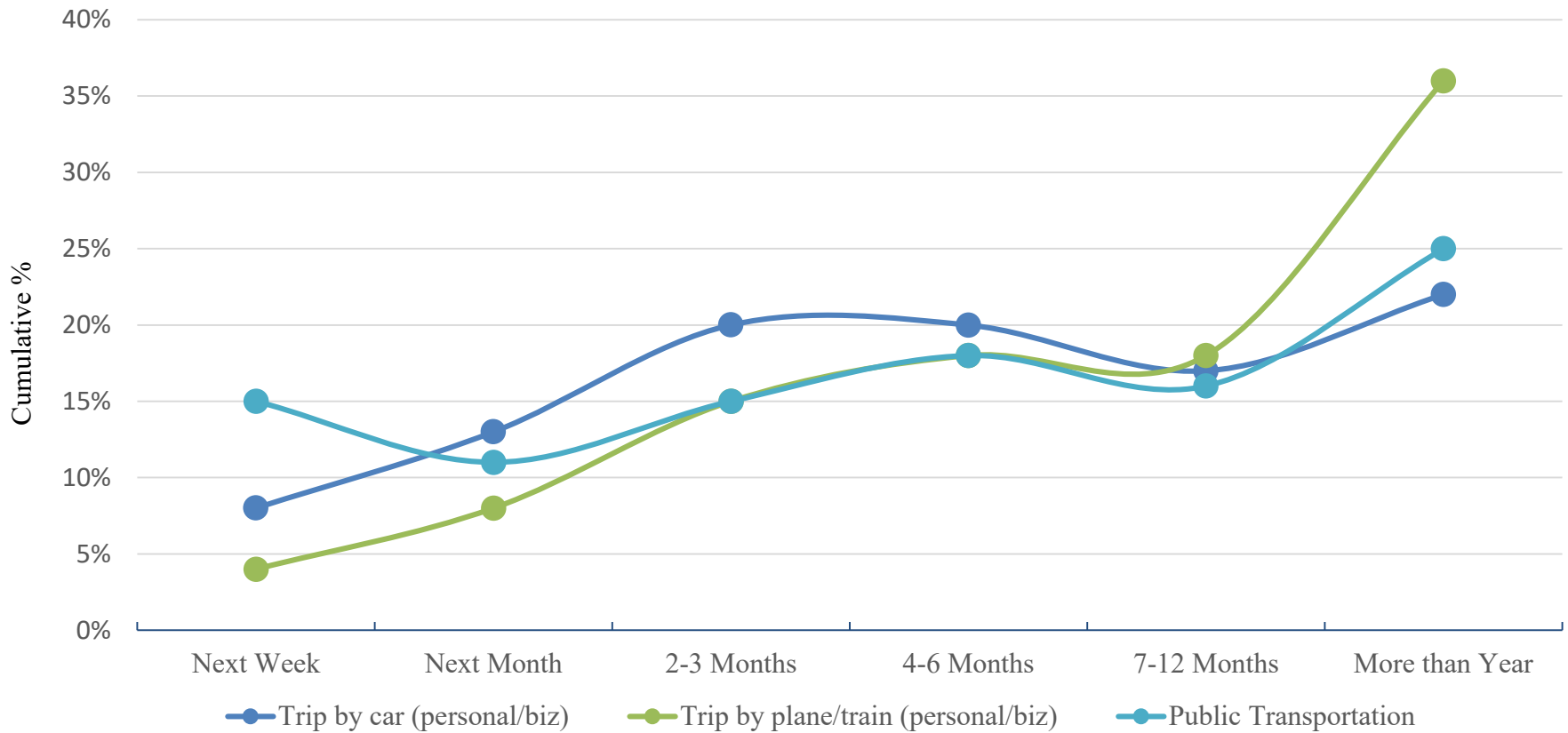


Source: Heart+Mind June 19<sup>th</sup> Roundtable



# National Trends: Public Transit Lags Behind Car Trips

Q: When are you likely to do each of the following?

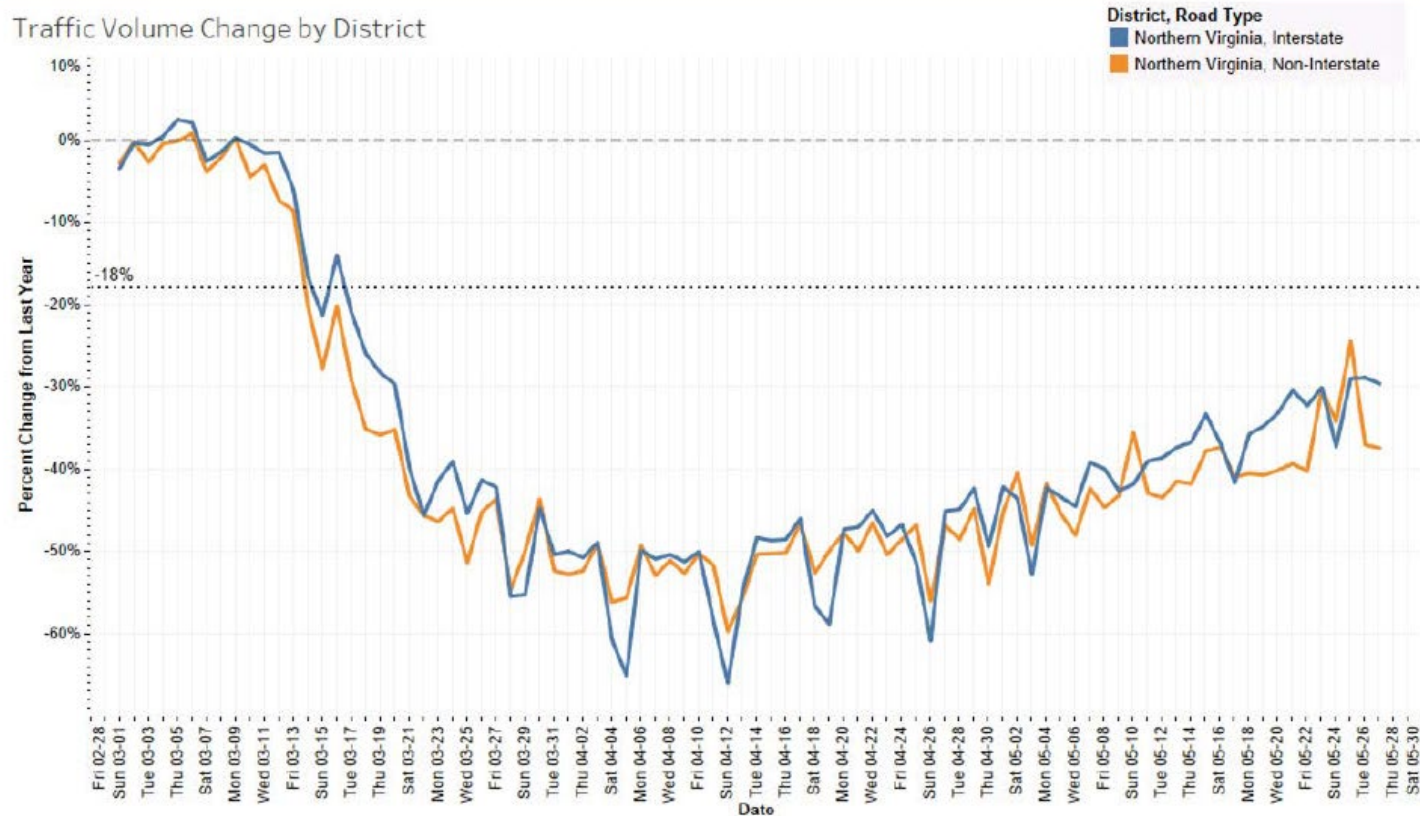


Source: Heart+Mind June 19<sup>th</sup> Roundtable

# Regional Trends: VDOT Volume Trends

## All Vehicles Daily Volume Change in Northern Virginia

Traffic Volume Change by District

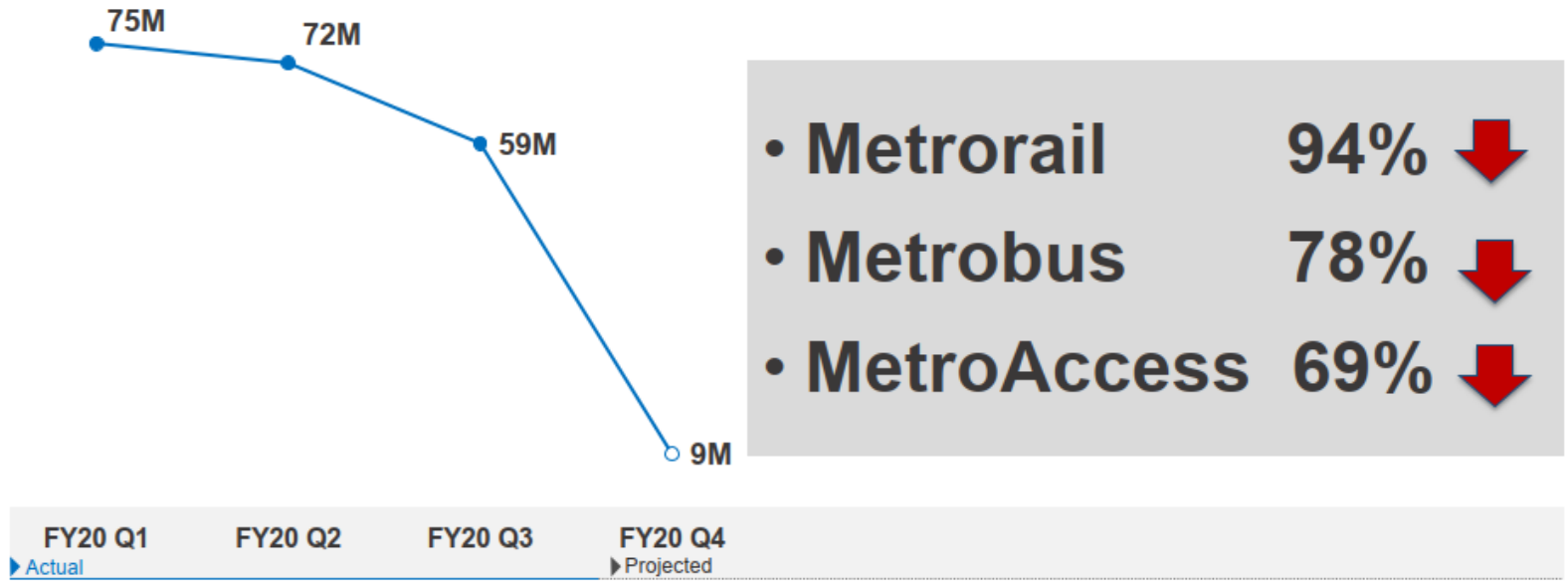


Mid-April shows the lowest daily volume at -55% compared to 2019 levels

Source: VDOT data presented at the Commonwealth Transportation Board June 17<sup>th</sup> Meeting

# Regional Trends: WMATA Ridership

Ridership Decline of 88% from Q4 FY2020 Budget



Source: WMATA Finance & Capital Committee Meeting May 14, 2020



# Northern Virginia Reopening Phases

- Phase 1 (started 5/29)
  - Continued social distancing & teleworking
  - Non-essential businesses, like restaurants and salons, reopened with limited capacity
- Phase 2 (started 6/12)
  - Social gatherings increase from 10 to 50 people
  - Restaurant and beverage establishments may offer indoor dining at 50% occupancy & certain recreation/entertainment venues without shared equipment may open with restrictions

# Northern Virginia Reopening Phases

- Phase 3 (started 7/1)
  - Limit the occupancy of physical spaces to ensure adequate physical distancing may be maintained
  - Encourage telework, when not feasible move/stagger workstations to maintain 6 feet of distance
- Phase 4 “New Normal” – June 2021-2025

# Scenario Definitions

Scenario	Short Term (2020-2021)	“New Normal” (2025)
Quick Recovery	Economy recovers by fall and most people are back to work and school	Overall travel is about 95% of pre-COVID levels
Active Transportation	Gradual recovery where more people drive alone or take active transportation (walking/biking)	Active transportation remains higher than 2019; overall travel about 90% of pre-COVID levels
Second Pandemic Wave in October	A second stay at home advisory issued in October, with an increase in job loss and teleworking and a decrease in transit ridership	Most significant impact on overall travel, returning only to about 85% of pre-COVID levels
Cautious Recovery	Most gradual recovery with low school attendance and business related travel is reduced, & E-commerce increases	Overall travel lower than Quick Recovery Scenario at about 90% of pre-COVID levels

# Scenario Comparison: Assumptions

	Quick Recovery		Active Transportation		Second Wave		Cautious Recovery	
	Short Term	New Normal	Short Term	New Normal	Short Term	New Normal	Short Term	New Normal
<b>Telework*</b>	10%	10%	20%	15%	50%	10%	25%	15%
<b>Jobs Lost*</b>	3%	0.5%	5%	1%	10%	6%	8%	2%
<b>School Attendance</b>	90%	95%	90%	95%	0%	100%	40%	90%
<b>Transit Safety Perception</b>	85%	100%	75%	95%	25%	95%	40%	100%
<b>Active Transportation</b>	Pre-COVID Mode Share		60% trips <5 mi are walk/bike. Mode share increases 30%.		Pre-COVID Mode Share		Pre-COVID Mode Share	

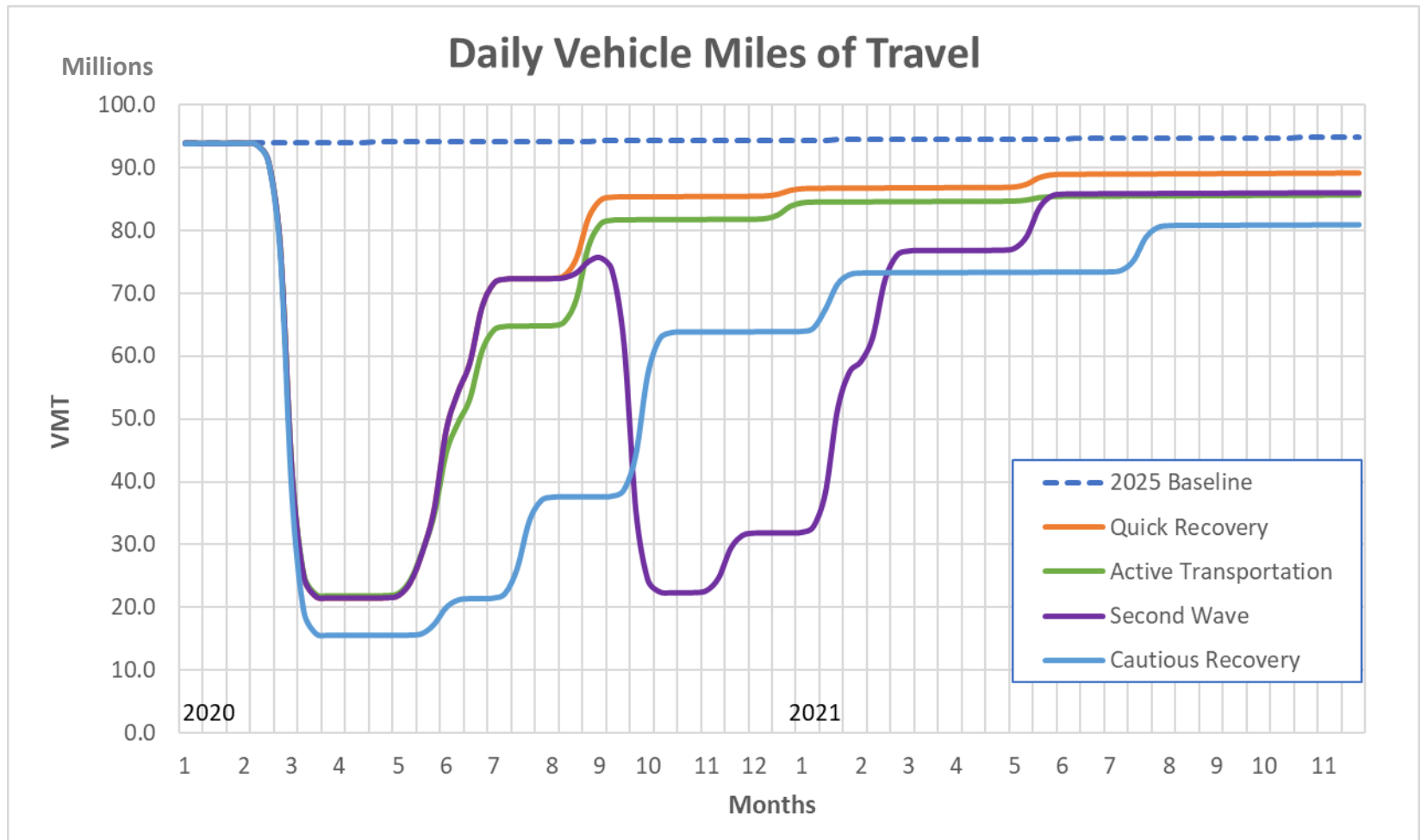
\*Compared to pre-COVID levels

# Short Term Impacts

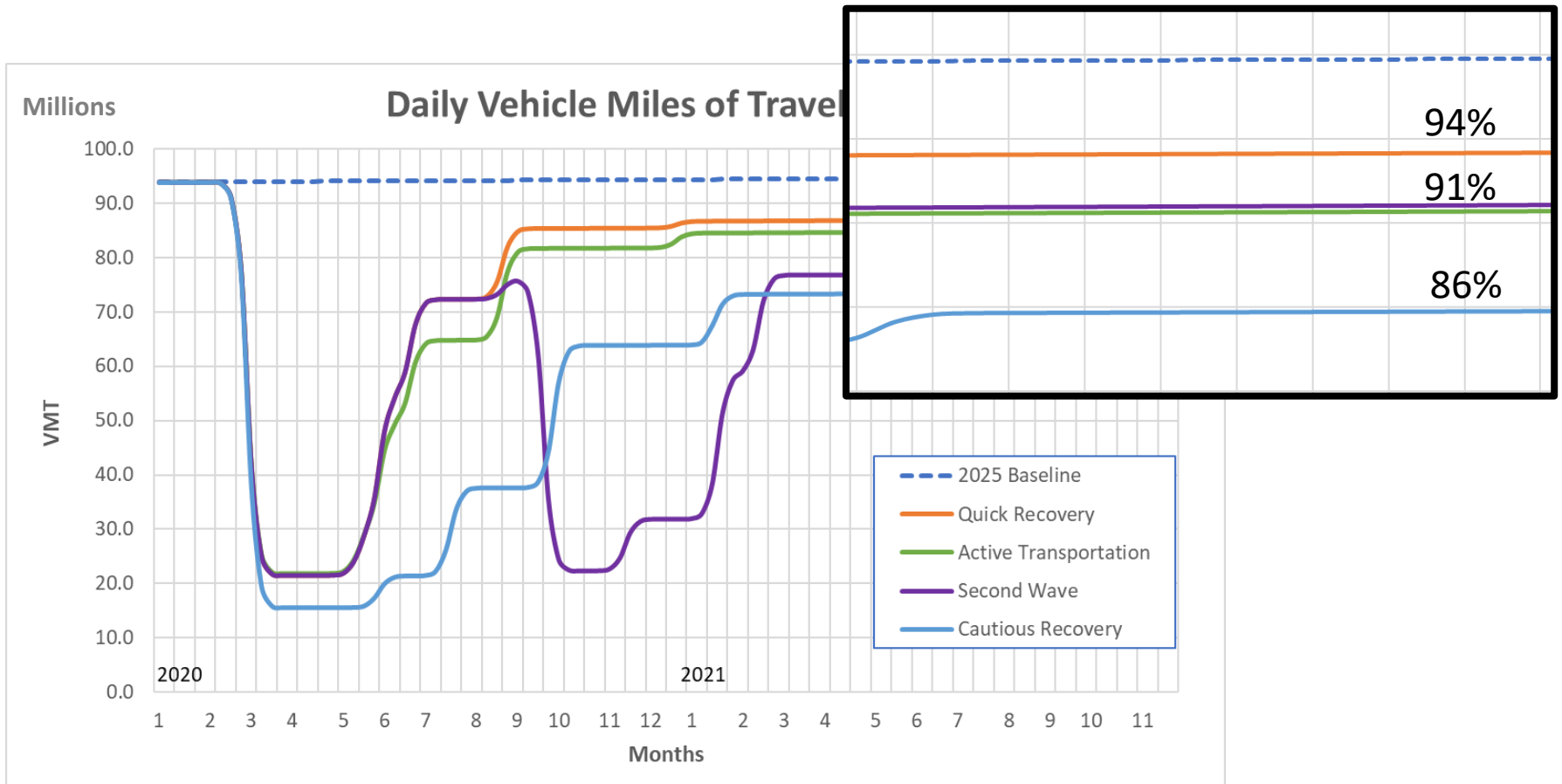
Jan 2020 to June 2021



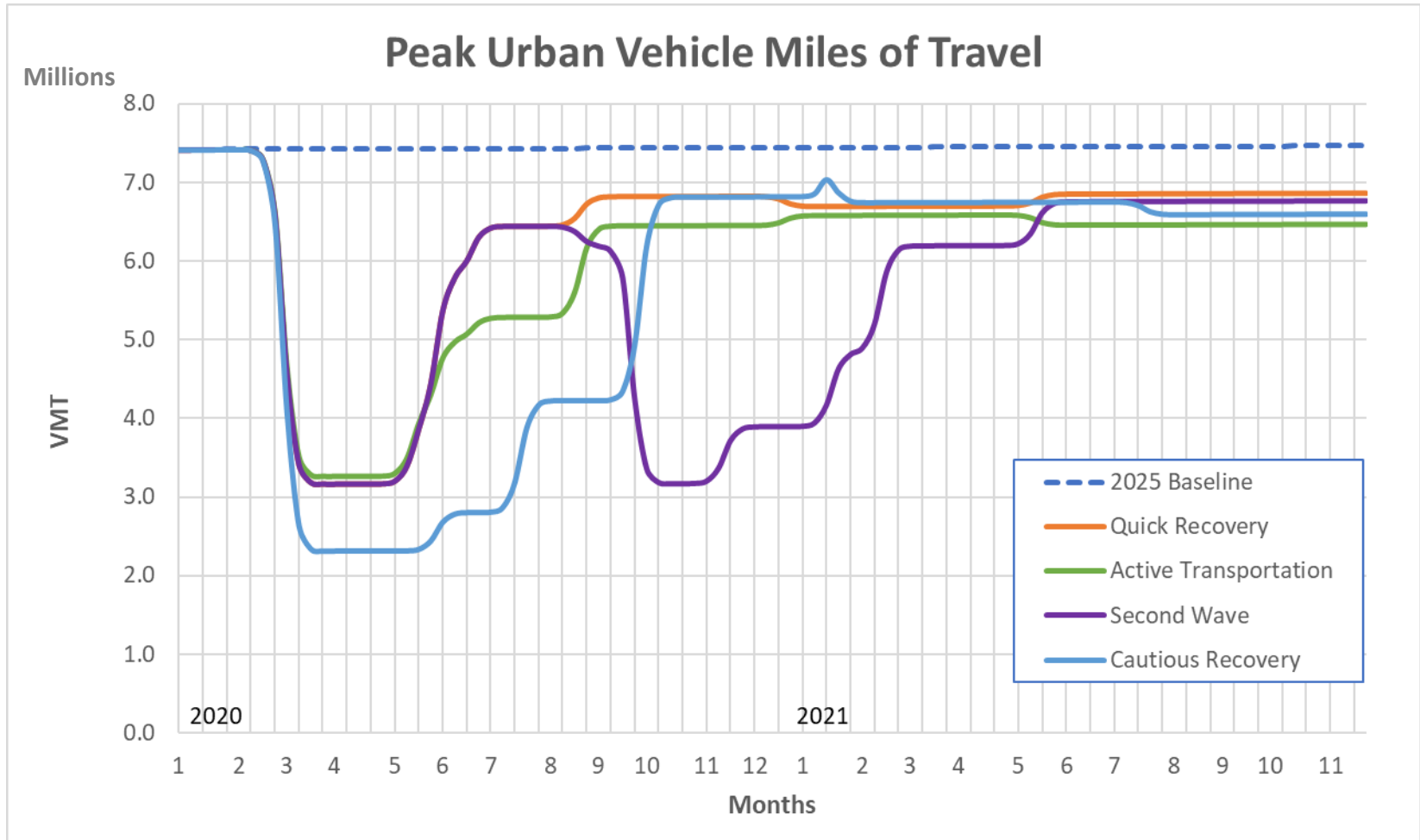
# Impact on Vehicle Miles Traveled (VMT)



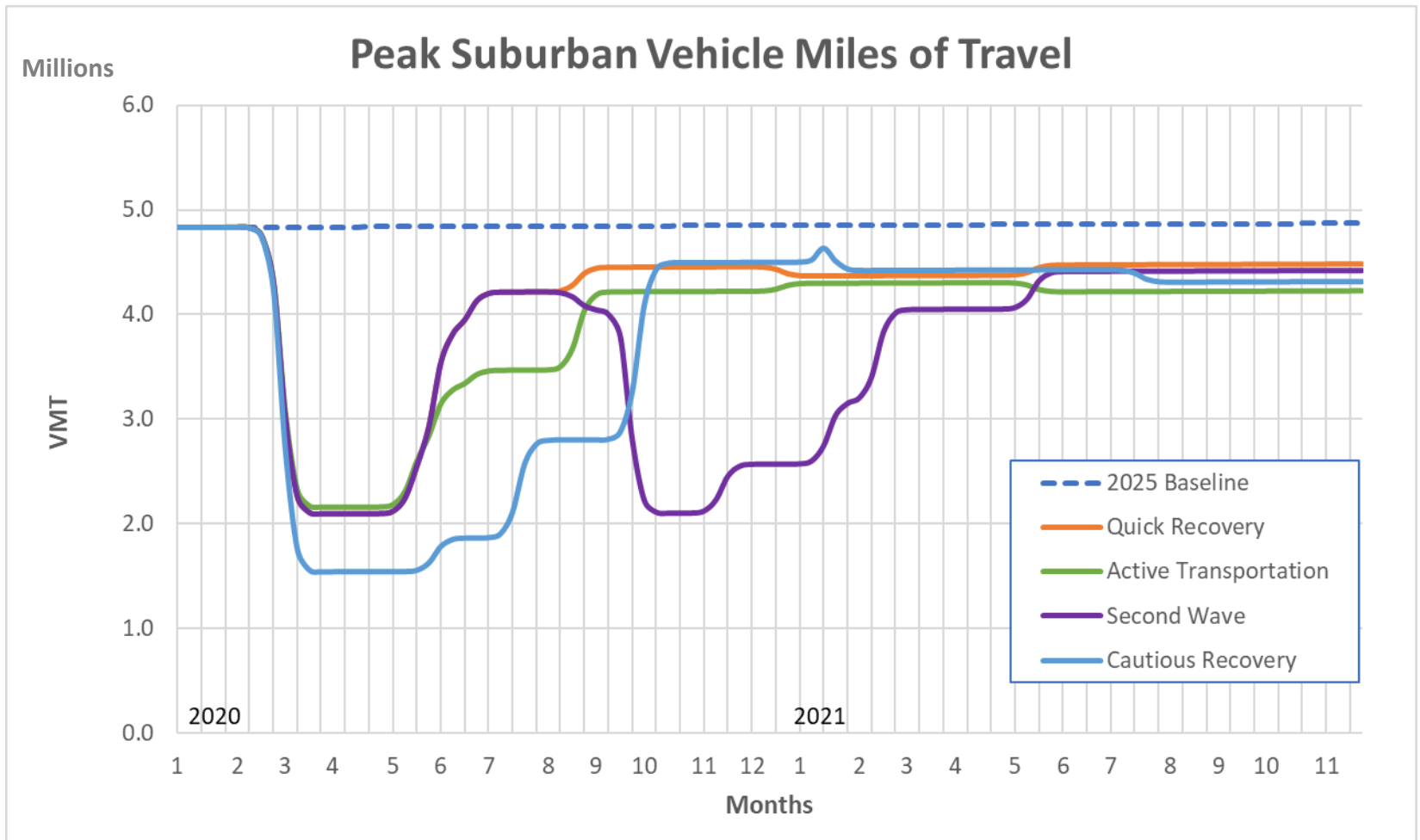
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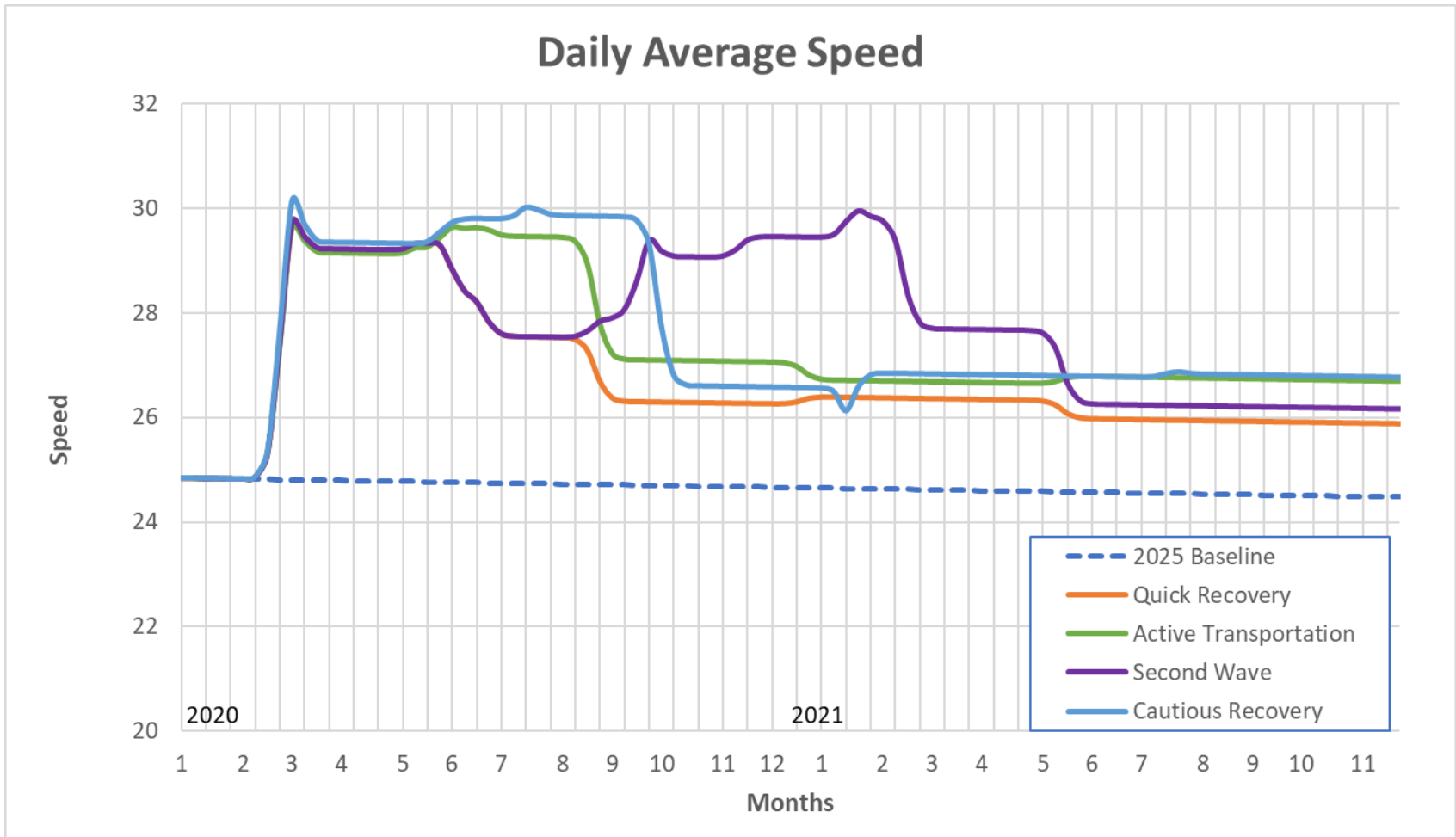
# Impact on VMT by Subarea



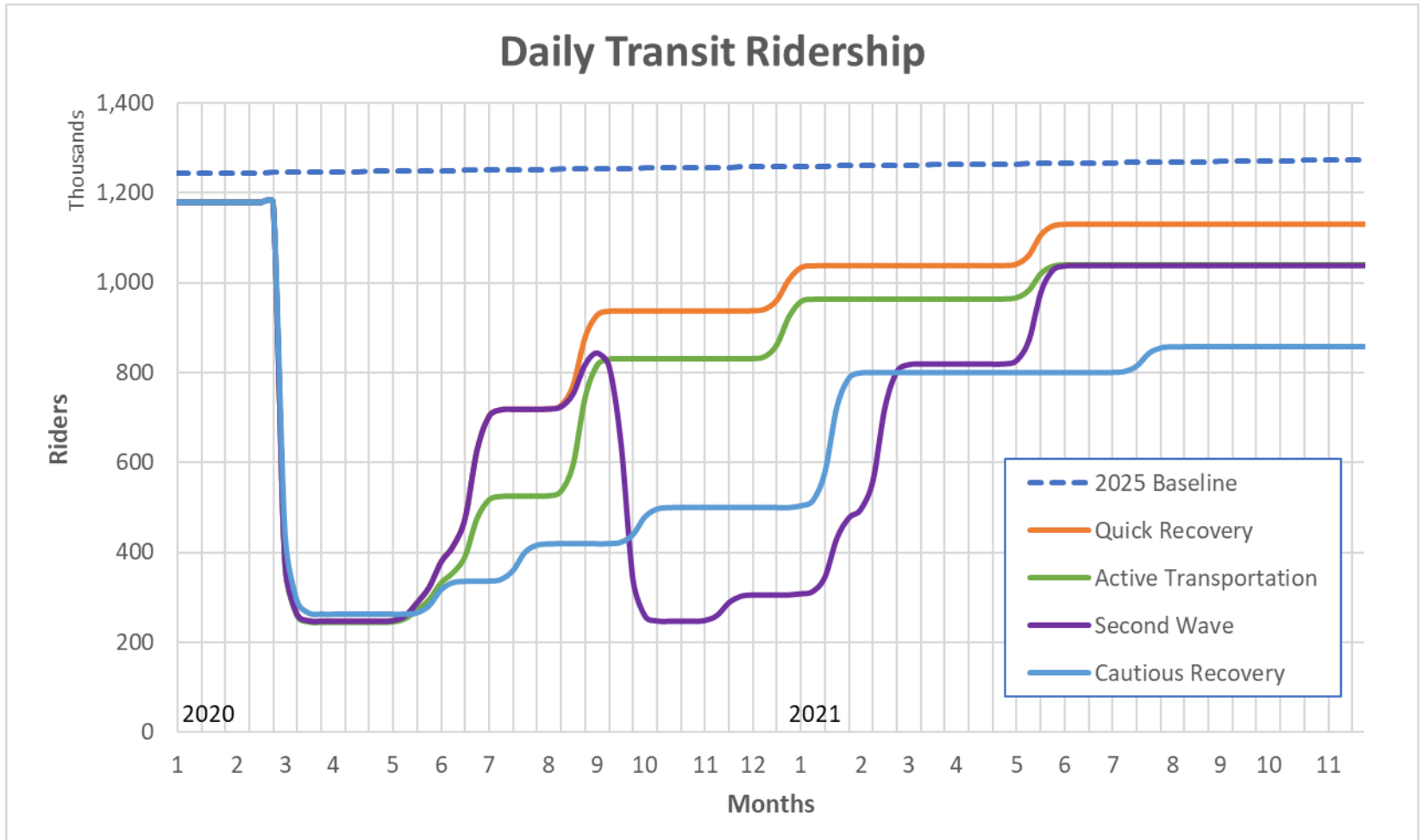
# Impact on VMT by Subarea



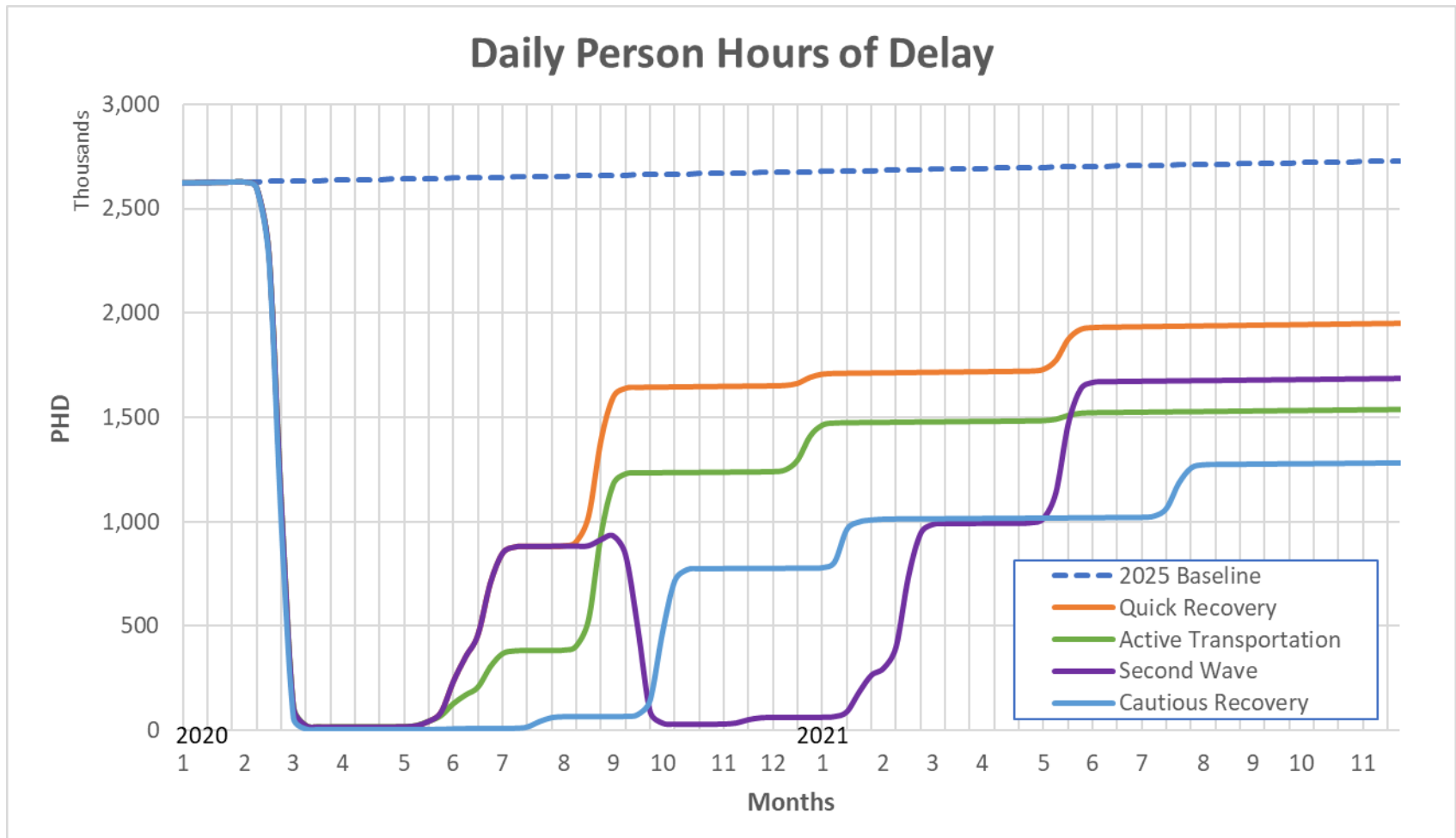
# Impact on Vehicle Speed



# Impact on Transit Ridership



# Impact on Person Hours of Delay



# “New Normal” Impacts

Horizon Year: 2025





# 2025 Transportation Network Performance

- Evaluate the scenarios using TransAction performance metrics
- Multi-modal measures that address accessibility and mobility in the region
  - Congestion
  - Transit ridership
  - VMT, etc.

# Findings: Selected Measures (2025)

Measures (Weekday)	Base 2025 Conditions	Quick Recovery (%Change)	Active Transportation (%Change)	Second Wave (%Change)	Cautious Recovery (%Change)
Auto Trips	6,883,071	-16%	↓ -46%	-24%	-38%
Transit Trips	618,202	-15%	-36%	-22%	↓ -37%
Transit Share%	8.2%	+0.1%	↑ +1.4%	+0.2%	+0.1%
Transit Boardings	889,648	-15%	-33%	-22%	↓ -37%
Miles of Travel (Person)	116,060,798	-16%	-30%	-24%	↓ -38%
Hours of Travel (Person)	4,040,851	-31%	-49%	-42%	↓ -55%
Hours of Delay (Person)	1,472,169	-57%	-81%	-72%	↓ -85%
Transit Crowding	1,564	-34%	-58%	-58%	↓ -66%

# Findings: VMT by Jurisdiction (2025)

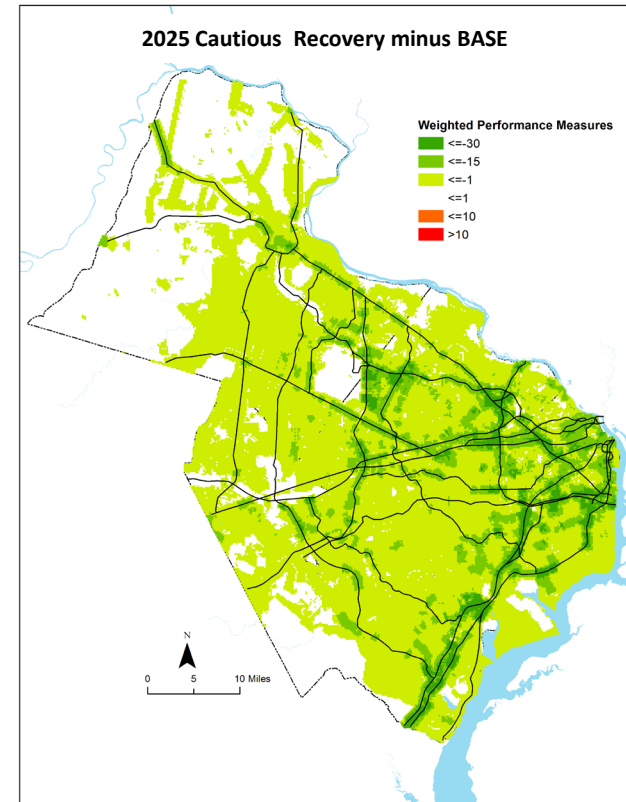
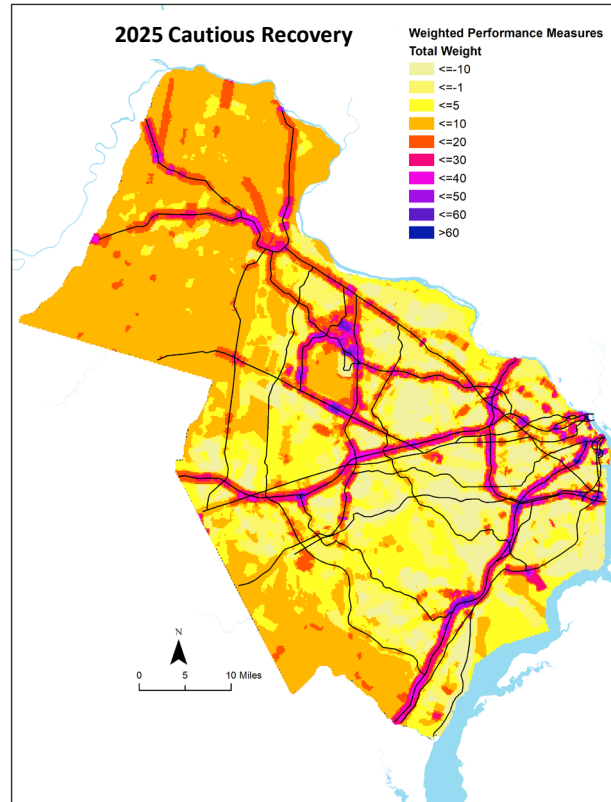
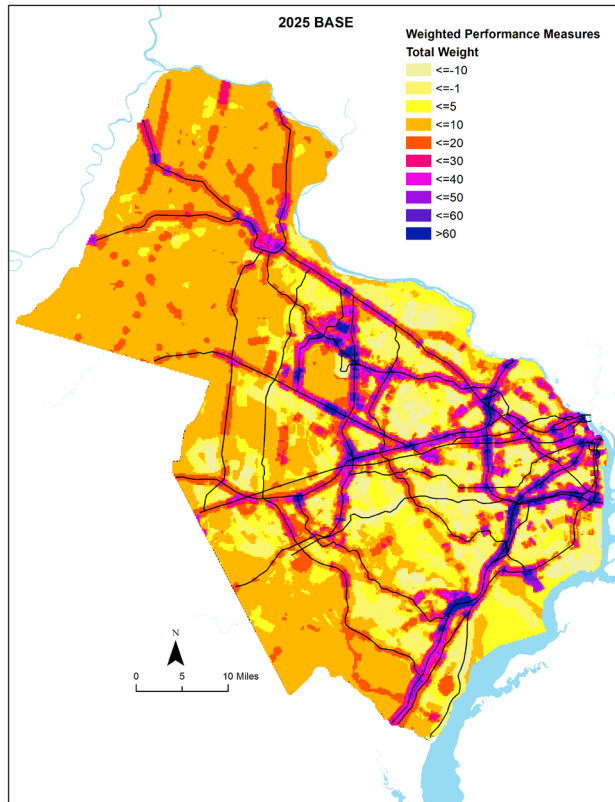
Miles of Travel Per Person (Auto & Transit)	Base Conditions (2025)	Quick Recovery (%Change)	Active Transportation (%Change)	Second Wave (%Change)	Cautious Recovery (%Change)
<b>Arlington</b>	8.3 mil	-19%	-35%	-28%	-45%
<b>Alexandria</b>	5.2 mil	-18%	-36%	-28%	-44%
<b>Fairfax, Fairfax City &amp; Falls Church</b>	62.0 mil	-16%	-29%	-24%	-38%
<b>Loudoun</b>	18.1 mil	-14%	-28%	-21%	-34%
<b>Prince William, Manassas &amp; Manassas Park</b>	22.5 mil	-16%	-31%	-24%	-38%

# Findings: Person Hours of Delay by Jurisdiction (2025)

Person Hours of Delay (PHD)	Base Conditions (2025)	Quick Recovery (%Change)	Active Transportation (%Change)	Second Wave (%Change)	Cautious Recovery (%Change)
<b>Arlington</b>	143,000	-66%	-87%	-80%	-92%
<b>Alexandria</b>	84,500	-69%	-90%	-83%	-94%
<b>Fairfax, Fairfax City &amp; Falls Church</b>	792,000	-61%	-83%	-75%	-88%
<b>Loudoun</b>	264,400	-44%	-68%	-57%	-72%
<b>Prince William, Manassas &amp; Manassas Park</b>	188,300	-48%	-77%	-68%	-84%

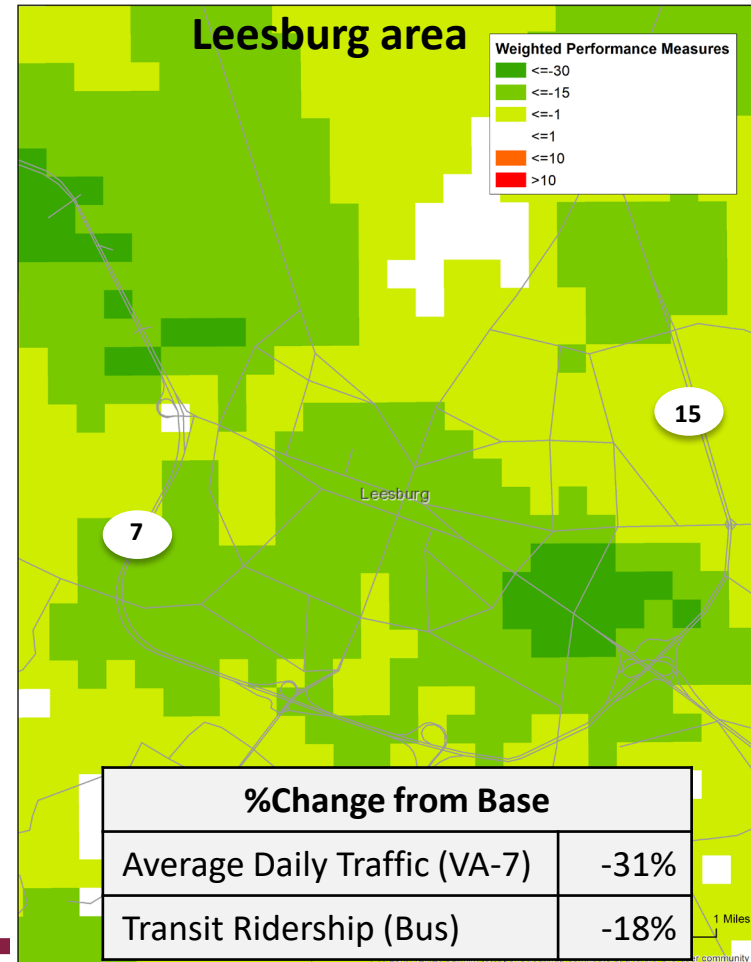
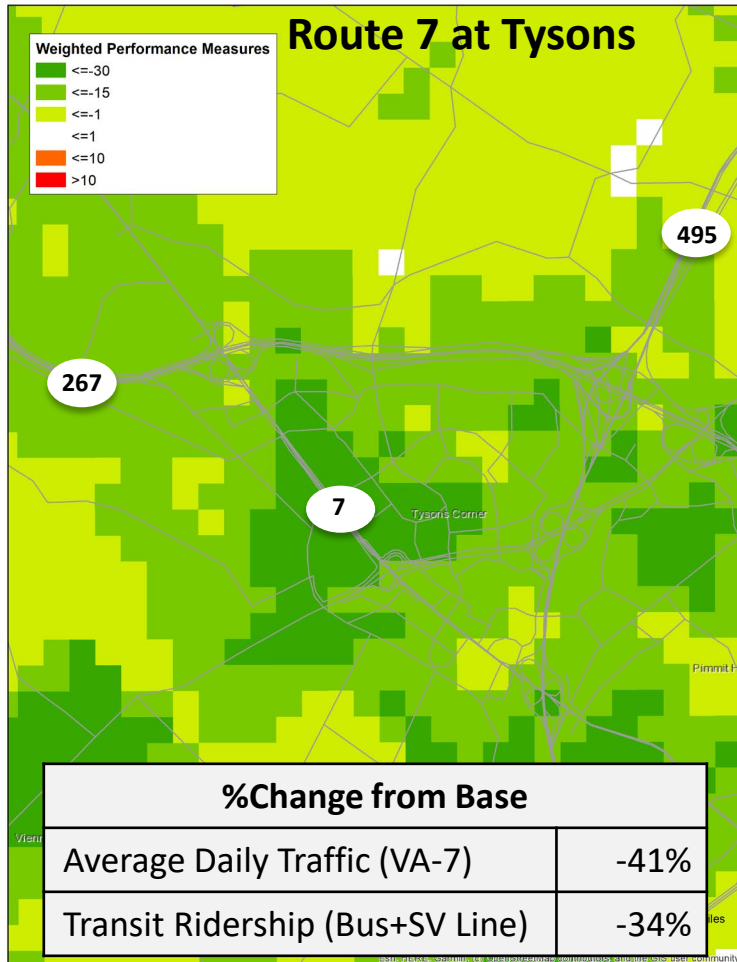
# Overall Impact of Cautious Recovery Scenario

## Weighted Performance Measures



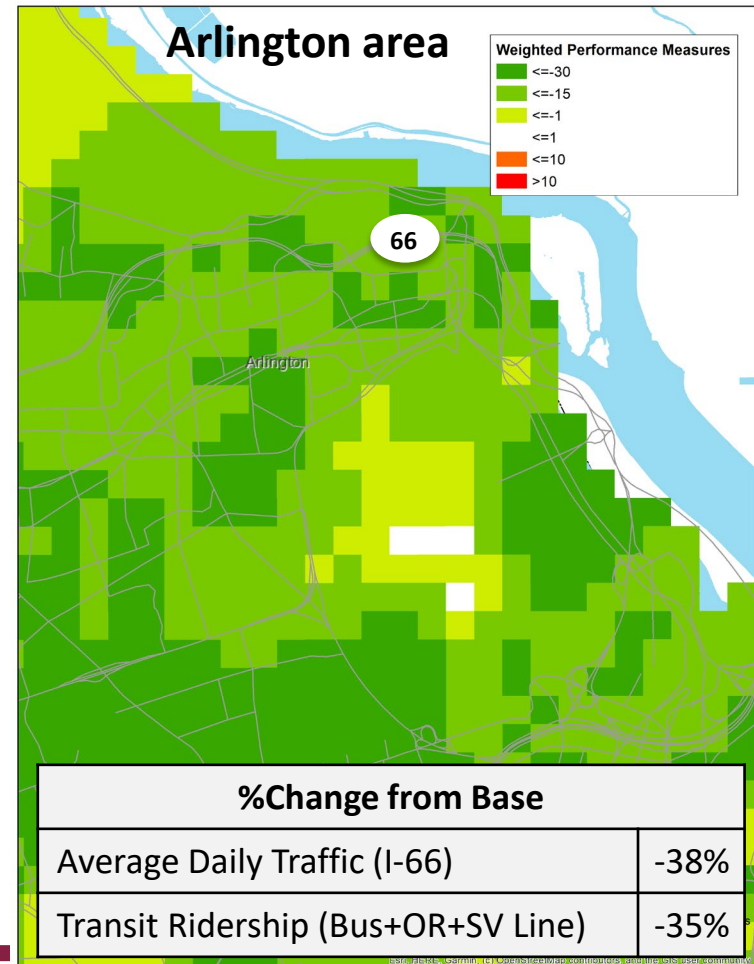
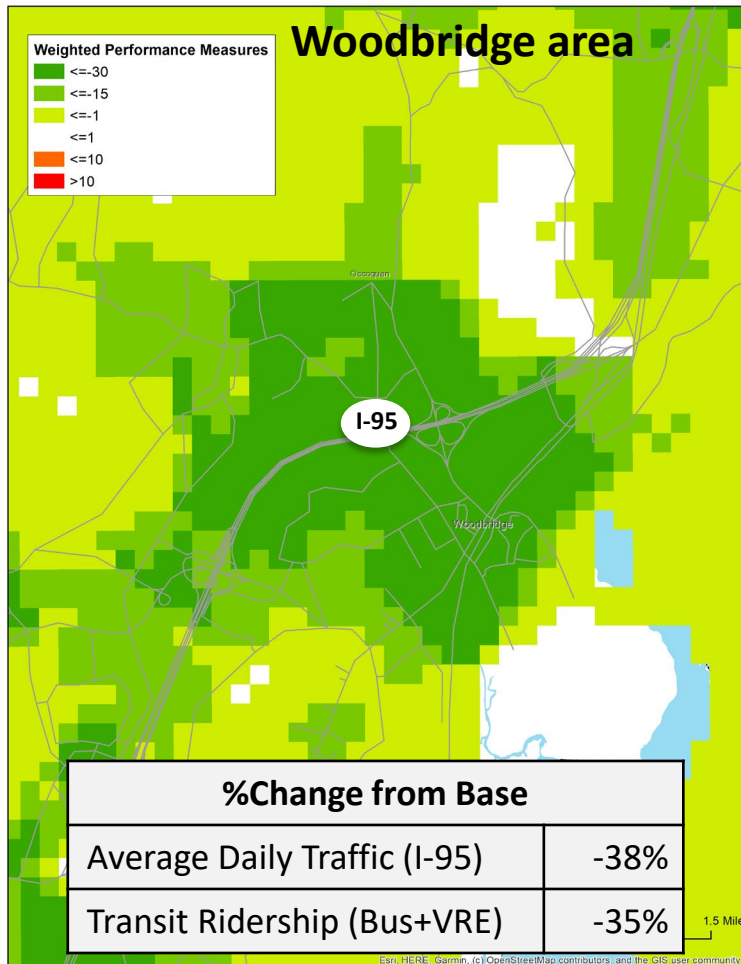
# Cautious Recovery Scenario: Route 7 Tysons; Leesburg

## Weighted Performance Measures



# Cautious Recovery Scenario: I-95 South near Woodbridge; Arlington

## Weighted Performance Measures



# “New Normal” Scenario Observations

- All four scenarios assume 10-15 percent more telework than pre-COVID levels, and school attendance levels close to pre-COVID levels
- All four scenarios reduce auto and transit trips
  - ‘Active Transportation’ scenario has the largest impact for auto trips (46 percent reduction)
  - ‘Cautious Recovery’ scenarios has the largest impact for transit trips (37 percent reduction)
- All four scenarios reduce person hours of delay
  - ‘Cautious Recovery’ scenario has the largest impact (85 percent reduction)
  - Impact is most pronounced among inner jurisdictions, but is still significant for outer jurisdictions
  - Impact is evident along major corridors



# Conclusions

- Short Term
  - The majority of changes occur within the first 18 months and level off around June 2021
- “New Normal”
  - Teleworking and economic impacts result in:
    - Traffic volumes and transit ridership that do not fully recover to pre-COVID levels
    - Significant reductions in time spent traveling and time lost in congestion
    - While congestion reduction impacts are a positive, transit ridership reduction may be challenging to financial stability of some transit agencies

# Implications for NVTAs' Planning and Programming Responsibilities, and Transportation Policy

- These findings suggest several topics for further consideration through the upcoming TransAction planning process and ongoing capital program development
  - Potential **policies** to support continued teleworking at greater than pre-COVID levels while mitigating impact on transit ridership, e.g. incentivization
  - **Using data** to further refine understanding of travel choices by households and businesses, and implications on the network
  - Quantifying the extent to which **TDM programs** influence travel behavior
  - Projects that support **multiple modes of transportation**
  - Emphasis on **flexible use of right-of-way** to accommodate changing travel patterns

# Q & A

# Backup Slides

# Performance Measures

- 1.1.1 Total Person Hours of Delay
- 1.1.2 Transit Crowding
- 1.1.3 Person Hours of Congested Travel in Automobiles
- 1.1.4 Person Hours of Congested Travel in Transit Vehicles
- 1.2.1 Congestion Severity: Maximum Travel Time Ratio
- 1.2.2 Congestion Duration
- 1.3.1 Percent of jobs/population within ½ mile of high frequency and/or high performance transit
- 1.3.2 Access to jobs within 45 mins by auto or within 60 mins by transit
- 1.4.1 Average travel time per motorized trip between Regional Activity Centers
- 1.4.2 Walkable/bikeable environment within a Regional Activity Center
- 2.1.1 Safety of the transportation system
- 2.2.1 First and last mile connections
- 2.3.1 Travel by non-SOV modes
- 2.4.1 Person hours of travel caused by 10% increase in PM peak hour demand
- 3.1.1 Vehicles miles traveled (VMT) by speed