



**TDOT**

Department of  
Transportation

**RITIS**

TDOT's Big Data Aggregation Tool of Choice

TSITE | May 9, 2023

Jon Storey, PE, PTOE | Statewide TSMO Integration Manager

# Question?

Would you  
be  
interested to  
quantify  
roadway  
operations...

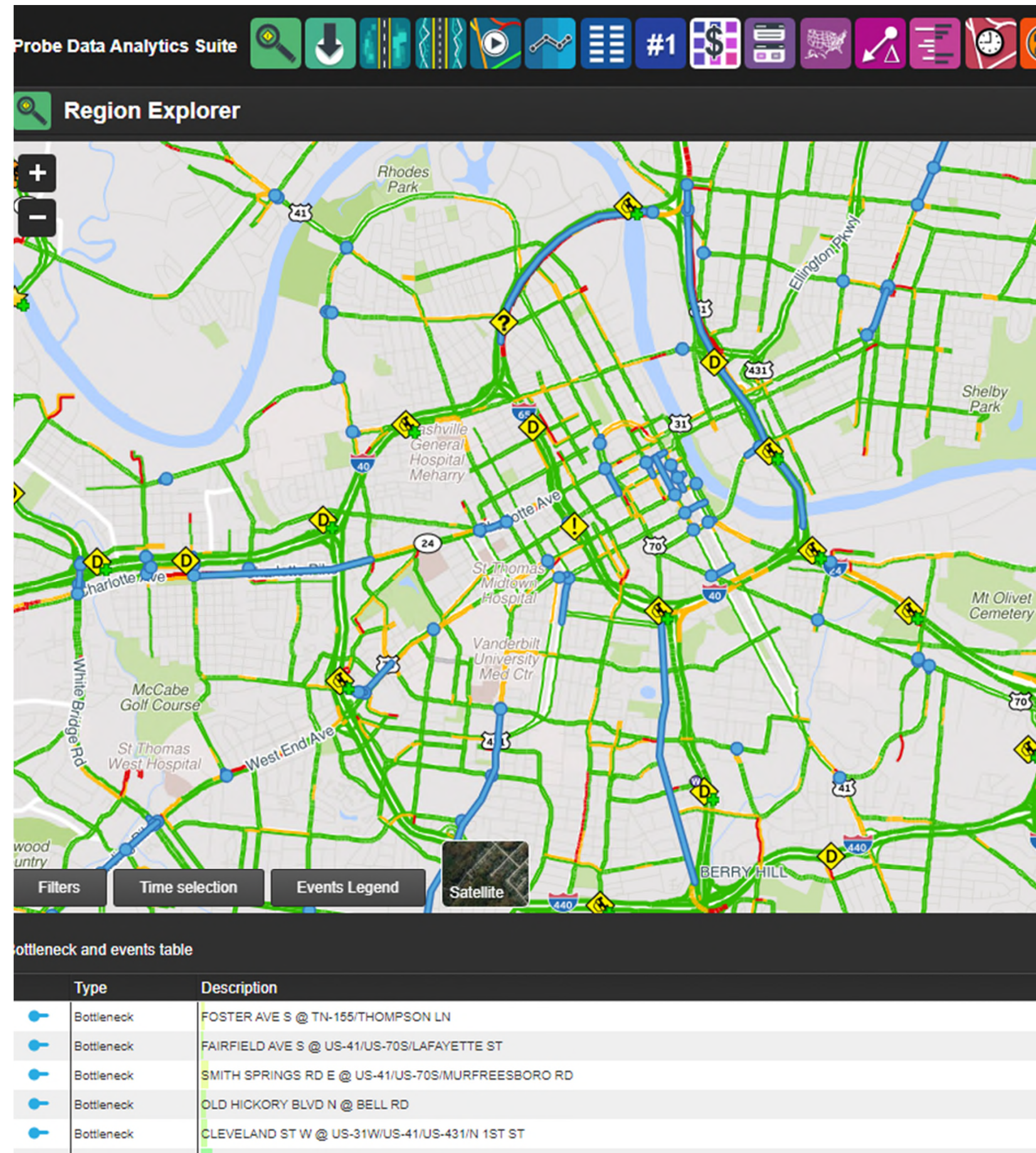
- Over the past year?
- When testing a new signal timing plan?
- Before and after a construction project?
- During MOT of a construction project?
- During a special event?
- To monitor and report major incident management?



# RITIS

TDOT's Big Data Aggregation Tool of Choice

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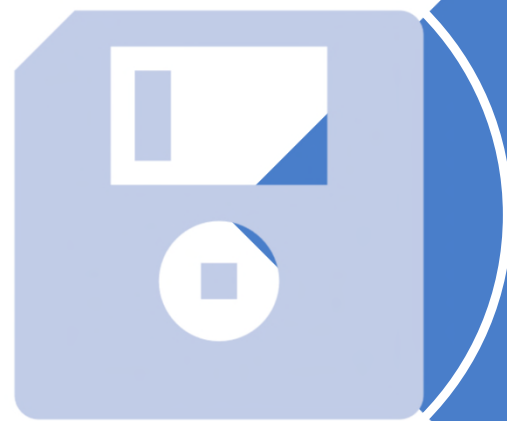


# Intro to RITIS

# What is RITIS?



Tools are accessed through a web portal



No software installation needed

# Who Can Access RITIS and How?

## Permanent Access

- Anyone with a “@tn.gov” e-mail address
- Municipal government employees in TN

## Project-based access

- Consultants working on TDOT Projects

# How to Access it?

## State Employees (@tn.gov e-mail)

- <https://ritis.org>
- Request an Account using your state e-mail
- Often takes less than two days

## Non-State Employees

- Complete a Data Use Application
- <https://dua.tdmmarketplace.com/>
- Questions can be referred to [mqle@tetcoalition.org](mailto:mqle@tetcoalition.org)
- May take up to two weeks

# What Kind of Learning Curve?

Online videos  
available

Plan on around  
half a day for all  
modules

Each module  
video around 5  
minutes



# What is RITIS?

Situational awareness, data archiving, and analytics platform

Used by transportation officials, first responders, planners, researchers, and more

Fuses data from many agencies, many systems, and even the private sector

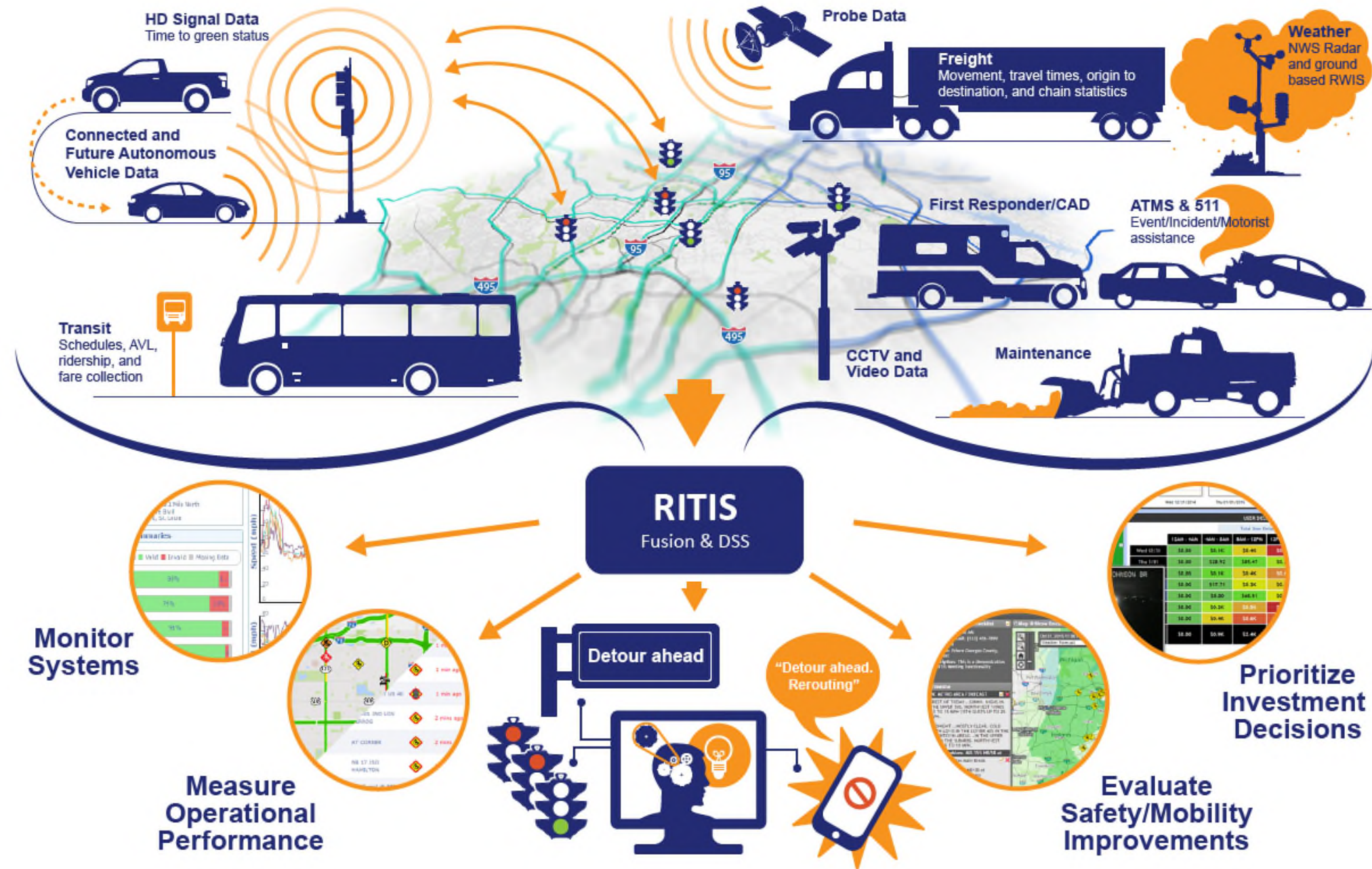
# How does RITIS Work?

RITIS integrates existing data from

- transportation and public safety systems
- the private sector
- and military

The data is fused in a private, secure cloud, and then disseminated to credentialed users through interactive websites, applications, data feeds, and APIs.

# How does RITIS Work?



# How is the Data Stored?



RITIS perpetually stores data—meaning no information is ever destroyed or erased.



A large team of 40+ software developers, network engineers, security experts, and IT specialists monitor RITIS 24/7/365—ensuring data and tools are always accessible.



**What Can RITIS Do?**

# What Can RITIS Do?

Planning for Operations

Active Operations

Long-Range Planning and Capital Programming

Research

Executive Leadership

Traveler Information



**TDOT's Contract**

# TDOT Contract

May 2021 through May 2026

\$4 m contract

All municipal agencies in TN have access through this contract

TDOT purchased historical INRIX data to January 1, 2016

Contract managed out of Long Range Planning

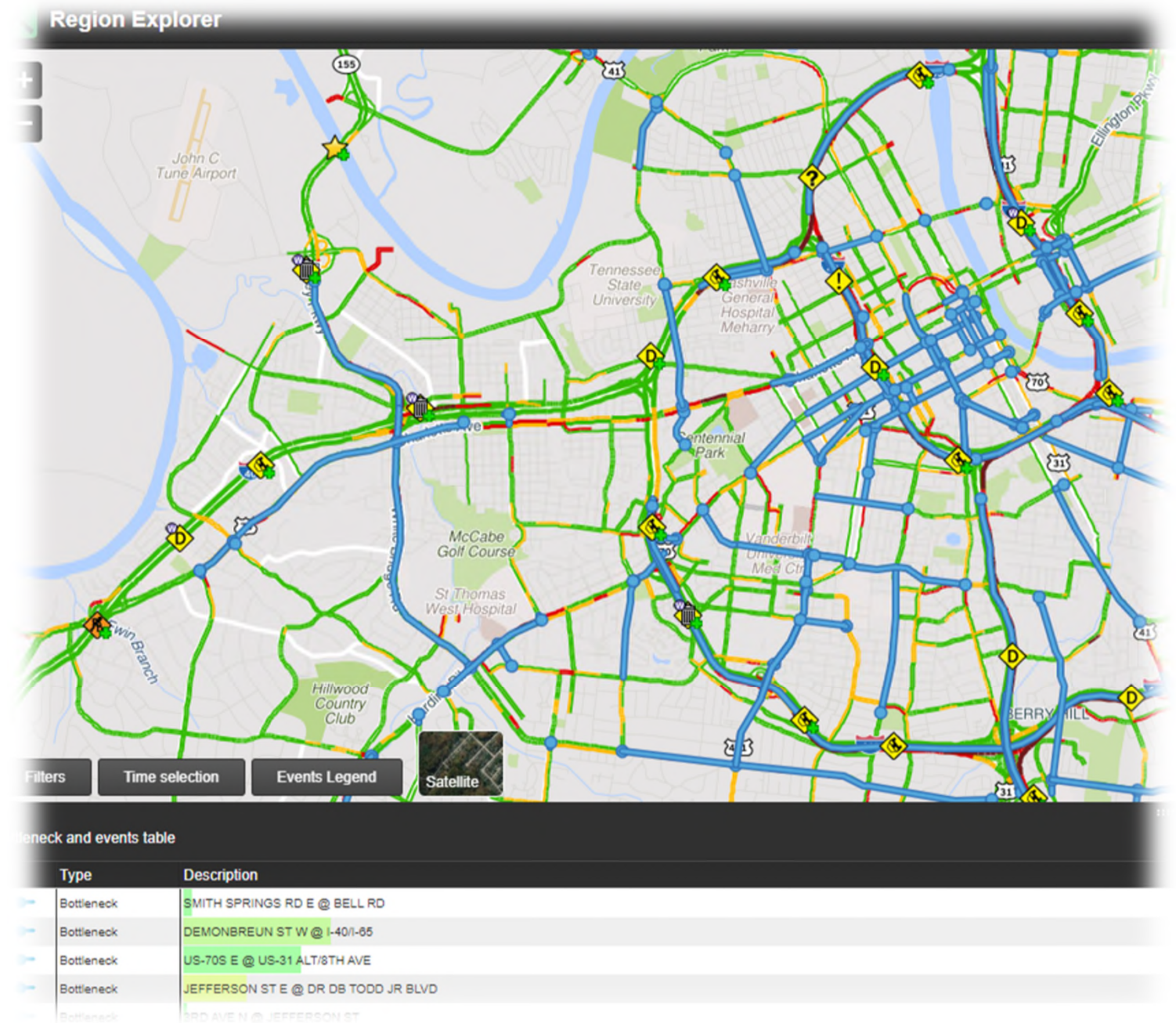




# TDOT RITIS Probe Data Analytics (PDA) Modules

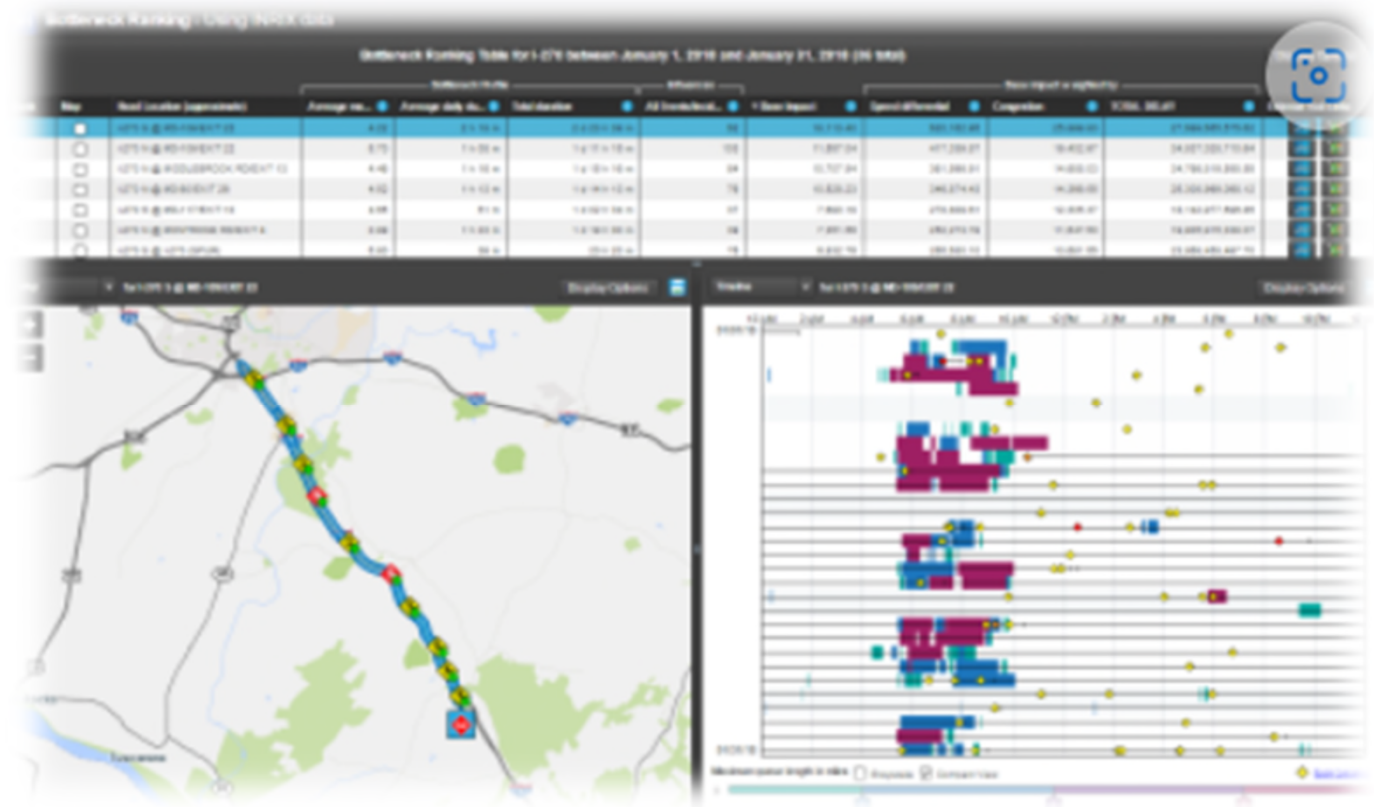
# RITIS Modules

- Region Explorer
  - Explore the relationships between bottlenecks and traffic events and their impacts on traffic conditions
  - Real-time or points in the past
  - Lists all of the events and bottlenecks within the bounds of the map



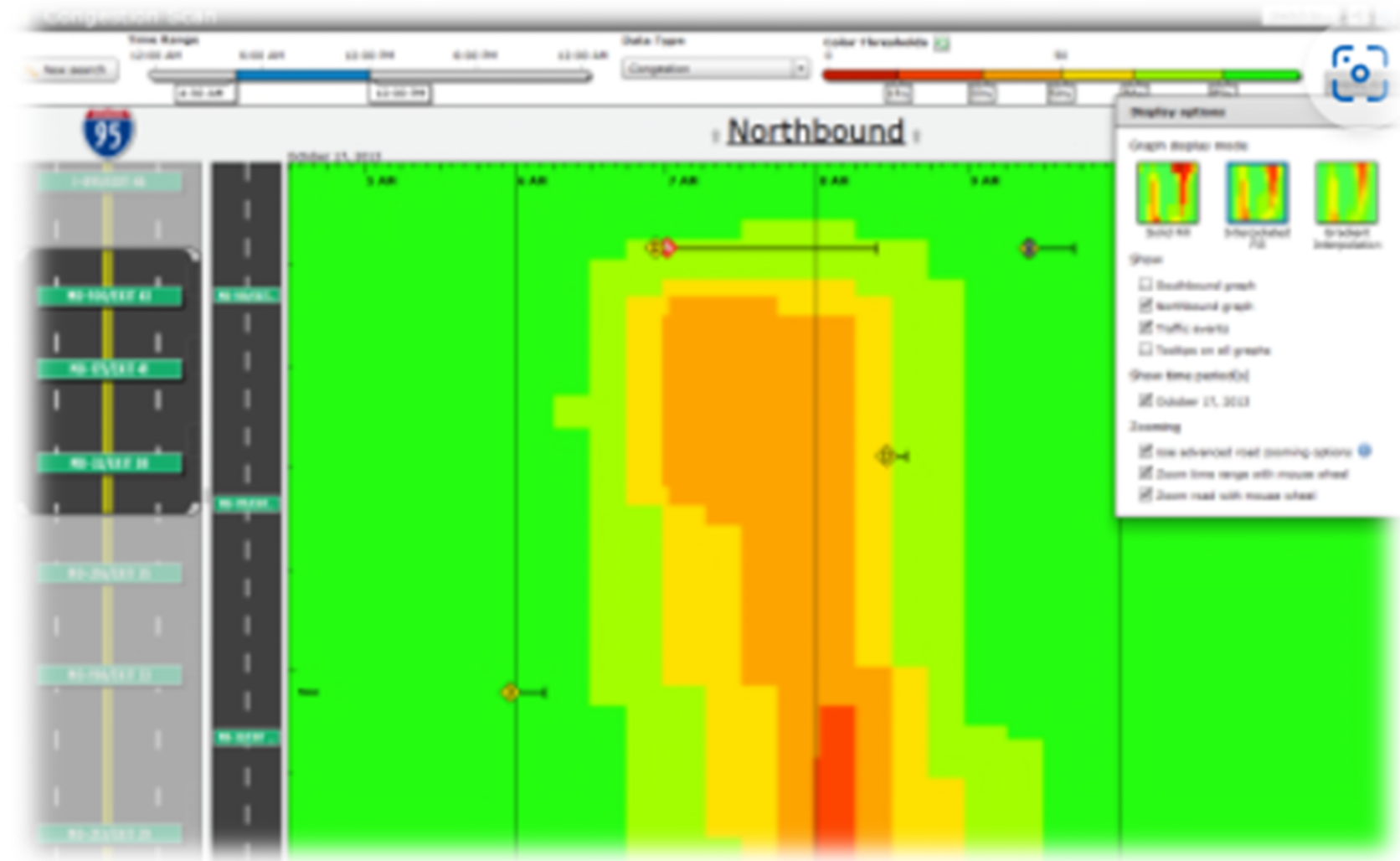
# RITIS Modules

- Bottleneck Ranking
  - Identify problem locations
  - Prioritize proposed projects
  - Ranking is performed using queue length, number of occurrences, impact, and accumulated delay



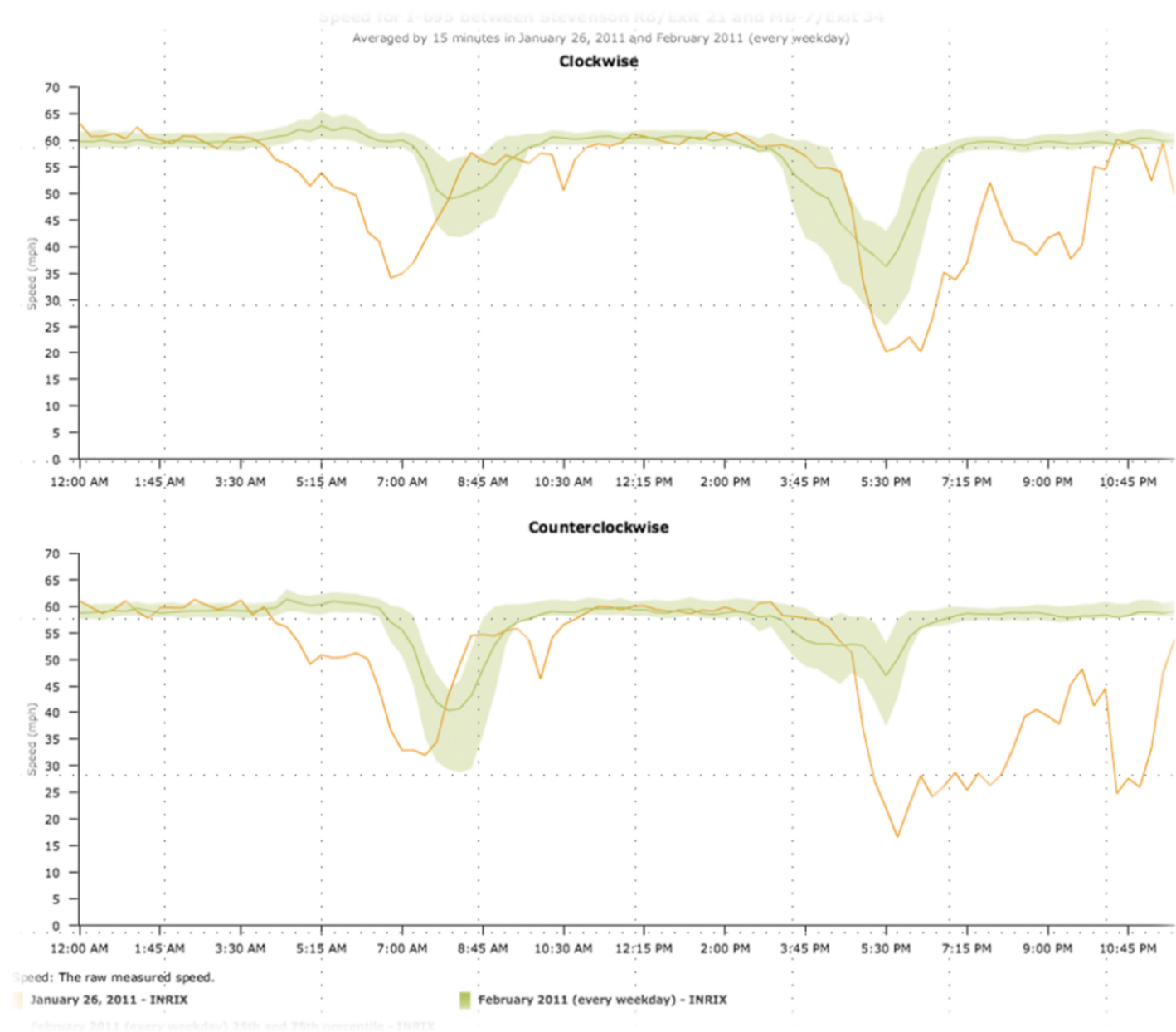
# RITIS Modules

- Congestion Scan
  - Analyze conditions on one or more stretches of road



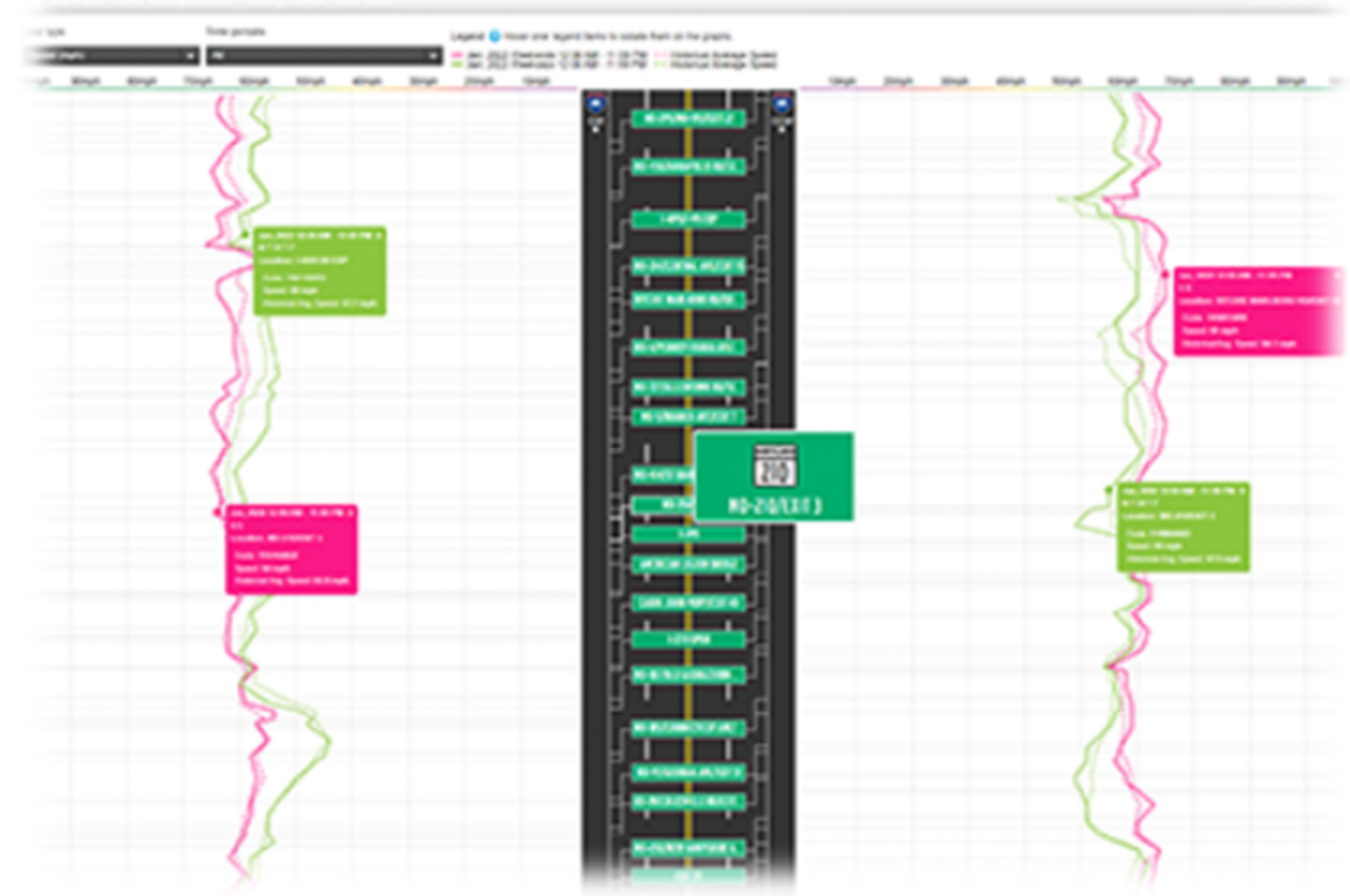
# RITIS Modules

- Performance Charts
  - Variety of visualization techniques – bar, line, scatterplot and candlestick –
  - Represents aggregate conditions across a road for key performance metrics
  - Average, 5th/95<sup>th</sup>, and 25th/75th percentiles ranges



# RITIS Modules

- Corridor Time Comparison
  - Visualize the variations in key performance measures along a roadway corridor
  - Displays bi-directional line charts associated with roadway segments
  - Up to two separate date ranges
  - Up to seven different time ranges
  - Choice of five different metrics

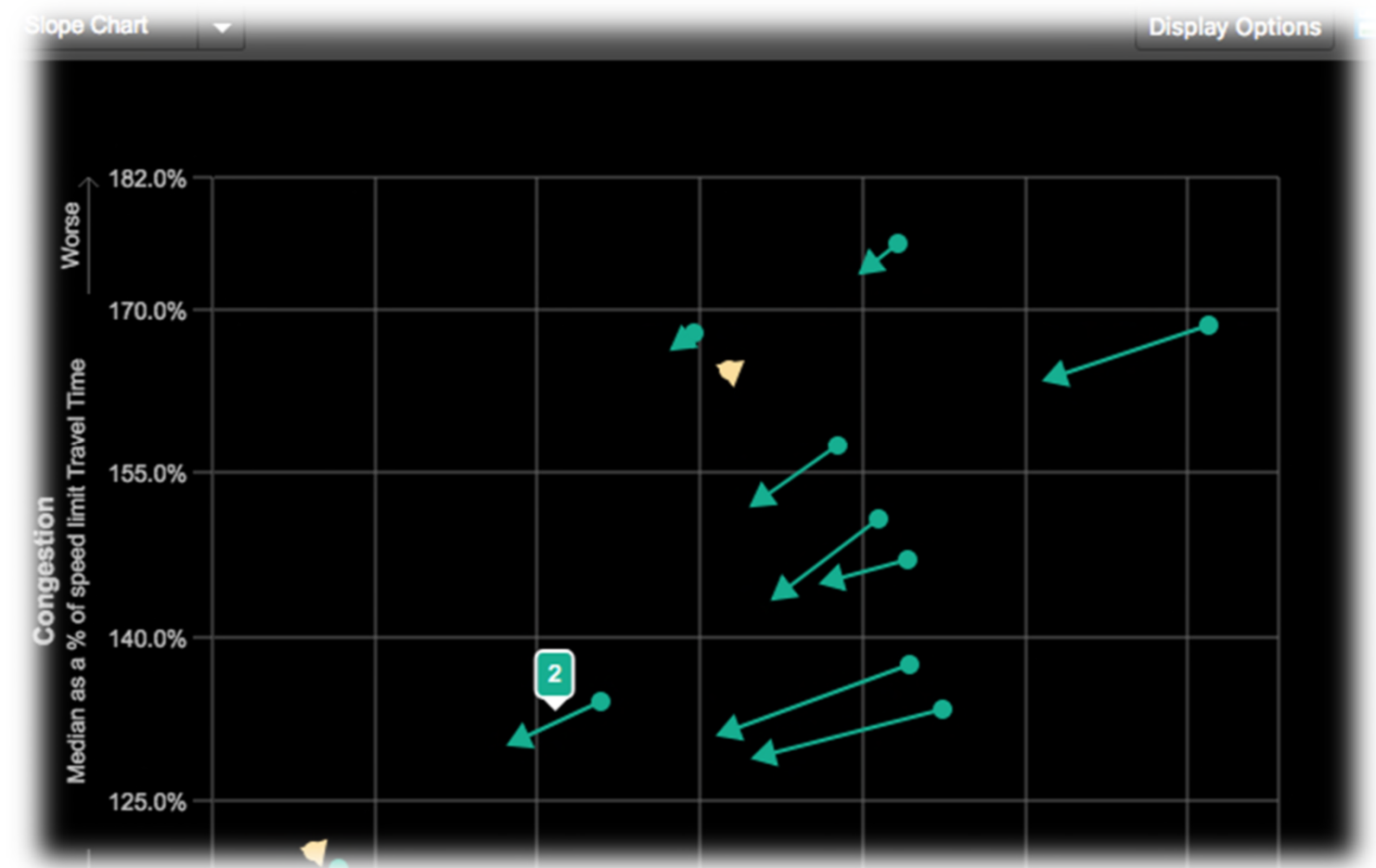


# RITIS Modules

- Trend Map
  - Create animated maps of probe data performance metrics over the course of time
  - This can be useful for seeing exactly when conditions deteriorate during morning and evening rush hour
  - Excellent for presentations

# RITIS Modules

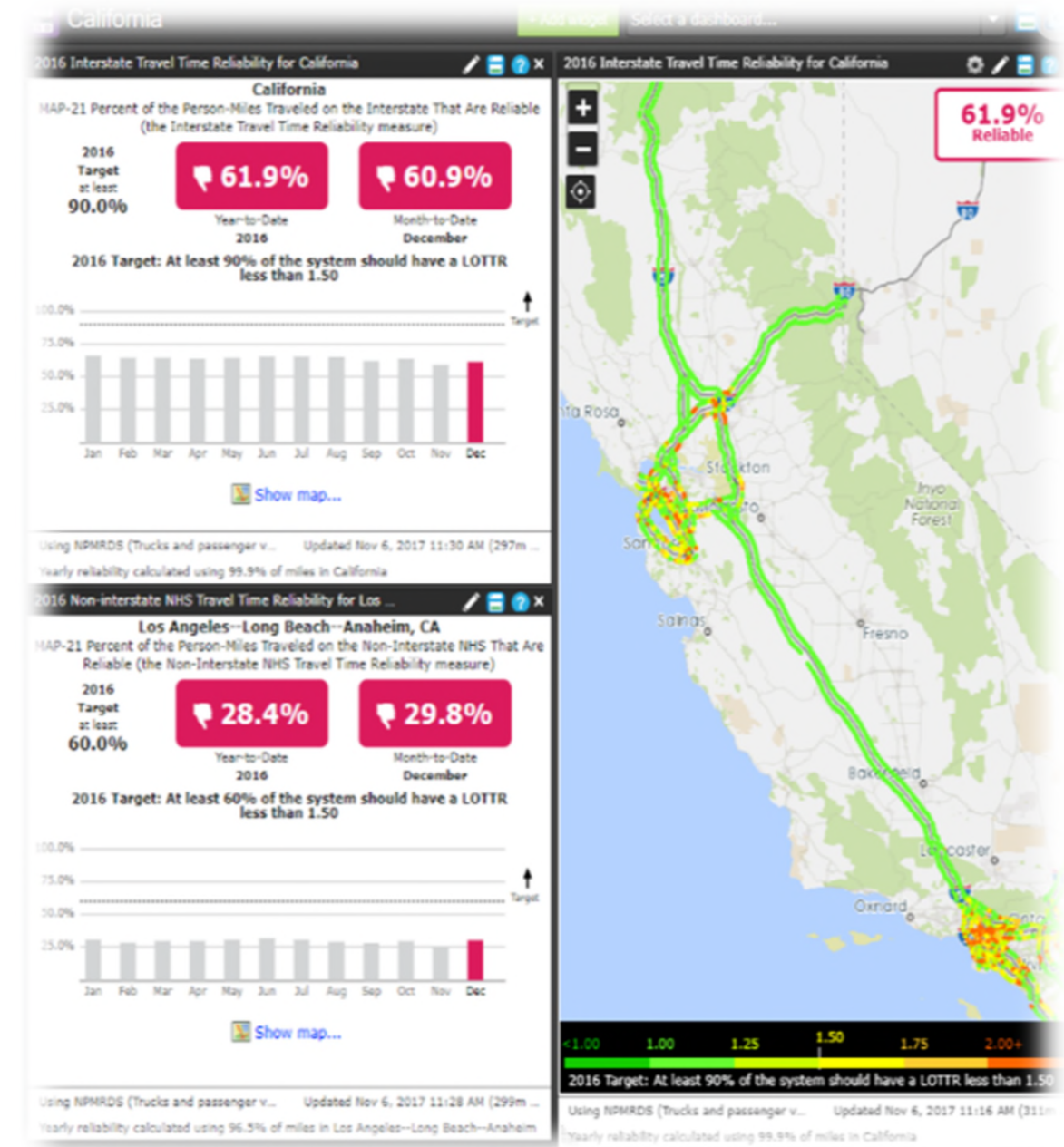
- Travel Time Delta Ranking
  - Performance of multiple corridors for a specified date range
  - Rank the corridors by median travel time and travel time reliability
  - Bar charts or scatter-plot to show the relationship between the two metrics





# RITIS Modules

- MAP 21
  - Compute, visualize, and download all of the PM3 Metrics and sub-metric data as required to be reported by FHWA
  - Agency speed-limit data is integrated, and trend-line capabilities to easily address target-setting requirements



# RITIS Modules

- Causes of Congestion Graphs
- ID and quantify the causes of congestion
  - (1) recurrent bottlenecks
  - (2) weather
  - (3) work zones
  - (4) incidents
  - (5) signal timing
  - (6) holidays



# RITIS Modules

- Massive Data Downloader
  - Export large amounts of probe data for offline analyses
  - Select any combination of road segments (an entire region, set of corridors, zip codes, etc.)
  - Any date range and time of day

# RITIS Modules

## Additional PDA Modules:

- Performance Summaries
- User Delay Cost Analysis
- National Performance Management Research Data Set (NPMRDS) Coverage Map
- Travel Time Comparison
- Temporal Comparison Maps

# Other TDOT RITIS Tools

- Transportation System Status
  - Active Events logged by our TMC with lane blockage info
- Trip Analytics
  - Origin Destination Data
- Event Query Tools
  - TDOT TMC and Waze Events



**What are some  
Limitations?**

# Observed Limitations

Common requests that RITIS is not suited for

- Minor collector roads and below roads
- Volume data\*
- Speeding data
- Multimodal data
- Signal performance measures\*\*

\* Currently exploring integrating TDOT's roadside radar volume data in metro areas.

\*\* INRIX has a separate Signal Analytics tool for additional fee



# Example Quarterly Bottleneck Report



The logo consists of the letters "TN" in a white, serif font, centered within a red square. The square has a thin white border at the bottom.

TN

A photograph of a two-lane asphalt road with double yellow lines, curving to the right. The road is flanked by dense trees and bushes with vibrant autumn foliage in shades of red, orange, and green. The sky is blue with scattered white clouds.

# TDOT Traffic Operations Division Congestion Analysis (Bottleneck) Report 2023 1st Quarter

January 1, 2023 – March 31, 2023

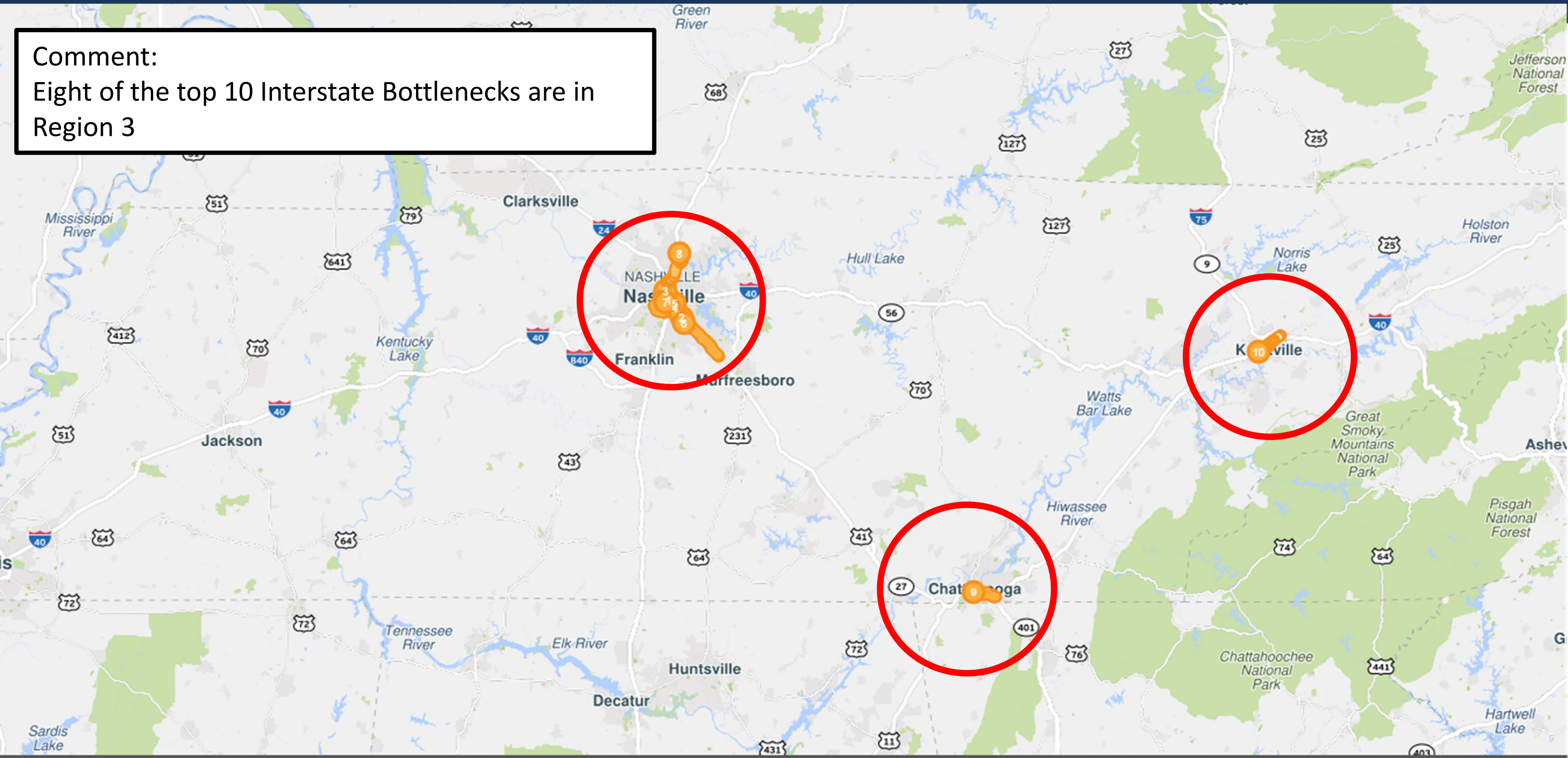
The logo features a stylized, multi-colored arc (yellow, orange, green, blue) above a grey road-like shape.

Developed with INRIX Probe  
Data + RITIS Reporting

# Top 10 Interstate Bottlenecks - Statewide

2023 Q1

Comment:  
Eight of the top 10 Interstate Bottlenecks are in  
Region 3



Selected Location Location head Queue (at max length) Number of Incidents

# Top 10 Interstate Bottlenecks - Statewide

2023 **Q1**

| Current Rank Q1 2023 | Location                                | Region | Total Delay | Average Daily Duration | Average Max Length (miles) | Agency & Waze Reported Events | Q4 2022 Rank | Q3 2022 Rank | Q2 2022 Rank |
|----------------------|---|--------|-------------|------------------------|----------------------------|-------------------------------|--------------|--------------|--------------|
| 1                    | I-24 E @ I-40/EXIT 83                   | 3      | 89,510,680  | 3 h 20 m               | 1.64                       | 493                           | 1            | 7            | 10           |
| 2                    | I-24 W @ TN-255/HARDING PL/EXIT 56      | 3      | 86,541,592  | 1 h 30 m               | 5.37                       | 1711                          | --           | --           | --           |
| 3                    | I-24 W @ I-65/EXIT 86                   | 3      | 78,813,407  | 5 h 26 m               | 1.68                       | 550                           | 7            | 6            | 7            |
| 4                    | I-440 E @ I-24                          | 3      | 78,031,926  | 1 h 55 m               | 2.63                       | 576                           | 3            | --           | --           |
| 5                    | I-24 W @ I-40/EXIT 52                   | 3      | 70,840,093  | 3 h 45 m               | 1.42                       | 2402                          | --           | --           | --           |
| 6                    | I-24 E @ HAYWOOD LN/EXIT 57             | 3      | 69,697,289  | 1 h 1 m                | 3.94                       | 1097                          | 10           | 5            | 6            |
| 7                    | I-40/I-65 S @ I-65/EXIT 210             | 3      | 69,325,179  | 3 h 12 m               | 1.18                       | 558                           | 5            | 8            | --           |
| 8                    | I-65 N @ DAVIDSON--SUMNER COUNTY BORDER | 3      | 62,692,808  | 1 h 40 m               | 4.37                       | 1191                          | --           | 3            | 5            |
| 9                    | I-24 W @ US-27/EXIT 178                 | 2      | 62,048,569  | 1 h 28 m               | 3.25                       | 960                           | 9            | 9            | 8            |
| 10                   | I-40 W @ I-75/I-640                     | 1      | 59,762,856  | 2 h 53 m               | 2.1                        | 925                           | 2            | 4            | --           |

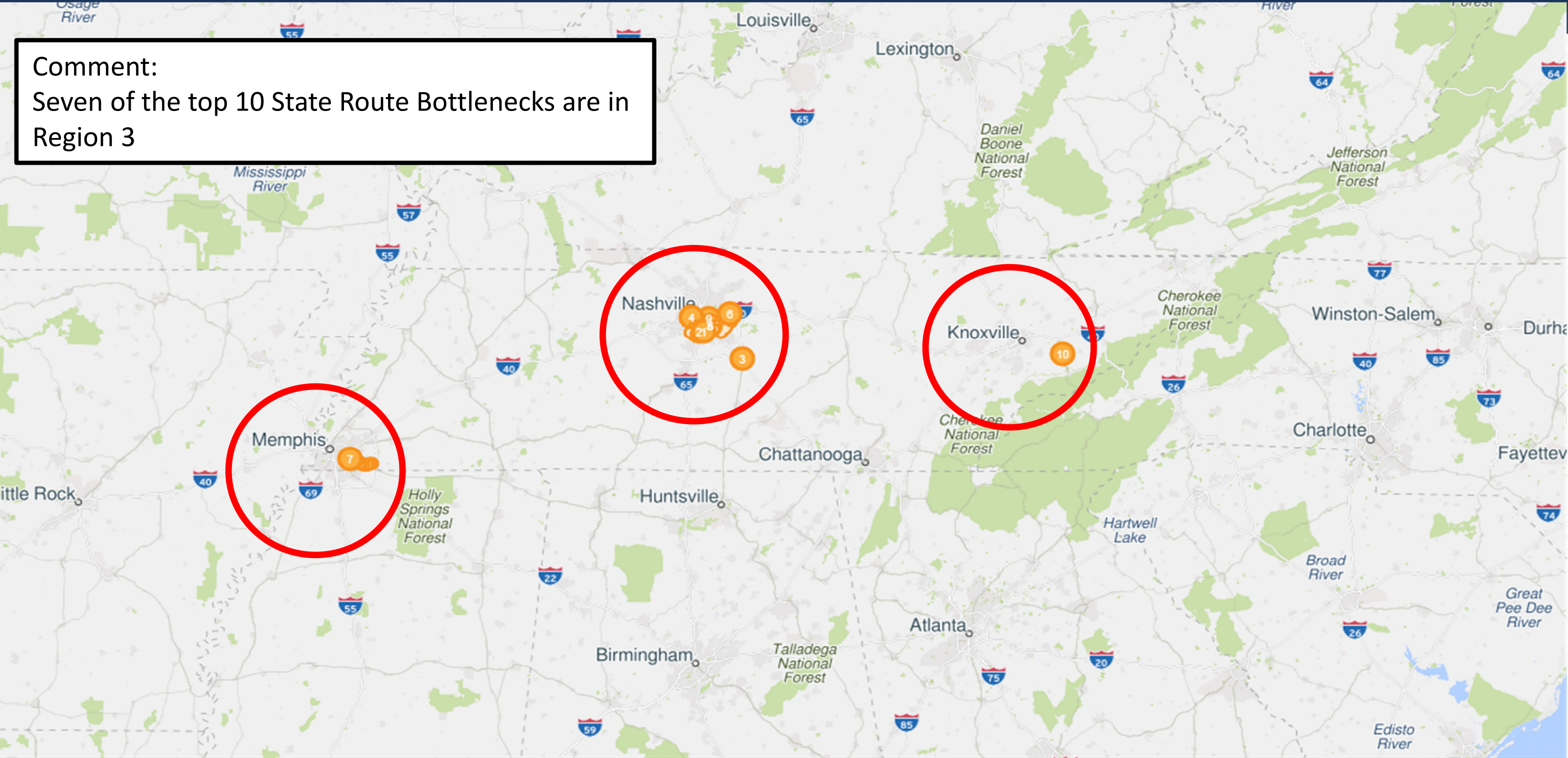
Red numbers = highest value for that metric

\*\*Total Delay is raw speed drop weighted by VMT. It is computed by multiplying the delay by the impacted traffic volume and aggregating the one-minute delays for the entire period the bottleneck is active.

# Top 10 State Route Bottlenecks - Statewide

2023 Q1

Comment:  
Seven of the top 10 State Route Bottlenecks are in Region 3



# Top 10 State Route Bottlenecks - Statewide

2023 **Q1**

| Current Rank Q1 2023 | Location                                      | Region | Total Delay | Average Daily Duration | Average Max Length (miles) | Agency & Waze Reported Events | Q4 2022 Rank | Q3 2022 Rank | Q2 2022 Rank |
|----------------------|---|--------|-------------|------------------------|----------------------------|-------------------------------|--------------|--------------|--------------|
| 1                    | TN-254 E @ EDMONDSON PIKE                     | 3      | 20,946,400  | 1 h 41 m               | 3.09                       | 46                            | 1            | 1            | 2            |
| 2                    | TN-254 W @ US-31/TN-6/FRANKLIN RD             | 3      | 20,000,957  | 12 h 55 m              | 0.41                       | 353                           | 3            | 2            | 1            |
| 3                    | TN-99 W @ MIDDLE TENNESSEE BLVD               | 3      | 12,087,560  | 3 h 49 m               | 0.87                       | 1                             | 4            | 4            | 3            |
| 4                    | TN-155 CCW @ US-70/TN-24/CHARLOTTE AVE        | 3      | 11,998,116  | 6 h 57 m               | 0.25                       | 98                            | 7            | 6            | 4            |
| 5                    | TN-255 N @ ANTIOCH PIKE                       | 3      | 10,993,594  | 4 h 42 m               | 0.55                       | 0                             | --           | --           | --           |
| 6                    | TN-171 N @ I-40                               | 3      | 10,321,881  | 2 h 19 m               | 1.49                       | 0                             | --           | --           | 7            |
| 7                    | TN-385 W @ I-240                              | 4      | 10,195,466  | 27 m                   | 2.35                       | 775                           | 6            | --           | --           |
| 8                    | TN-255 S @ I-24                               | 3      | 10,049,608  | 2 h 40 m               | 0.63                       | 42                            | --           | --           | --           |
| 9                    | TN-155 CCW @ I-40 (NASHVILLE) (EAST)          | 3      | 8,315,074   | 1 h 6 m                | 1.7                        | 52                            | --           | --           | --           |
| 10                   | TN-66 S @ US-411/US-441/TN-35/TN-71/W MAIN ST | 1      | 8,107,243   | 5 h 20 m               | 0.31                       | 45                            | 2            | 3            | 6            |

Red numbers = highest value for that metric

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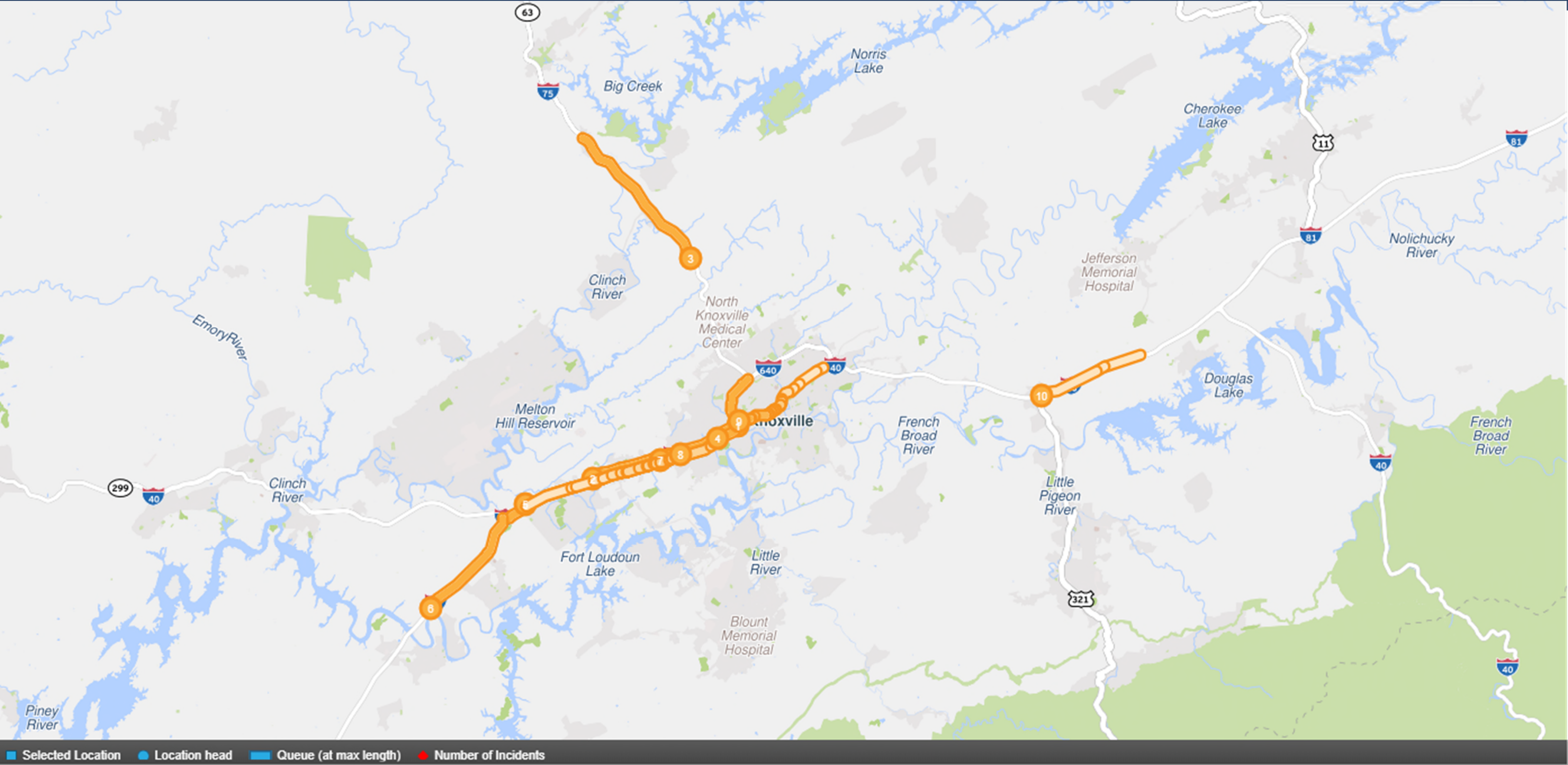


# Region 1 - Knoxville



# Top 10 Interstate Bottlenecks – Region 1

2023 Q1



# Top 10 Interstate Bottlenecks – Region 1

2023 **Q1**

| Current Rank Q1 2023 | Location                                | Total Delay       | Average Daily Duration | Average Max Length (miles) | Agency & Waze Reported Events | Q4 2022 Rank | Q3 2022 Rank | Q2 2022 Rank |
|----------------------|---|-------------------|------------------------|----------------------------|-------------------------------|--------------|--------------|--------------|
| <b>1</b>             | I-40 W @ I-75/I-640                     | <b>59,762,856</b> | <b>2 h 53 m</b>        | 2.1                        | 924                           | <b>1</b>     | 2            | 2            |
| <b>2</b>             | I-40/I-75 W @ TN-131/LOVELL RD/EXIT 374 | 19,408,899        | 47 m                   | 2.71                       | 1555                          | 3            | 3            | 3            |
| <b>3</b>             | I-75 S @ ANDERSON--KNOX COUNTY BORDER   | 10,882,808        | 9 m                    | <b>5.21</b>                | 267                           | --           | --           | --           |
| <b>4</b>             | I-40/I-75 E @ PAPERMILL DR/EXIT 383     | 10,301,298        | 9 m                    | 3.81                       | <b>1646</b>                   | 7            | --           | --           |
| <b>5</b>             | I-40/I-75 E @ WATT RD/EXIT 369          | 9,449,149         | 49 m                   | 1.42                       | 1408                          | 4            | <b>1</b>     | <b>1</b>     |
| <b>6</b>             | I-75 S @ TN-324/SUGARLIMB RD/EXIT 76    | 8,649,472         | 4 m                    | 4.76                       | 242                           | --           | --           | --           |
| <b>7</b>             | I-40/I-75 E @ BRIDGEWATER RD/EXIT 379   | 7,840,591         | 17 m                   | 2.77                       | 1044                          | --           | 9            | --           |
| <b>8</b>             | I-40/I-75 E @ US-70/US-11/EXIT 380      | 7,743,842         | 8 m                    | 4.44                       | 1266                          | --           | --           | --           |
| <b>9</b>             | I-75/I-640 S @ I-40                     | 7,062,577         | 36 m                   | 1.42                       | 364                           | --           | --           | --           |
| <b>10</b>            | I-40 W @ TN-66/EXIT 407                 | 6,420,738         | 5 m                    | 5.19                       | 286                           | --           | --           | --           |

**Red numbers** = highest value for that metric

\*\* Total Delay is raw speed drop weighted by VMI. It is computed by multiplying the delay by the impacted traffic volume and aggregating the one-minute delays for the entire period the bottleneck is active.

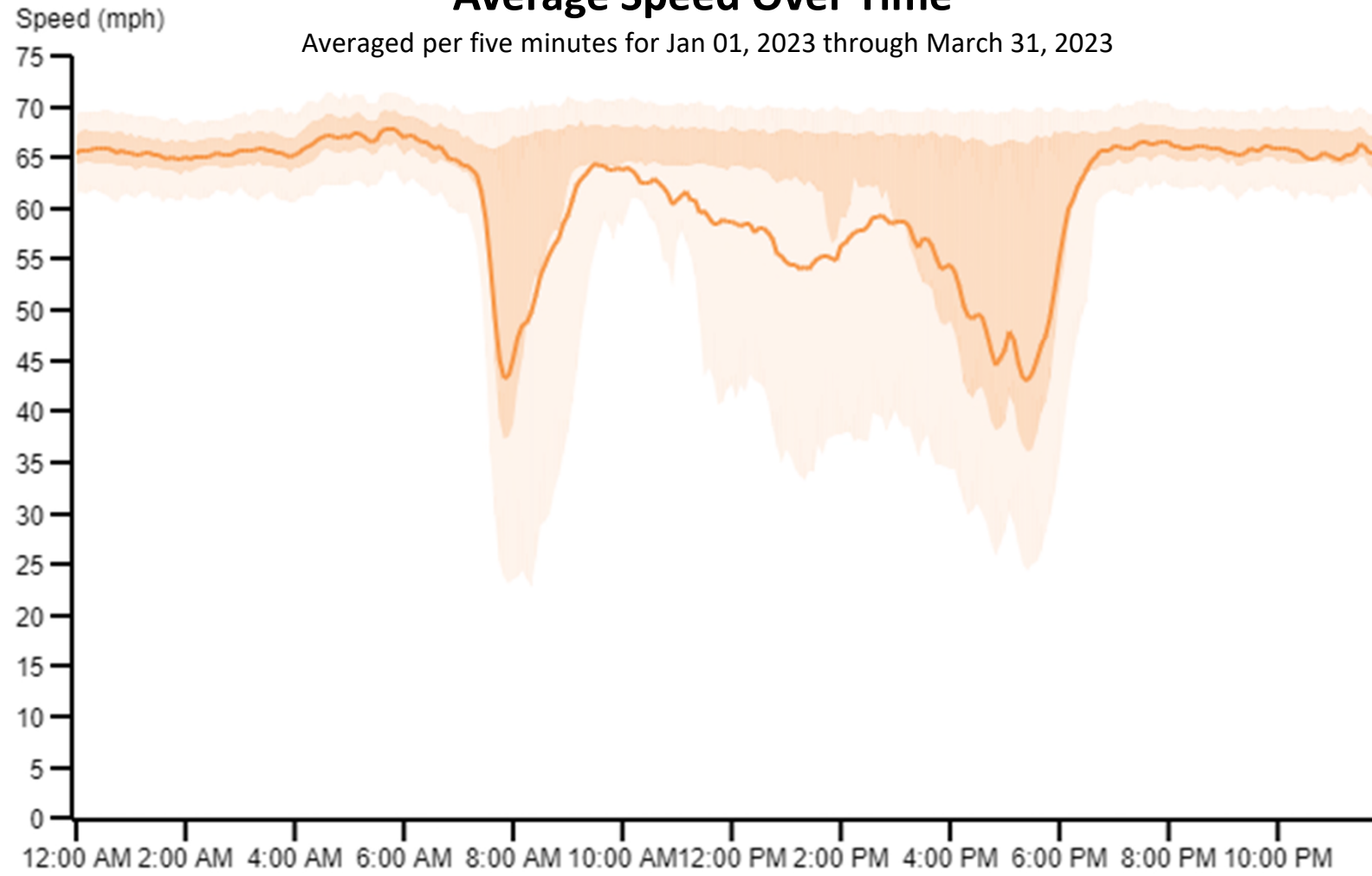


# I-40 WB @ I-75/I-640

## 2023 Q1 #1 Interstate Bottleneck in Region 1

### Average Speed Over Time

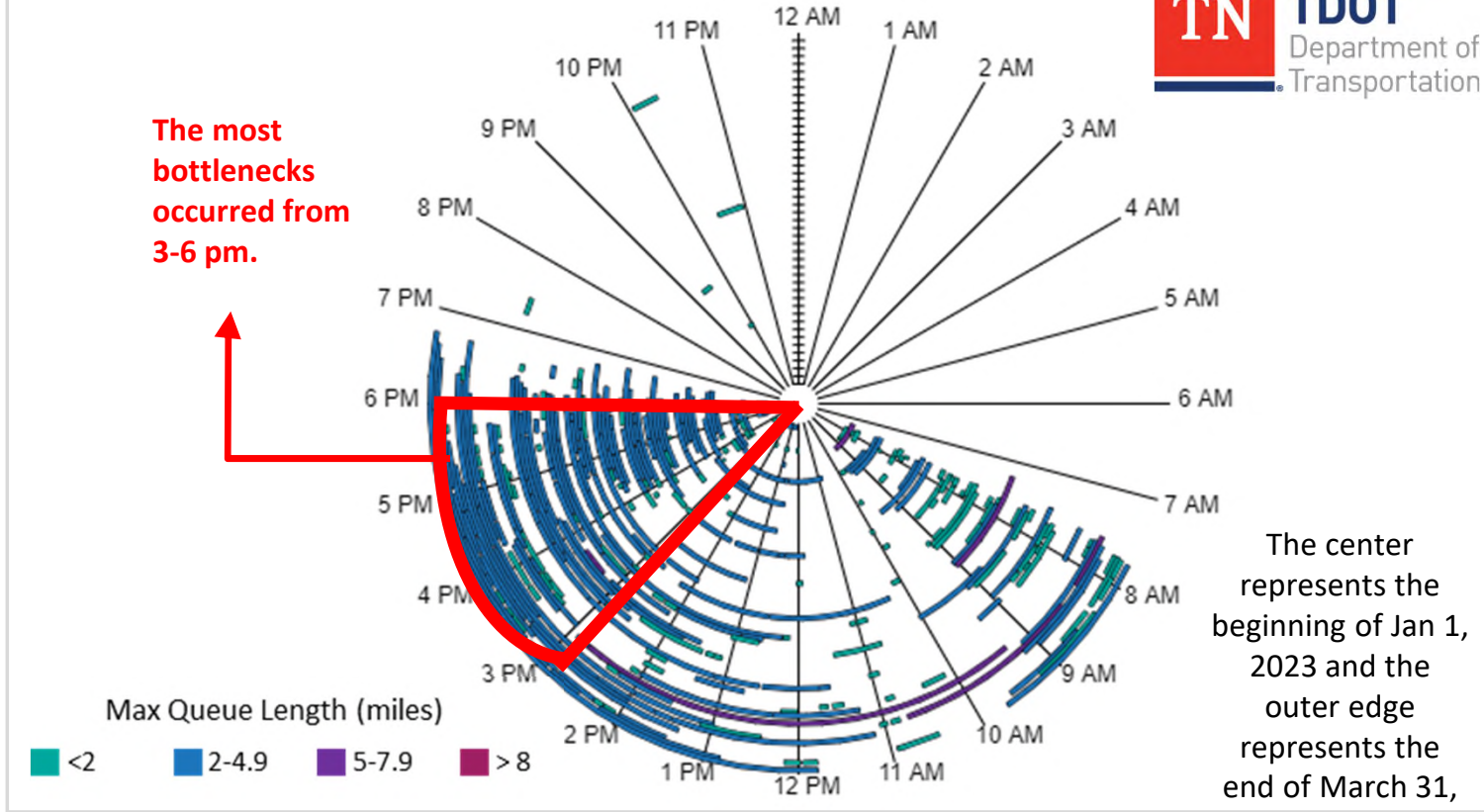
Averaged per five minutes for Jan 01, 2023 through March 31, 2023



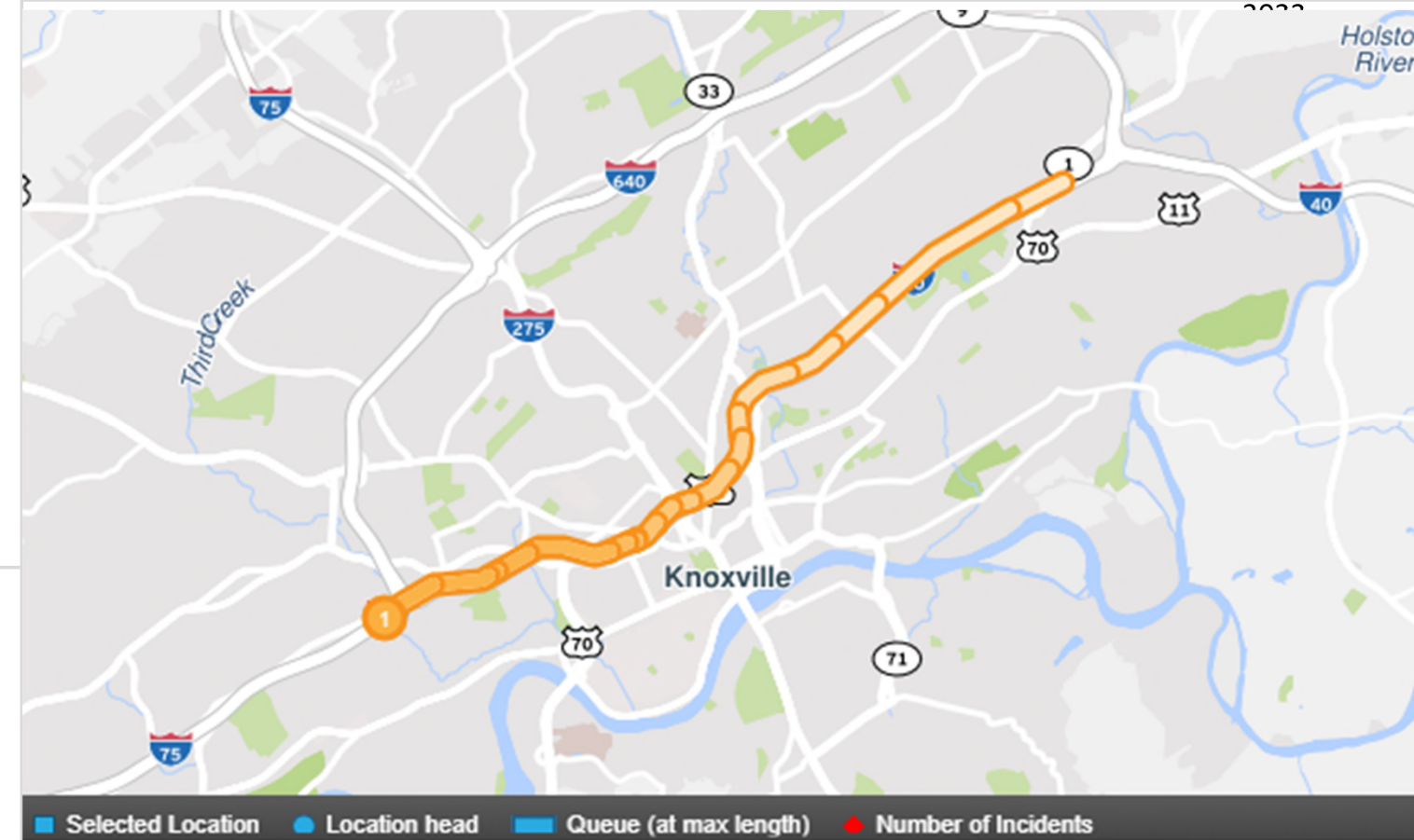
- Jan 01, 2023 through Mar 31, 2023 - INRIX
- Jan 01, 2023 through Mar 31, 2023 25th and 75th percentile - INRIX
- Jan 01, 2023 through Mar 31, 2023 5th and 95th percentile - INRIX

- The A.M. peak average speed is **43.5** mph at 7:55 am, **31%** slower than free flow. The P.M. peak average speed is **43.1** mph at 5:25 pm, **32%** slower than free flow.
- There were over **14,863** vehicle hours of delay on this segment of the interstate in Quarter 1.

### Bottleneck Occurrences

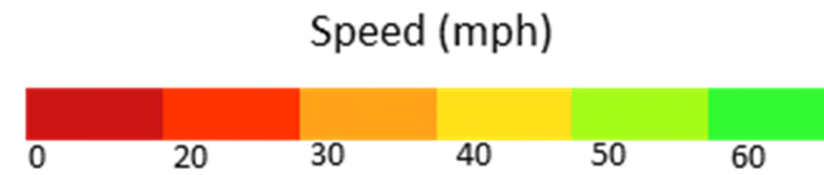


The center represents the beginning of Jan 1, 2023 and the outer edge represents the end of March 31, 2023

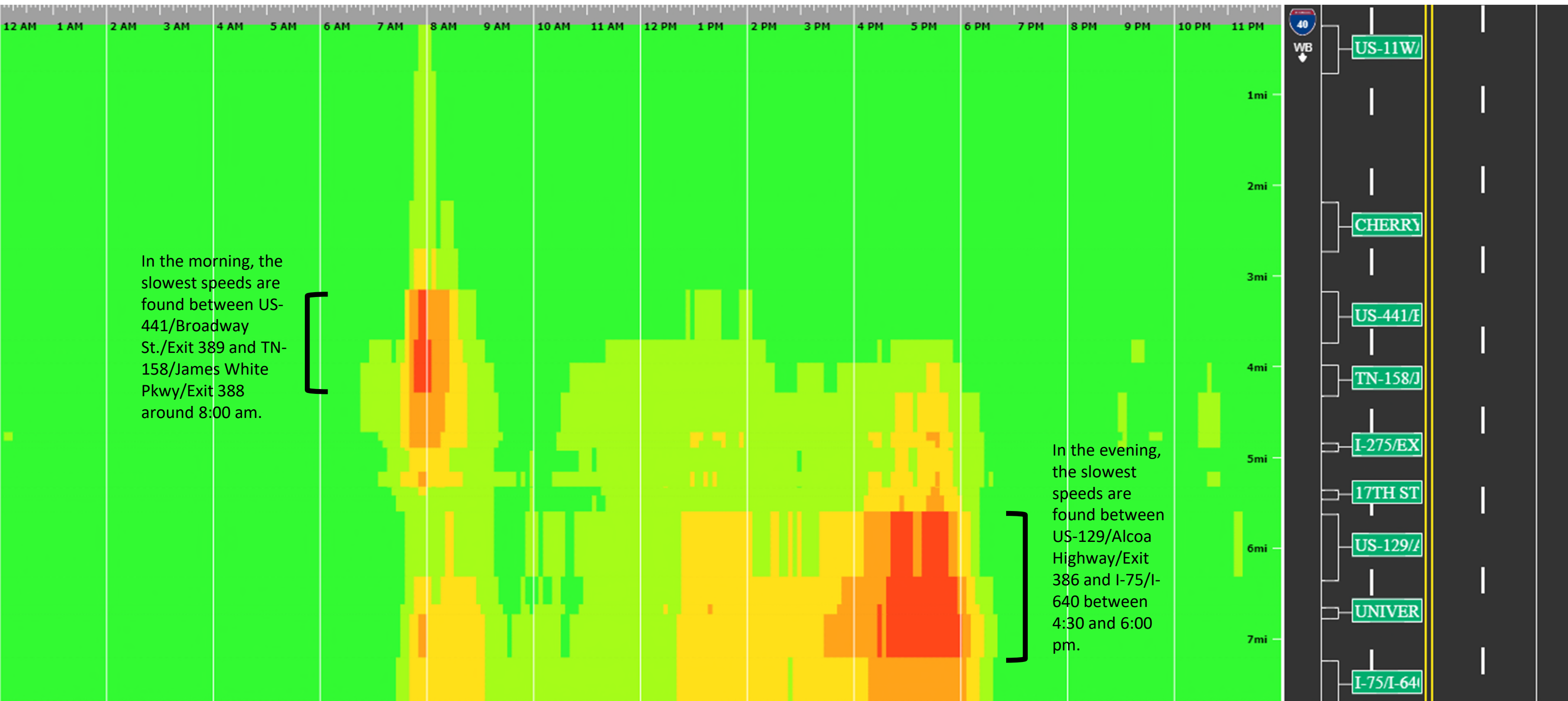


# I-40 WB @ I-75/I-640

## 2023 Q1 #1 Interstate Bottleneck in Region 1



Average Speed Over Time Averaged per five minutes for Jan 01, 2023 through March 31, 2023



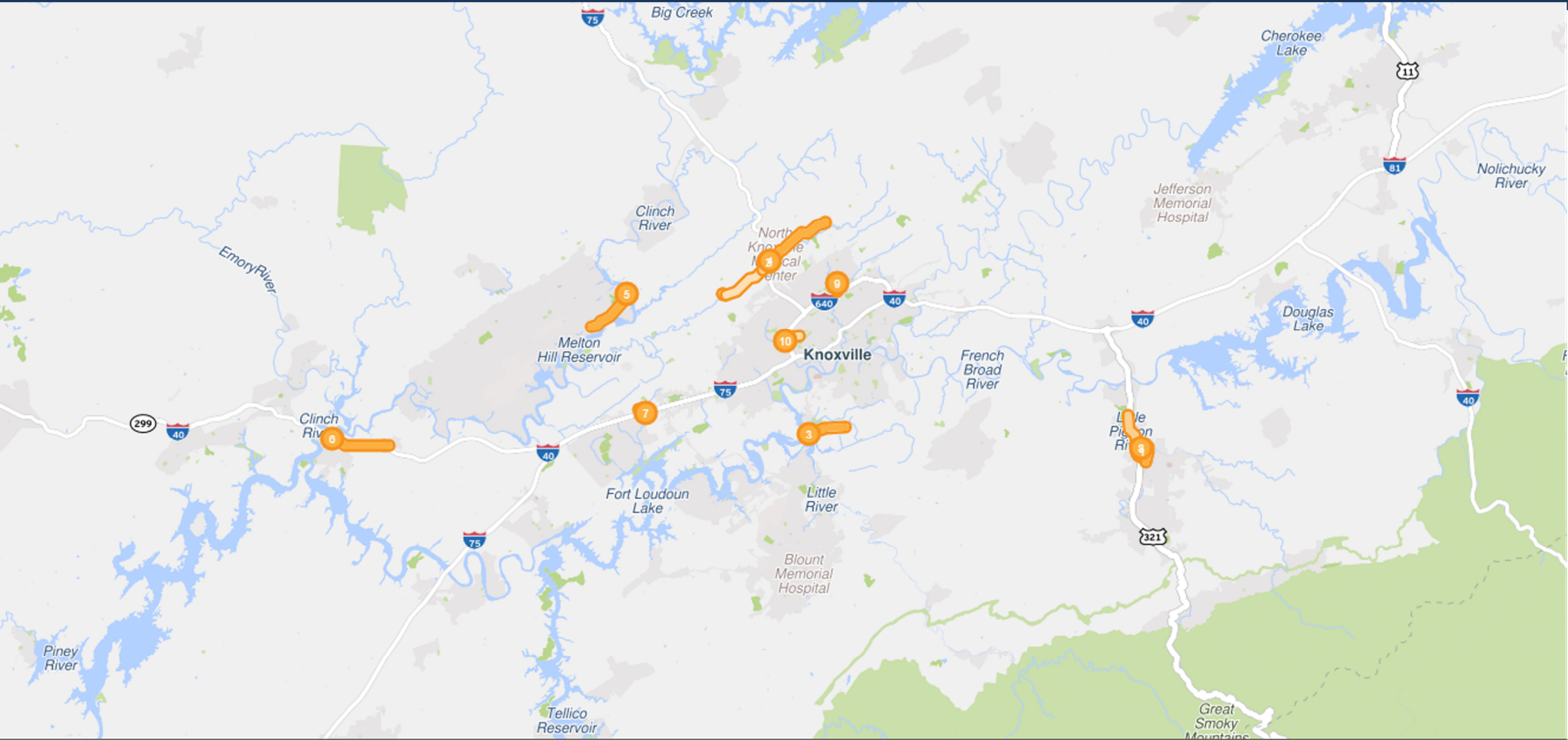
In the morning, the slowest speeds are found between US-441/Broadway St./Exit 389 and TN-158/James White Pkwy/Exit 388 around 8:00 am.

In the evening, the slowest speeds are found between US-129/Alcoa Highway/Exit 386 and I-75/I-640 between 4:30 and 6:00 pm.

- US-11W/
- CHERRY
- US-441/E
- TN-158/J
- I-275/EX
- 17TH ST
- US-129/A
- UNIVER
- I-75/I-640

# Top 10 State Route Bottlenecks – Region 1

2023 Q1



Selected Location   Location head   Queue (at max length)   Number of Incidents

# Top 10 State Route Bottlenecks – Region 1

2023 **Q1**

| Current Rank Q1 2023 | Location                                      | Total Delay | Average Daily Duration | Average Max Length (miles) | Agency & Waze Reported Events | Q4 2022 Rank | Q3 2022 Rank | Q2 2022 Rank |
|----------------------|---|-------------|------------------------|----------------------------|-------------------------------|--------------|--------------|--------------|
| 1                    | TN-66 S @ US-411/US-441/TN-35/TN-71/W MAIN ST | 8,107,243   | 5 h 20 m               | 0.31                       | 45                            | 1            | 1            | 1            |
| 2                    | TN-131 W @ I-75                               | 8,012,926   | 4 h 58 m               | 0.56                       | 33                            | 3            | 2            | 2            |
| 3                    | TN-168 S @ US-129/ALCOA HWY                   | 7,323,031   | 5 h 51 m               | 0.28                       | 46                            | 2            | 3            | 3            |
| 4                    | TN-131 E @ I-75                               | 7,182,296   | 14 h 24 m              | 0.15                       | 18                            | 6            | --           | --           |
| 5                    | TN-170 E @ MELTON LAKE DR                     | 4,573,413   | 8 h 19 m               | 0.26                       | 4                             | 4            | 4            | 5            |
| 6                    | TN-58 S @ I-40                                | 3,608,781   | 8 m                    | 3.71                       | 55                            | --           | --           | --           |
| 7                    | TN-131 W @ I-40                               | 3,245,654   | 3 h 56 m               | 0.23                       | 10                            | 5            | 8            | --           |
| 8                    | TN-448 N @ TN-66/WINFIELD DUNN PKWY           | 2,516,354   | 8 h 13 m               | 0.09                       | 12                            | 7            | 5            | 6            |
| 9                    | TN-331 N @ JACKSBORO PIKE                     | 2,139,306   | 1 h 45 m               | 0.41                       | 0                             | --           | --           | --           |
| 10                   | TN-62 W @ ED SHOUSE DR                        | 2,133,725   | 8 h 51 m               | 0.1                        | 2                             | --           | --           | --           |

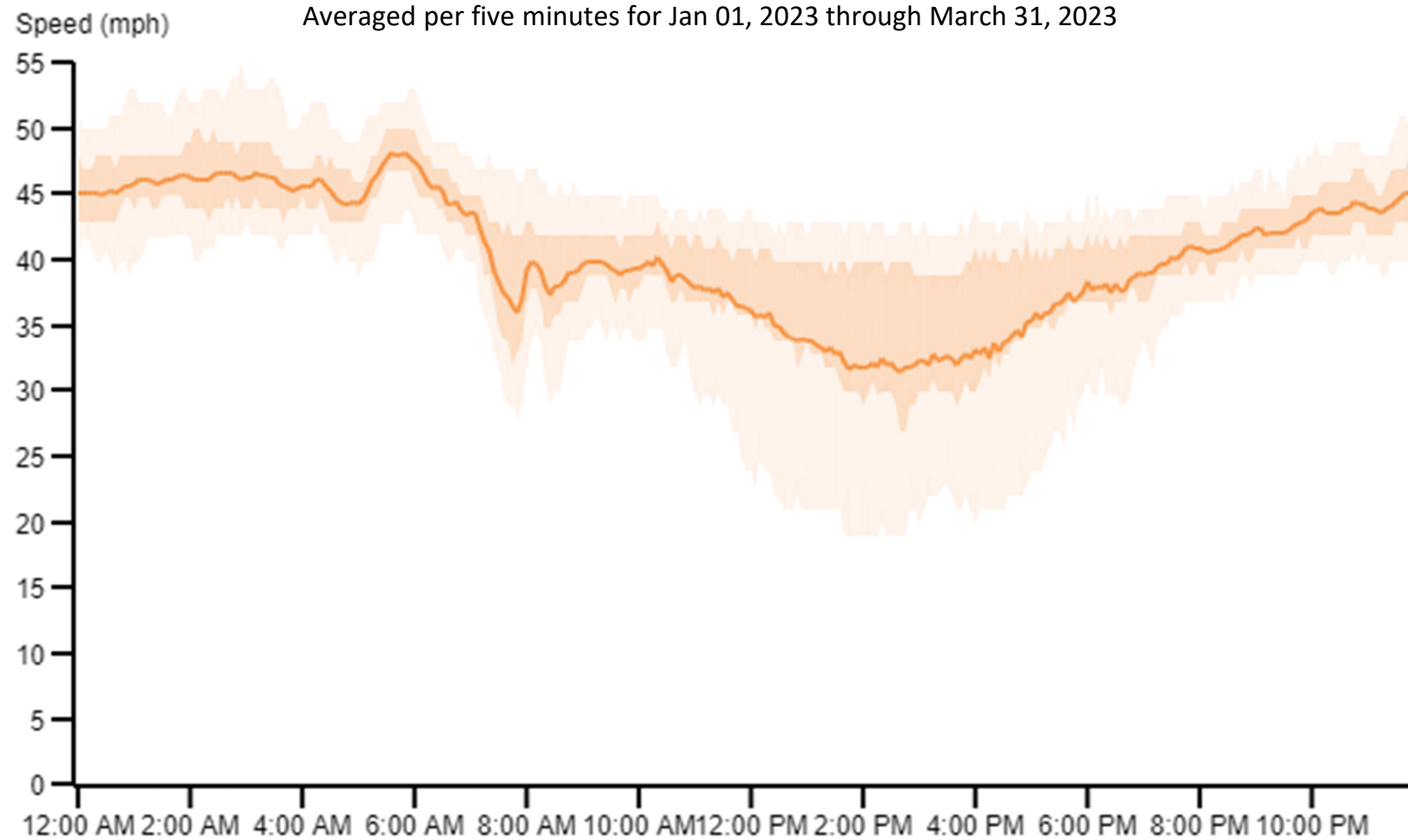
Red numbers = highest value for that metric

\*\* Total Delay is raw speed drop weighted by VMT. It is computed by multiplying the delay by the impacted traffic volume and aggregating the one-minute delays for the entire period the bottleneck is active.

# TN-66 SB @ US-411/US-441/TN-35/TN-71/W. Main St.

## Average Speed Over Time

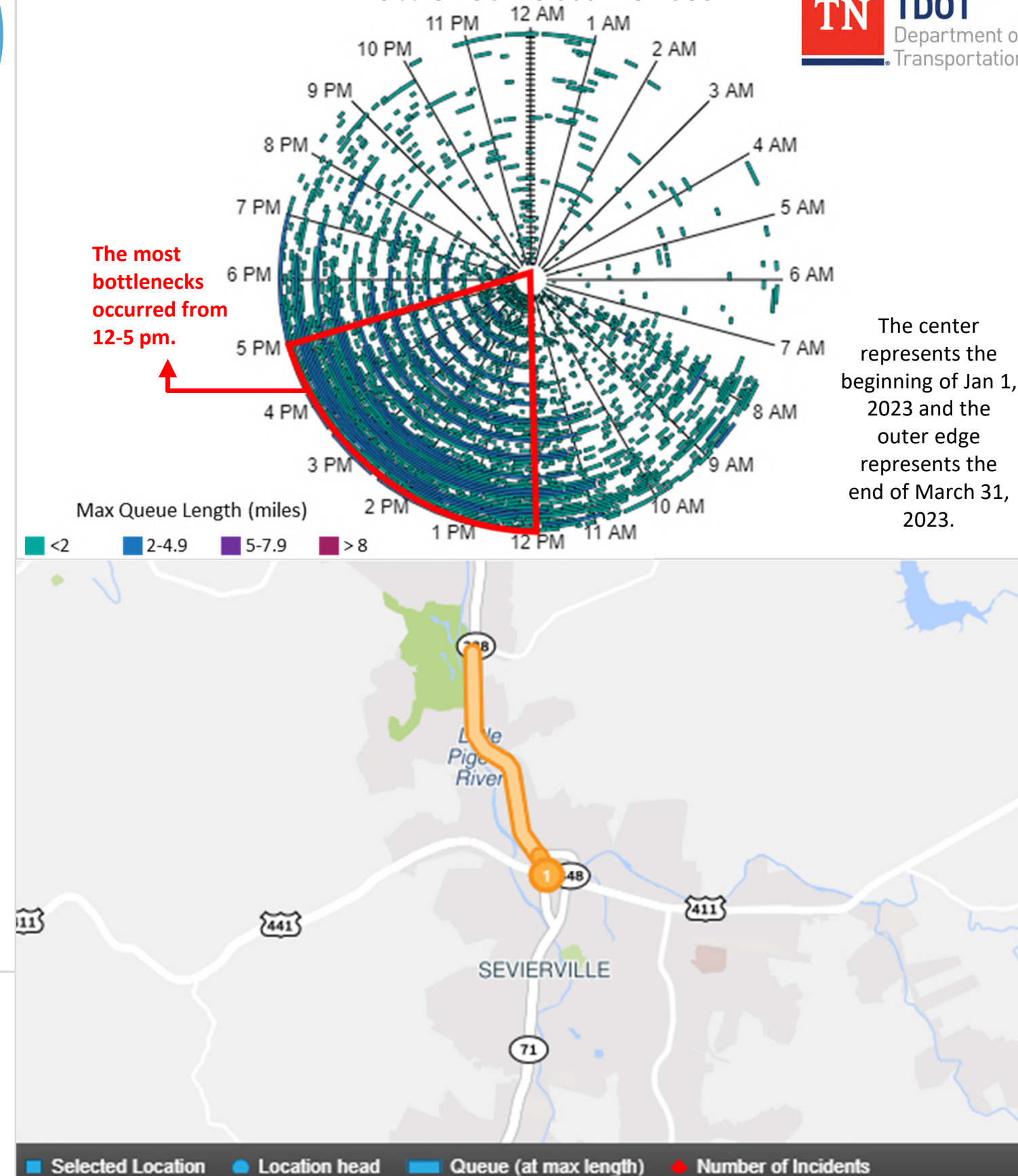
Averaged per five minutes for Jan 01, 2023 through March 31, 2023



- Jan 01, 2023 through Mar 31, 2023 - INRIX
- Jan 01, 2023 through Mar 31, 2023 25th and 75th percentile - INRIX
- Jan 01, 2023 through Mar 31, 2023 5th and 95th percentile - INRIX

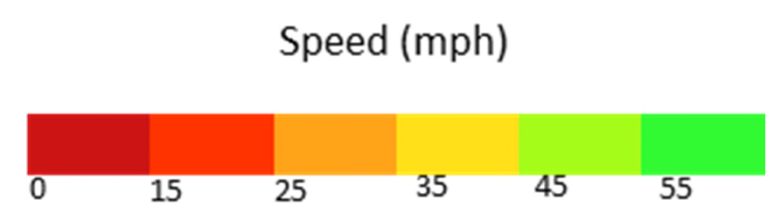
- The A.M. peak average speed is **36** mph at 7:50 am, **16%** slower than free flow speed. The P.M. peak average speed is **31.4** mph at 2:40 pm, **27%** slower than free flow speed.
- There were over **2,803** vehicle hours of delay on this segment of the State Route in Quarter 1.

## Bottleneck Occurrences

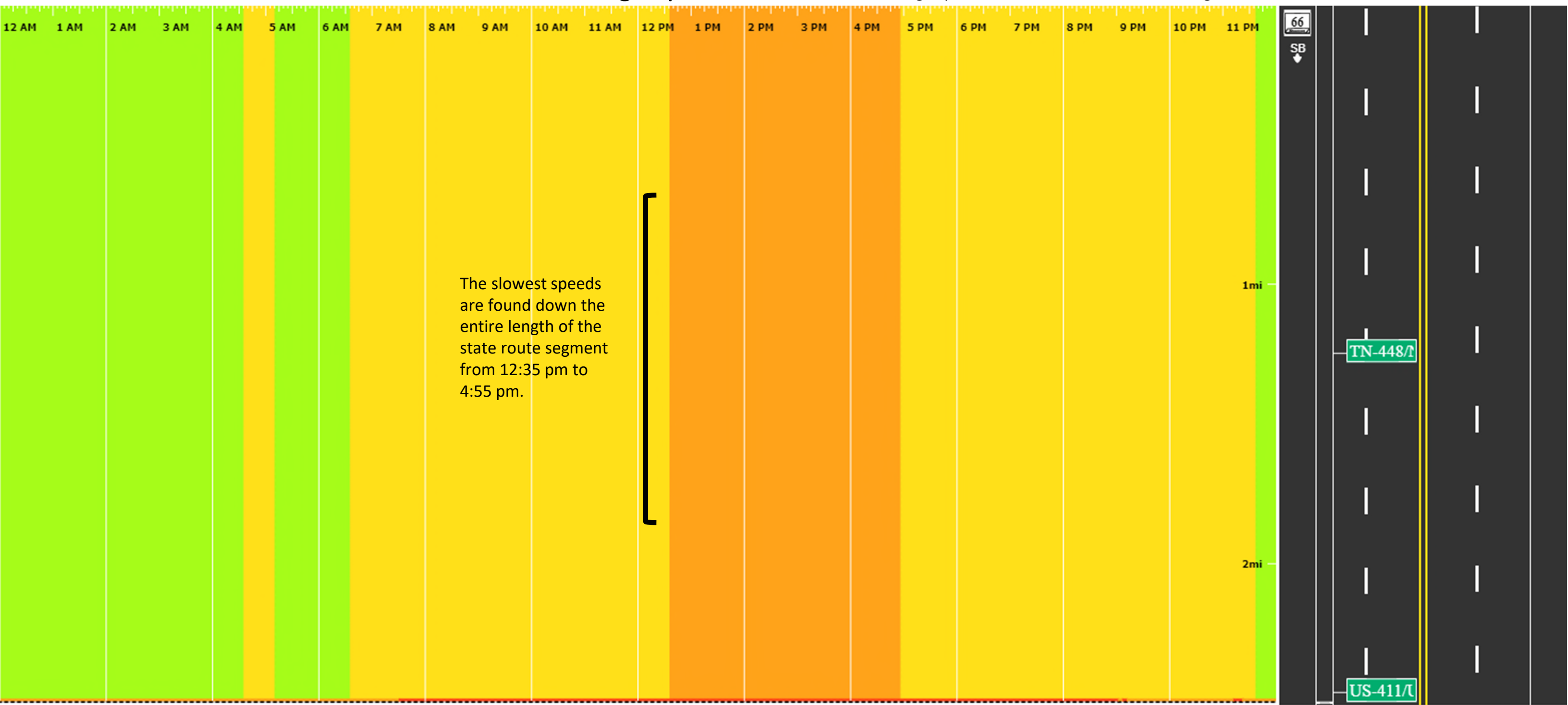


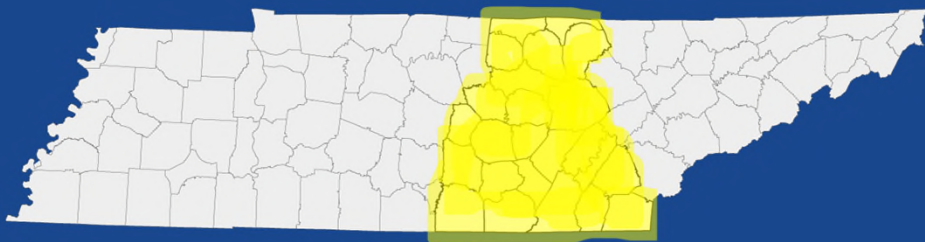
The center represents the beginning of Jan 1, 2023 and the outer edge represents the end of March 31, 2023.

# TN-66 SB @ US-411/US-441/TN-35/TN-71/W. Main St. 2023 Q1 #1 State Route Bottleneck in Region 1



Average Speed Over Time Averaged per five minutes for Jan 01, 2023 through March 31, 2023



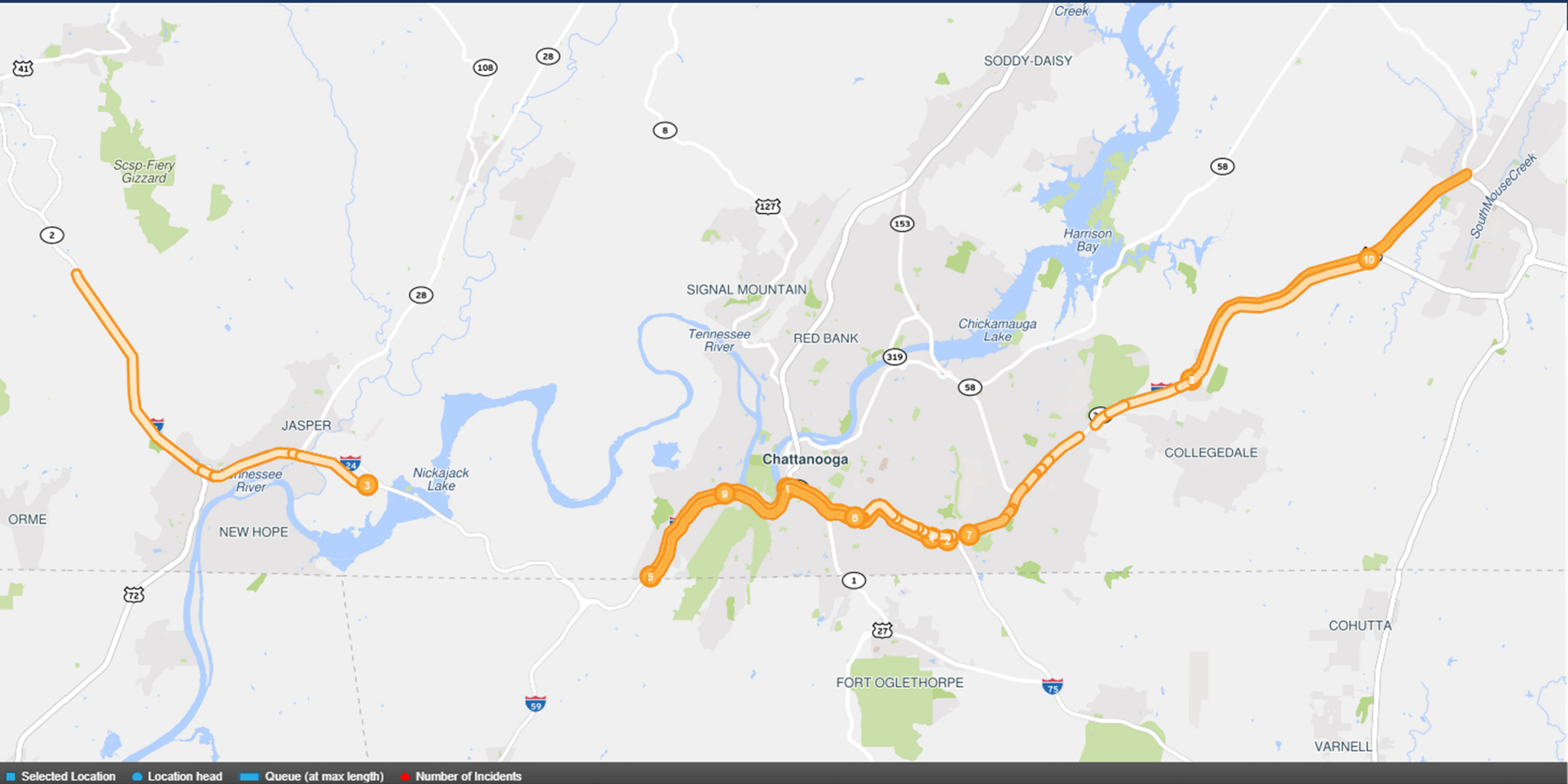


# Region 2 - Chattanooga



# Top 10 Interstate Bottlenecks – Region 2

2023 Q1





# Top 10 Interstate Bottlenecks – Region 2

2023 **Q1**

| Current Rank Q1 2023 | Location                              | Total Delay | Average Daily Duration | Average Max Length (miles) | Agency & Waze Reported Events | Q4 2022 Rank | Q3 2022 Rank | Q2 2022 Rank |
|----------------------|---------------------------------------|-------------|------------------------|----------------------------|-------------------------------|--------------|--------------|--------------|
| 1                    | I-24 W @ US-27/EXIT 178               | 62,048,569  | 1 h 28 m               | 3.25                       | 960                           | 1            | 1            | 1            |
| 2                    | I-24 E @ I-75/EXIT 185                | 30,699,297  | 39 m                   | 4.8                        | 1566                          | --           | 3            | 5            |
| 3                    | I-24 E @ TN-27/EXIT 158               | 22,182,959  | 8 m                    | 4.85                       | 246                           | --           | --           | --           |
| 4                    | I-24 E @ MOORE RD/EXIT 184            | 19,908,670  | 31 m                   | 4.42                       | 1454                          | 2            | 4            | 9            |
| 5                    | I-24 W @ TENNESSEE/GEORGIA STATE LINE | 15,003,870  | 23 m                   | 6.02                       | 1400                          | 9            | 8            | 2            |
| 6                    | I-24 W @ 4TH AVE/EXIT 181             | 14,270,199  | 3 m                    | 2.47                       | 657                           | --           | --           | --           |
| 7                    | I-75 S @ I-24/TN-2/EXIT 2             | 13,858,404  | 47 m                   | 1.93                       | 1061                          | --           | --           | 10           |
| 8                    | I-75 S @ US-64/US-11/TN-2/EXIT 11     | 12,997,825  | 15 m                   | 9.87                       | 612                           | 7            | --           | 4            |
| 9                    | I-24 E @ BROWNS FERRY RD/EXIT 175     | 11,993,166  | 21 m                   | 3.18                       | 245                           | 4            | 9            | 7            |
| 10                   | I-75 N @ US-64/EXIT 20                | 9,987,233   | 10 m                   | 9.53                       | 781                           | 5            | --           | --           |

Red numbers = highest value for that metric

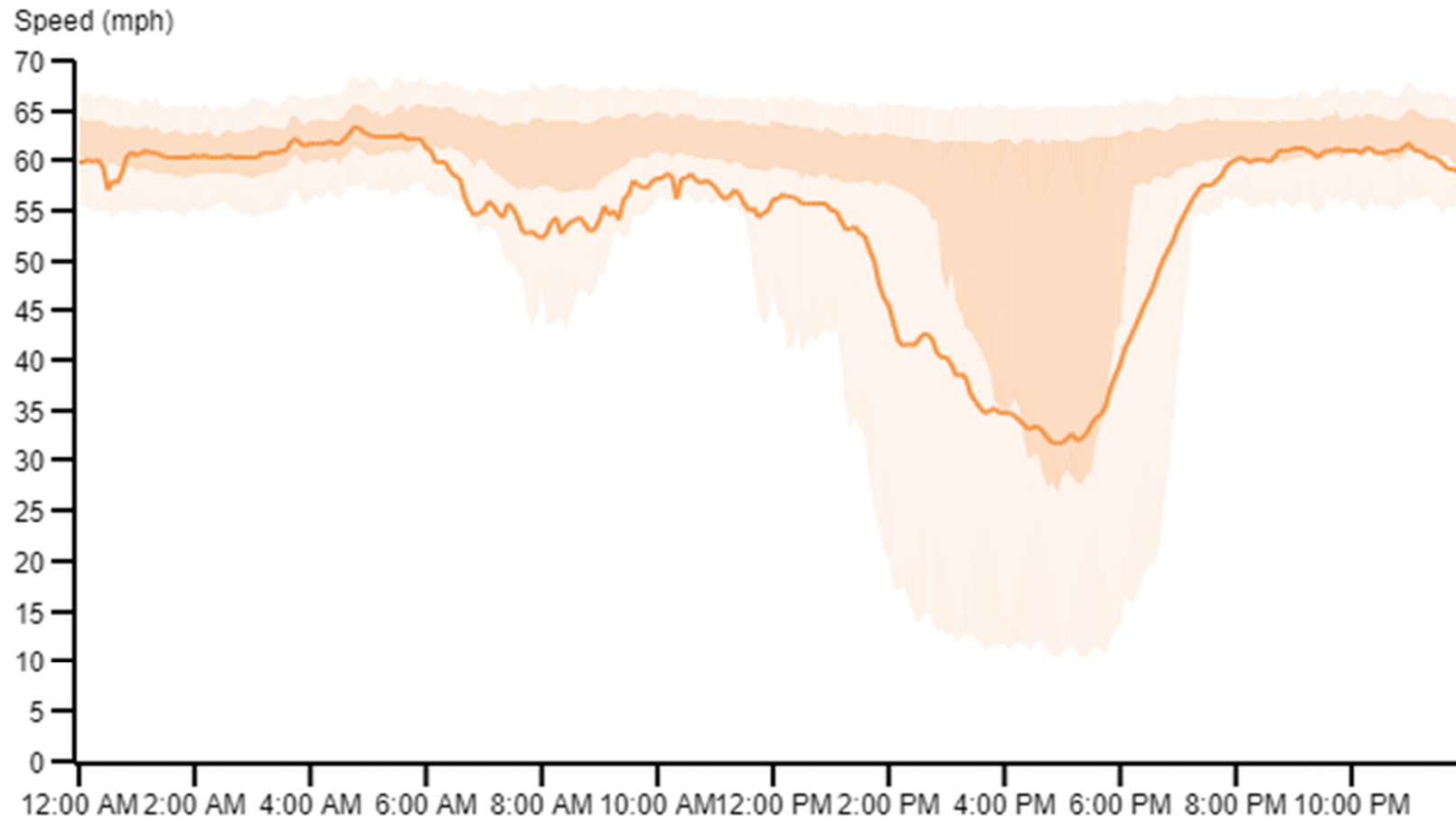
\*\*Total Delay is raw speed drop weighted by VMT. It is computed by multiplying the delay by the impacted traffic volume and aggregating the one-minute delays for the entire period the bottleneck is active.

# I-24 WB @ US-27/Exit 178

## 2023 Q1 #1 Interstate Bottleneck in Region 2

### Average Speed Over Time

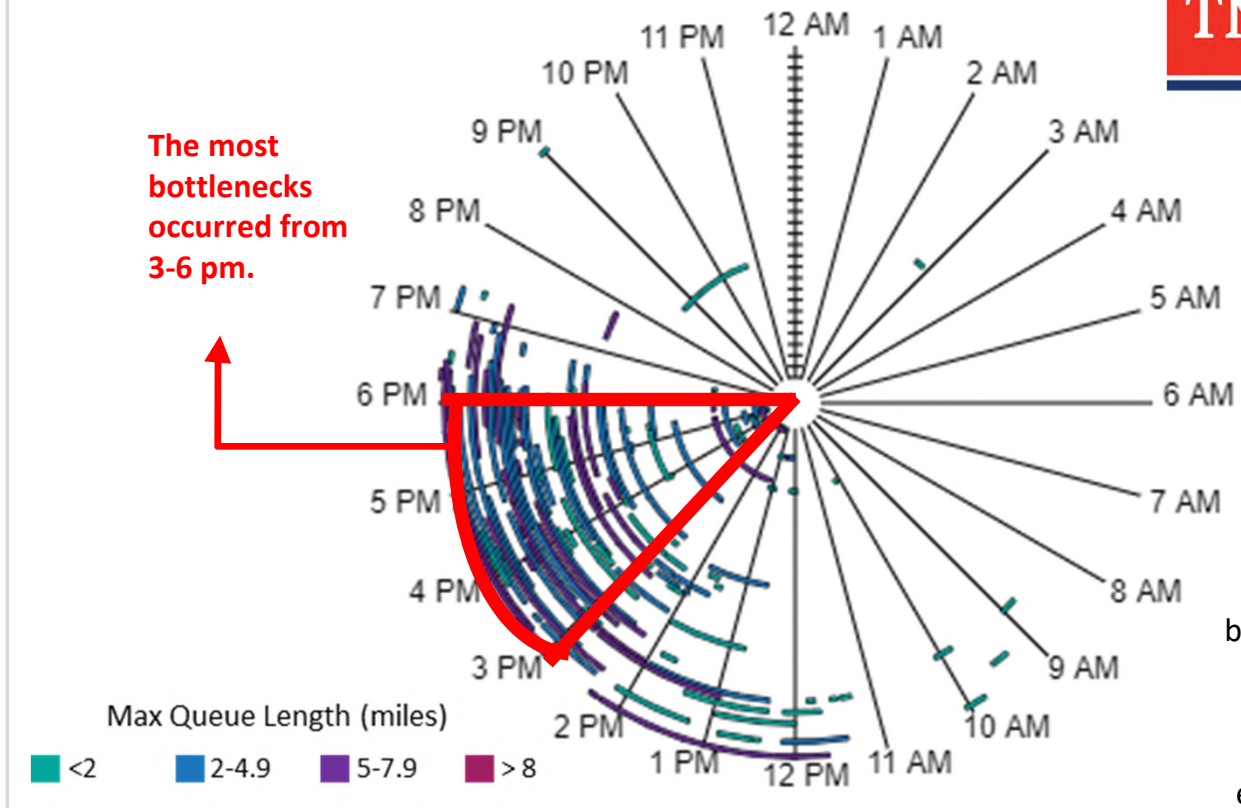
Averaged per five minutes for Jan 01, 2023 through March 31, 2023



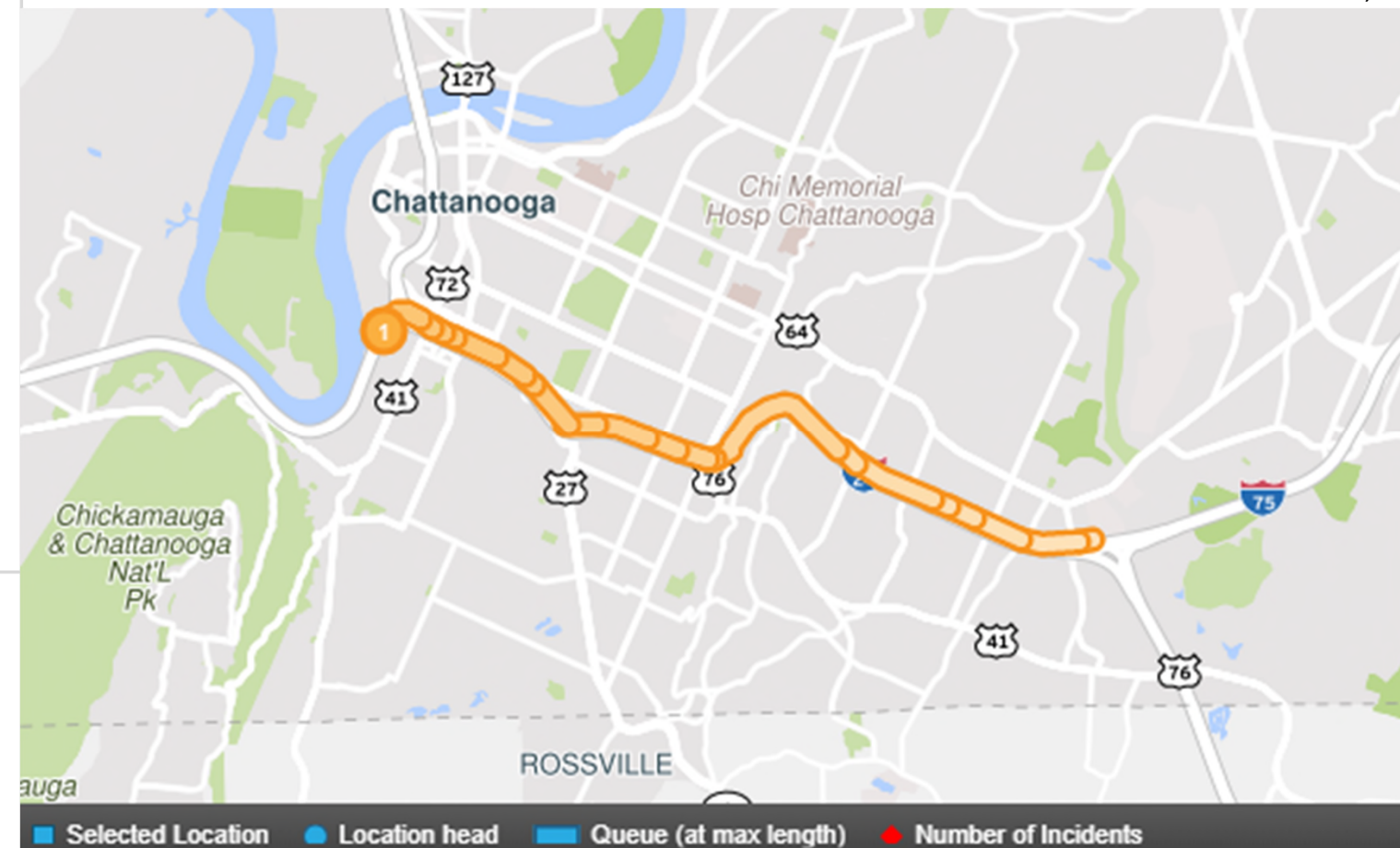
- Jan 01, 2023 through Mar 31, 2023 - INRIX
- Jan 01, 2023 through Mar 31, 2023 25th and 75th percentile - INRIX
- Jan 01, 2023 through Mar 31, 2023 5th and 95th percentile - INRIX

- The A.M. peak average speed is **52.2 mph** at 8:00 am, **9%** slower than free flow. The P.M. peak average speed is **31.7 mph** at 5:00 pm, **45%** slower than free flow.
- There were over **52,850** vehicle hours of delay on this segment of the interstate in Quarter 1.

### Bottleneck Occurrences

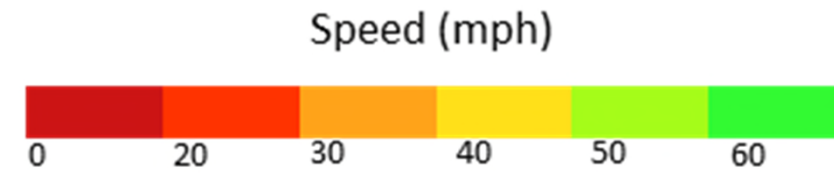


The center represents the beginning of Jan 1, 2023 and the outer edge represents the end of March 31,

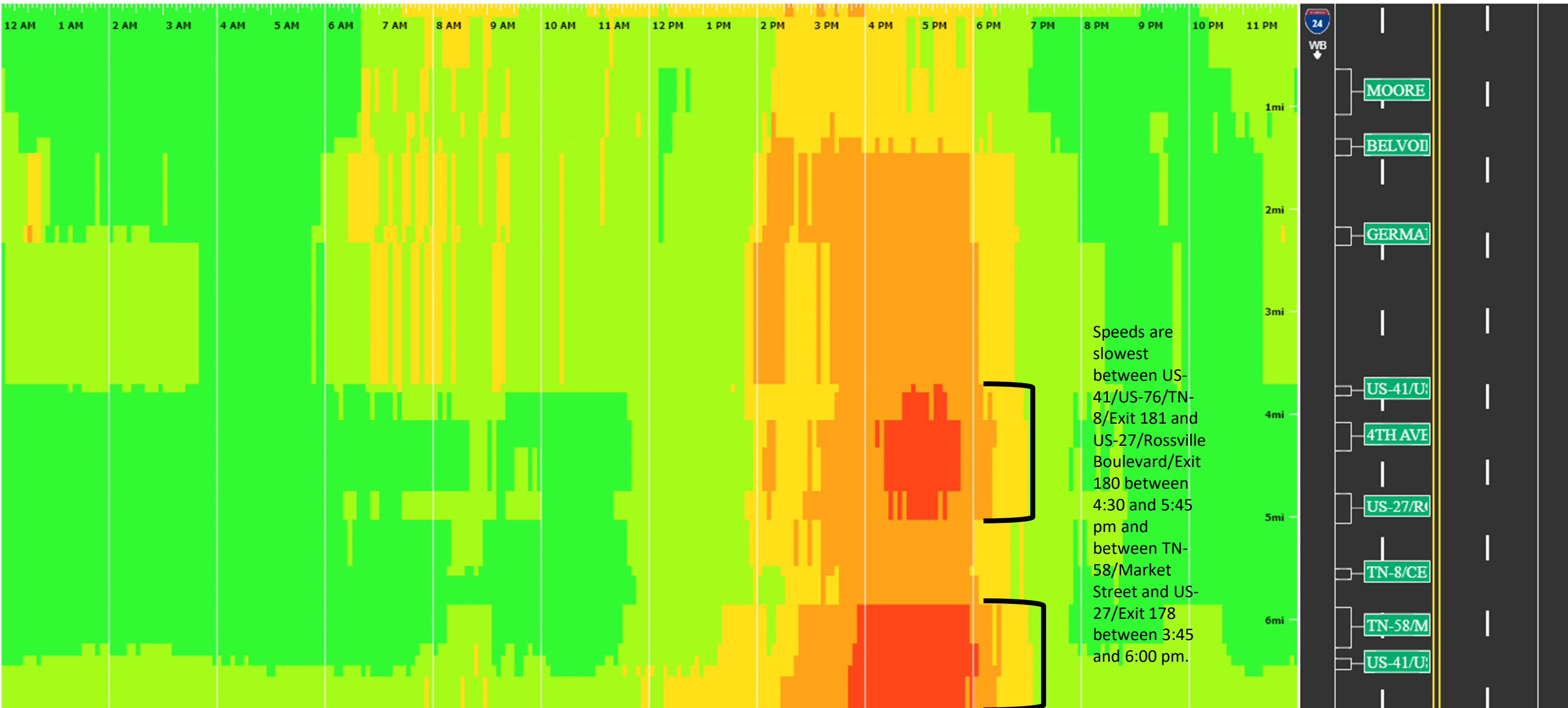


# I-24 WB @ US-27/Exit 178

## 2023 Q1 #1 Interstate Bottleneck in Region 2

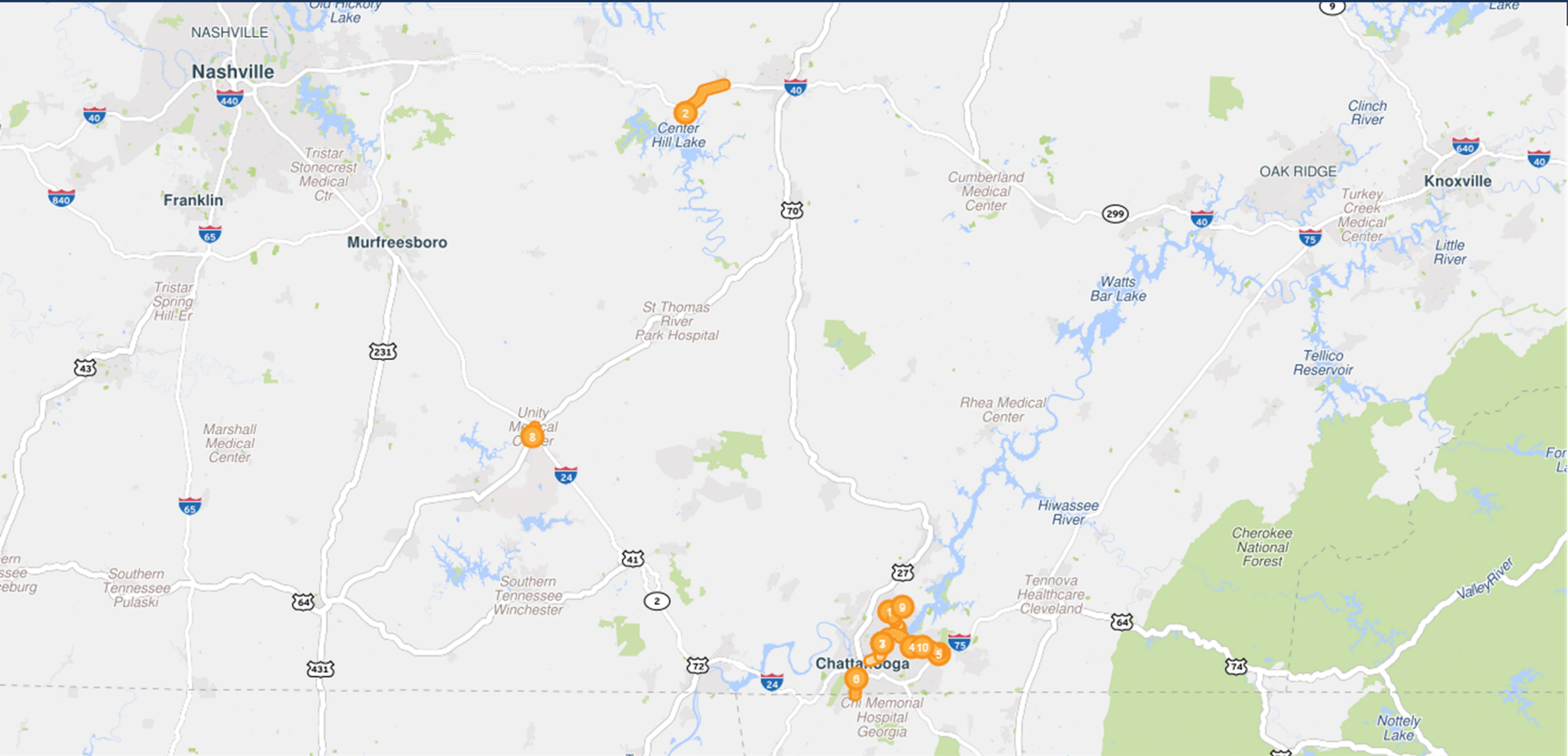


Average Speed Over Time Averaged per five minutes for Jan 01, 2023 through March 31, 2023



# Top 10 State Route Bottlenecks – Region 2

2023 Q1



Selected Location Location head Queue (at max length) Number of Incidents

# Top 10 State Route Bottlenecks – Region 2

2023 **Q1**

| Current Rank Q1 2023 | Location  | Total Delay | Average Daily Duration | Average Max Length (miles) | Agency & Waze Reported Events | Q4 2022 Rank | Q3 2022 Rank | Q2 2022 Rank |
|----------------------|---|-------------|------------------------|----------------------------|-------------------------------|--------------|--------------|--------------|
| 1                    | TN-153 N @ GADD RD                                    | 7,608,453   | 2 h 10 m               | 0.82                       | 159                           | 1            | 6            | 1            |
| 2                    | TN-56 S @ I-40  | 4,033,891   | 3 h 5 m                | 0.34                       | 0                             | --           | --           | --           |
| 3                    | TN-58 S @ WISDOM ST/RIVERPORT RD                      | 2,687,440   | 28 m                   | 1.46                       | 15                            | 6            | --           | --           |
| 4                    | TN-317 N @ TN-153                                     | 2,344,704   | 14 m                   | 3.73                       | 20                            | 7            | 3            | 9            |
| 5                    | TN-317 S @ US-11/LEE HWY                              | 1,969,000   | 25 m                   | 2.38                       | 12                            | --           | 1            | --           |
| 6                    | TN-17 N @ US-11/US-41/US-64/US-72/OLD WAUHATCHIE PIKE | 1,953,686   | 13 h 10 m              | 0.15                       | 0                             | 3            | 10           | 4            |
| 7                    | TN-58 N @ WISDOM ST/RIVERPORT RD                      | 1,713,884   | 17 m                   | 2.35                       | 8                             | --           | 2            | --           |
| 8                    | TN-55 S @ US-41/TN-2/HILLSBORO BLVD                   | 1,581,852   | 12 h 8 m               | 0.13                       | 0                             | 10           | --           | --           |
| 9                    | TN-319 N @ MIDDLE VALLEY RD                           | 1,340,292   | 19 m                   | 2.03                       | 0                             | --           | --           | --           |
| 10                   | TN-317 N @ NOAH REID RD                               | 1,333,235   | 28 m                   | 2.46                       | 4                             | --           | --           | --           |

Red numbers = highest value for that metric

\*\*Total Delay is raw speed drop weighted by VMT. It is computed by multiplying the delay by the impacted traffic volume and aggregating the one-minute delays for the entire period the bottleneck is active.

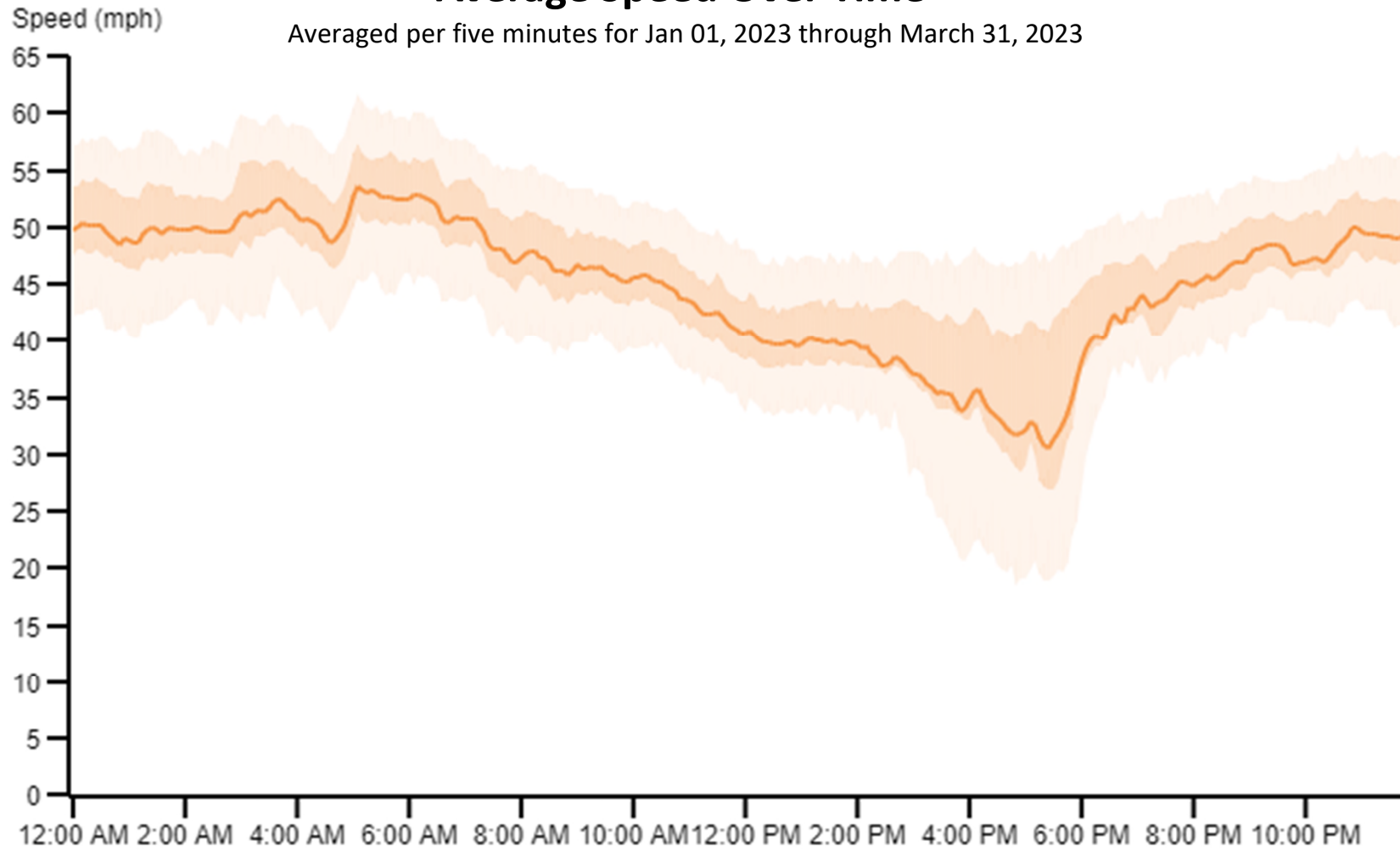
# TN-153 NB @ Gadd Road

## 2023 Q1 #1 State Route Bottleneck in Region

2

### Average Speed Over Time

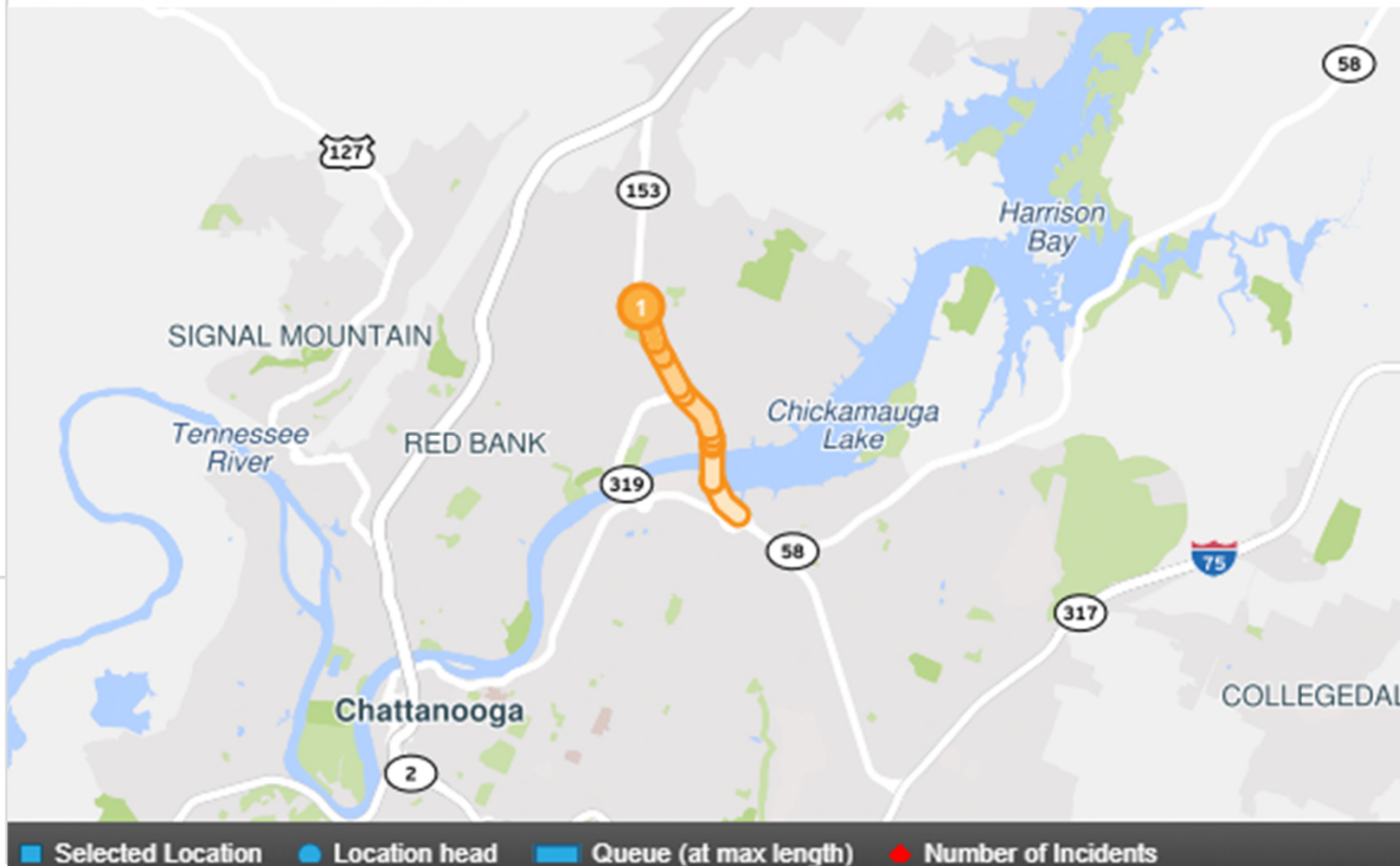
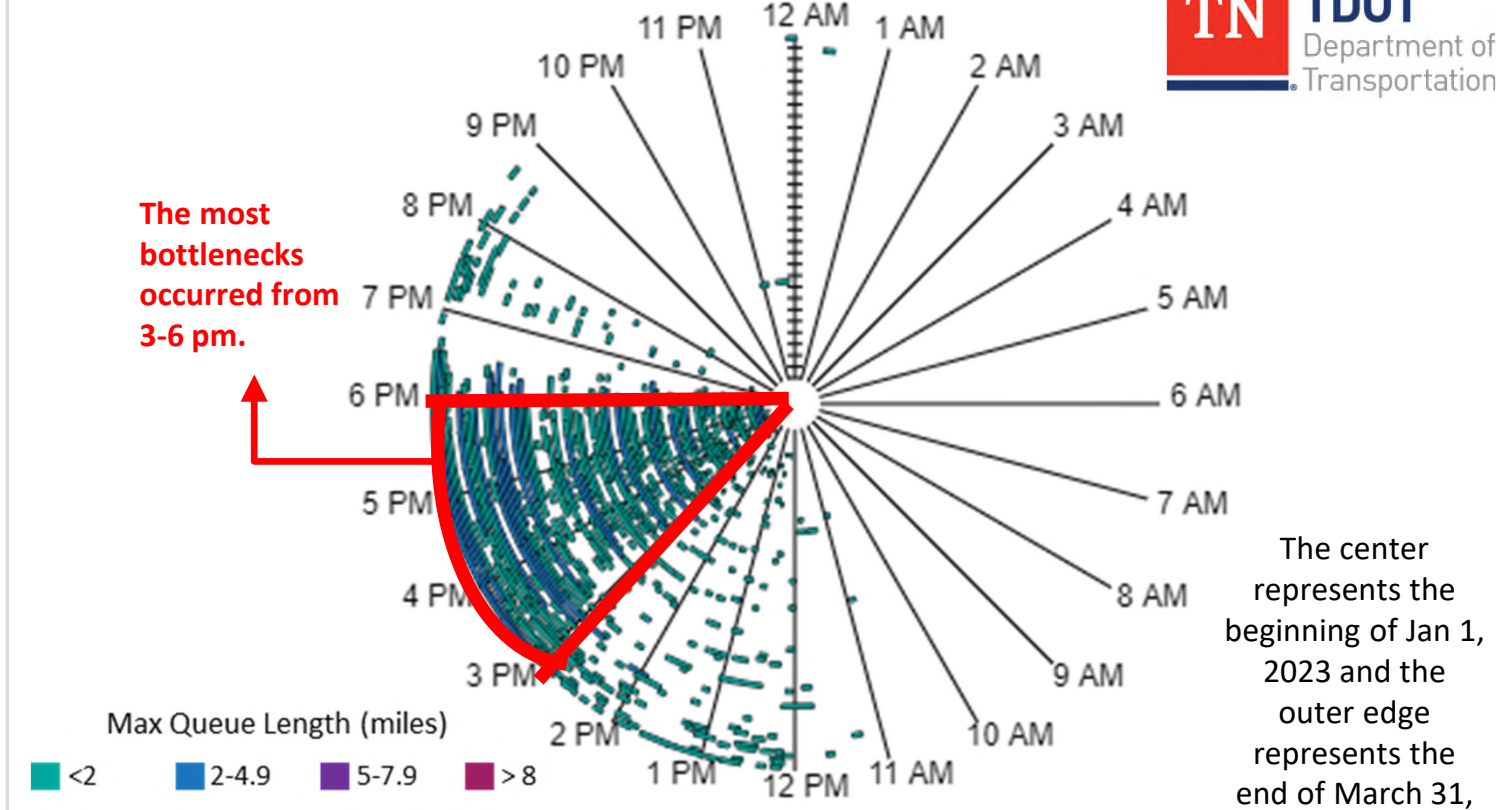
Averaged per five minutes for Jan 01, 2023 through March 31, 2023



- Jan 01, 2023 through Mar 31, 2023 - INRIX
- Jan 01, 2023 through Mar 31, 2023 25th and 75th percentile - INRIX
- Jan 01, 2023 through Mar 31, 2023 5th and 95th percentile - INRIX

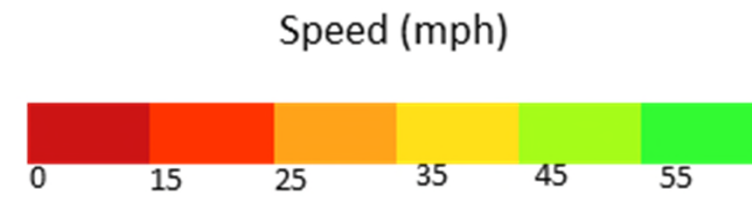
- The A.M speed gradually declines from **53.5 mph** at 5:05 am to **40.6 mph** at noon, **15%** slower than free flow. The P.M. peak average speed is **30.6 mph** at 5:25 pm, **36%** slower than free flow.
- There were over **9,513** vehicle hours of delay on this segment of the State Route in Quarter 1.

### Bottleneck Occurrences

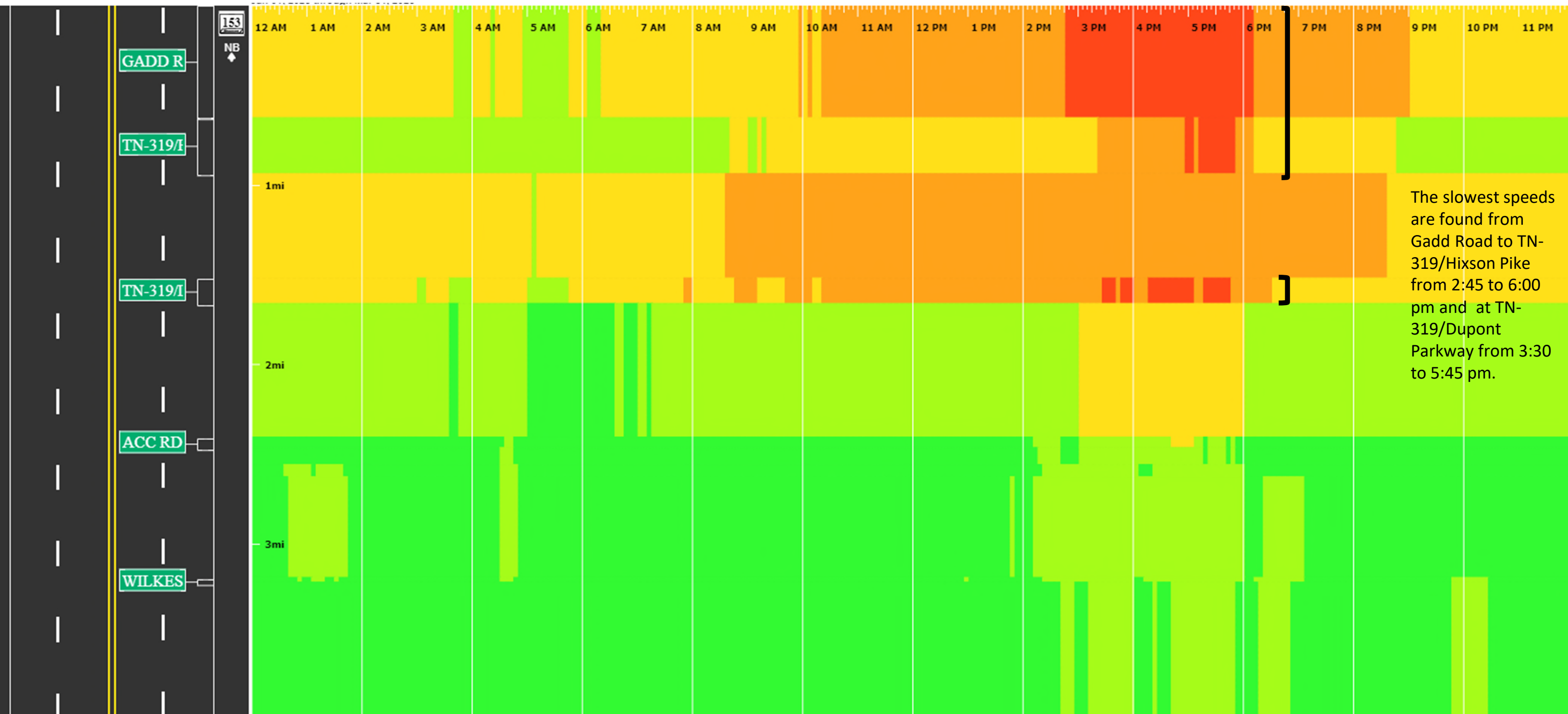


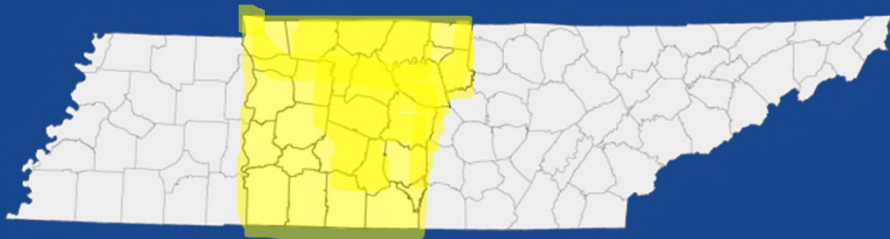
# TN-153 NB @ Gadd Road

## 2023 Q1 #1 State Route Bottleneck in Region 2



Average Speed Over Time Averaged per five minutes for Jan 01, 2023 through March 31, 2023



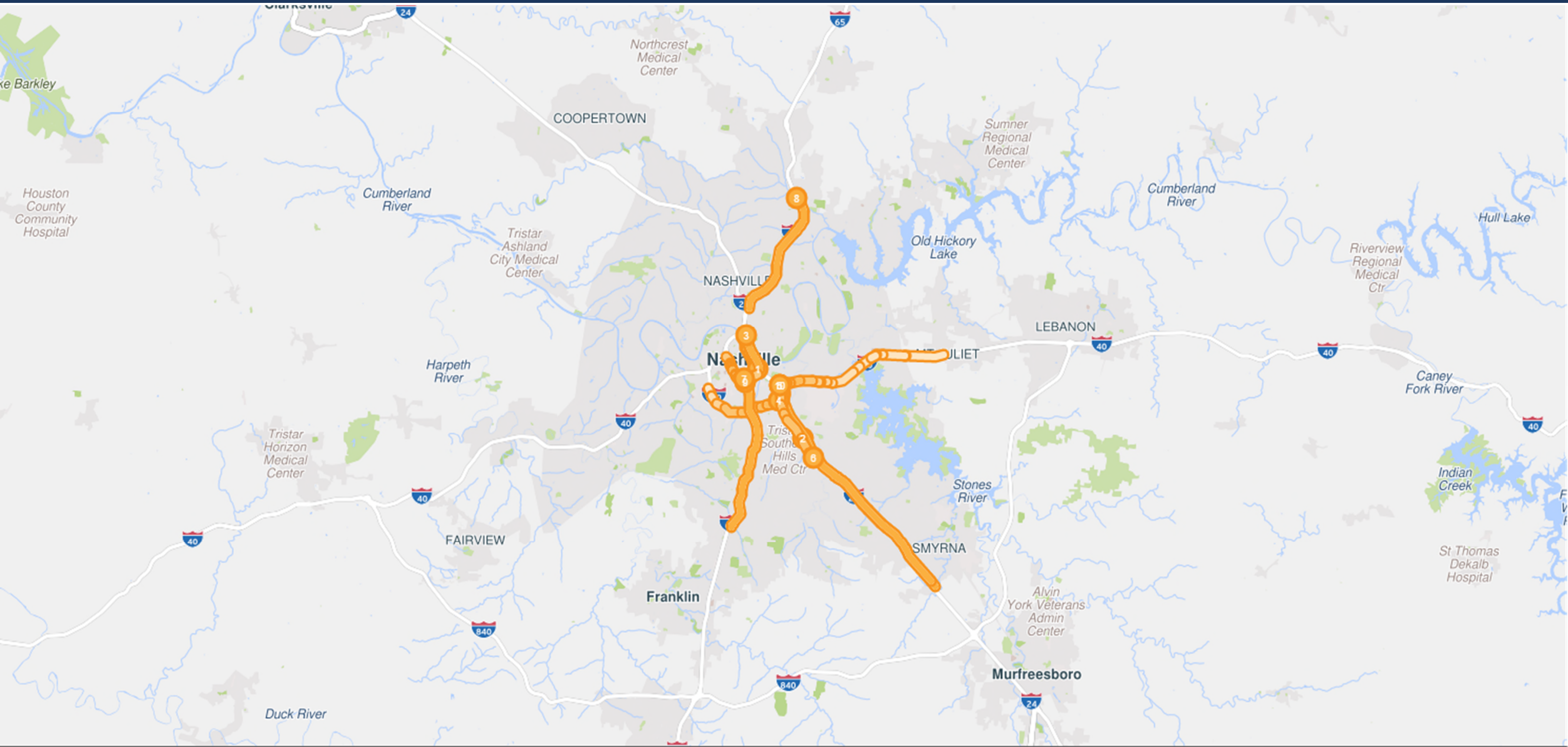


# Region 3 - Nashville



# Top 10 Interstate Bottlenecks – Region 3

2023 Q1



# Top 10 Interstate Bottlenecks – Region 3

2023 **Q1**

| Current Rank Q1 2023 | Location                                | Total Delay | Average Daily Duration | Average Max Length (miles) | Agency & Waze Reported Events | Q4 2022 Rank | Q3 2022 Rank | Q2 2022 Rank |
|----------------------|---|-------------|------------------------|----------------------------|-------------------------------|--------------|--------------|--------------|
| 1                    | I-24 E @ I-40/EXIT 83                   | 89,510,680  | 3 h 20 m               | 1.64                       | 493                           | 1            | 5            | 8            |
| 2                    | I-24 W @ TN-255/HARDING PL/EXIT 56      | 86,541,592  | 1 h 30 m               | 5.37                       | 1711                          | 8            | --           | --           |
| 3                    | I-24 W @ I-65/EXIT 86                   | 78,813,407  | 5 h 26 m               | 1.68                       | 552                           | 4            | 4            | 6            |
| 4                    | I-440 E @ I-24                          | 78,031,926  | 1 h 55 m               | 2.63                       | 577                           | 2            | --           | 10           |
| 5                    | I-24 W @ I-40/EXIT 52                   | 70,840,093  | 3 h 45 m               | 1.42                       | 2402                          | --           | --           | --           |
| 6                    | I-24 E @ HAYWOOD LN/EXIT 57             | 69,697,289  | 1 h 1 m                | 3.94                       | 1098                          | 7            | 3            | 5            |
| 7                    | I-40/I-65 S @ I-65/EXIT 210             | 69,325,179  | 3 h 12 m               | 1.18                       | 557                           | 3            | 6            | --           |
| 8                    | I-65 N @ DAVIDSON--SUMNER COUNTY BORDER | 62,692,808  | 1 h 40 m               | 4.37                       | 1190                          | 10           | 2            | 4            |
| 9                    | I-65 N @ I-40/EXIT 82                   | 59,247,620  | 1 h 31 m               | 2.56                       | 1187                          | 5            | --           | --           |
| 10                   | I-40 W @ I-24/EXIT 213                  | 58,371,390  | 3 h 33 m               | 1.34                       | 1331                          | 6            | 1            | 1            |

Red numbers = highest value for that metric

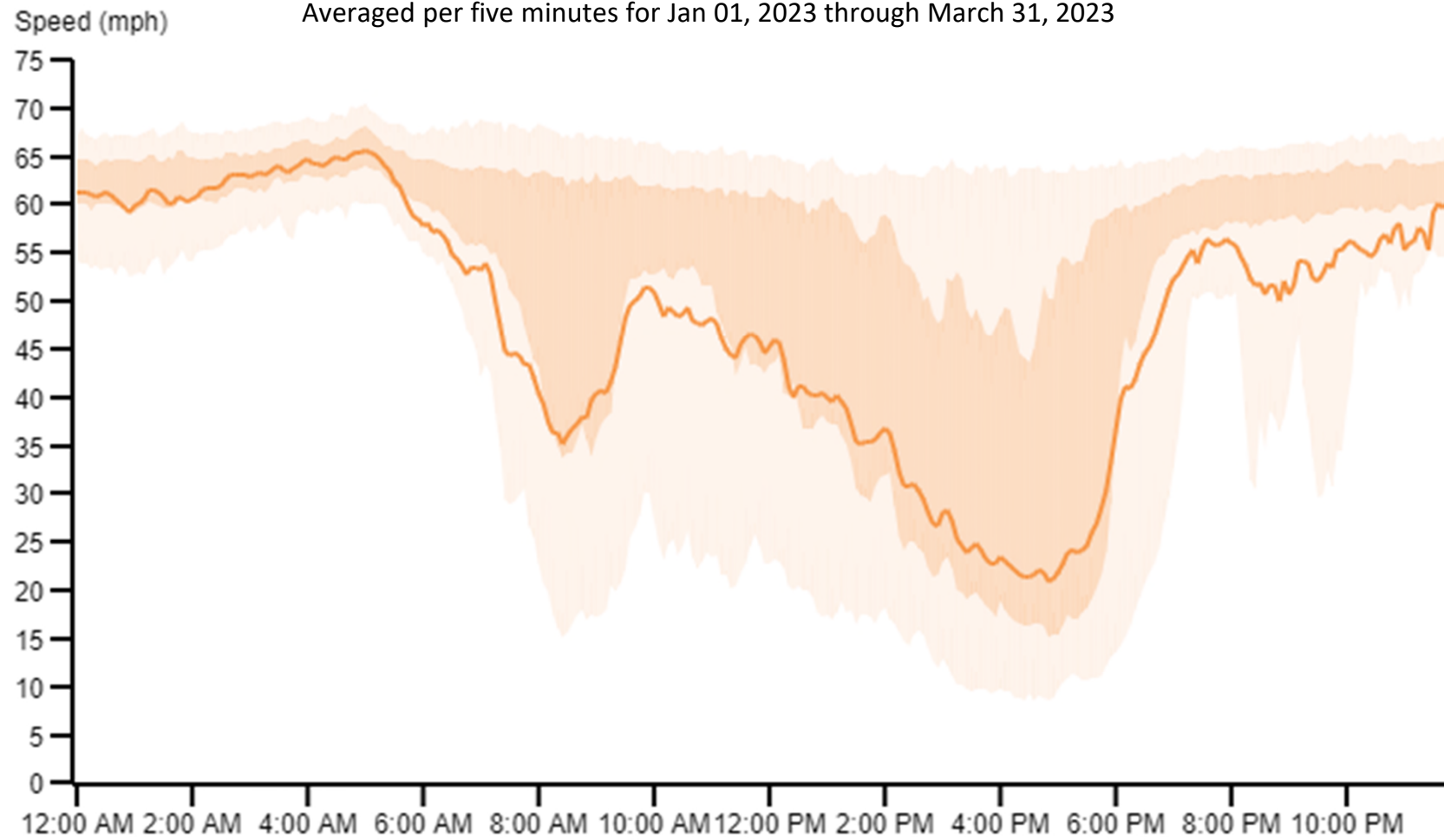
\*\*Total Delay is raw speed drop weighted by VMT. It is computed by multiplying the delay by the impacted traffic volume and aggregating the one-minute delays for the entire period the bottleneck is active.

# I-24 EB @ I-40/Exit 83

## 2023 Q1 #1 Interstate Bottleneck in Region 3

### Average Speed Over Time

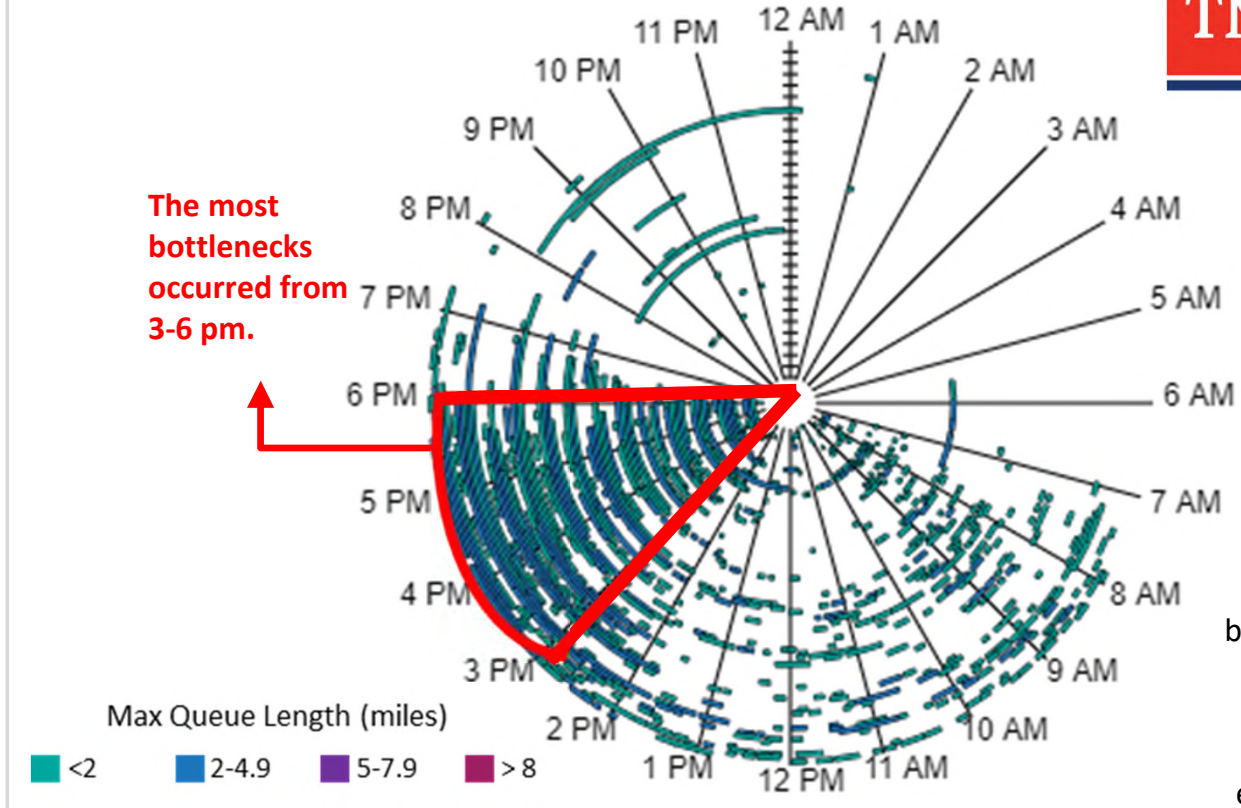
Averaged per five minutes for Jan 01, 2023 through March 31, 2023



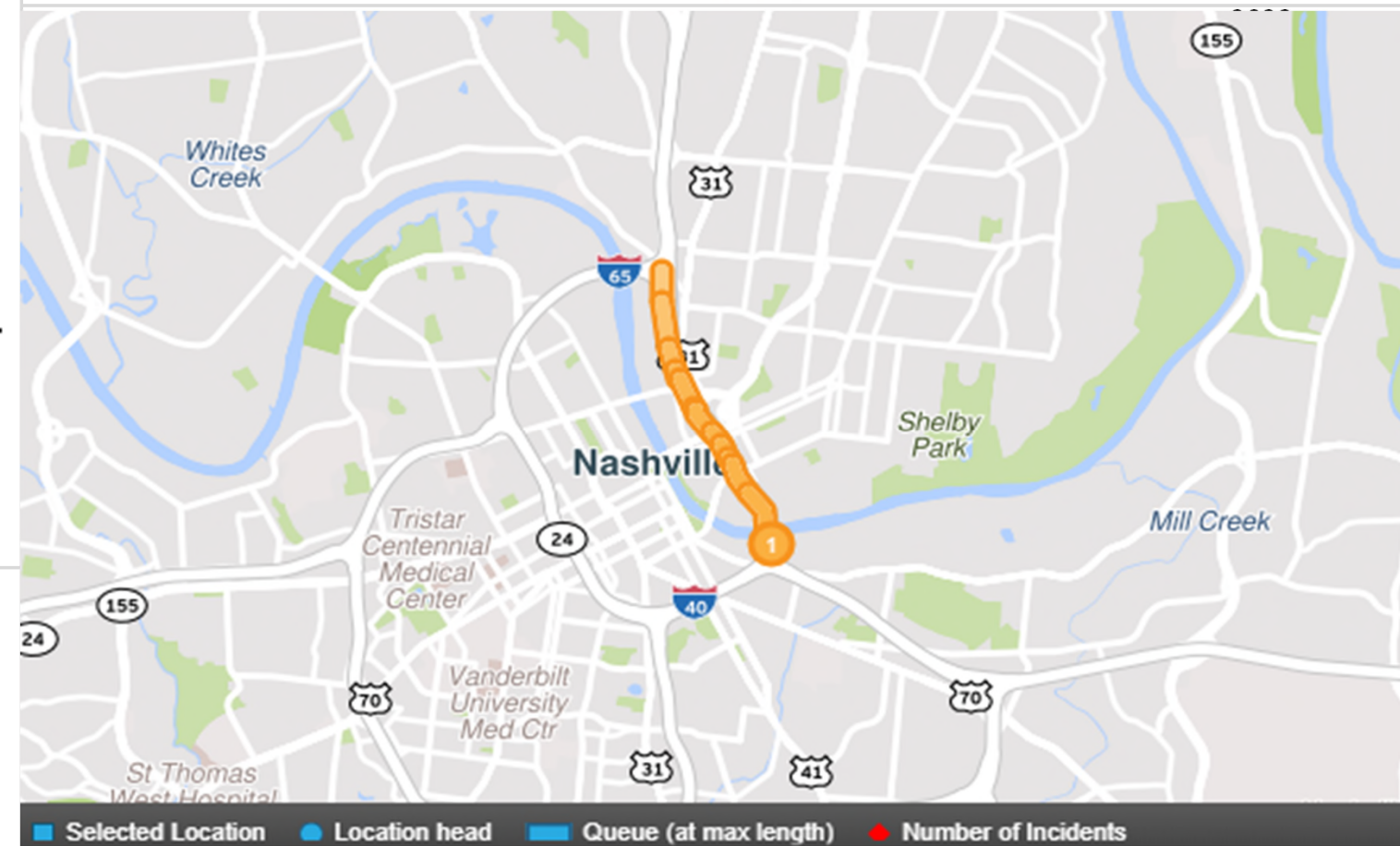
- Jan 01, 2023 through Mar 31, 2023 - INRIX
- Jan 01, 2023 through Mar 31, 2023 25th and 75th percentile - INRIX
- Jan 01, 2023 through Mar 31, 2023 5th and 95th percentile - INRIX

- The A.M. peak average speed is **35.1 mph** at 8:25 am, **39%** slower than free flow. The P.M. peak average speed is **21 mph** at 4:50 pm, **64%** slower than free flow.
- There were over **48,185** vehicle hours of delay on this segment of the interstate in Quarter 1.

### Bottleneck Occurrences

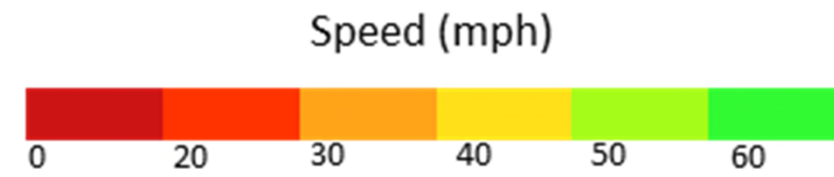


The center represents the beginning of Jan 1, 2023 and the outer edge represents the end of March 31,

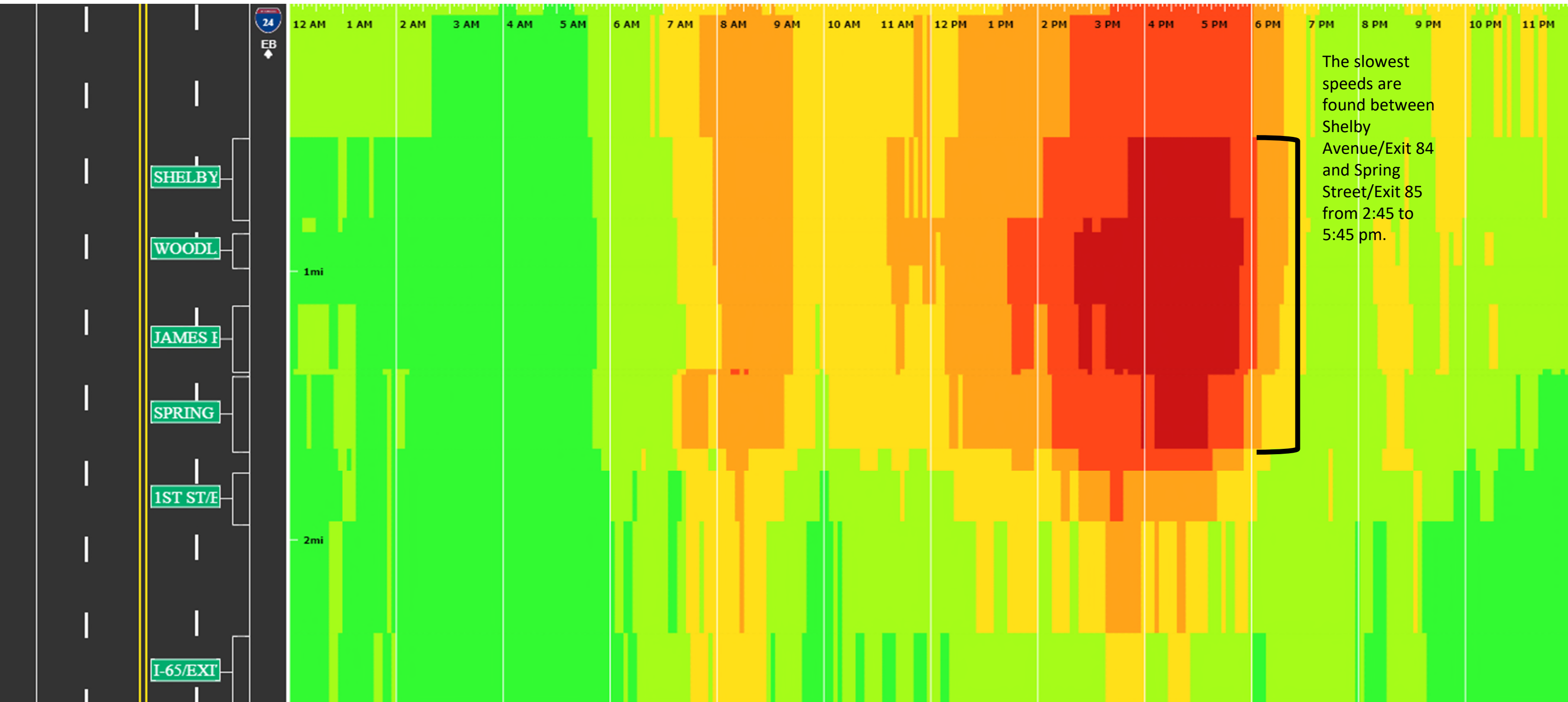


# I-24 EB @ I-40/Exit 83

## 2023 Q1 #1 Interstate Bottleneck in Region 3

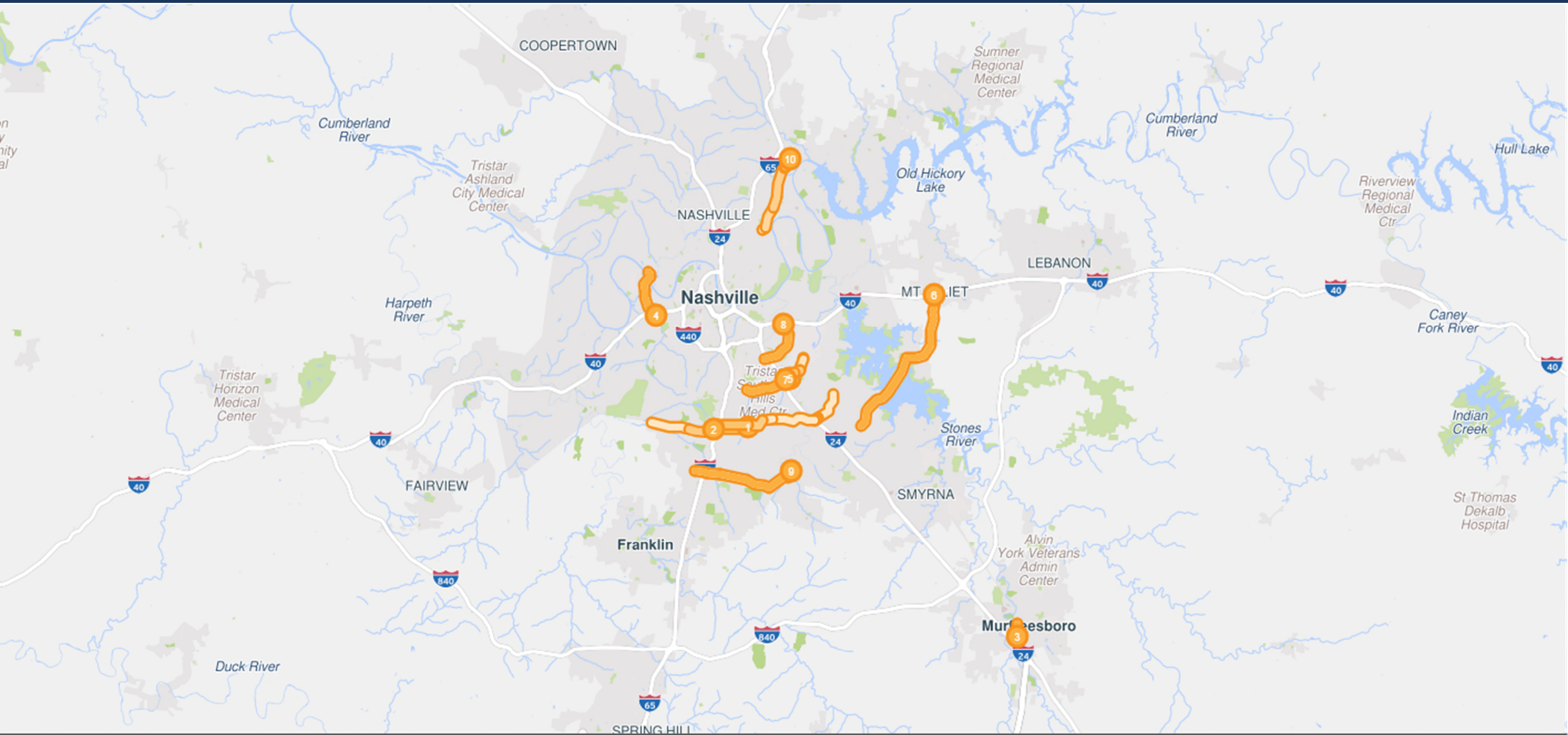


Average Speed Over Time Averaged per five minutes for Jan 01, 2023 through March 31, 2023



# Top 10 State Route Bottlenecks – Region 3

2023 Q1



Selected Location   Location head   Queue (at max length)   Number of Incidents

# Top 10 State Route Bottlenecks – Region 3

2023 **Q1**

| Current Rank Q1 2023 | Location                                  | Total Delay | Average Daily Duration | Average Max Length (miles) | Agency & Waze Reported Events | Q4 2022 Rank | Q3 2022 Rank | Q2 2022 Rank |
|----------------------|---|-------------|------------------------|----------------------------|-------------------------------|--------------|--------------|--------------|
| 1                    | TN-254 E @ EDMONDSON PIKE                 | 20,946,400  | 1 h 41 m               | 3.09                       | 46                            | 1            | 1            | 2            |
| 2                    | TN-254 W @ US-31/TN-6/FRANKLIN RD         | 20,002,541  | 12 h 55 m              | 0.41                       | 353                           | 2            | 2            | 1            |
| 3                    | TN-99 W @ MIDDLE TENNESSEE BLVD           | 12,087,560  | 3 h 49 m               | 0.87                       | 1                             | 3            | 3            | 3            |
| 4                    | TN-155 CCW @ US-70/TN-24/CHARLOTTE AVE    | 11,998,116  | 6 h 57 m               | 0.25                       | 98                            | 5            | 5            | 4            |
| 5                    | TN-255 N @ ANTIOCH PIKE                   | 10,993,594  | 4 h 42 m               | 0.55                       | 0                             | 8            | 8            | 10           |
| 6                    | TN-171 N @ I-40                           | 10,321,881  | 2 h 19 m               | 1.49                       | 0                             | --           | --           | 6            |
| 7                    | TN-255 S @ I-24                           | 10,049,608  | 2 h 40 m               | 0.63                       | 42                            | 9            | --           | --           |
| 8                    | TN-155 CCW @ I-40 (NASHVILLE) (EAST)      | 8,315,074   | 1 h 6 m                | 1.7                        | 52                            | --           | --           | 9            |
| 9                    | TN-253 E @ US-31A/US-41A/NOLENSVILLE PIKE | 7,731,690   | 16 h 52 m              | 0.44                       | 0                             | 10           | --           | --           |
| 10                   | TN-6 N @ CONFERENCE DR                    | 7,263,335   | 1 h 29 m               | 1.22                       | 7                             | 7            | --           | --           |

Red numbers = highest value for that metric

\*\*Total Delay is raw speed drop weighted by VMT. It is computed by multiplying the delay by the impacted traffic volume and aggregating the one-minute delays for the entire period the bottleneck is active.

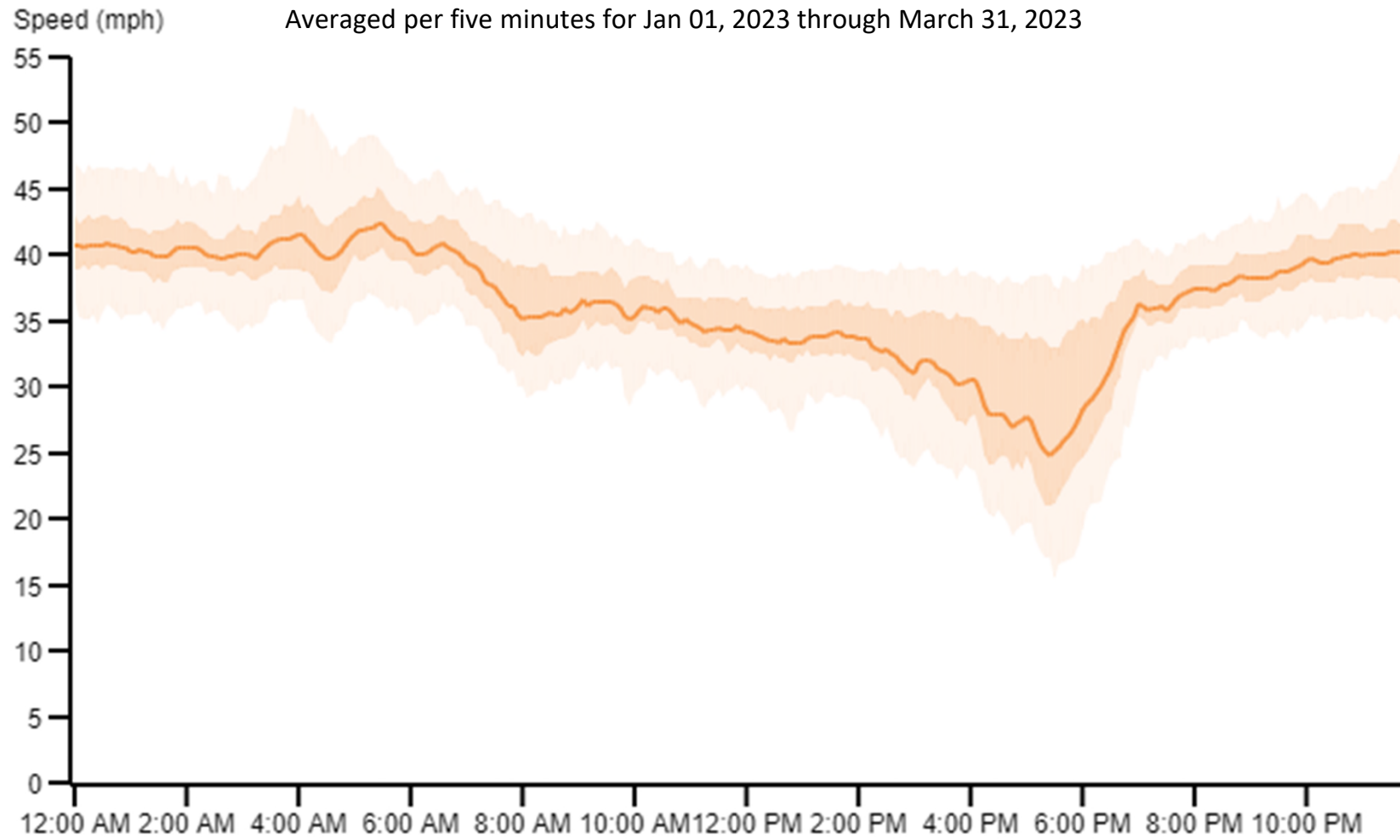
# TN-254 EB @ Edmondson Pike

## 2023 Q1 #1 State Route Bottleneck In Region

3

### Average Speed Over Time

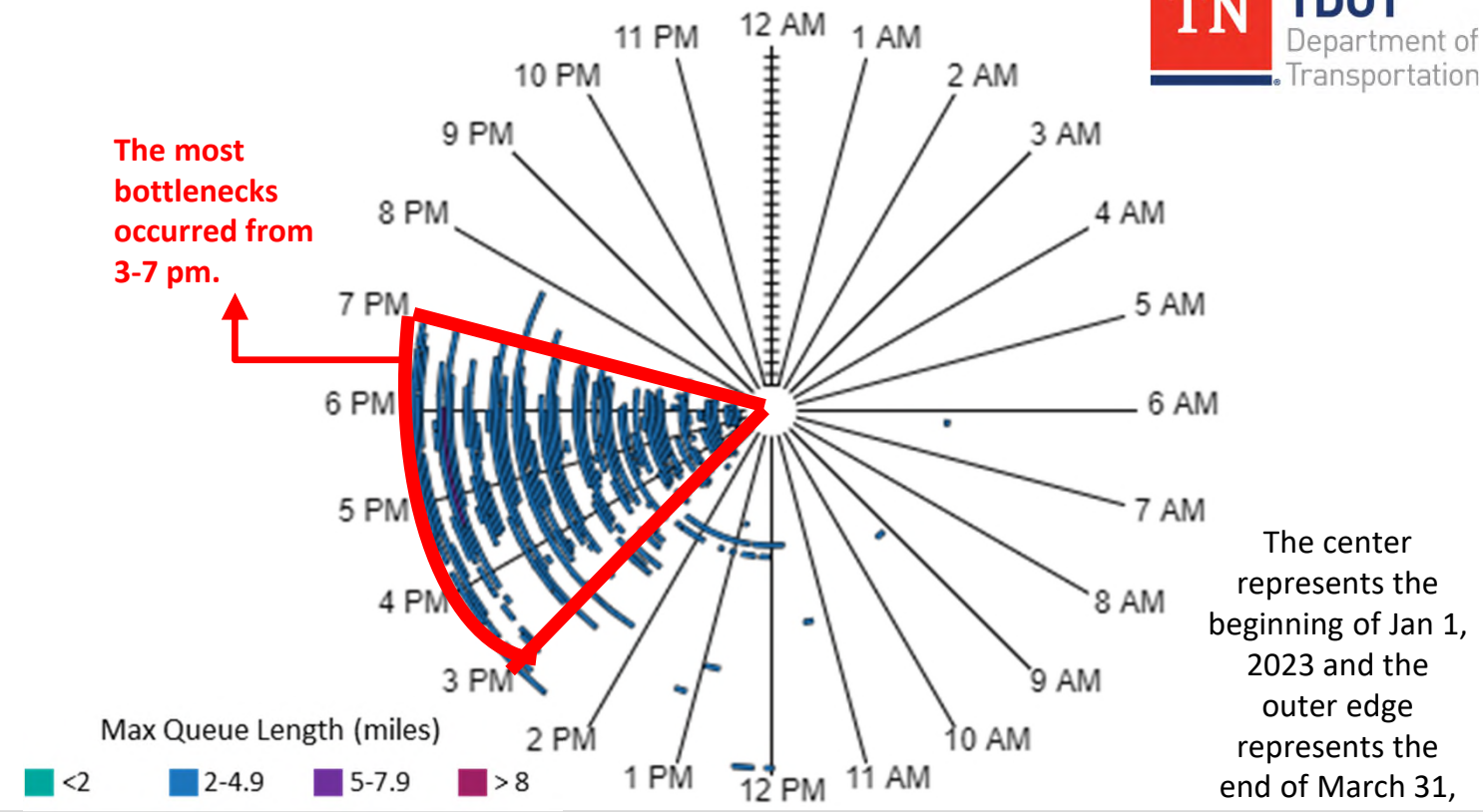
Averaged per five minutes for Jan 01, 2023 through March 31, 2023



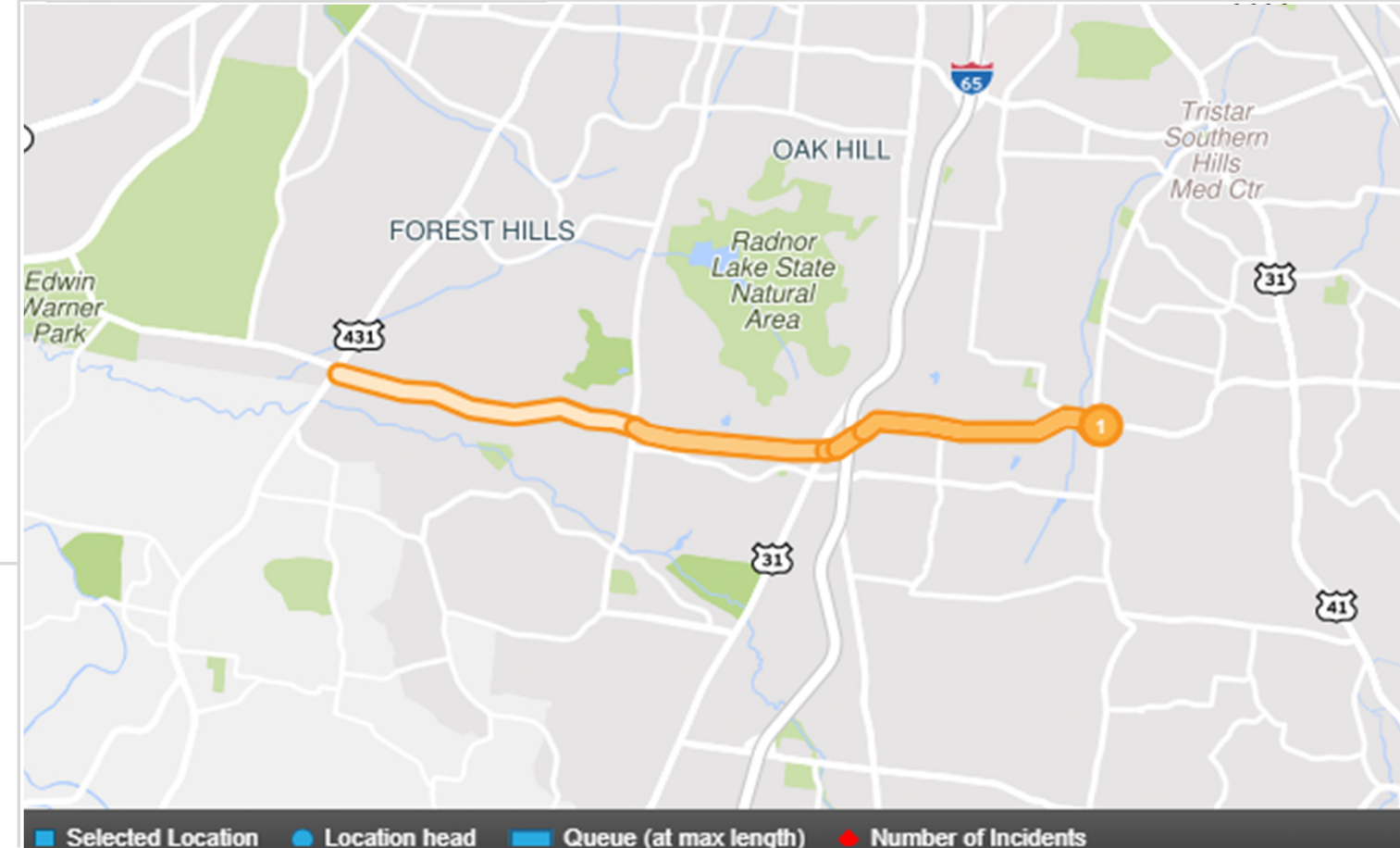
- Jan 01, 2023 through Mar 31, 2023 - INRIX
- Jan 01, 2023 through Mar 31, 2023 25th and 75th percentile - INRIX
- Jan 01, 2023 through Mar 31, 2023 5th and 95th percentile - INRIX

- The A.M. peak average speed is **35.1 mph** at 8:00 am, **10%** slower than free flow. The P.M. peak average speed is **24.9 mph** at 5:25 pm, **36%** slower than free flow.
- There were over **15,686** vehicle hours of delay on this segment of the State route in Quarter 1.

### Bottleneck Occurrences

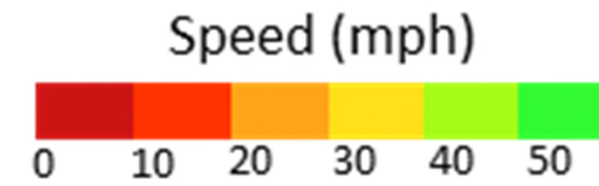


The center represents the beginning of Jan 1, 2023 and the outer edge represents the end of March 31,



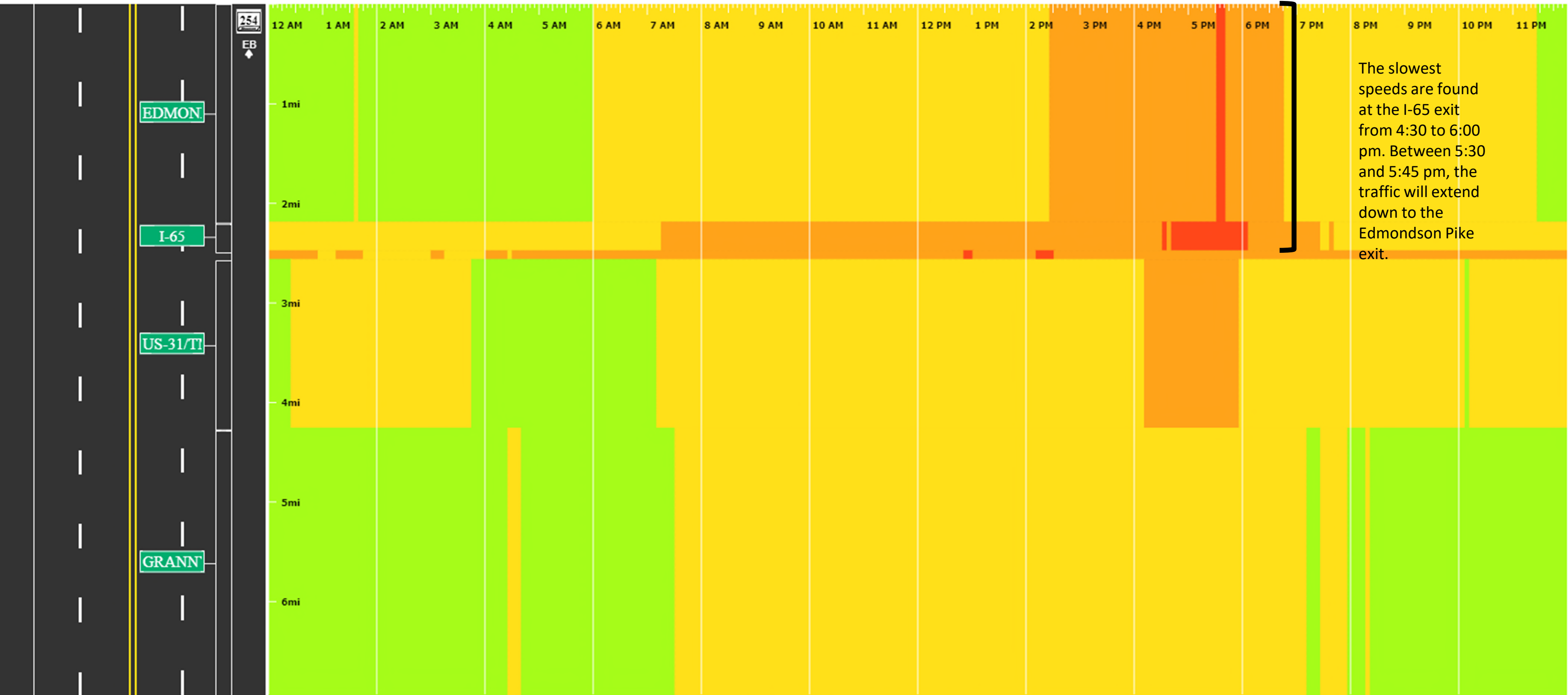
# TN-254 EB @ Edmondson Pike

## 2023 Q1 #1 State Route Bottleneck in Region 3



### Average Speed Over Time

Averaged per five minutes for Jan 01, 2023 through March 31, 2023



The slowest speeds are found at the I-65 exit from 4:30 to 6:00 pm. Between 5:30 and 5:45 pm, the traffic will extend down to the Edmondson Pike exit.



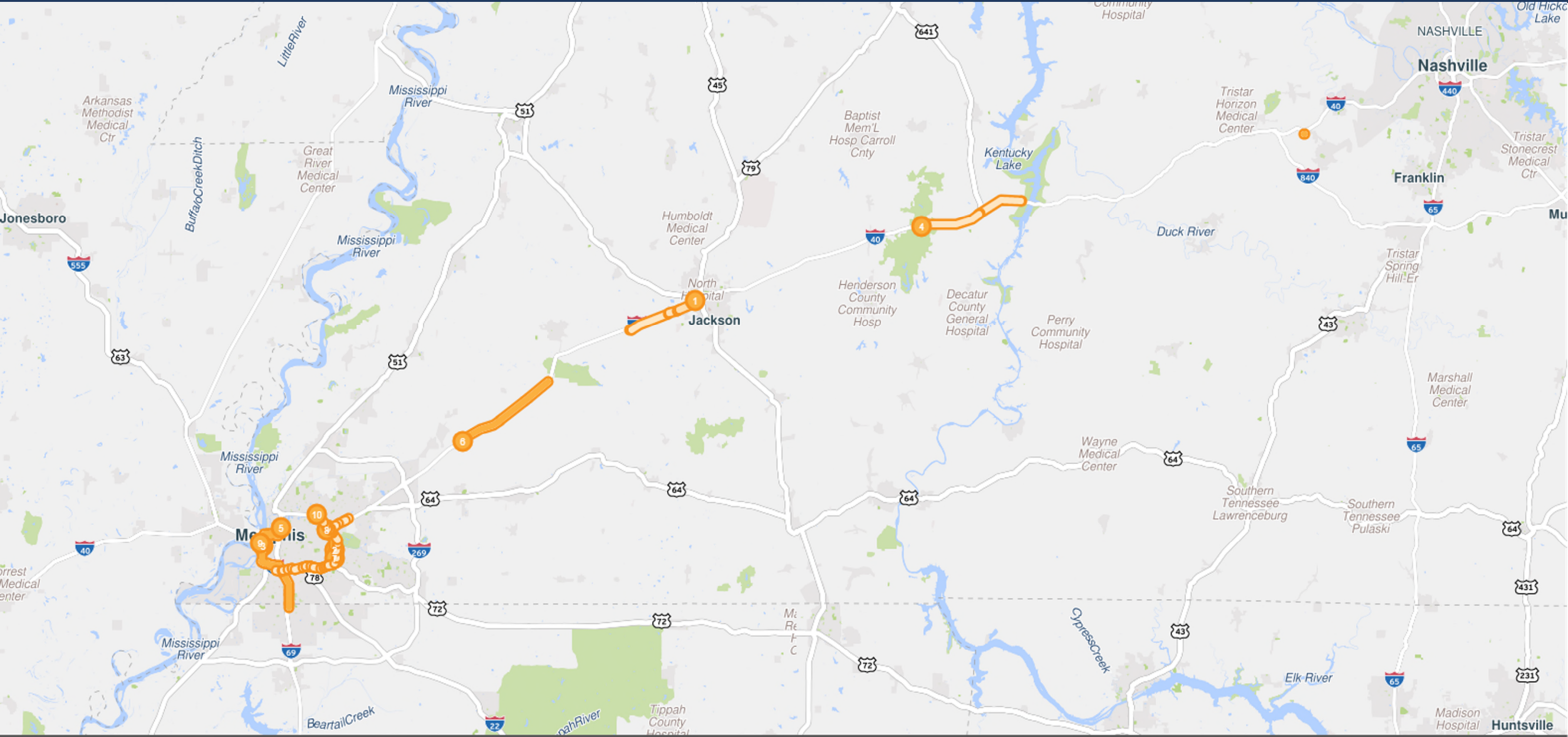


# Region 4 – Memphis & Jackson



# Top 10 Interstate Bottlenecks – Region 4

2023 Q1



Selected Location Location head Queue (at max length) Number of Incidents

# Top 10 Interstate Bottlenecks – Region 4

2023 **Q1**

| Current Rank Q1 2023 | Location                               | Total Delay | Average Daily Duration | Average Max Length (miles) | Agency & Waze Reported Events | Q4 2022 Rank | Q3 2022 Rank | Q2 2022 Rank |
|----------------------|--|-------------|------------------------|----------------------------|-------------------------------|--------------|--------------|--------------|
| 1                    | I-40 E @ US-412/EXIT 79                | 17,358,031  | 31 m                   | 4.82                       | 132                           | --           | --           | --           |
| 2                    | I-240 E @ POPLAR AVE                   | 13,496,834  | 28 m                   | 2.34                       | 965                           | 6            | 9            | 3            |
| 3                    | I-55 S @ US-61                         | 10,735,146  | 7 h 41 m               | 0.31                       | 36                            | 3            | 3            | --           |
| 4                    | I-40 W @ TN-114/EXIT 116               | 9,872,735   | 7 m                    | 12.16                      | 193                           | --           | --           | --           |
| 5                    | I-40 E @ TN-14/TN-1/JACKSON AVE/EXIT 1 | 7,859,998   | 43 m                   | 1.26                       | 143                           | 2            | 2            | 4            |
| 6                    | I-40 W @ TN-59/EXIT 35                 | 6,392,623   | 5 m                    | 9.75                       | 178                           | --           | --           | --           |
| 7                    | I-240 W @ POPLAR AVE                   | 6,325,208   | 9 m                    | 1.95                       | 728                           | --           | --           | --           |
| 8                    | I-240 E @ I-40/SAM COOPER BLVD         | 6,276,675   | 10 m                   | 3.49                       | 2084                          | 9            | --           | --           |
| 9                    | I-55 N @ CRITTENDEN/SHELBY COUNTY LINE | 4,952,461   | 20 m                   | 2.2                        | 724                           | --           | --           | --           |
| 10                   | I-40 W @ TN-14/JACKSON AVE/EXIT 8      | 4,586,128   | 9 m                    | 2.16                       | 822                           | --           | --           | --           |

Red numbers = highest value for that metric

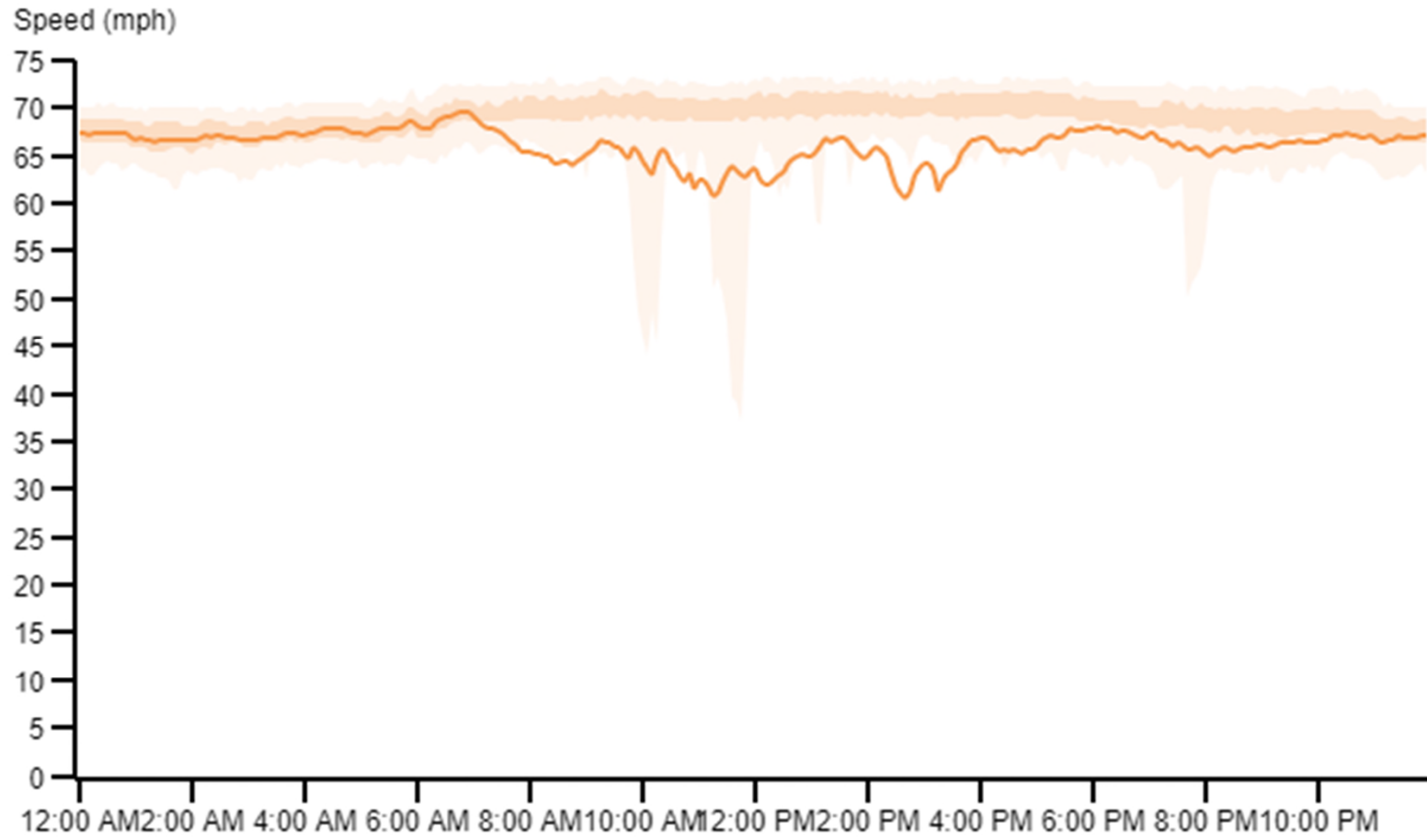
\*\*Total Delay is raw speed drop weighted by VMT. It is computed by multiplying the delay by the impacted traffic volume and aggregating the one-minute delays for the entire period the bottleneck is active.

# I-40 EB @ US-412/EXIT 79

## 2023 Q1 #1 Interstate Bottleneck in Region 4

### Average Speed Over Time

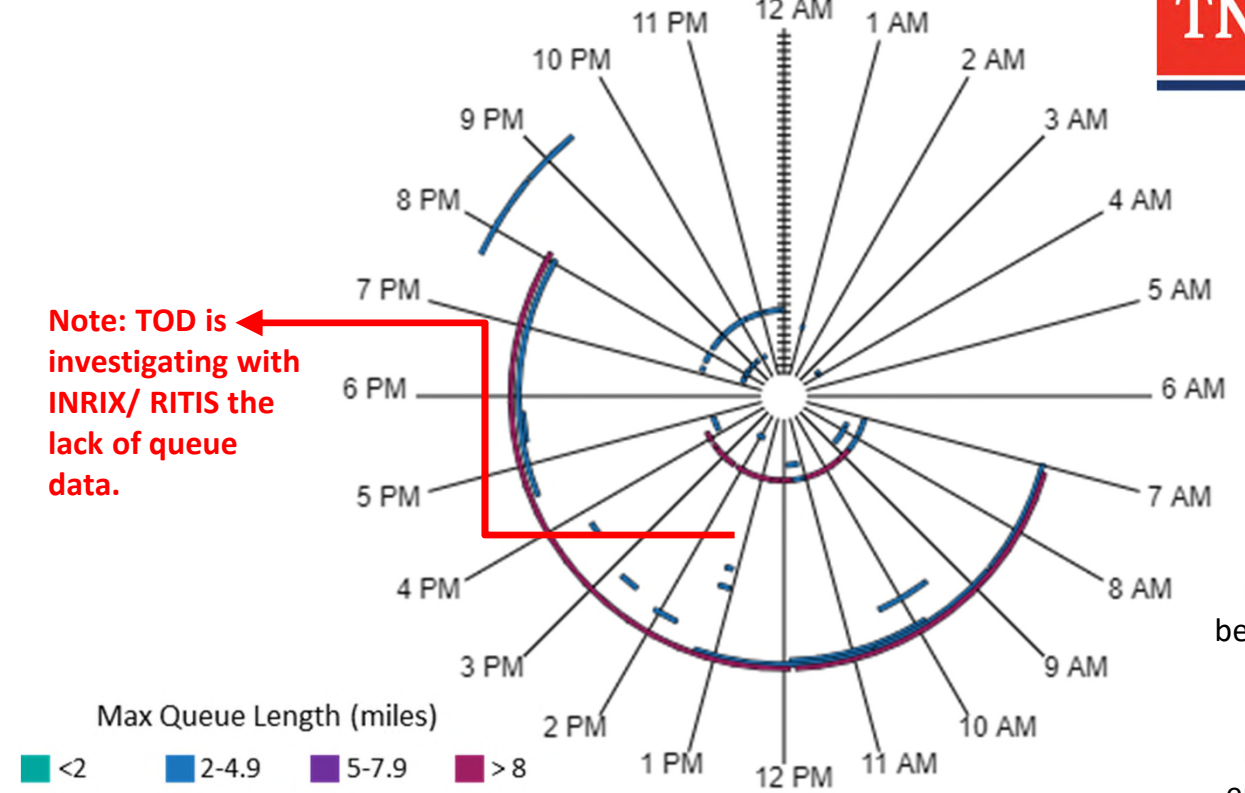
Averaged per five minutes for Jan 01, 2023 through March 31, 2023



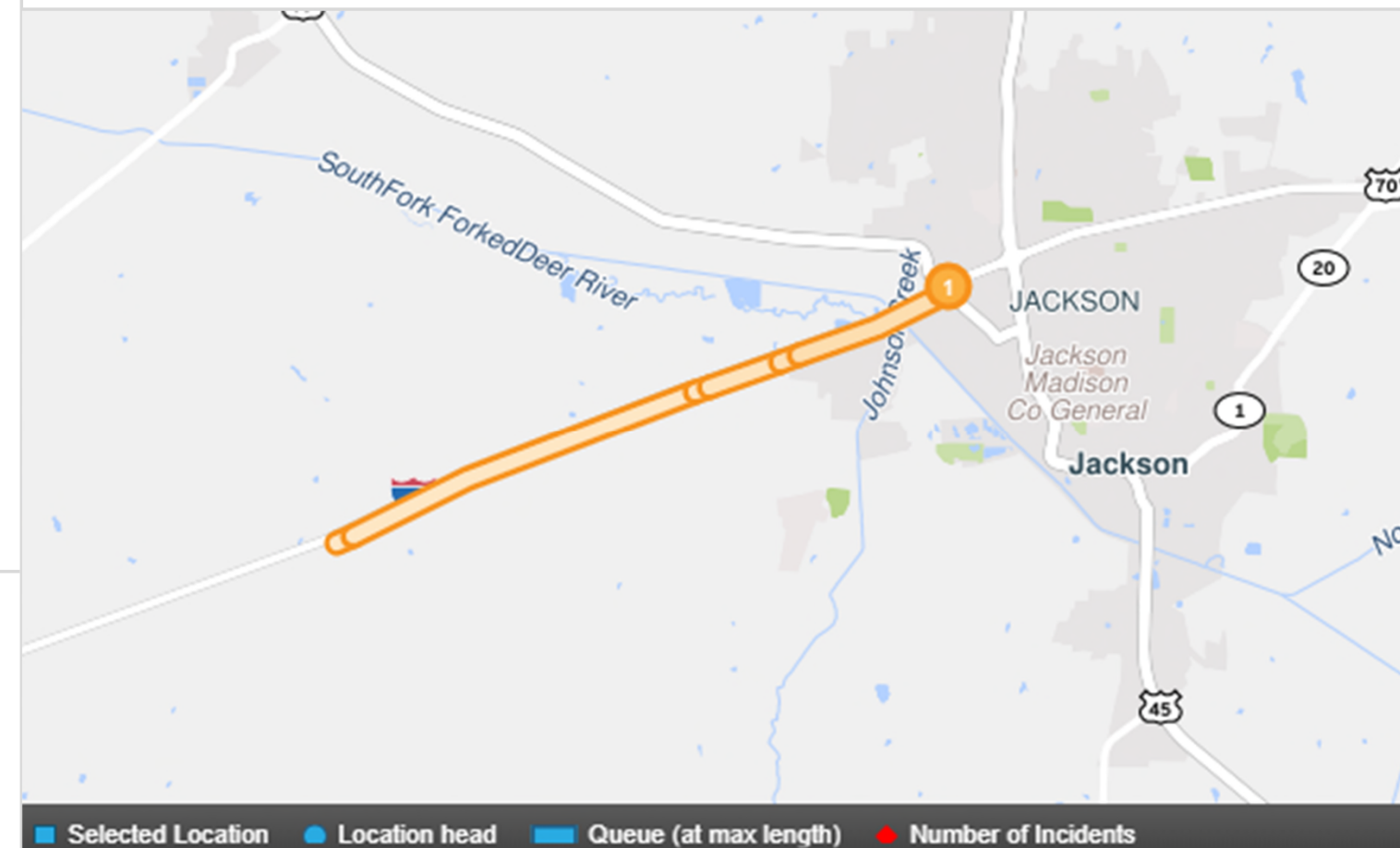
- Jan 01, 2023 through Mar 31, 2023 - INRIX
- Jan 01, 2023 through Mar 31, 2023 25th and 75th percentile - INRIX
- Jan 01, 2023 through Mar 31, 2023 5th and 95th percentile - INRIX

- The A.M. peak average speed is **60.8** mph at 11:15 am, **10%** slower than free flow. The P.M. peak average speed is **60.5** mph at 2:40 pm, **10%** slower than free flow.
- There were over **20,196** vehicle hours of delay on this segment of the interstate in Quarter 1.

### Bottleneck Occurrences

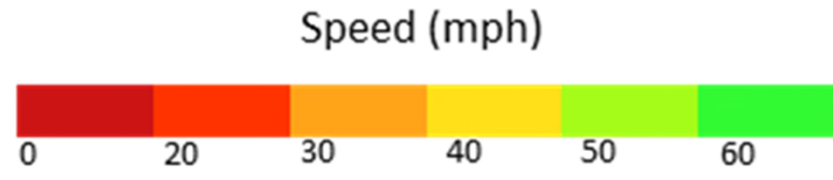


The center represents the beginning of Jan 1, 2023 and the outer edge represents the end of March 31,

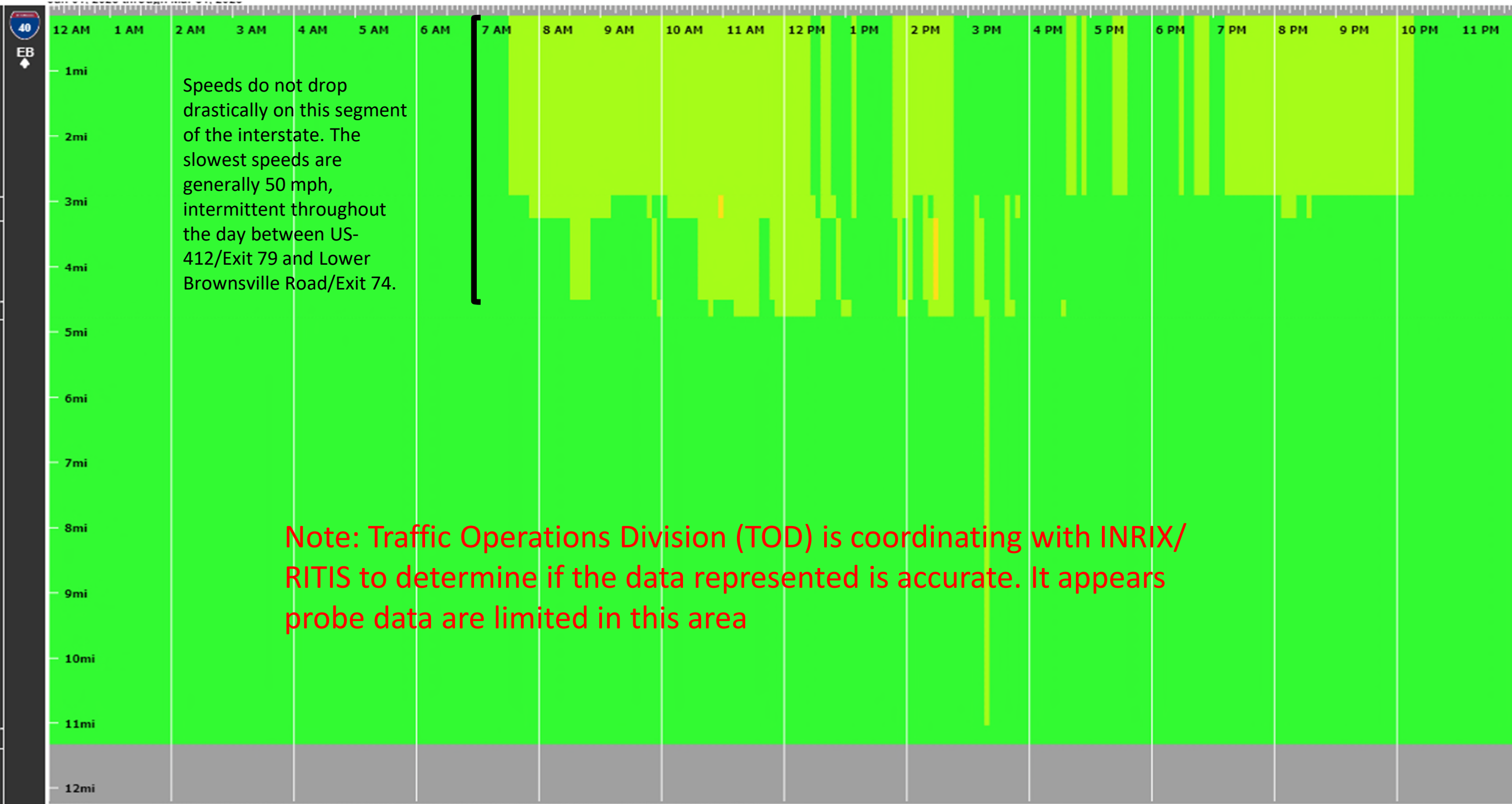


# I-40 EB @ US-412/EXIT 79

## 2023 Q1 #1 Interstate Bottleneck in Region 4

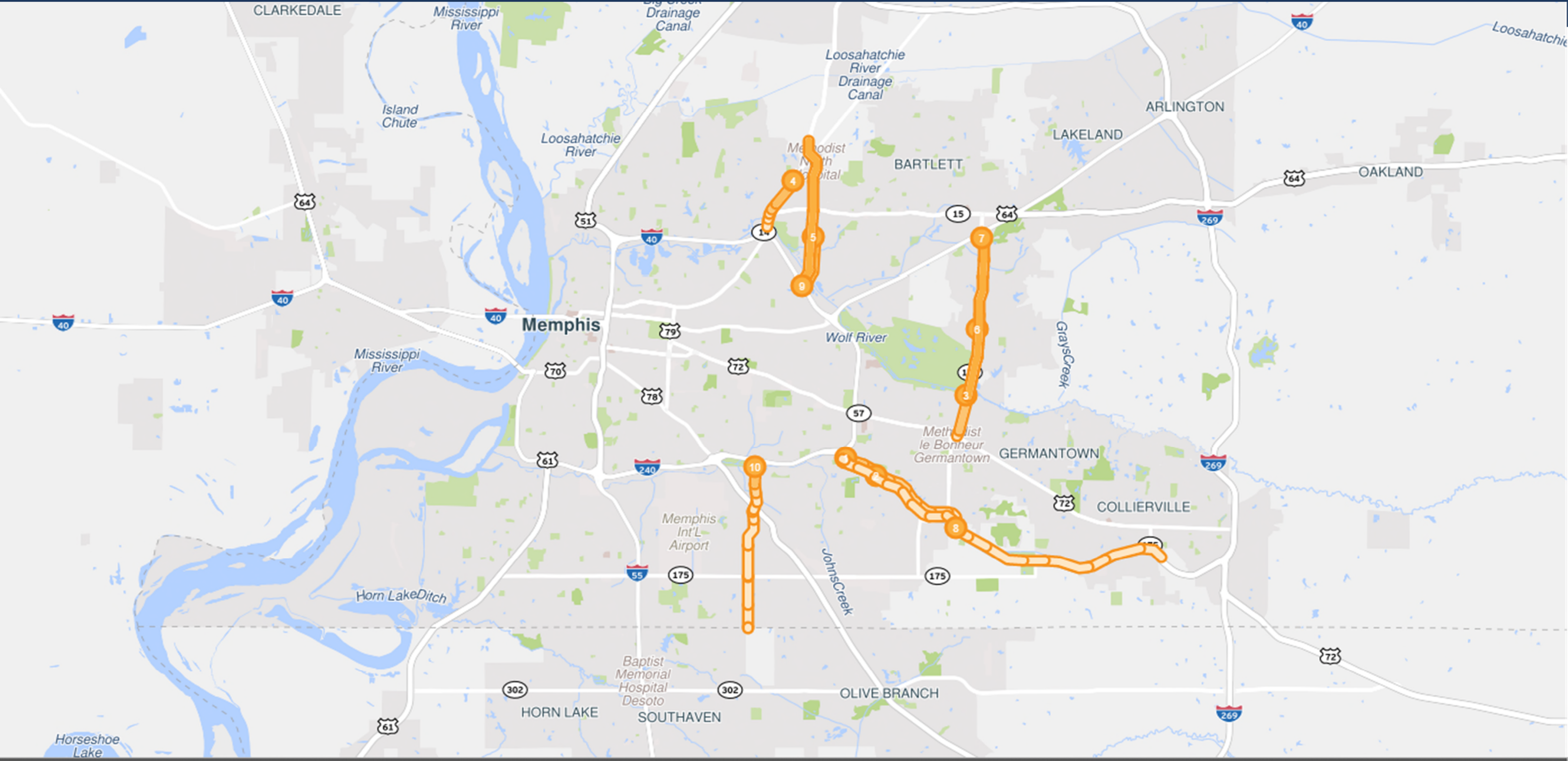


Average Speed Over Time Averaged per five minutes for Jan 01, 2023 through March 31, 2023



# Top 10 State Route Bottlenecks – Region 4

2023 Q1



Selected Location   Location head   Queue (at max length)   Number of Incidents

# Top 10 State Route Bottlenecks – Region 4

2023 **Q1**

| Current Rank Q1 2023 | Location                                  | Total Delay | Average Daily Duration | Average Max Length (miles) | Agency & Waze Reported Events | Q4 2022 Rank | Q3 2022 Rank | Q2 2022 Rank |
|----------------------|---|-------------|------------------------|----------------------------|-------------------------------|--------------|--------------|--------------|
| 1                    | TN-385 W @ I-240                          | 10,195,466  | 27 m                   | 2.35                       | 777                           | 1            | 2            | 1            |
| 2                    | TN-385 E @ RIDGEWAY RD                    | 6,347,740   | 36 m                   | 1.19                       | 157                           | 3            | 1            | 4            |
| 3                    | TN-177 N @ WOLF RIVER BLVD                | 5,334,571   | 44 m                   | 1.26                       | 11                            | 2            | 4            | 2            |
| 4                    | TN-14 N @ YALE RD                         | 4,284,432   | 3 h 25 m               | 0.32                       | 19                            | 6            | 7            | --           |
| 5                    | TN-204 N @ RALEIGH LAGRANGE RD            | 3,136,903   | 29 m                   | 1.43                       | 11                            | --           | --           | --           |
| 6                    | TN-177 N @ FISCHER STEEL RD/WALNUT RUN RD | 2,751,476   | 25 m                   | 1.23                       | 36                            | --           | --           | --           |
| 7                    | TN-177 N @ I-40                           | 2,592,896   | 59 m                   | 0.86                       | 63                            | 7            | --           | 5            |
| 8                    | TN-385 E @ WINCHESTER RD                  | 2,258,063   | 6 m                    | 2.37                       | 437                           | --           | --           | --           |
| 9                    | TN-204 S @ I-40                           | 2,224,063   | 4 h 34 m               | 0.15                       | 15                            | --           | --           | --           |
| 10                   | TN-176 N @ AMERICAN WAY                   | 2,223,386   | 53 m                   | 0.87                       | 17                            | 8            | --           | --           |

Red numbers = highest value for that metric

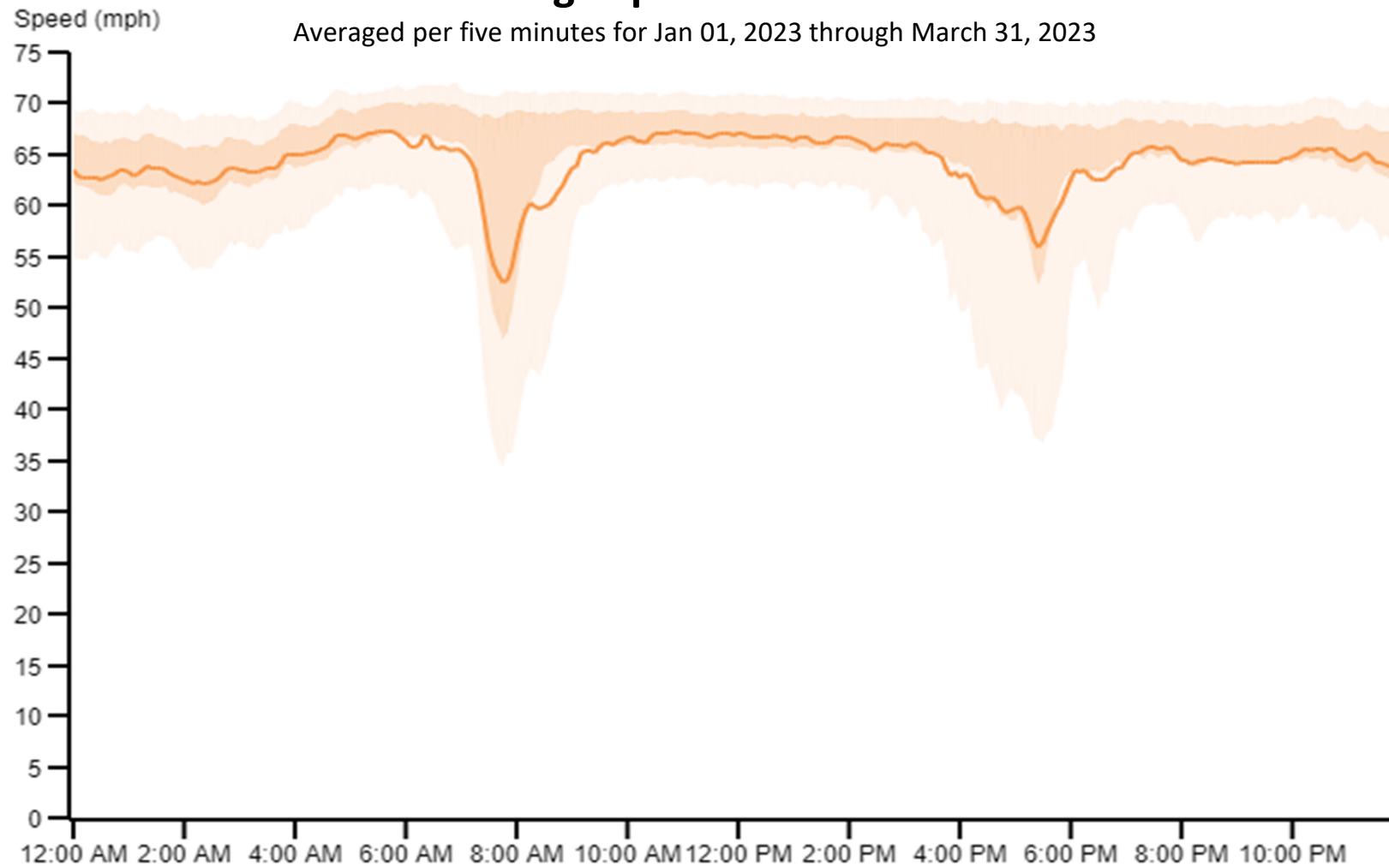
\*\*Total Delay is raw speed drop weighted by VMT. It is computed by multiplying the delay by the impacted traffic volume and aggregating the one-minute delays for the entire period the bottleneck is active.

# 2023 Q1 #1 State Route Bottleneck in Region

4

## Average Speed Over Time

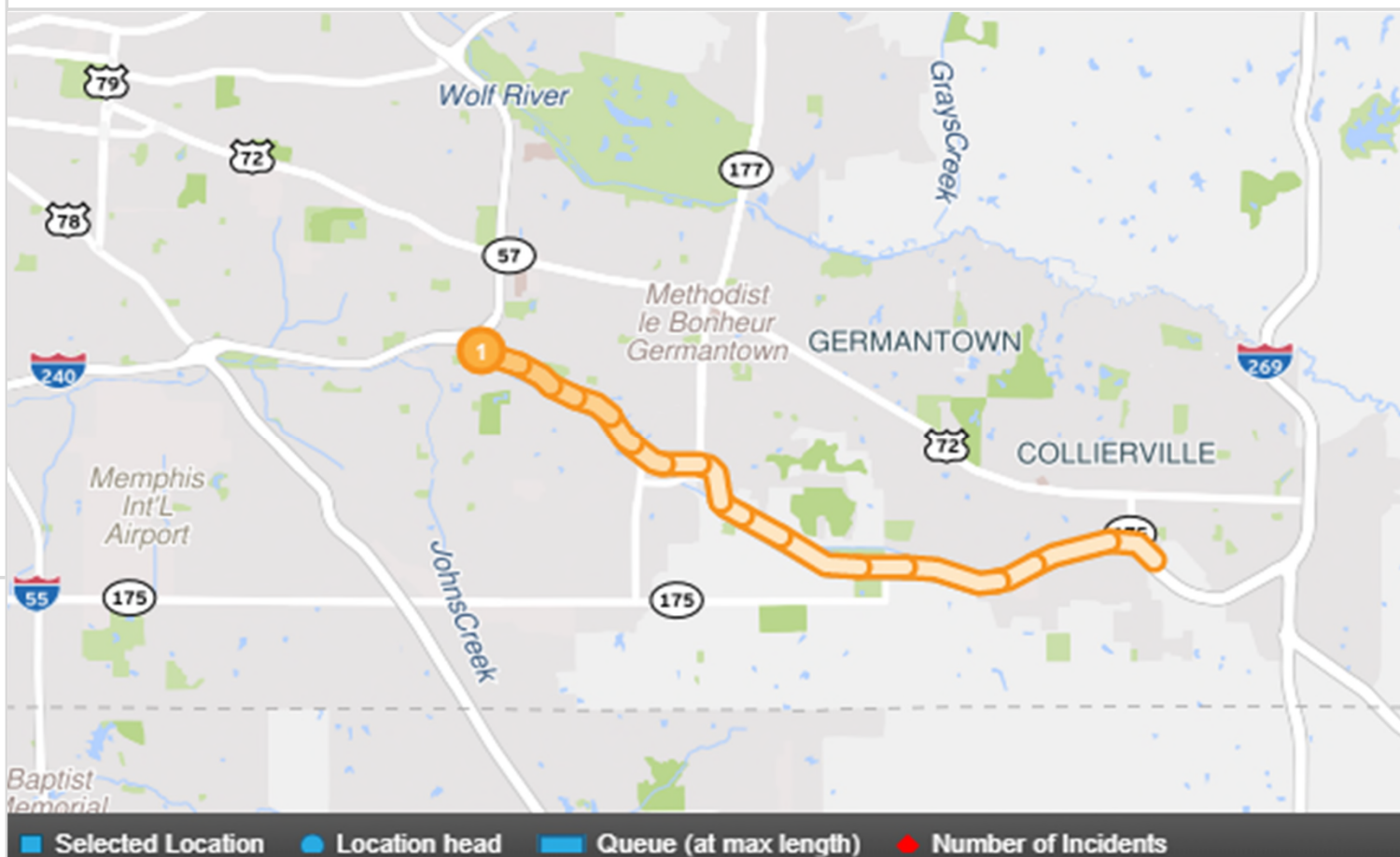
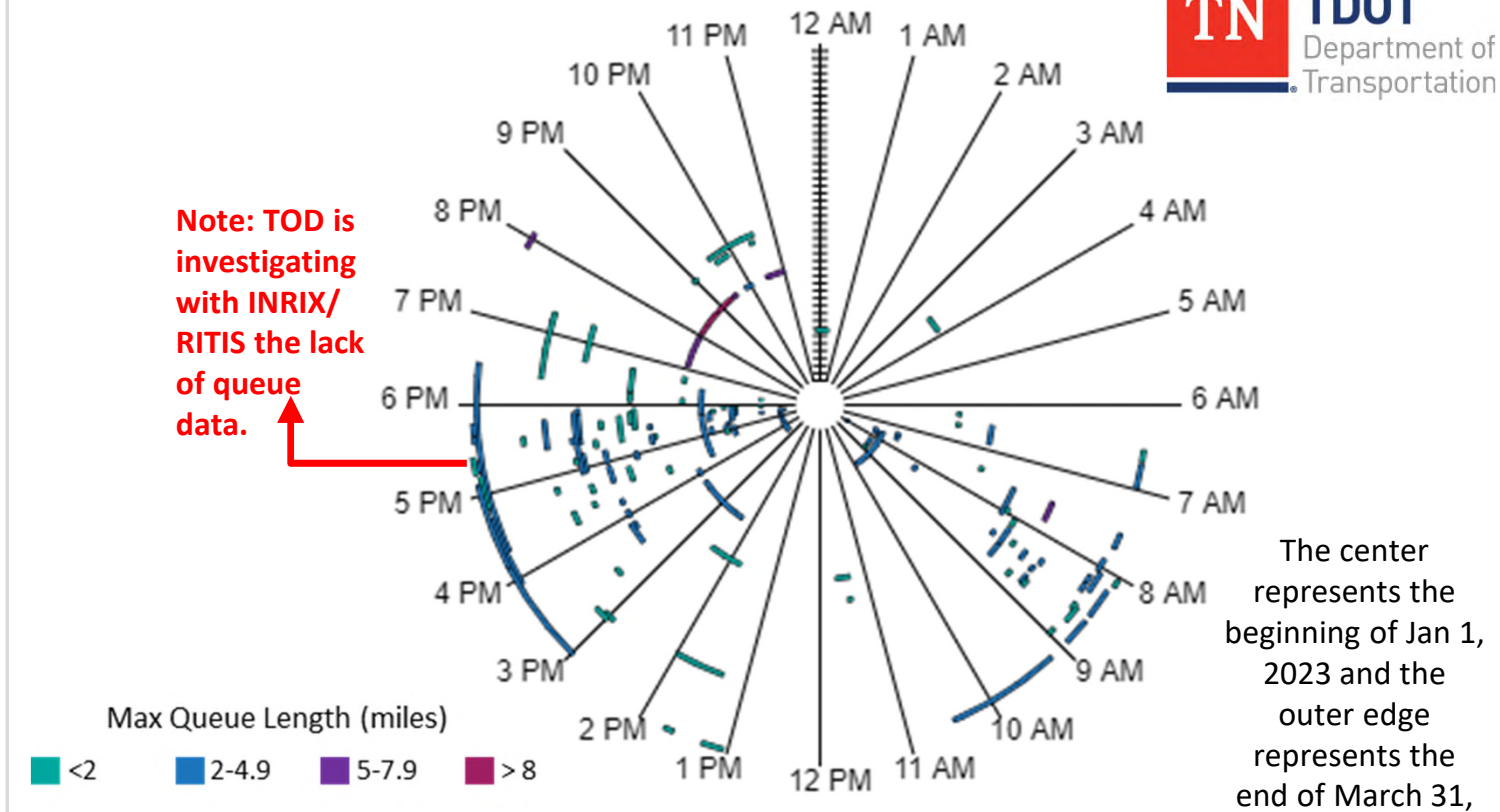
Averaged per five minutes for Jan 01, 2023 through March 31, 2023



- Jan 01, 2023 through Mar 31, 2023 - INRIX
- Jan 01, 2023 through Mar 31, 2023 25th and 75th percentile - INRIX
- Jan 01, 2023 through Mar 31, 2023 5th and 95th percentile - INRIX

- The A.M. peak average speed is **52.6 mph** at 7:45 am, **17%** slower than free flow. The P.M. peak average speed is **56 mph** at 5:25 pm, **11%** slower than free flow.
- There were over **17,263** vehicle hours of delay on this segment of the State Route in Quarter 1.

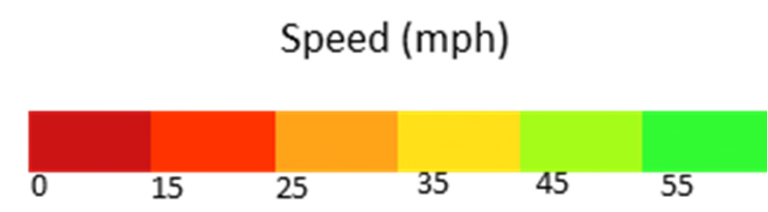
## Bottleneck Occurrences



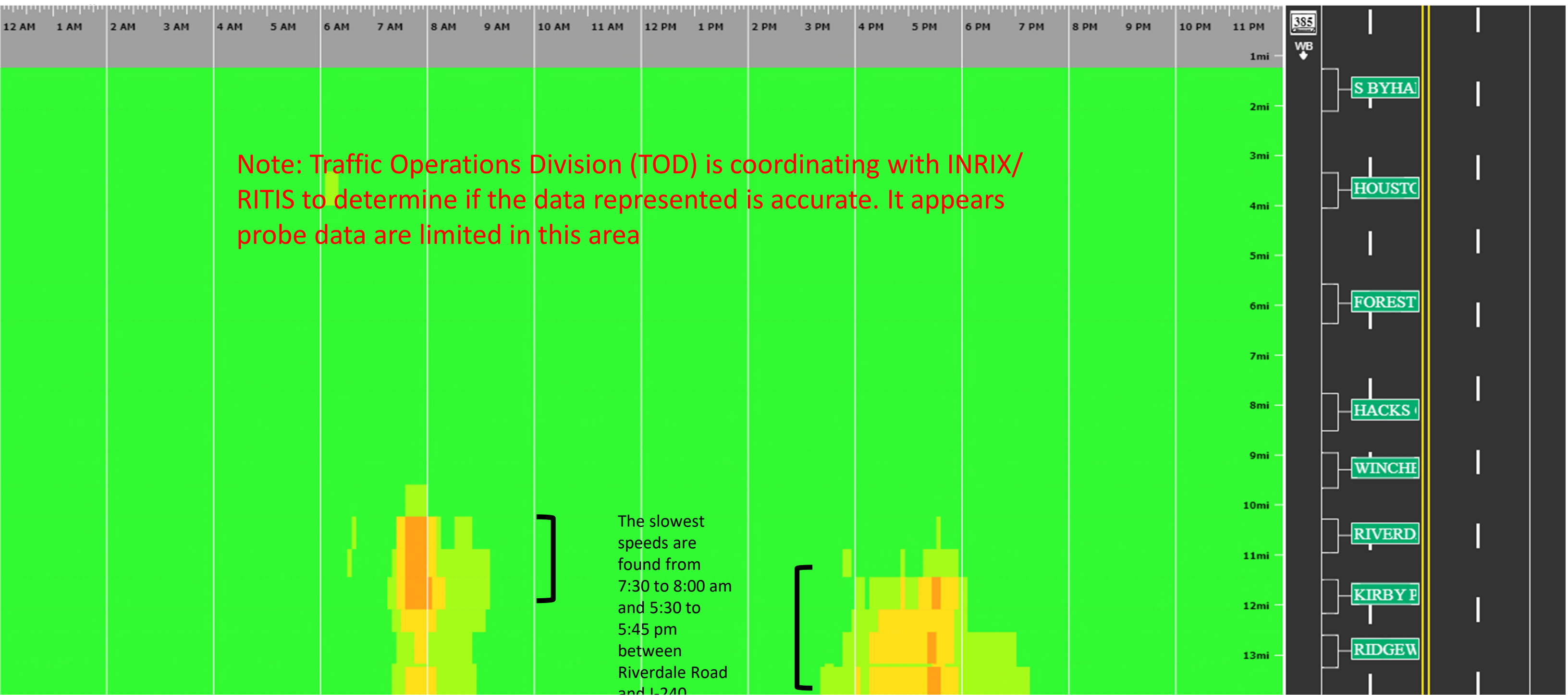


# TN-385 WB @ I-240

## 2023 Q1 #1 State Route Bottleneck in Region 4



Average Speed Over Time Averaged per five minutes for Jan 01, 2023 through March 31, 2023





## For more information, contact:

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