Baltimore Regional Transportation Board

Quarterly Congestion Analysis Report
Top 10 Bottlenecks

4th Quarter 2021

January 2022

BMC

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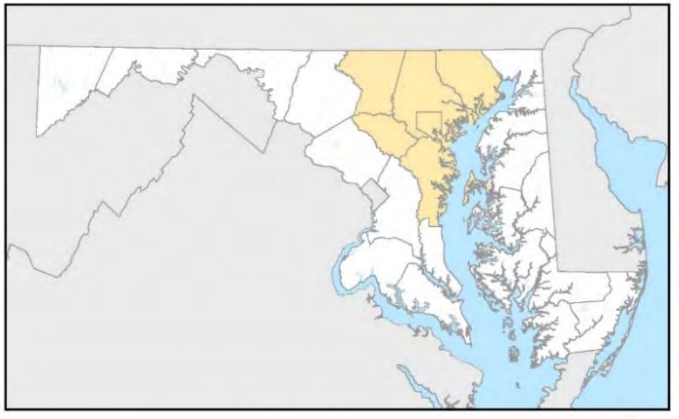
About the Region

About the Region

Located in the heart of the Mid-Atlantic on the east coast, the Baltimore region includes:

The Baltimore region is the nation's 19th largest market, with over 2.5 million people. The market also ranks among the top 20 in the country in the number of households, total effective buying income and retail sales.

Baltimore Metropolitan Region



Prepared by
Transportation Planning Division
Projected Coordinate System: NAD 1983 State Plane (ft)
Data Source: BMC, © NAVTEQ 2016, TIGER/Line®, MTA
Printed - April 2017

Bottleneck Analytics

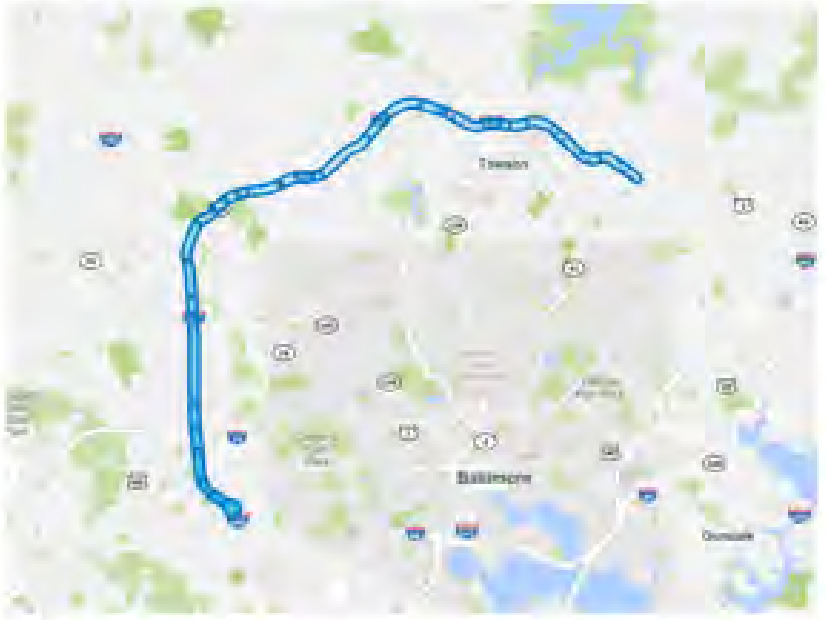
How are bottleneck conditions tracked?

- **Rank** - The ranked position of the location according to the current table ordering by Base Impact – the aggregation of queue length over time for congestion at each location in mile minutes. It is then weighted by Total Delay – Raw speed drop weighted by VMT factor.
- **Average max length** - The average maximum length, in miles, of queues formed by congestion originating at the location.
- **Average daily duration** - The average amount of time per day that congestion is identified originating at the location.
- **All Events/Incidents** - The number of traffic events and incidents that occurred within the space of the bottleneck at any time during the time period being analyzed.
- **Volume Estimate** - AADT weighted by queue length.

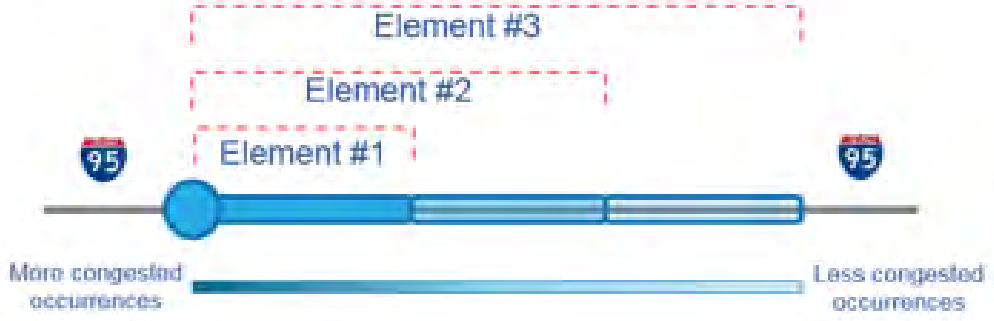
Rank	Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
1	I-695 OL @ EDMONDSON AVE/EXIT 14	5.01	2 h 43 m	834	88946
2	I-695 IL @ I-83/MD-25/EXIT 23	3.53	2 h 56 m	463	95048
3	I-695 IL @ I-70/EXIT 16	2.11	2 h 54 m	233	95068
4	I-695 OL @ US-40/EXIT 15	3.57	1 h 48 m	766	89650
5	I-95 N @ MD-100/EXIT 43	4.23	1 h 22 m	310	95604
6	I-95 N @ MD-295/BALTIMORE WASHINGTON PKWY/EXIT 52	2.26	1 h 50 m	641	93260
7	MD-295 S @ POWDER MILL RD	5.26	1 h 24 m	318	45940
8	I-695 IL @ MD-542/LOCH RAVEN BLVD/EXIT 29	3.71	53 m	496	85789
9	I-95 N @ MD-175/EXIT 41	3.23	1 h 12 m	243	95344
10	I-695 OL @ I-83/MD-25/EXIT 23	3.48	1 h 06 m	484	79378

IL = Inner Loop OL = Outer Loop

Maps



The Map view displays selected bottlenecks on a map. Each element occurring at the selected location is layered on the map, extending upstream from the head location to the maximum length of the specific *element*. As each element adds another layer on the map, road segments become more opaque. Segments closest to the head become the most opaque as they are more frequently affected by congestion at the selected location.



Top 10 Bottleneck Rankings in the Baltimore Region – 4th Quarter 2021

Top 10 Bottlenecks – 4th Quarter 2021

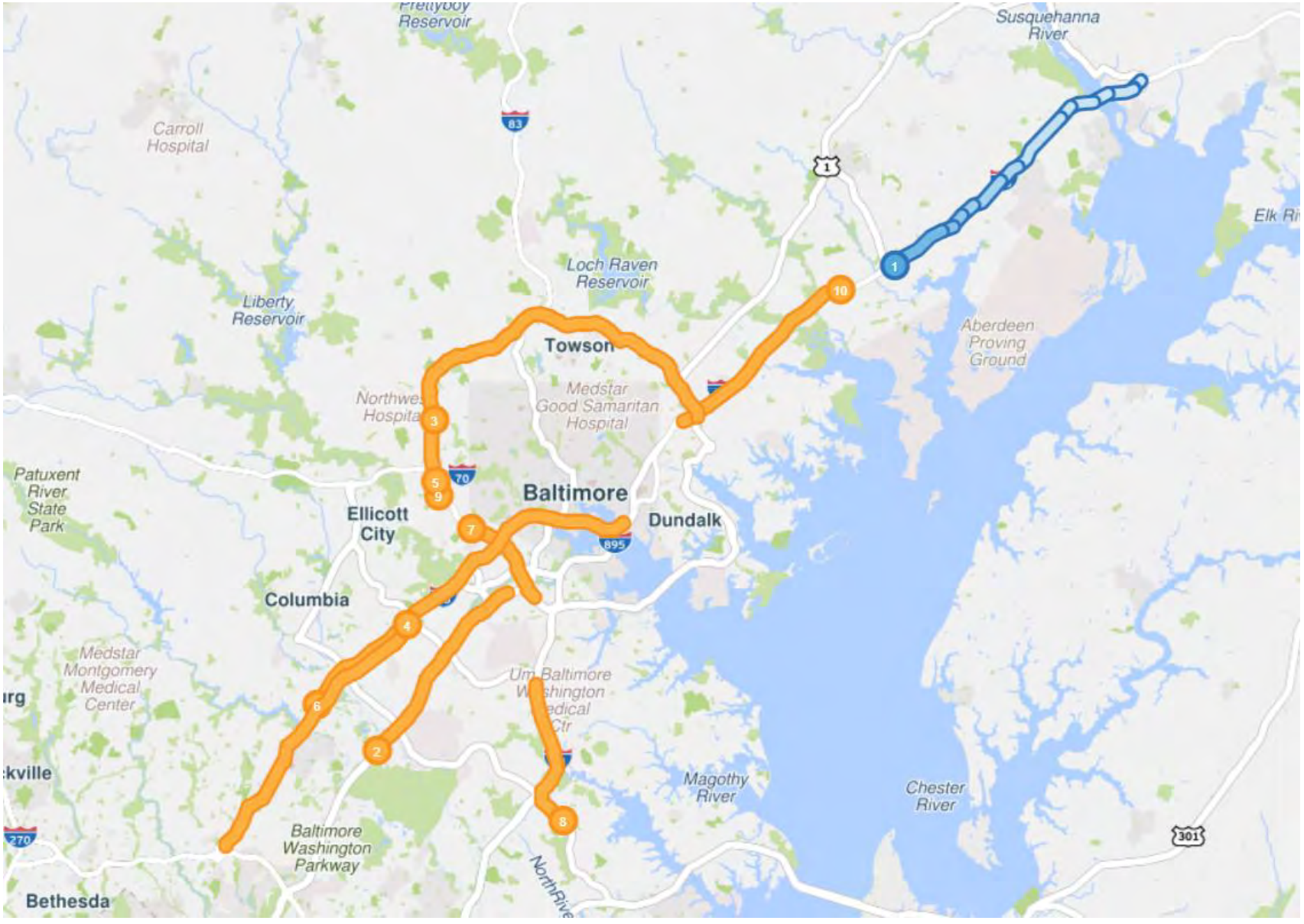
Ranked by Base Impact - the aggregation of queue length over time for congestion at each location in mile minutes. It is then weighted by **Total Delay** – Raw speed drop weighted by VMT factor.

Rank	Location	Previous Quarter Ranking	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
1	I-95 S @ MD-24/EXIT 77	2	5.95	1 h 51 m	228	55,208
2	MD-295 S @ MD-198	1	3.08	3 h 14 m	140	47,272
3	I-695 OL @ MD-26/EXIT 18		2.55	1 h 28 m	495	97,894
4	I-95 N @ MD-100/EXIT 43	6	4.62	1 h 21 m	346	102,960
5	I-695 OL @ I-70/EXIT 16		3.06	1 h 41 m	369	103,876
6	I-95 S @ MD-216/EXIT 35	9	5.43	44 m	819	102,207
7	I-695 IL @ MD-372/WILKENS AVE/EXIT 12	8	2.00	1 h 28 m	170	98,509
8	I-97 S @ MD-178/EXIT 5		2.99	1 h 52 m	136	58,595
9	I-695 OL @ US-40/EXIT 15	10	4.48	40 m	252	103,178
10	I-95 N @ MD-152/EXIT 74	7	7.36	35 m	382	84,254

IL = Inner Loop OL = Outer Loop

Top 10 Bottlenecks – 4th Quarter 2021

Site Map



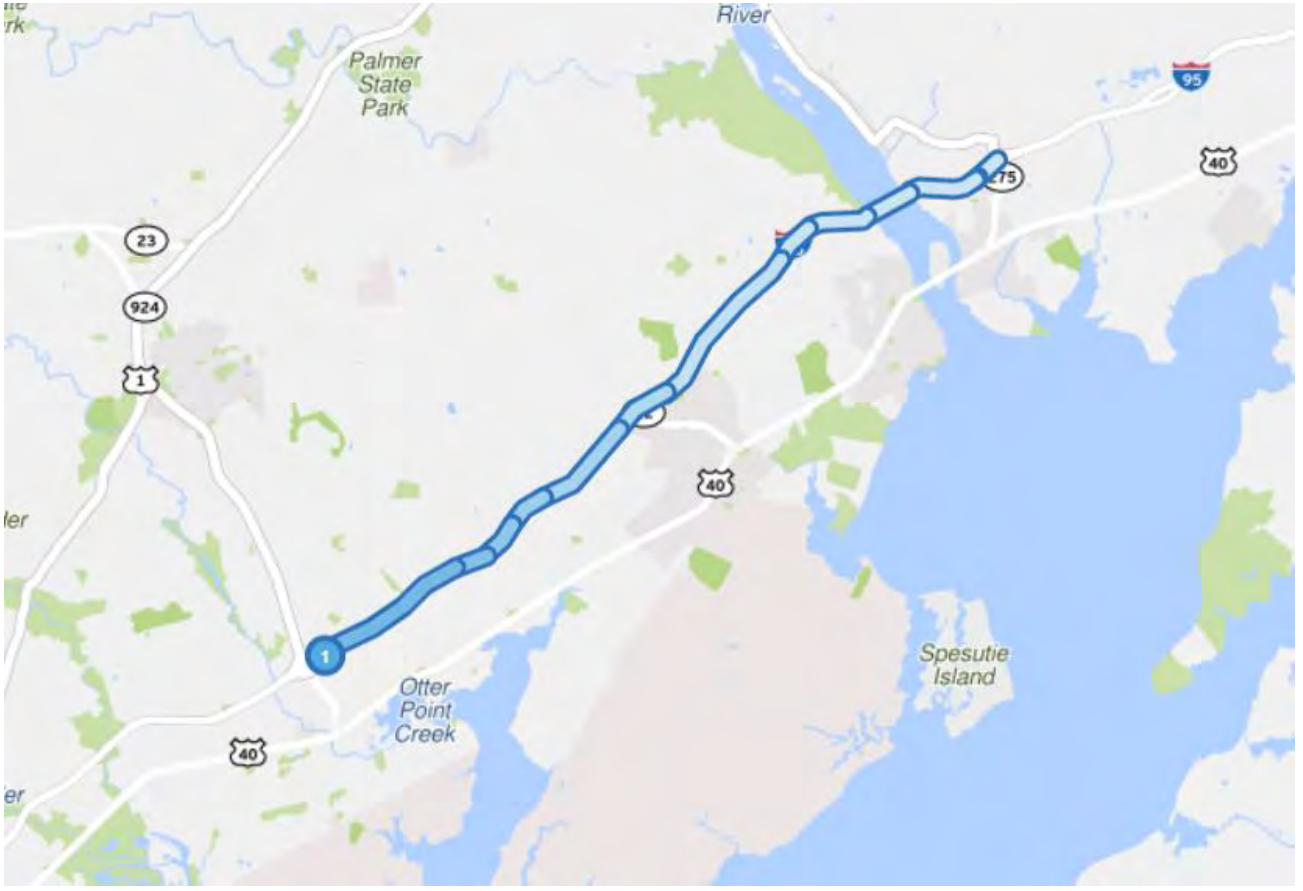
Top 10 Bottleneck Rankings in the Baltimore Region – 4th Quarter 2021 by Location

Includes:

- -Location Maps with notes on each bottleneck condition
- -Speed Graphs
- -Travel Time Graphs
- -Congestion Scan Heat Diagrams

#1 Ranked Bottleneck – 4th Quarter 2021 Location Map

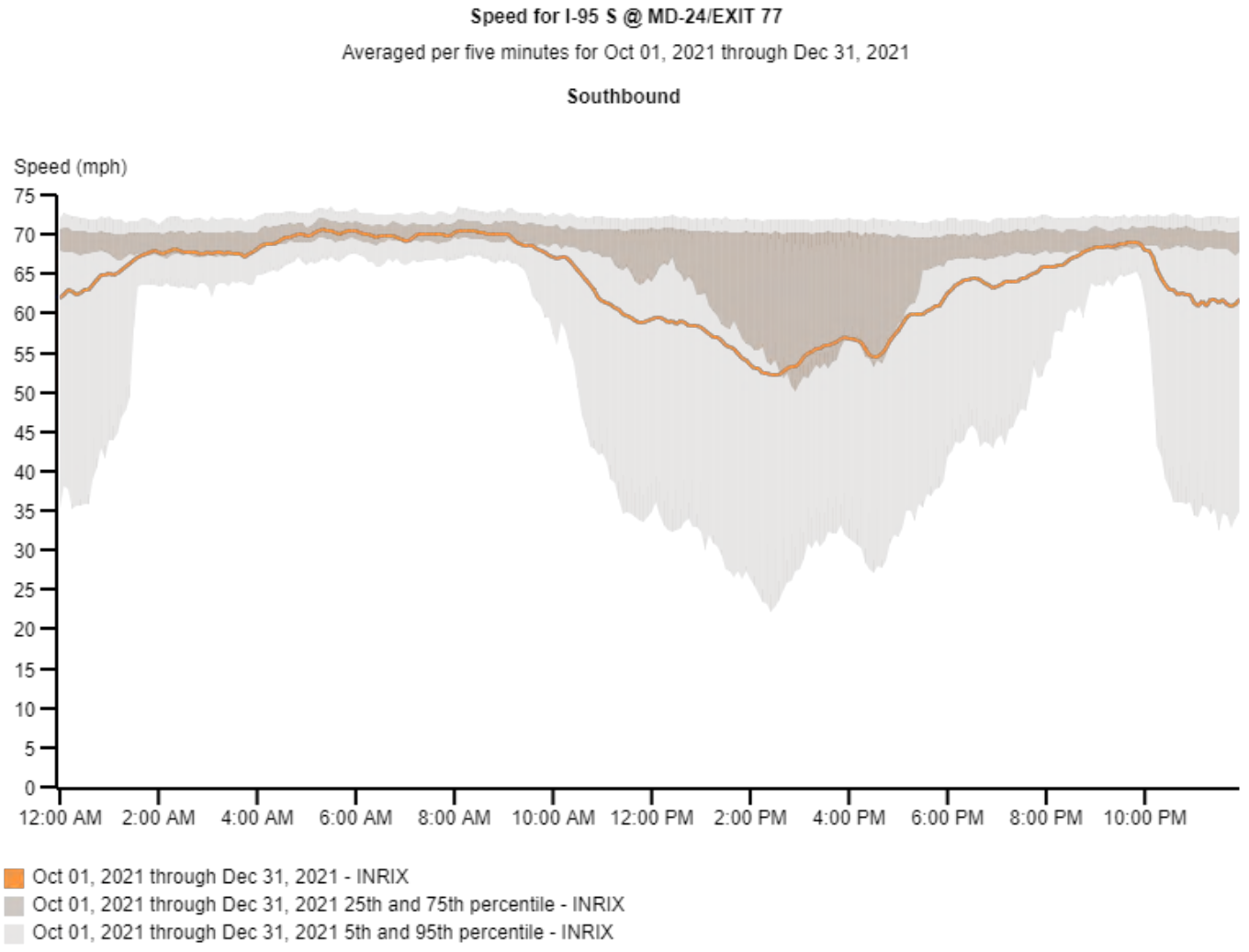
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 S @ MD-24/EXIT 77	5.95	1 h 51 m	228	55.261



Notes: *MD 152 to MD 24 Auxiliary Lane & MD 24 Ramp Improvement project. Off peak shoulder and lane closures. The Clayton Road Bridge Overpass Reconstruction is also affecting traffic is this high volume area.*

#1 Ranked Bottleneck – 4th Quarter 2021 – Average Speeds Graph

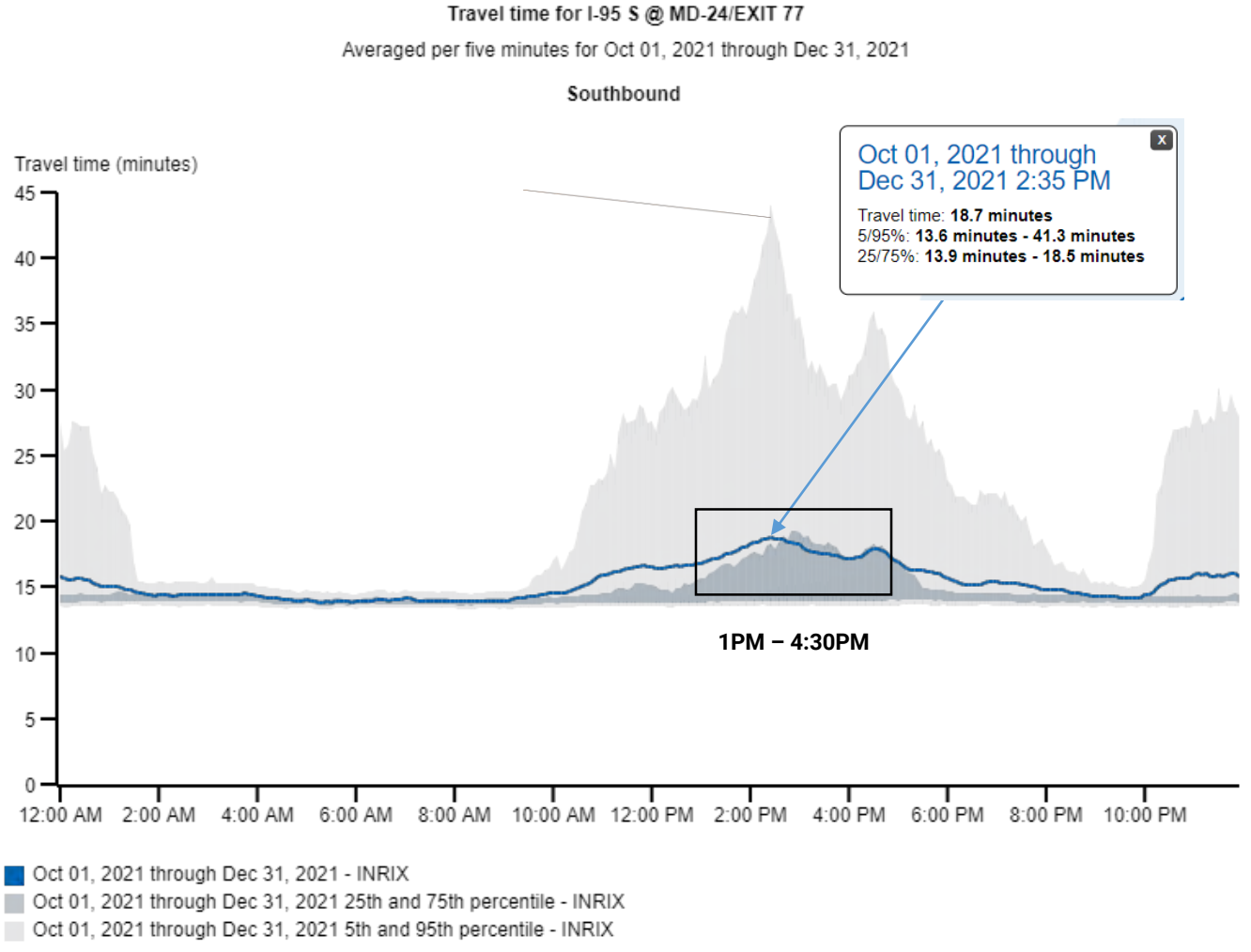
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 S @ MD-24/EXIT 77	5.95	1 h 51 m	228	55.261



#1 Ranked Bottleneck – 4th Quarter 2021 – Travel Times

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 S @ MD-24/EXIT 77	5.95	1 h 51 m	228	55.261

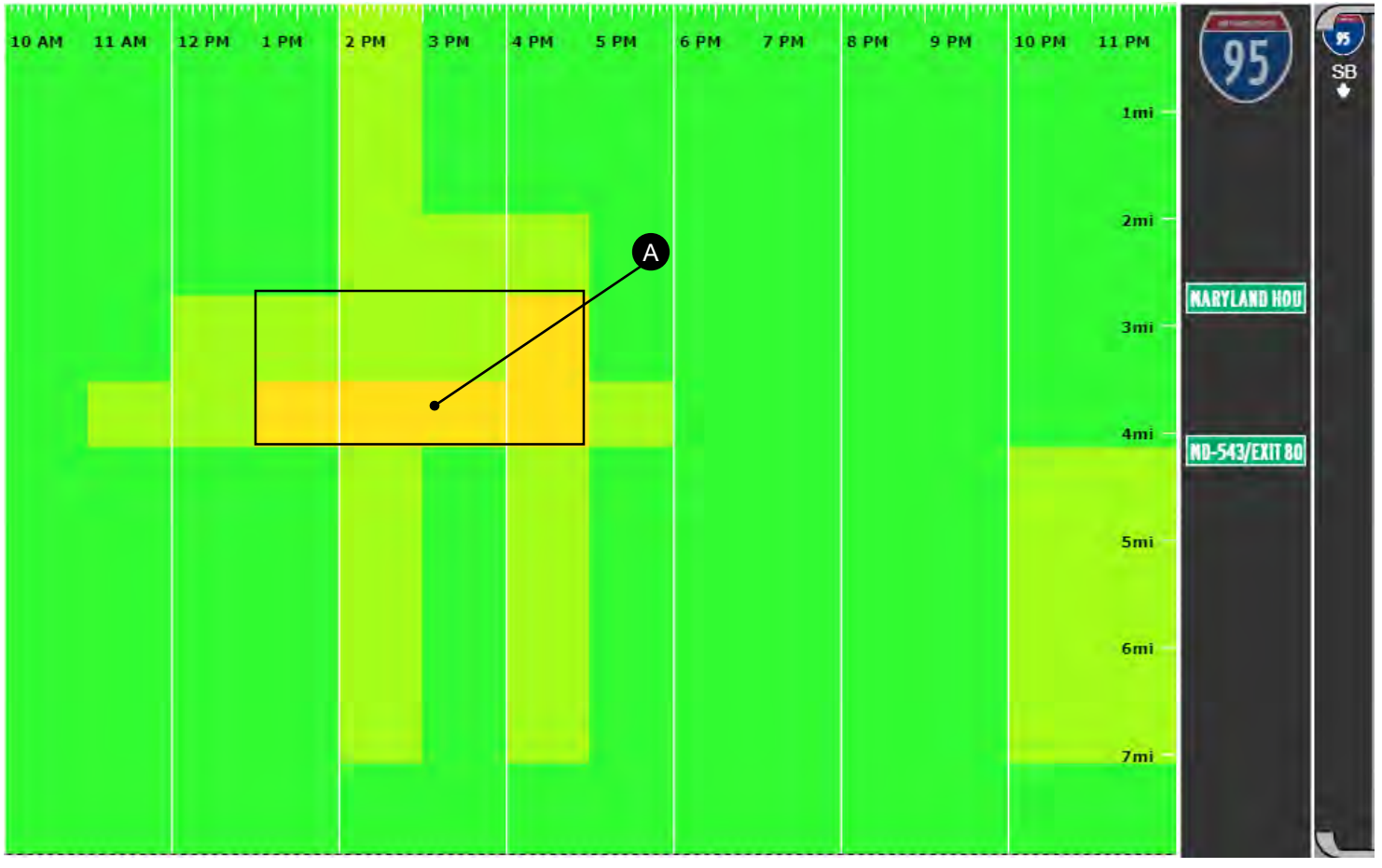
Southbound

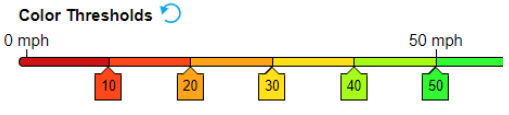


#1 Ranked Bottleneck – 4th Quarter 2021 – Congestion Scan

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 S @ MD-24/EXIT 77	5.95	1 h 51 m	228	55.261

Southbound



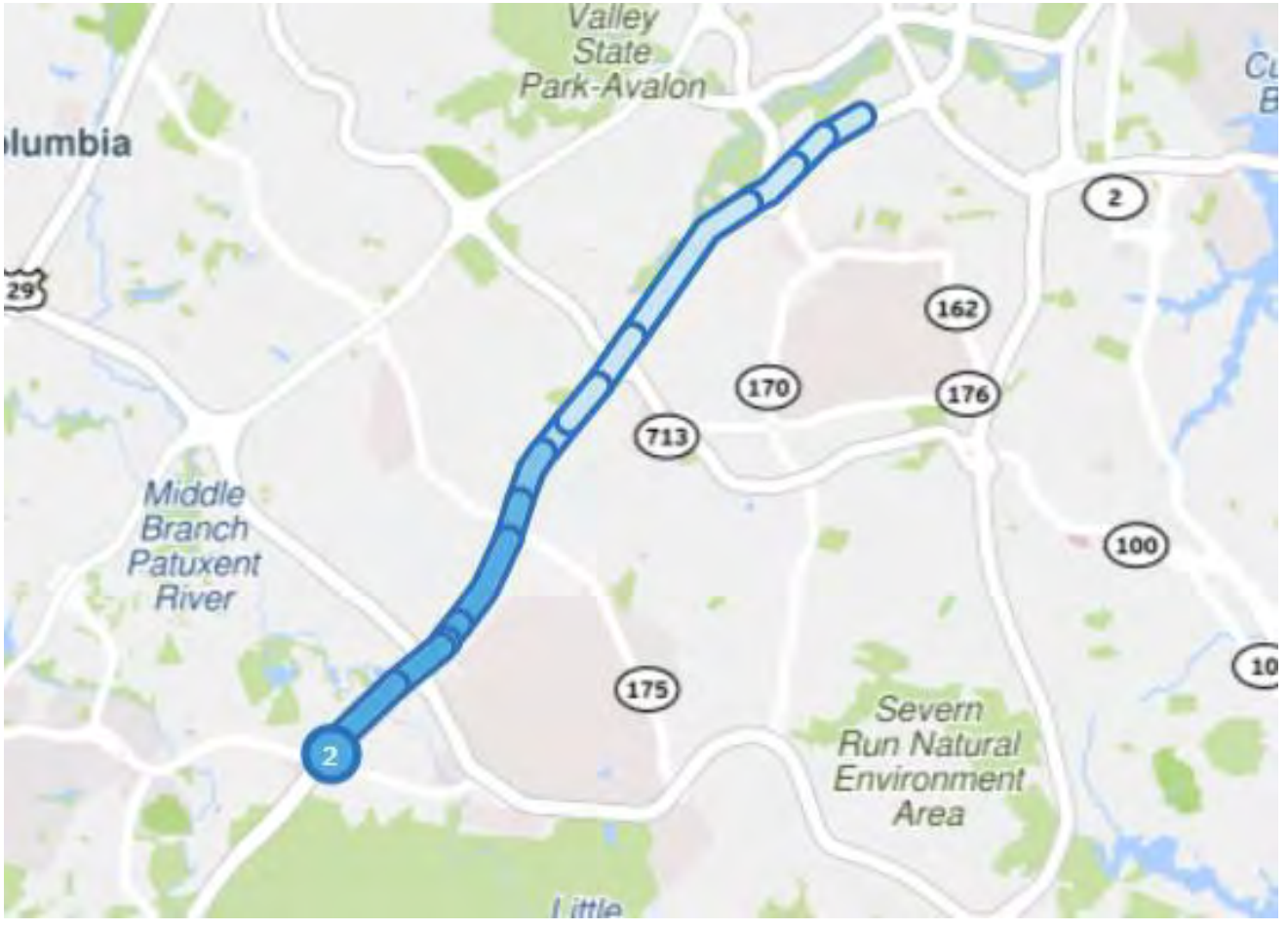


Locations of Congestion (SB)

A: 1PM –4:30PM: Maryland House to MD-543

#2 Ranked Bottleneck – 4th Quarter 2021 – Location Map

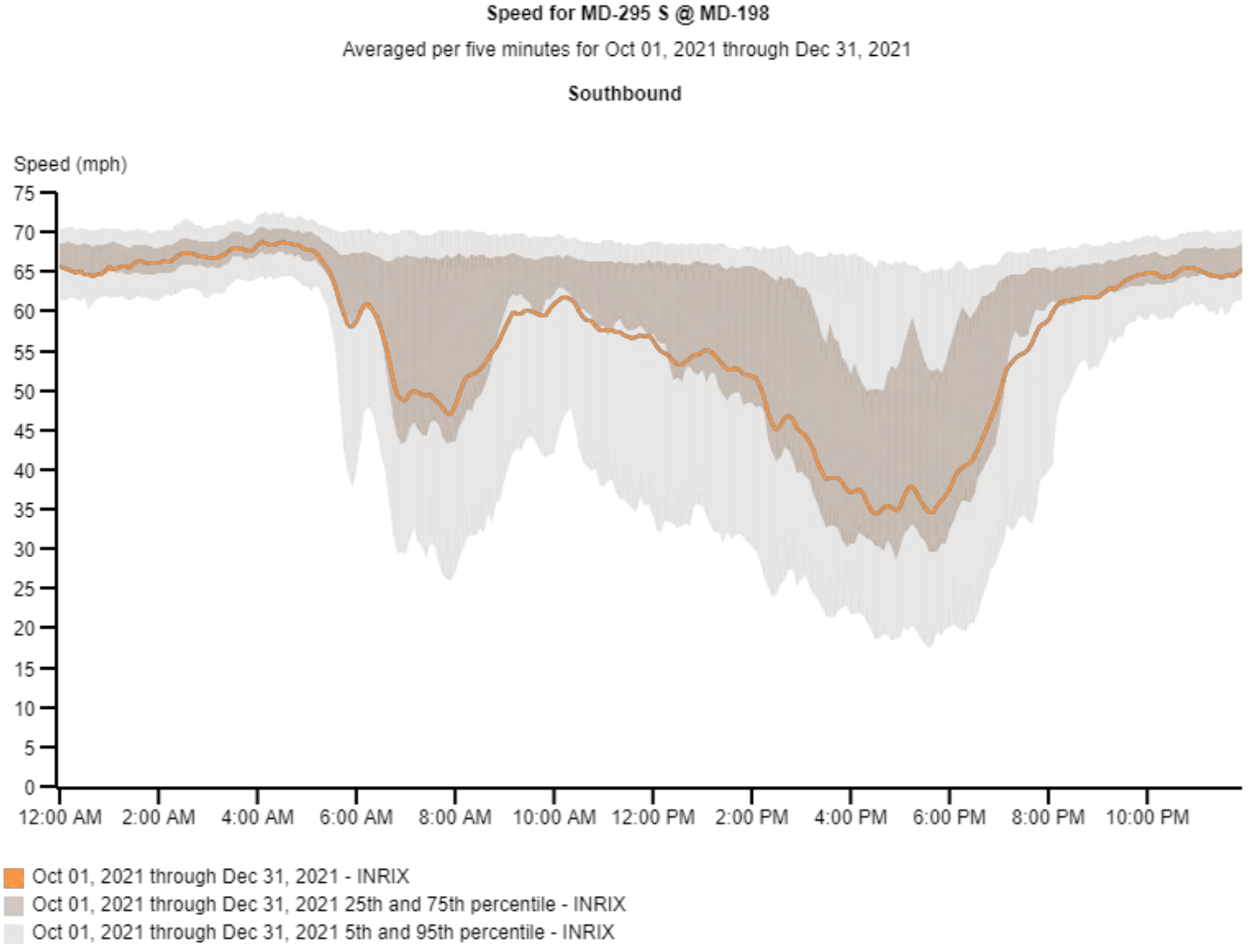
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
MD-295 S @ MD-198	3.08	3 h 14 m	140	47,272



Notes: *Southbound PM congestion from MD-198 extending into the southern portion of the Baltimore region near Fort Meade occurring during both the morning and afternoon peak periods. Volume related delays caused by factors such as Baltimore commuters traveling to DC and Fort Meade and the MD-295 merge with the heavily congested Capital Beltway.*

#2 Ranked Bottleneck – 4th Quarter 2021 – Average Speeds Graph

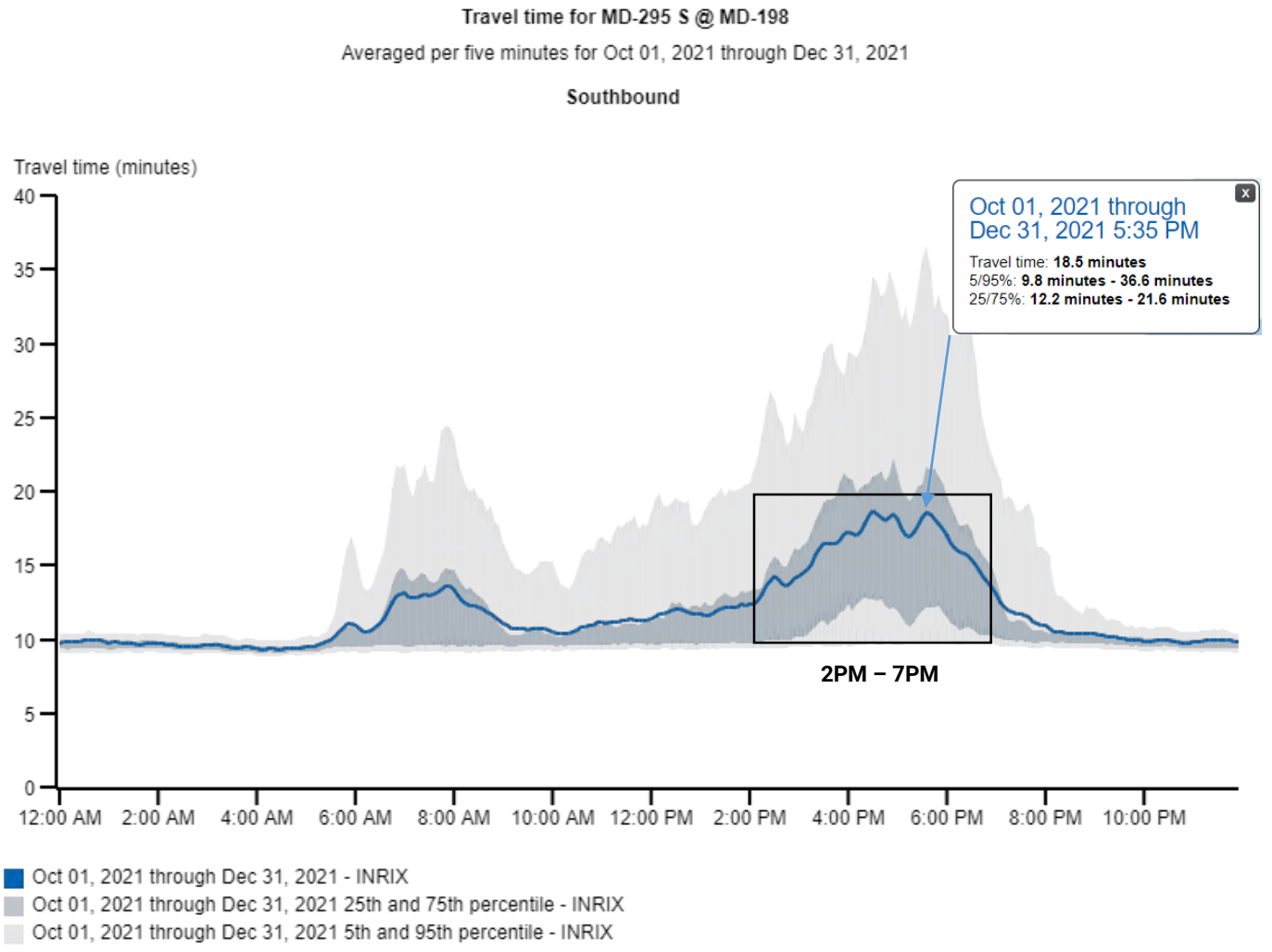
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
MD-295 S @ MD-198	3.08	3 h 14 m	140	47,272



#2 Ranked Bottleneck –4th Quarter 2021 – Travel Times

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
MD-295 S @ MD-198	3.08	3 h 14 m	140	47,272

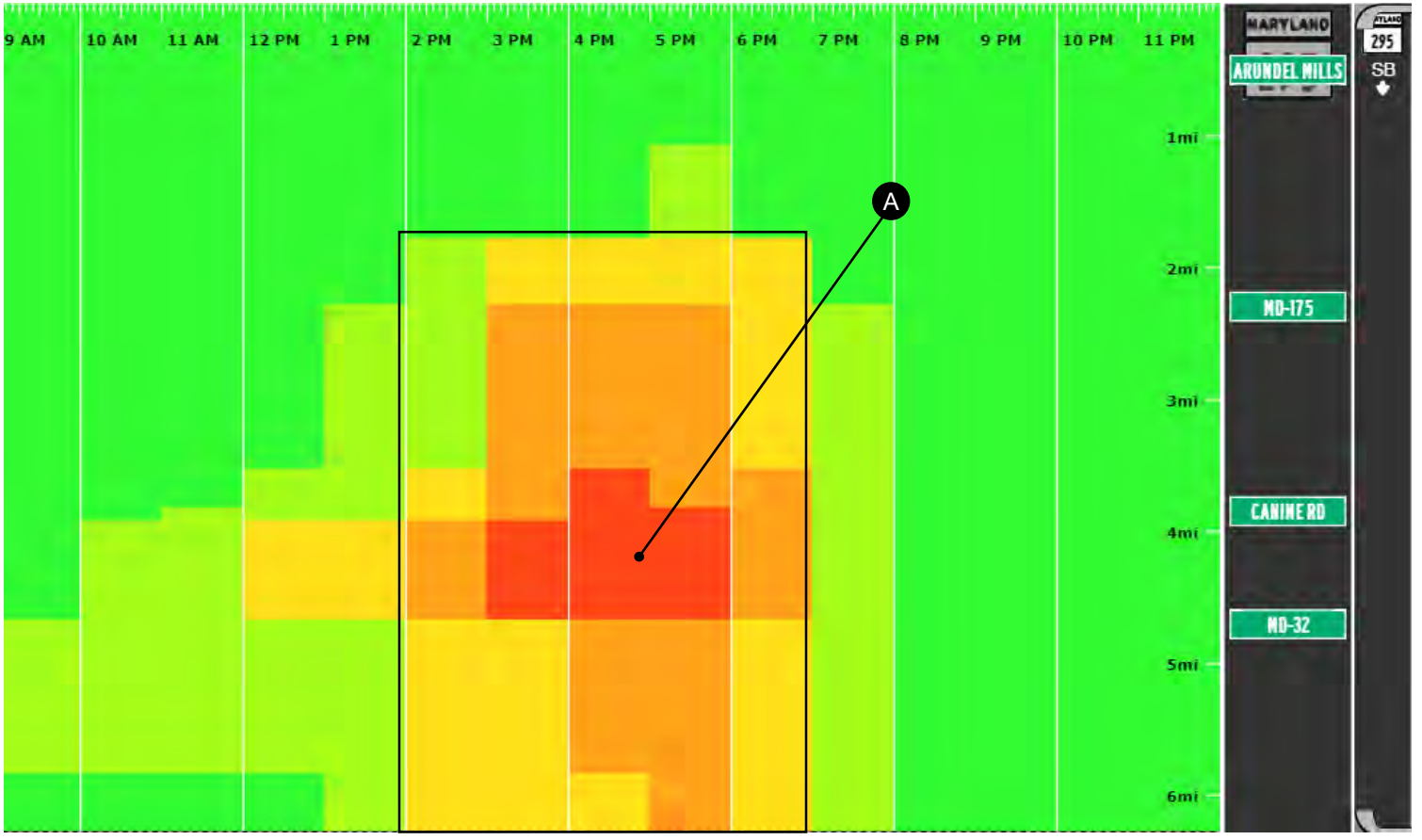
Southbound



#2 Ranked Bottleneck –4th Quarter 2021 – Congestion Scan

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
MD-295 S @ MD-198	3.08	3 h 14 m	140	47,272

Southbound

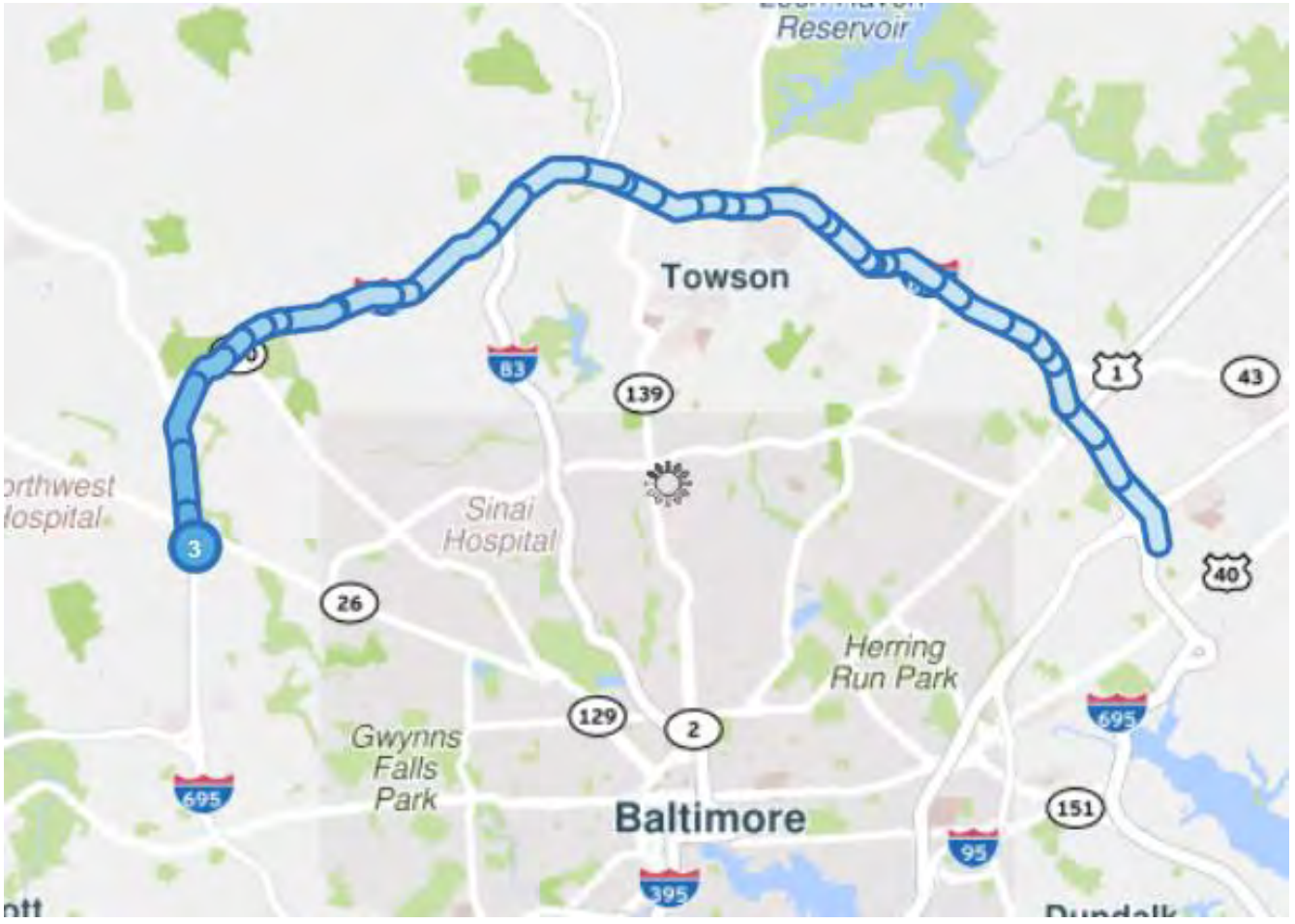


Locations of Congestion (SB)

A: 2PM - 7PM: MD-175 to MD-198

#3 Ranked Bottleneck – 4th Quarter 2021 – Location Map

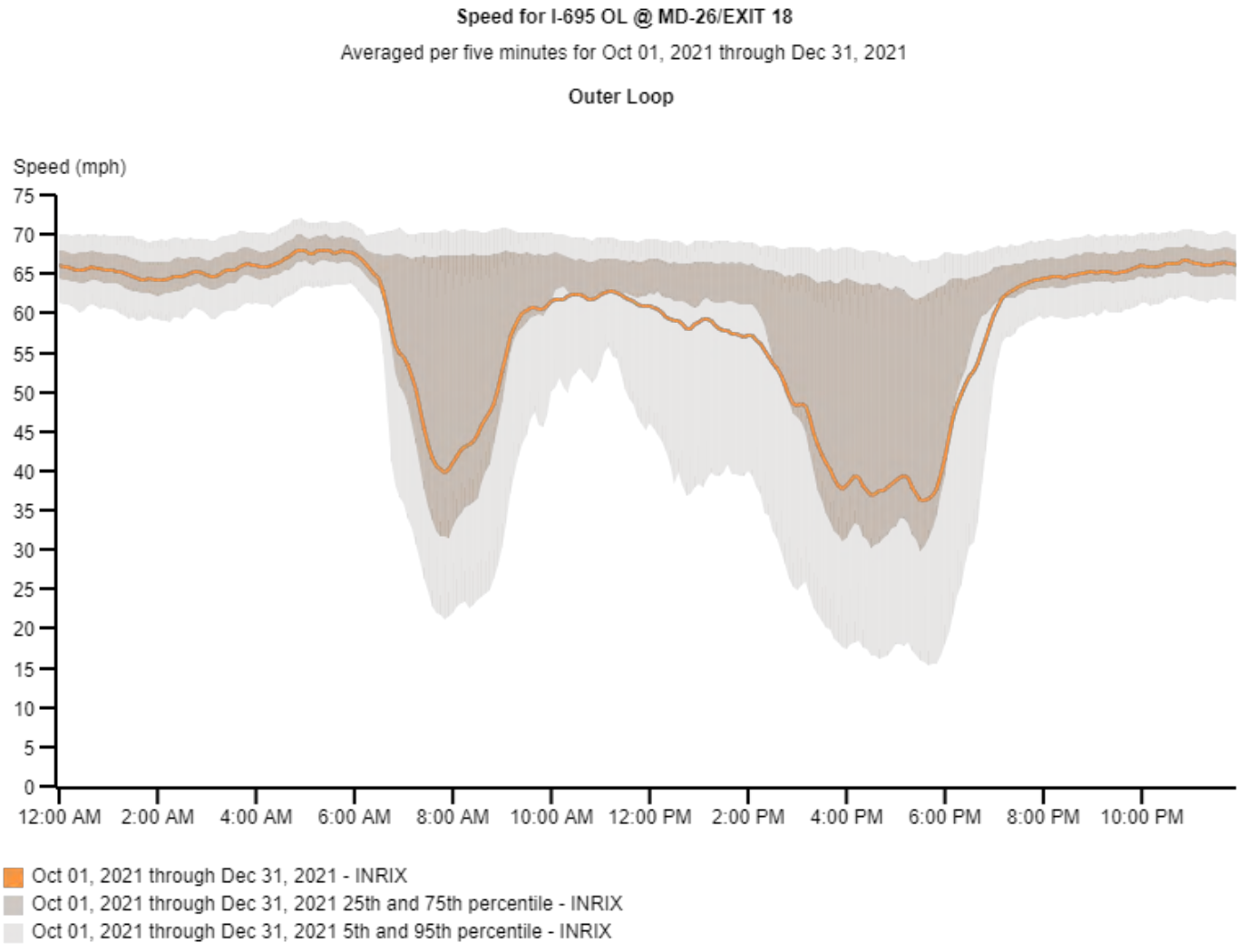
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ MD-26/EXIT 18	2.55	1 h 28 m	495	97,894



Notes: *One of the heaviest traveled high volume corridors in the area. The bottlenecks originate at varying exit locations both in the AM and PM peak periods, In this case the core of the bottleneck extends back to MD-140/Reisterstown Rd /Exit 20. As seen in the location map it sometimes can extend back across the entire top side of the beltway.*

#3 Ranked Bottleneck – 4th Quarter 2021 – Average Speeds Graph

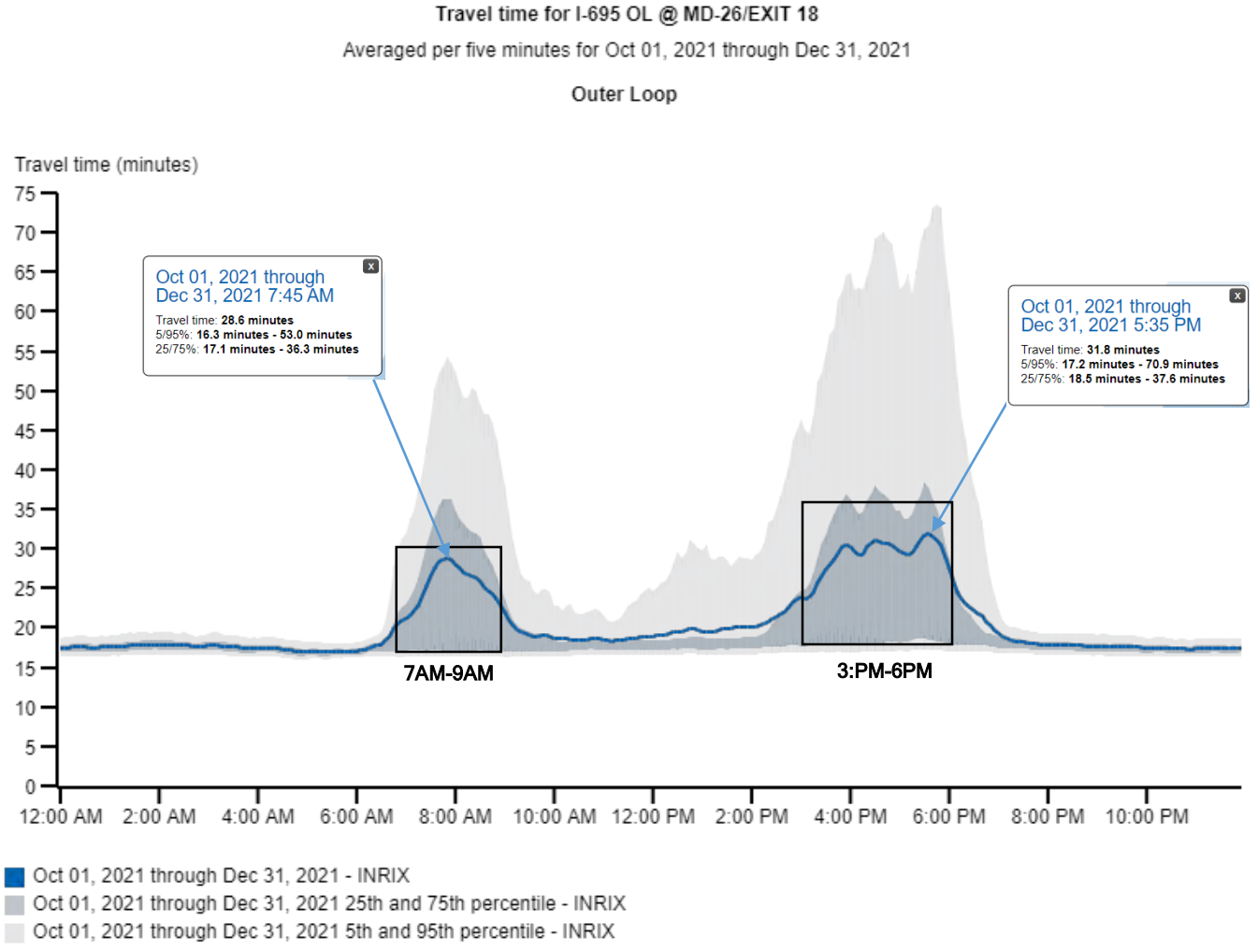
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ MD-26/EXIT 18	2.55	1 h 28 m	495	97,894



#3 Ranked Bottleneck –4th Quarter 2021 – Travel Times

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ MD-26/EXIT 18	2.55	1 h 28 m	495	97,894

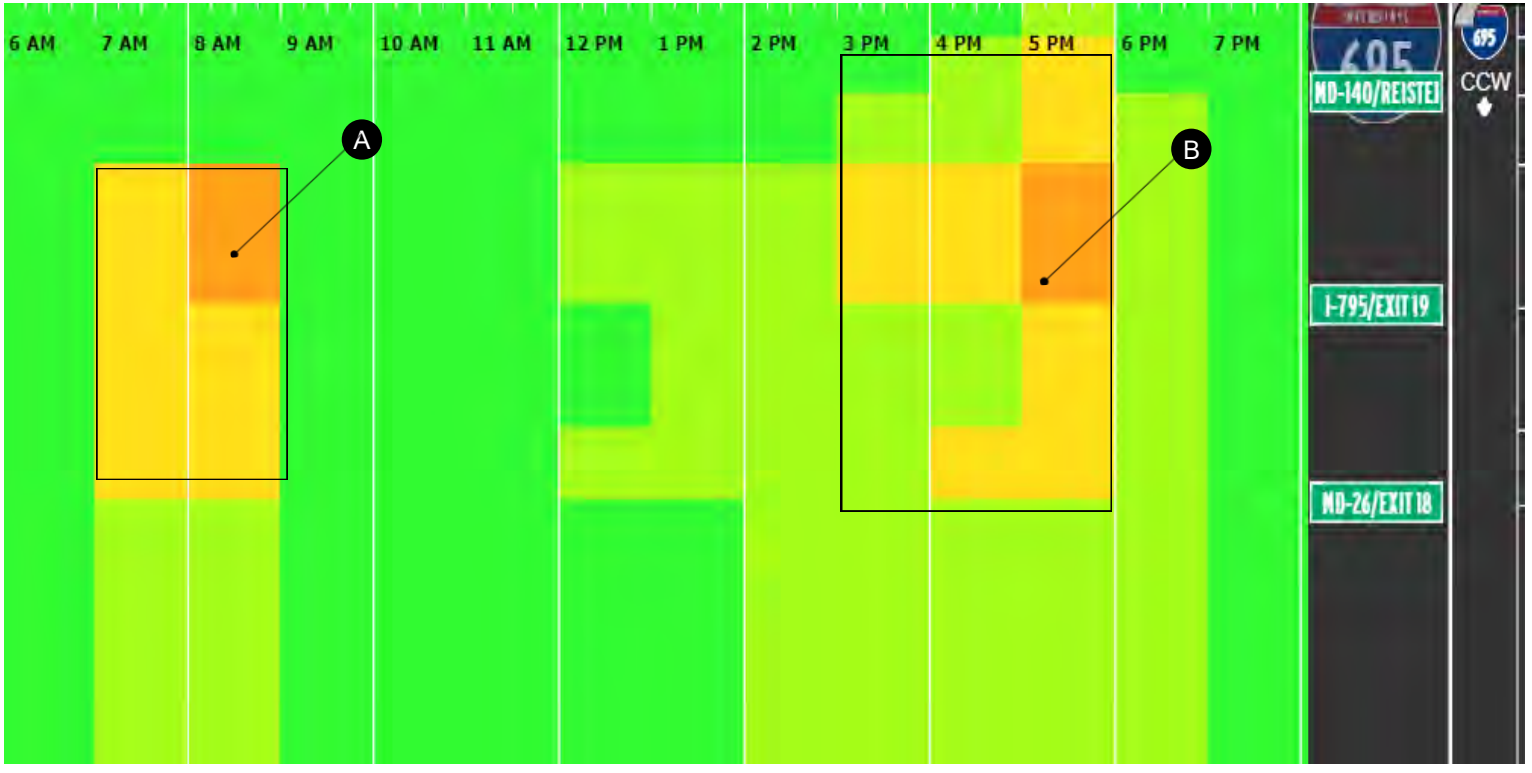
Outer Loop

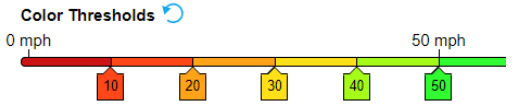


#3 Ranked Bottleneck –4th Quarter 2021 – Congestion Scan

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ MD-26/EXIT 18	2.55	1 h 28 m	495	97,894

Outer Loop



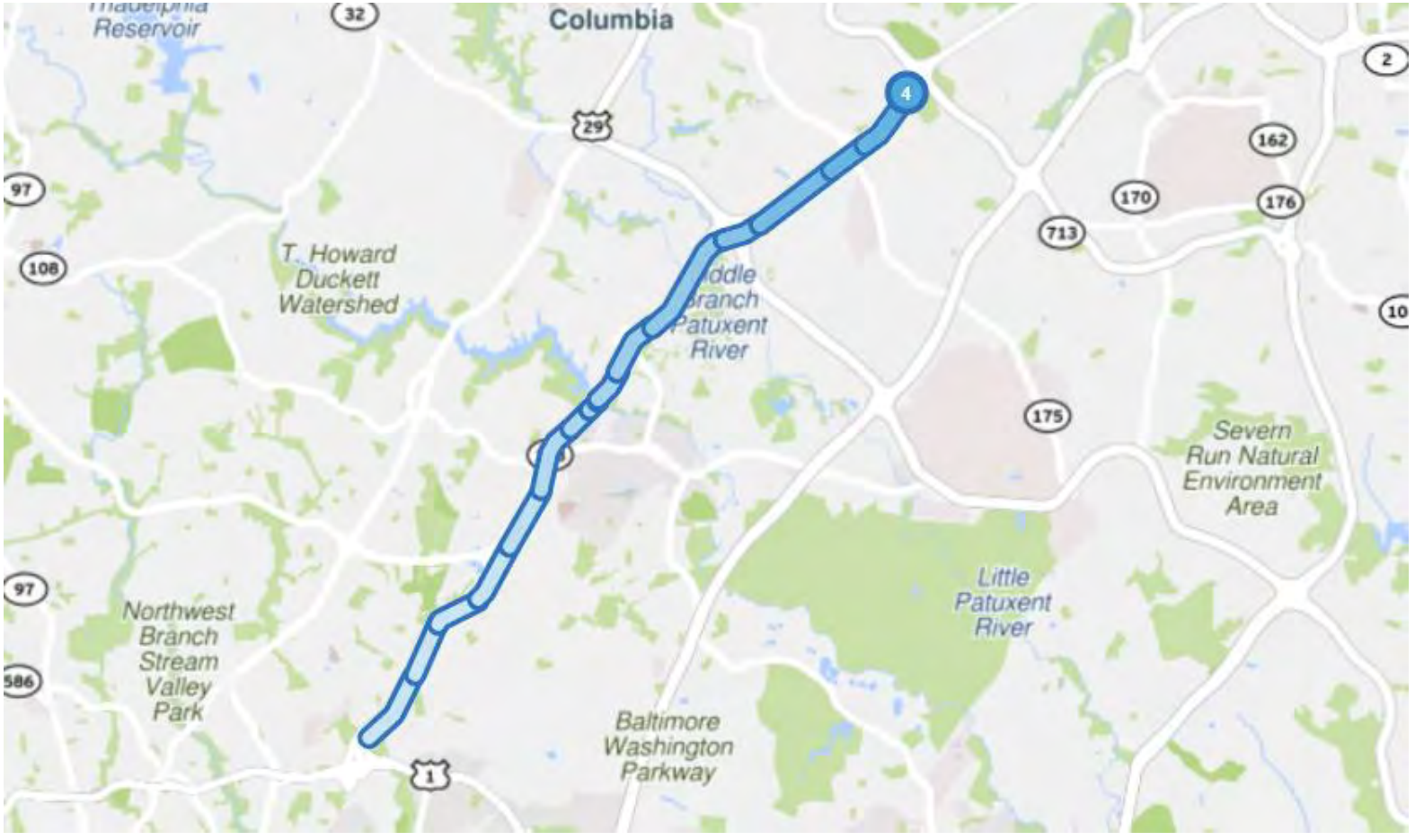


Locations of Congestion (OL)

A: 7AM-9AM: I-795 to MD-26/Liberty Rd/Exit 18
C. 3PM-6PM MD-140/Reisterstown Rd/Exit 20 to MD-26/Liberty Rd/Exit 18

#4 Ranked Bottleneck – 4th Quarter 2021 – Location Map

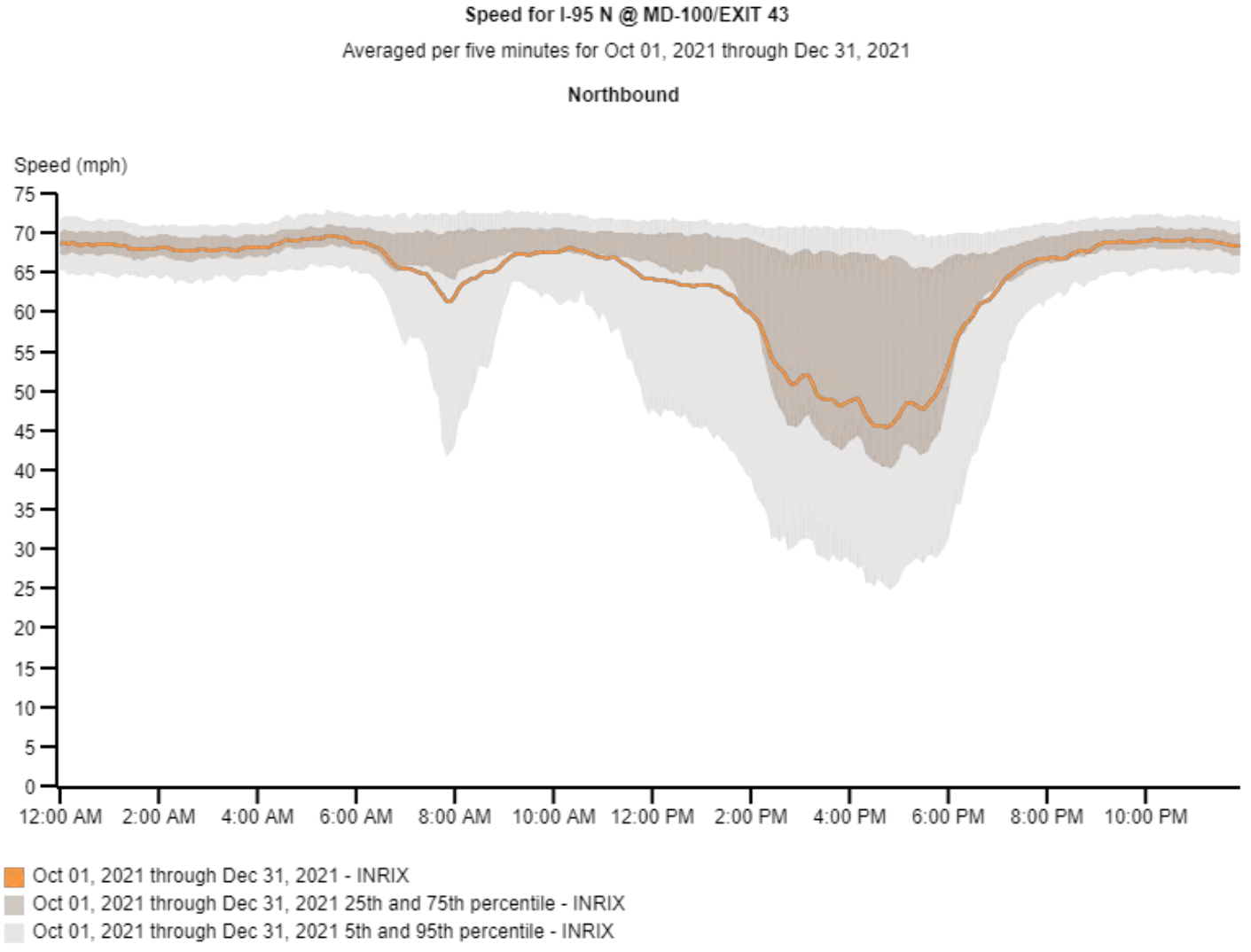
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 N @ MD-100/EXIT 43	4.62	1 h 21 m	346	102,960



Notes: *Congestion in the afternoon rush hour. Contributing factors include traffic entering at MD-175, weaving to exit at MD-100, and the half-mile uphill grade midway between MD-175 and MD-100.*

#4 Ranked Bottleneck – 4th Quarter 2021 – Average Speeds Graph

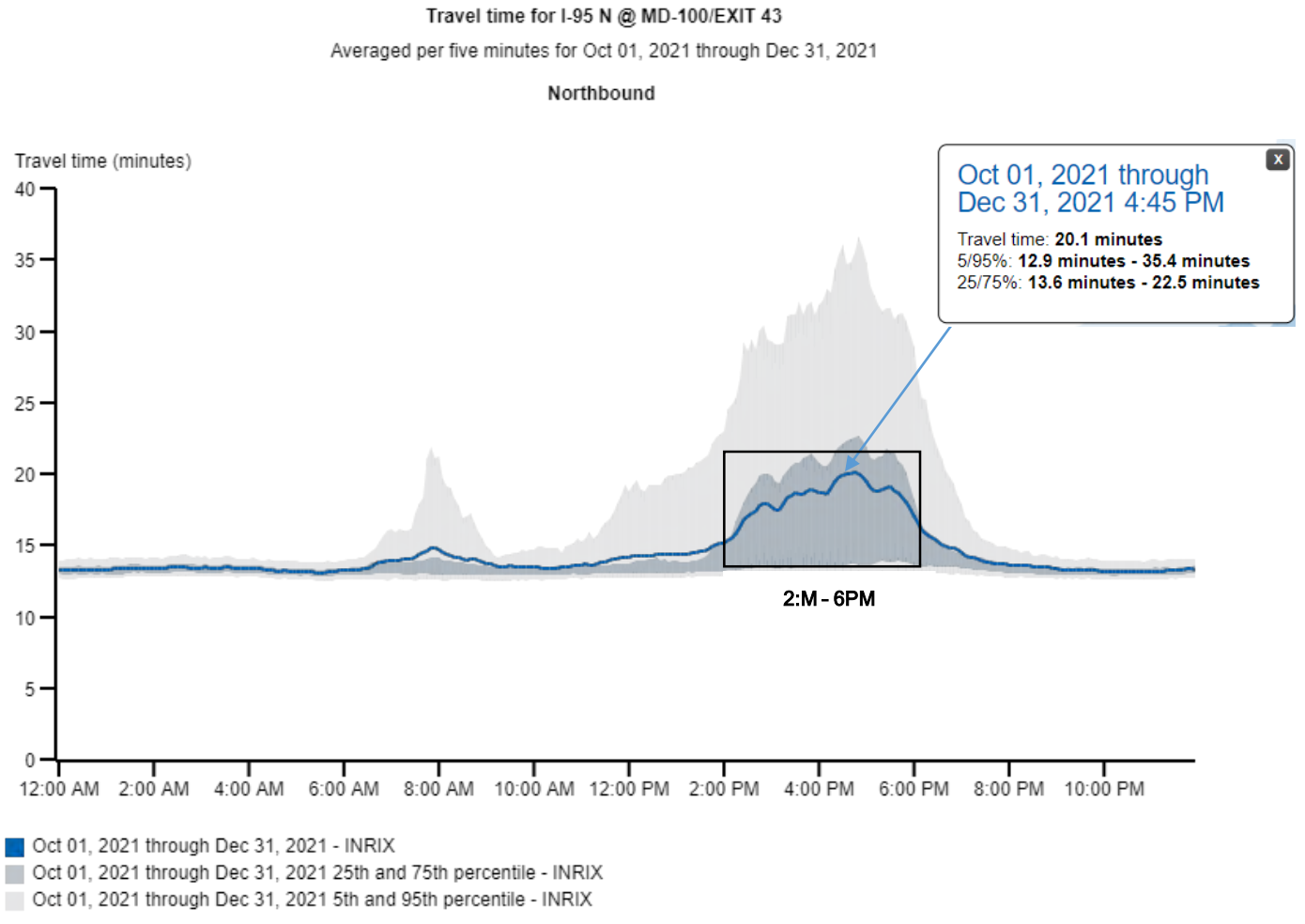
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 N @ MD-100/EXIT 43	4.62	1 h 21 m	346	102,960



#4 Ranked Bottleneck –4th Quarter 2021 – Travel Times

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 N @ MD-100/EXIT 43	4.62	1 h 21 m	346	102,960

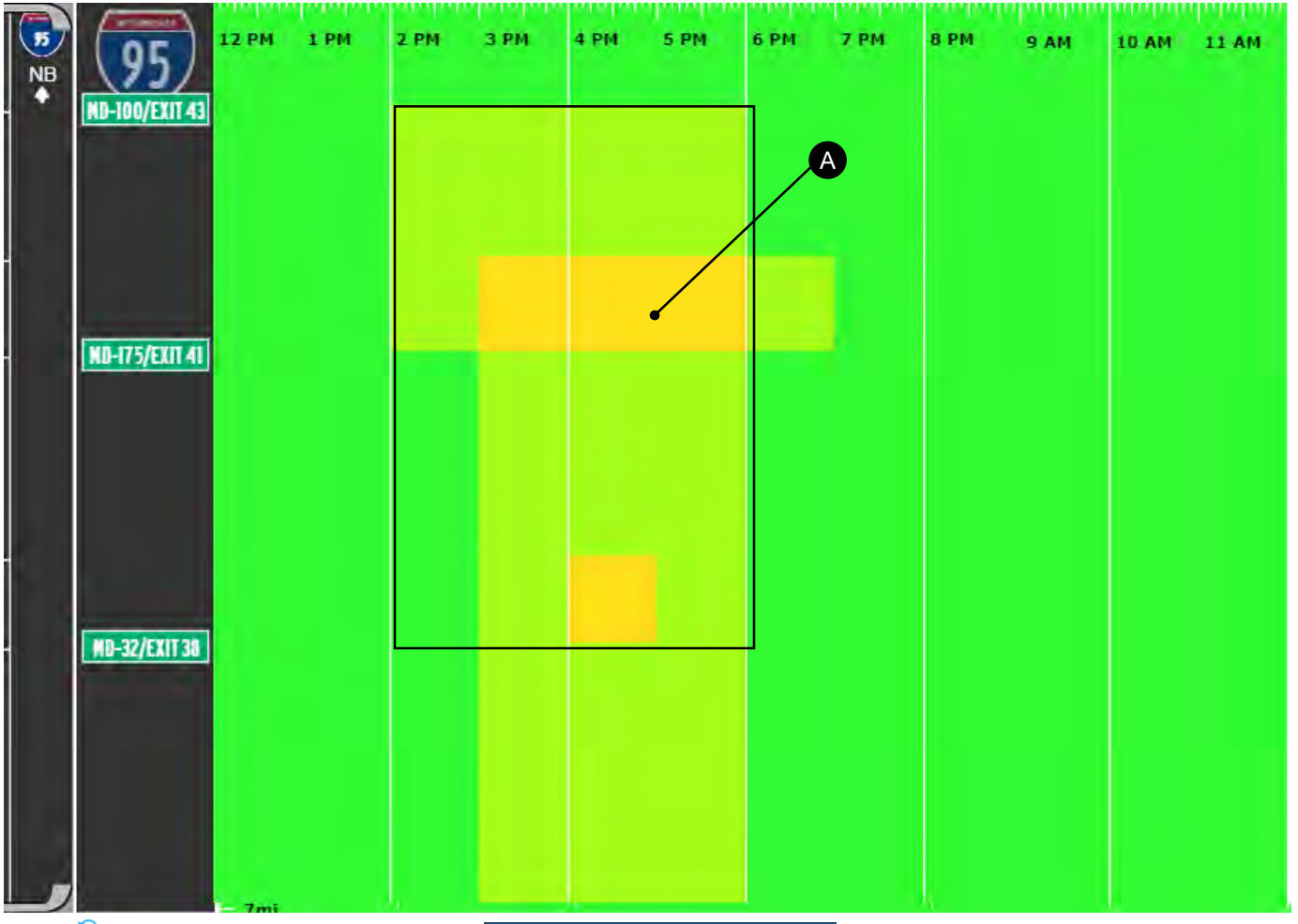
Northbound



#4 Ranked Bottleneck –4th Quarter 2021 – Congestion Scan

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 N @ MD-100/EXIT 43	4.62	1 h 21 m	346	102,960

Northbound



Color Thresholds

0 mph — 50 mph

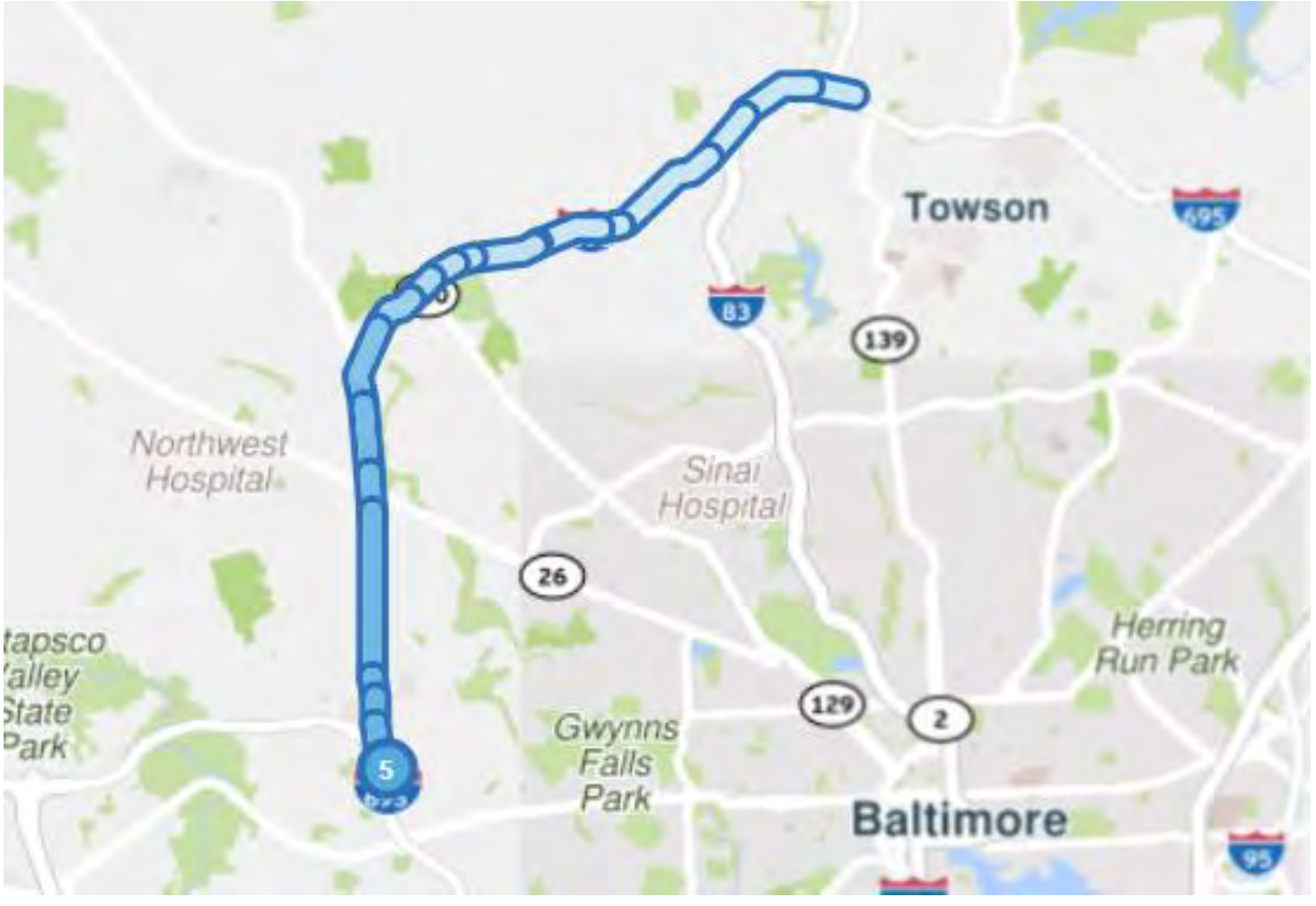
10 20 30 40 50

Locations of Congestion (NB)

A: 2PM-6PM: MD-32 to MD-100

#5 Ranked Bottleneck – 4th Quarter 2021 – Location Map

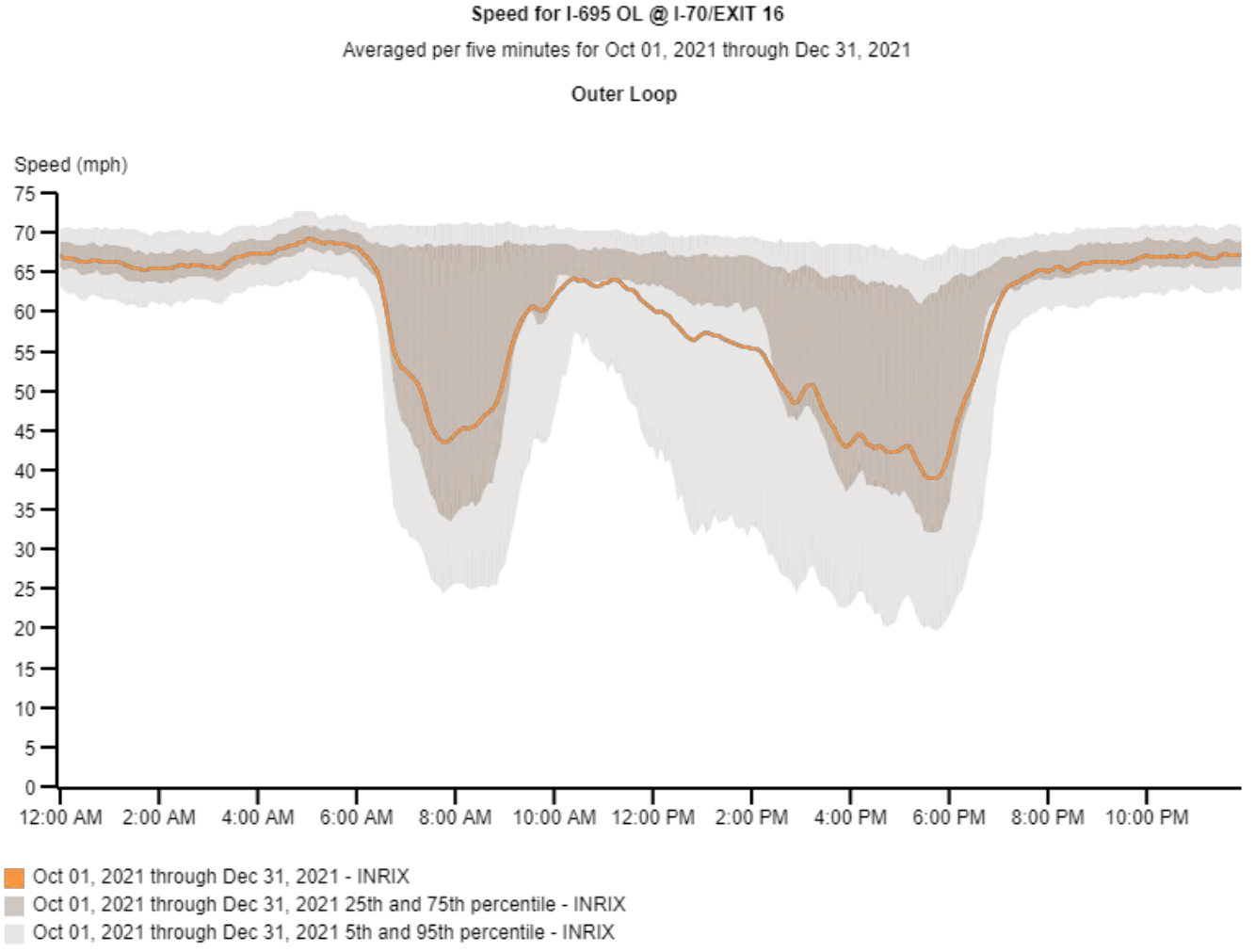
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ I-70/EXIT 16	3.06	1 h 41 m	369	103,876



Notes: *The core congestion extends from I-70 to MD-140/Reisterstown Rd in both the morning and afternoon rush hour with the AM rush being more severe. A Transportation Systems Management and Operations project was just completed in the area in the late fall of 2021. This is part of an overlapping bottleneck with the #3 location.*

#5 Ranked Bottleneck – 4th Quarter 2021 – Average Speeds Graph

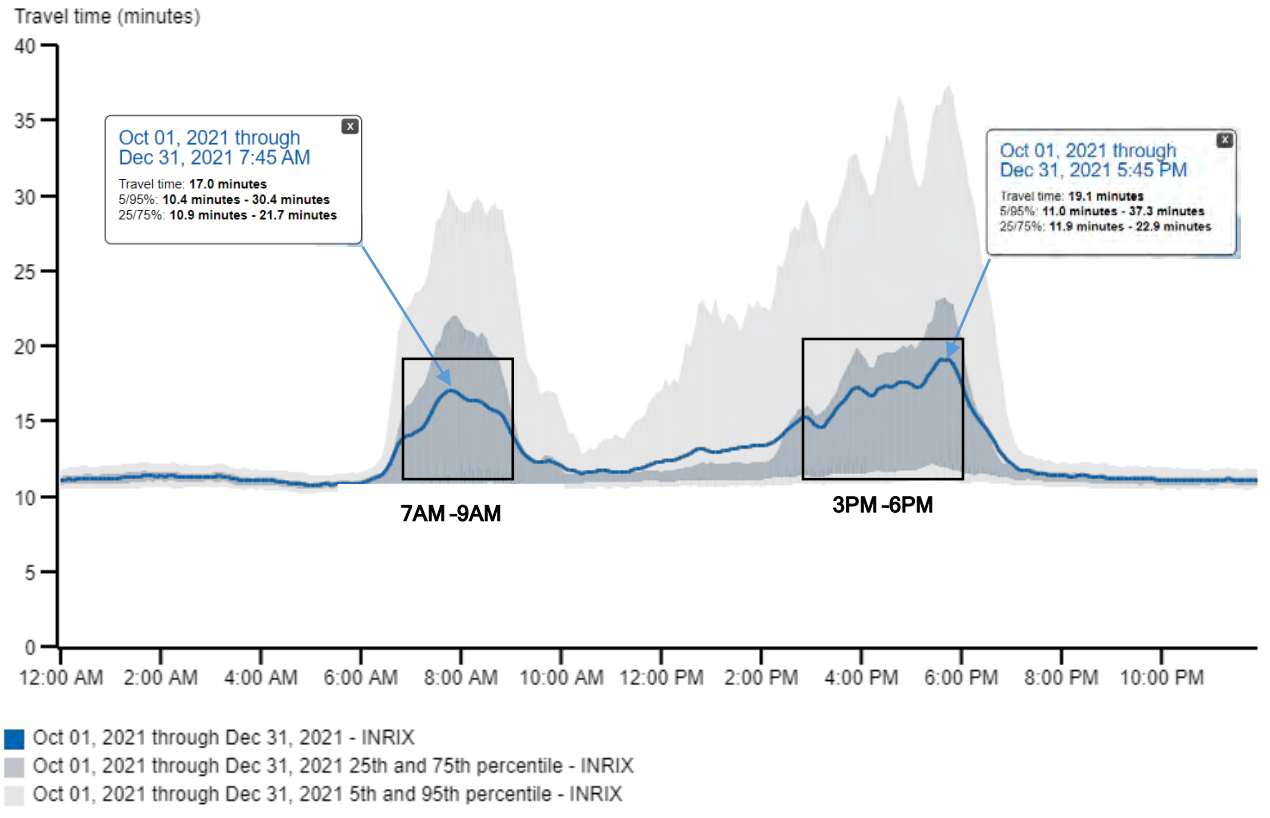
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ I-70/EXIT 16	3.06	1 h 41 m	369	103,876



#5 Ranked Bottleneck – 4th Quarter 2021 – Travel Times

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ I-70/EXIT 16	3.06	1 h 41 m	369	103,876

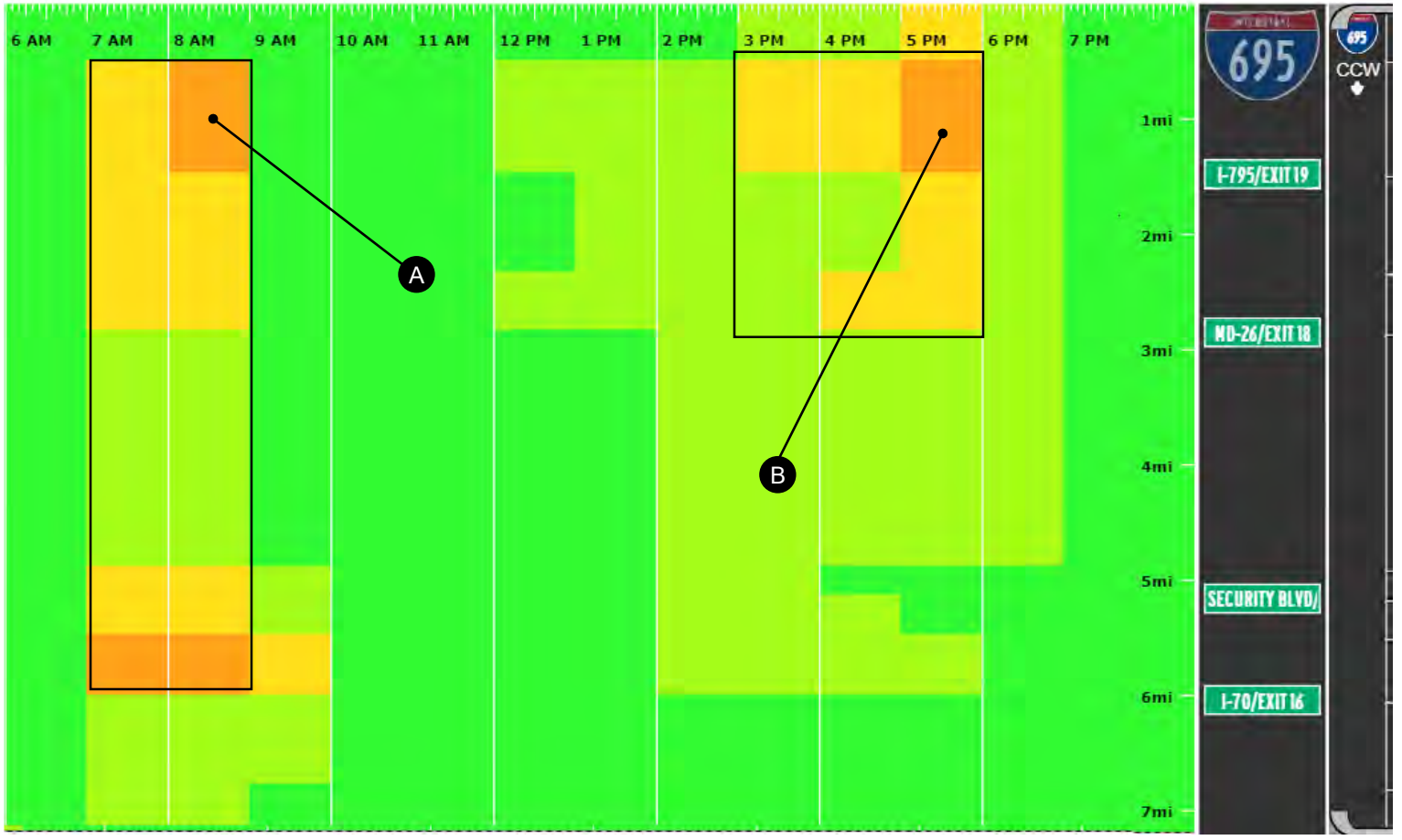
Outer Loop

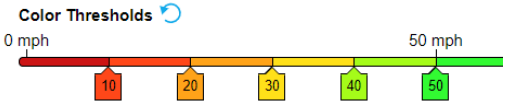


#5 Ranked Bottleneck – 4th Quarter 2021 – Congestion Scan

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ I-70/EXIT 16	3.06	1 h 41 m	369	103,876

Outer Loop



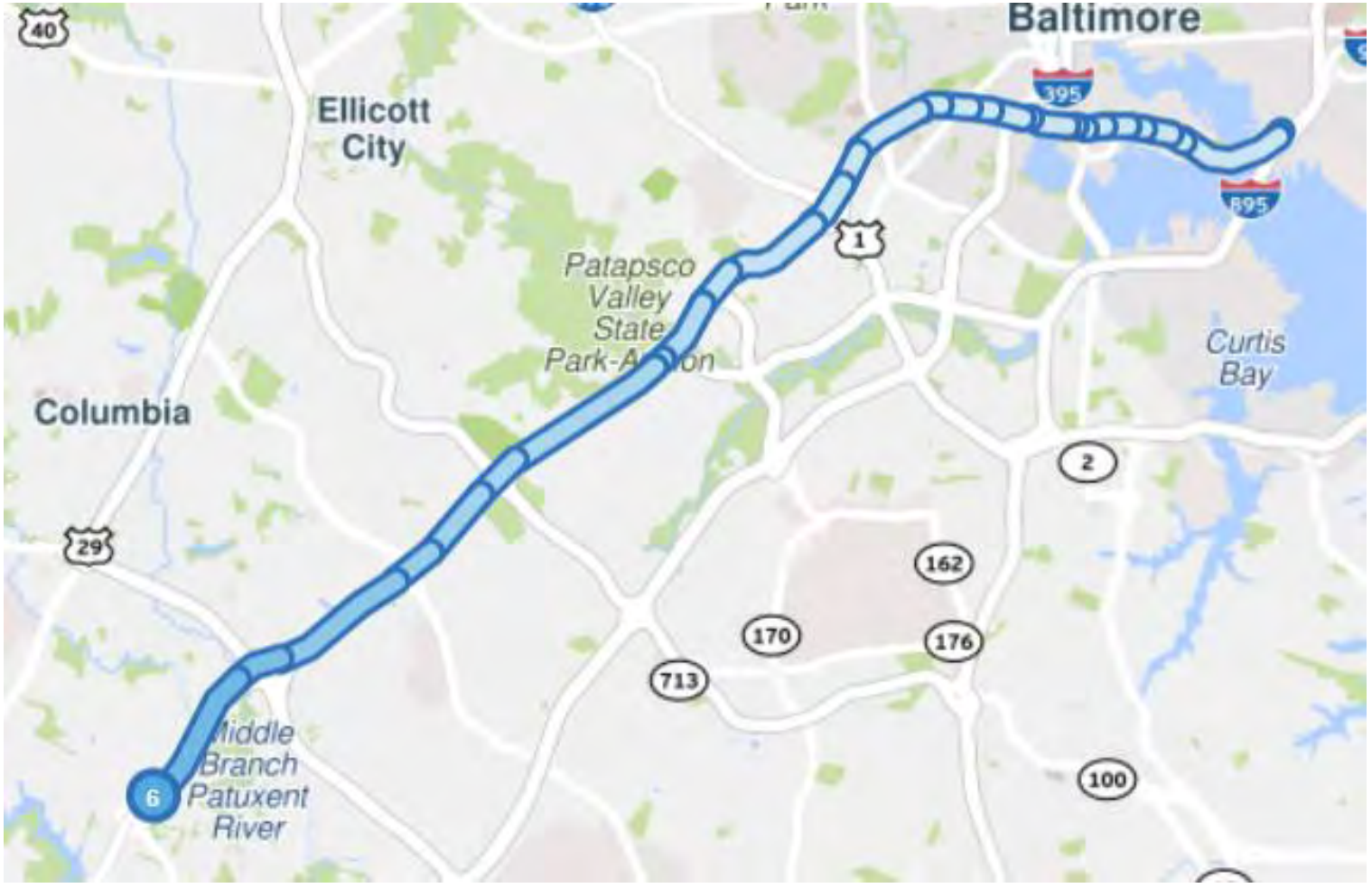


Locations of Congestion (OL)

A: 7AM - 9AM: I-795/Exit 19 to I-70/Exit 16
B: 3PM - 6PM MD-140/Reisterstown Rd/Exit 20 to MD-26/Liberty Rd/Exit 18

#6 Ranked Bottleneck – 4th Quarter 2021 – Location Map

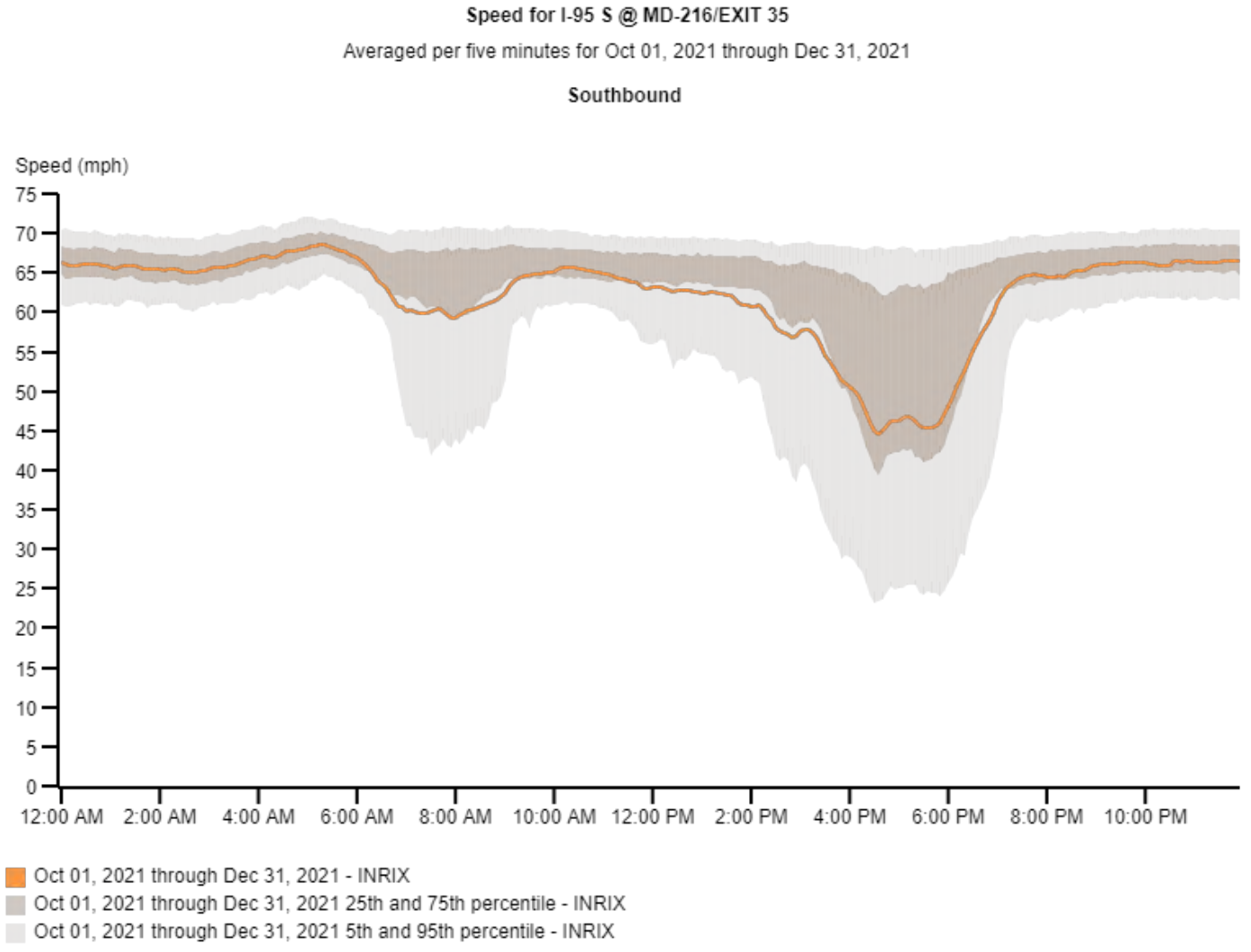
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 S @ MD-216/EXIT 35	5.43	44 m	819	102,207



Notes: *High traffic volume corridor primarily in the afternoon. Traffic in this corridor has 3 major merge areas at MD-216, MD-32 and MD-175 near Columbia, MD.*

#6 Ranked Bottleneck – 4th Quarter 2021 – Average Speeds Graph

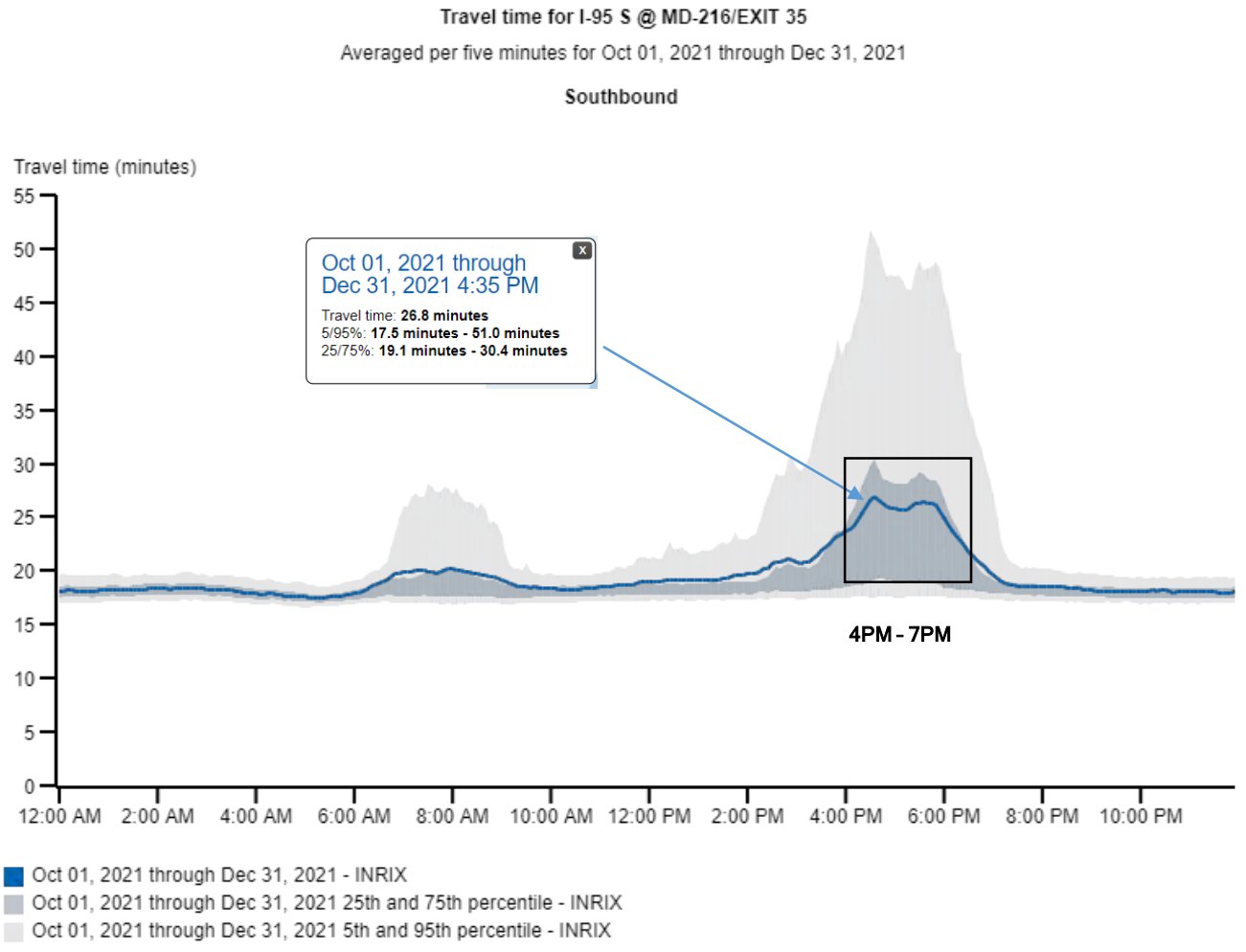
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 S @ MD-216/EXIT 35	5.43	44 m	819	102,207



#6 Ranked Bottleneck – 4th Quarter 2021 – Travel Times

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 S @ MD-216/EXIT 35	5.43	44 m	819	102,207

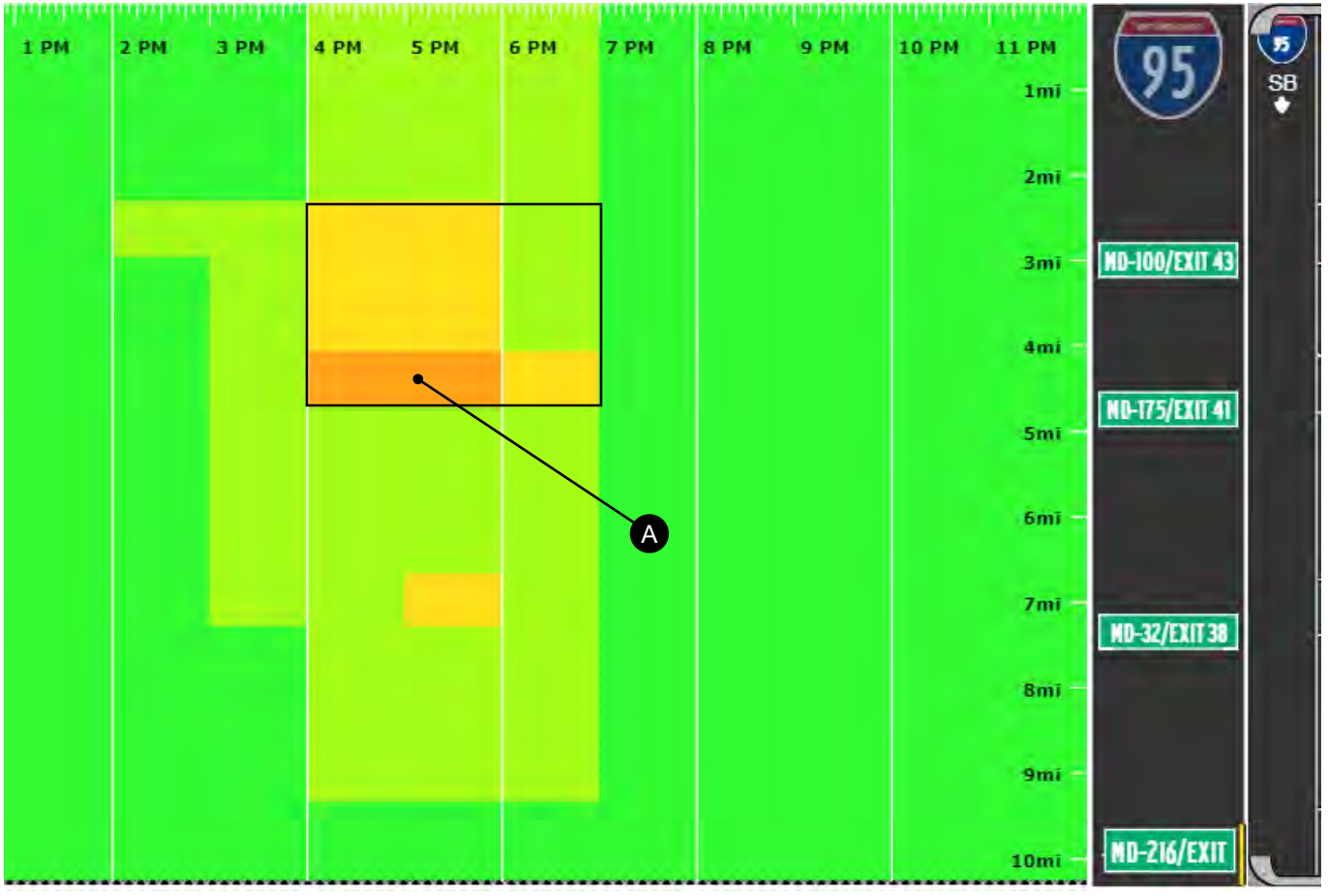
Southbound

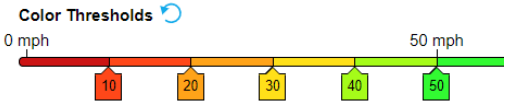


#6 Ranked Bottleneck – 4th Quarter 2021 – Congestion Scan

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 S @ MD-216/EXIT 35	5.43	44 m	819	102,207

Southbound



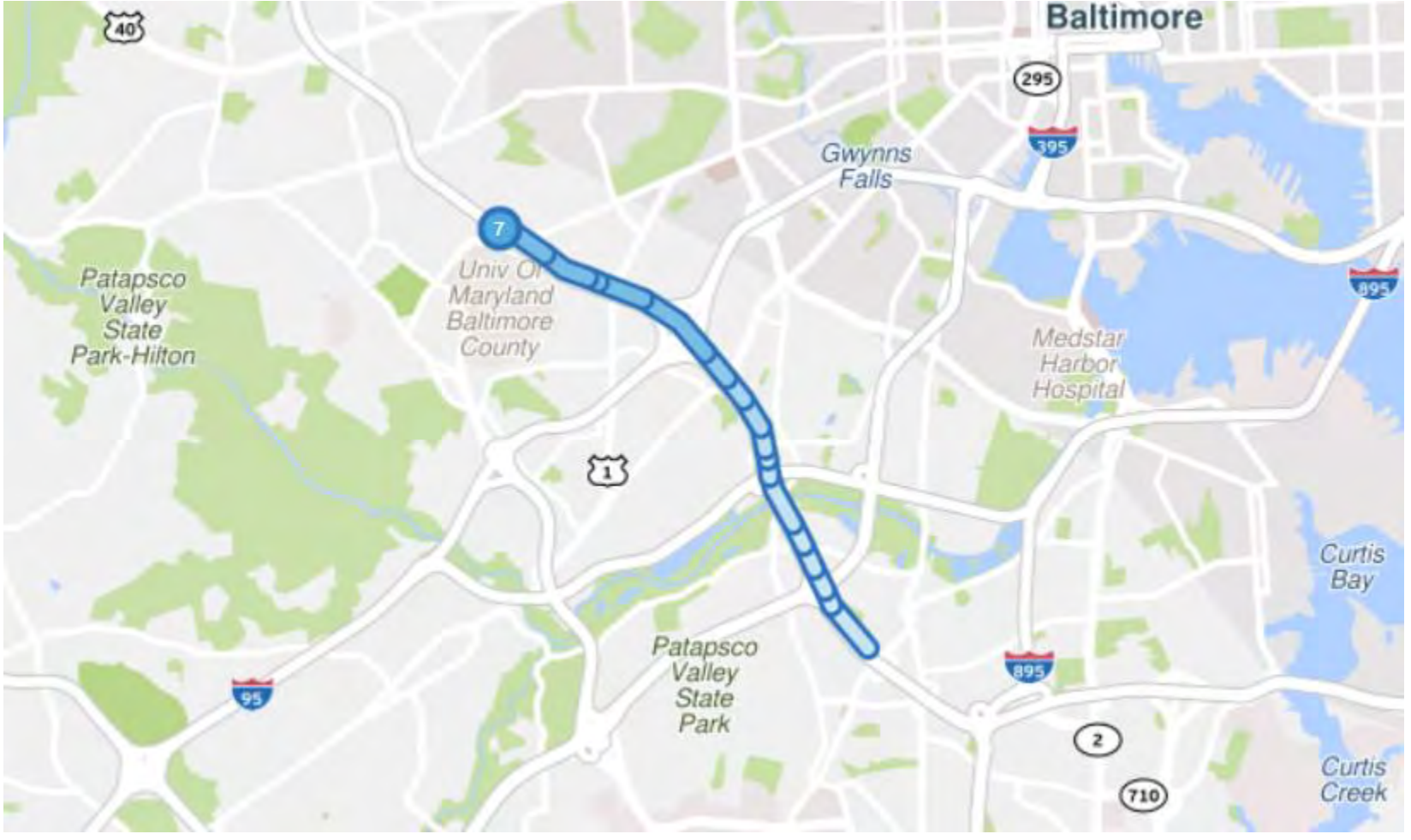


Locations of Congestion (SB)

A: 4PM - 7PM: MD-100/Exit 43 to MD-175/Exit 41

#7 Ranked Bottleneck – 4th Quarter 2021 – Location Map

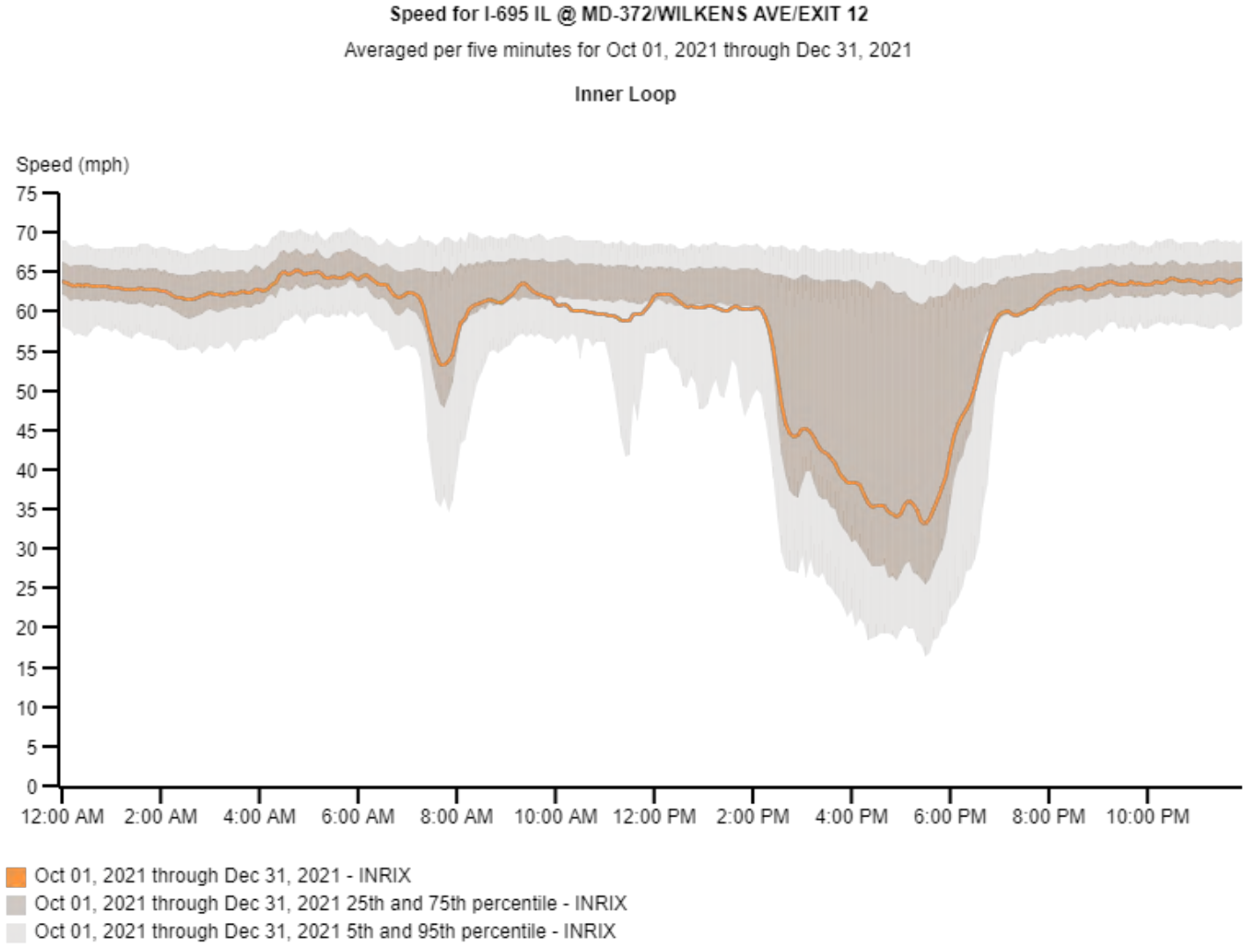
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 IL @ MD-372/WILKENS AVE/EXIT 12	2.00	1 h 28 m	170	98,509



***Notes**: Afternoon congestion on the inner loop of the beltway with the greatest delays between MD 144 and the lane drop at I-70. High-volume ramps from Security Blvd, I-70 and US 40 contributed to the congestion.*

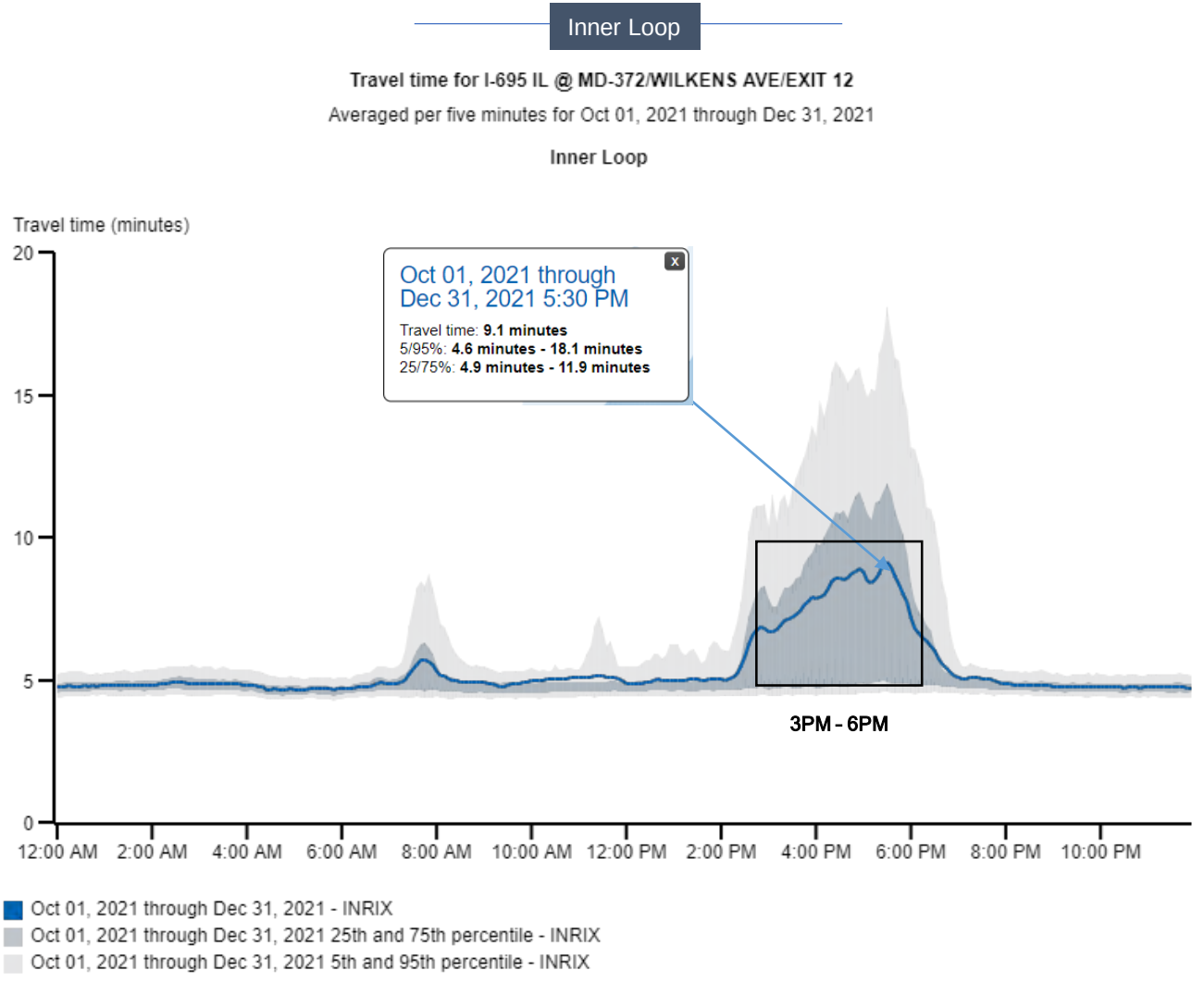
#7 Ranked Bottleneck – 4th Quarter 2021 – Average Speeds Graph

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 IL @ MD-372/WILKENS AVE/EXIT 12	2.00	1 h 28 m	170	98,509



#7 Ranked Bottleneck – 4th Quarter 2021 – Travel Times

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 IL @ MD-372/WILKENS AVE/EXIT 12	2.00	1 h 28 m	170	98,509



#7 Ranked Bottleneck – 4th Quarter 2021 – Congestion Scan

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 IL @ MD-372/WILKENS AVE/EXIT 12	2.00	1 h 28 m	170	98,509

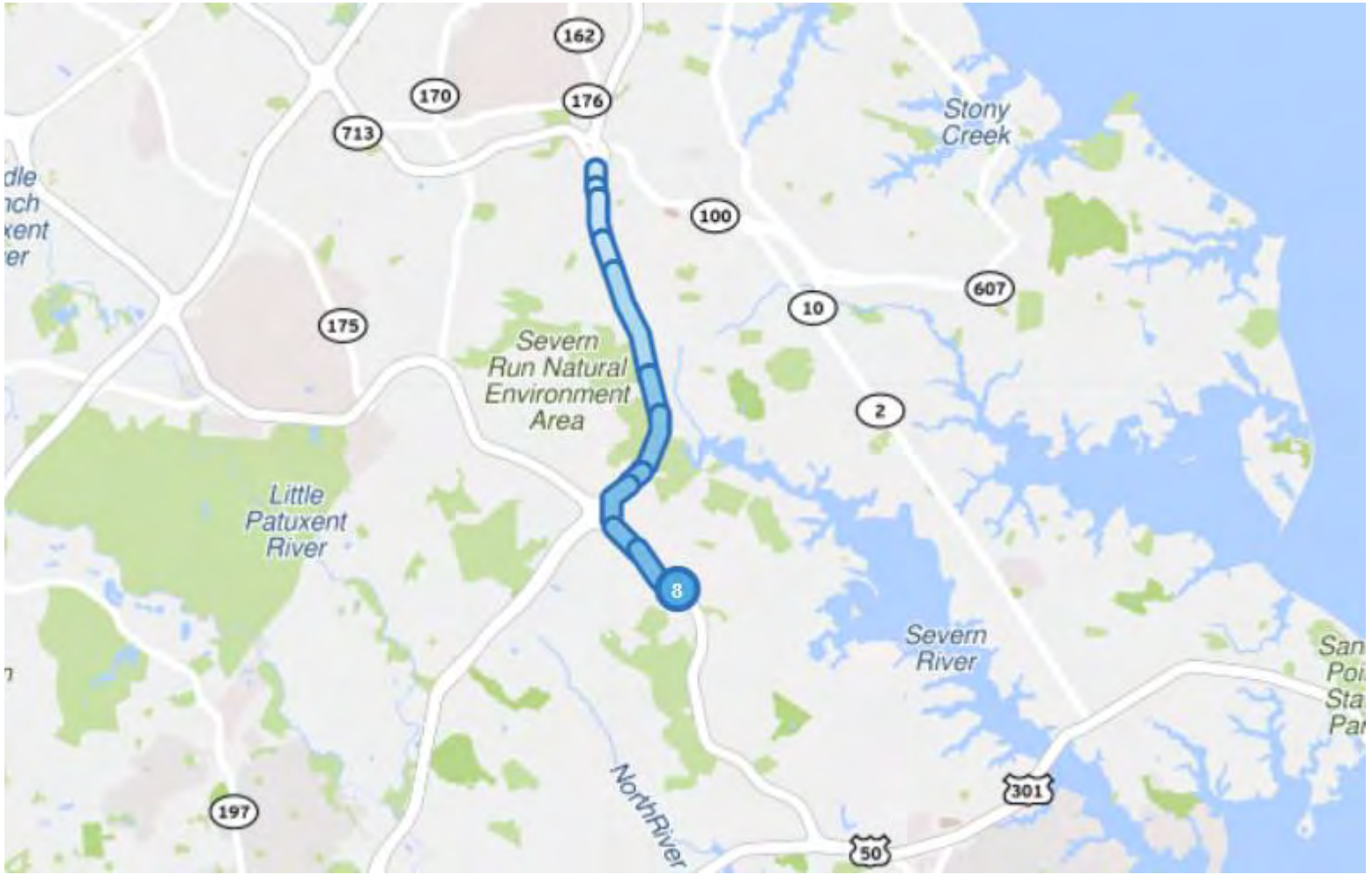
Color Thresholds
0 mph 50 mph
10 20 30 40 50

Locations of Congestion (IL)

A: 3PM -6PM: MD-144/Frederick Rd/Exit 13 to MD-372/Wilkens Ave/Exit 12

#8 Ranked Bottleneck – 4th Quarter 2021 – Location Map

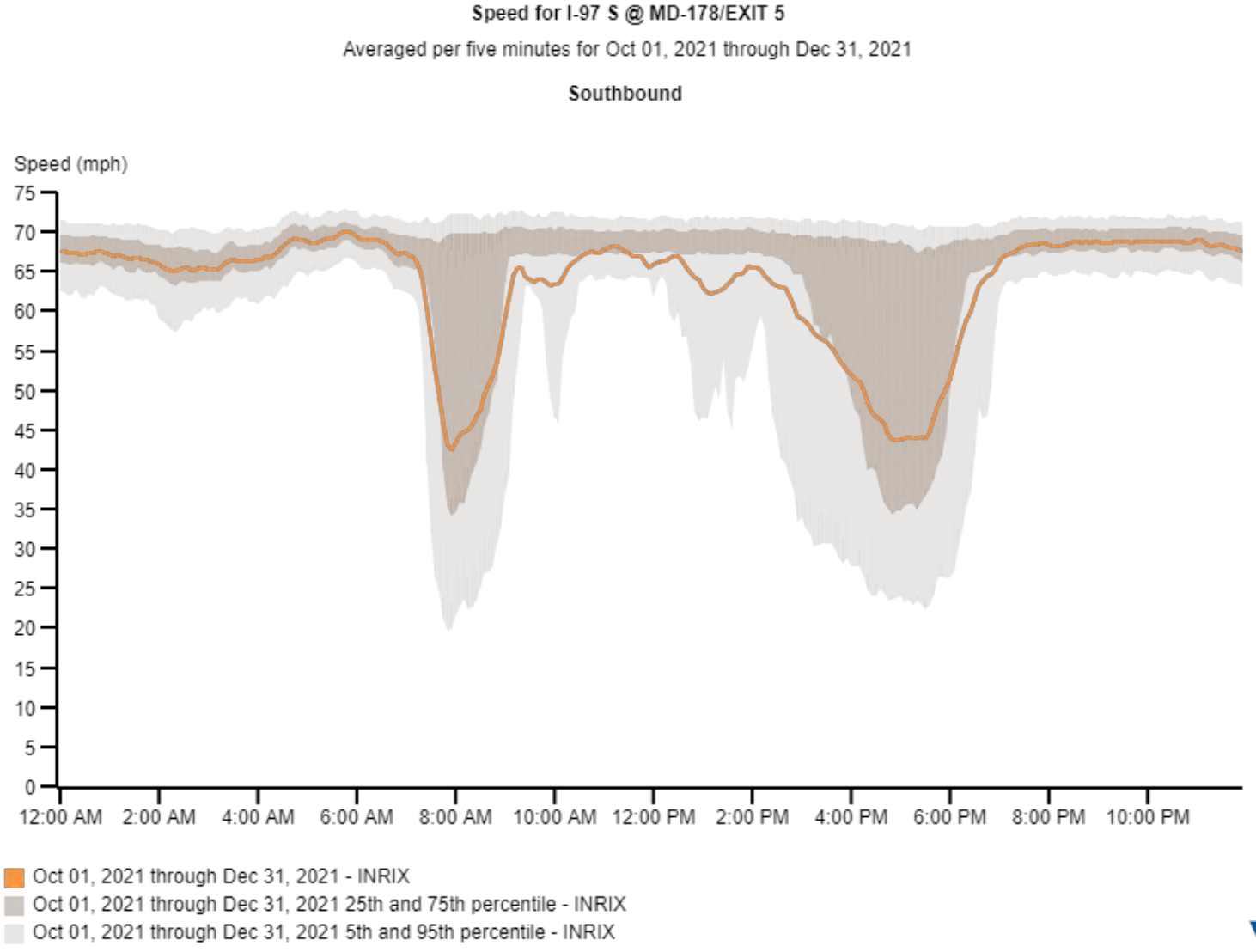
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-97 S @ MD-178/EXIT 5	2.99	1 h 52 m	136	58,595



Notes: *The Maryland Department of Transportation State Highway Administration reports that heavy traffic is expected on state roads during the Maryland Renaissance Festival, open Saturdays and Sundays from 10 a.m. to 7 p.m. through Oct. 24. The agency said Wednesday that I-97, MD-178 (Generals Highway) and MD-450 (Defense Highway) could see an increased number of motorized steeds with patrons attending the festival.*

#8 Ranked Bottleneck – 4th Quarter 2021 – Average Speeds Graph

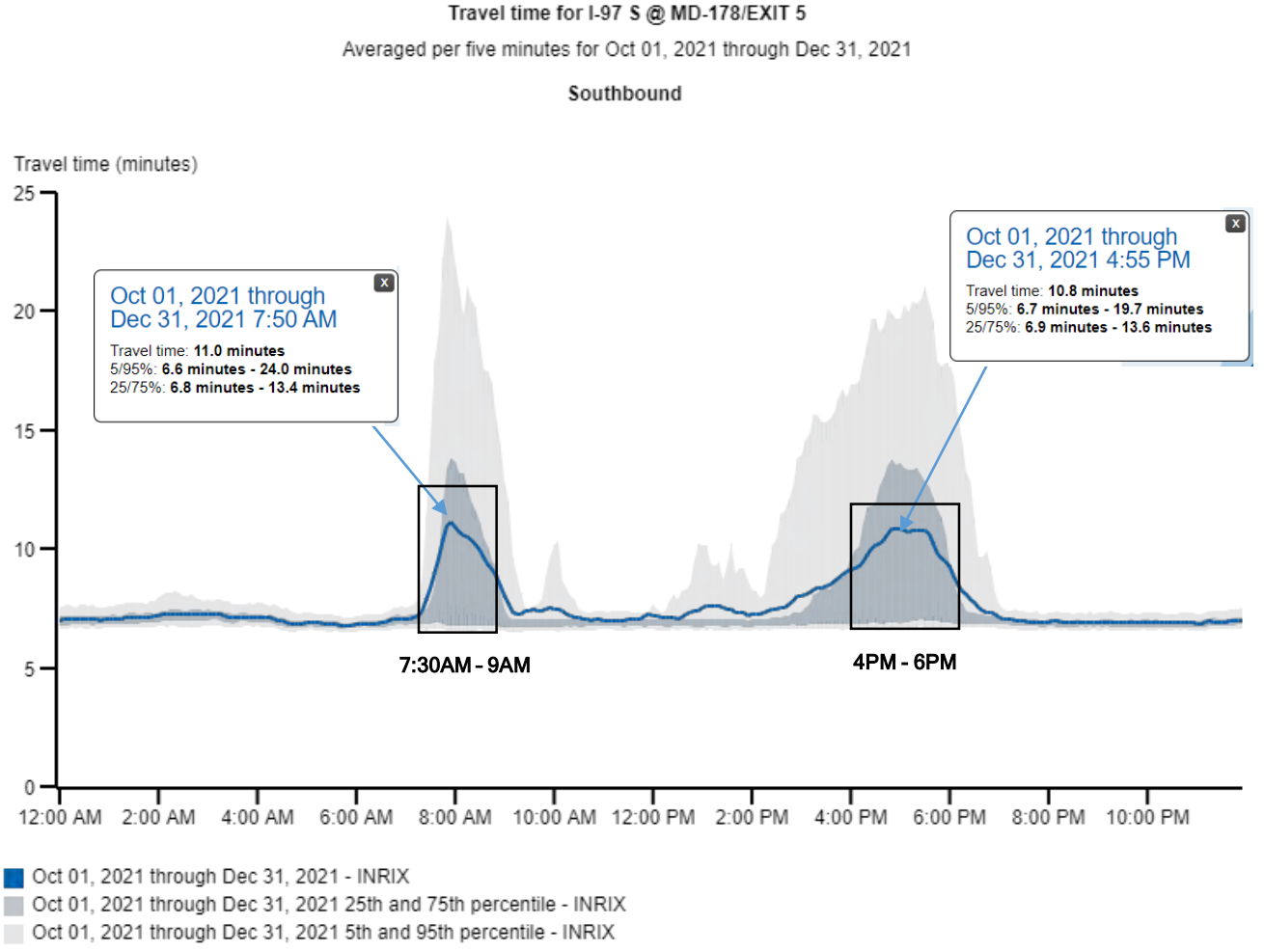
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-97 S @ MD-178/EXIT 5	2.99	1 h 52 m	136	58,595



#8 Ranked Bottleneck – 4th Quarter 2021 – Travel Times

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-97 S @ MD-178/EXIT 5	2.99	1 h 52 m	136	58,595

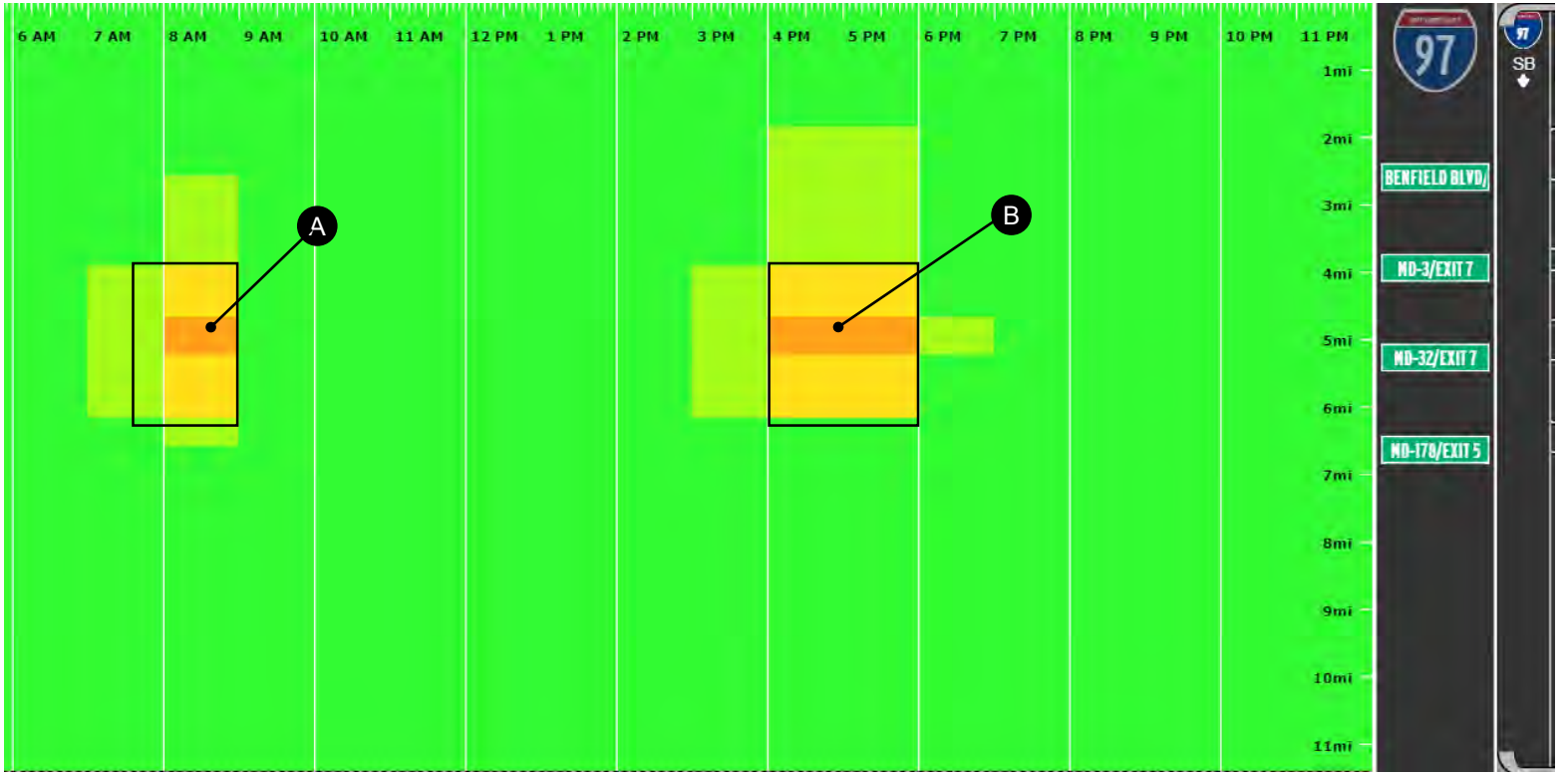
Southbound

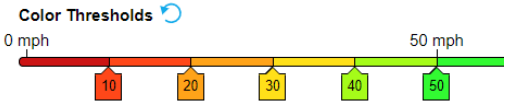


#8 Ranked Bottleneck –4th Quarter 2021 – Congestion Scan

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-97 S @ MD-178/EXIT 5	2.99	1 h 52 m	136	58,595

Southbound



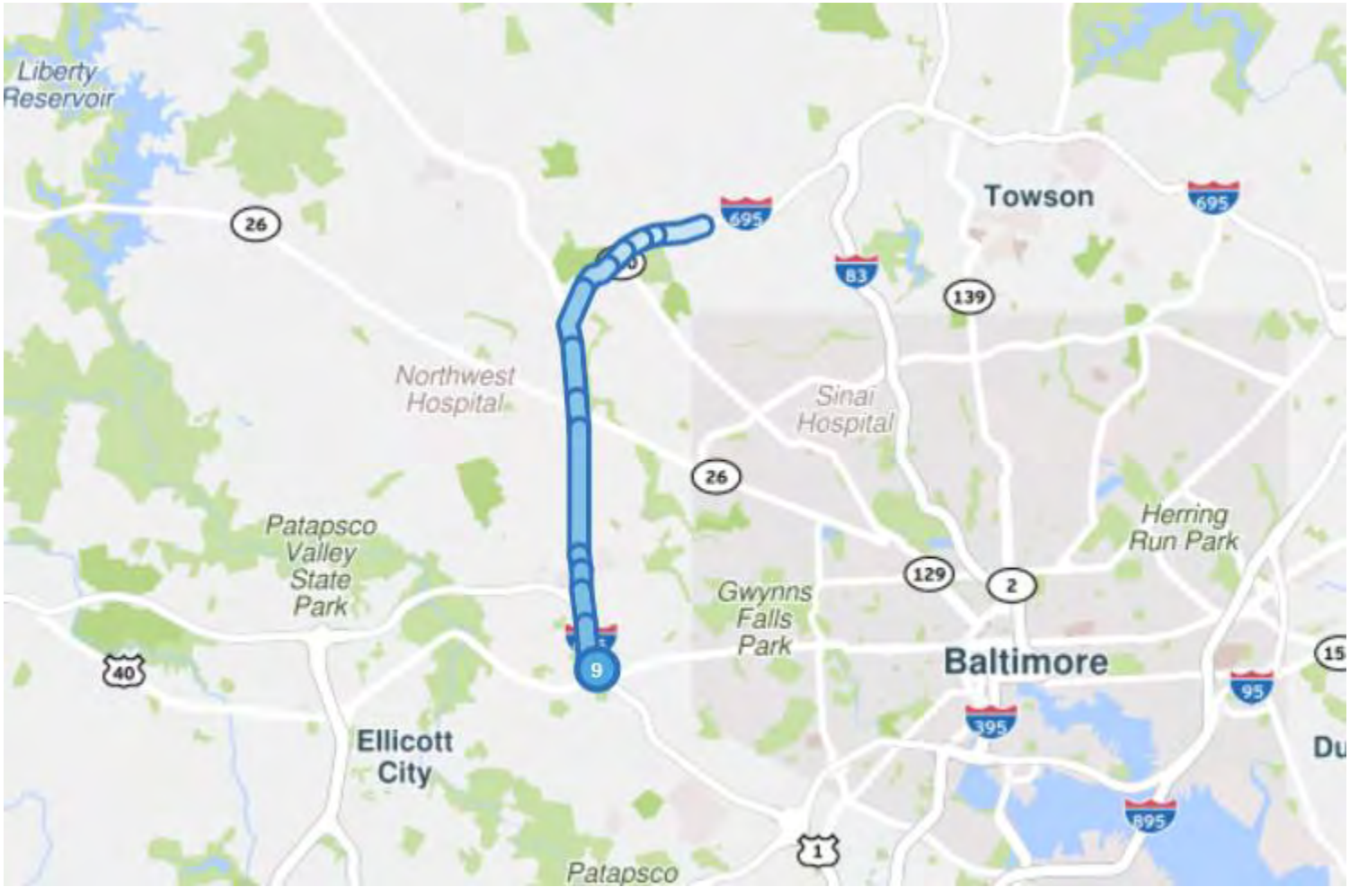


Locations of Congestion (SB)

A: 7:30AM - 9AM: MD-3 to MD-178
B: 4PM - 6PM: MD-3 to MD-178

#9 Ranked Bottleneck – 4th Quarter 2021 – Location Map

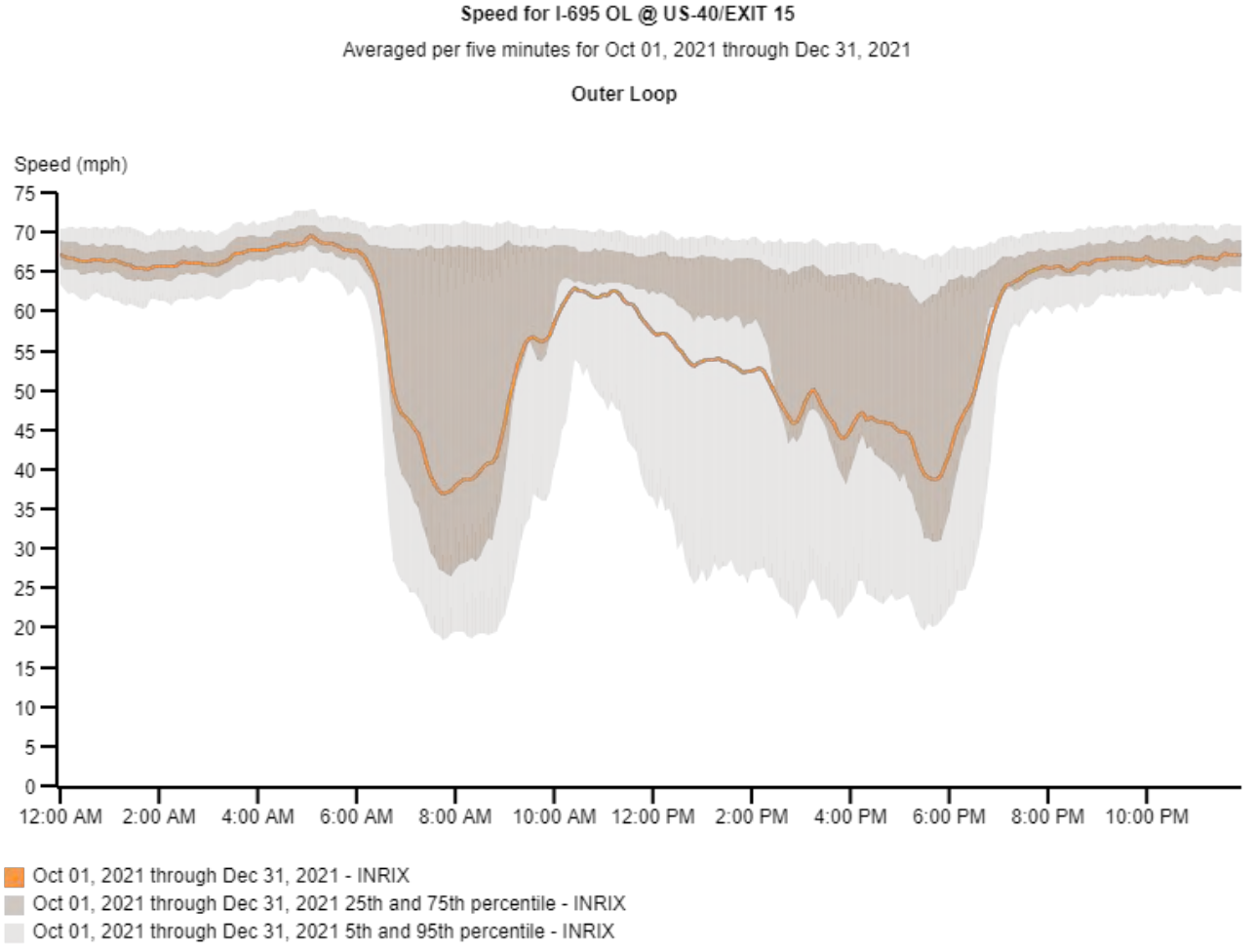
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ US-40/EXIT 15	4.48	40 m	252	103,178



Notes: *Overlapping bottleneck with #3 and 5. Combined this makes the west side Outer Loop of the beltway the most congested corridor in the region. The core congestion extends from just south of US 40/Baltimore National Pike to MD 140/Reisterstown Rd in both the morning and afternoon rush hour with the AM rush being more severe. A beltway widening project was completed in the Fall of 2021 in the area.*

#9 Ranked Bottleneck – 4th Quarter 2021 – Average Speeds Graph

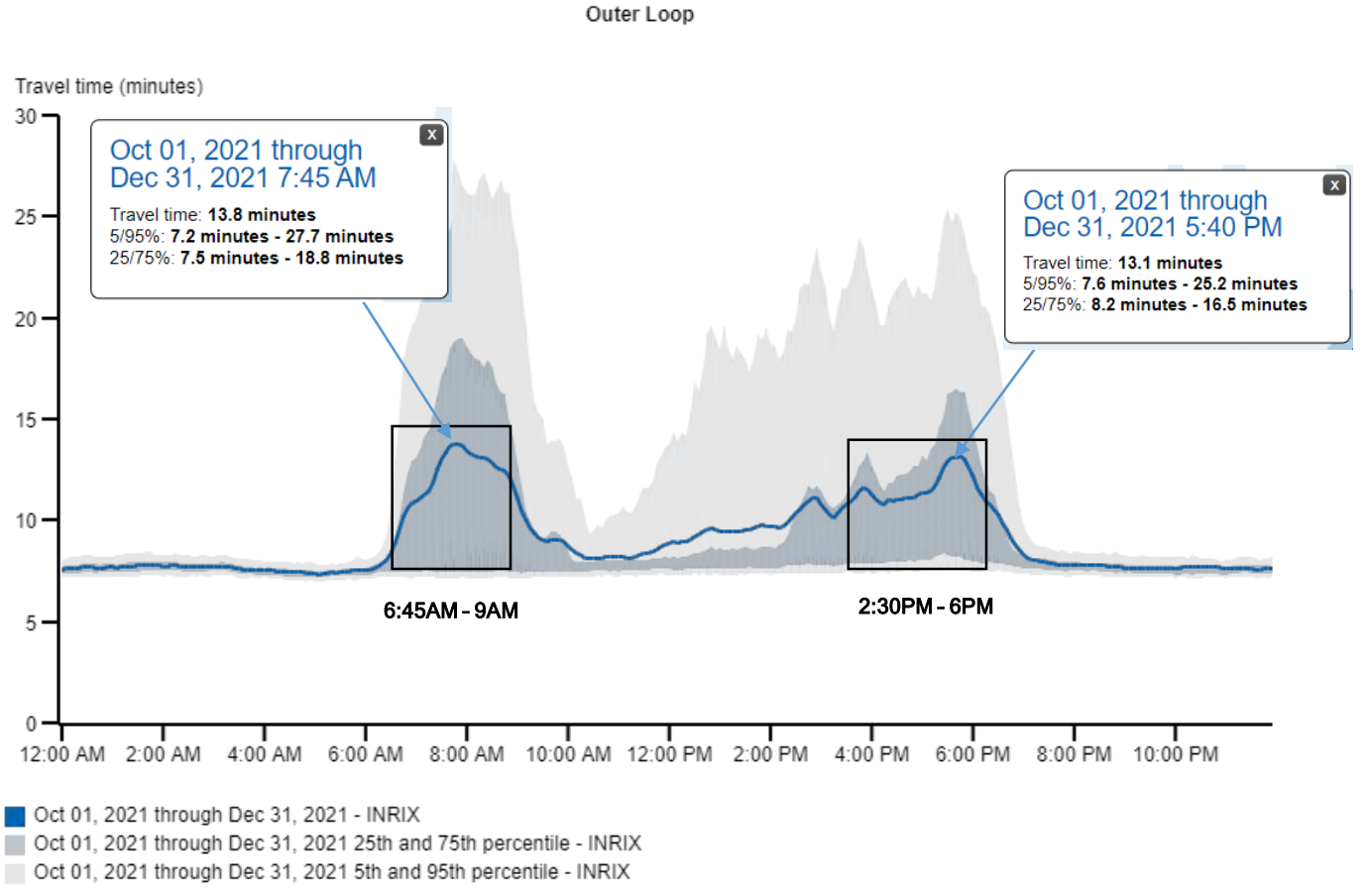
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ US-40/EXIT 15	4.48	40 m	252	103,178



#9 Ranked Bottleneck – 4th Quarter 2021 – Travel Times

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ US-40/EXIT 15	4.48	40 m	252	103,178

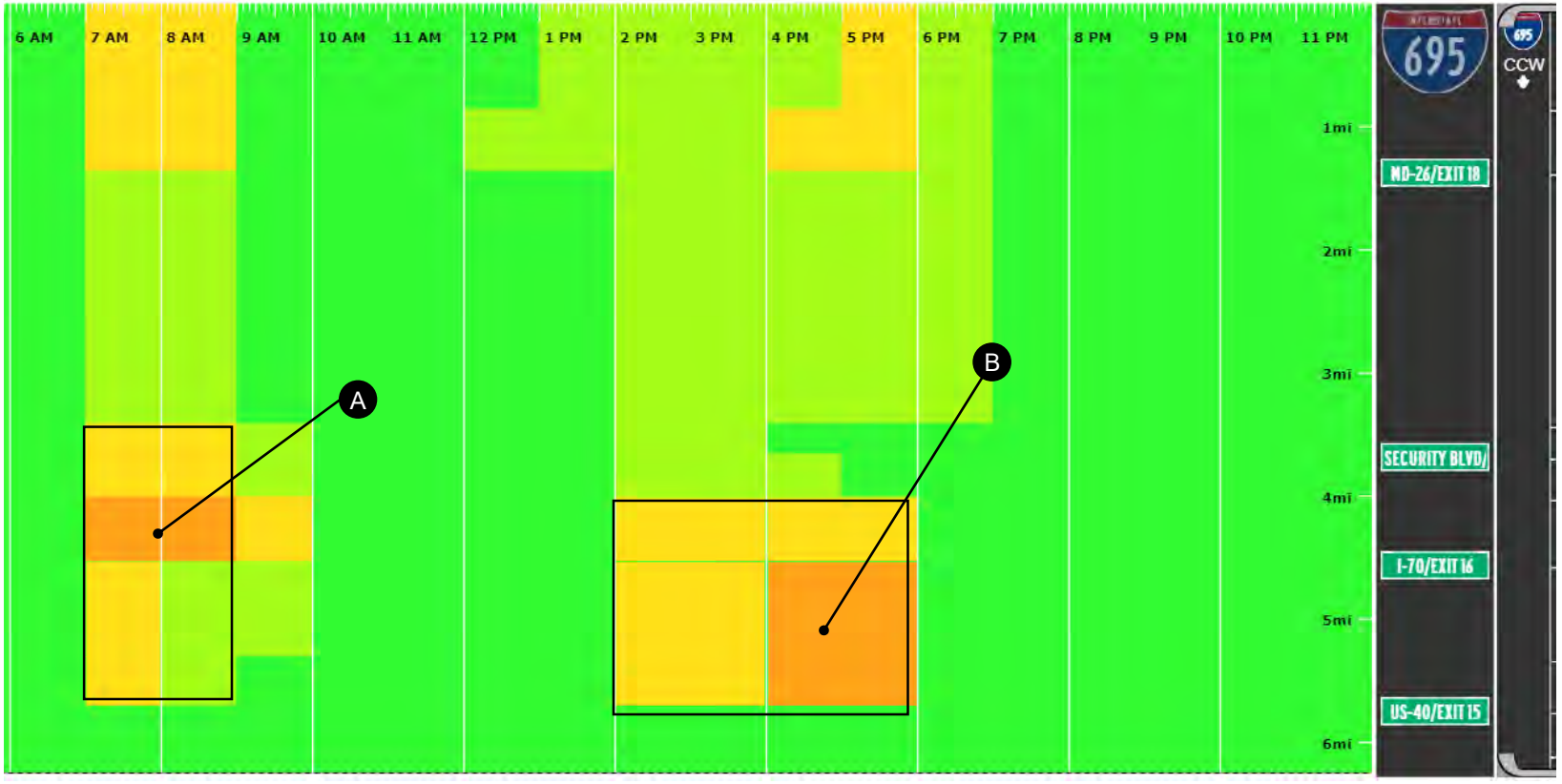
Outer Loop

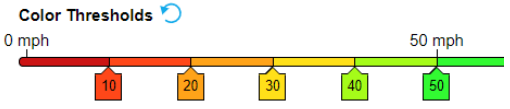


#9 Ranked Bottleneck – 4th Quarter 2021 – Congestion Scan

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ US-40/EXIT 15	4.48	40 m	252	103,178

Outer Loop



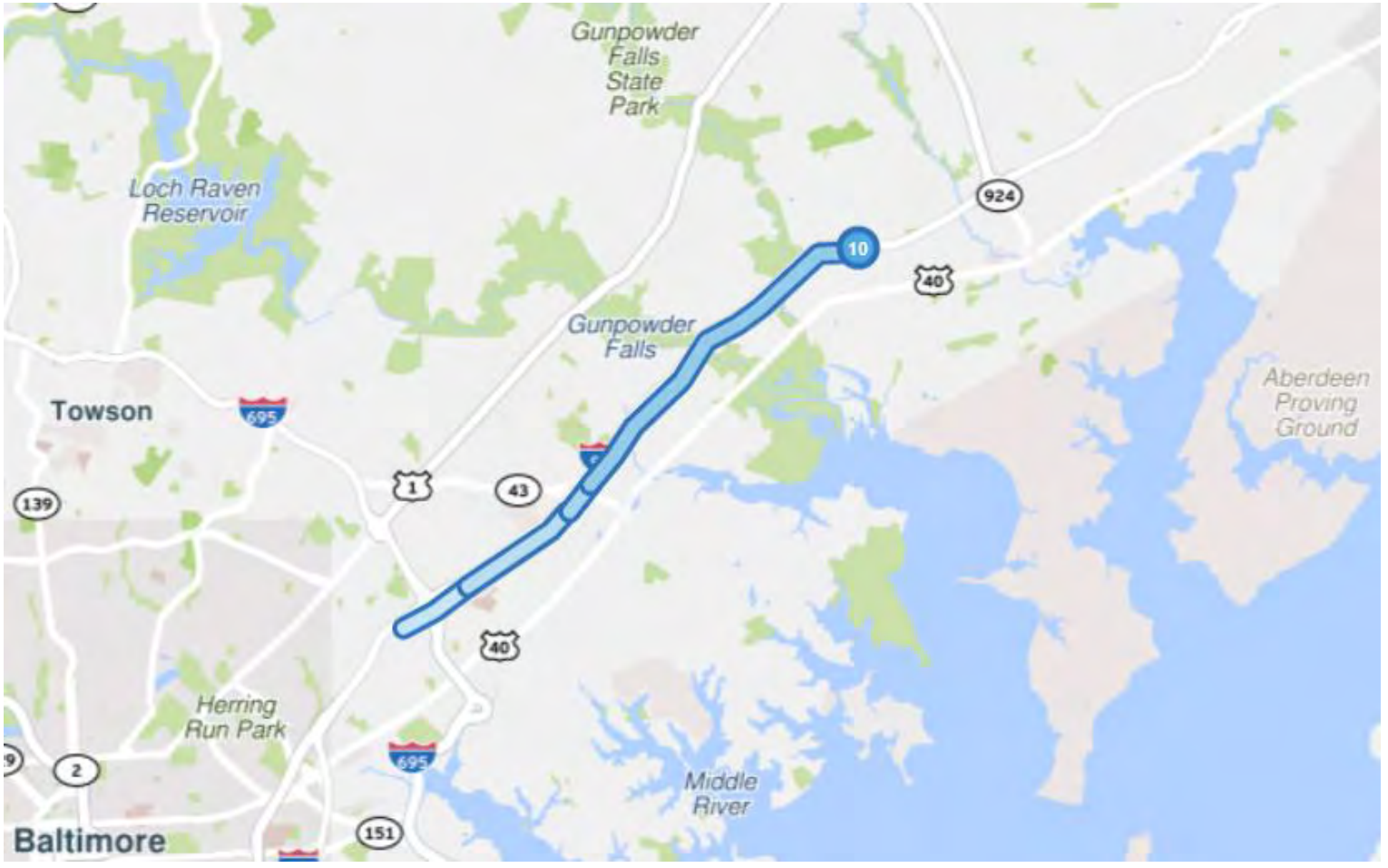


Locations of Congestion (OL)

A: 6:45AM - 9AM: Security Blvd/Exit 17 to US-40/Exit 15
B: 2:30PM - 6PM I-70/Exit 16 to US:-40/Exit 15

#10 Ranked Bottleneck –4th Quarter 2021 – Location Map

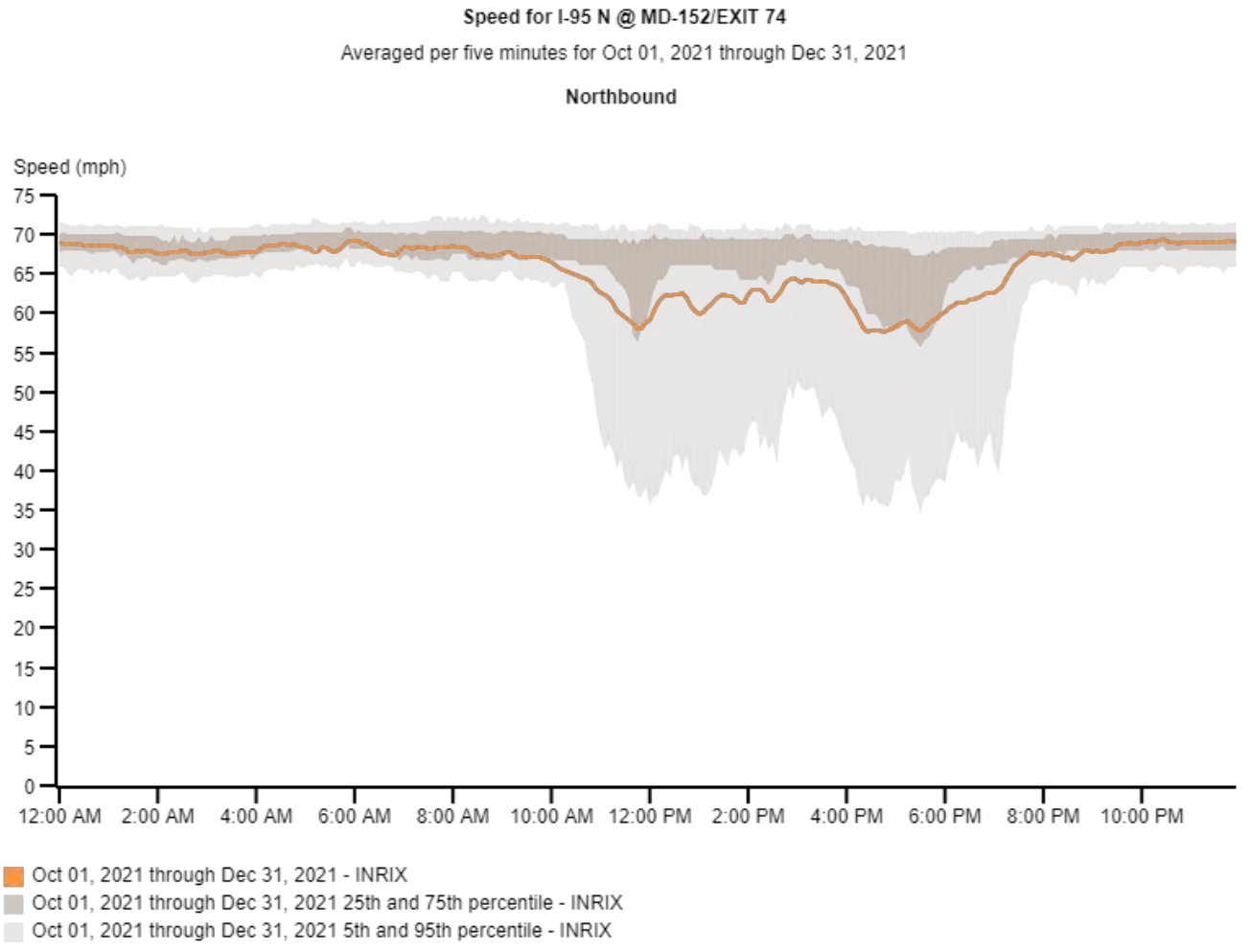
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 N @ MD-152/EXIT 74	7.36	35 m	382	84,254



Notes: *I-95 Express Toll Lanes Northbound Extension From MD 43 to MD-152 is responsible for off peak shoulder and lane closures. The extension is expected to be open to traffic by the end of 2023 to MD -152, with the full extension to north of MD-24 open to traffic by the end of 2026. This includes the Old Joppa Road Overpass Replacement. Off peak shoulder and lane closures.*

#10 Ranked Bottleneck – 4th Quarter 2021 – Average Speeds Graph

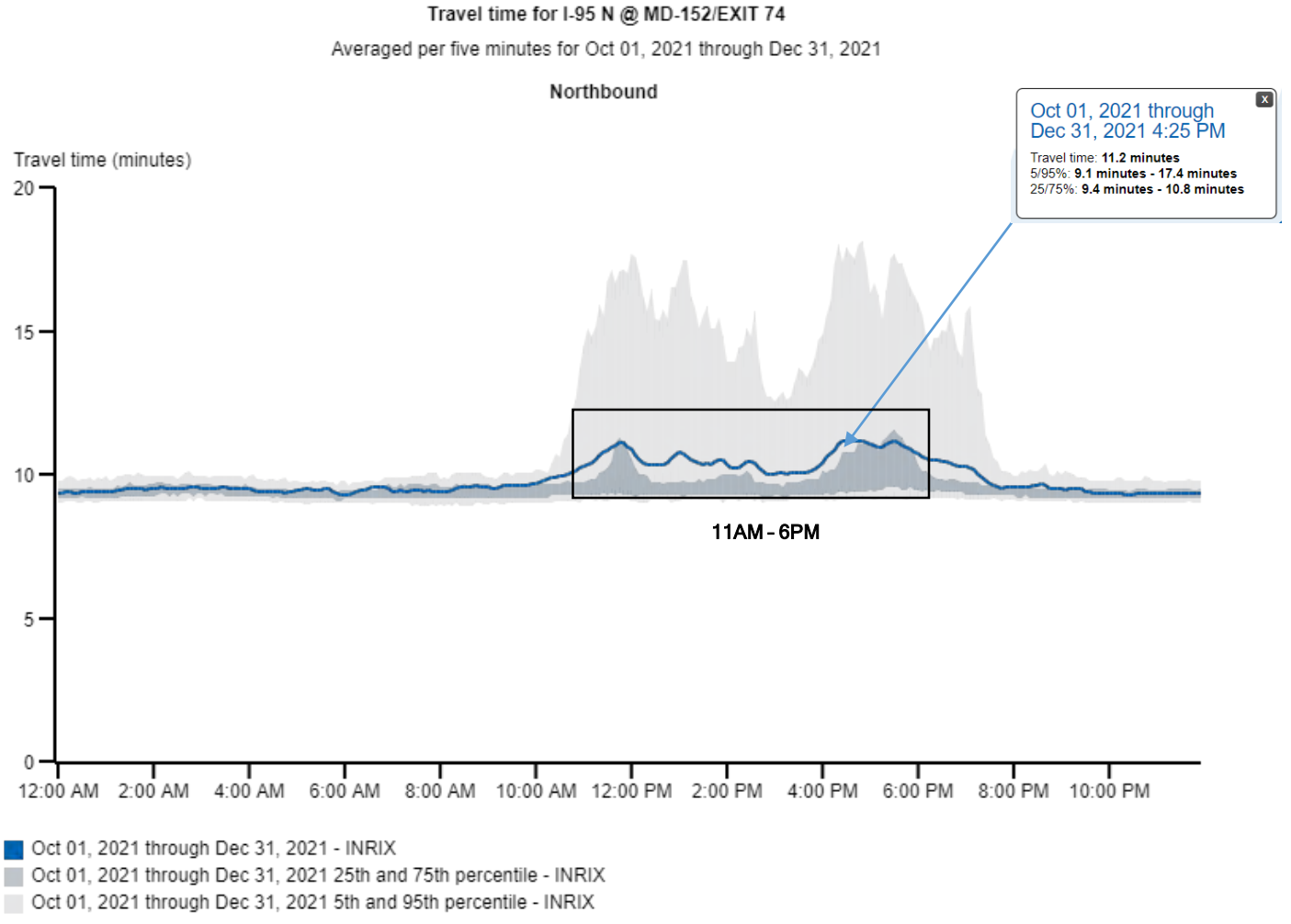
Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 N @ MD-152/EXIT 74	7.36	35 m	382	84,254



#10 Ranked Bottleneck –4th Quarter 2021 – Travel Times

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 N @ MD-152/EXIT 74	7.36	35 m	382	84,254

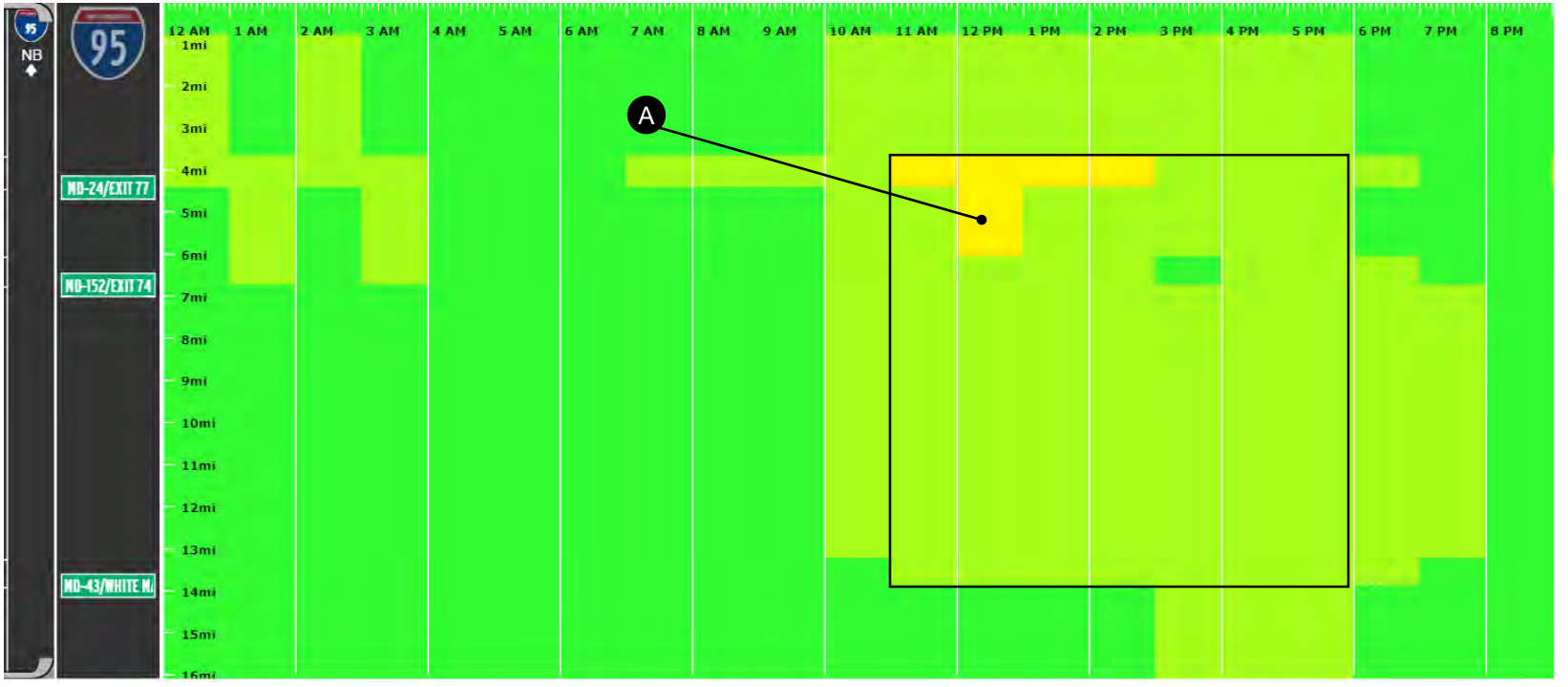
Northbound

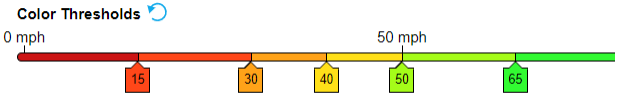


#10 Ranked Bottleneck –4th Quarter 2021 – Congestion Scan

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 N @ MD-152/EXIT 74	7.36	35 m	382	84,254

Northbound





Note: The speed color thresholds have been adjusted due to very high speeds in the area under normal conditions.

Locations of Congestion (NB)

A: 11AM - 6PM: MD-43/White Marsh Blvd/Exit 67 to MD-152/Mountain Rd/Exit 74

Top 10 Bottlenecks on Non-Limited Access Roads

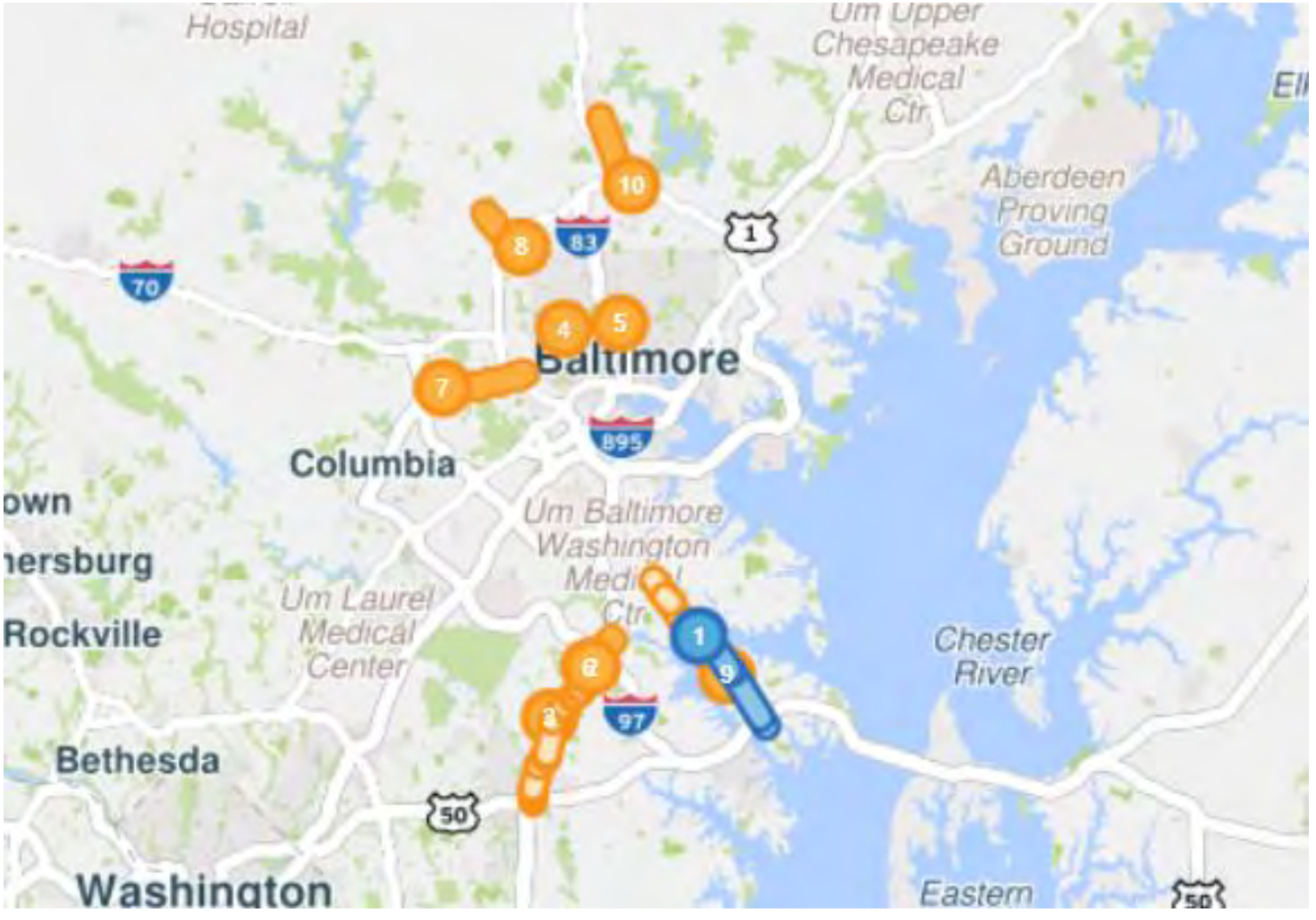
Top 10 Bottlenecks in the Baltimore Region – Non Limited Access Roads – 4th Quarter 2021

Ranked by Base Impact - the aggregation of queue length over time for congestion at each location in mile minutes. It is then weighted by **Total Delay** – Raw speed drop weighted by VMT factor.

Rank	Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
1	MD-2 N @ ROBINSON RD	3.45	1 h 30 m	15	28,814
2	MD-3 N @ MD-175/ANNAPOLIS RD/MILLERSVILLE RD	1.77	1 h 39 m	19	33,916
3	MD-3 N @ MD-424/DAVIDSONVILLE RD/CONWAY RD	2.18	1 h 18 m	12	35,510
4	WINDSOR MILL RD W @ GWYNNS FALLS PKWY	0.39	19 h 25 m	N/A	9,198
5	MD-25 N @ W 28TH ST	0.71	4 h 52 m	N/A	8,718
6	MD-3 S @ MD-175/ANNAPOLIS RD/MILLERSVILLE RD	0.56	2 h 59 m	12	29,938
7	MD-144 W @ ELLICOTT MILLS DR	0.51	8 h 35 m	29	9,738
8	MD-140 E @ SUDBROOK LN	0.57	6 h 28 m	40	15,266
9	MD-2 S @ COLLEGE PKY	3.07	44 m	7	30,093
10	MD-45 S @ MD-131/SEMINARY AVE	0.56	4 h 39 m	24	18,654

Top 10 Bottlenecks – Non Limited Access Roads – 4th Quarter 2021

Overview Map



Ranked Bottleneck Lists by Jurisdiction

Top 25 Bottlenecks in Local Jurisdictions- 4th Quarter 2021

Ranked by Base Impact - the aggregation of queue length over time for congestion at each location in mile minutes. It is then weighted by **Total Delay** – Raw speed drop weighted by VMT factor.

Anne Arundel County

Rank	Location
1	MD-295 S @ MD-198
2	I-97 S @ MD-178/EXIT 5
3	US-50 E @ WILLIAM PRESTON LANE BRG
4	MD-295 N @ CANINE RD
5	MD-295 N @ MD-175
6	MD-295 S @ CANINE RD
7	MD-2 N @ ROBINSON RD
8	MD-3 N @ MD-175/ANNAPOLIS RD/MILLERSVILLE RD
9	I-695 OL @ MD-295/WASH-BALT PKY/EXIT 7
10	MD-3 N @ MD-424/DAVIDSONVILLE RD/CONWAY RD
11	I-97 S @ US-50/US-301
12	MD-295 N @ MD-100
13	MD-3 S @ MD-175/ANNAPOLIS RD/MILLERSVILLE RD
14	MD-295 N @ PRINCE GEORGE'S/ARUNDEL CO LINE
15	MD-295 S @ MD-175
16	MD-295 N @ MD-198
17	MD-2 S @ COLLEGE PKY
18	MD-648 N @ MAGOTHY BRIDGE RD
19	I-695 CCW @ MD-170/CAMP MEADE RD/EXIT 6
20	MD-100 E @ MD-170/TELEGRAPH RD/EXIT 11
21	I-97 S @ MD-3/EXIT 7
22	US-50 E @ MD-648/BALTIMORE ANNAPOLIS BLVD
23	I-695 OL @ MD-295/BALT-WASH PKY/EXIT 7
24	MD-295 N @ I-195
25	MD-295 S @ MD-32

Baltimore City

Rank	Location
1	I-895 N @ HARBOR TUNNEL THWY (NORTH)
2	WINDSOR MILL RD W @ GWYNNS FALLS PKWY
3	MD-25 N @ W 28TH ST
4	I-83 S @ MD-25/FALLS RD/EXIT 8
5	I-95 S @ MD-295/BALT-WASH PKY/EXIT 52
6	MD-25 N @ W 29TH ST
7	I-895 S @ HARBOR TUNNEL THWY (SOUTH)
8	US-40 W @ MD-295/PACA ST
9	MD-25 S @ US-1/W NORTH AVE
10	S MARTIN L KING JR BLVD N @ BALTIMORE ST
11	MT ROYAL AVE W @ US-1/W NORTH AVE
12	MARTIN L KING JR BLVD S @ BALTIMORE ST
13	E LOMBARD ST W @ MD-2/LIGHT ST
14	I-95 N @ WASHINGTON BLVD/EXIT 51
15	I-83 N @ COLD SPRING LN/EXIT 9
16	I-95 N @ KEITH AVE/EXIT 56
17	HOWARD ST S @ W PRATT ST
18	FOREST PARK AVE N @ WINDSOR MILL RD
19	MD-25 N @ I-83/JONES FALLS EXPY
20	I-95 S @ I-95 (WEST)
21	HOWARD ST S @ W CHASE ST/N MLK JR BLVD
22	I-95 S @ FORT MCHENRY TUNNEL
23	MARTIN L KING JR BLVD N @ PARK AVE/W CHASE ST
24	I-895 N @ HARBOR TUNNEL THWY (SOUTH)
25	BOSTON ST W @ S CHESTER ST/FLEET ST

IL = Inner Loop

OL = Outer Loop

Top 25 Bottlenecks in Local Jurisdictions- 4th Quarter 2021

Ranked by Base Impact - the aggregation of queue length over time for congestion at each location in mile minutes. It is then weighted by **Total Delay** – Raw speed drop weighted by VMT factor.

Baltimore County

Rank	Location
1	I-695 OL @ MD-26/EXIT 18
2	I-695 OL @ I-70/EXIT 16
3	I-695 IL @ MD-372/WILKENS AVE/EXIT 12
4	I-695 OL @ US-40/EXIT 15
5	I-95 N @ MD-152/EXIT 74
6	I-695 IL @ MD-41/PERRING PKY/EXIT 30
7	I-695 IL @ MD-122/SECURITY BLVD/EXIT 17
8	I-695 OL @ MD-122/SECURITY BLVD/EXIT 17
9	I-695 IL @ I-83/MD-25/EXIT 23
10	I-695 OL @ MD-567/CROMWELL BR RD/EXIT 29
11	I-695 OL @ GREENSPRING AVE/EXIT 22
12	I-95 S @ MD-43/WHITE MARSH BLVD/EXIT 67
13	I-695 OL @ I-83/MD-25/EXIT 23
14	I-83 S @ I-695
15	I-695 IL @ PROVIDENCE RD/EXIT 28
16	I-695 IL @ MD-542/LOCK RAVEN BLVD/EXIT 29
17	I-695 OL @ PROVIDENCE RD/EXIT 28
18	I-695 IL @ MD-147/HARFORD RD/EXIT 31
19	I-70 E @ I-695/EXIT 91
20	I-695 IL @ MD-144/FREDERICK RD/EXIT 13
21	I-695 IL @ I-70/EXIT 16
22	I-695 OL @ MD-41/PERRING PKY/EXIT 30
23	I-695 IL @ US-1/EXIT 32
24	I-95 S @ I-695/EXIT 49
25	MD-140 E @ SUDBROOK LN

Carroll County

Rank	Location
1	MD-30 N @ MD-27/MANCHESTER RD
2	MD-30 S @ MD-27/MANCHESTER RD
3	MD-32 W @ MD-26/LIBERTY RD
4	MD-97 N @ MD-496/BACHMANS VALLEY RD
5	MD-140 W @ MD-194/YORK ST/FREDERICK ST
6	MD-27 N @ MD-30/MAIN ST
7	MD-482 W @ MD-27/MANCHESTER RD
8	MD-97 S @ MD-496/BACHMANS VALLEY RD
9	MD-140 W @ MD-91/GAMBER RD/EMORY RD
10	MD-97 N @ MAGNA WAY/AIRPORT DR
11	MD-91 N @ MD-140/BALTIMORE BLVD
12	MD-27 N @ MD-26/LIBERTY RD
13	MD-27 N @ MD-482/HAMPSTEAD MEXICO RD
14	MD-97 N @ MD-140/MD-97/BALTIMORE BLVD
15	MD-32 W @ MD-851/SPRINGFIELD AVE
16	MD-31 W @ MD-32/W MAIN ST
17	MD-27 S @ MD-30/MAIN ST
18	MD-26 E @ GEORGETOWN BLVD
19	MD-140 W @ ROYER RD/MEADOW BRANCH RD
20	MD-91 S @ MD-140/BALTIMORE BLVD
21	MD-140 E @ MD-27/MANCHESTER RD
22	MD-91 S @ MD-32/SYKESVILLE RD
23	MD-140 E @ MD-91/GAMBER RD/EMORY RD
24	MD-97 N @ MD-32/SYKESVILLE RD
25	MD-26 E @ WHITE ROCK RD

IL = Inner Loop

OL = Outer Loop

Top 25 Bottlenecks in Local Jurisdictions- 4th Quarter 2021

Ranked by Base Impact - the aggregation of queue length over time for congestion at each location in mile minutes. It is then weighted by **Total Delay** – Raw speed drop weighted by VMT factor.

Harford County

Rank	Location
1	I-95 S @ MD-24/EXIT 77
2	I-95 N @ MD-24/EXIT 77
3	I-95 S @ MD-543/EXIT 80
4	I-95 S @ MARYLAND HOUSE
5	MD-152 N @ OLD JOPPA RD
6	I-95 N @ MD-22/MD-132/EXIT 85
7	MD-543 S @ US-1/HICKORY BYP
8	US-1-BR S @ MD-24/VIETNAM VETS MEMORIAL HWY
9	MD-24 N @ I-95/JOHN F KENNEDY MEMORIAL HWY
10	I-95 N @ MD-155/EXIT 89
11	MD-24 N @ SINGER RD
12	I-95 N @ MILLARD E TYDINGS MEMORIAL BRG
13	I-95 S @ MD-152/EXIT 74
14	MD-152 N @ SINGER RD
15	MD-543 N @ US-1/HICKORY BYP
16	US-1-BR N @ MD-24/VIETNAM VETS MEMORIAL HWY
17	MD-24 N @ MD-23/EAST WEST HWY
18	US-1-BR N @ MD-924/MD-22/FULFORD AVE/MAIN ST
19	MD-24 N @ PLUMTREE RD
20	MD-22 W @ MD-136/PRIESTFORD RD/CALVARY RD
21	US-1 S @ MD-147/US-1-BR/BELAIR RD
22	US-1-BR N @ US-1/HICKORY BYP
23	MD-24 N @ US-1-BR/BALTIMORE PIKE/BEL AIR RD
24	MD-22 E @ MD-136/PRIESTFORD RD/CALVARY RD
25	MD-152 N @ OLD FALLSTON RD

Howard County

Rank	Location
1	I-95 N @ MD-100/EXIT 43
2	I-95 S @ MD-216/EXIT 35
3	I-95 S @ MD-175/EXIT 41
4	I-95 N @ MD-175/EXIT 41
5	I-95 N @ MD-32/EXIT 38
6	I-70 W @ US-29/EXIT 87
7	I-95 N @ I-895/EXIT 46
8	MD-100 W @ EXIT 7
9	I-95 S @ MD-32/EXIT 38
10	I-95 S @ MD-100/EXIT 43
11	MD-32 W @ I-95
12	MD-144 W @ ELLICOTT MILLS DR
13	MD-100 E @ EXIT 7
14	MD-32 E @ I-95
15	I-70 E @ US-29/EXIT 87
16	US-40 W @ ST JOHNS LN
17	US-29 N @ MD-32/EXIT 16
18	MD-144 E @ WESTCHESTER AVE
19	I-95 N @ MD-216/EXIT 35
20	US-29 N @ US-40
21	I-95 S @ I-895/EXIT 46
22	I-70 E @ MARRIOTTSVILLE RD/EXIT 83
23	MD-32 E @ TEN OAKS RD
24	I-70 E @ MD-32/EXIT 80
25	US-29 N @ MD-103

Top 25 Bottlenecks in Local Jurisdictions- 4th Quarter 2021

Ranked by Base Impact - the aggregation of queue length over time for congestion at each location in mile minutes. It is then weighted by **Total Delay** – Raw speed drop weighted by VMT factor.

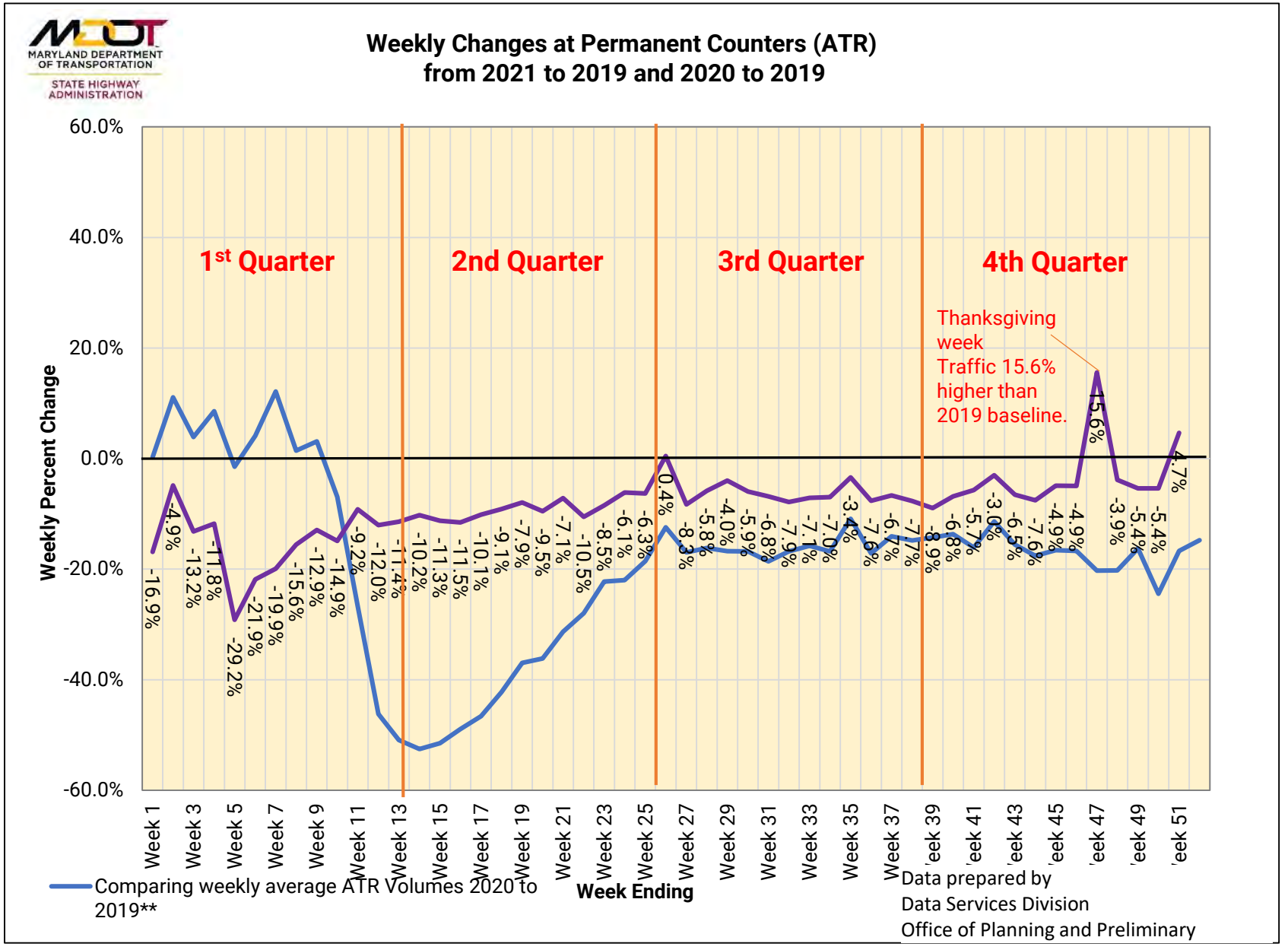
Queen Anne's County

Rank	Location
1	US-50 W @ BAY BRIDGE
2	US-50 E @ MD-8/EXIT 37
3	US-50 E @ BAY BRIDGE
4	US-50 W @ MD-213/CENTREVILLE RD
5	US-50 E @ MD-213/CENTREVILLE RD
6	MD-313 S @ MD-544/MCGINNES RD
7	US-50 W @ US-301/BLUE STAR MEML HWY
8	US-301 S @ US-50
9	US-50 E @ MD-18/MAIN ST/EXIT 43A
10	US-50 W @ MD-404/QUEEN ANNE HWY
11	US-50 E @ MD-456/DEL RHODES AVE
12	US-50 E @ MD-404/QUEEN ANNE HWY
13	US-50 W @ MD-8/EXIT 37
14	US-50 W @ MD-456/DEL RHODES AVE
15	US-50 W @ EVANS AVE/EXIT 44B
16	US-50 E @ US-301/BLUE STAR MEML HWY
17	US-50 W @ MD-18/MAIN ST/EXIT 38
18	US-50 W @ THOMPSON CREEK RD/DUKE ST
19	US-301 N @ MD-18/MAIN ST
20	US-50 E @ MD-18/MAIN ST/EXIT 42
21	MD-213 N @ MD-289/N CROSS ST/PHILOSOPHERS TER
22	US-50 E @ BEGIN FREEWAY
23	MD-300 E @ MD-213/CHURCH HILL RD
24	US-50 W @ MD-18/MAIN ST/EXIT 42
25	MD-404 W @ MD-309/STARR RD/MAIN ST

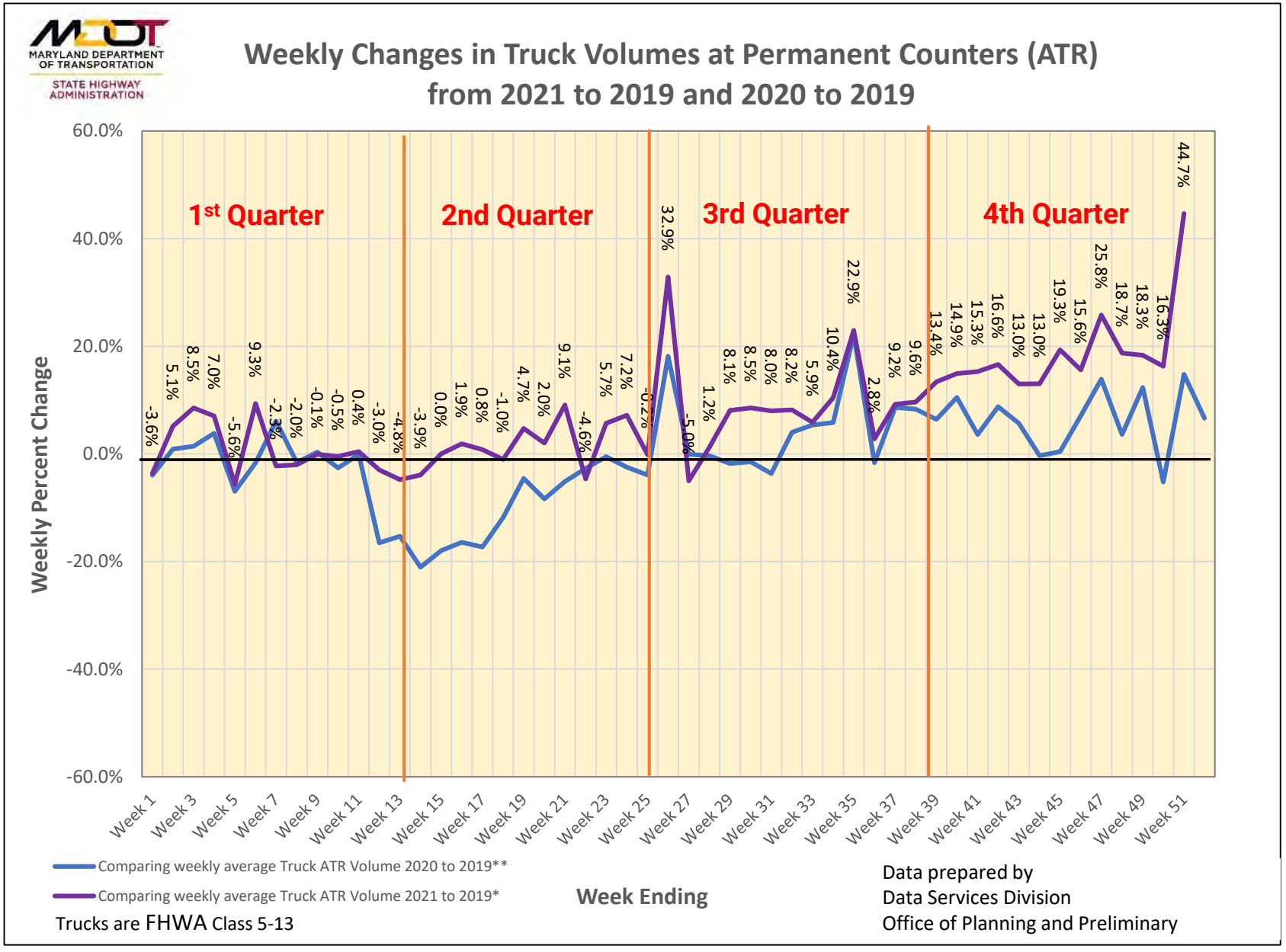
Traffic Volume Trend Graphs

From MDOT/SHA Automated Traffic Recorders (ATR's)

Traffic Volumes

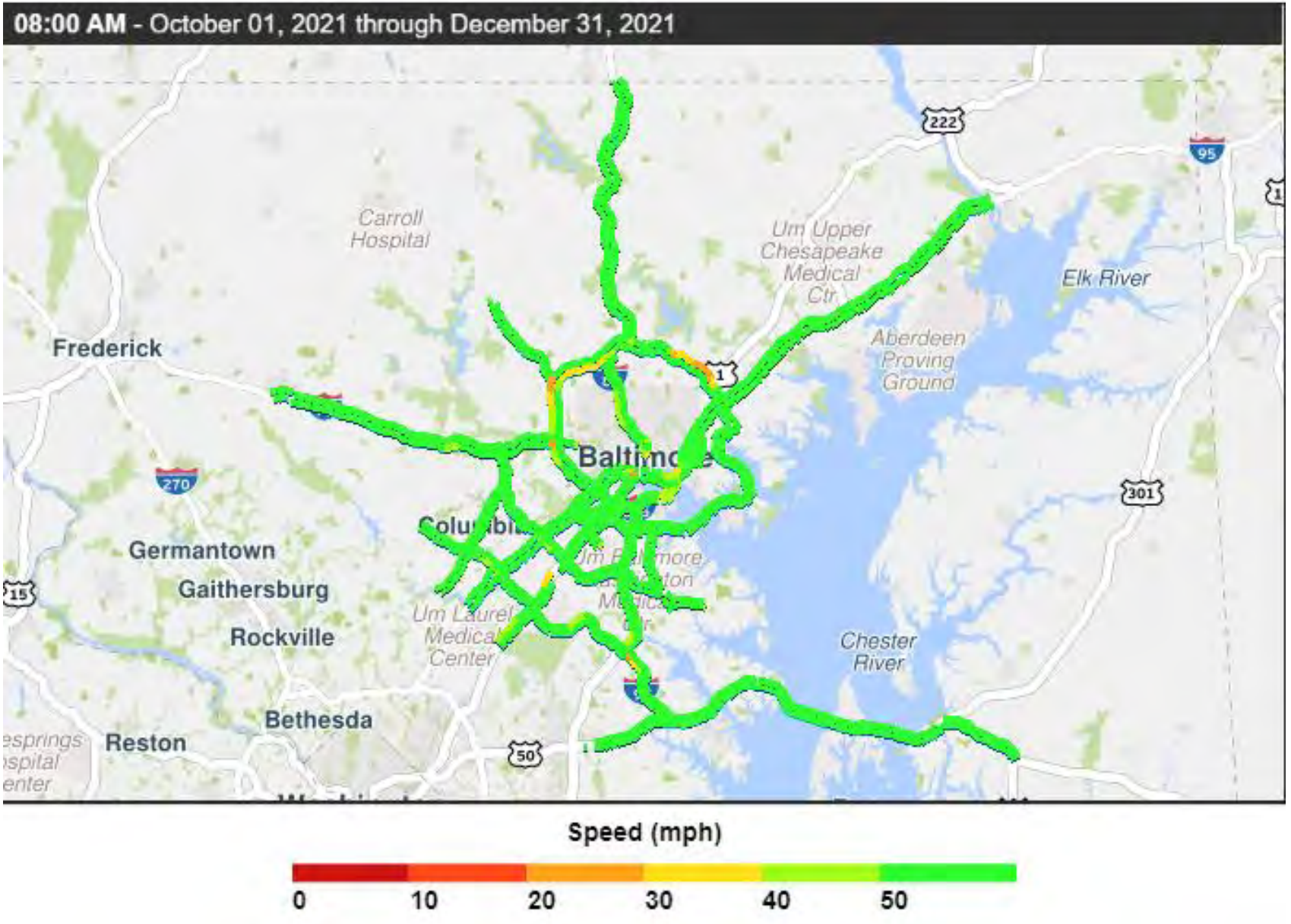


Truck Volumes

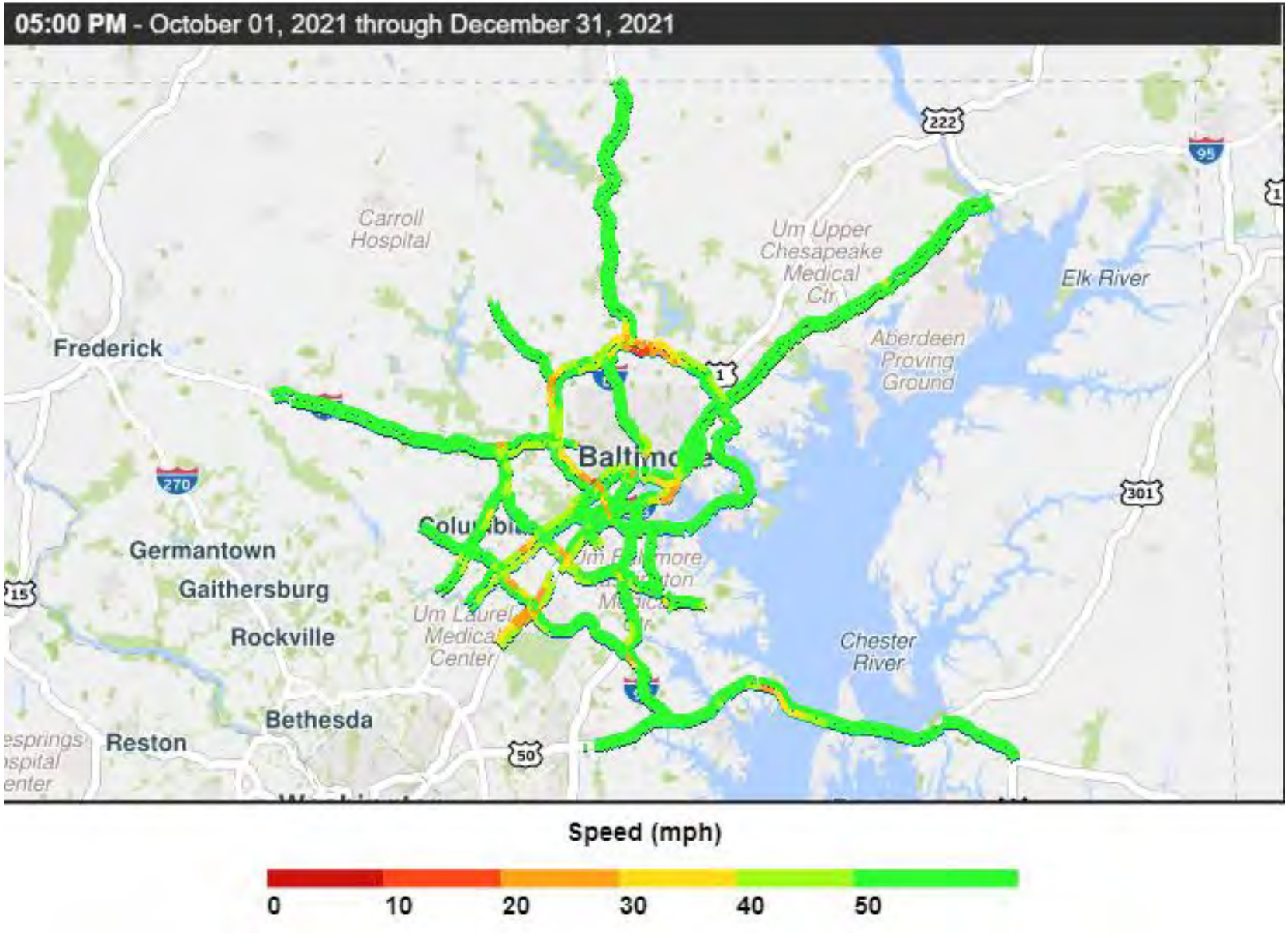


Regional Speed Maps

AM Peak Period Rush Hour: October 1st– December 31st



PM Peak Period Rush Hour: October 1st – December 31st



System Reliability Performance Measures

Percent of reliable person-miles traveled on the Interstate

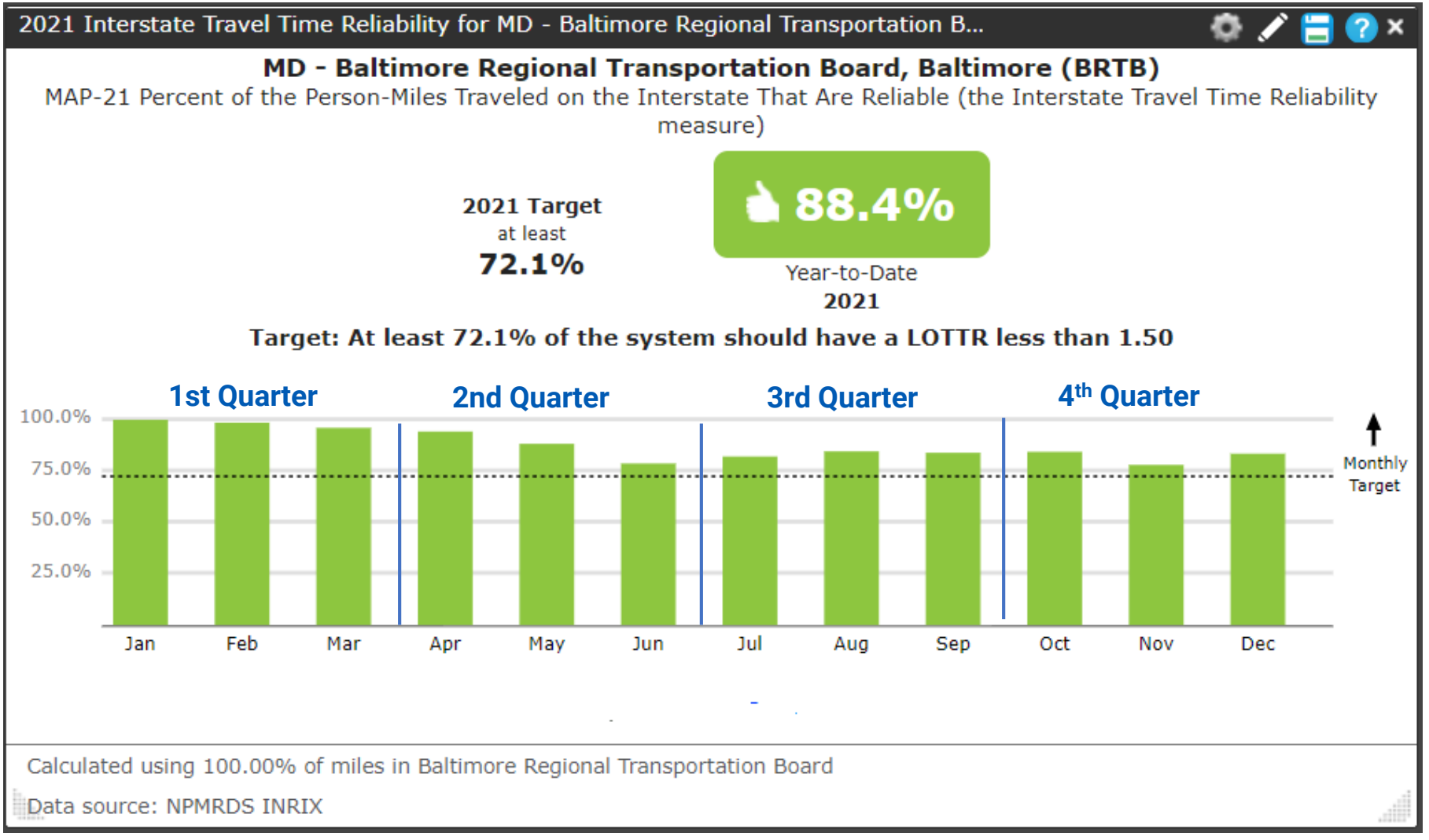
Percent of reliable person-miles traveled on the Non-Interstate NHS

Percentage of Interstate system mileage providing for reliable truck travel time (Truck Travel Time Reliability Index)

* Each state must establish statewide targets and report findings to the Federal Highway Administration. Metropolitan Planning Organizations must either support the established state targets or develop regional targets of their own.

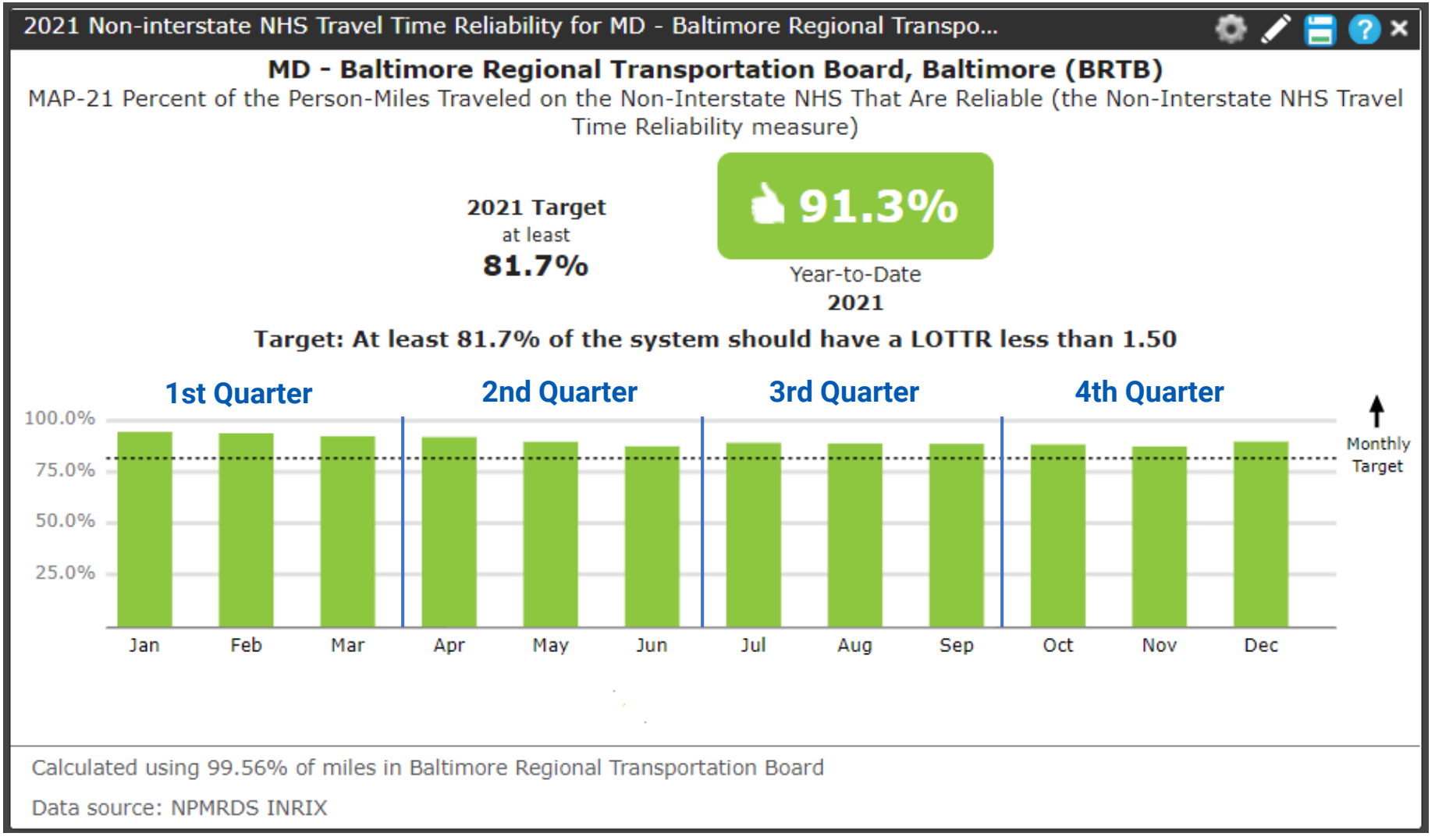
Level of Travel Time Reliability: Interstates

Travel time reliability is the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day.



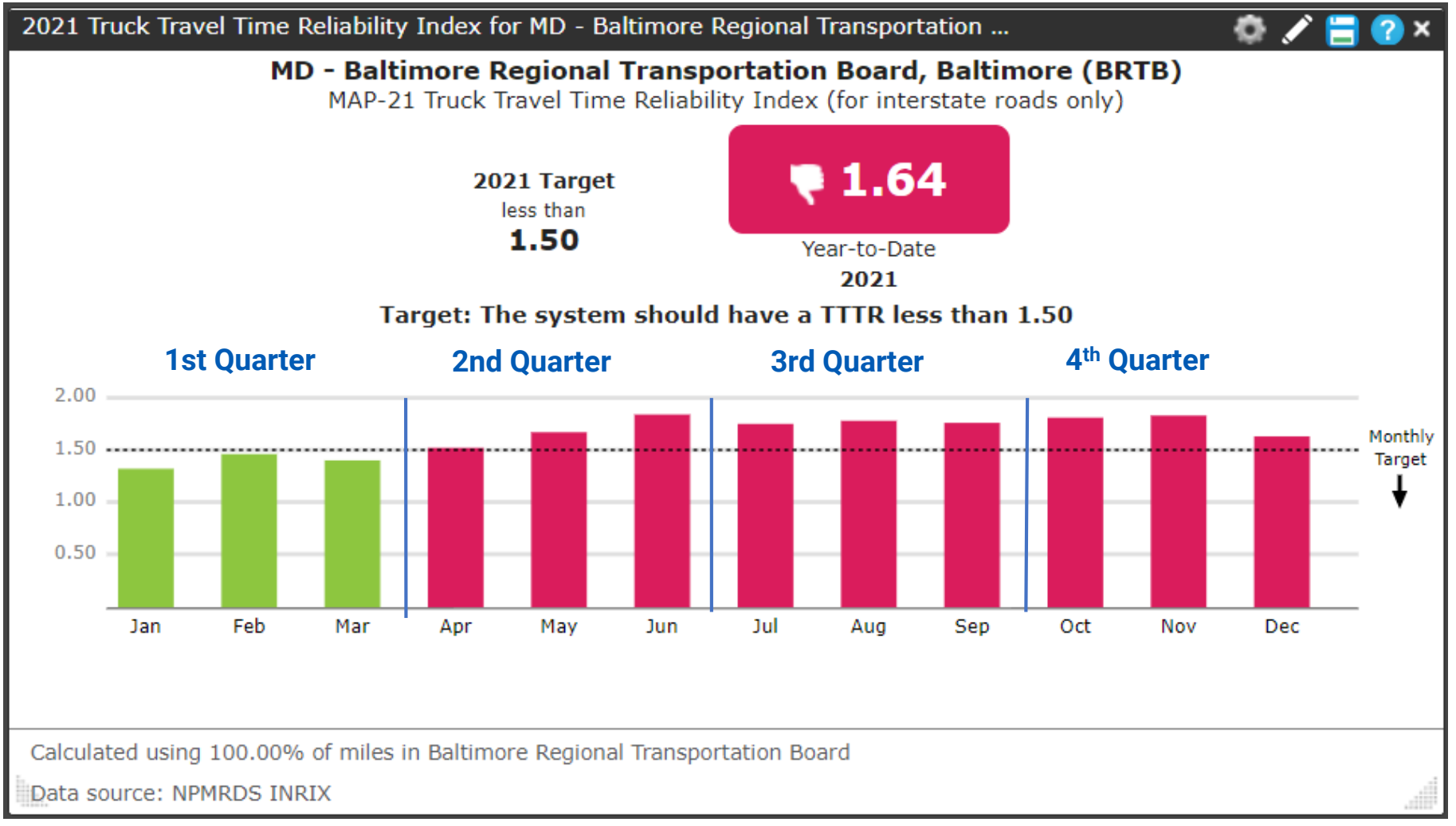
Level of Travel Time Reliability: non-Interstates

Travel time reliability is the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day.



Level of Truck Travel Time Reliability

Travel time reliability is the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day.



Ranked Bottleneck Monthly Comparison

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Location
		24	12	2	5	2	1	3	1	1	1	I-95 S @ MD-24/EXIT 77
		15	13		18	7	7	10	20	14	2	I-95 N @ MD-152/EXIT 74
3	3	1	2	1	2	3	5		2	5	3	MD-295 S @ MD-198
	6	4		4	3	4	8	5	10	3	4	I-95 N @ MD-100/EXIT 43
	5	8	6	8	9	9	12		8	12	5	I-695 IL @ MD-372/WILKENS AVE/EXIT 12
	25	14					10	14		2	6	I-695 OL @ I-83/MD-25/EXIT 23
2										8	7	I-695 IL @ MD-41/PERRING PKY/EXIT 30
				17	16	12	18	24	18	19	8	I-95 S @ MD-175/EXIT 41
					24	20	20	4	6	7	9	I-695 OL @ MD-26/EXIT 18
					8	10	11	11	5	15	10	I-95 S @ MD-216/EXIT 35
			20	22		22		16	17		11	I-695 OL @ MD-567/CROMWELL BR RD/EXIT 29
	20	12		20	15	6		13	12	4	12	I-695 OL @ US-40/EXIT 15
4		6	5	5	11	16	25	8	14	24	13	MD-295 N @ CANINE RD
11		9	24	10				6	9	23	14	I-695 OL @ MD-122/SECURITY BLVD/EXIT 17
		7	15	16	19	24	19	12	13	13	15	I-695 IL @ MD-122/SECURITY BLVD/EXIT 17
				14	17	13		2	3	9	16	I-695 OL @ I-70/EXIT 16
16		13	19	24		11	17			16	17	MD-295 N @ MD-175
					10		3	1	4		18	I-95 N @ MD-543/EXIT 80
			9	25			10	14	15	10	19	I-695 IL @ I-83/MD-25/EXIT 23
											20	I-695 IL @ US-1/EXIT 32
20					15						21	I-95 N @ MD-175/EXIT 41
								23			22	I-83 S @ I-695
					12						23	I-695 OL @ MD-41/PERRING PKY/EXIT 30
	1	3	8			19	14	19	19		24	I-695 IL @ PROVIDENCE RD/EXIT 28
	9		4								25	I-95 S @ MD-32/EXIT 38

Conclusions/Observations: The ranked bottlenecks are starting to resemble the baseline pre-pandemic rankings. Traffic volumes in 2021 were only an estimated 8% below pre-pandemic levels. In comparison in 2020 volumes were down almost 19% compared to the 2019 baseline levels.

Interstate and non Interstate travel time reliability are outperforming the set target levels, while Truck Travel Time reliability has been below target level performance since the 2nd Quarter of 2021.

I-95 S at MD-24 Exit 77 was the number #1 bottleneck location for all 3 months of the 4th Quarter primarily caused by multiple construction projects in that corridor along with extremely high traffic volumes.

Inner Loop (IL)
Outer Loop (OL)

Credits

THE EASTERN
TRANSPORTATION
COALITION

CATT
LABORATORY

MDOT
MARYLAND DEPARTMENT
OF TRANSPORTATION
STATE HIGHWAY
ADMINISTRATION

INRIX

BALTIMORE
METROPOLITAN
COUNCIL
1500 Whetstone Way, Suite 300
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BRTB
Baltimore Regional Transportation Board

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