Quarterly Congestion Analysis Report

Top 10 Bottlenecks in the Baltimore Region

1st Quarter 2023

BRTB Baltimore Regional Transportation Board

Report created May 2023

BALTIMORE METROPOLITAN COUNCIL

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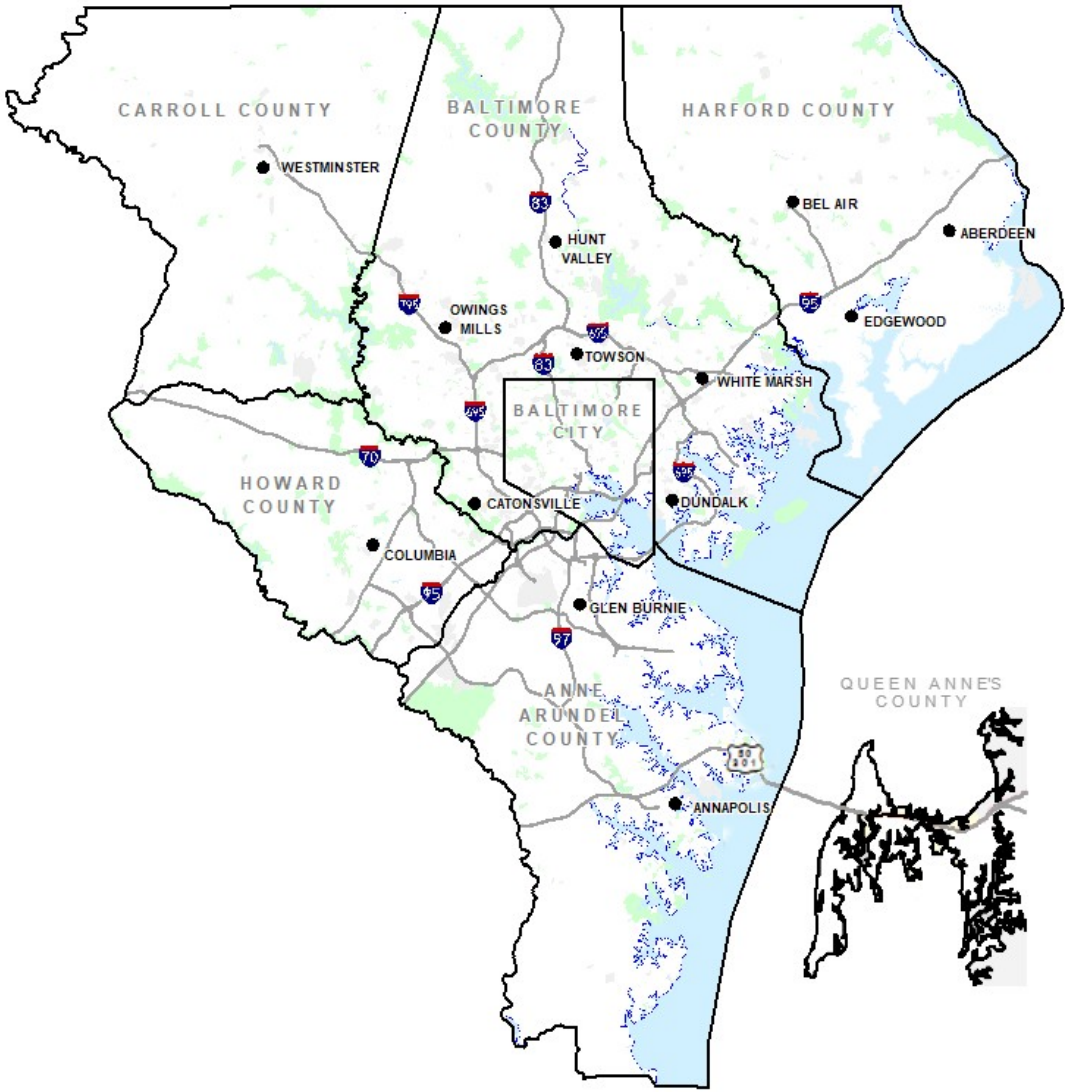
About the Region

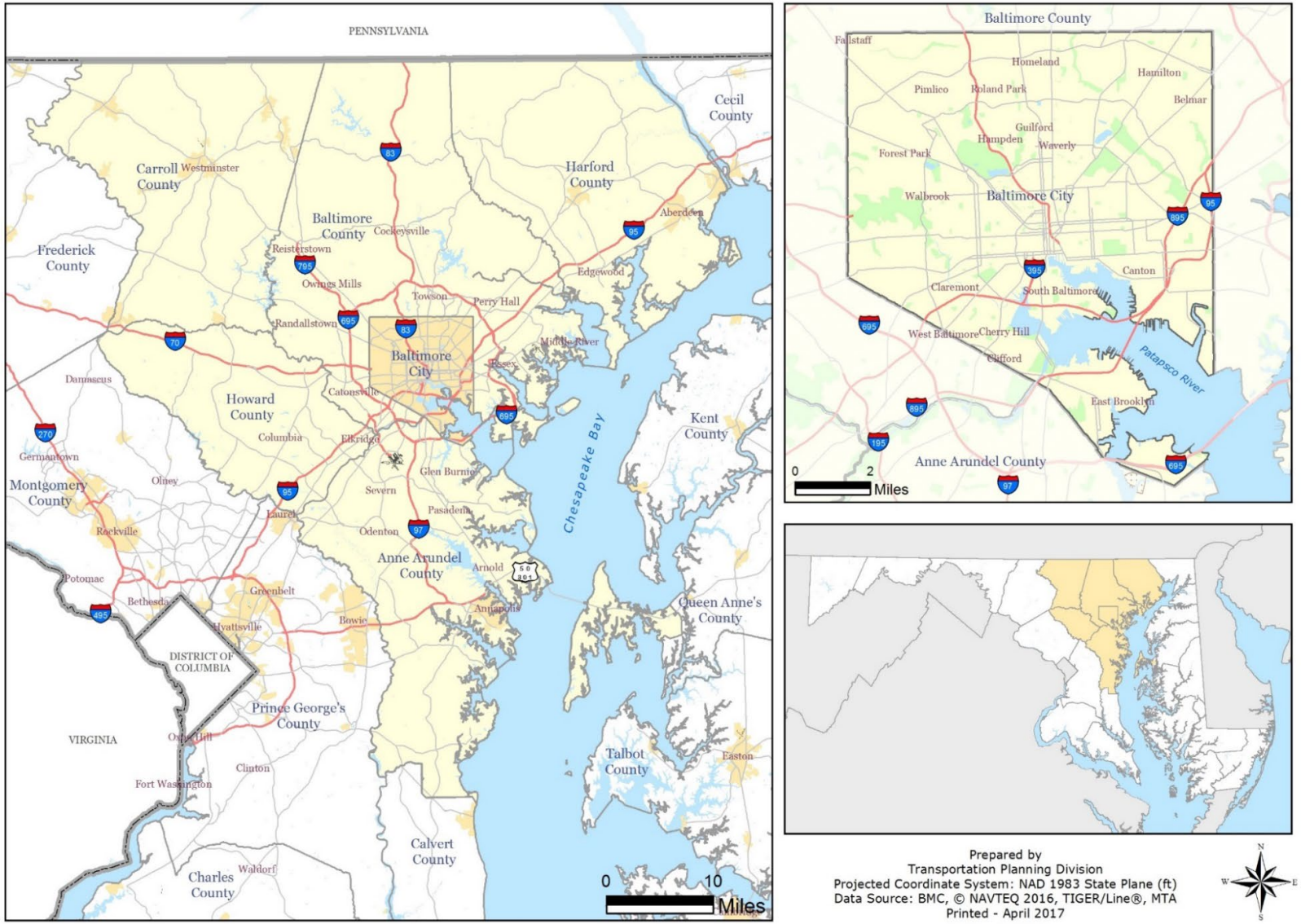
Baltimore Region



The Baltimore region is the nation's 19th largest market, with over 2.8 million people. The market also ranks among the top 20 in the number of households, total effective buying income and retail sales.

County	2020 Census	2010 Census	Change	Area
Anne Arundel	588,261	537,656	+9.41%	414.90 sq mi
Baltimore City	585,708	620,961	−5.68%	80.94 sq mi
Baltimore	854,535	805,029	+6.15%	598.30 sq mi
Carroll	172,891	167,134	+3.44%	447.59 sq mi
Harford	260,924	244,826	+6.58%	437.09 sq mi
Howard	332,317	287,085	+15.76%	250.74 sq mi
Queen Anne's	49,874	47,798	+4.34%	371.91 sq mi
Total	2,844,510	2,710,489	+4.94%	2,601.47 sq mi

Baltimore 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

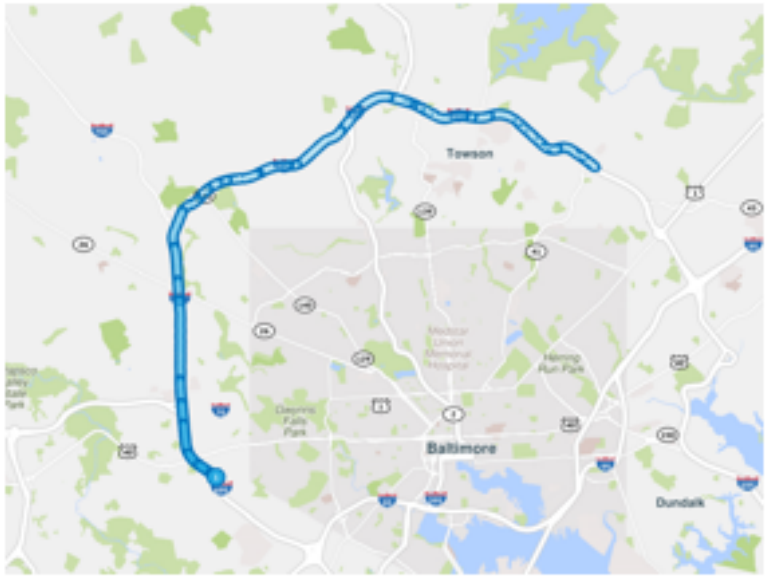
Bottleneck Analytics

How are bottleneck conditions tracked?

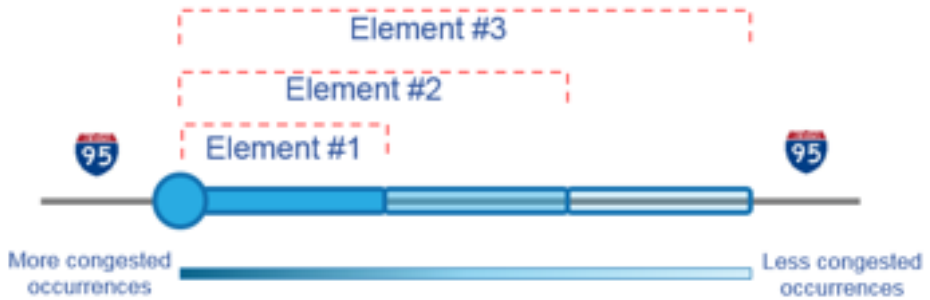
- **Rank** - The ranked position of the location according to the current table ordering by Base Impact – the aggregation of queue length over time for congestion at each location in mile minutes. It is then weighted by Total Delay – Raw speed drop weighted by VMT factor.
- **Previous Quarter Ranking** - Bottleneck ranking from the previous report if the bottleneck was in the Top 10.
- **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.
- **Volume Estimate** - AADT weighted by queue length.
- **Total Delay** - Raw Speed drop weighted by VMT Factor (in millions).

Rank	Location	Previous Quarter Ranking	Avg. Max. Length (mi)	Avg. Daily Duration	Volume Estimate (AADT)	Total Delay (Millions)
1	I-695 OL @MD-26/LIBERTY RD/EXIT 18	1	1.88	2 h 6 m	98,434	82.4
2	I-95 N @ MD-152/MOUNTAIN RD/EXIT 74	3	7.18	40 m	85,463	67.0
3	I-695 IL @ MD-372/WILKENS AVE/EXIT 12	5	2.00	1 h 45 m	98,964	63.7
4	I-95 N @ MD-100/EXIT 43				103,385	60.9
5	I-95 S @ MD-24/EXIT 77				58,863	43.9
6	I-695 OL @ PROVIDENCE RD/EXIT 28		3.72	38 m	78,288	37.1
7	I-97 S @ MD-178/EXIT 5		2.27	1 h 45 m	58,228	35.6
8	I-695 OL @ I-83/MD-25/EXIT 23		3.50	51 m	93,455	34.6
9	I-695 IL @ MD-22/SECURITY BLVD/EXIT 17		2.18	1 h 15 m	102,889	34.2
10	MD-295 N @ CANINE RD		2.48	1 h 18 m	49,927	31.4

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.

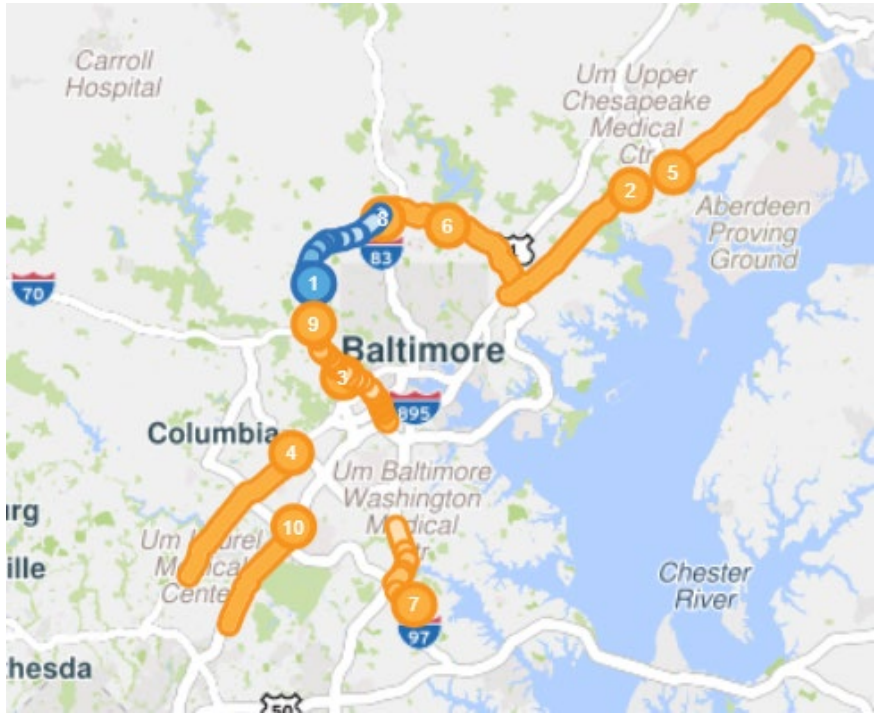


Top 10 Bottleneck Rankings in the Baltimore Region – 1st Quarter 2023

Top 10 Bottlenecks in the Region

Q1 2023

Rank	Location	Previous Quarter Ranking	Avg. Max. Length (mi)	Avg. Daily Duration	Volume Estimate (AADT)	Total Delay (Millions)
1	I-695 OL @MD-26/LIBERTY RD/EXIT 18	1	1.88	2 h 6 m	98,434	82.4
2	I-95 N @ MD-152/MOUNTAIN RD/EXIT 74	3	7.18	40 m	85,463	67.0
3	I-695 IL @ MD-372/WILKENS AVE/EXIT 12	5	2.00	1 h 45 m	98,964	63.7
4	I-95 N @ MD-100/EXIT 43		3.59	1 h 34 m	103,385	60.9
5	I-95 S @ MD-24/EXIT 77	2	4.28	1 h 10 m	58,863	43.9
6	I-695 OL @ PROVIDENCE RD/EXIT 28		3.72	38 m	78,288	37.1
7	I-97 S @ MD-178/EXIT 5		2.27	1 h 45 m	58,228	35.6
8	I-695 OL @ I-83/MD-25/EXIT 23		3.50	51 m	93,455	34.6
9	I-695 IL @ MD-22/SECURITY BLVD/EXIT 17		2.18	1 h 15 m	102,889	34.2
10	MD-295 N @ CANINE RD		2.48	1 h 18 m	49,927	31.4



*Bottlenecks are ranked by **Base Impact** – the sum of queue lengths over the duration of the bottleneck and weighted by speed differential, congestion and **total delay**.*

IL = Inner Loop OL = Outer Loop

Red #s = highest value for that metric

Total Delay = Raw Speed drop weighted by VMT Factor (in millions)

Top 10 Bottleneck Rankings in the Baltimore Region – 1st Quarter 2023 by Location

Includes:

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

1 I-695 OL @ MD-26/EXIT 18

Quarterly Bottleneck Evaluation Summary

Q1 2023

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 top side of the beltway.

A Transportation Systems Management and Operations (TSMO) project is being developed to reduce congestion and delay and increase reliability of travel within the project area from I-70 to MD 43.

PK. AVG. SPEED

AM Peak | 8:20AM
46.1 mph
(35% slower than free flow)

PM Peak | 5:30 PM
46.0 mph
(32% slower than free flow)

PK. TRAVEL TIME

AM Peak |8:20AM
9.4 min

PM Peak |5:30 PM
9.5 min

Q1 DELAY COST

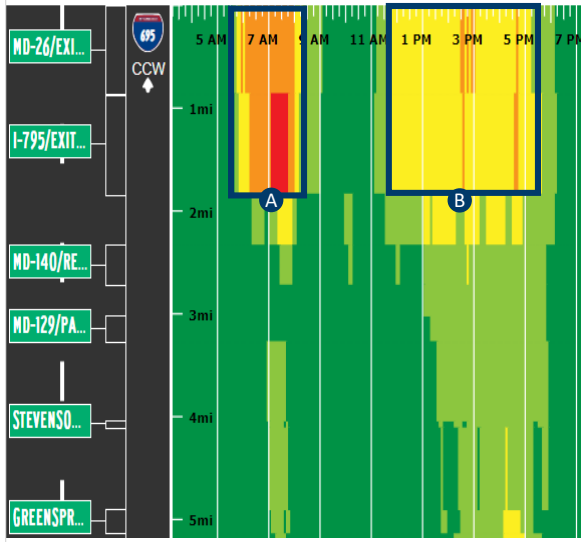
Delay Cost
$1.193 M

Veh-hrs. of Delay
39,513 h

Congested Locations

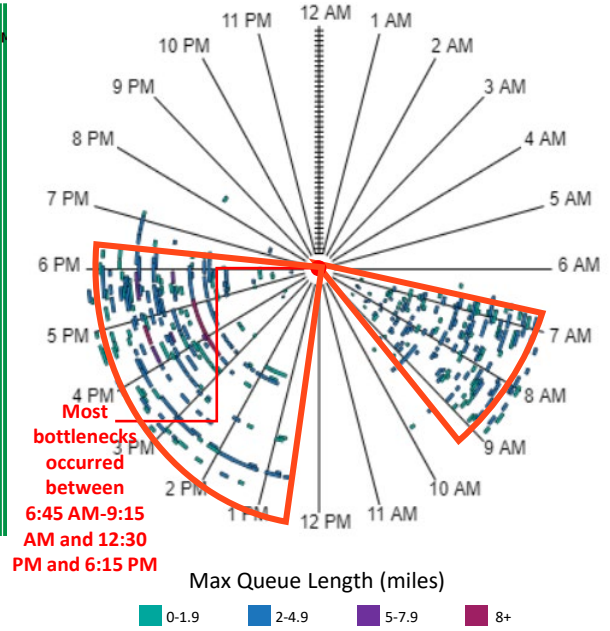
A **6:45AM – 9:15AM** I-795/Exit 19 to MD-26/Exit 18

B **12:30PM – 6:30PM** I-795/Exit 19 to MD-26/Exit 18



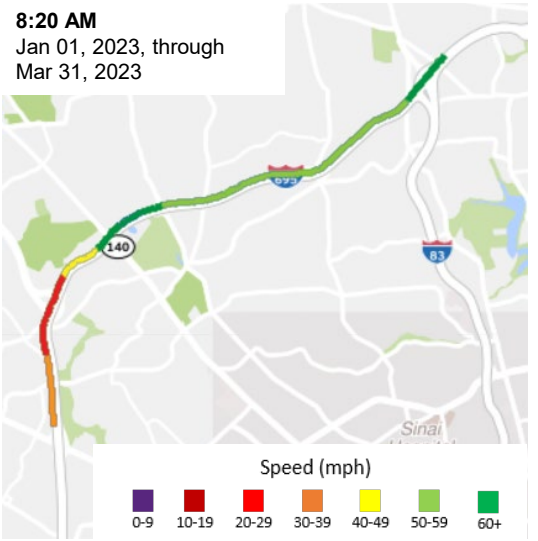
Bottleneck Occurrences

The center represents the beginning **of 01.01.23** and the outer edge the end of **03.31.23**



Corridor Speeds Over Time

For animated playback of corridor speeds over time, click anywhere on the map below



2 I-95 N @ MD-152/EXIT 74

Quarterly Bottleneck Evaluation Summary Q1 2023

I-95 Express Toll Lanes Northbound Extension From MD 43 to MD 152 is responsible for shoulder and lane closures primarily in the daylight hours.

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 and off peak shoulder and lane closures.

PK. AVG. SPEED

AM Peak | 7:05 AM
57.3 mph
(19% slower than free flow)

PM Peak | 4:25 PM
54.5 mph
(22% slower than free flow)

PK. TRAVEL TIME

AM Peak | 4:25 AM
11.2 min

PM Peak |1:10 PM
11.8 min

Q1 DELAY COST

Delay Cost
$1.036 M

Veh-hrs. of Delay
34,308 h

Congested Locations

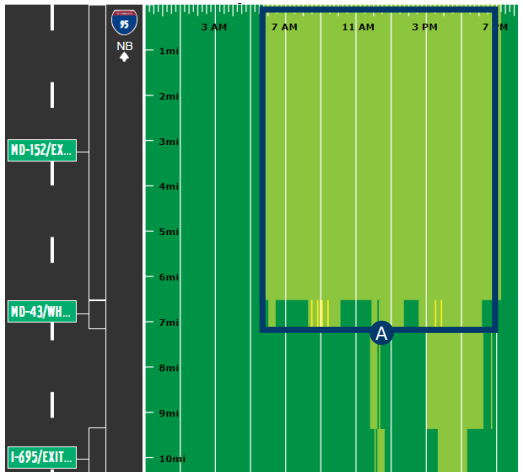
A **6:45AM – 8:00PM** MD-43/White Marsh Blvd/Exit 67 to MD-152/Mountain Rd/Exit 74

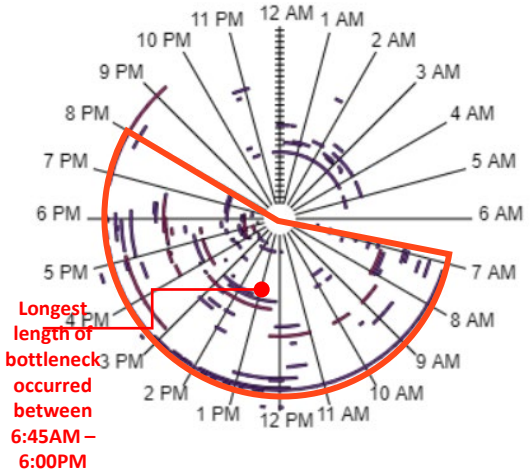
Bottleneck Occurrences

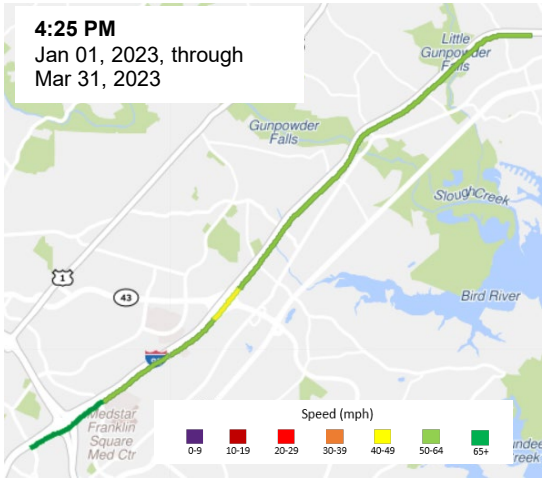
The center represents the beginning **of 01.01.23** and the outer edge the end of **03.31.23**

Corridor Speeds Over Time

For animated playback of corridor speeds over time, click anywhere on the map below







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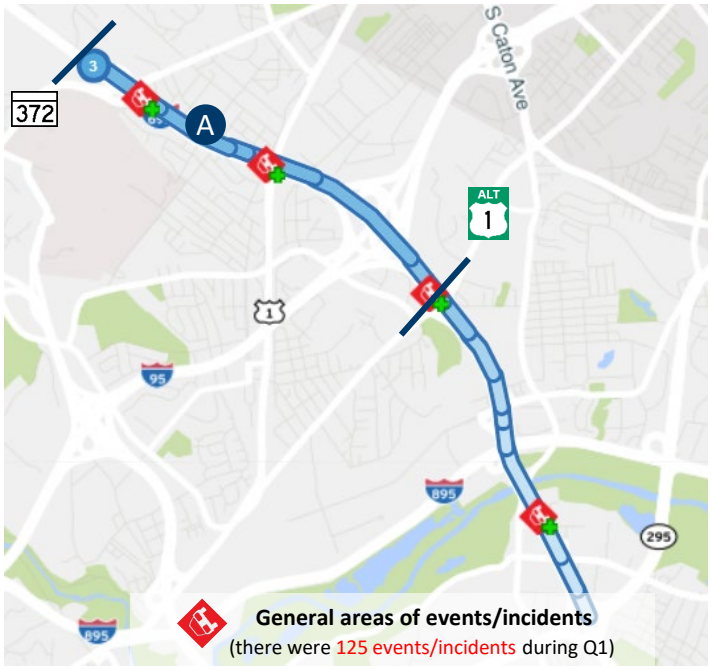
3 I-695 IL @ MD-372/WILKENS AVE/EXIT 12

Quarterly Bottleneck Evaluation Summary Q1 2023



A Locations of Congestion

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. Section "A" of the bottleneck also sometimes overlaps into the 2nd ranked bottleneck that begins at MD-122/Security Blvd.

PK. AVG. SPEED

AM Peak | 7:45 AM
50.6 mph
(26% slower than free flow)

PM Peak | 4:25 PM
28.8 mph
(57% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:45 AM
5.1 min

PM Peak |4:25 PM
9 min

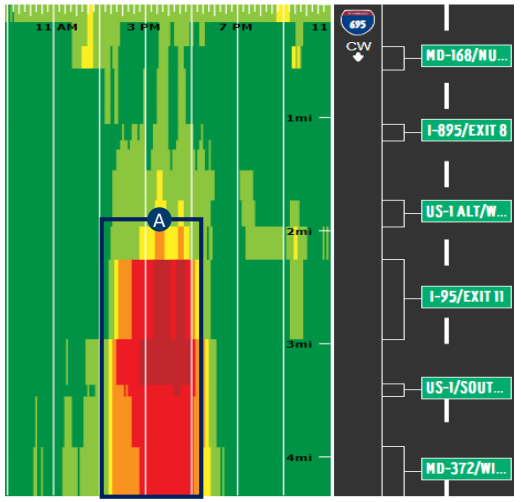
Q1 DELAY COST

Delay Cost
$0.874 M

Veh-hrs. of Delay
28,941 h

Congested Locations

A **2:15PM – 6:30PM** US-1 ALT/Washington Blvd/Exit 10 to MD-372/Wilkens Ave/Exit 12



Bottleneck Occurrences

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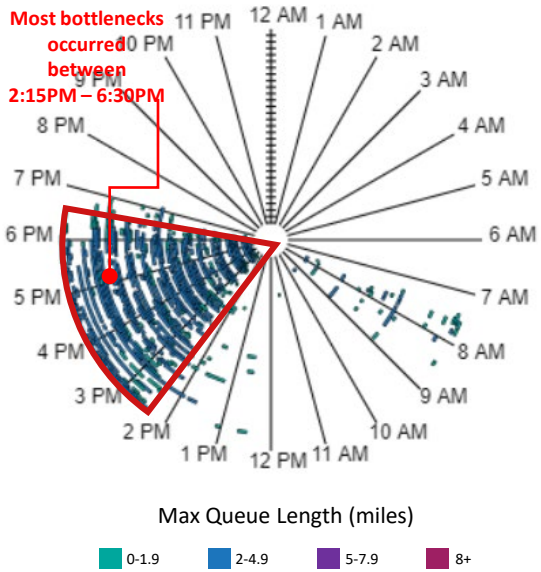

Corridor Speeds Over Time

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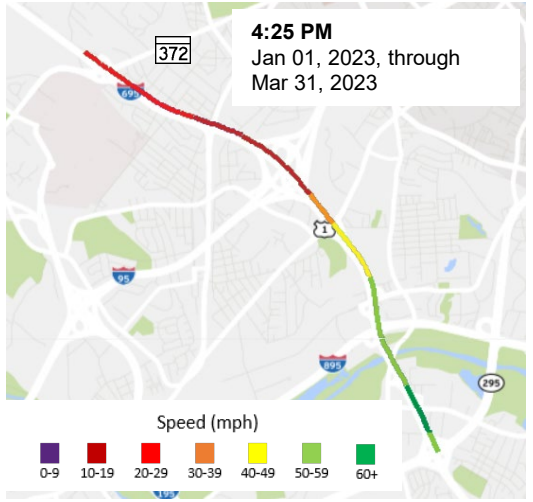
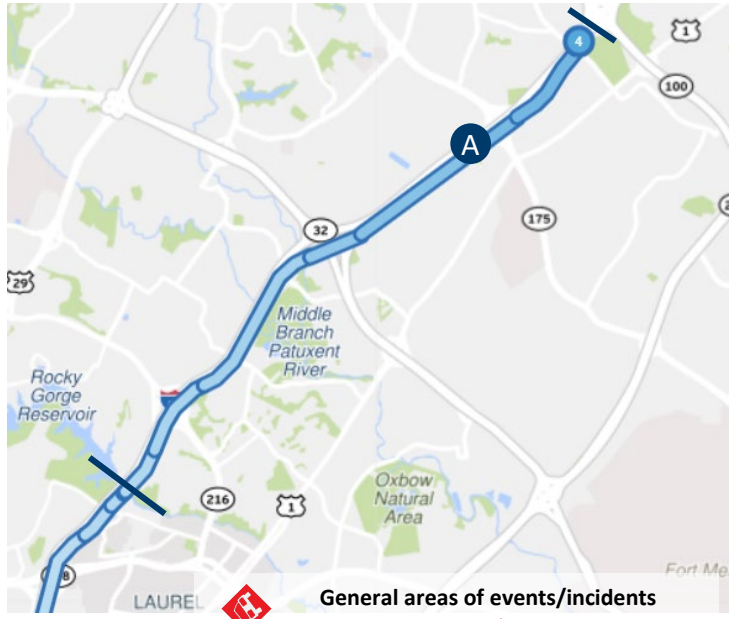


4 I-95 N @ MD-100/EXIT 43

Quarterly Bottleneck Evaluation Summary Q1 2023



General areas of events/incidents
(there were 255 events/incidents during Q1)

A **Locations of Congestion**

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.

PK. AVG. SPEED

AM Peak | 7:50 AM
60.1 mph
(16% slower than free flow)

PM Peak | 3:45 PM
41.9 mph
(41% slower than free flow)

PK. TRAVEL TIME

AM Peak |7:50 AM
10.9 min

PM Peak |3:45 PM
16.6 min

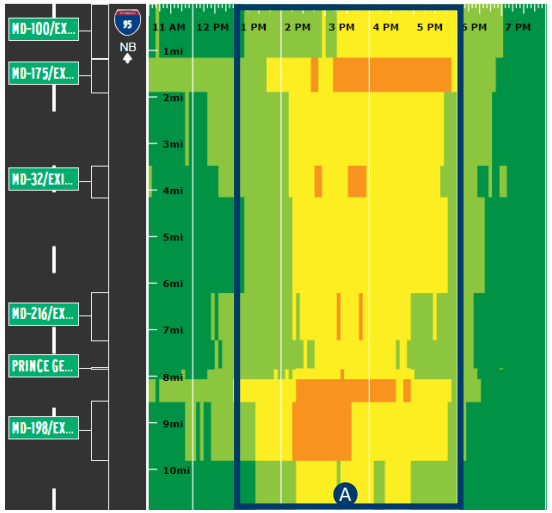
Q1 DELAY COST

Delay Cost
$1.460 M

Veh-hrs. of Delay
48,352 h

Congested Locations

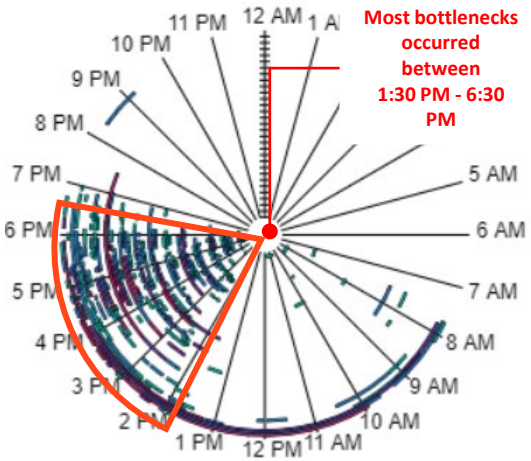
A **1:00PM – 6:00PM** Prince George's/Anne Arundel Line to MD-100/Exit 43



Speed (mph)
0-9 10-19 20-29 30-39 40-49 50-59 60+

Bottleneck Occurrences

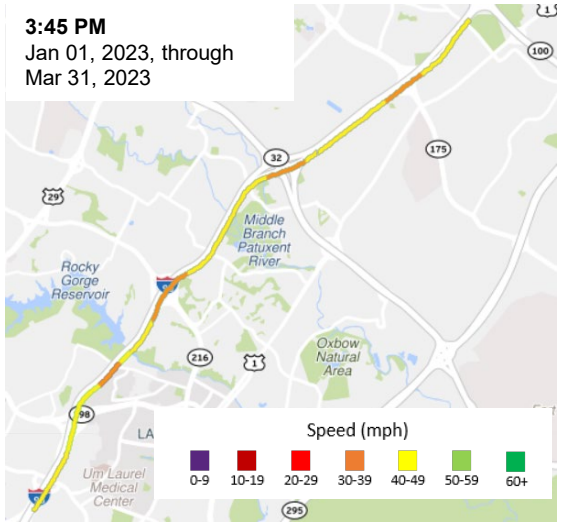
The center represents the beginning **of 01.01.23** and the outer edge the end of **03.31.23**



Max Queue Length (miles)
0-1.9 2-4.9 5-7.9 8+

Corridor Speeds Over Time

For animated playback of corridor speeds over time, click anywhere on the map below



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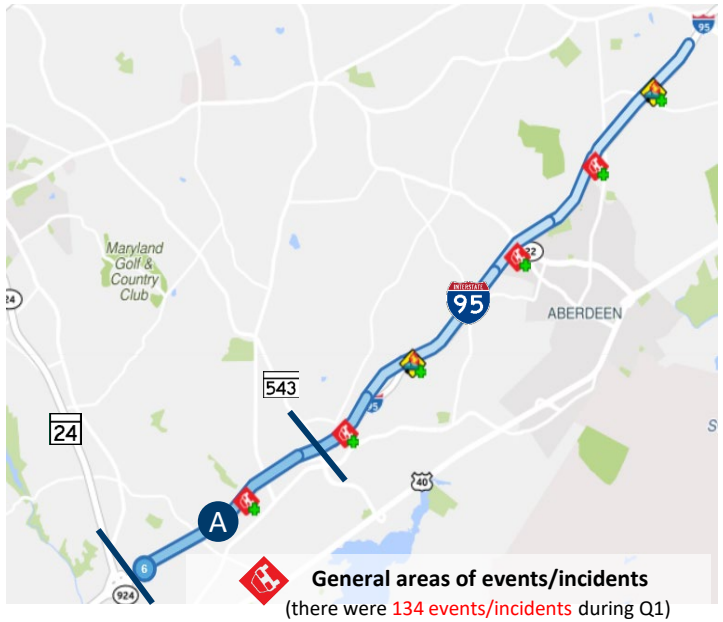
5 I-95 S @ MD-24/EXIT 77

Quarterly Bottleneck Evaluation Summary Q1 2023



General areas of events/incidents
(there were 134 events/incidents during Q1)

A **Locations of Congestion**

Construction of the Express Toll Lanes (ETL) in Harford County on I 95 along with high traffic volumes contribute to this delay.

Based on observations work appears to be occurring mid-days during the week between 10AM and 5PM.

PK. AVG. SPEED

AM Peak |11:40 AM
62.0 mph
(14% slower than free flow)

PM Peak | 2:45 PM
54.2 mph
(25% slower than free flow)

PK. TRAVEL TIME

AM Peak | 11:40 AM
11.2 min

PM Peak | 2:45 PM
12.8 min

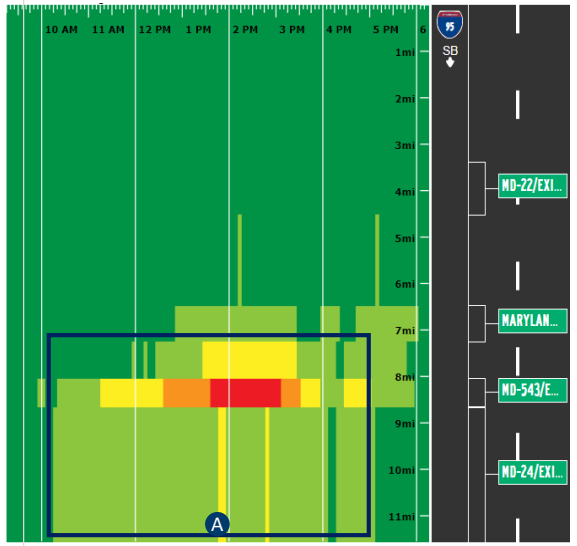
Q1 DELAY COST

Delay Cost
$0.839 M

Veh-hrs. of Delay
27,772 h

Congested Locations

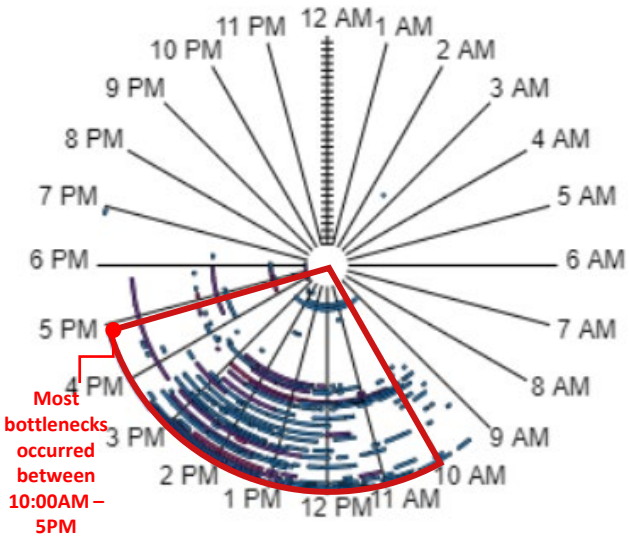
A **10:00AM – 5PM** Maryland House to MD-543/Exit 80 to MD-24/Exit 77



Speed (mph)
0-9 10-19 20-29 30-39 40-49 50-59 60+

Bottleneck Occurrences

The center represents the beginning **of 01.01.23** and the outer edge the end of **03.31.23.**

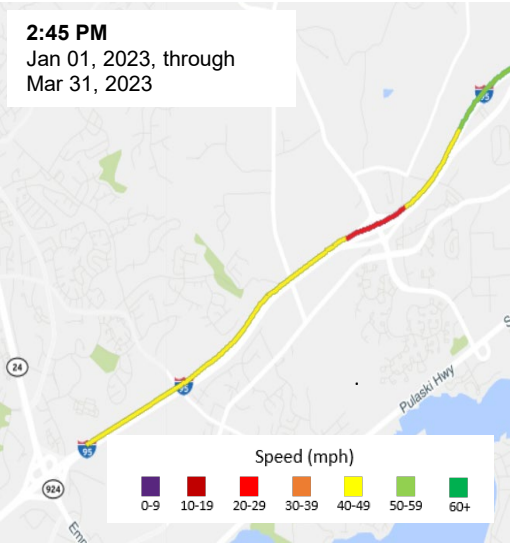


Most bottlenecks occurred between 10:00AM – 5PM

Max Queue Length (miles)
0-1.9 2-4.9 5-7.9 8+

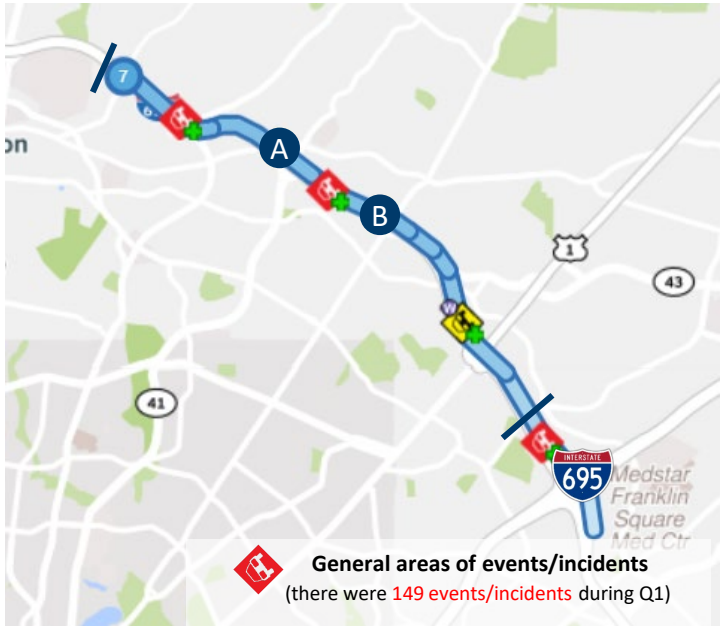
Corridor Speeds Over Time

For animated playback of corridor speeds over time, click anywhere on the map below



6 I-695 OL @ PROVIDENCE RD

Quarterly Bottleneck Evaluation Summary Q1 2023



General areas of events/incidents
(there were 149 events/incidents during Q1)

A **B** **Locations of Congestion**

Factors contributing to this long standing and extended congested zone are merging and weaving associated with traffic at each close interchange.

A Transportation Systems Management and Operations (TSMO) project is being developed to reduce congestion and delay and increase reliability of travel within the project area from I-70 to MD 43.

PK. AVG. SPEED

AM Peak | 7:50 AM
25.0 mph
(64% slower than free flow)

PM Peak | 4:30 PM
44.0 mph
(34% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:50 AM
16.4 min

PM Peak |4:30 PM
9.3 min

Q1 DELAY COST

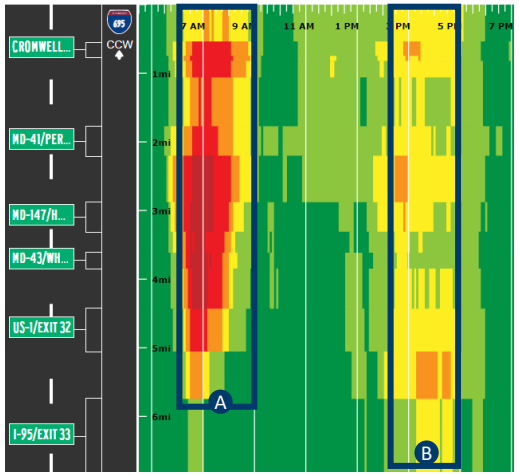
Delay Cost
$1.558 M

Veh-hrs. of Delay
51,595 h

Congested Locations

A **7:00AM – 9:30AM** I-95/Exit 33 to Providence Rd/Exit 28

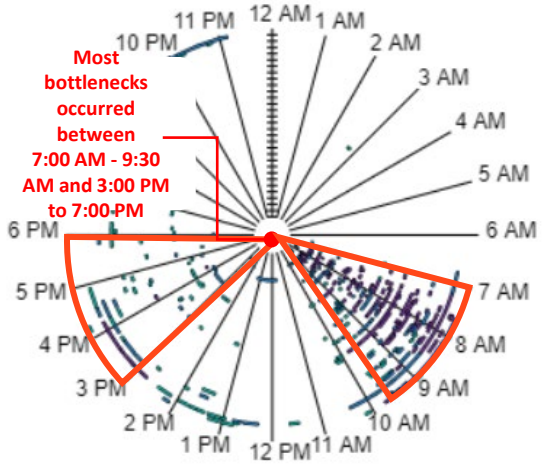
B **3:00PM – 6:00PM** I-95/Exit 33 to Providence Rd/Exit 28



Speed (mph)
0-9 10-19 20-29 30-39 40-49 50-59 60+

Bottleneck Occurrences

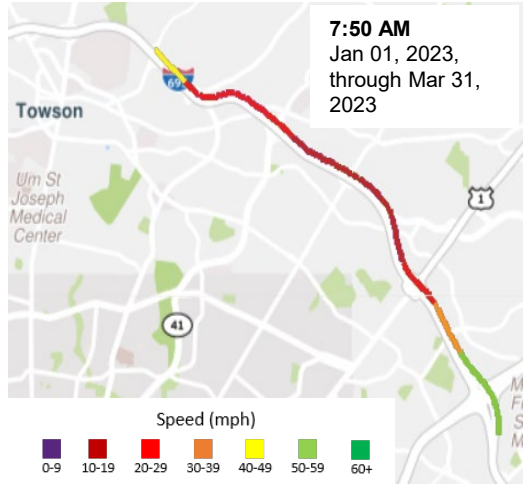
The center represents the beginning **of 01.01.23** and the outer edge the end of **03.31.23**



Max Queue Length (miles)
0-1.9 2-4.9 5-7.9 8+

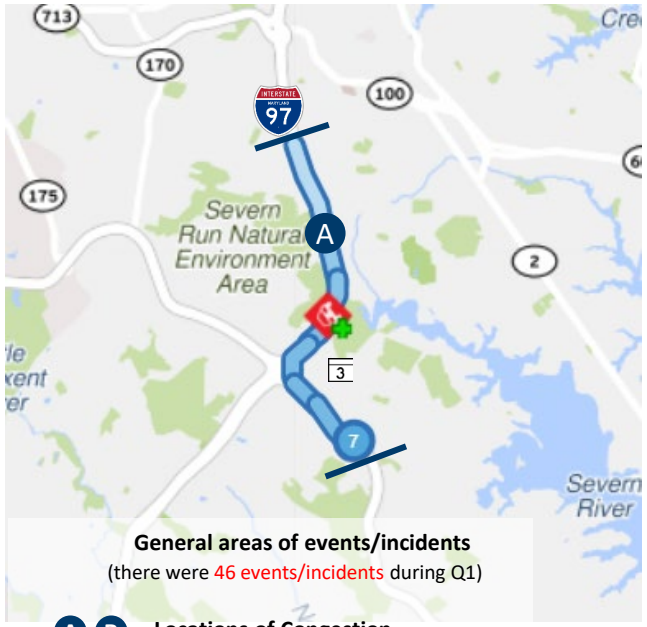
Corridor Speeds Over Time

For animated playback of corridor speeds over time, click anywhere on the map below



7 I-97 S @ MD-178/EXIT 5

Quarterly Bottleneck Evaluation Summary Q1 2023



General areas of events/incidents
(there were 46 events/incidents during Q1)

A B **Locations of Congestion**

High traffic volumes traveling from Baltimore to the Annapolis area. Road geometry has a hard curve on I-97 at MD-32.

PK. AVG. SPEED

AM Peak | 7:55 AM
35.9 mph
(50% slower than free flow)

PM Peak | 4:50 PM
44.5 mph
(37% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:55 AM
10.3 min

PM Peak |4:50 PM
8.3 min

Q1 DELAY COST

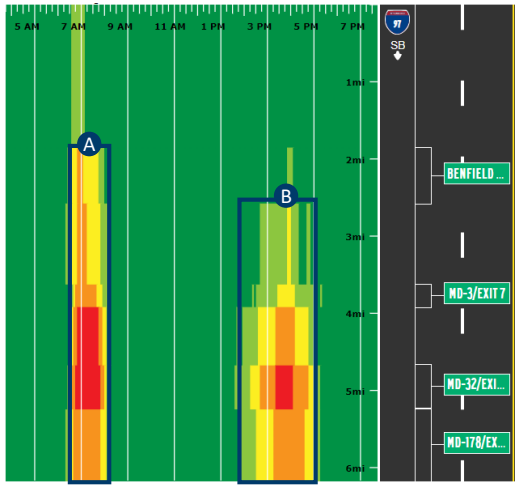
Delay Cost
$1.386 M

Veh-hrs. of Delay
45,902 h

Congested Locations

A **7:30AM – 9AM** Benfield Blvd/Exit 10 to MD-178/Exit 5

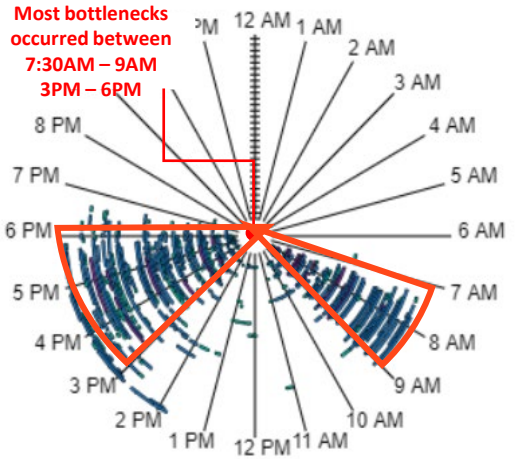
B **3PM – 6PM** Benfield Blvd/Exit 10 to MD-178/Exit 5



Speed (mph)
0-9 10-19 20-29 30-39 40-49 50-59 60+

Bottleneck Occurrences

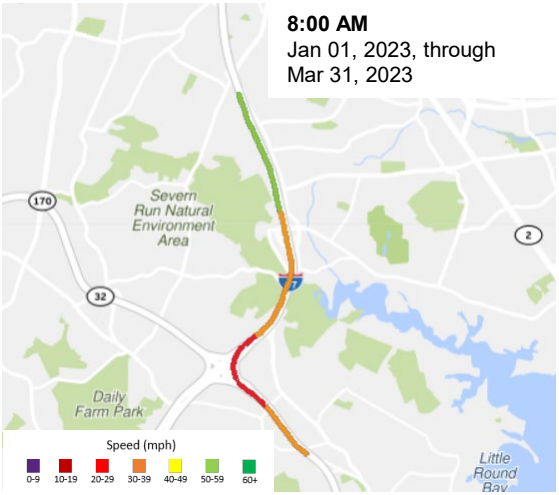
The center represents the beginning **of 01.01.23** and the outer edge the end of **03.31.23**



Max Queue Length (miles)
0-1.9 2-4.9 5-7.9 8+

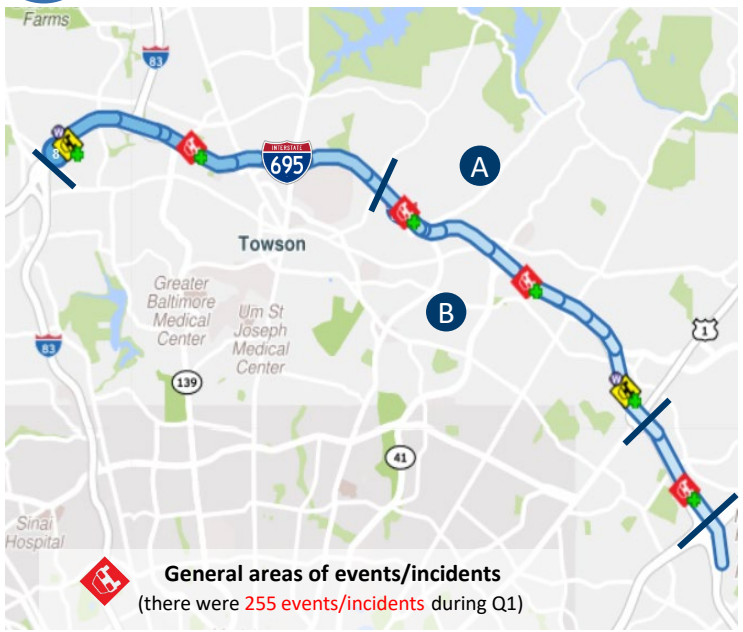
Corridor Speeds Over Time

For animated playback of corridor speeds over time, click anywhere on the map below



8 I-695 OL @ I-83/MD-25/EXIT 23

Quarterly Bottleneck Evaluation Summary Q1 2023



General areas of events/incidents
(there were 255 events/incidents during Q1)

A **B** **Locations of Congestion**

Historically long term rush hour delays more severe in the AM peak period. Road geometry, traffic volume and the amount of exits and merges close together contribute to delays. Overlapping bottleneck with the #7 ranked that originates further east at Providence Rd.

A Transportation Systems Management and Operations (TSMO) project is being developed to reduce congestion and delay and increase reliability of travel within the project area from I-70 to MD 43.

PK. AVG. SPEED

AM Peak | 7:50 AM
32.0 mph
(54% slower than free flow)

PM Peak | 5:25 PM
39.3 mph
(41% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:50 AM
21.5 min

PM Peak |5:25 PM
17.6 min

Q1 DELAY COST

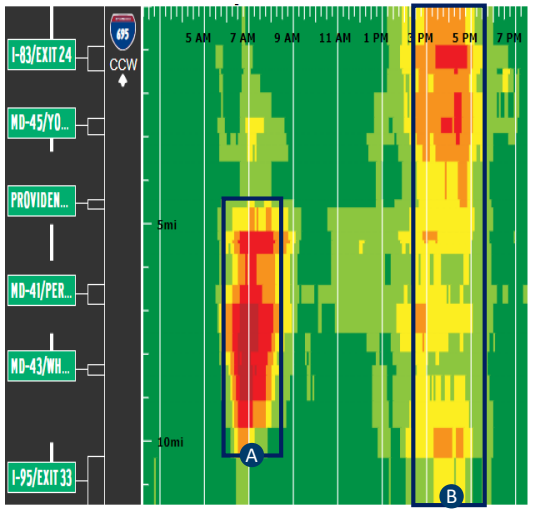
Delay Cost
$2.366 M

Veh-hrs. of Delay
78,366 h

Congested Locations

A **6:45AM – 9:45AM** US-1/Belair Rd/Exit 32 to Providence Rd/Exit 28

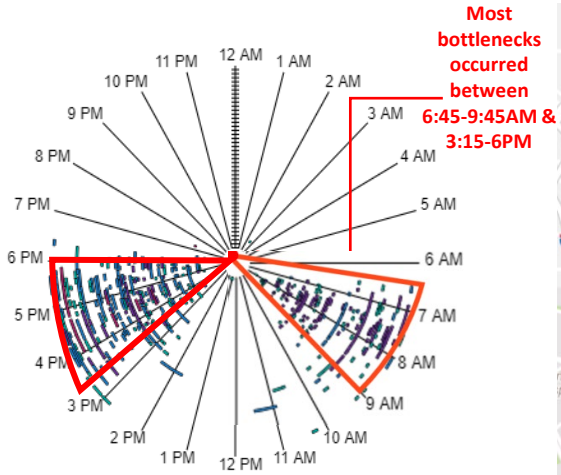
B **2:45PM – 6:30PM** I-95/Exit 33 to I-83/MD-25/Exit 23



Speed (mph)
0-9 10-19 20-29 30-39 40-49 50-59 60+

Bottleneck Occurrences

The center represents the beginning **of 01.01.23** and the outer edge the end of **03.31.23**

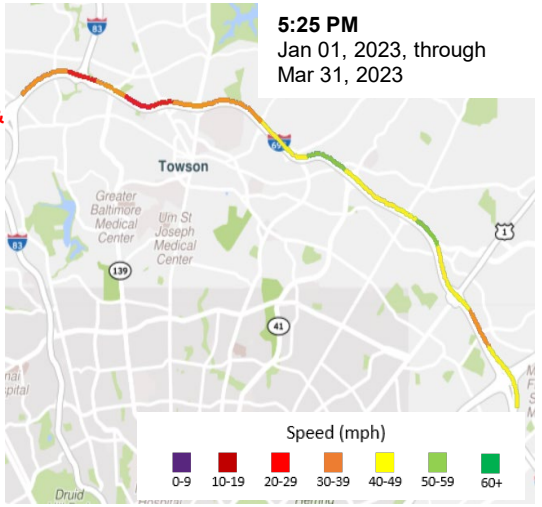


Most bottlenecks occurred between 6:45-9:45AM & 3:15-6PM

Max Queue Length (miles)
0-1.9 2-4.9 5-7.9 8+

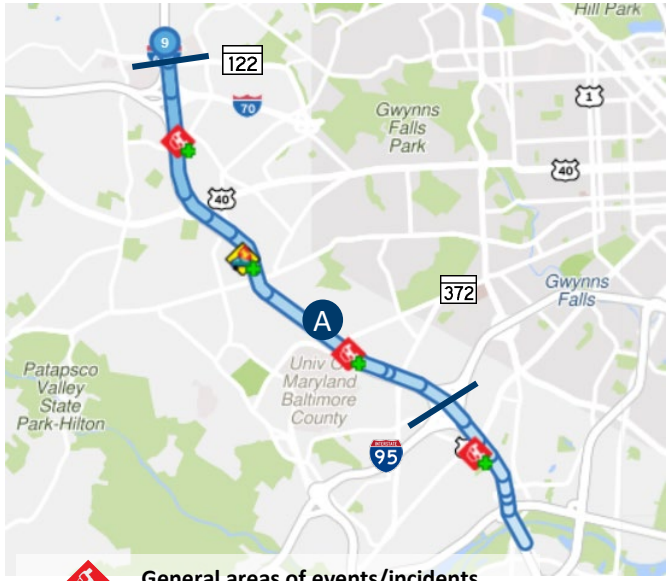
Corridor Speeds Over Time

For animated playback of corridor speeds over time, click anywhere on the map below



9 I-695 IL @ MD-122/SECURITY BLVD /EXIT 17

Quarterly Bottleneck Evaluation Summary Q1 2023



General areas of events/incidents
(there were 245 events/incidents during Q1)

A **Locations of Congestion**

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.

PK. AVG. SPEED

AM Peak | 7:55 AM
50.3 mph
(28% slower than free flow)

PM Peak | 5:25 PM
31.3 mph
(52% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:55 AM
9.7 min

PM Peak | 5:25PM
15.5 min

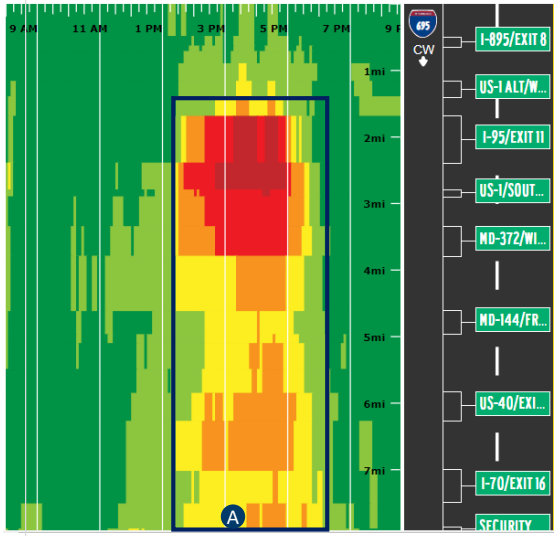
Q1 DELAY COST

Delay Cost
$1.544 M

Veh-hrs. of Delay
51,125 h

Congested Locations

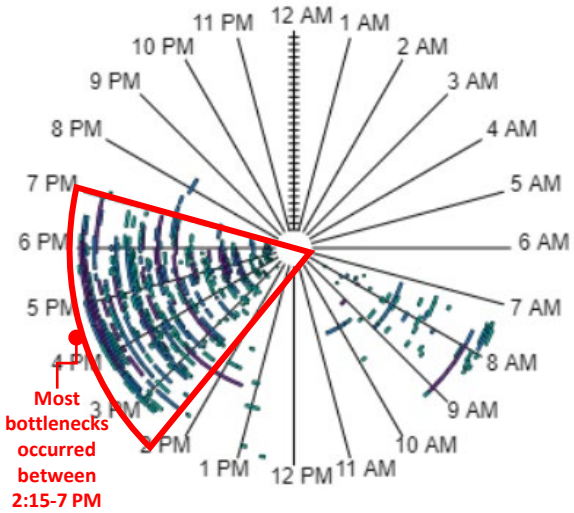
A **2:15PM – 7PM** I-95/Exit 11 to Security Blvd/Exit 17



Speed (mph)
0-9 10-19 20-29 30-39 40-49 50-59 60+

Bottleneck Occurrences

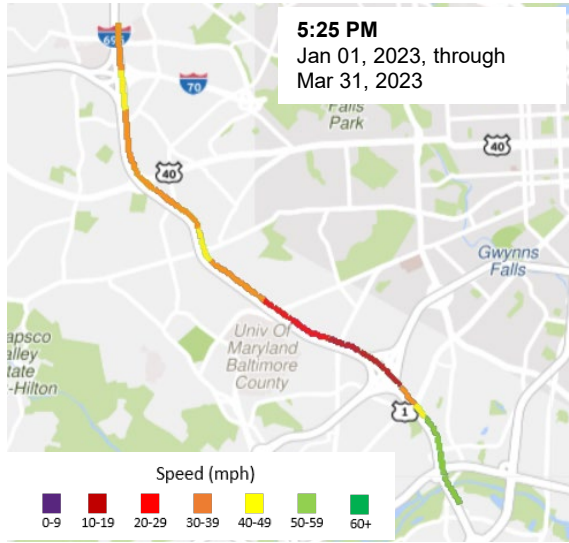
The center represents the beginning **of 01.01.23** and the outer edge the end of **03.31.23**



Max Queue Length (miles)
0-1.9 2-4.9 5-7.9 8+

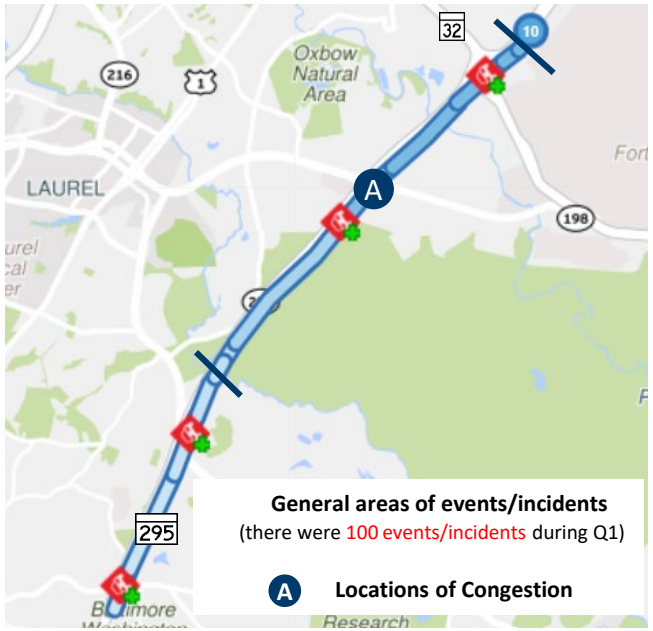
Corridor Speeds Over Time

For animated playback of corridor speeds over time, click anywhere on the map below



10 MD-295 N @ CANINE RD

Quarterly Bottleneck Evaluation Summary Q1 2023



PK. AVG. SPEED

AM Peak | 7:45 AM
48.0 mph
(32% slower than free flow)

PM Peak | 4:25 PM
30.7 mph
(53% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:45 AM
9.8 min

PM Peak |4:25 PM
15.3 min

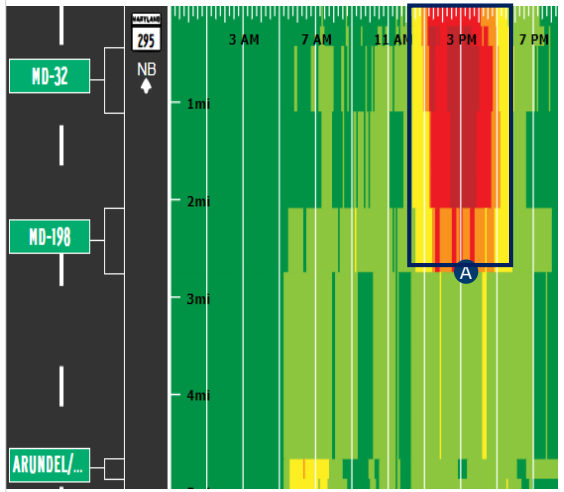
Q1 DELAY COST

Delay Cost
$1.467 M

Veh-hrs. of Delay
48,594 h

Congested Locations

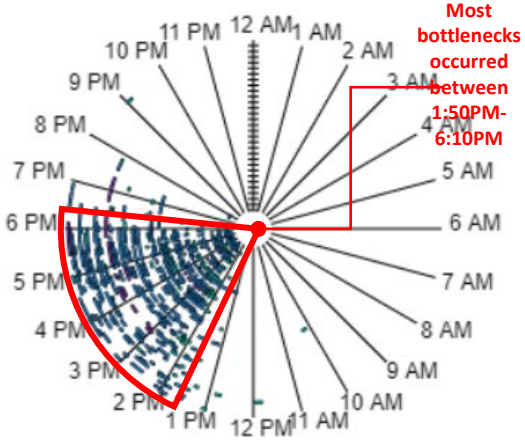
A **1:15PM – 7PM** MD-198 to Canine Rd



Speed (mph)
0-9 10-19 20-29 30-39 40-49 50-59 60+

Bottleneck Occurrences

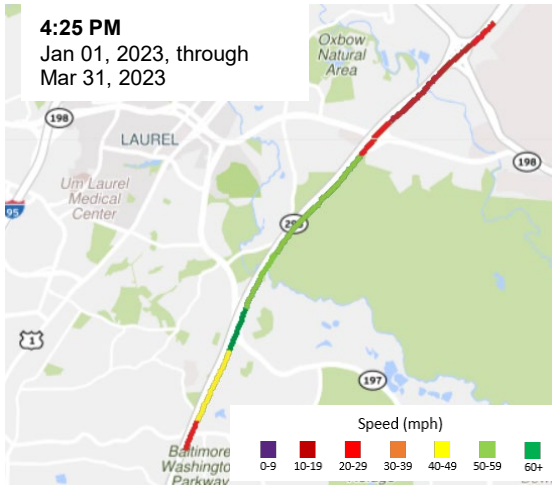
The center represents the beginning **of 01.01.23** and the outer edge the end of **03.31.23**



Max Queue Length (miles)
0-1.9 2-4.9 5-7.9 8+

Corridor Speeds Over Time

For animated playback of corridor speeds over time, click anywhere on the map below



Northbound PM congestion from Canine Rd near Fort Meade extending into the DC region occurring primarily during the afternoon peak period.

Volume related delays are most likely caused by factors such as commuters to and from Fort Meade.

**Speed, travel time and delay costs calculated only for the portion of the Bottleneck within the Baltimore region.*

Top 10 Bottlenecks on Non-Limited Access Roads

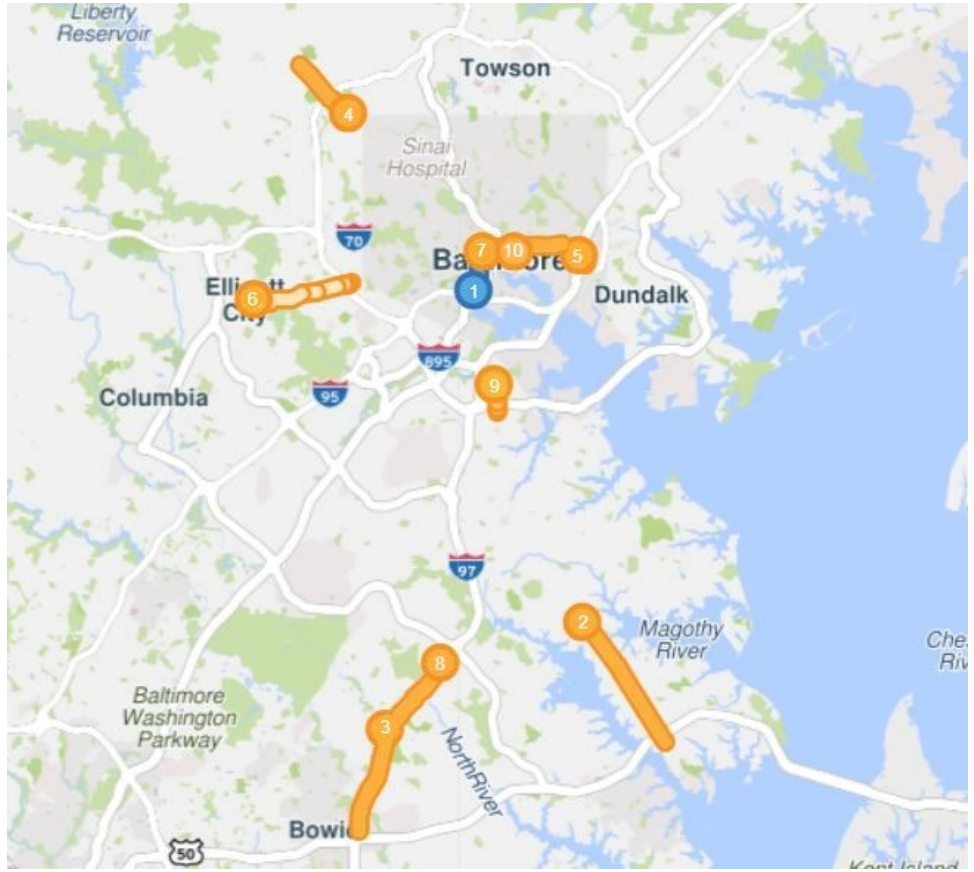
Top 10 Bottlenecks in the Region – Non Limited Access Roads

Q1 2023

Rank	Location	Avg. Max. Length (mi)	Avg. Daily Duration	Volume Estimate (AADT)	Total Delay (Millions)
1	MD-295 S @ BUSH ST	0.4	7h 30m	31,581	**10.0**
2	MD-2 N @ ROBINSON RD	**3.06**	59m	29,132	9.4
3	MD-3 N @ MD-424/CONWAY RD/DAVIDSONVILLE RD	2.05	58m	**34,884**	9.4
4	MD-140 E @ SUDBROOK LN	0.53	7h 27m	14,805	8.8
5	BAYVIEW BLVD N @ I-895/HARBOR TUNNEL TRWY/E LOMBARD ST	0.29	5h 50m	32,323	8.4
6	MD-144 W @ ELLICOTT MILLS DR	0.51	7h 55m	9,626	7.7
7	US-40 W @ MD-295/PACA ST	0.46	4h 45m	10,558	7.7
8	MD-3 N @ MD-175/MILLERSVILLE RD/ANNAPOLIS RD	1.60	1h 03m	33,801	7.5
9	MD-2 N @ MD-171/CHURCH ST	0.24	**8h 41m**	19,113	6.3
10	US-40 W @ CENTRAL AVE	0.45	2h 29m	14,309	5.8

Red #s = highest value for that metric

Total Delay = Raw Speed drop weighted by VMT Factor (in millions)



*Bottlenecks are ranked by **Base Impact** – the sum of queue lengths over the duration of the bottleneck and weighted by speed differential, congestion and **total delay**.*

Ranked Bottleneck Lists by Jurisdiction

Top 20 Bottlenecks in Local Jurisdictions- 1st Quarter 2023

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	I-97 S @ MD-3 BUS/NEW CUT RD/EXIT 12
2	MD-295 N @ CANINE RD
3	US-50 E @ MD-70/ROWE BLVD/EXIT 24
4	US-50 W @ BAY BRIDGE
5	MD-295 N @ MD-175
6	MD-295 S @ ARUNDEL--PRINCE GEORGE'S COUNTY BORDER
7	MD-295 S @ CANINE RD
8	MD-295 S @ MD-175
9	I-695 OL @ MD-295/BALTIMORE WASHINGTON PKWY/EXIT 7
10	US-50 E @ BAY DALE DR/FERGUSON RD/EXIT 28
11	MD-2 N @ ROBINSON RD
12	MD-3 N @ MD-424/CONWAY RD/DAVIDSONVILLE RD
13	MD-295 N @ PRINCE GEORGE'S/ARUNDEL CO LINE
14	MD-3 N @ MD-175/MILLERSVILLE RD/ANNAPOLIS RD
15	MD-295 N @ I-195
16	MD-295 N @ MD-198
17	MD-295 N @ MD-100
18	MD-32 E @ MD-198/FORT MEADE RD
19	MD-2 N @ MD-171/CHURCH ST
20	I-97 N @ MD-3 BUS/NEW CUT RD/EXIT 12

Baltimore City

Rank	Location
1	MD-295 N @ BAYARD ST
2	I-895 S @ HARBOR TUNNEL THWY (SOUTH) TOLL
3	I-95 S @ I-95 (SOUTH) (TOLL PLAZA)
4	I-95 N @ FORT MCHENRY TUNNEL (TOLL PLAZA)
5	I-95 S @ FORT MCHENRY TUNNEL (MCCOMAS ST)
6	MD-295 S @ BUSH ST
7	BAYVIEW BLVD N @ I-895/HARBOR TUNNEL TRWY
8	I-95 N @ I-95 (EAST) (TUNNEL ENTRANCE TO TOLL PLAZA)
9	US-40 W @ MD-295/PACA ST
10	I-95 S @ US-1 ALT/CATON AVE/EXIT 50
11	US-40 W @ CENTRAL AVE
12	E MONUMENT ST E @ N BROADWAY
13	I-895 N @ FRANKFURST AVE/SHELL RD/EXIT 8
14	I-83 N @ COLD SPRING LN/EXIT 9
15	I-83 S @ MD-25/FALLS RD/EXIT 8
16	MARTIN L KING JR BLVD N @ MULBERRY ST
17	PATAPSCO AVE E @ WASHINGTON BLVD
18	MT ROYAL AVE W @ US-1/W NORTH AVE
19	MD-2 N @ E PRATT ST
20	MD-25 N @ W 29TH ST

IL = Inner Loop

OL = Outer Loop

Top 20 Bottlenecks in Local Jurisdictions- 1st Quarter 2023

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-95 N @ MD-152/EXIT 74
3	I-695 IL @ MD-372/WILKENS AVE/EXIT 12
4	I-695 OL @ PROVIDENCE RD/EXIT 28
5	I-695 OL @ I-83/MD-25/EXIT 23
6	I-695 IL @ SECURITY BLVD/EXIT 17
7	I-695 OL @ I-70/EXIT 16
8	I-695 IL @ MD-41/PERRING PKWY/EXIT 30
9	I-695 IL @ MD-542/LOCH RAVEN BLVD/EXIT 29
10	I-695 IL @ I-83/MD-25/EXIT 23
11	I-83 S @ I-695
12	I-695 OL @ CROMWELL BRIDGE RD/EXIT 29
13	I-695 IL @ PROVIDENCE RD/EXIT 28
14	I-695 IL @ I-70/EXIT 16
15	I-695 OL @ MD-41/PERRING PKWY/EXIT 30
16	I-695 OL @ GREENSPRING AVE/EXIT 22
17	I-95 S @ MD-43/WHITEMARSH BLVD/EXIT 67
18	I-695 IL @ MD-144/FREDERICK RD/EXIT 13
19	MD-140 E @ SUDBROOK LN
20	I-695 OL @ I-83/EXIT 24

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 @ MAGNA WAY/AIRPORT DR
5	MD-140 W @ MD-194/YORK ST/FREDERICK ST
6	MD-482 W @ MD-27/MANCHESTER RD
7	MD-97 S @ MD-496/BACHMANS VALLEY RD
8	MD-32 W @ RAINCLIFFE RD/SANDOSKY RD
9	MD-97 N @ MD-496/BACHMANS VALLEY RD
10	MD-97 S @ MAGNA WAY/AIRPORT DR
11	MD-140 E @ GORES MILL RD
12	MD-91 N @ MD-140/BALTIMORE BLVD
13	MD-97 N @ MD-140/MD-97/BALTIMORE BLVD
14	MD-144 E @ MD-27/RIDGE RD
15	MD-140 W @ MD-91/EMORY RD/GAMBER RD
16	MD-140 E @ MD-91/EMORY RD/GAMBER RD
17	MD-27 N @ MD-26/LIBERTY RD
18	MD-27 N @ MD-482/HAMPSTEAD MEXICO RD
19	MD-91 S @ MD-32/SYKESVILLE RD
20	MD-144 E @ US-40 BALT NAT'L PIKE(MOUNT AIRY)

IL = Inner Loop

OL = Outer Loop

Top 20 Bottlenecks in Local Jurisdictions- 1st Quarter 2023

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 S @ MD-152/EXIT 74
3	I-95 N @ MD-543/EXIT 80
4	I-95 S @ MD-543/EXIT 80
5	I-95 N @ MD-24/EXIT 77
6	MD-152 N @ OLD JOPPA RD
7	US-40 W @ MD-22/ABERDEEN TRWY
8	I-95 S @ MARYLAND HOUSE
9	I-95 N @ MD-152/EXIT 74
10	US-1-BR S @ MD-24
11	MD-24 N @ MD-924/TOLLGATE RD/EMMORTON RD
12	MD-24 N @ EDGEWOOD RD
13	MD-24 N @ SINGER RD
14	I-95 S @ MD-22/EXIT 85
15	MD-152 N @ SINGER RD
16	MD-22 W @ MD-136/PRIESTFORD RD/CALVARY RD
17	US-1-BR N @ MD-24
18	MD-755 N @ US-40
19	US-1-BR N @ US-1/HICKORY BYP
20	MD-543 N @ MD-22/E CHURCHVILLE RD

Howard County

Rank	Location
1	I-95 N @ MD-100/EXIT 43
2	I-95 N @ MD-32/EXIT 38
3	I-95 S @ MD-216/EXIT 35
4	I-95 S @ MD-175/EXIT 41
5	I-95 N @ MD-175/EXIT 41
6	MD-32 W @ I-95
7	I-95 N @ PRINCE GEORGE'S/HOWARD CO LINE
8	MD-100 W @ COCA COLA DR/EXIT 8
9	MD-32 E @ I-95
10	I-95 S @ MD-32/EXIT 38
11	US-29 N @ MD-32/EXIT 16
12	MD-144 W @ ELLICOTT MILLS DR
13	I-95 N @ MD-216/EXIT 35
14	MD-100 W @ MARC DORSEY STATION ACCESS RD/EXIT 7
15	I-95 S @ MD-100/EXIT 43
16	US-29 N @ MD-175
17	MD-100 E @ MARC DORSEY STATION ACCESS RD/EXIT 7
18	US-40 W @ ST JOHNS LN
19	MD-144 E @ WESTCHESTER AVE
20	I-70 W @ US-29/EXIT 87

Top 20 Bottlenecks in Local Jurisdictions- 1st Quarter 2023

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 W @ MD-8/EXIT 37
3	US-50 E @ BAY BRIDGE
4	US-50 W @ MD-18/MAIN ST/EXIT 41
5	MD-313 S @ MD-544/MCGINNIS RD
6	US-50 E @ MD-8/EXIT 37
7	US-50 W @ US-301/BLUE STAR MEMORIAL HWY
8	US-50 W @ THOMPSON CREEK RD/DUKE ST
9	US-50 W @ MD-404/QUEEN ANNE HWY
10	US-50 W @ PINEY RD/S PINEY RD/EXIT 40A
11	MD-300 E @ MD-213/CHURCH HILL RD
12	US-50 E @ US-50/US-301/OCEAN GATEWAY SPLIT
13	MD-313 N @ MD-544/MCGINNIS RD
14	US-50 E @ PINEY RD/S PINEY RD/EXIT 40A
15	US-50 W @ MD-456/DEL RHODES AVE
16	US-50 E @ MD-18/MAIN ST/EXIT 43A
17	US-50 E @ MD-213/CENTREVILLE RD
18	US-301 S @ US-50
19	US-50 E @ MD-404/QUEEN ANNE HWY
20	US-50 E @ THOMPSON CREEK RD/DUKE ST

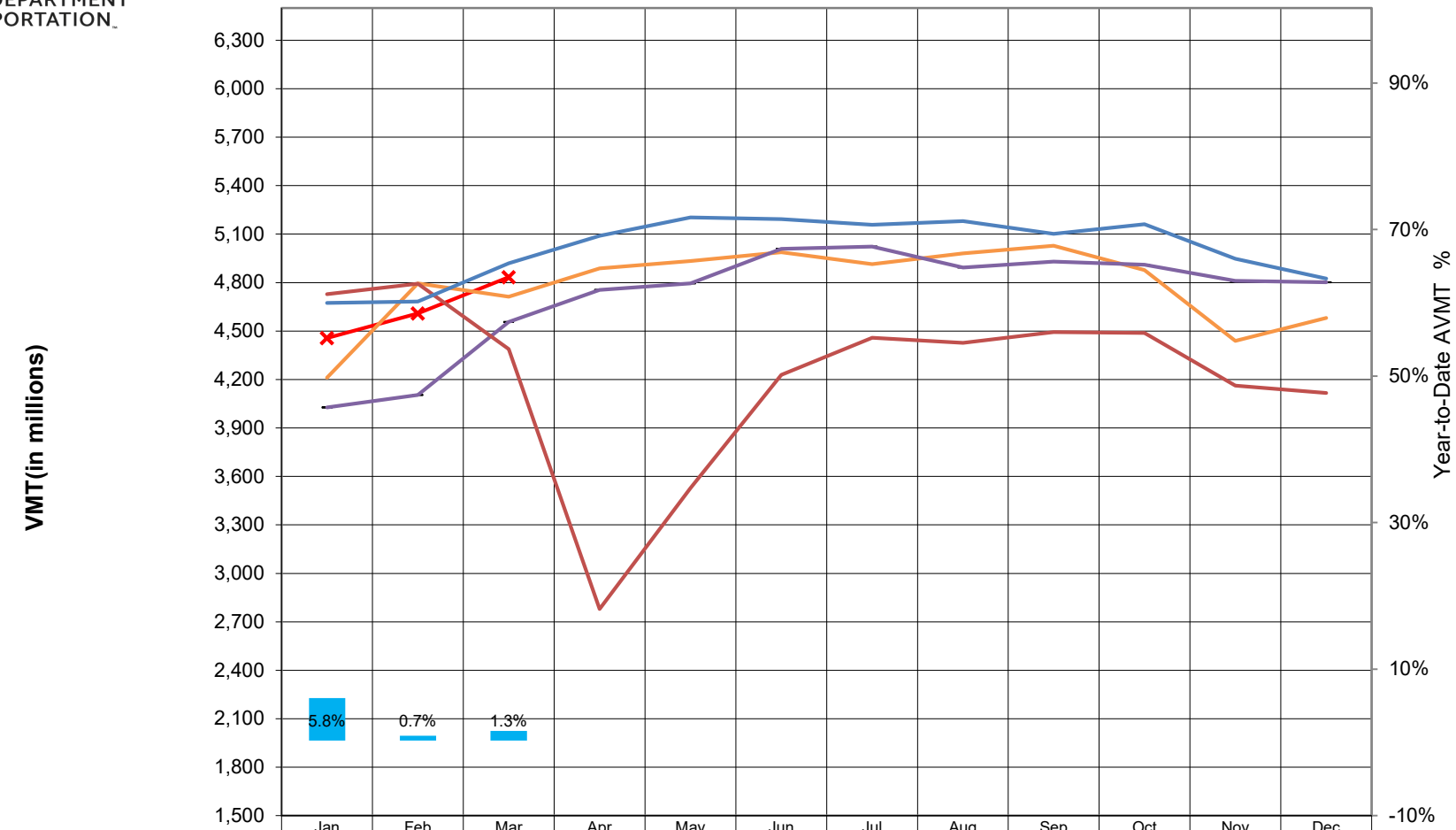
Vehicle Miles Traveled (VMT) Trend Graphs

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

Estimated Monthly Distribution of Annual (VMT) Vehicle Miles of Travel for : March-2023										
March	2019 VMT (Millions)	2020 VMT (Millions)	2021 VMT (Millions)	**2022 VMT* (Millions)- Estimated**	**2023 VMT* (Millions)- Estimated**	Percent Change 2019-2020	Percent Change 2020-2021	Percent Change 2021-2022	Percent Change 2022-2023	Cumulative Year-to-Date Change 2022-2023
Jan	4674	4728	4028	4212	4456	1.2%	-14.8%	4.6%	5.8%	5.8%
Feb	4683	4794	4104	4795	4610	2.4%	-14.4%	16.8%	-3.9%	0.7%
Mar	4919	4389	4556	4712	4834	-10.8%	3.8%	3.4%	2.6%	1.3%
Apr	5089	2779	4755	4888		-45.4%	71.1%	2.8%		
May	5204	3527	4795	4933		-32.2%	36.0%	2.9%		
Jun	5193	4229	5009	4988		-18.6%	18.4%	-0.4%		
Jul	5158	4458	5023	4914		-13.6%	12.7%	-2.2%		
Aug	5180	4427	4894	4981		-14.5%	10.5%	1.8%		
Sep	5102	4494	4930	5028		-11.9%	9.7%	2.0%		
Oct	5162	4488	4910	4877		-13.1%	9.4%	-0.7%		
Nov	4947	4163	4810	4439		-15.8%	15.5%	-7.7%		
Dec	4825	4116	4802	4581		-14.7%	16.7%	-4.6%		
TOTAL	**60,136**	**50,592**	**56,616**	**57,348**		**-15.9%**	**11.9%**	**1.3%**		
Note										
1	The March-2023 Monthly AVMT is up compared to March-2022 by 2.6%									
2	The Cumulative Year-to-Date Change till March-2023 AVMT is up compared to same time last year 2022 by 1.3%									
3	* Preliminary 2023 VMT Estimates based on 2022 Estimated VMT.									
Data Source:Based on data collected at 50+ continuous count stations by SHA's Data Services Division in Office Of Planning & Preliminary Engineering										
	Report Updated on :07/25/2023									

MARYLAND DEPARTMENT OF TRANSPORTATION

Estimated Monthly Distribution of Annual (VMT) Vehicle Miles of Travel for : March-2023



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cumulative Year-to-Date Change 2022-2023	5.8%	0.7%	1.3%									
2023 VMT* (Millions)-Estimated	4456	4610	4834									
2022 VMT* (Millions)-Estimated	4212	4795	4712	4888	4933	4988	4914	4981	5028	4877	4439	4581
2021 VMT (Millions)	4028	4104	4556	4755	4795	5009	5023	4894	4930	4910	4810	4802
2020 VMT (Millions)	4728	4794	4389	2779	3527	4229	4458	4427	4494	4488	4163	4116
2019 VMT (Millions)	4674	4683	4919	5089	5204	5193	5158	5180	5102	5162	4947	4825

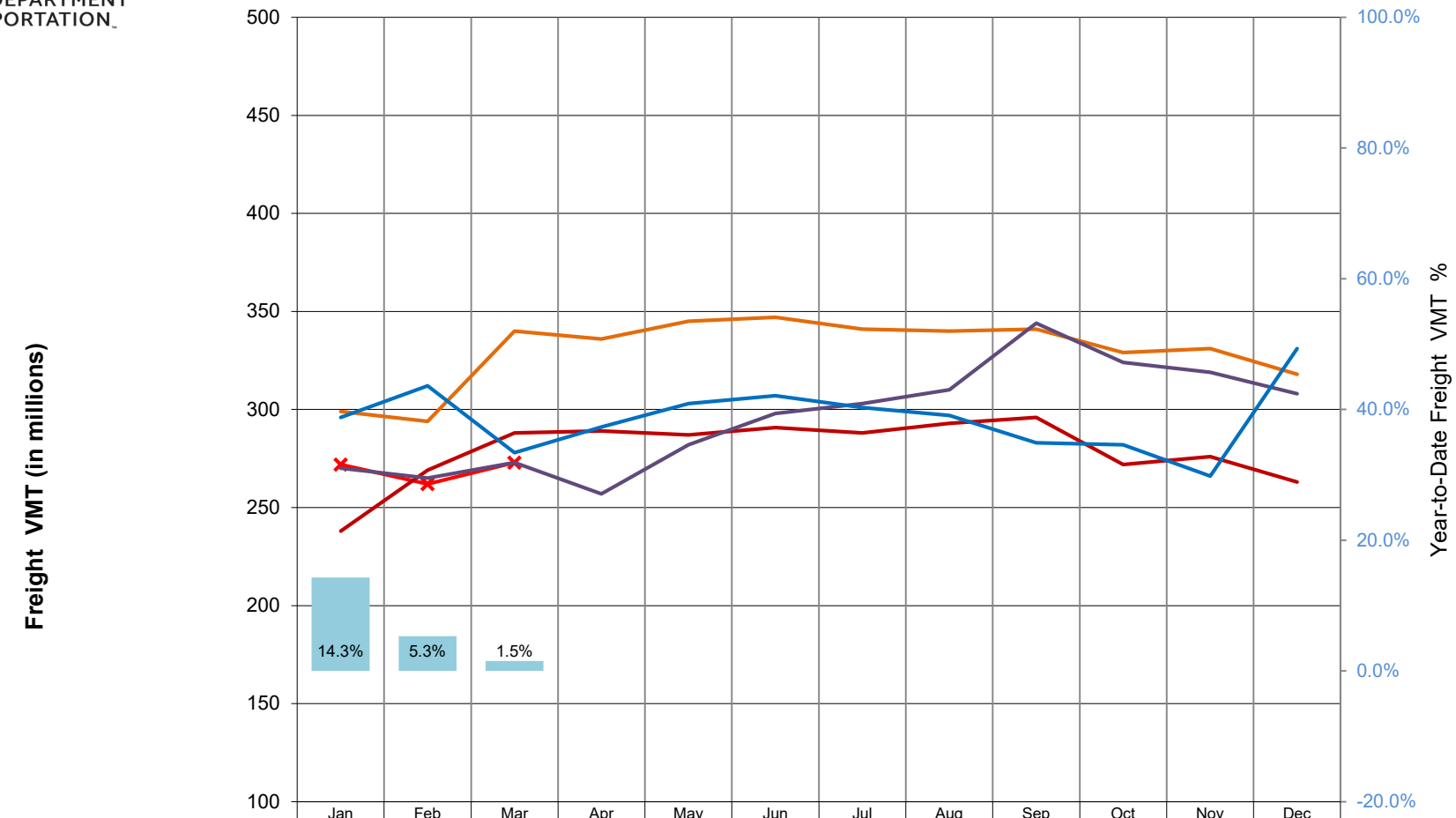
NOTE: This chart displays estimated monthly Vehicle Miles of Travel compared with the previous year based on data collected at approximately 50+ continuous count stations throughout the State.

Report Updated on :07/25/2023

Estimated Monthly Distribution of Freight Vehicle Miles of Travel for : March-2023										
March	2019 Freight VMT (Millions)	2020 Freight VMT (Millions)	2021 Freight VMT (Millions)	2022 Freight VMT (Millions)** Estimated	2023 Freight VMT (Millions)* Estimated	Percent Change 2019-2020 Freight VMT	Percent Change 2020-2021 Freight VMT	Percent Change 2021-2022 Freight VMT	Percent Change 2022-2023 Freight VMT	Cumulative Year-to-Date Freight VMT 2022-2023
Jan	296	270	299	238	272	-8.8%	10.7%	-20.4%	14.3%	14.3%
Feb	312	265	294	269	262	-15.1%	10.9%	-8.5%	-2.6%	5.3%
Mar	278	273	340	288	273	-1.8%	24.5%	-15.3%	-5.2%	1.5%
Apr	291	257	336	289		-11.7%	30.7%	-14.0%		
May	303	282	345	287		-6.9%	22.3%	-16.8%		
Jun	307	298	347	291		-2.9%	16.4%	-16.2%		
Jul	301	303	341	288		0.7%	12.5%	-15.5%		
Aug	297	310	340	293		4.4%	9.7%	-13.8%		
Sep	283	344	341	296		21.6%	-0.9%	-13.2%		
Oct	282	324	329	272		14.9%	1.5%	-17.3%		
Nov	266	319	331	276		19.9%	3.8%	-16.6%		
Dec	331	308	318	263		-6.9%	3.2%	-17.3%		
TOTAL	**3547**	**3553**	**3961**	**3350**		**0.17%**	**11.48%**	**-15.43%**		
Note										
1	The March-2023 Monthly Freight VMT is down compared to March-2022 by -5.2%									
2	The Cumulative Year-to-Date Change till March-2023 Freight VMT is up compared to same time last year 2022 by 1.5%									
3	* Preliminary 2023 Freight VMT Estimates based on 2022 Freight Estimated VMT and 2022 HPMS Vehicle Class Summary .									
4	** VEHICLE CLASS software updated in 2022									
5	Freight VMT = Vehicle Class 5-13									
	Data Source:Based on data collected at approximately 20+ class continuous count stations maintained by SHA's Data Services Division in OPPE									
Report Updated on :07/25/2023										

MARYLAND DEPARTMENT OF TRANSPORTATION

Estimated Monthly Distribution of Freight Vehicle Miles of Travel for : March-2023



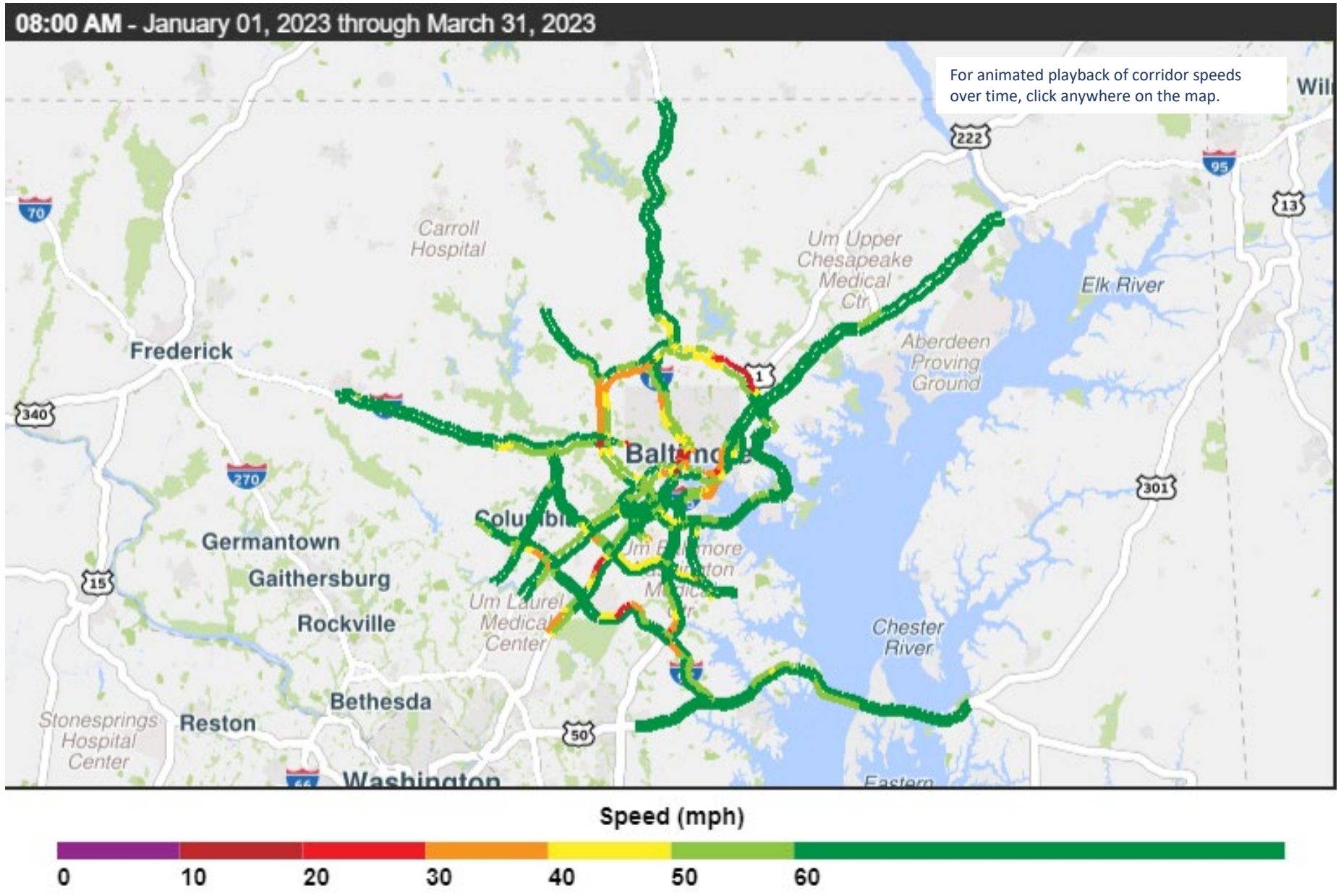
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cumulative Year-to-Date Freight VMT 2022-2023	14.3%	5.3%	1.5%									
2023 Freight VMT (Millions)* Estimated	272	262	273									
2022 Freight VMT (Millions)** Estimated	238	269	288	289	287	291	288	293	296	272	276	263
2021 Freight VMT (Millions)	299	294	340	336	345	347	341	340	341	329	331	318
2020 Freight VMT (Millions)	270	265	273	257	282	298	303	310	344	324	319	308
2019 Freight VMT (Millions)	296	312	278	291	303	307	301	297	283	282	266	331

NOTE: This chart displays estimated monthly Freight Vehicle Miles of Travel compared with the previous year based on data collected at approximately 20+ continuous count stations throughout the State.

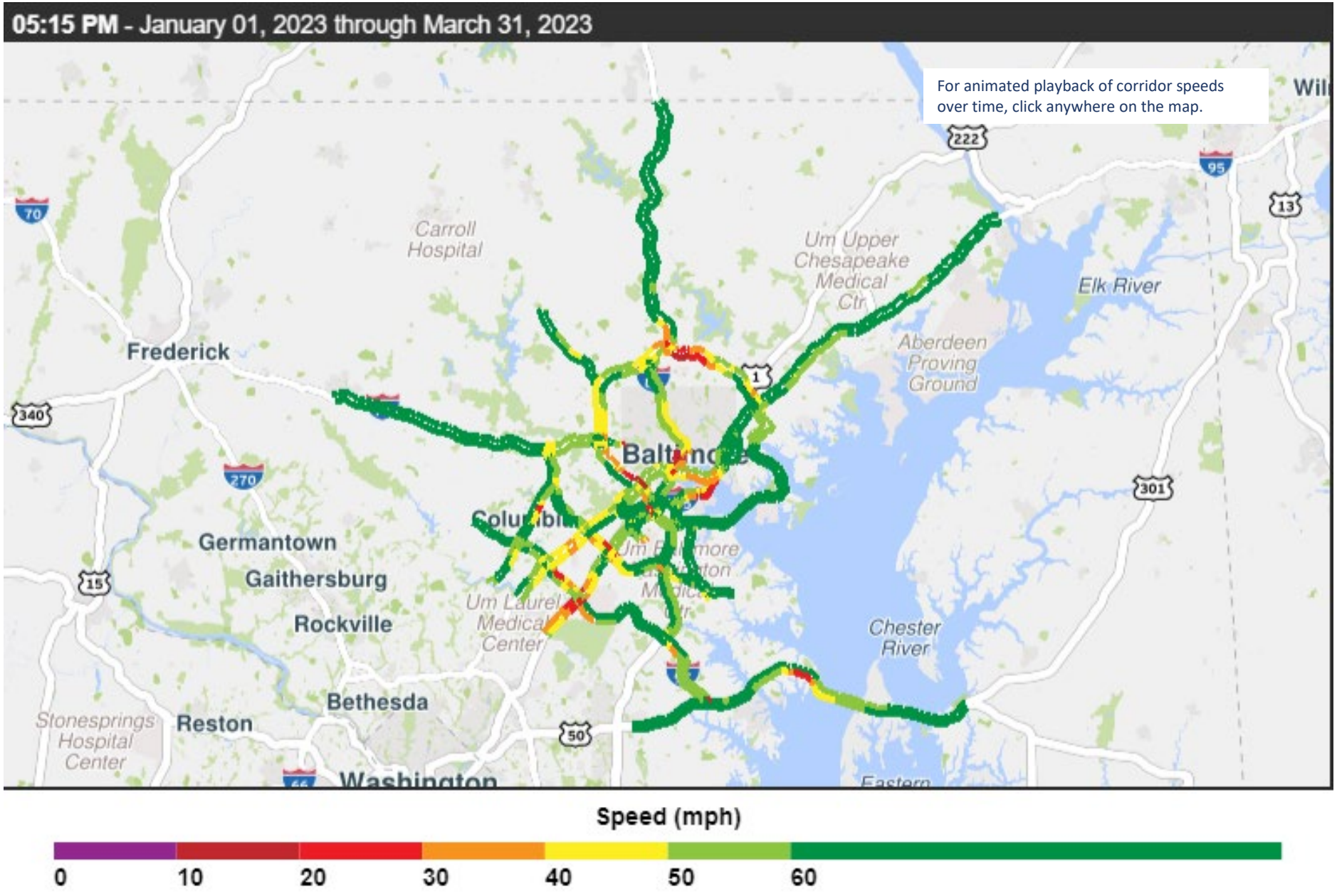
Report Updated on :07/25/2023

Regional Speed Maps

AM Peak Period Rush Hour: 1st Quarter 2023



PM Peak Period Rush Hour: 1st Quarter 2023



System Reliability Performance Measures

Percent of reliable person-miles traveled on the Interstate

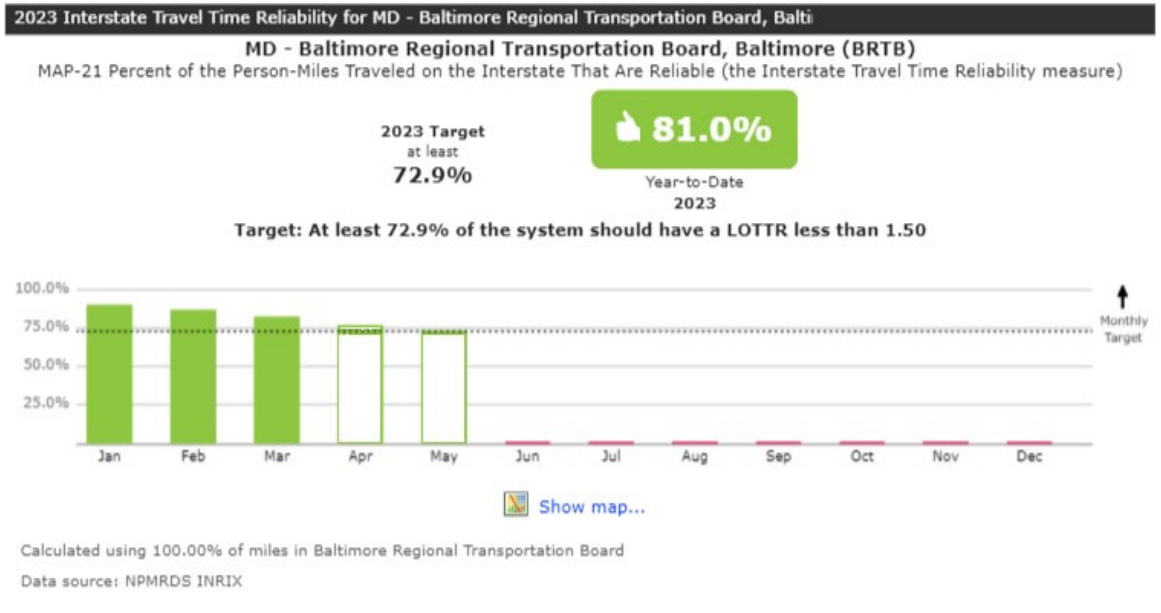
Percent of reliable person-miles traveled on the Non-Interstate NHS

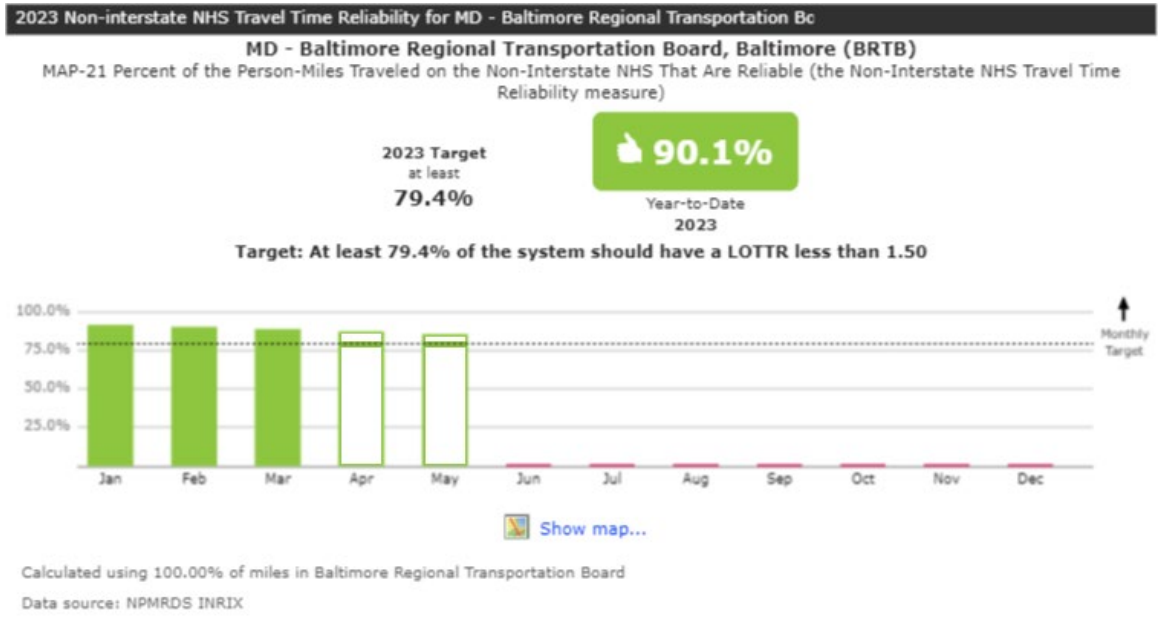
Percentage of Interstate system mileage providing for reliable truck travel time (Truck Travel Time Reliability Index)

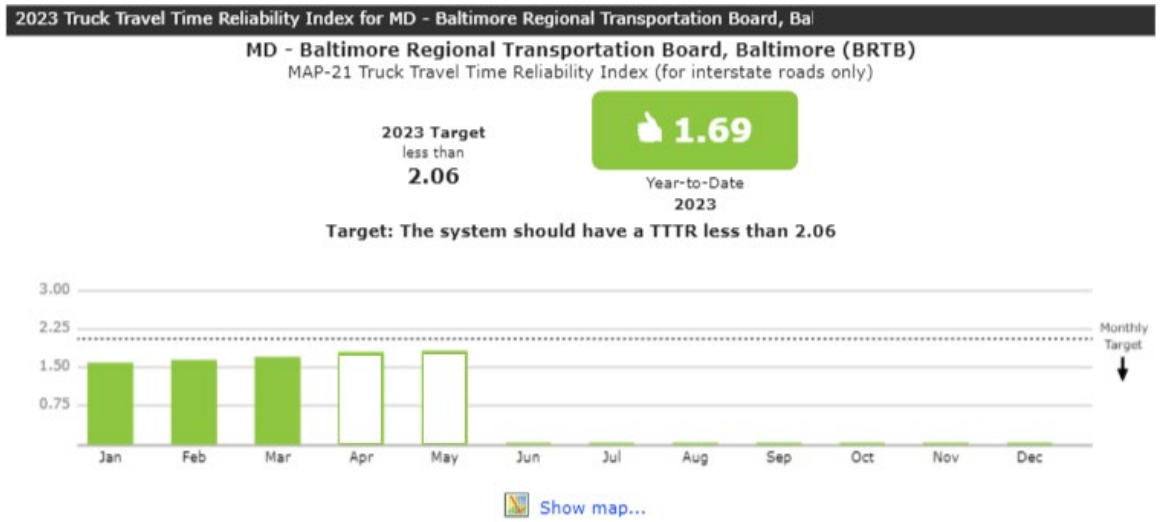
* Each state must establish statewide targets and report findings to the Federal Highway Administration. Metropolitan Planning Organizations must either support the established state targets or develop regional targets of their own.

Level of Travel Time Reliability: Interstates, Non-Interstates and Trucks

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

			2022-2023										
Apr	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Q1 Rank**	**Q1 Locations**
10		14		6	2	2	1	1	4	1	1	1	I-695 OL @ MD-26/EXIT 18
1	1	1	3	4	9	5	2	3	1	4	4	2	I-95 N @ MD-152/EXIT 74
15		17	9	8	5	6		7	3	3	5	3	I-695 IL @ MD-372/WILKENS AVE/EXIT 12
6	4	6	6			7		4	10	14	2	4	I-95 N @ MD-100/EXIT 43
	5			1	1	1		2		5	3	5	I-95 S @ MD-24/EXIT 77
13		18		15			20	18	6	13	9	6	I-695 OL @ PROVIDENCE RD/EXIT 28
11	16	13				17	7		8	11	7	7	I-97 S @ MD-178/EXIT 5
16					14	14				7	11	8	I-695 OL @ I-83/MD-25/EXIT 23
4	8		16	17	17	13			13	6	14	9	I-695 IL @ SECURITY BLVD/EXIT 17
17	17	12		14	12			19	9	16	13	10	MD-295 N @ CANINE RD
		20					15			8	10	11	I-95 N @ MD-32/EXIT 38
18	18	5	10	20		9	6	10		10	12	12	I-95 S @ MD-216/EXIT 35
7	7	8	4	13	8	11	19	12		20	17	13	I-695 OL @ I-70/EXIT 16
								5	7			14	I-695 IL @ MD-41/PERRING PKWY/EXIT 30
20	9	9	15	16	20	16	12	14	17	9		15	I-95 S @ MD-175/EXIT 41
	10		2	7	10		13		14		20	16	US-50 W @ BAY BRIDGE
					13		16			17		17	I-695 IL @ MD-542/LOCH RAVEN BLVD/EXIT 29
	20			10	7	10	5	9	5		6	18	I-695 IL @ I-83/MD-25/EXIT 23
			19						12			19	MD-295 N @ BAYARD ST
					19	18	9	11	18	19		20	I-83 S @ I-695

Conclusions/Observations: The March-2023 Monthly Average Vehicle Miles Traveled AVMT is up compared to March-2022 by 2.6%. The cumulative Year to Date change through March 2023 AMVT is up compared to last year 2022 by 1.3%. The outer loop of I-695/Baltimore Beltway at MD-26/Exit 18 remained the region's top bottleneck as it was in the final quarter of 2022.

Inner Loop (IL)
Outer Loop (OL)

Credits


THE EASTERN
TRANSPORTATION
COALITION


CATT
LABORATORY


MDOT
MARYLAND DEPARTMENT
OF TRANSPORTATION
STATE HIGHWAY
ADMINISTRATION


INRIX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