Quarterly Congestion Analysis Report

Top 10 Bottlenecks in the Baltimore Region

1st Quarter 2022

BRTB Baltimore Regional Transportation Board

Report created April 2022

BALTIMORE METROPOLITAN COUNCIL

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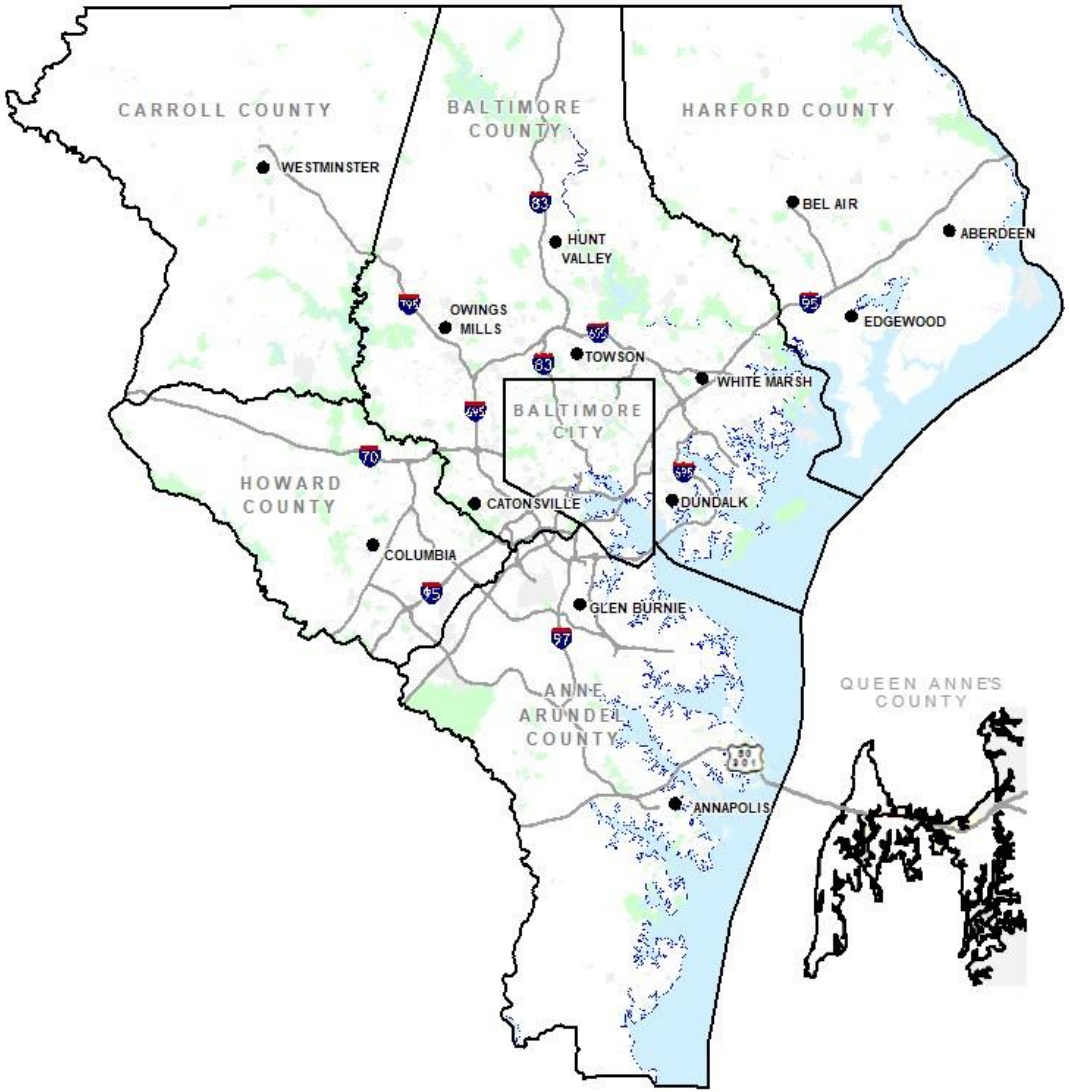
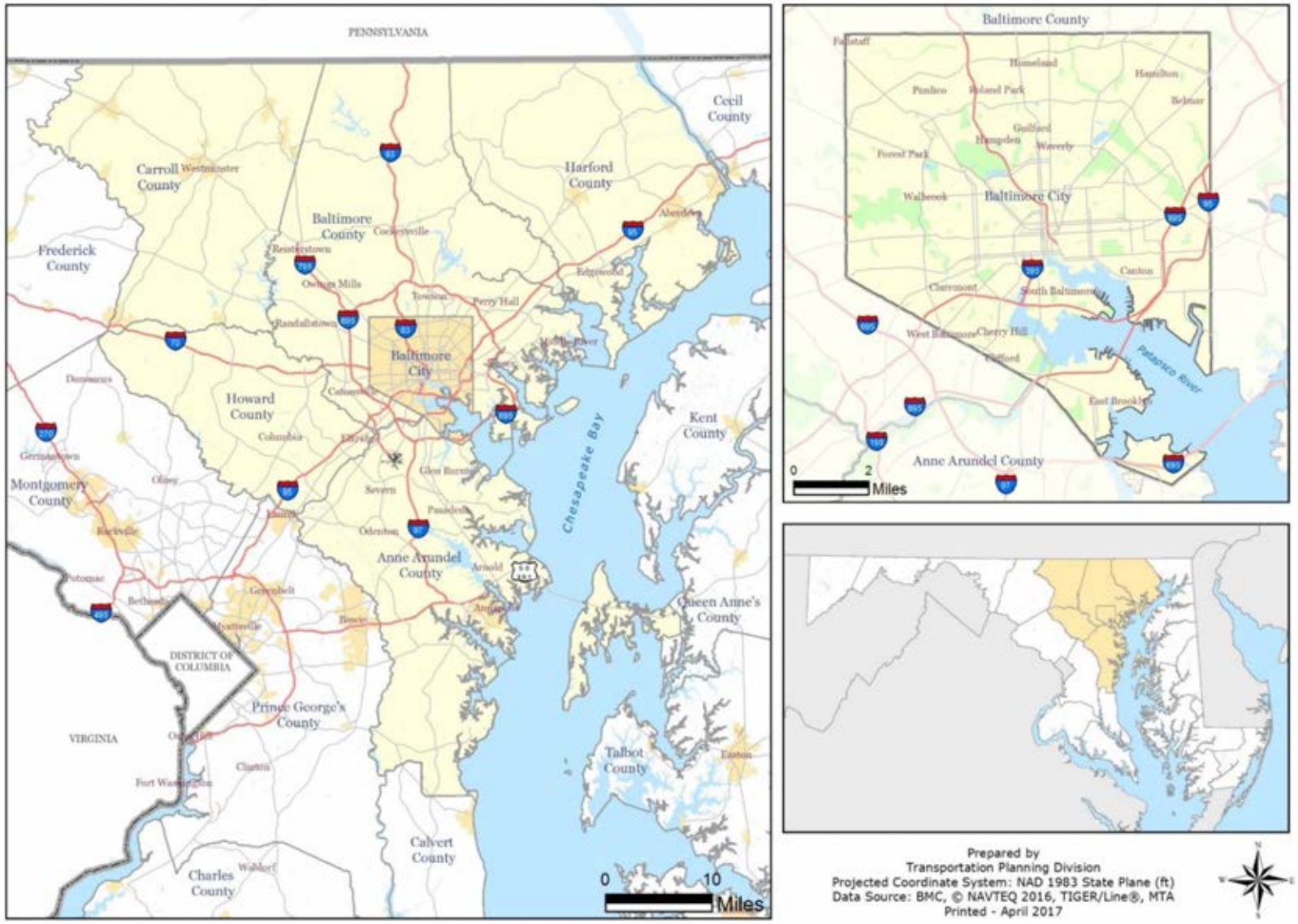
Baltimore Region



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



Bottleneck Analytics

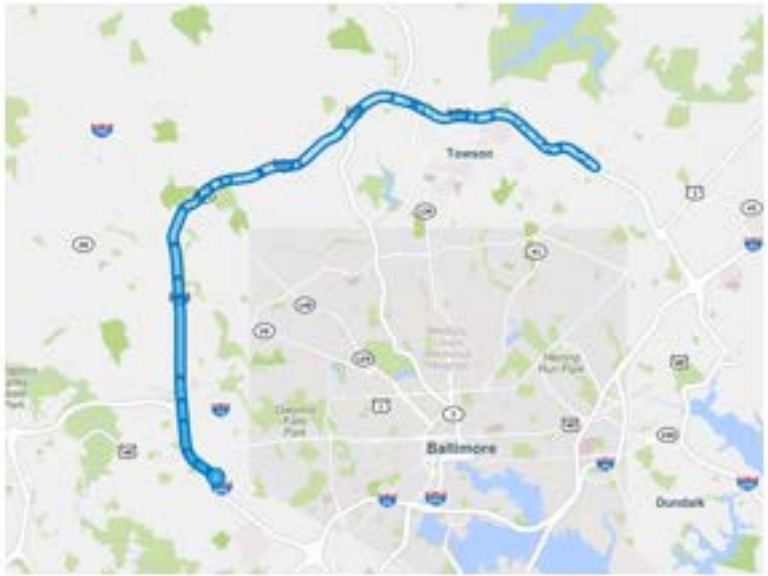
How are bottleneck conditions tracked?

- **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	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 – 1st Quarter 2022

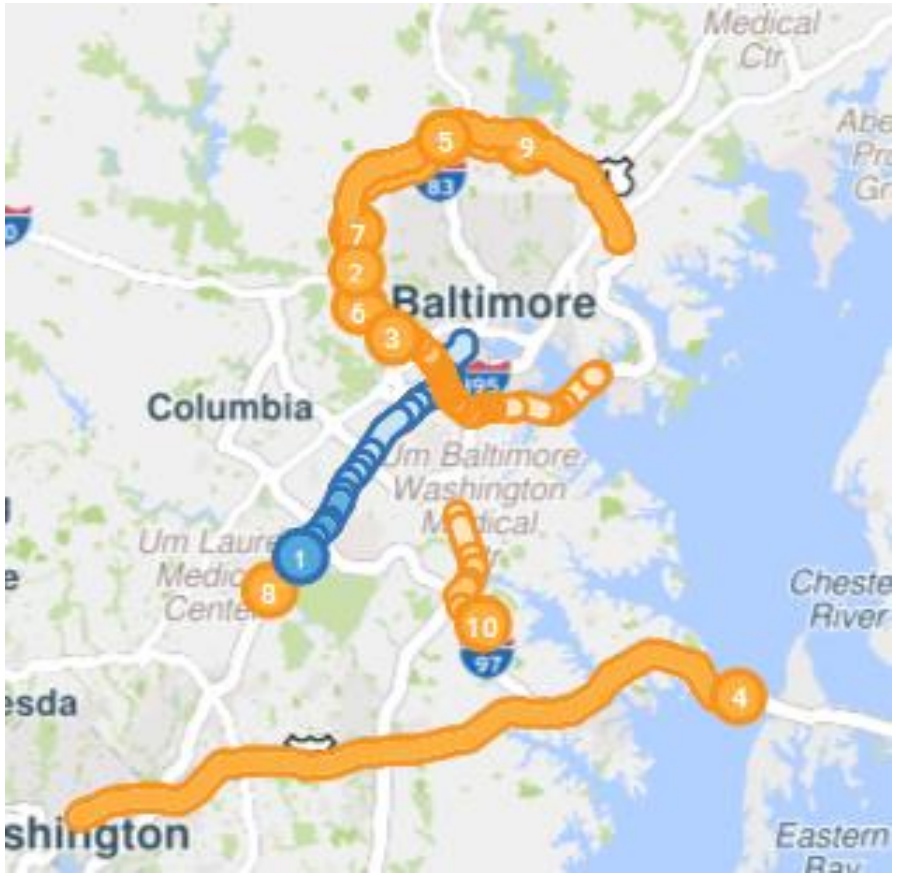
Top 10 Bottlenecks in the Region

Q1 2022

Rank	Location	Previous Quarter Ranking	Avg. Max. Length (mi)	Avg. Daily Duration	Agency Reported Incidents	Volume Estimate (AADT)
1	MD-295 S @ MD-198	2	2.86	**2 h 19 m**	223	48,361
2	I-695 IL @ MD-122/SECURITY BLVD/EXIT 17	--	2.33	1 h 40 m	249	**102,916**
3	I-695 IL @ MD-372/WILKENS AVE/EXIT 12	7	1.93	1 h 2 m	407	99,105
4	US-50 E @ BAY BRIDGE	--	**4.42**	52m	**816**	40,770
5	I-695 OL @ I-83/MD-25/EXIT 23	--	3.38	39m	319	94,861
6	I-695 OL @ US-40/EXIT 15	9	4.06	25m	663	102,236
7	I-695 OL @ MD-26/EXIT 18	3	2.09	46m	301	100,334
8	MD-295 S @ P.G./ANNE ARUNDEL CO LINE	--	4.21	30m	243	45,447
9	I-695 IL @ PROVIDENCE RD/EXIT 28	--	3.16	38m	299	84,773
10	I-97 S @ MD-178/EXIT 5	8	2.31	58m	92	53,932

IL = Inner Loop OL = Outer Loop

Red #s = highest value for that metric



*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.*

Top 10 Bottleneck Rankings in the Baltimore Region – 1st Quarter 2022 by Location

Includes:

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

1 MD-295 S @ MD-198

Quarterly Bottleneck Evaluation Summary Q1 2022

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 are most likely caused by factors such as Baltimore commuters to DC and Fort Meade and MD-295 merge with the heavily congested Capital Beltway.

PK. AVG. SPEED

AM Peak | 7:45 AM
52.9 mph
(24% slower than free flow)

PM Peak | 5:35 PM
43.2 mph
(34% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:45 AM
16.5 min

PM Peak | 5:35 PM
20.2 min

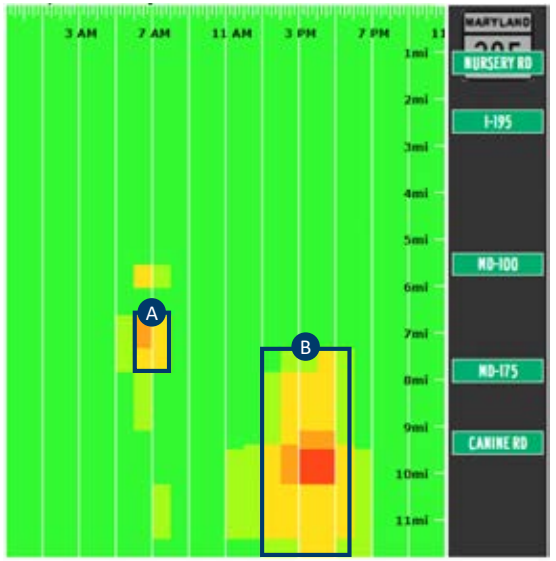
Q1 DELAY COST

Delay Cost
$2.135M

Veh-hrs. of Delay
70,727 h

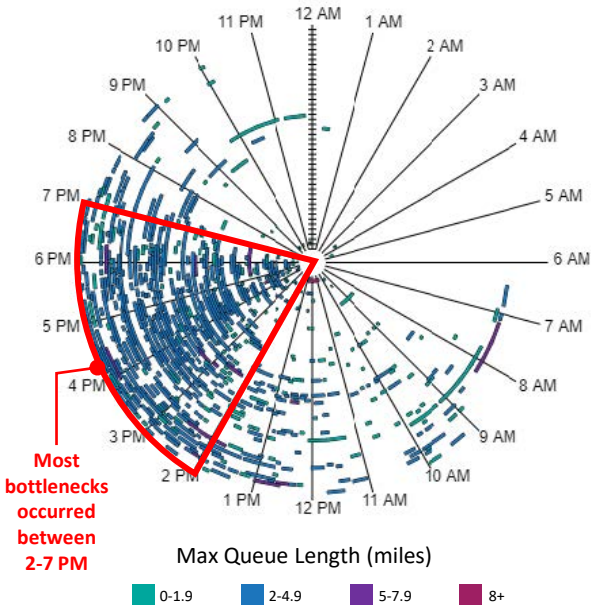
Congested Locations

A 7AM – 9AM Arundel Mills Blvd. to MD-175
B 2PM – 7PM MD-175 to MD-198



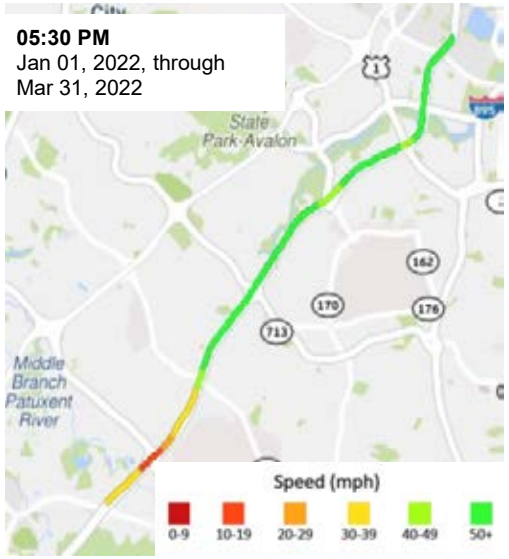
Bottleneck Occurrences

The center represents the beginning **of 01.01.22** and the outer edge the end of **03.31.22**



Corridor Speeds Over Time

Peak period conditions.



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

Quarterly Bottleneck Evaluation Summary Q1 2022

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 | 8:00 AM
54.1 mph
(23% slower than free flow)

PM Peak | 5:15 PM
36.2 mph
(47% slower than free flow)

PK. TRAVEL TIME

AM Peak | 8:00 AM
2.9 min

PM Peak | 5:15PM
4.3 min

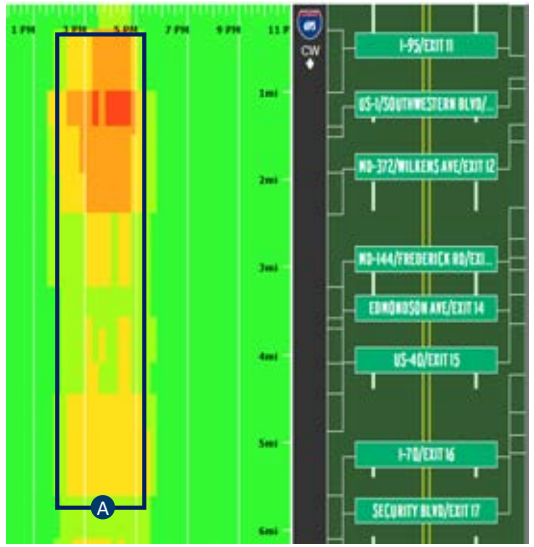
Q1 DELAY COST

Delay Cost
$1.340M

Veh-hrs. of Delay
44,389 h

Congested Locations

A **3PM – 6PM** I-95/Exit 11 to Security Blvd/Exit 17



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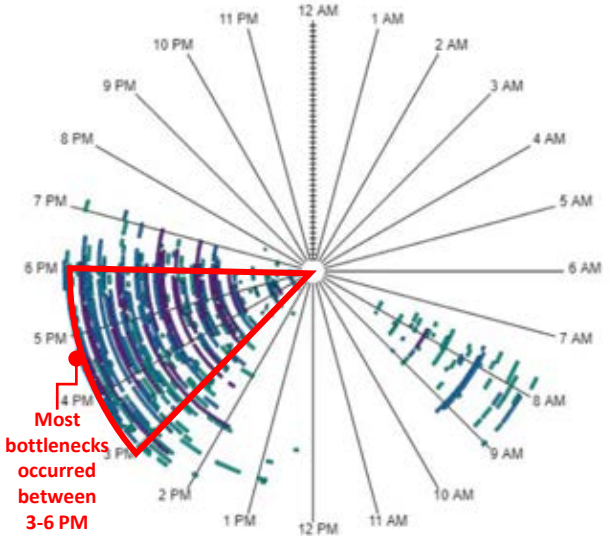
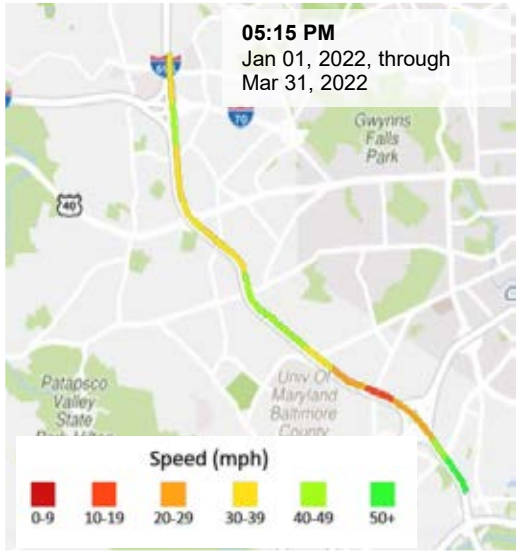


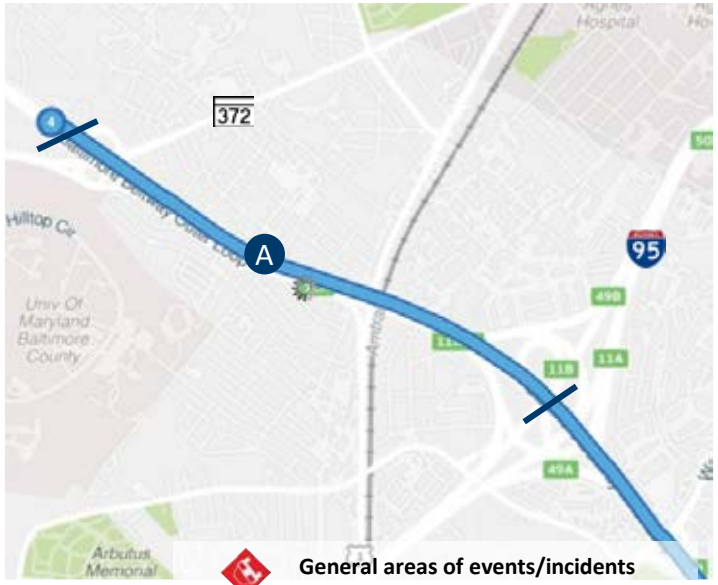
Corridor Speeds Over Time

Peak period conditions



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

Quarterly Bottleneck Evaluation Summary Q1 2022



General areas of events/incidents
(there were 408 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. 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 |7:45AM
47.4 mph
(31% slower than free flow)

PM Peak | 5:25 PM
24.5 mph
(24.5% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:45 AM
3.0 min

PM Peak | 5:25PM
5.8 min

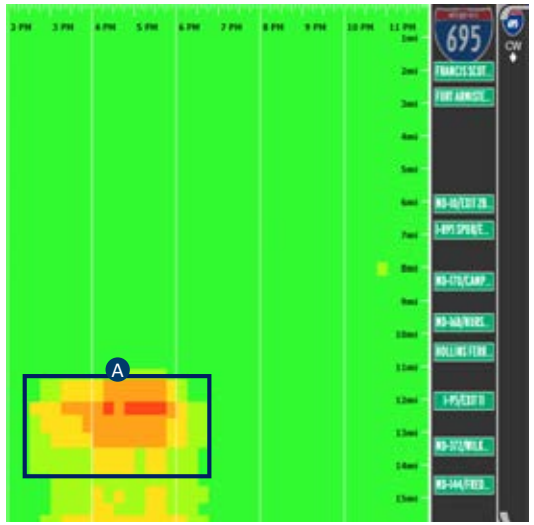
Q1 DELAY COST

Delay Cost
$0.775M

Veh-hrs. of Delay
25,650 h

Congested Locations

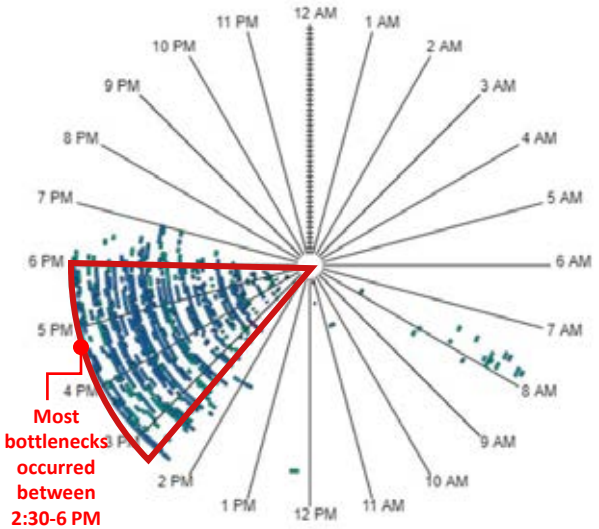
A **2:30PM – 6:15PM** I-95/Exit 11 to MD-372/Wilkens Ave



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

Bottleneck Occurrences

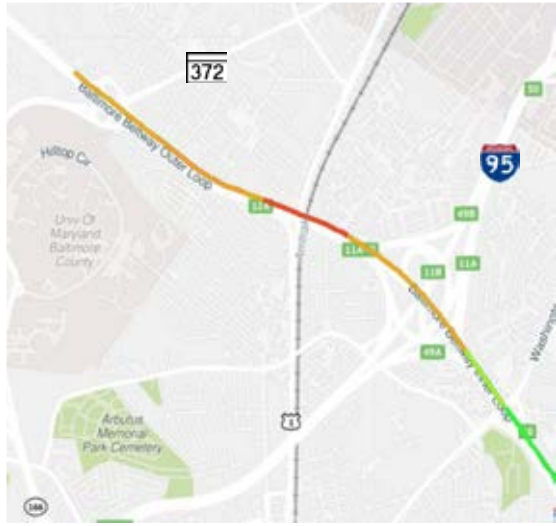
The center represents the beginning **of 01.01.22** and the outer edge the end of **03.31.22**



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

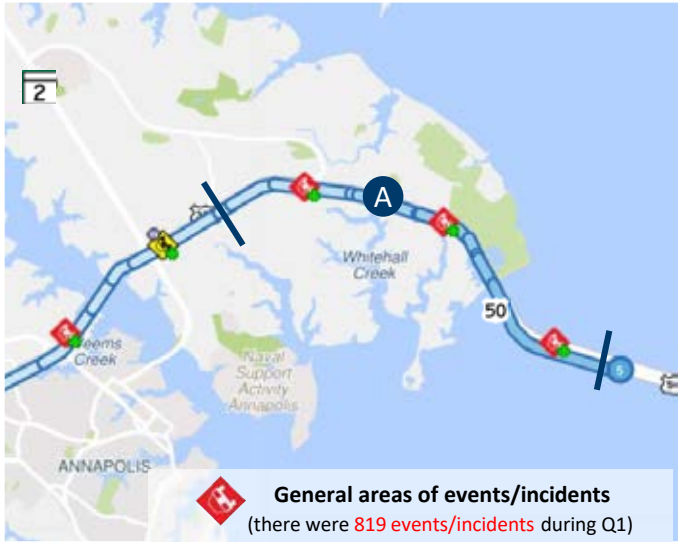
Corridor Speeds Over Time

Peak period conditions.



4 US-50 E @ BAY BRIDGE

Quarterly Bottleneck Evaluation Summary Q1 2022



A **Locations of Congestion**

Heavy weekend traffic heading to the Maryland beach resorts. All-electronic tolling (AET) construction work with off peak lane closures began on January 11th and is expected to continue throughout the summer months.. Eastbound Bay Bridge Deck Rehabilitation, Phase 1 in progress.

PK. AVG. SPEED

AM Peak | 9:00 AM
52.8 mph
(20% slower than free flow)

PM Peak | 4:45 PM
38.2 mph
(41% slower than free flow)

PK. TRAVEL TIME

AM Peak | 9:00 AM
9.3 min

PM Peak |4:45 PM
12.5 min

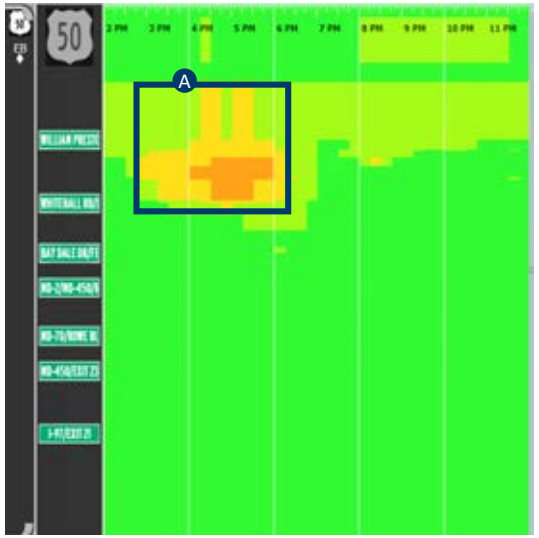
Q1 DELAY COST

Delay Cost
$2.090M

Veh-hrs. of Delay
69,213 h

Congested Locations

A **2:45PM – 6:15PM** Bay Dale Dr to Bay Bridge Toll Plaza



Bottleneck Occurrences

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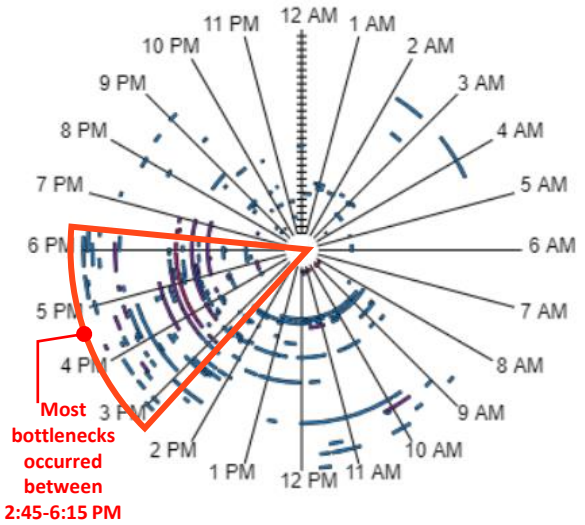
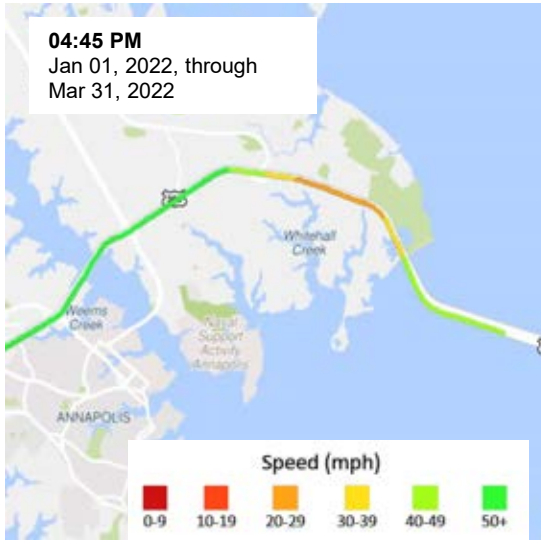


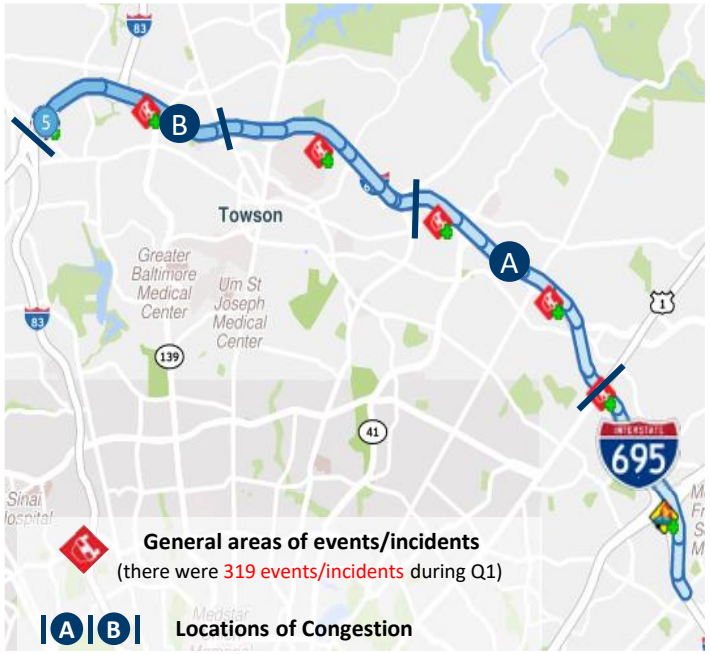
Corridor Speeds Over Time

Peak period conditions



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

Quarterly Bottleneck Evaluation Summary Q1 2022



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.

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 | 7:45 AM
37.4 mph
(46% slower than free flow)

PM Peak | 5:15 PM
43.5 mph
(35% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:45 AM
20.0 min

PM Peak |5:15 PM
17.2 min

Q1 DELAY COST

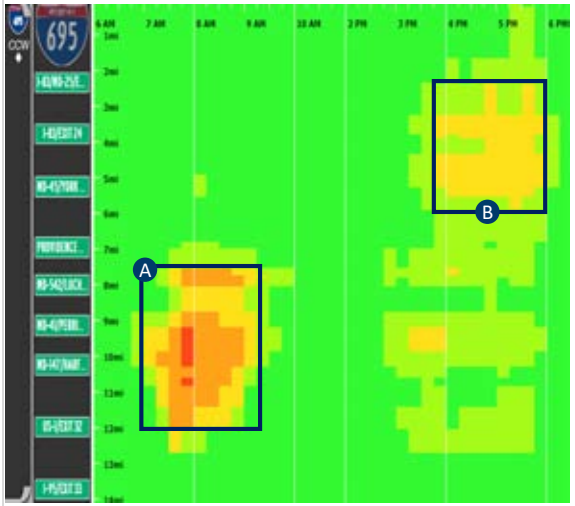
Delay Cost
$1.907M

Veh-hrs. of Delay
63,152 h

Congested Locations

A **7AM – 9:15AM** US-1/Belair Rd to MD-542/Loch Raven Blvd

B **3:45PM – 6PM** MD-45/York Rd to I-83/MD-25/Exit 23



Bottleneck Occurrences

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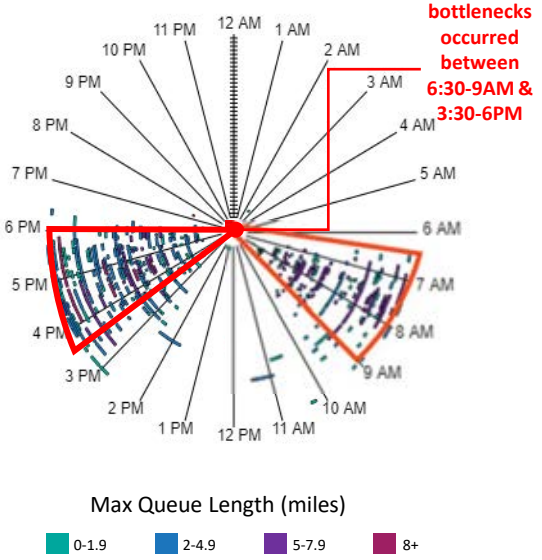
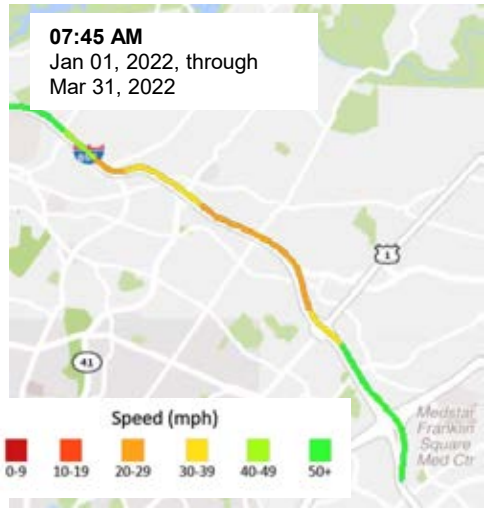


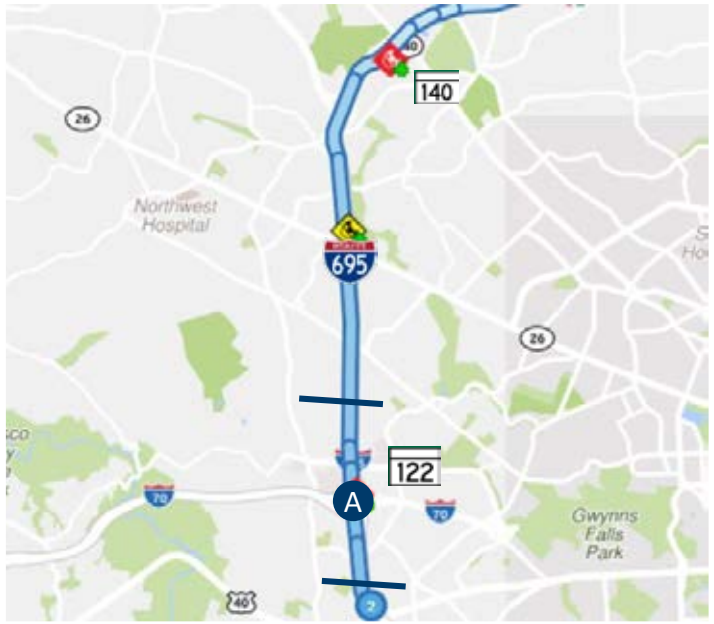
Corridor Speeds Over Time

Peak period conditions



6 I-695 OL @ US-40/EXIT 15

Quarterly Bottleneck Evaluation Summary Q1 2022



General areas of events/incidents
(there were 663 events/incidents during Q1)

A Locations of Congestion

Overlapping bottleneck with #5 & 8. 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-122/Security Blvd during the morning rush hour from 6:45AM to 9AM.

Speed, travel time and user cost delay data calculated from MD-140/Reisterstown Rd to US-40/Baltimore National Pike.

TSMO Construction project is underway in this stretch of I-695

PK. AVG. SPEED

AM Peak | 7:45 AM
38.0 mph
(46% slower than free flow)

PM Peak | 5:30 PM
50.2 mph
(26% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:45 AM
12.4 min

PM Peak |3:30 PM
9.4 min

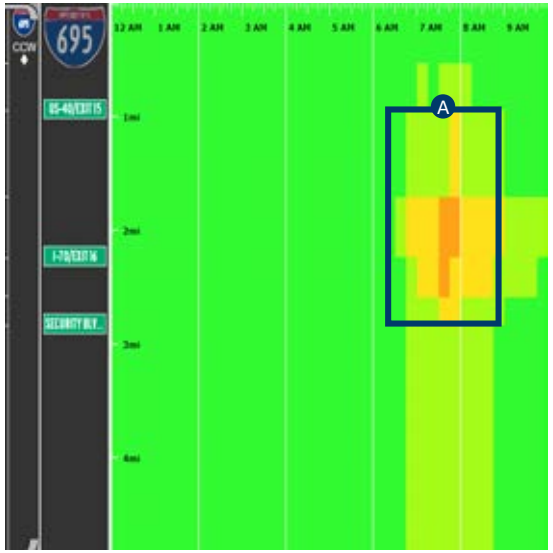
Q1 DELAY COST

Delay Cost
$1,110M

Veh-hrs. of Delay
36,755 h

Congested Locations

A 6:45AM – 9:00AM Security Blvd to US-40/Exit 15



Bottleneck Occurrences

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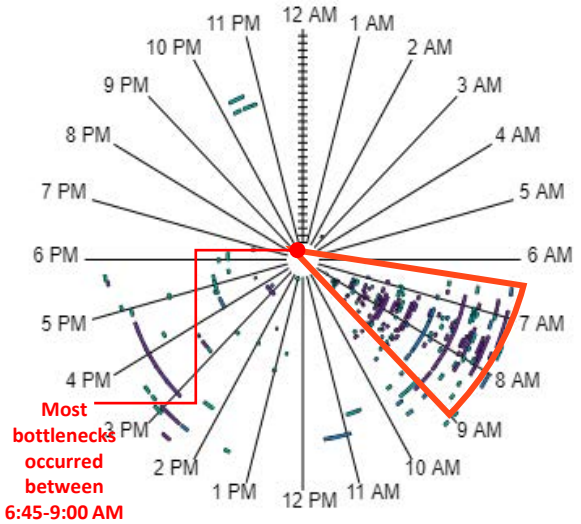
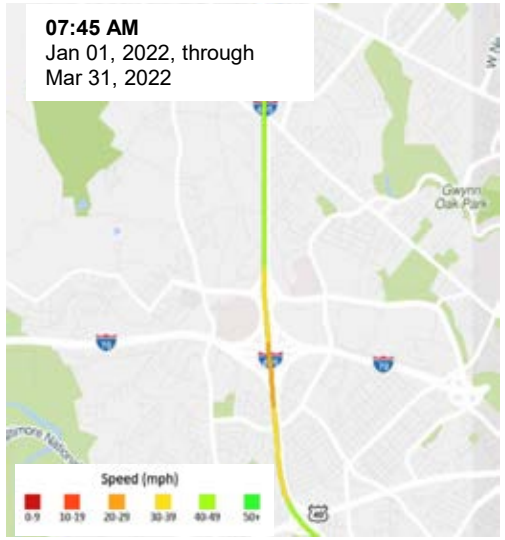


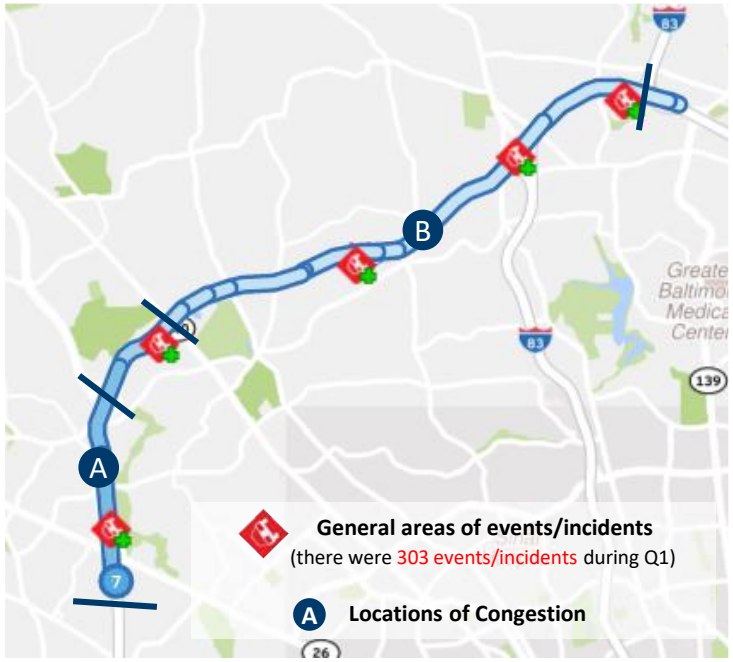
Corridor Speeds Over Time

Peak period conditions



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

Quarterly Bottleneck Evaluation Summary Q1 2022



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 | 8:00AM
50.9 mph
(28% slower than free flow)

PM Peak | 5:30 PM
45.7 mph
(33% slower than free flow)

PK. TRAVEL TIME

AM Peak |8:00AM
11.0 min

PM Peak |5:30 PM
12.2 min

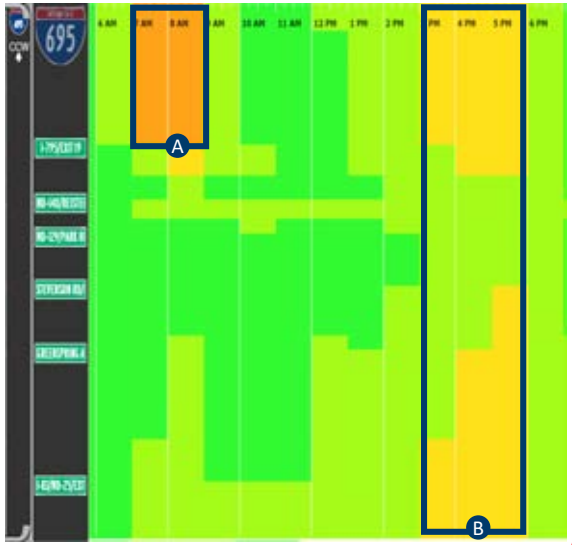
Q1 DELAY COST

Delay Cost
$0.899M

Veh-hrs. of Delay
29,777 h

Congested Locations

A **7:00AM – 9:00AM** I-795 to MD-26/Exit 18
B **3:00PM – 6:00PM** I-83/MD-25 to MD-26



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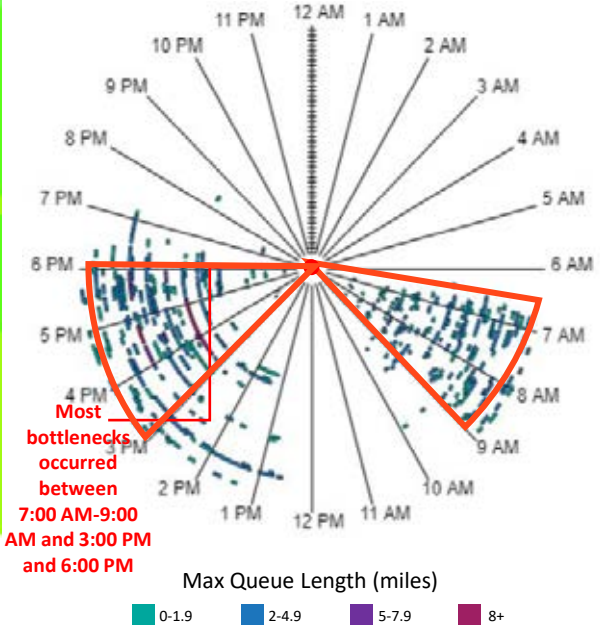
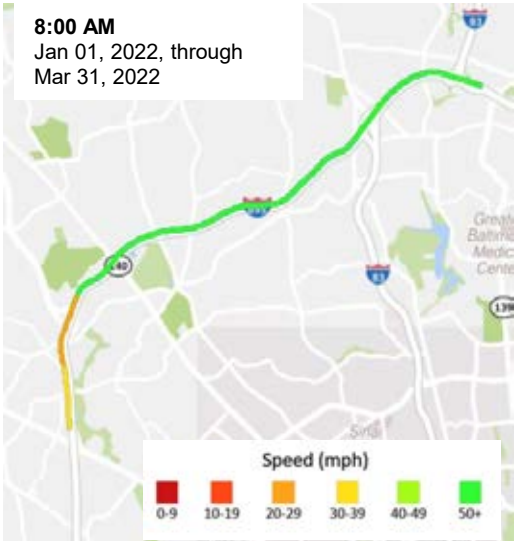


Corridor Speeds Over Time

Peak period conditions



8 MD-295 S @ AA/PG CO LINE

Quarterly Bottleneck Evaluation Summary Q1 2022

Southbound congestion begins from before MD-198 and extends into the southern portion of the Baltimore region near Fort Meade occurring mostly during the PM peak period. Congestion in this area usually begins at MD-198 but in this case starts at the Anne Arundel and Prince George's County line.

Volume related delays are exacerbated by poor road conditions including pot holes and congestion related crashes. The speed limit between MD-197 and MD-32 was recently lowered to 40 mph by the National Park Service which maintains that area of the facility.

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PK. AVG. SPEED

AM Peak | 7:50 AM
43.7 mph
(38% slower than free flow)

PM Peak | 5:35 PM
31.0 mph
(52% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:50 AM
10.5 min

PM Peak |5:35 PM
14.8 min

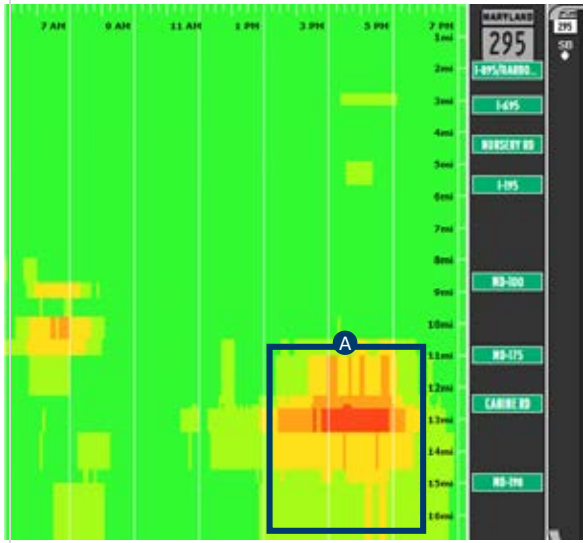
Q1 DELAY COST

Delay Cost
$2.718M

Veh-hrs. of Delay
90,030 h

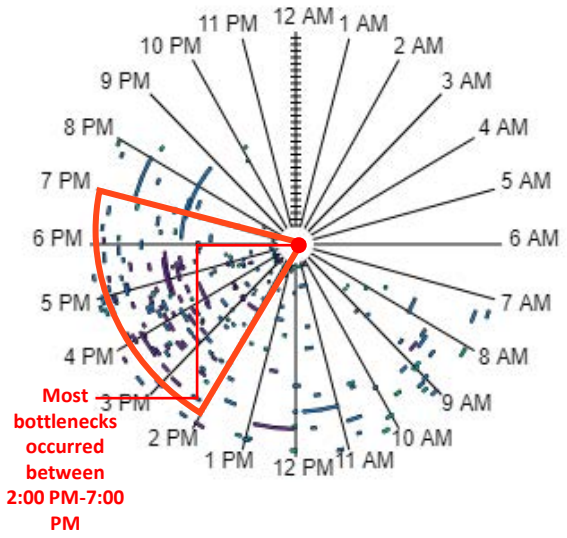
Congested Locations

A **2:00PM – 7:00PM** MD-175 to Anne Arundel/Prince George's County Line



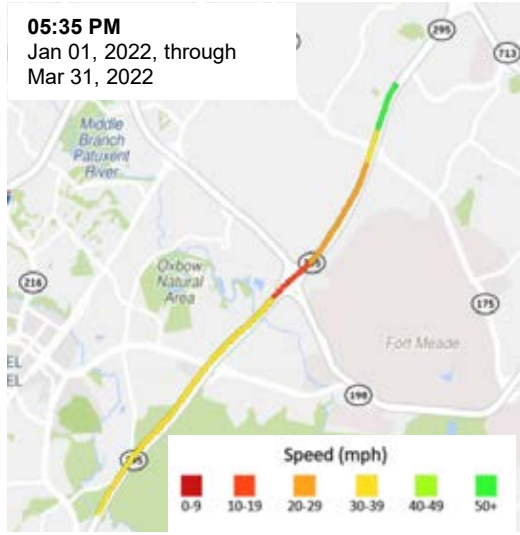
Bottleneck Occurrences

The center represents the beginning **of 01.01.22** and the outer edge the end of **03.31.22**



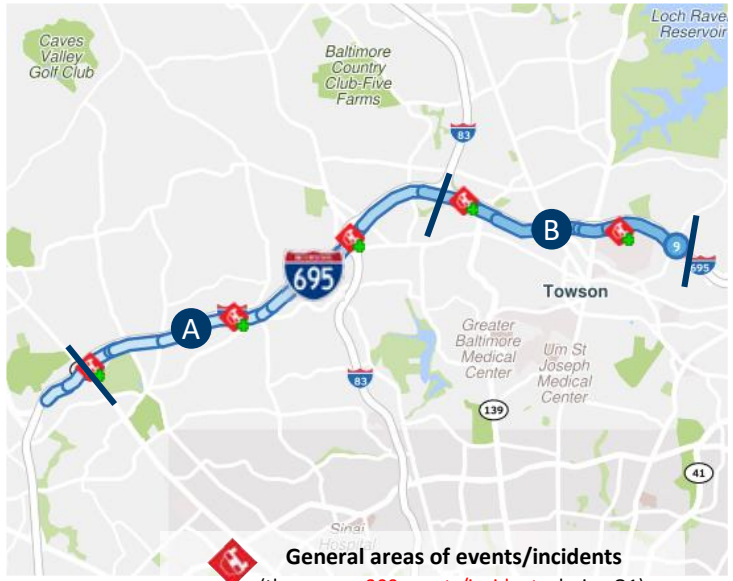
Corridor Speeds Over Time

Peak period conditions



9 I-695 IL @ PROVIDENCE RD

Quarterly Bottleneck Evaluation Summary Q1 2022



General areas of events/incidents
(there were 300 events/incidents during Q1)

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

Congestion was most severe between I-83 and Providence Rd in the PM rush. Factors contributing to this long standing and extended congested zone: merging and weaving associated with traffic at each interchange; and a lane drop (to three lanes) at MD-45 (York 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 | 8:00 AM
44.8 mph
(37% slower than free flow)

PM Peak | 5:30 PM
36.7 mph
(46% slower than free flow)

PK. TRAVEL TIME

AM Peak | 8:00 AM
13.7 min

PM Peak |5:30 PM
16.9 min

Q1 DELAY COST

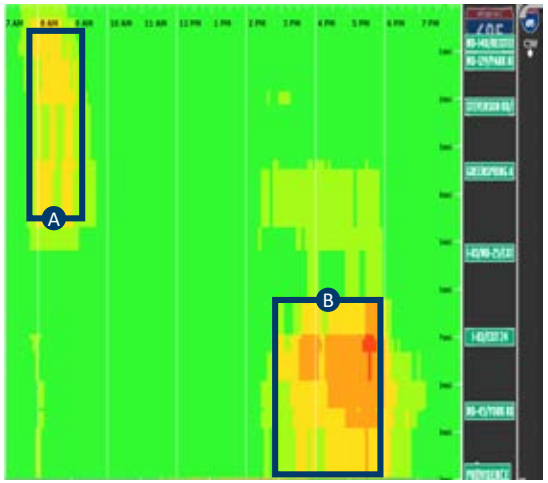
Delay Cost
$1.875M

Veh-hrs. of Delay
62,088 h

Congested Locations

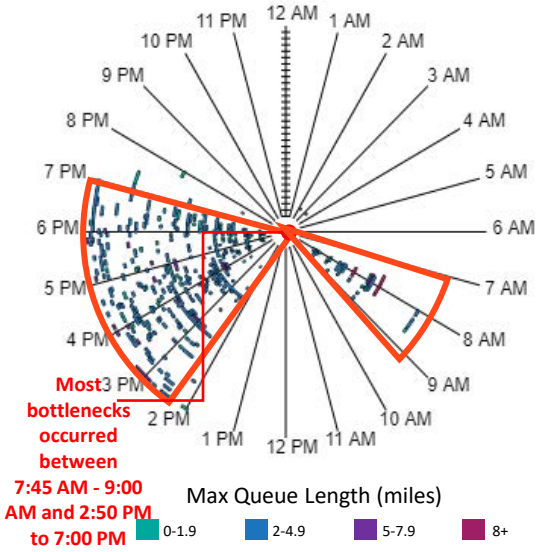
A **7:45AM – 9:00AM** MD 140 to I-83/MD-25/Exit 23

B **2:50PM – 6:15PM** I-83/Exit 24 to Providence Rd/Exit 28



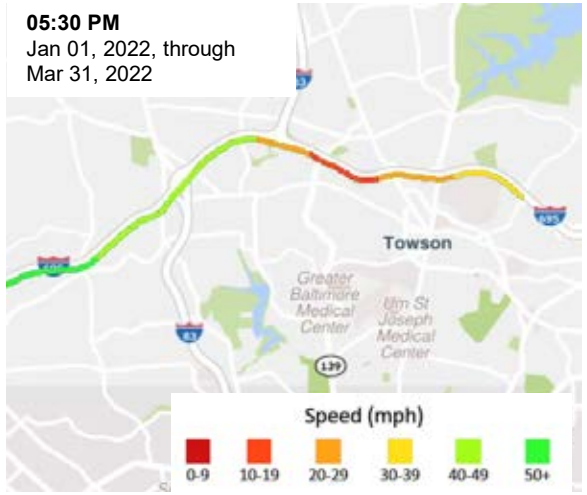
Bottleneck Occurrences

The center represents the beginning **of 01.01.22** and the outer edge the end of **03.31.22**



Corridor Speeds Over Time

Peak period conditions



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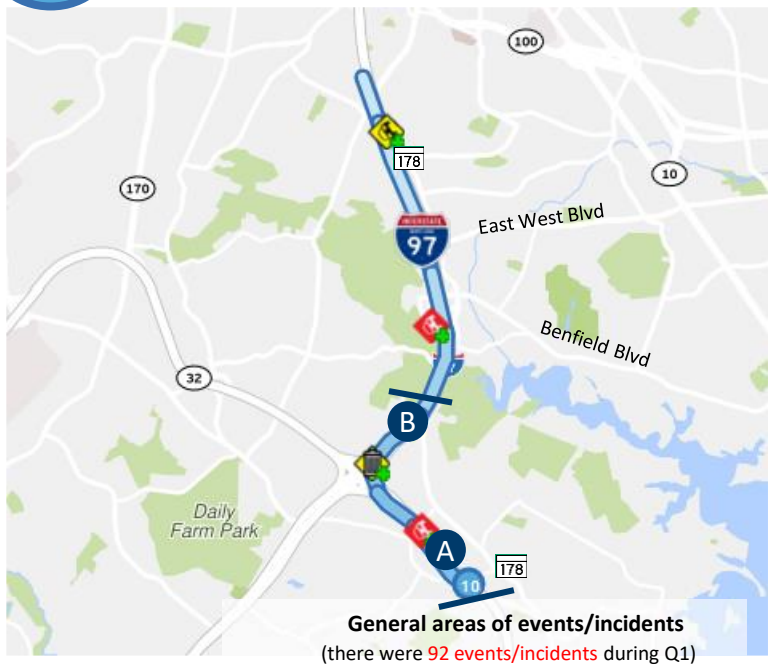
10 I-97 S @ MD-178/EXIT 5

Quarterly Bottleneck Evaluation Summary Q1 2022



General areas of events/incidents
(there were 92 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 | 8:05 AM
49.3 mph
(32% slower than free flow)

PM Peak | 4:55 PM
53.5 mph
(25% slower than free flow)

PK. TRAVEL TIME

AM Peak | 8:05 AM
9.5 min

PM Peak |4:55 PM
8.8 min

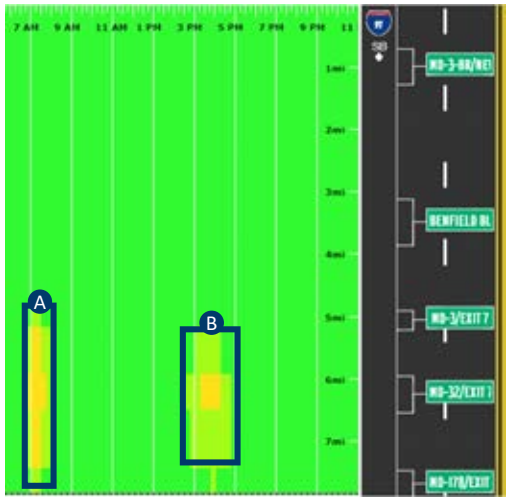
Q1 DELAY COST

Delay Cost
$0.650M

Veh-hrs. of Delay
21,511 h

Congested Locations

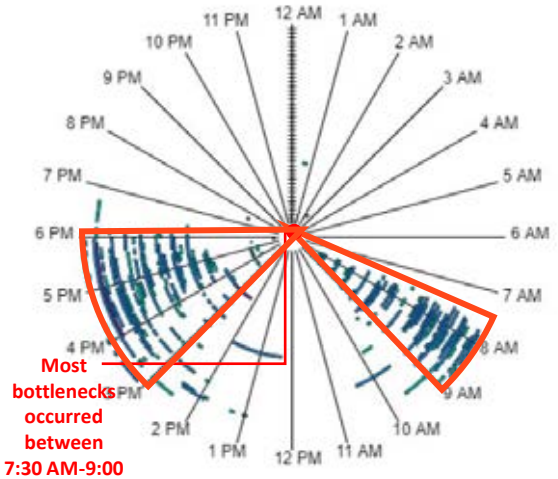
A **7:30AM – 9:00AM** MD-3/Exit 7 to MD-178
B **3:00PM – 6:00PM** MD-3/Exit 7 to MD-178



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

Bottleneck Occurrences

The center represents the beginning **of 01.01.22** and the outer edge the end of **03.31.22**

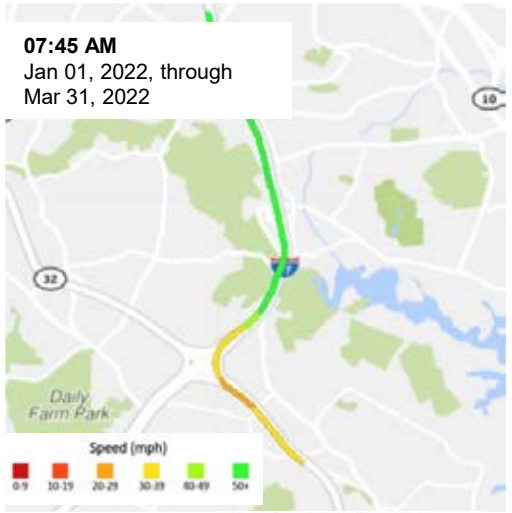


Most bottlenecks occurred between 7:30 AM-9:00 AM and 3 PM to 6 PM

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

Corridor Speeds Over Time

Peak period conditions



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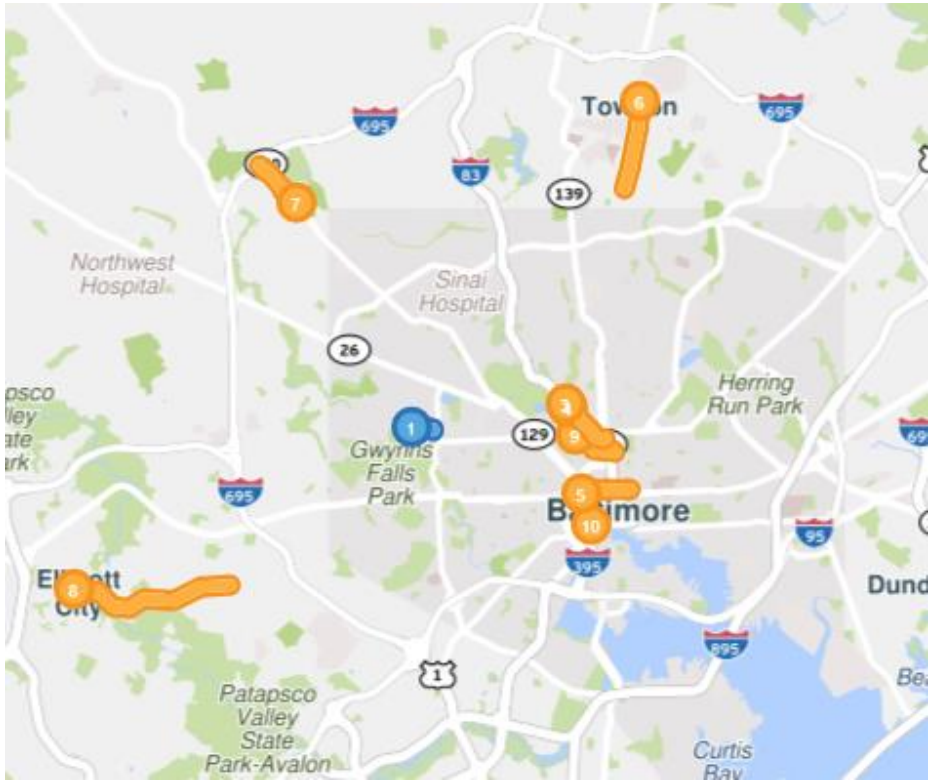
Top 10 Bottlenecks on Non-Limited Access Roads

Top 10 Bottlenecks in the Region – Non Limited Access Roads – 1st Quarter 2022 Q1 2022

Rank	Location	Avg. Max. Length (mi)	Avg. Daily Duration	Agency Reported Incidents	Volume Estimate (AADT)
1	WINDSOR Mill RD W @ GWYNNS FALLS PKWY	0.39	**17h 41m**	0	9,210
2	MD-3 N @MD-424/DAVIDSONVILLE RD	**2.04**	54m	29	**34,786**
3	MD-25 N @ W 29TH ST	0.82	3h 36m	0	8,884
4	MD-25 N @ W 28TH ST	0.7	3h 39m	**0**	8,672
5	US-40 W @ MD-295/PACA ST	0.48	3h 58m	0	10,676
6	MD-45 N @ MD 146/DULANEY VALLEY RD	0.33	9h 6m	5	10,337
7	MD-140 E SUDBROOK LN	0.53	6h 2m	29	14,683
8	MD-144 W @ ELLICOTT MILLS DR	0.49	6h 40m	**44**	9,636
9	MT ROYAL AVE W @ US-1/NORTH AVE	0.39	12h 1m	0	7,443
10	HOWARD ST S @ W PRATT ST	0.09	6h 31m	0	29,695

IL = Inner Loop OL = Outer Loop **Red #s** = highest value for that metric



*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 2022

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	US-50 E @ WILLIAM PRESTON LANE BRG
3	MD-295 S @ PRINCE GEORGE'S/ARUNDEL CO LINE
4	I-97 S @ MD-178/EXIT 5
5	I-97 S @ US-50/US-301
6	MD-295 N @ MD-175
7	MD-295 S @ CANINE RD
8	I-97 N @ I-895-SPUR
9	US-50 E @ I-97/EXIT 21
10	MD-295 S @ MD-175
11	MD-32 E @ I-97
12	MD-3 N @ MD-424/DAVIDSONVILLE RD/CONWAY RD
13	MD-295 S @ MD-32
14	MD-295 N @ PRINCE GEORGE'S/ARUNDEL CO LINE
15	US-50 W @ WILLIAM PRESTON LANE BRG
16	I-695 OL @ MD-295/WASH-BALT PKY/EXIT 7
17	MD-295 N @ MD-32
18	MD-2 N @ ROBINSON RD
19	MD-3 S @ MD 175/ANNAPOLIS RD/MILLERSVILLE RD
20	HAMMONDS FERRY RD S @ ANDOVER RD

Baltimore City

Rank	Location
1	I-95 N @ I-95 (NORTH)
2	WINDSOR MILL RD W @ GWYNNS FALLS PKWY
3	MD-25 N @ W 29TH ST
4	MD-25 N @ W 28TH ST
5	I-83 S @ MD-25/FALLS RD/EXIT 8
6	US-40 W @ MD-295/PACA ST
7	I-95 N @ I-95 (EAST)
8	MT ROYAL AVE W @ US-1/W NORTH AVE
9	HOWARD ST S @ W PRATT ST
10	MD-295 N @ I-95/MONROE ST
11	MD-295 N @ BAYARD ST
12	I-95 N @ FORT MCHENRY TUNNEL
13	MD-25 S @ US-1/W NORTH AVE
14	I-895 S @ HARBOR TUNNEL THWY (SOUTH)
15	E LOMBARD ST W @ MD 2/LIGHT ST
16	FOREST PARK AVE N @ WINDSOR MILL RD
17	MD-295 N @ BUSH ST
18	MD-25 N @ I-83/JONES FALLS EXPY
19	I-895 S @ HARBOR TUNNEL THWY (NORTH)
20	US-40 W @ COOKS LN

IL = Inner Loop

OL = Outer Loop

Top 20 Bottlenecks in Local Jurisdictions- 1st Quarter 2022

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 IL @ MD-122/SECURITY BLVD/EXIT 17
2	I-95 S @ MD-43/WHITE MARSH BLVD/EXIT 67
3	I-695 IL @ MD-372/WILKENS AVE/EXIT 12
4	I-695 OL @ I-83/MD-25/EXIT 23
5	I-695 OL @ US-40/EXIT 15
6	I-95 N @ MD-152/EXIT 74
7	I-695 OL @ MD-26/EXIT 18
8	I-695 IL @ PROVIDENCE RD/EXIT 28
9	I-695 OL @ MD-567/CROMWELL BR RD/EXIT 29
10	I-695 IL @ MD-41/PERRING PKY/EXIT 30
11	I-695 IL @ MD-542/LOCK RAVEN BLVD/EXIT 29
12	I-70 E @ I-695/EXIT 91
13	I-695 IL @ I-795/NORTHWEST EXPY/EXIT 19
14	I-695 OL @ MD-41/PERRING PKY/EXIT 30
15	I-695 IL @ MD-144/FREDERICK RD/EXIT 13
16	I-695 IL @ I-83/MD-25/EXIT 23
17	I-695 OL @ MD-122/SECURITY BLVD/EXIT 17
18	I-695 OL @ STEVENSON RD/EXIT 21
19	MD 45 N @ MD-146/DULANEY VALLEY
20	I-695 OL @ GREENSPRING AVE/EXIT 22

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-144 W @ MD-27/RIDGE RD
5	MD-27 N @ MD-30/MAIN ST
6	MD-97 N @ MAGNA WAY/AIRPORT DR
7	MD-97 S @ MD-496/BACHMANS VALLEY RD
8	MD-482 W @ MD-27/MANCHESTER RD
9	MD-26 E @ MD-32/SYKESVILLE RD
10	MD-140 W @ MD-194/YORK ST/FREDERICK ST
11	MD-91 N @ MD-140/BALTIMORE BLVD
12	MD-140 W @ MD-91/GAMBER RD/EMORY RD
13	MD-27 S @ MD-30/MAIN ST
14	MD-27 N @ MD-482/HAMPSTEAD MEXICO RD
15	MD-91 S @ MD-140/BALTIMORE BLVD
16	MD-26 W @ MD-32/SYKESVILLE RD
17	MD-91 S @ MD-32/SYKESVILLE RD
18	MD-27 N @ MD-26/LIBERTY RD
19	MD-97 N @ MD-496/BACHMANS VALLEY RD
20	MD-140 E @ MD-91/GAMBER RD/EMORY RD

IL = Inner Loop

OL = Outer Loop

Top 20 Bottlenecks in Local Jurisdictions- 1st Quarter 2022

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-543/EXIT 80
3	I-95 N @ MD-24/EXIT 77
4	I-95 S @ MD-152/EXIT 74
5	MD-543 S @ US-1/HICKORY BYP
6	I-95 N @ MILLARD E TYDINGS MEMORIAL BRG
7	I-95 S @ MD-543/EXIT 80
8	MD-152 N @ OLD JOPPA RD
9	MD-924 S @ MD-24
10	US-1-BR S @ MD-24
11	MD-24 N @ I-95
12	MD-543 N @ US-1/HICKORY BYP
13	I-95 S @ MARYLAND HOUSE
14	MD-152 N @ SINGER RD
15	US-1-BR N @ MD-24
16	US-1-BR N @ US-1/HICKORY BYP
17	MD-755 N @ MD-24/EMMORTON RD (NORTH)
18	US-1 S @ MD-147/US-1-BR/BELAIR RD
19	MD-156 E @ MD-155/LEVEL RD
20	MD-152 S @ MD-7/PHILADELPHIA RD

Howard County

Rank	Location
1	I-95 S @ MD-175/EXIT 41
2	I-95 N @ MD-175/EXIT 41
3	I-95 N @ MD-32/EXIT 38
4	I-95 N @ PRINCE GEORGE'S/HOWARD CO LINE
5	I-95 S @ MD-100/EXIT 43
6	MD-100 W @ EXIT 7
7	I-70 W @ US-29/EXIT 87
8	I-95 S @ PRINCE GEORGE'S/HOWARD CO LINE
9	MD-144 W @ ELLICOTT MILLS DR
10	MD-100 W @ US-29
11	I-95 S @ MD-32/EXIT 38
12	MD-32 E @ I-95
13	US-40 W @ ST JOHNS LN
14	MD-32 E @ TEN OAKS RD
15	I-70 W @ CARROLL/HOWARD COUNTY LINE
16	I-95 S @ I-895/EXIT 46
17	US-29 N @ MD-175
18	MD-100 E @ EXIT 7
19	MD-144 E @ WESTCHESTER AVE
20	I-95 N @ MD-216/EXIT 35

Top 20 Bottlenecks in Local Jurisdictions- 1st Quarter 2022

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 @ BAY BRIDGE
3	US-301 S @ US-50
4	MD-313 S @ MD-544/MCGINNES RD
5	US-50 W @ MD-404/QUEEN ANNE HWY
6	US-50 E @ MD-456/DEL RHODES AVE
7	US-50 W @ MD-213/CENTREVILLE RD
8	US-50 W @ MD-18/MAIN ST/EXIT 41
9	US-50 W @ MD-8/EXIT 37
10	US-50 W @ MD-456/DEL RHODES AVE
11	US-50 E @ MD-8/EXIT 37
12	MD-404 E @ US-50/OCEAN GTWY
13	MD-404 W @ US-50/OCEAN GTWY
14	US-50 E @ MD-213/CENTREVILLE RD
15	US-50 W @ US-301/BLUE STAR MEML HWY
16	US-50 E @ MD-18/MAIN ST/EXIT 38
17	MD-213 S @ MD-300/SUDLERSVILLE RD
18	US-50 W @ MD-18/MAIN ST/EXIT 42
19	US-301 N @ MD-302/BARCLAY RD/HALL RD
20	MD-404 W @ MD-309/STARR RD/MAIN ST

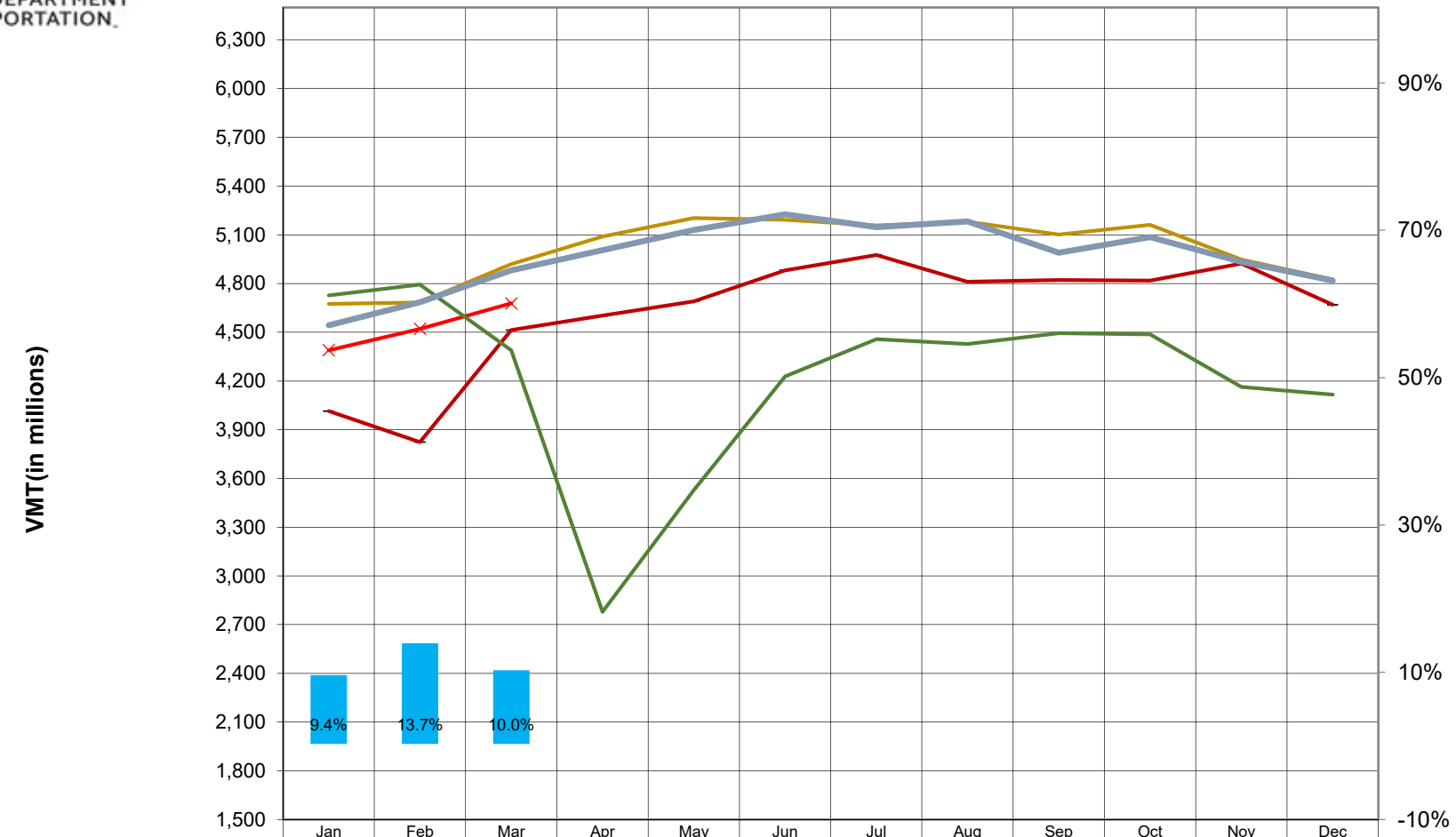
Vehicle Miles Traveled (VMT) Trend Graphs

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

Estimated Monthly Distribution of Annual (VMT) Vehicle Miles of Travel for : March-2022											
March	2018 VMT (Millions)	2019 VMT (Millions)	2020 VMT (Millions)	2021 VMT* (Millions)- Estimated	2022 VMT* (Millions)- Estimated	Percent Change 2018-2019	Percent Change 2019-2020	Percent Change 2019-2021**	Percent Change 2019-2022**	Percent Change 2021-2022	Cummulative Year-to-Date Change 2021-2022
Jan	4544	4674	4728	4014	4390	2.9%	1.2%	-14.1%	-6.1%	9.4%	9.4%
Feb	4686	4683	4794	3824	4521	-0.1%	2.4%	-18.3%	-3.5%	18.2%	13.7%
Mar	4881	4919	4389	4513	4678	0.8%	-10.8%	-8.3%	-4.9%	3.7%	10.0%
Apr	5005	5089	2779	4602		1.7%	-45.4%	-9.6%			
May	5130	5204	3527	4691		1.4%	-32.2%	-9.9%			
Jun	5226	5193	4229	4881		-0.6%	-18.6%	-6.0%			
Jul	5147	5158	4458	4976		0.2%	-13.6%	-3.5%			
Aug	5183	5180	4427	4811		-0.1%	-14.5%	-7.1%			
Sep	4989	5102	4494	4821		2.3%	-11.9%	-5.5%			
Oct	5086	5162	4488	4819		1.5%	-13.1%	-6.6%			
Nov	4933	4947	4163	4923		0.3%	-15.8%	-0.5%			
Dec	4819	4825	4116	4669		0.1%	-14.7%	-3.2%			
TOTAL	59,629	60,136	50,592	55,544		0.9%	-15.9%	-7.6%			
Note											
1	The March-2022 Monthly AVMT is up compared to March-2021 by 3.7%										
2	The Cummulative Year-to-Date Change till March-2022 AVMT is up compared to same time last year 2021 by 10%										
3	* Preliminary 2022 VMT Estimates have been projected based on 2019 Final VMT.										
4	** Comparison with Pre-COVID19 year 2019										
Data Source:Based on data collected at approximately 50+ continuous count stations by SHA's Data Services Division in Office Of Planning & Preliminary Engineering											
	Report Updated on :06/30/2022										

MARYLAND DEPARTMENT OF TRANSPORTATION

Estimated Monthly Distribution of Annual (VMT) Vehicle Miles of Travel for : March-2022



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cummulative Year-to-Date Change 2021-2022	9.4%	13.7%	10.0%									
2022 VMT* (Millions)-Estimated	4390	4521	4678									
2021 VMT* (Millions)-Estimated	4014	3824	4513	4602	4691	4881	4976	4811	4821	4819	4923	4669
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
2018 VMT (Millions)	4544	4686	4881	5005	5130	5226	5147	5183	4989	5086	4933	4819

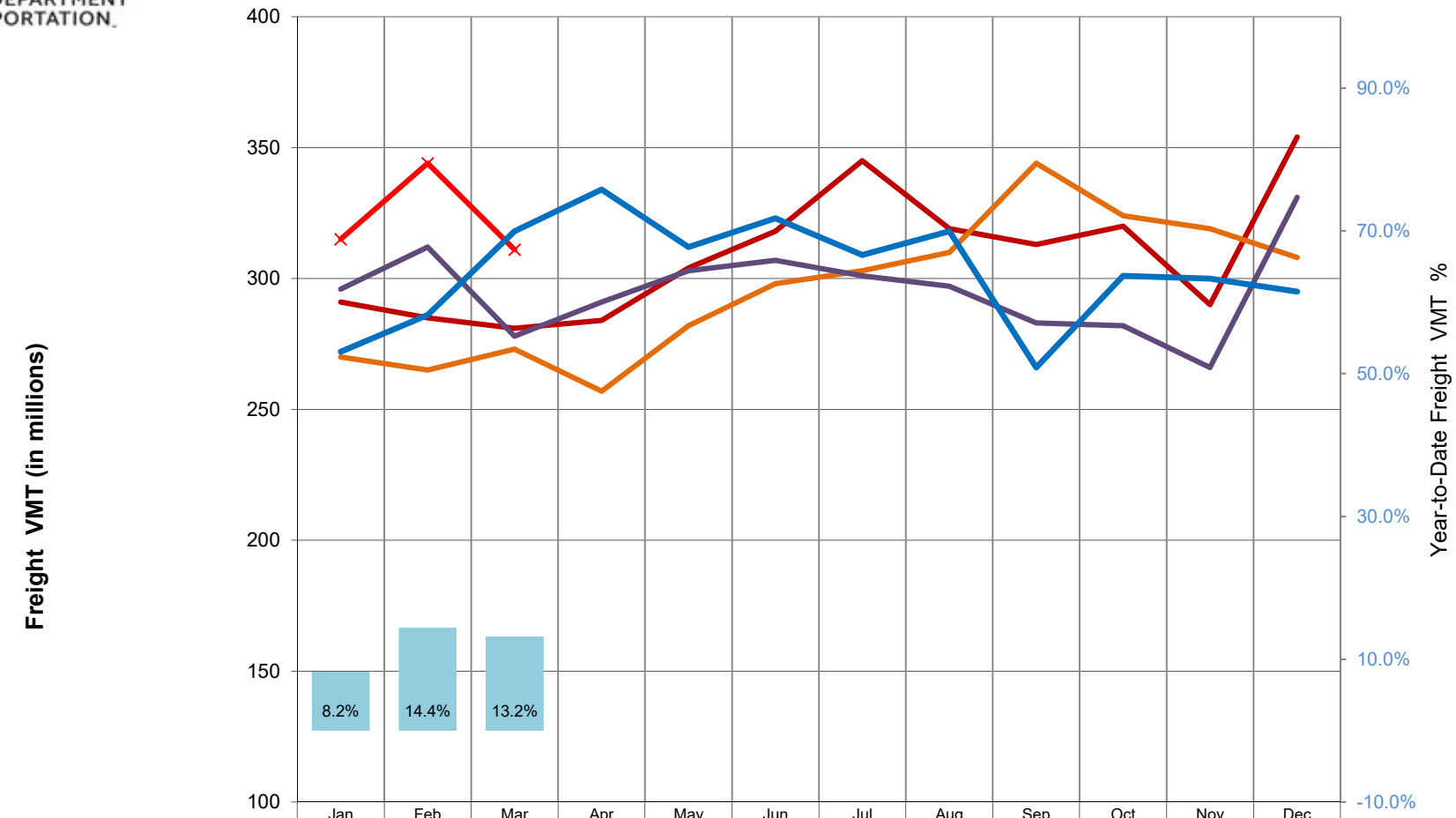
NOTE: This chart displays estimated monthly Vehicle Miles of Travel compared with the previous year based on data collected at approximately 50+ continuous count stations throughout the State.

Report Updated on :06/30/2022

Estimated Monthly Distribution of Freight Vehicle Miles of Travel for : March-2022											
March	2018 Freight VMT (Millions)	2019 Freight VMT (Millions)	2020 Freight VMT (Millions)	2021 Freight VMT (Millions)* Estimated	2022 Freight VMT (Millions)* Estimated	Percent Change 2018-2019 Freight VMT	Percent Change 2019-2020 Freight VMT	Percent Change 2019-2021** Freight VMT	Percent Change 2019-2022** Freight VMT	Percent Change 2021-2022 Freight VMT	Cumulative Year-to-Date Freight VMT 2021-2022
Jan	272	296	270	291	315	8.8%	-8.8%	-1.7%	6.4%	8.2%	8.2%
Feb	286	312	265	285	344	9.1%	-15.1%	-8.7%	10.3%	20.7%	14.4%
Mar	318	278	273	281	311	-12.6%	-1.8%	1.1%	11.9%	10.7%	13.2%
Apr	334	291	257	284		-12.9%	-11.7%	-2.4%			
May	312	303	282	304		-2.9%	-6.9%	0.3%			
Jun	323	307	298	318		-5.0%	-2.9%	3.6%			
Jul	309	301	303	345		-2.6%	0.7%	14.6%			
Aug	318	297	310	319		-6.6%	4.4%	7.4%			
Sep	266	283	344	313		6.4%	21.6%	10.6%			
Oct	301	282	324	320		-6.3%	14.9%	13.5%			
Nov	300	266	319	290		-11.3%	19.9%	9.0%			
Dec	295	331	308	354		12.2%	-6.9%	6.9%			
TOTAL	3634	3547	3553	3704		-2.39%	0.17%	4.4%			
Note											
1	The March-2022 Monthly Freight VMT is up compared to March-2021 by 10.7%										
2	The Cummulative Year-to-Date Change till March-2022 Freight VMT is up compared to same time last year 2021 by 13.2%										
3	* Preliminary 2022 Freight VMT Estimates have been projected based on 2019 Freight VMT. An upward adjustment was made in Jan 2022 Projection										
4	** Comparison with Pre-COVID19 year 2019										
5	Freight VMT = Vehicle Class 5-13										
	Data Source:Based on data collected at approximately 20+ vehicle class continuous count stations maintained by SHA's Data Services Division in OPPE										
Report Updated on :10/19/2022											

MARYLAND DEPARTMENT OF TRANSPORTATION

Estimated Monthly Distribution of Freight Vehicle Miles of Travel for : March-2022



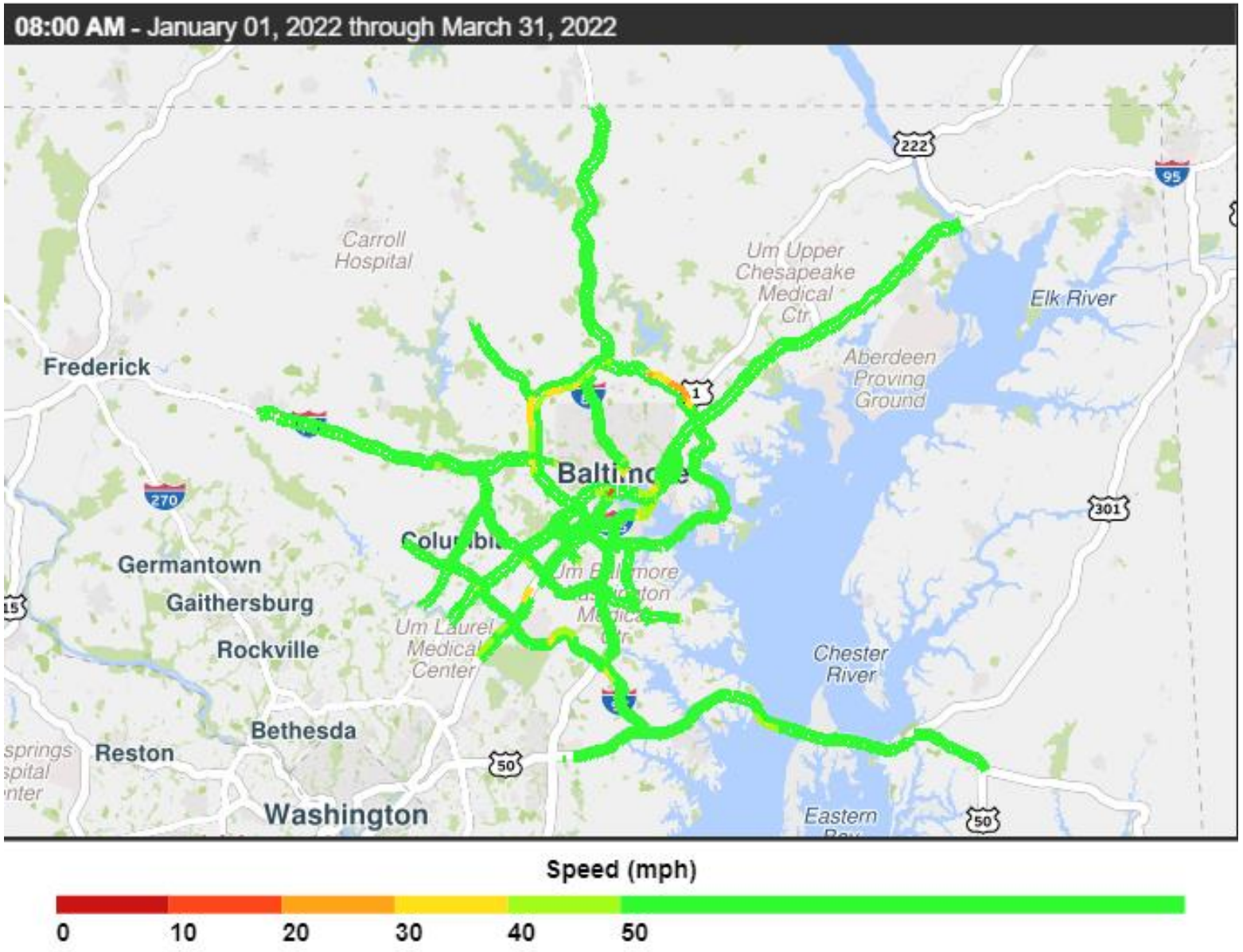
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cumulative Year-to-Date Freight VMT 2021-2022	8.2%	14.4%	13.2%									
2022 Freight VMT (Millions)* Estimated	315	344	311									
2021 Freight VMT (Millions)* Estimated	291	285	281	284	304	318	345	319	313	320	290	354
2020 Freight VMT (Millions)	270	265	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
2018 Freight VMT (Millions)	272	286	318	334	312	323	309	318	266	301	300	295

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.

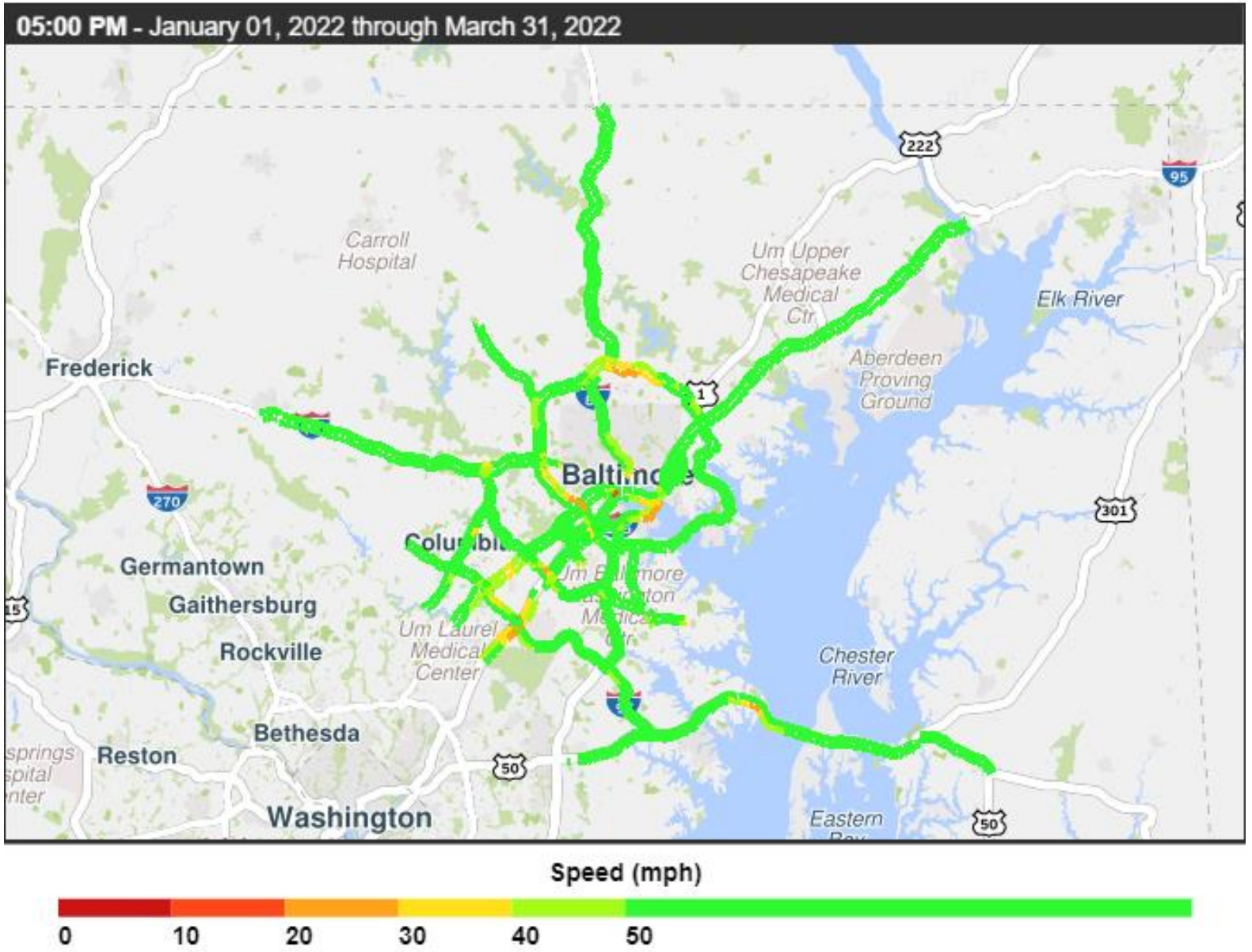
Report Updated on :06/30/2022

Regional Speed Maps

AM Peak Period Rush Hour: 1st Quarter 2022



PM Peak Period Rush Hour: 1st Quarter 2022



System Reliability Performance Measures

Percent of reliable person-miles traveled on the Interstate

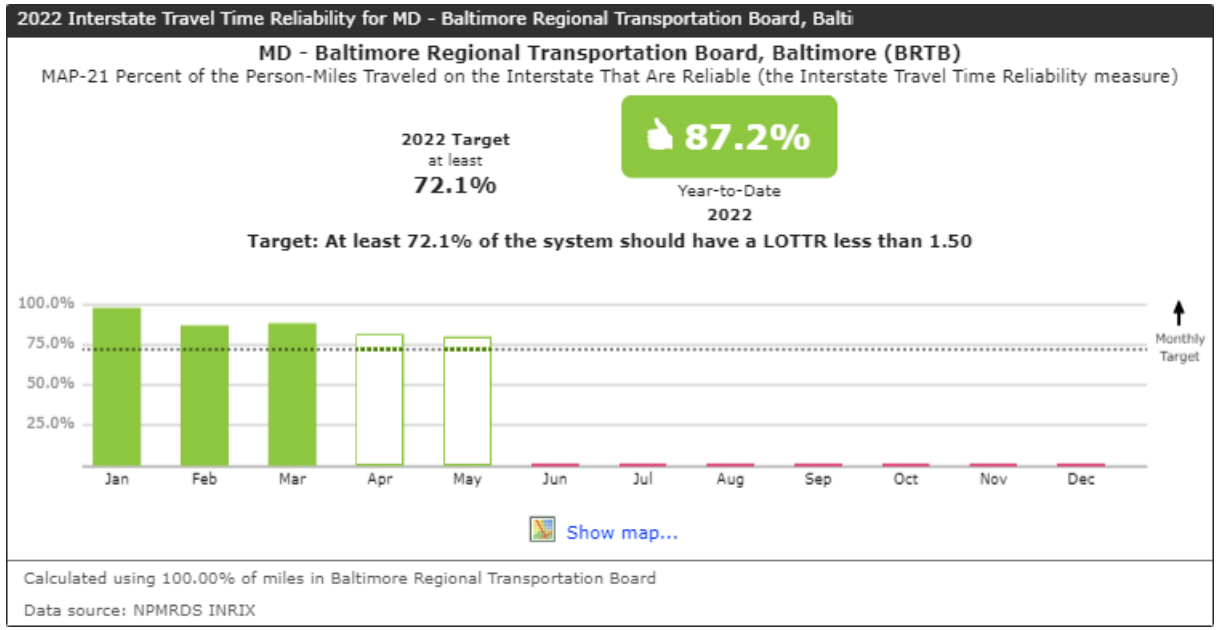
Percent of reliable person-miles traveled on the Non-Interstate NHS

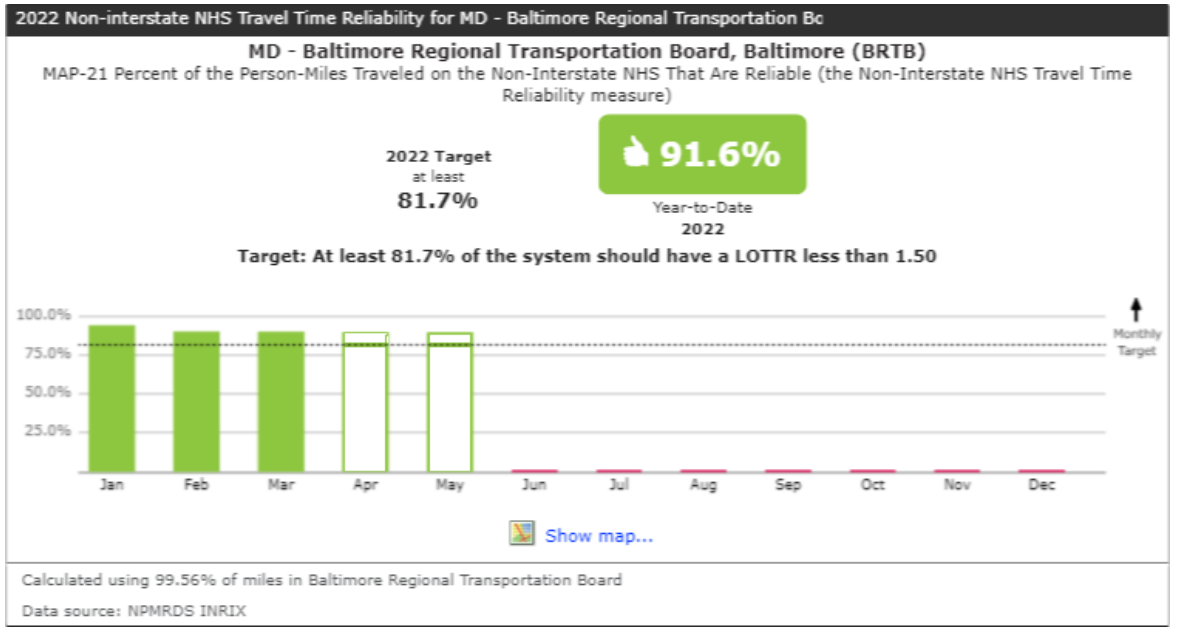
Percentage of Interstate system mileage providing for reliable truck travel time (Truck Travel Time Reliability Index)

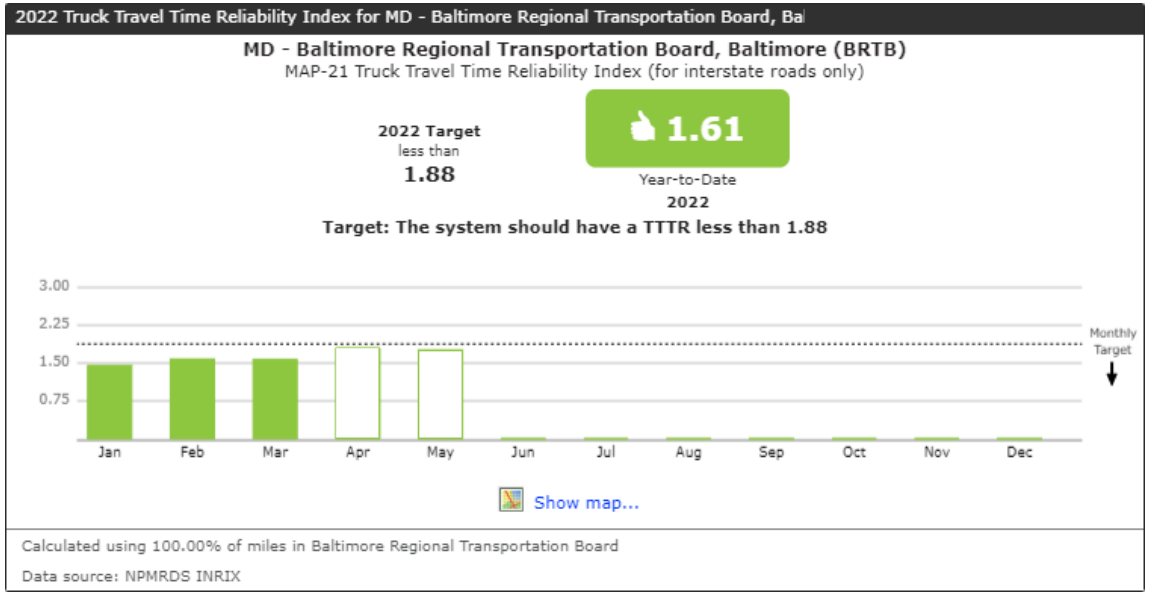
* Each state must establish statewide targets and report findings to the Federal Highway Administration. Metropolitan Planning Organizations must either support the established state targets or develop regional targets of their own.

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

			2021 - 2022											
Apr	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Q1 Rank**	**Q1 Locations**
2	1	2	3	5		2	5	3	3	2	1	1	MD-295 S @ MD-198
15	16	19		19	6	13	13	15		1	4	2	I-695 IL @ MD-122/SECURITY BLVD/EXIT 17
6	8	9	9	12		8	12	5	8		3	3	I-695 IL @ MD-372/WILKENS AVE/EXIT 12
11		1		2	7	16	6		4	3		4	US-50 E @ BAY BRIDGE
				10			2	6	17	5		5	I-695 OL @ I-83/MD-25/EXIT 23
	20	15	6		13	12	4	12	15		5	6	I-695 OL @ US-40/EXIT 15
				20	4	6	7	9		6	9	7	I-695 OL @ MD-26/EXIT 18
17									14	8		8	MD-295 S @ PRINCE GEORGE'S/ARUNDEL CO LINE
8		12	19	14	19	19			9	10		9	I-695 IL @ PROVIDENCE RD/EXIT 28
	11					7	11			7	12	10	I-97 S @ MD-178/EXIT 5
									1	19		11	I-97 S @ US-50/US-301
19			11	17			16	17	20	13	18	12	MD-295 N @ MD-175
13		18	7	7	10	20	14	2	6	12	6	13	I-95 N @ MD-152/EXIT 74
20					16	17		11			13	14	I-695 OL @ MD-567/CROMWELL BRIDGE RD/EXIT 29
12	2	5	5	4	3	1	1	1	11	20		15	I-95 S @ MD-24/EXIT 77
							8	7			17	16	I-695 IL @ MD-41/PERRING PKY/EXIT 30
	17	16	12	18		18	19	8		15		17	I-95 S @ MD-175/EXIT 41
										16		18	I-95 N @ MD-175/EXIT 41
					9					18	16	19	I-695 IL @ MD-542/LOCH RAVEN BLVD/EXIT 29
3	15				20				13			20	MD-295 S @ CANINE RD

Conclusions/Observations: The March-2022 Monthly Average Vehicle Miles Traveled AVMT is up compared to March-2021 by 3.7%. The cumulative Year to Date change through March 2022 AMVT is up compared to last year 2021 by 10%. MD-295 at MD-198 southbound reclaimed the top bottleneck spot after falling in the final quarter of 2021 to #2 .

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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BRTB
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