

Quarterly Congestion Analysis Report

Top 10 Bottlenecks in the Baltimore Region

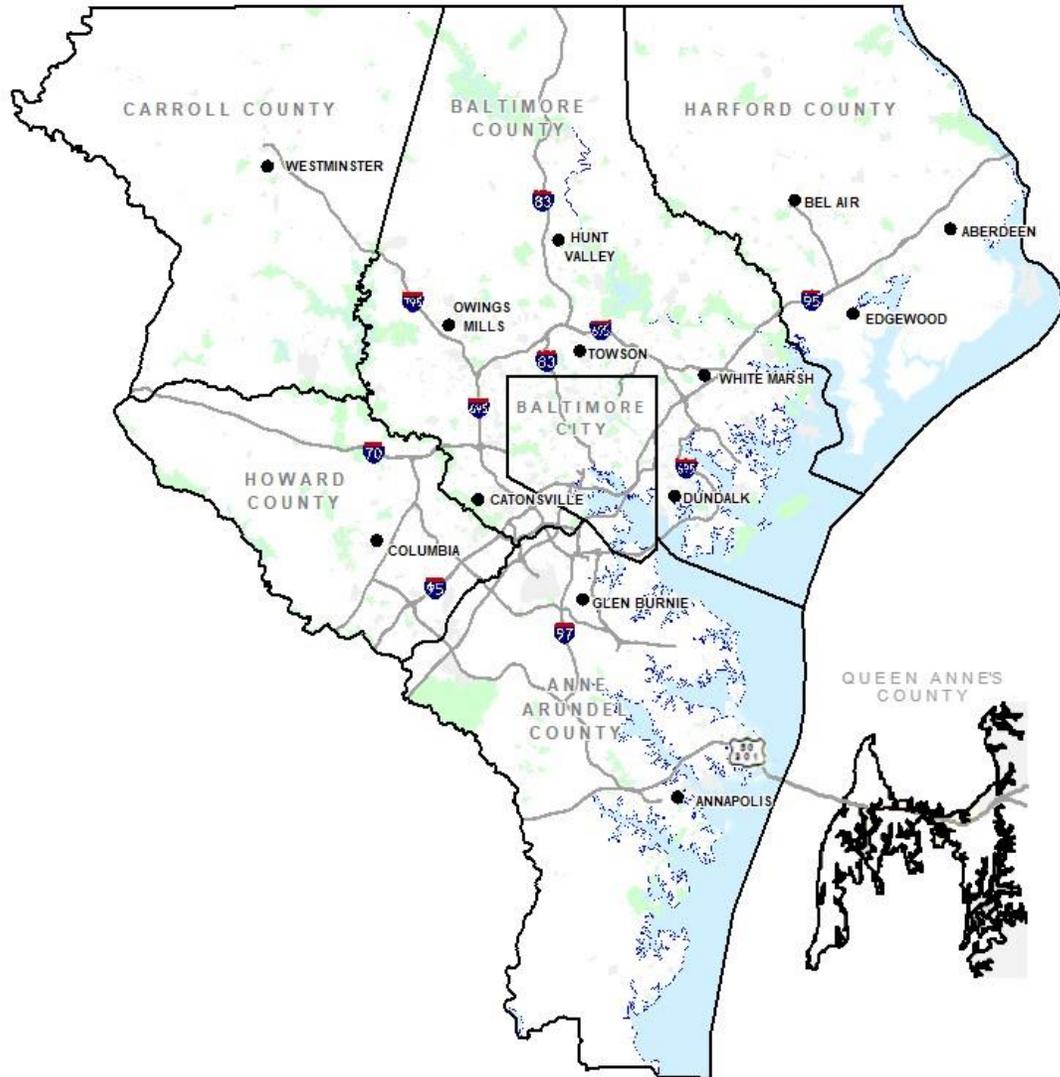
4th Quarter 2022

Table of Contents

Page	Description
3	About the Region
6	Bottleneck Analytics (How Bottleneck conditions are tracked)
9	Top 10 Bottleneck Rankings
11	Top 10 Bottlenecks by Location
22	Top 10 Bottleneck Rankings on non Limited Access Roads
24	Top 10 Bottleneck Rankings by Jurisdiction
29	Vehicle Miles Traveled (VMT) Trend Graphs
34	Regional Speed Maps
37	System Reliability
39	Ranked Monthly Bottleneck Comparison
40	Credits
41	For More Information

About the Region

Baltimore Region



The Baltimore Metropolitan 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

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.

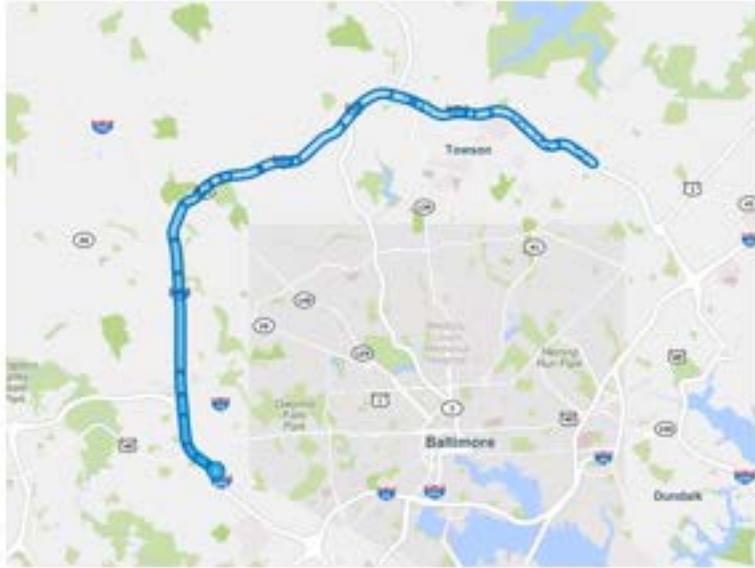
Rank	Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
1	I-695 OL @ EDMONDSON AVE/EXIT 14	5.01	2 h 43 m	834	88946
2	I-695 IL @ I-83/MD-25/EXIT 23	3.53	2 h 56 m	463	95048
3	I-695 IL @ I-70/EXIT 16	2.11	2 h 54 m	233	95068
4	I-695 OL @ US-40/EXIT 15	3.97	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

Example

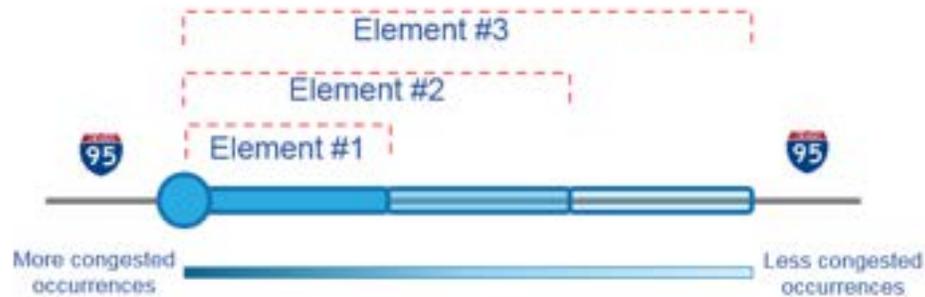
IL = Inner Loop

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.

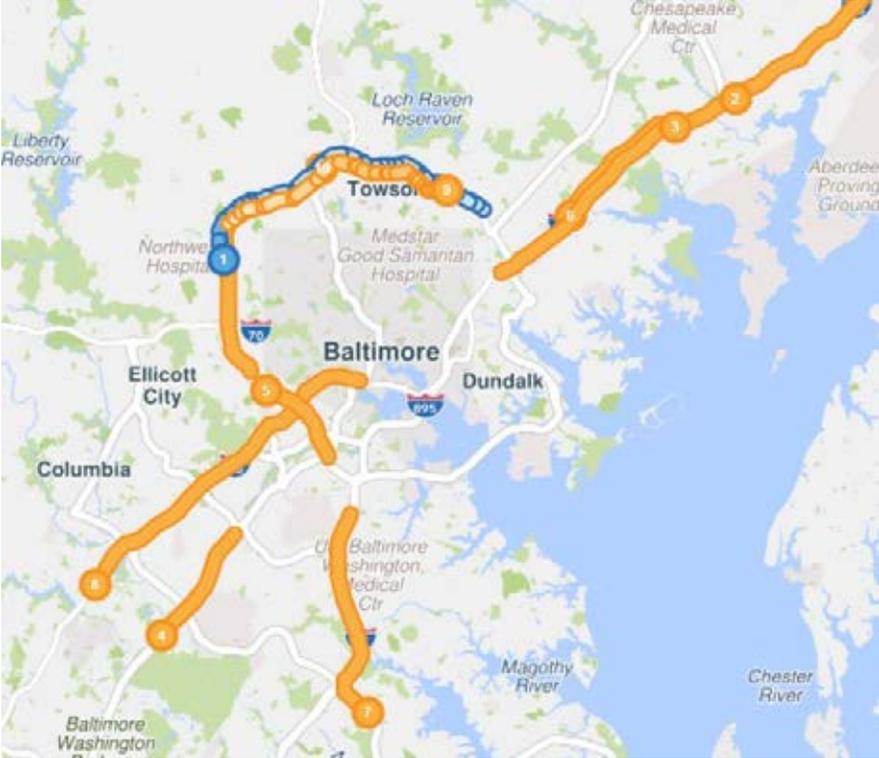


Top 10 Bottleneck Rankings in the Baltimore Region – 4th Quarter 2022

Top 10 Bottlenecks in the Region

Q4 2022

Rank	Location	Previous Quarter Ranking	Avg. Max. Length (mi)	Avg. Daily Duration	Agency Reported Incidents	Volume Estimate (AADT)
1	I-695 OL @ MD-26/EXIT 18	3	2.22	3 h 18 m	518	97,439
2	I-95 S @ MD-24/EXIT 77	--	5.73	2 h 34 m	245	56,608
3	I-95 N @ MD-152/EXIT 74	5	7.17	54 m	367	84,048
4	MD-295 S @ MD-198	1	2.92	3 h 52 m	77	47,584
5	I-695 IL @ MD-372/WILKENS AVE/EXIT 12	8	2.02	1 h 56 m	137	98,374
6	I-95 S @ MD-43/WHITE MARSH BLVD/EXIT 67	--	7.20	23 m	293	82,745
7	I-97 S @ MD-178/EXIT 5	--	2.87	2 h 3 m	142	58,342
8	I-95 S @ MD-216/EXIT 35	--	5.31	58 m	597	99,949
9	I-695 IL @ MD-41/PERRING PKWY/EXIT 30	--	5.25	37 m	374	84,783
10	I-695 IL @ I-83/MD-25/EXIT 23	--	3.66	53 m	405	97,580



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

N/A = Not Applicable/No agency report

Top 10 Bottleneck Rankings in the Baltimore Region – 4th Quarter 2022 by Location

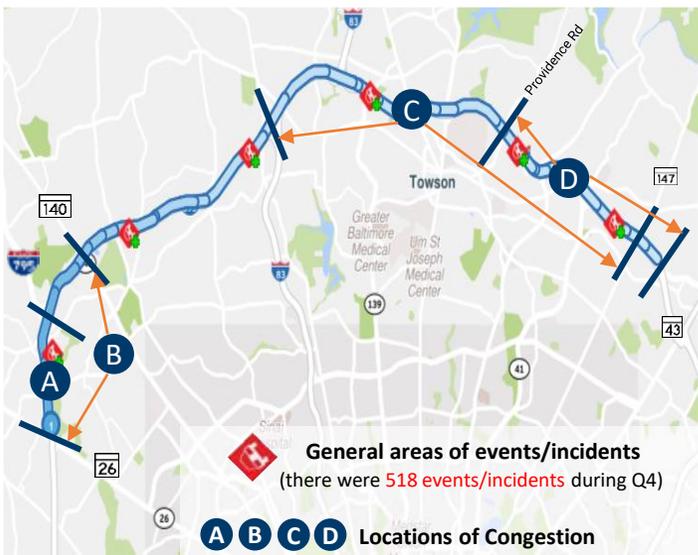
Includes:

- 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

Q4 2022



PK. AVG. SPEED

AM Peak | 8:10 AM

38.8 mph

(42% slower than free flow)

PM Peak | 4:35 PM

34.7 mph

(48% slower than free flow)

PK. TRAVEL TIME

AM Peak | 8:10 AM

24.7 min

PM Peak | 4:35 PM

27.6 min

Q4 DELAY COST

Delay Cost

\$1.948M

Veh.-hrs. of Delay

64,499 h

Congested Locations

- A** 6:36AM – 9:19AM I-795/Exit 19 to MD-26/Exit 18
- B** 3:20PM – 6:30PM MD-140/Exit 19 to MD-140/Exit 20
- C** 2:40PM – 5:50PM MD-147/Harford Rd/Exit 31 to I-83/Exit 23
- D** 6:45AM – 9:09AM MD-43/Exit 31 to Providence Rd/Exit 28

Bottleneck Occurrences

The center represents the beginning of **10.01.22** and the outer edge the end of **12.31.22**

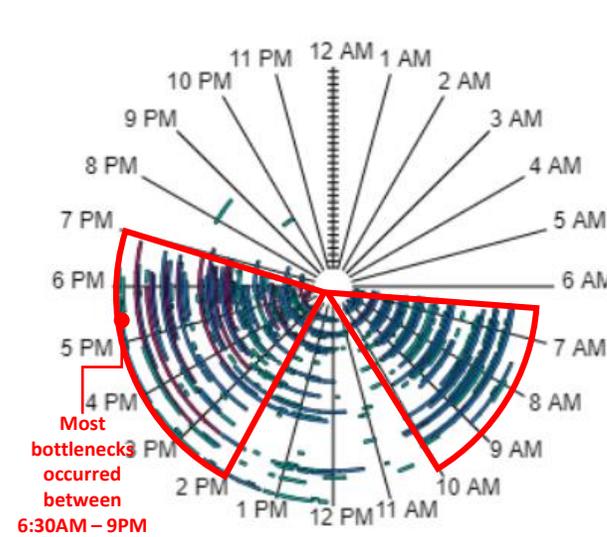
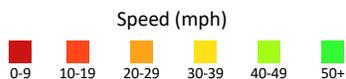
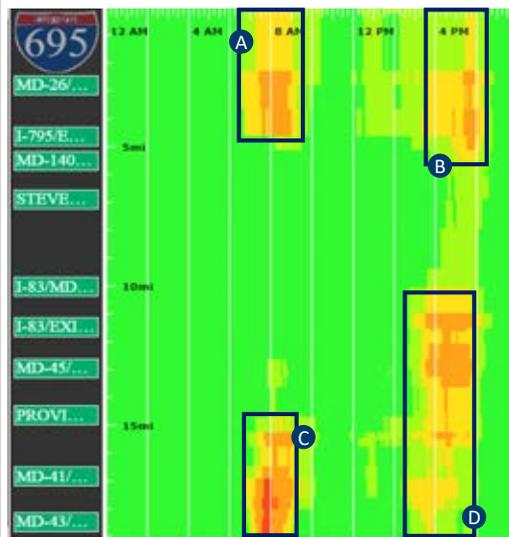
Corridor Speeds Over Time

Peak period conditions.

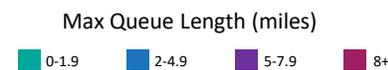
One of the heaviest traveled high volume corridors in the area. In this case the core of the bottleneck extends from MD-26 back to MD-140/Reisterstown Rd /Exit 20.

This includes what on the ground appears to be a separate bottleneck on the topside outer loop of the Baltimore Beltway that sometimes connects up with the westside portion (figures A & B).

TSMO Construction project is underway in this stretch of I-695 from I-70 to MD-43.



Most bottlenecks occurred between 6:30AM – 9PM

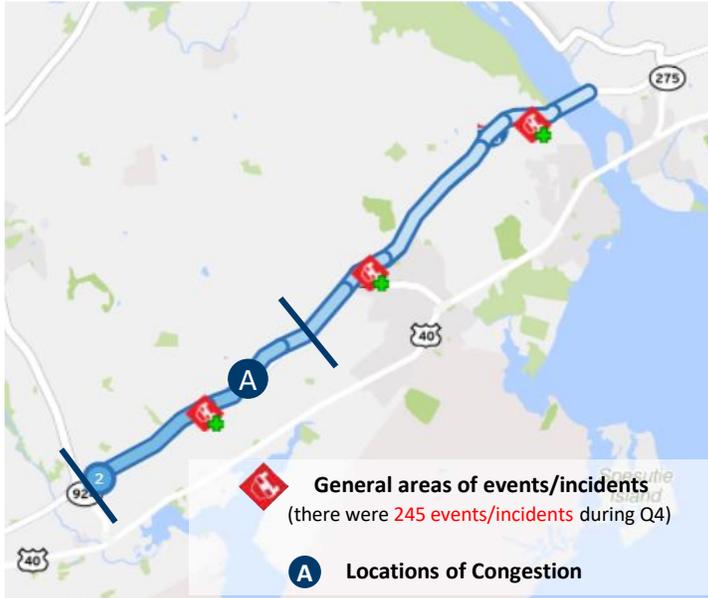


05:30 PM
October 01, 2022, through
December 31, 2022



Quarterly Bottleneck Evaluation Summary

Q4 2022



PK. AVG. SPEED

AM Peak | 11:50 AM

54.6 mph

(24% slower than free flow)

PM Peak | 2:20 PM

47.7 mph

(33% slower than free flow)

PK. TRAVEL TIME

AM Peak | 11:50 AM

18.2 min

PM Peak | 2:20 PM

20.7 min

Q4 DELAY COST

Delay Cost

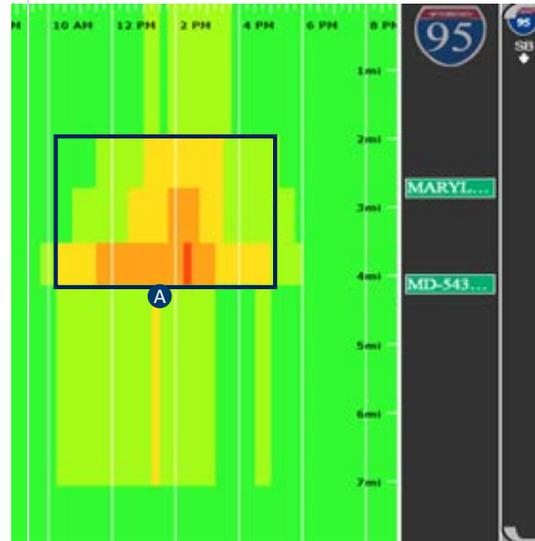
\$2,558M

Veh-hrs. of Delay

84,721 h

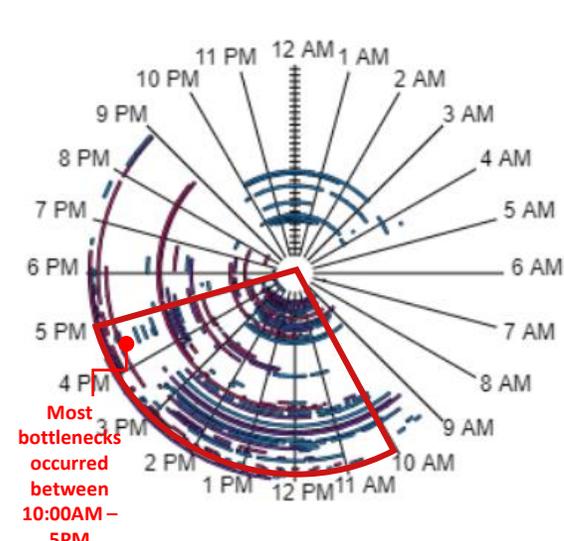
Congested Locations

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



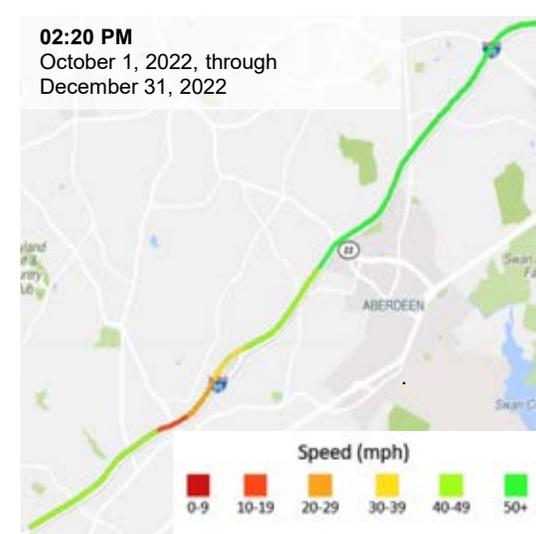
Bottleneck Occurrences

The center represents the beginning of 10.01.22 and the outer edge the end of 12.31.22.



Corridor Speeds Over Time

Peak period conditions.



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

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

Quarterly Bottleneck Evaluation Summary

Q4 2022



PK. AVG. SPEED

AM Peak | 11:55 AM
56.3 mph
 (25% slower than free flow)

PM Peak | 1:10 PM
53.3 mph
 (24% slower than free flow)

PK. TRAVEL TIME

AM Peak | 11:55 AM
14.2 min

PM Peak | 1:10 PM
15 min

Q4 DELAY COST

Delay Cost
\$1.671M

Veh-hrs. of Delay
55,348 h

Congested Locations

- A** 11:00AM – 3:00PM MD-43/White Marsh Blvd/Exit 67 to MD-152/Mountain Rd/Exit 43
- B** 4:00PM – 6:00PM MD-43/White Marsh Blvd/Exit 67 to MD-152/Mountain Rd/Exit 43

Bottleneck Occurrences

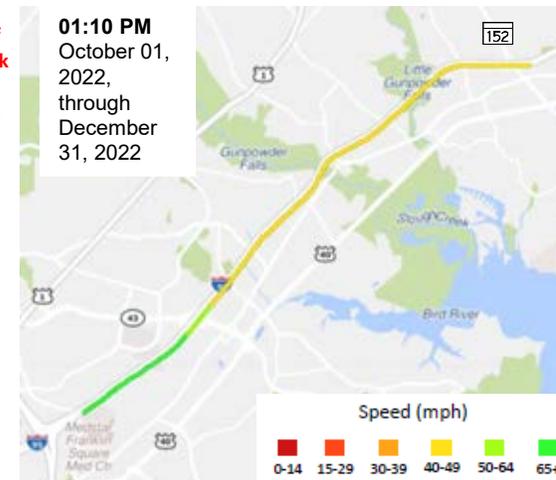
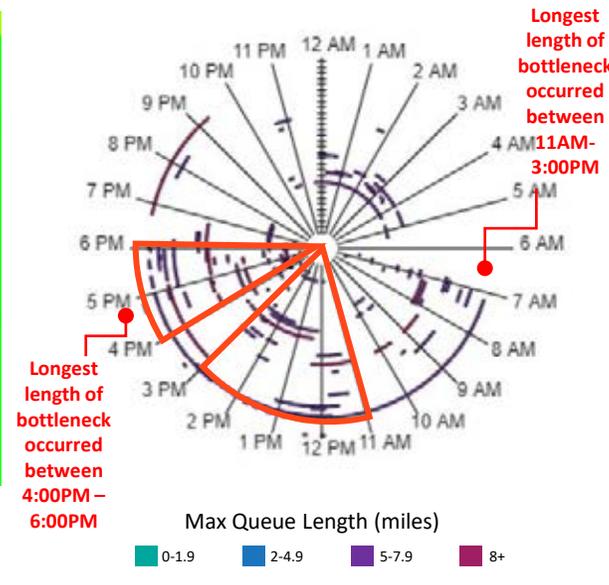
The center represents the beginning of 10.01.22 and the outer edge the end of 12.31.22

Corridor Speeds Over Time

Peak period conditions.

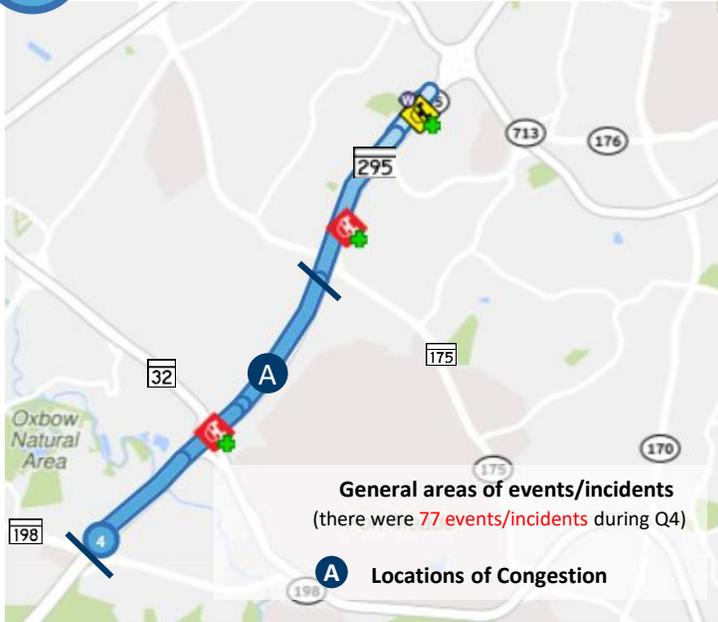
95 Express Toll Lanes Northbound Extension From MD 43 to MD 152 is responsible for off peak shoulder and lane closures.

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 and off peak shoulder and lane closures.



4

MD-295 S @ MD-198



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 the MD-295 merge with the heavily congested Capital Beltway.

Quarterly Bottleneck Evaluation Summary

Q4 2022

PK. AVG. SPEED

AM Peak | 7:50 AM
40.4 mph
 (42% slower than free flow)

PM Peak | 4:50 PM
24.4 mph
 (62% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:50 AM
9.3 min

PM Peak | 4:50 PM
15.4 min

Q4 DELAY COST

Delay Cost
\$3.499M

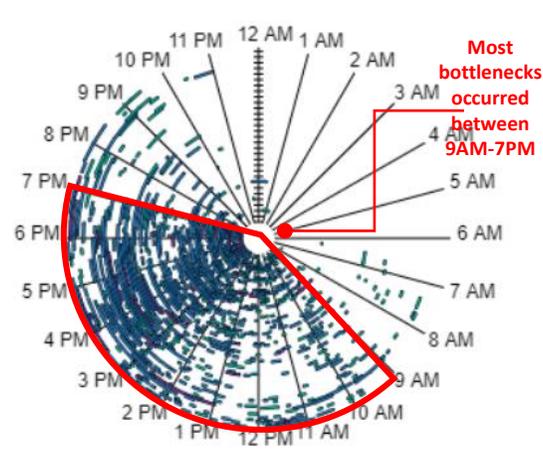
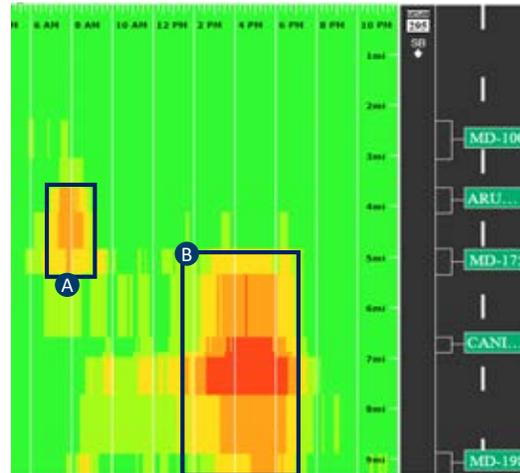
Veh-hrs. of Delay
115,869 h

Congested Locations

- A** 6:45AM – 9:00AM Arundel Mills Blvd to MD-175
- B** 1:30PM – 7:00PM MD-175 to MD-198

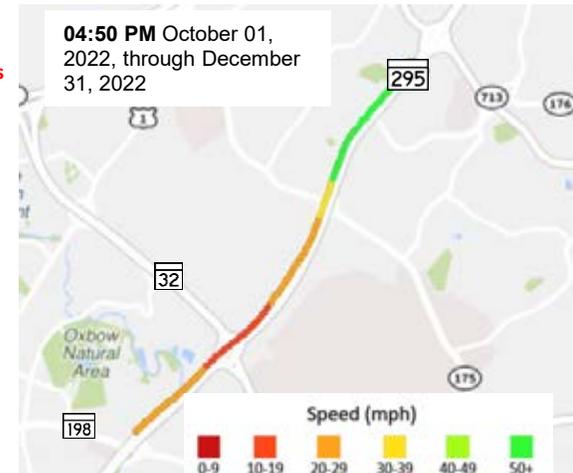
Bottleneck Occurrences

The center represents the beginning of **10.01.22** and the outer edge the end of **12.31.22**



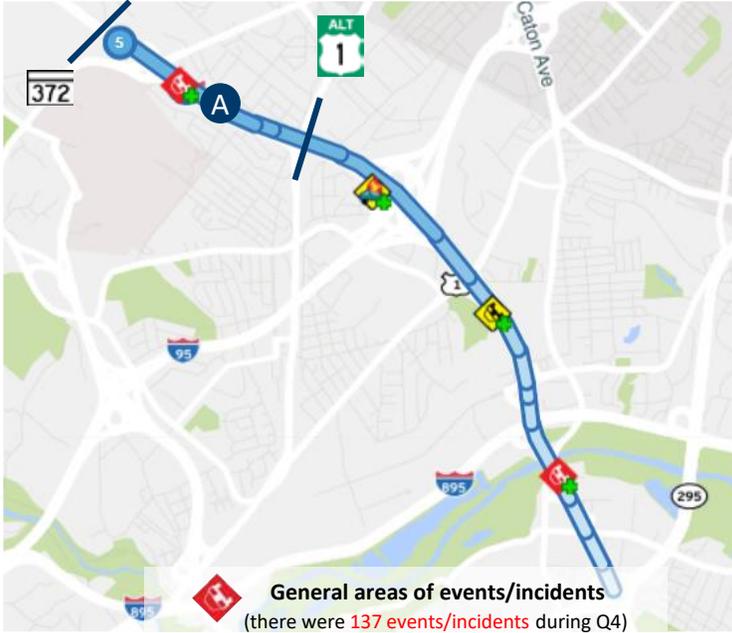
Corridor Speeds Over Time

Peak period conditions



Quarterly Bottleneck Evaluation Summary

Q4 2022



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
48.9 mph
 (29% slower than free flow)

PM Peak | 5:25 PM
27.1 mph
 (59% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:45 AM
9.9 min

PM Peak | 5:25 PM
20.2 min

Q4 DELAY COST

Delay Cost
\$1.054 M

Veh-hrs. of Delay
34,910 h

Congested Locations

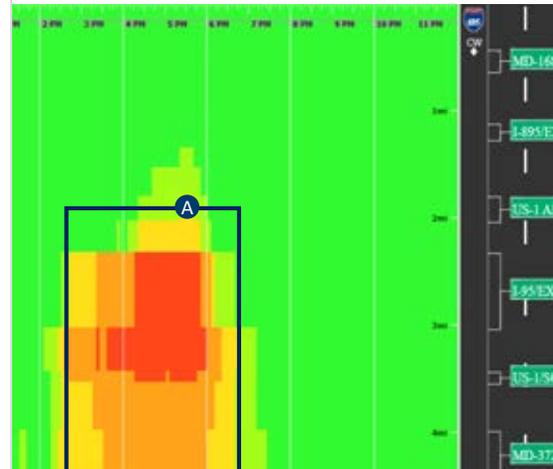
A 2:30PM – 6:30PM US-1 ALT/Washington Blvd/Exit 10 to MD-372/Wilkens Ave/Exit 12

Bottleneck Occurrences

The center represents the beginning of **10.01.22** and the outer edge the end of **12.31.22**

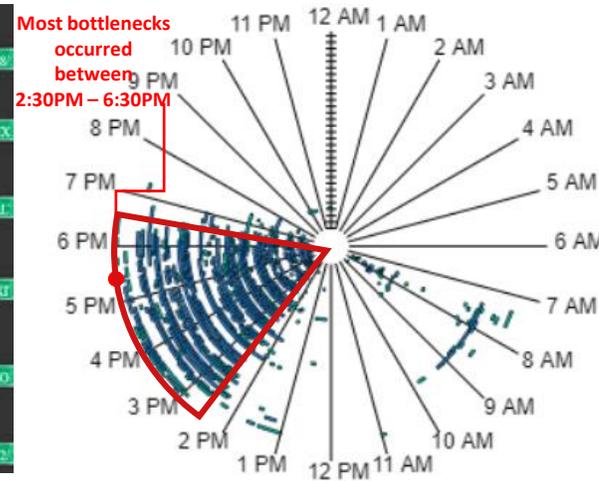
Corridor Speeds Over Time

Peak period conditions



Speed (mph)

0-14	15-19	20-29	30-39	40-49	50+
------	-------	-------	-------	-------	-----



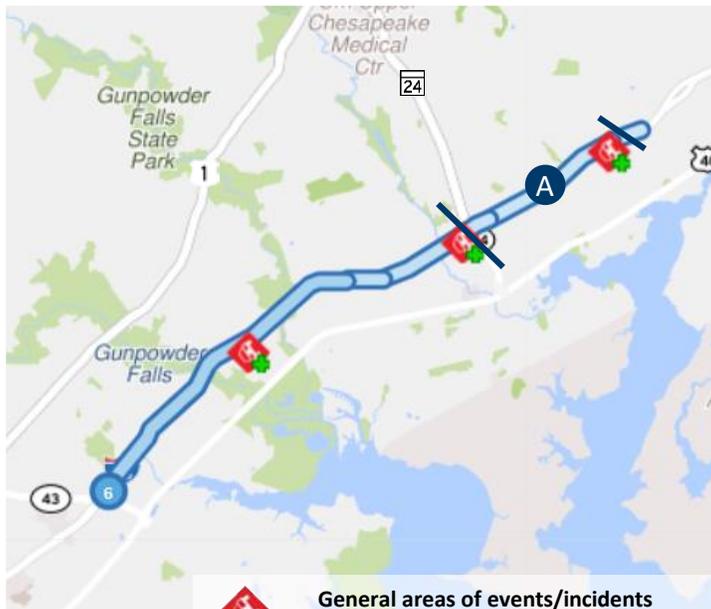
Max Queue Length (miles)

0-1.9	2-4.9	5-7.9	8+
-------	-------	-------	----



Quarterly Bottleneck Evaluation Summary

Q4 2022



General areas of events/incidents
(there were 293 events/incidents during Q4)

A Locations of Congestion

Large number of reported incidents along this corridor along with the construction of new electronic toll lanes from MD-43/White Marsh Blvd to MD-152/Mountain Rd are causing slowdowns in this area.

The Raphael Rd Bridge over I-95 is being replaced causing intermittent shoulder and lane closures.

PK. AVG. SPEED

AM Peak | 11:55 AM
54.2 mph
(18% slower than free flow)

PM Peak | 2:20 PM
49.8 mph
(29% slower than free flow)

PK. TRAVEL TIME

AM Peak | 11:55 AM
16.2 min

PM Peak | 2:20 PM
17.7 min

Q4 DELAY COST

Delay Cost
\$2.657 M

Veh-hrs. of Delay
87,979 h

Congested Locations

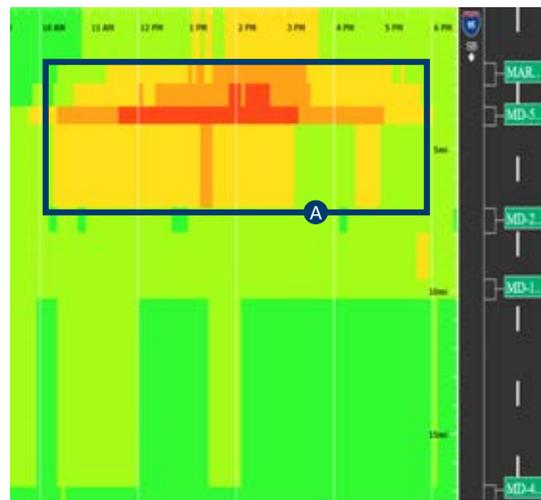
A 10:00AM – 5:00PM Maryland House Rest Stop to MD-24/Exit 77

Bottleneck Occurrences

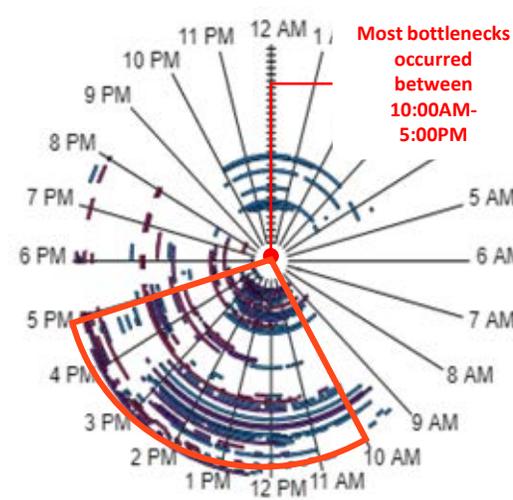
The center represents the beginning of 10.01.22 and the outer edge the end of 12.31.22

Corridor Speeds Over Time

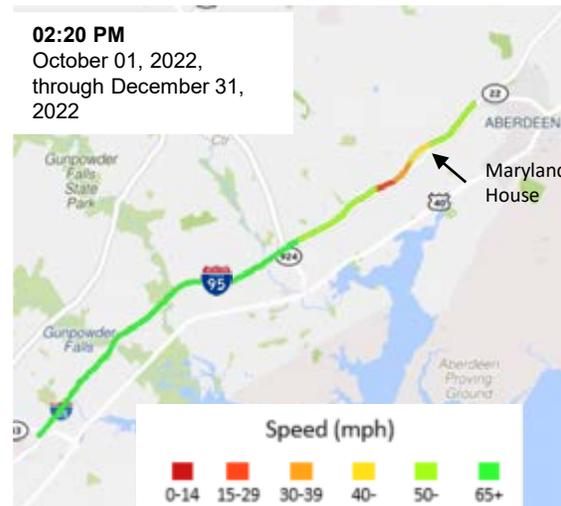
Peak period speed conditions



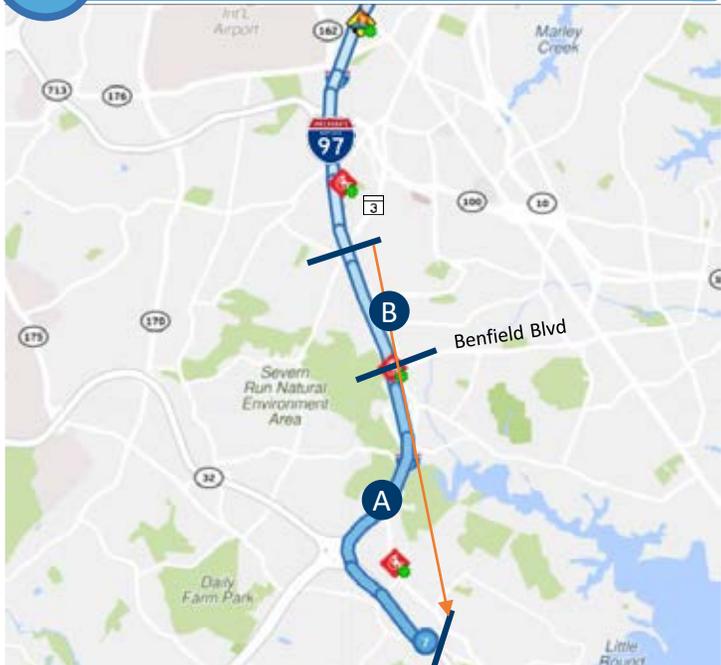
Speed (mph)
0-14 15-29 30-39 40-49 50-64 65+



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



Speed (mph)
0-14 15-29 30-39 40- 50- 65+



General areas of events/incidents
(there were 142 events/incidents during Q4)

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 | 8:00 AM
41.7 mph
 (42% slower than free flow)

PM Peak | 4:50 PM
45.9 mph
 (35% slower than free flow)

PK. TRAVEL TIME

AM Peak | 11:30 AM
15 min

PM Peak | 5:15 PM
13.6 min

Q4 DELAY COST

Delay Cost
\$1.386M

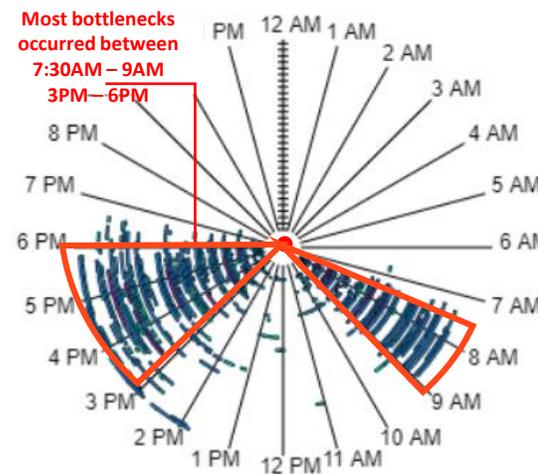
Veh.-hrs. of Delay
45,902 h

Congested Locations

- A** 7:30AM – 9:00AM Benfield Blvd/Exit 10 to MD-178/Exit 5
- B** 3PM – 6PM MD-3/Exit 7 to MD-178/Exit 5

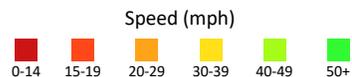
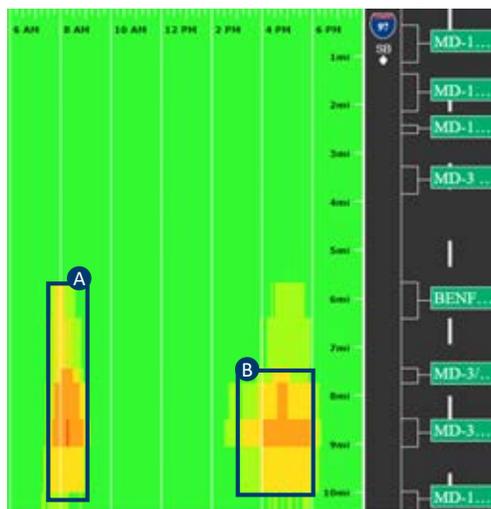
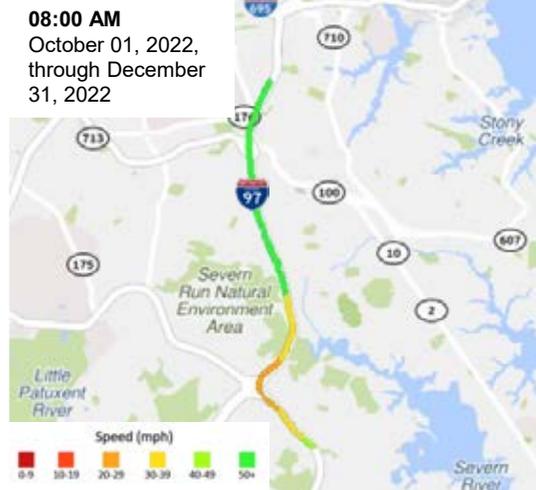
Bottleneck Occurrences

The center represents the beginning of 10.01.22 and the outer edge the end of 12.31.22



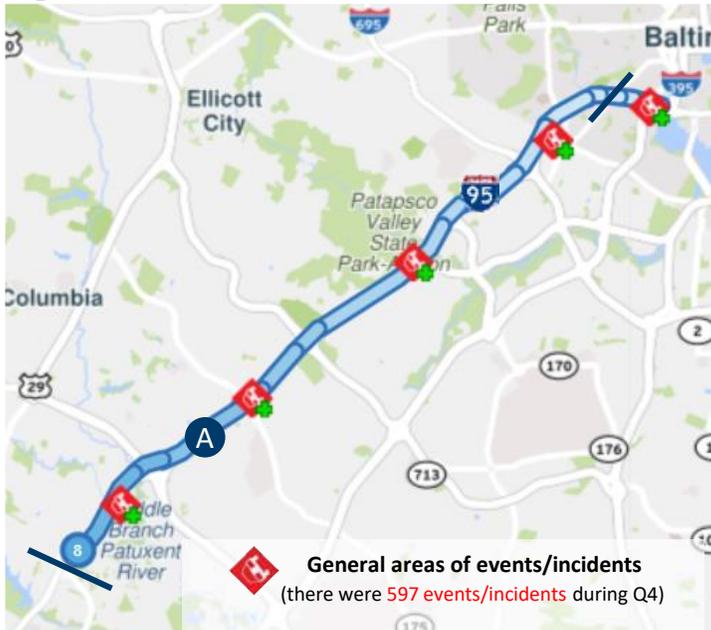
Corridor Speeds Over Time

Peak period speed conditions



Quarterly Bottleneck Evaluation Summary

Q4 2022



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.

PK. AVG. SPEED

AM Peak | 7:30 AM
57.5 mph
 (19% slower than free flow)

PM Peak | 4:35 PM
41.6 mph
 (39% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:30 AM
17.9 min

PM Peak | 4:35 PM
24.7 min

Q4 DELAY COST

Delay Cost
\$2.176M

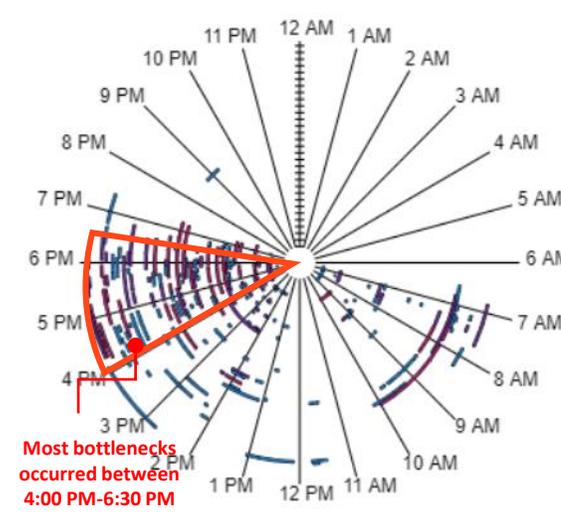
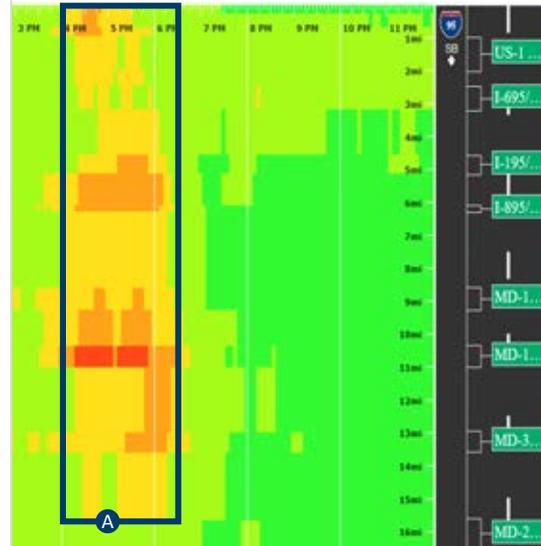
Veh-hrs. of Delay
72,070 h

Congested Locations

A 4PM – 6:30PM Washington Blvd/Exit 51 to MD-216/Exit 35

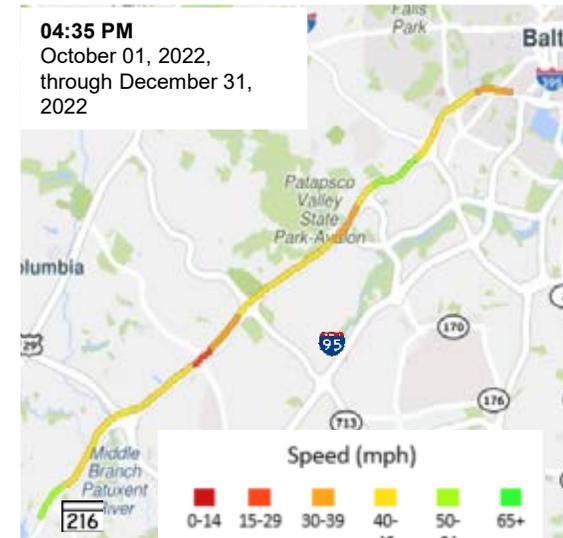
Bottleneck Occurrences

The center represents the beginning of **10.01.22** and the outer edge the end of **12.31.22**



Corridor Speeds Over Time

Peak period speed conditions



Quarterly Bottleneck Evaluation Summary

Q4 2022



General areas of events/incidents
(there were 374 events/incidents during Q4)

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).

TSMO Construction project is underway in this stretch of I-695 from I-70 to MD-43.

PK. AVG. SPEED

AM Peak | 7:50 AM
53.1 mph
(23% slower than free flow)

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

PK. TRAVEL TIME

AM Peak | 7:50 AM
46.2 min

PM Peak | 5:30 PM
50.1 min

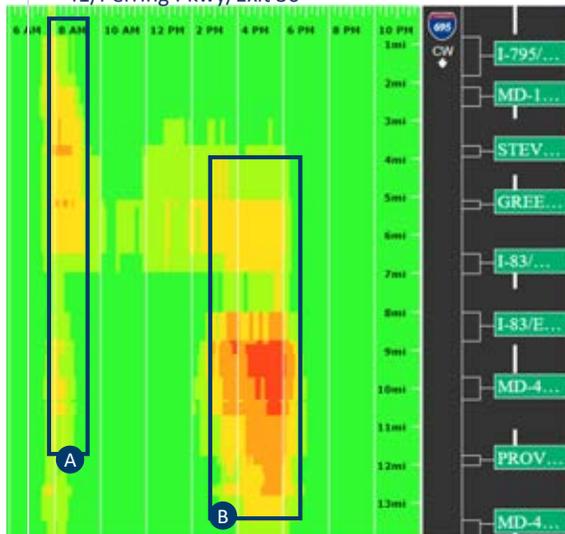
Q4 DELAY COST

Delay Cost
\$4.065M

Veh-hrs. of Delay
134,599 h

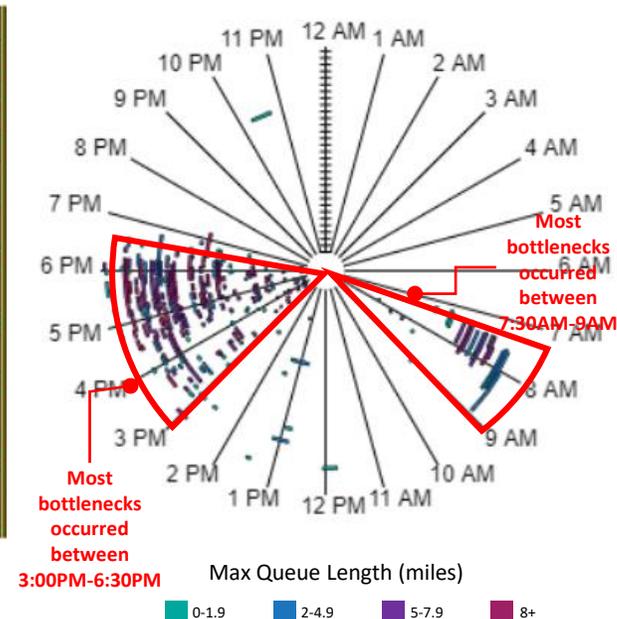
Congested Locations

- A 7:30AM – 9:0AM** I-795/Exit 19 to Providence Rd/Exit 28
- B 3:00PM – 6:30PM** Greenspring Ave/Exit 22 to MD-41/Perring Pkwy/Exit 30



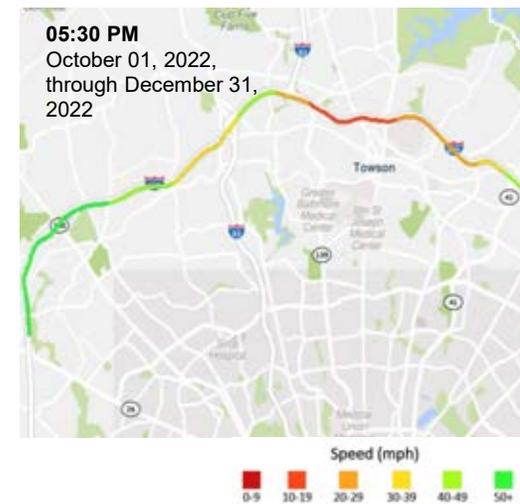
Bottleneck Occurrences

The center represents the beginning of 10.01.22 and the outer edge the end of 12.31.22



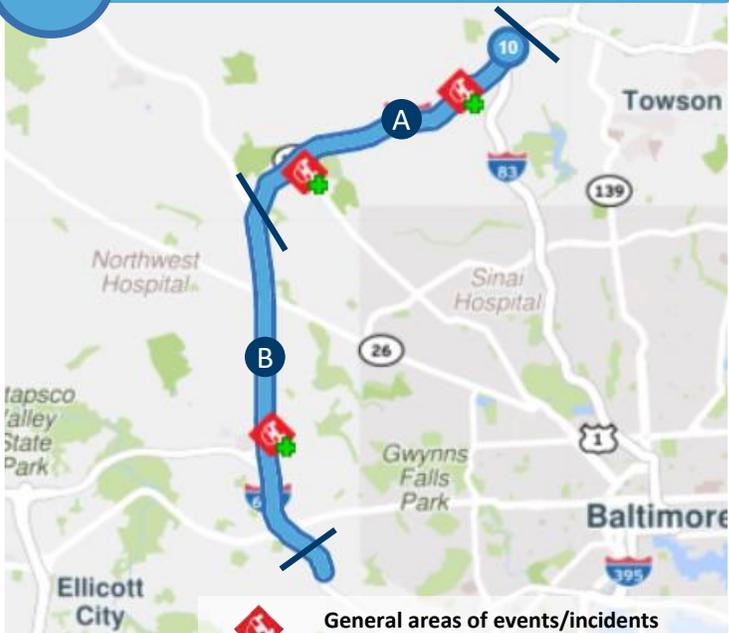
Corridor Speeds Over Time

Peak period conditions.



Quarterly Bottleneck Evaluation Summary

Q4 2022



General areas of events/incidents
(there were 405 events/incidents during Q4)

A B Locations of Congestion

Rush hour congestion more severe during the AM peak period. The lane drop approaching the ramp to southbound I-83 is a contributing factor, as are merging and weaving at the interchanges in this segment.

TSMO Construction project is underway in this stretch of I-695 from I-70 to MD-43.

PK. AVG. SPEED

AM Peak | 7:55 AM
41.4 mph
(41% slower than free flow)

PM Peak | 4:45 PM
44.5 mph
(34% slower than free flow)

PK. TRAVEL TIME

AM Peak | 7:55 AM
18.5 min

PM Peak | 4:45 PM
17.2 min

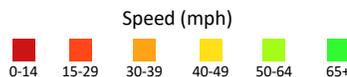
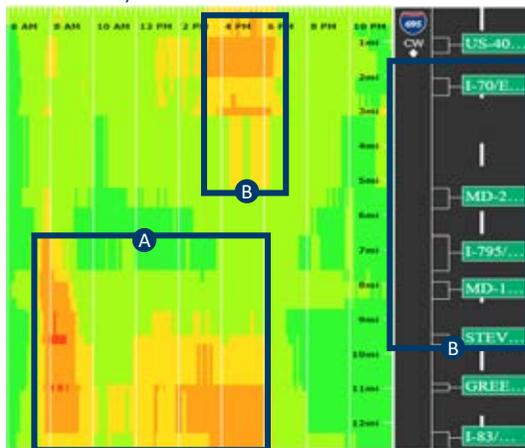
Q4 DELAY COST

Delay Cost
\$2.744M

Veh-hrs. of Delay
90,876 h

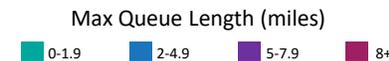
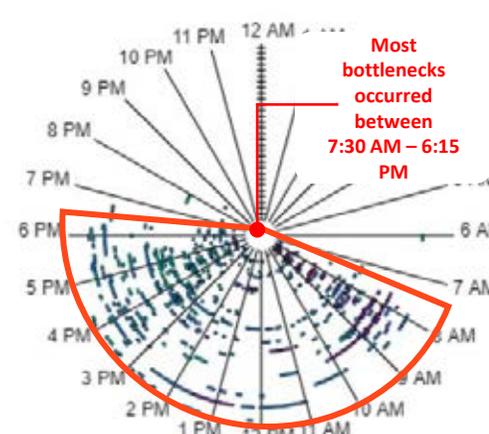
Congested Locations

- A** 7:30AM - 10AM & 12PM - 6PM
I-795/Exit 19 to I-83/MD-25/Exit 23
- B** 3:00PM - 6:15PM Edmondson Ave/Exit 14 to MD-26/Exit 18



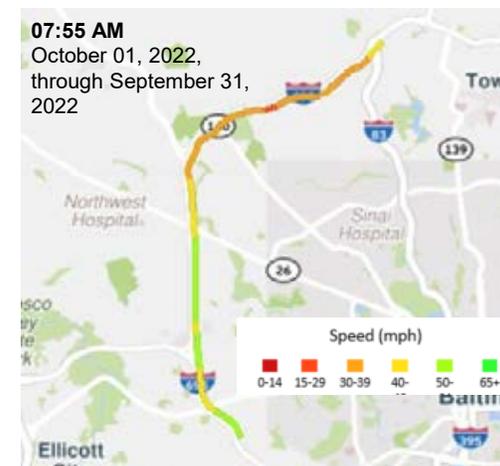
Bottleneck Occurrences

The center represents the beginning of 10.01.22 and the outer edge the end of 12.31.22



Corridor Speeds Over Time

Peak period speed conditions

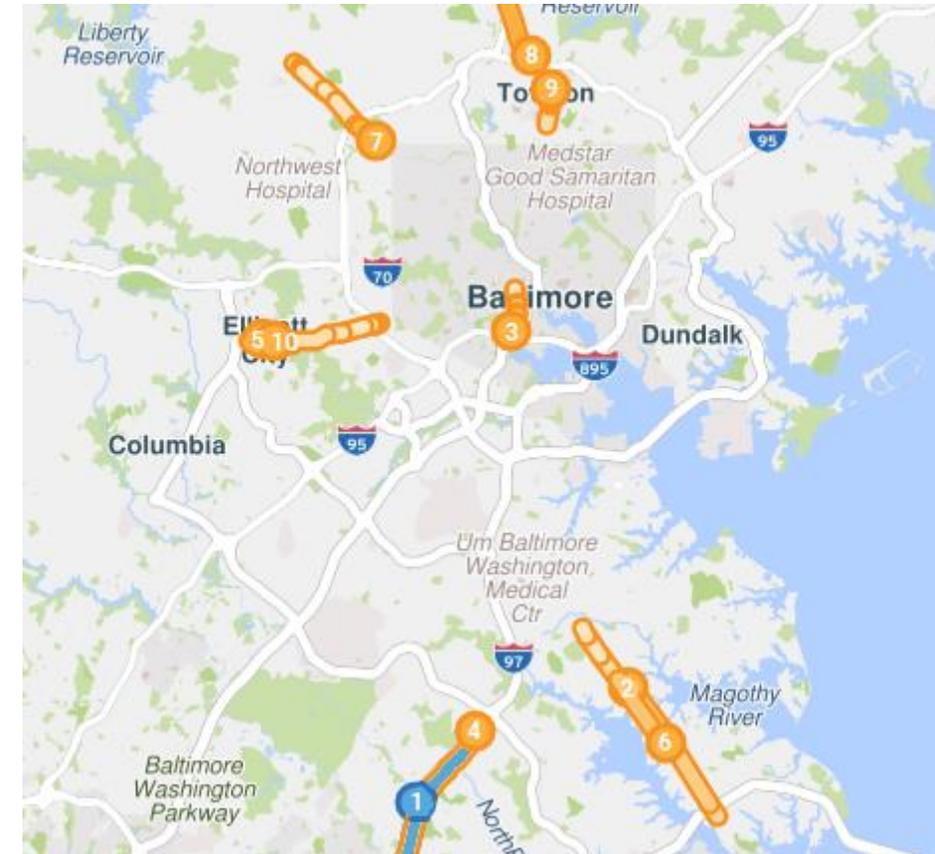


Top 10 Bottlenecks on Non-Limited Access Roads

Top 10 Bottlenecks in the Region – Non Limited Access Roads – 4th Quarter 2022

Rank	Location	Avg. Max. Length (mi)	Avg. Daily Duration	Agency Reported Incidents	Volume Estimate (AADT)
1	MD-3 N @ MD-424/CONWAY RD/DAVIDSONVILLE RD	2.22	1h 44m	19	35,090
2	MD-2 N @ ROBINSON RD	3.27	1h 31m	14	28,784
3	MD-295 S @ BUSH ST	0.41	9h 55m	1	30,098
4	MD-3 N @ MD-175/MILLERSVILLE RD/ANNAPOLIS RD	1.63	1h 33m	25	33,786
5	MD-144 W @ ELLICOTT MILLS DR	0.55	8h 54m	71	9,789
6	MD-2 S @ COLLEGE PKWY	3.09	47m	7	29,944
7	MD-140 E @ SUDBROOK LN	0.57	6h 48m	24	15,384
8	MD-45 S @ MD-131/SEMINARY AVE	0.55	4h 19m	1	18,636
9	MD-45 N @ MD-146/DULANEY VALLEY RD	0.37	9h 32m	1	10,637
10	MD-144 E @ WESTCHESTER AVE	0.53	7h 50m	0	6,691

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- 4th 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	I-97 S @ MD-178/EXIT 5
3	US-50 E @ BAY BRIDGE
4	MD-295 S @ ANNE ARUNDEL--P.G. COUNTY BORDER
5	MD-295 S @ PRINCE GEORGE'S/ARUNDEL CO LINE
6	MD-295 N @ CANINE RD
7	US-50 W @ BAY BRIDGE
8	MD-295 S @ CANINE RD
9	MD-3 N @ MD-424/CONWAY RD/DAVIDSONVILLE RD
10	MD-2 N @ ROBINSON RD
11	MD-295 N @ MD-175
12	I-695 OL @ MD-295/B.W. PKWY/EXIT 7
13	MD-3 N @ MD-175/MILLERSVILLE RD/ANNAPOLIS RD
14	MD-295 N @ MD-100
15	MD-295 N @ I-195
16	MD-295 S @ MD-175
17	I-97 S @ US-301/US-50
18	MD-2 S @ COLLEGE PKWY
19	MD-295 N @ PRINCE GEORGE'S/ANNE ARUNDEL CO LINE
20	MD-100 E @ MD-170/TELEGRAPH RD/EXIT 11

IL = Inner Loop

Baltimore City

Rank	Location
1	I-95 S @ FORT MCHENRY TUNNEL
2	I-895 S @ HARBOR TUNNEL THWY (SOUTH)
3	I-95 N @ I-95 (BALTIMORE)/FORT MCHENRY TUNNEL(EAST)
4	MD-295 N @ BAYARD ST
5	MD-295 S @ BUSH ST
6	I-83 S @ MD-25/FALLS RD/EXIT 8
7	I-95 N @ FORT MCHENRY TUNNEL
8	US-40 W @ MD-295/PACA ST
9	I-95 S @ MCCOMAS ST/EXIT 55 NORTH
10	I-895 S @ FRANKFURST AVE/SHELL RD/EXIT 8
11	I-895 S @ HARBOR TUNNEL THWY (NORTH)
12	I-895 N @ HARBOR TUNNEL THWY (SOUTH)
13	I-95 N @ MD-295/BALTIMORE WASHINGTON PKWY/EXIT 52
14	I-95 S @ KEITH AVE/EXIT 56
15	I-95 S @ I-95 (WEST)
16	MT ROYAL AVE W @ US-1/W NORTH AVE
17	PATAPSCO AVE E @ WASHINGTON BLVD
18	US-40 W @ COOKS LN
19	MD-295 N @ I-95/MONROE ST
20	FOREST PARK AVE N @ WINDSOR MILL RD

OL = Outer Loop

Top 20 Bottlenecks in Local Jurisdictions- 4th 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 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-95 S @ MD-43/WHITE MARSH BLVD/EXIT 67
5	I-695 IL @ MD-41/PERRING PKWY/EXIT 30
6	I-695 IL @ I-83/MD-25/EXIT 23
7	I-695 OL @ I-70/EXIT 16
8	I-83 S @ I-695
9	I-695 IL @ PROVIDENCE RD/EXIT 28
10	I-695 IL @ MD-147/HARFORD RD/EXIT 31
11	I-695 IL @ I-70/EXIT 16
12	I-695 IL @ MD-542/LOCH RAVEN BLVD/EXIT 29
13	I-695 IL @ SECURITY BLVD/EXIT 17
14	I-70 E @ I-695/EXIT 91
15	I-695 OL @ GREENSPRING AVE/EXIT 22
16	I-695 OL @ CROMWELL BRIDGE RD/EXIT 29
17	I-695 OL @ MD-41/PERRING PKWY/EXIT 30
18	I-695 IL @ MD-144/FREDERICK RD/EXIT 13
19	I-695 IL @ I-83/EXIT 24
20	I-95 S @ I-195/MD-166/EXIT 47

IL = Inner Loop

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-140 W @ MD-97/MALCOLM DR
5	MD-27 N @ MD-30/MAIN ST
6	MD-32 W @ RAINCLIFFE RD/SANDOSKY RD
7	MD-140 W @ MD-194/YORK ST/FREDERICK ST
8	MD-140 E @ MD-91/EMORY RD/GAMBER RD
9	MD-97 N @ MD-140/MD-97/BALTIMORE BLVD
10	MD-482 W @ MD-27/MANCHESTER RD
11	MD-140 W @ MD-27/MANCHESTER RD
12	MD-144 E @ MD-27/RIDGE RD
13	MD-97 S @ MD-496/BACHMANS VALLEY RD
14	MD-97 S @ MD-140/COLLEGE VIEW BLVD
15	MD-97 N @ MAGNA WAY/AIRPORT DR
16	MD-97 N @ MD-496/BACHMANS VALLEY RD
17	MD-91 N @ MD-140/BALTIMORE BLVD
18	MD-140 W @ MD-91/EMORY RD/GAMBER RD
19	MD-144 E @ I-70/US-40/BALTIMORE NATIONAL PIKE
20	MD-27 S @ MD-30/MAIN ST

OL = Outer Loop

Top 20 Bottlenecks in Local Jurisdictions- 4th 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-24/EXIT 77
3	I-95 S @ MD-152/EXIT 74
4	I-95 N @ MD-22/EXIT 85
5	I-95 S @ MD-543/EXIT 80
6	I-95 S @ MARYLAND HOUSE
7	MD-152 N @ OLD JOPPA RD
8	US-40 W @ MD-22/ABERDEEN TRWY
9	MD-24 N @ I-95
10	MD-24 N @ SINGER RD
11	MD-24 N @ PLUMTREE RD
12	US-1-BR S @ MD-24
13	MD-22 W @ SCHUCKS RD/THOMAS RUN RD
14	I-95 N @ MD-155/EXIT 89
15	I-95 N @ MILLARD E TYDINGS MEMORIAL BRIDGE
16	MD-22 E @ MD-136/PRIESTFORD RD/CALVARY RD
17	US-40 E @ MD-22/ABERDEEN TRWY
18	MD-147 N @ MD-152/FALLSTON RD/MOUNTAIN RD
19	MD-7 N @ MD-152/S MOUNTAIN RD
20	US-1-BR N @ MD-24

Howard County

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

Top 20 Bottlenecks in Local Jurisdictions- 4th 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 @ MD-8/EXIT 37
3	US-50 W @ STATION LN/VFW AVE/EXIT 44A
4	US-50 W @ MD-213/CENTREVILLE RD
5	US-50 E @ BAY BRIDGE
6	US-50 W @ US-301/BLUE STAR MEMORIAL HWY
7	US-301 S @ US-50
8	US-50 W @ MD-456/DEL RHODES AVE
9	US-50 W @ MD-8/EXIT 37
10	MD-313 S @ MD-544/MCGINNIS RD
11	US-50 E @ MD-213/CENTREVILLE RD
12	US-50 W @ MD-18/MAIN ST/EXIT 41
13	US-50 W @ THOMPSON CREEK RD/DUKE ST
14	US-50 W @ MD-404/QUEEN ANNE HWY
15	US-50 W @ MD-18/MAIN ST/EXIT 43A
16	US-50 E @ MD-404/QUEEN ANNE HWY
17	MD-300 E @ MD-213/CHURCH HILL RD
18	US-301 N @ MD-291/RIVER RD
19	US-301 S @ MD-544/MCGINNES RD
20	US-50 E @ STATION LN/VFW AVE/EXIT 44A

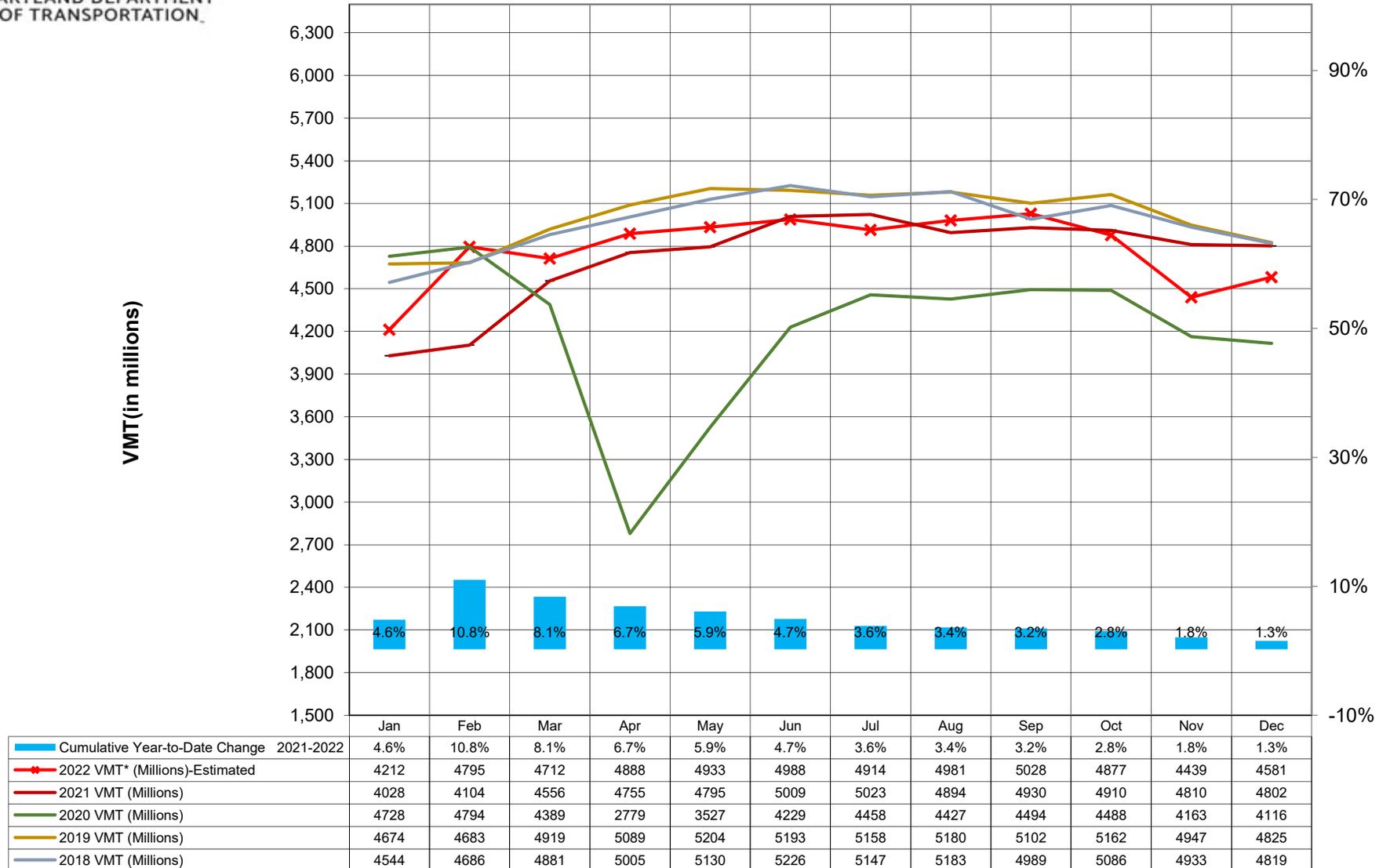
Vehicle Miles Traveled (VMT) Trend Graphs

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

Estimated Monthly Distribution of Annual (VMT) Vehicle Miles of Travel for : December-2022										
December	2018 VMT (Millions)	2019 VMT (Millions)	2020 VMT (Millions)	2021 VMT (Millions)	2022 VMT* (Millions)- Estimated	Percent Change 2018- 2019	Percent Change 2019- 2020	Percent Change 2020- 2021	Percent Change 2021- 2022	Cumulative Year-to-Date Change 2021- 2022
Jan	4544	4674	4728	4028	4212	2.9%	1.2%	-14.8%	4.6%	4.6%
Feb	4686	4683	4794	4104	4795	-0.1%	2.4%	-14.4%	16.8%	10.8%
Mar	4881	4919	4389	4556	4712	0.8%	-10.8%	3.8%	3.4%	8.1%
Apr	5005	5089	2779	4755	4888	1.7%	-45.4%	71.1%	2.8%	6.7%
May	5130	5204	3527	4795	4933	1.4%	-32.2%	36.0%	2.9%	5.9%
Jun	5226	5193	4229	5009	4988	-0.6%	-18.6%	18.4%	-0.4%	4.7%
Jul	5147	5158	4458	5023	4914	0.2%	-13.6%	12.7%	-2.2%	3.6%
Aug	5183	5180	4427	4894	4981	-0.1%	-14.5%	10.5%	1.8%	3.4%
Sep	4989	5102	4494	4930	5028	2.3%	-11.9%	9.7%	2.0%	3.2%
Oct	5086	5162	4488	4910	4877	1.5%	-13.1%	9.4%	-0.7%	2.8%
Nov	4933	4947	4163	4810	4439	0.3%	-15.8%	15.5%	-7.7%	1.8%
Dec	4819	4825	4116	4802	4581	0.1%	-14.7%	16.7%	-4.6%	1.3%
TOTAL	59,629	60,136	50,592	56,616	57,348	0.9%	-15.9%	11.9%	1.3%	1.3%
Note										
1	The December-2022 Monthly AVMT is down compared to December-2021 by -4.6%									
2	The Cumulative Year-to-Date Change till December-2022 AVMT is up compared to same time last year 2021 by 1.3%									
3	* Preliminary 2022 VMT Estimates based on 2021 Final 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 :03/29/2023									



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

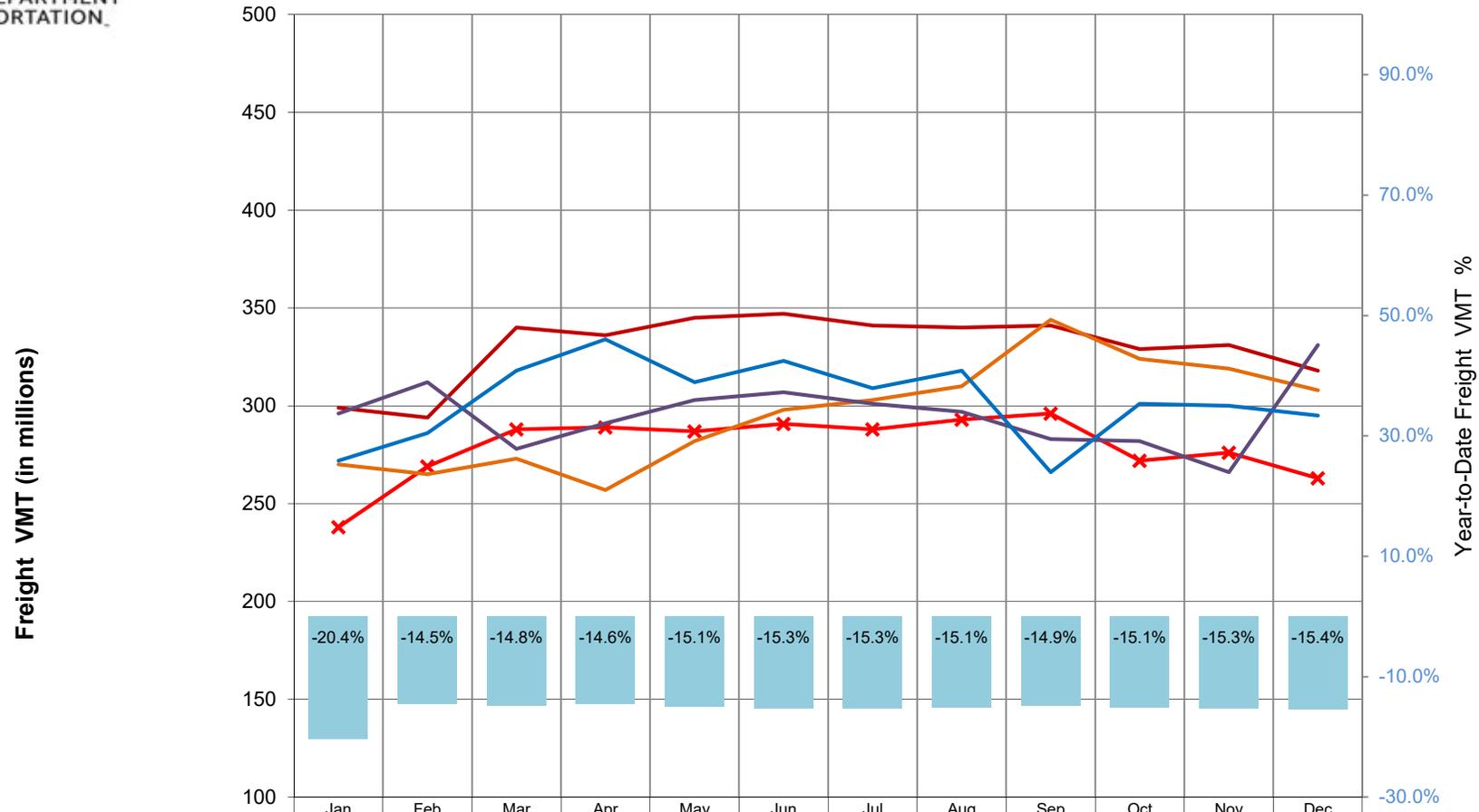


NOTE: This chart displays estimated monthly Vehicle Miles of Travel compared with the previous year based on data collected at approximately 50+ continuous count stations throughout the State.
Report Updated on :03/29/2023

Estimated Monthly Distribution of Freight Vehicle Miles of Travel for : December-2022										
December	2018 Freight VMT (Millions)	2019 Freight VMT (Millions)	2020 Freight VMT (Millions)	2021 Freight VMT (Millions)	2022 Freight VMT (Millions)* Estimated	Percent Change 2018-2019 Freight VMT	Percent Change 2019-2020 Freight VMT	Percent Change 2020-2021 Freight VMT	Percent Change 2021-2022 Freight VMT	Cumulative Year-to-Date Freight VMT 2021-2022
Jan	272	296	270	299	238	8.8%	-8.8%	10.7%	-20.4%	-20.4%
Feb	286	312	265	294	269	9.1%	-15.1%	10.9%	-8.5%	-14.5%
Mar	318	278	273	340	288	-12.6%	-1.8%	24.5%	-15.3%	-14.8%
Apr	334	291	257	336	289	-12.9%	-11.7%	30.7%	-14.0%	-14.6%
May	312	303	282	345	287	-2.9%	-6.9%	22.3%	-16.8%	-15.1%
Jun	323	307	298	347	291	-5.0%	-2.9%	16.4%	-16.2%	-15.3%
Jul	309	301	303	341	288	-2.6%	0.7%	12.5%	-15.5%	-15.3%
Aug	318	297	310	340	293	-6.6%	4.4%	9.7%	-13.8%	-15.1%
Sep	266	283	344	341	296	6.4%	21.6%	-0.9%	-13.2%	-14.9%
Oct	301	282	324	329	272	-6.3%	14.9%	1.5%	-17.3%	-15.1%
Nov	300	266	319	331	276	-11.3%	19.9%	3.8%	-16.6%	-15.3%
Dec	295	331	308	318	263	12.2%	-6.9%	3.2%	-17.3%	-15.4%
TOTAL	3634	3547	3553	3961	3350	-2.39%	0.17%	11.48%	-15.4%	-15.4%
Note										
1	The December-2022 Monthly Freight VMT is down compared to December-2021 by -17.3%									
2	The Cumulative Year-to-Date Change till December-2022 Freight VMT is down compared to same time last year 2021 by -15.4%									
3	* Preliminary 2022 Freight VMT Estimates based on 2021 Freight Final VMT.									
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 :03/29/2023										



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



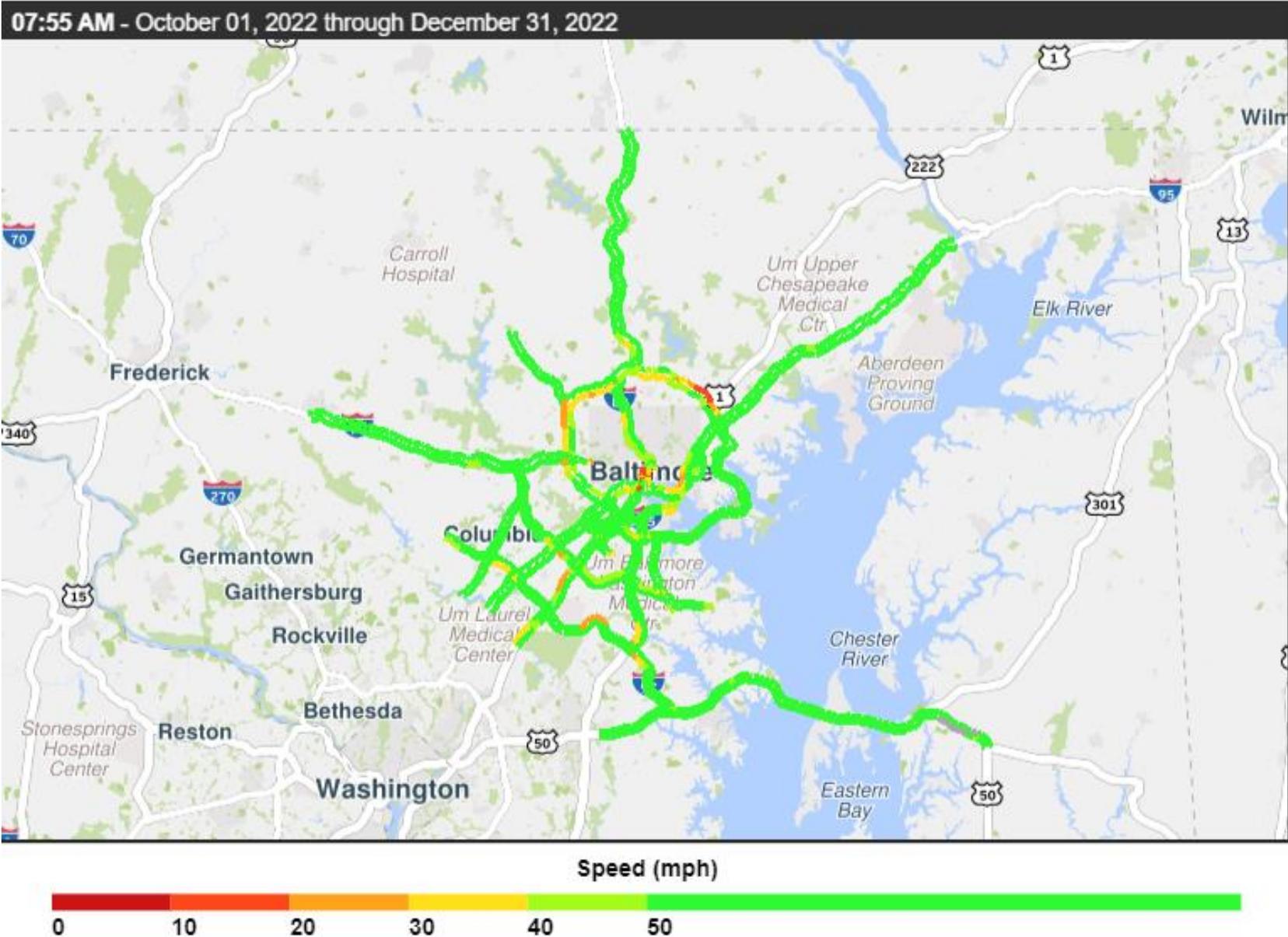
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cumulative Year-to-Date Freight VMT 2021-2022	-20.4%	-14.5%	-14.8%	-14.6%	-15.1%	-15.3%	-15.3%	-15.1%	-14.9%	-15.1%	-15.3%	-15.4%
2022 Freight VMT (Millions)* Estimated	238	269	288	289	287	291	288	293	296	272	276	263
2021 Freight VMT (Millions)	299	294	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
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 :03/29/2023

Regional Speed Maps

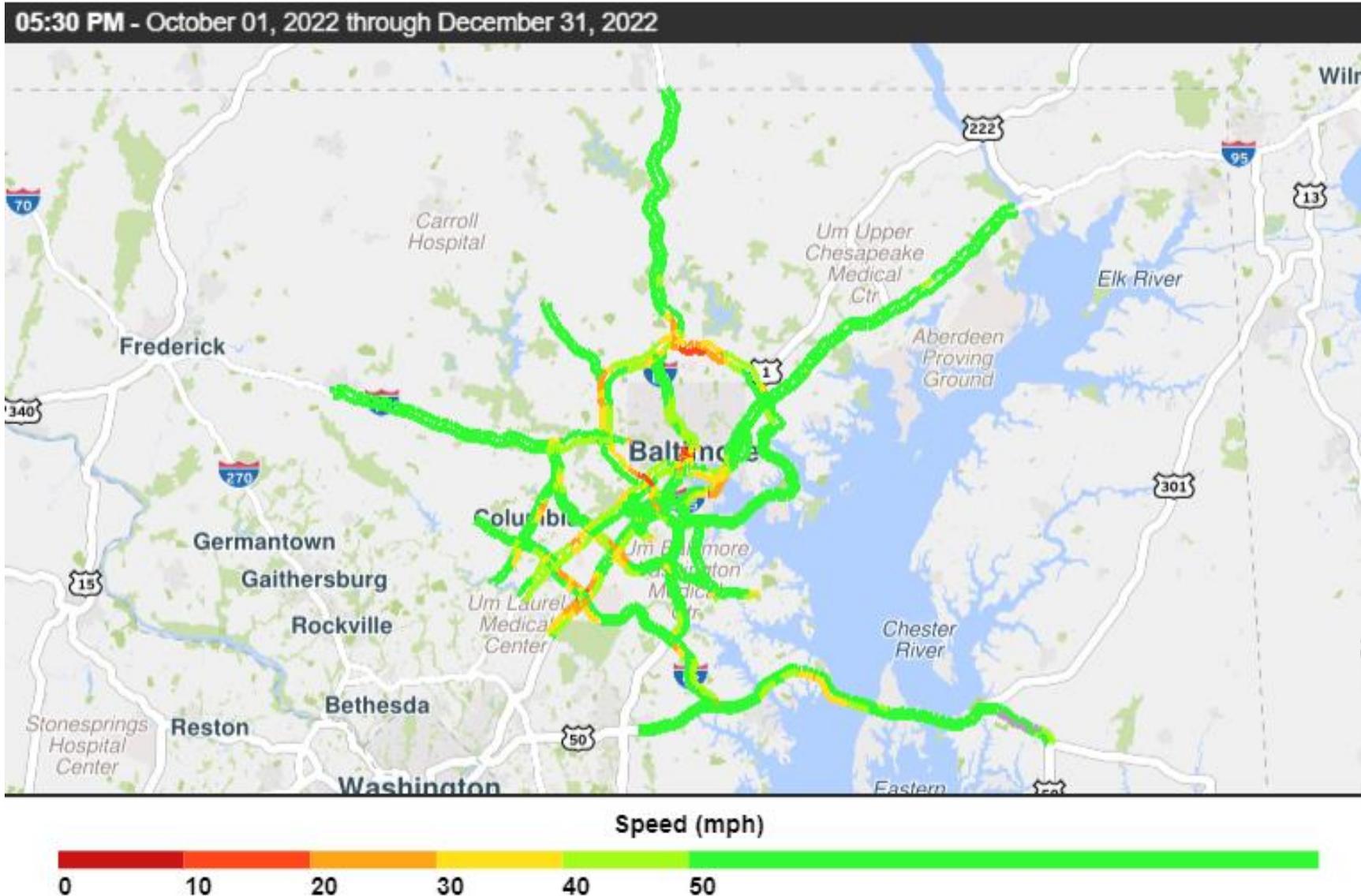
AM Peak Period Rush Hour: 4th Quarter 2022

BMC Region Limited Access Speed Trend Map for October 1, 2022 through December 31, 2022



PM Peak Period Rush Hour: 4th Quarter 2022

BMC Region Limited Access Speed Trend Map for October 1, 2022 through December 31, 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.

2022 Interstate Travel Time Reliability for MD - Baltimore Regional Transportation Board, Balti

MD - Baltimore Regional Transportation Board, Baltimore (BRTB)

MAP-21 Percent of the Person-Miles Traveled on the Interstate That Are Reliable (the Interstate Travel Time Reliability measure)

2022 Target
at least
72.1%

82.4%

Year-to-Date
2022

Target: At least 72.1% of the system should have a LOTTR less than 1.50



Show map...

Calculated using 100.00% of miles in Baltimore Regional Transportation Board

Data source: NPMRDS INRIX

2022 Non-interstate NHS Travel Time Reliability for MD - Baltimore Regional Transportation Board, Baltimore (BRTB)

MD - Baltimore Regional Transportation Board, Baltimore (BRTB)

MAP-21 Percent of the Person-Miles Traveled on the Non-Interstate NHS That Are Reliable (the Non-Interstate NHS Travel Time Reliability measure)

2022 Target
at least
81.7%

90.5%

Year-to-Date
2022

Target: At least 81.7% of the system should have a LOTTR less than 1.50



Show map...

Calculated using 100.00% of miles in Baltimore Regional Transportation Board

Data source: NPMRDS INRIX

2022 Truck Travel Time Reliability Index for MD - Baltimore Regional Transportation Board, Baltimore (BRTB)

MD - Baltimore Regional Transportation Board, Baltimore (BRTB)

MAP-21 Truck Travel Time Reliability Index (for interstate roads only)

2022 Target
less than
1.88

1.72

Year-to-Date
2022

Target: The system should have a TTTR less than 1.88



Show map...

Calculated using 100.00% of miles in Baltimore Regional Transportation Board

Data source: NPMRDS INRIX

Ranked Bottleneck Monthly Comparison

2022													
Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2022 Rank	2022 Locations
15	20			5			1	1	1		2	1	I-95 S @ MD-24/EXIT 77
3	2	2	6	3	4	1	3	3	3	4	6	2	MD-295 S @ MD-198
10	12	8	1	1	2	3	5	10	5	2	3	3	I-95 N @ MD-152/EXIT 74
	5	6	3	7	11		8	2	2	1	1	4	I-695 OL @ MD-26/EXIT 18
4	3		8	5	16		2	13	19	5	15	5	US-50 E @ BAY BRIDGE
11		4	16		19	9	9	5	6		7	6	I-695 IL @ MD-372/WILKENS AVE/EXIT 12
	17				3	8	6	4		11		7	I-95 N @ MD-543/EXIT 80
						11	8	11	6	9		8	I-695 IL @ I-83/MD-25/EXIT 23
			2		5	11	4	11				9	I-95 N @ I-95 (EAST)
		13	12	17	10				9	8		10	I-97 S @ MD-178/EXIT 5
19		7		8	14	5		19				11	I-695 OL @ US-40/EXIT 15
	1	5		10		17	18	18	14			12	I-695 IL @ SECURITY BLVD/EXIT 17
		15		12	12	16	17		17	13	14	13	I-95 S @ MD-175/EXIT 41
12	10				13	18					8	14	I-695 IL @ PROVIDENCE RD/EXIT 28
			10	13	8					12	17	15	I-95 N @ MD-24/EXIT 77
		18									5	16	I-695 IL @ MD-41/PERRING PKWY/EXIT 30
7												17	MD-100 W @ MD-10
	14		13	14			17					18	I-70 E @ I-695/EXIT 91
	18	17					14			16		19	I-695 IL @ MD-542/LOCH RAVEN BLVD/EXIT 29
5												20	MD-32 W @ MD-295/BALTIMORE WASHINGTON PKWY

Conclusions/Observations: The December-2022 Monthly Average Vehicle Miles Traveled AVMT is down compared to September-2021 by 4.6%. The cumulative Year to Date change through December 2022 AMVT is up compared to last year 2021 by 1.3%.

Inner Loop (IL)
Outer Loop (OL)

Construction on the Express Toll Lanes (ETL) on I-95 in Harford County has caused this corridor to be a hotspot northbound between MD-152 and MD-543 with I-95 S @ MD-24/Exit 77 becoming the regions #1 bottleneck for the year. It held the number 1 spot for three consecutive months (Aug-Oct).

Credits



For More Information



**BALTIMORE
METROPOLITAN
COUNCIL**

1500 Whetstone Way, Suite 300

Baltimore, MD 21230

p. 410.732.0500

Ed Style (Author)
Transportation Analyst
(410) 732-0500 x1031
estyle@baltometro.org
www.baltometro.org