



# Quarterly Congestion Analysis Report. Top 10 Bottlenecks

## 4th Quarter 2020

February, 2021



# INTRODUCTION

# About the Region

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



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

# Baltimore Metropolitan Region



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



## 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

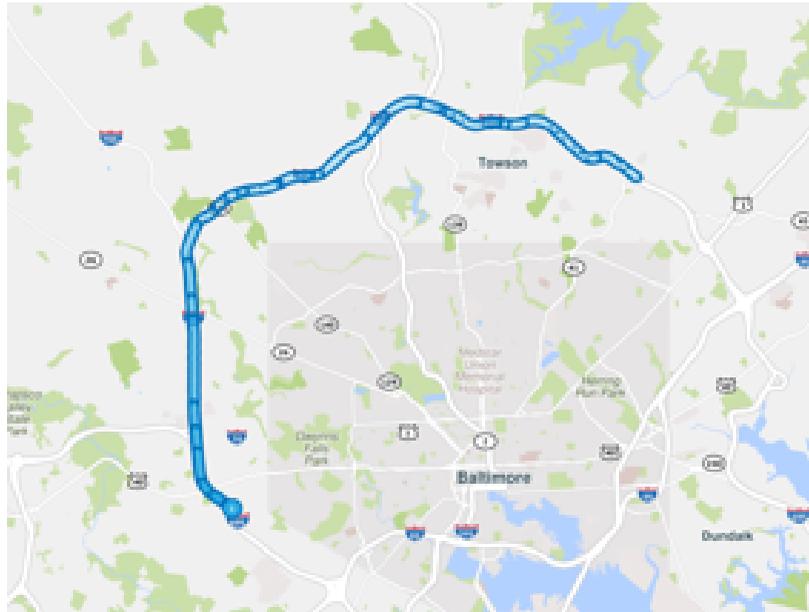
the aggregation of queue length over time for congestion at each location in mile minutes

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

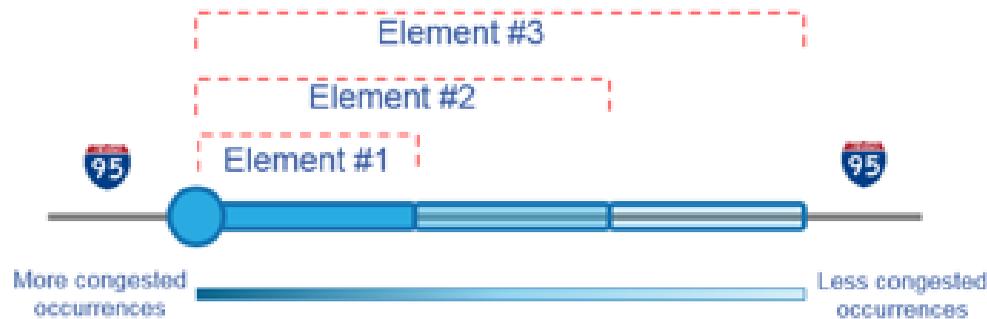
IL = Inner Loop

OL = Outer Loop

## Maps



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

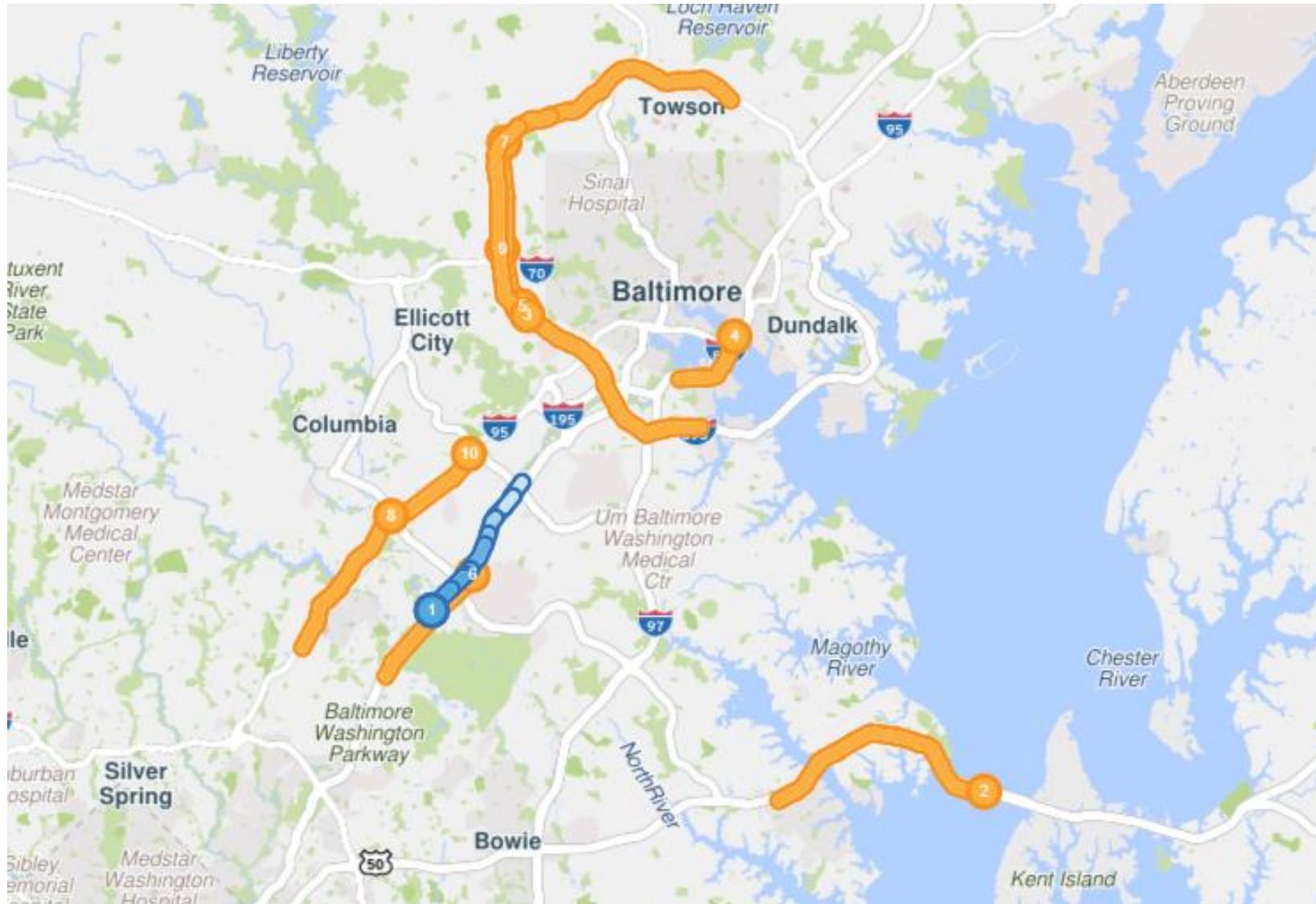


# Top 10 Bottleneck Rankings – 4th Quarter 2020

# Top 10 Bottlenecks in the Baltimore Region

## 4th Quarter 2020

Overview Map



## Top 10 Bottlenecks in the Baltimore Region 4th Quarter 2020

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

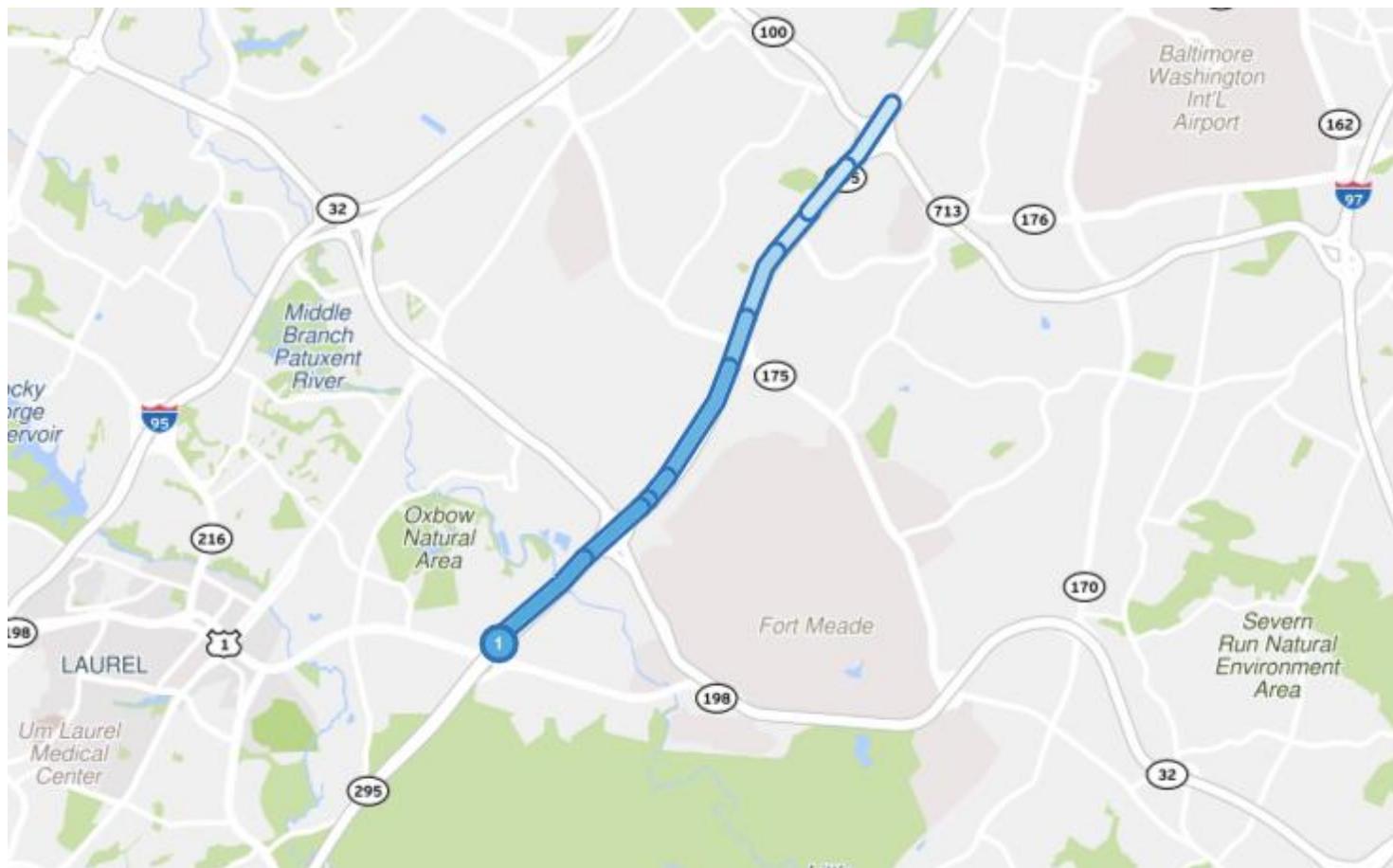
Rank	Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
1	MD-295 S @ MD-198	2.8	1 h 56 m	94	47,797
2	US-50 E @ BAY BRIDGE	3.82	38 m	535	36,286
3	I-695 OL @ MD-144/FREDERICK RD/EXIT 13	3.07	15 m	253	93,081
4	I-895 N @ HARBOR TUNNEL THWY (NORTH)	1.92	2 h 10 m	117	34,334
5	I-695 OL @ EDMONDSON AVE/EXIT 14	2.25	41 m	233	101,212
6	MD-295 N @ CANINE RD	2.08	59 m	42	48,933
7	I-695 IL @ I-795/NORTHWEST EXPY/EXIT 19	3.95	7 m	478	98,699
8	I-95 N @ MD-32/EXIT 38	3.59	11 m	102	99,324
9	I-695 OL @ MD-122/SECURITY BLVD/EXIT 17	4.03	8 m	395	98,754
10	I-95 N @ MD-100/EXIT 43	2.96	32 m	128	103,606

IL = Inner Loop

OL = Outer Loop

## #1 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
MD-295 S @ MD-198	2.8	1 h 56 m	94	47,797

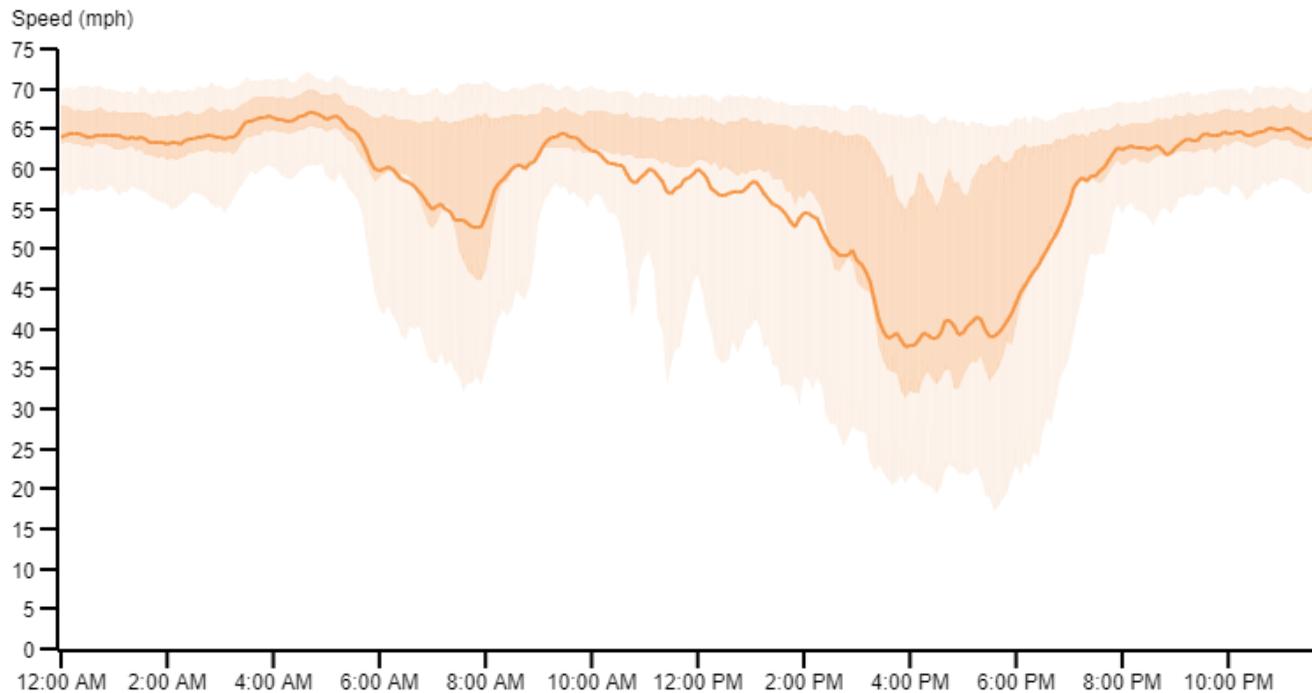


**Notes:** Southbound PM congestion extending from MD-198 extending into the southern portion of the Baltimore region near Fort Meade occurring during both the morning and afternoon peak periods. Volume related delays caused by factors such as Baltimore commuters to DC and Fort Meade and the MD-295 merge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

## #1 Ranked Bottleneck in the Baltimore Region –4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
MD-295 S @ MD-198	2.8	1 h 56 m	94	47,797

Speed for MD-295 S @ MD-198  
 Averaged per five minutes for Oct 01, 2020 through Dec 31, 2020  
 Southbound

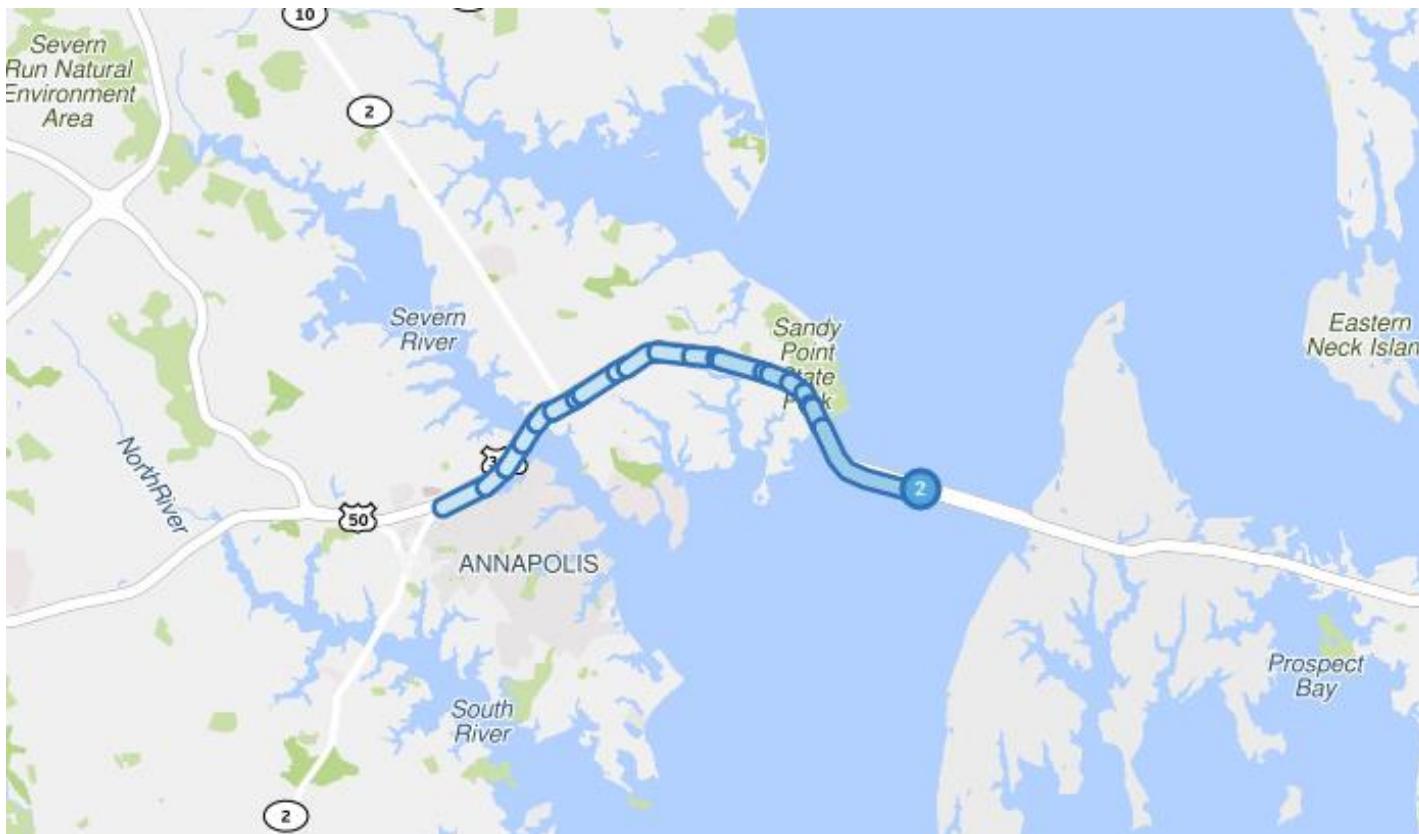


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Oct 01, 2020 through Dec 31, 2020 - INRIX
- Oct 01, 2020 through Dec 31, 2020 25th and 75th percentile - INRIX
- Oct 01, 2020 through Dec 31, 2020 5th and 95th percentile - INRIX

## #2 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
US-50 E @ BAY BRIDGE	3.82	38 m	535	36,286

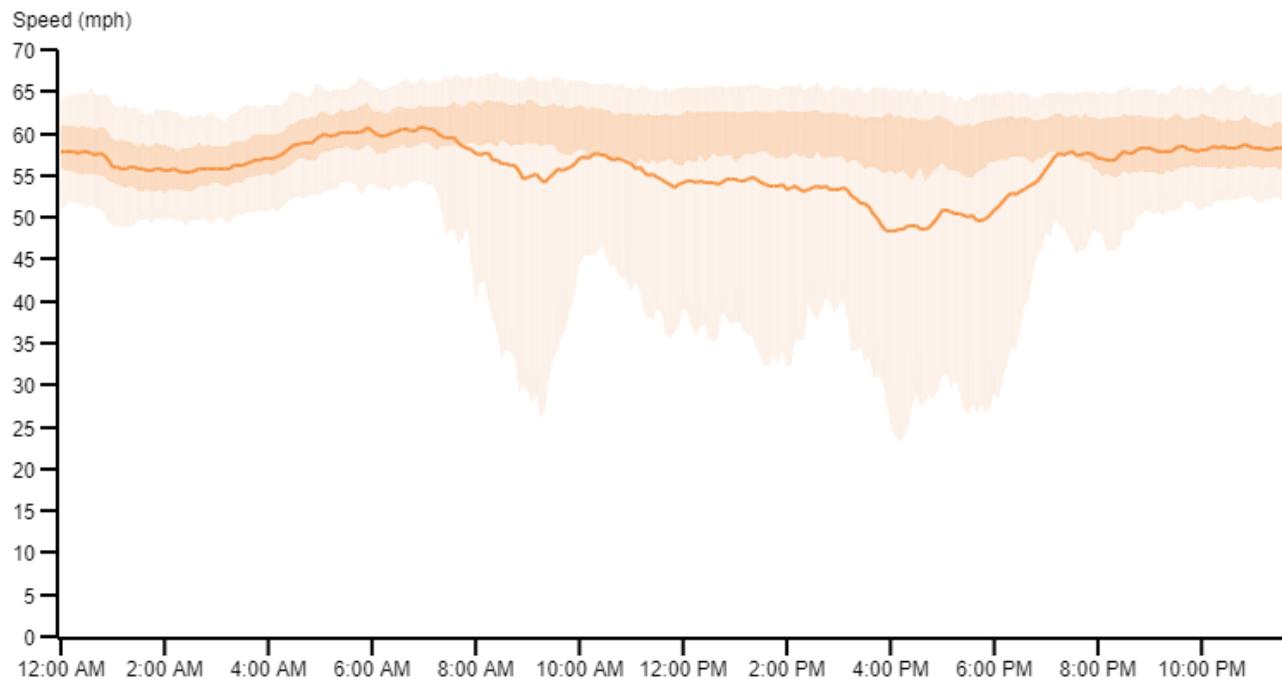


**Notes:** Miscellaneous rehabilitation of the Bay Bridge Suspension Spans and Bay Bridge automated lane closure system in operation. Off-peak shoulder and lane closures on October 3<sup>rs</sup>, 15<sup>th</sup>, 16<sup>th</sup> and December 10<sup>th</sup>.

## #2 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
US-50 E @ BAY BRIDGE	3.82	38 m	535	36,286

Speed for US-50 E @ BAY BRIDGE  
 Averaged per five minutes for Oct 01, 2020 through Dec 31, 2020  
 Eastbound

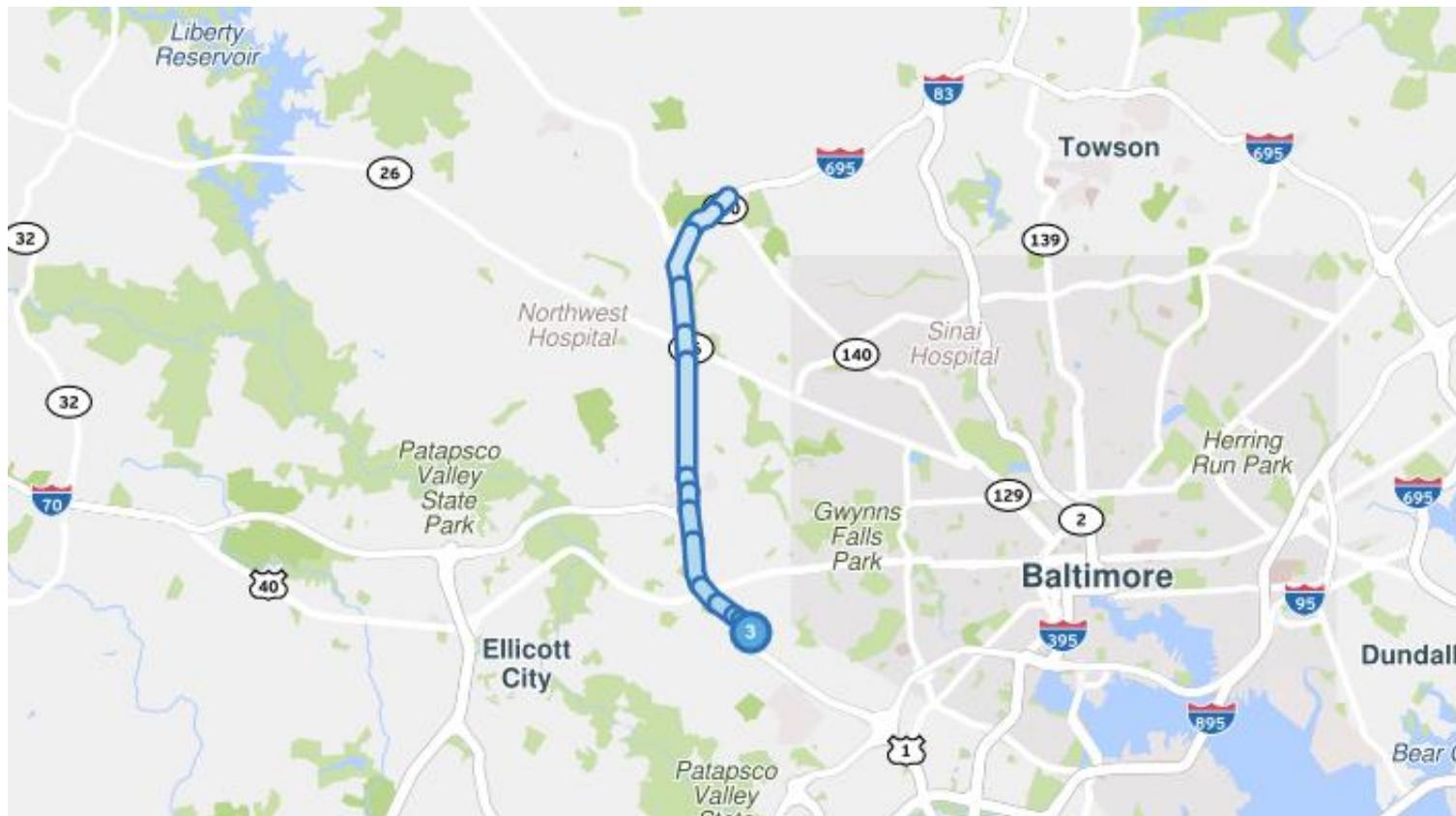


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Oct 01, 2020 through Dec 31, 2020 - INRIX
- Oct 01, 2020 through Dec 31, 2020 25th and 75th percentile - INRIX
- Oct 01, 2020 through Dec 31, 2020 5th and 95th percentile - INRIX

### #3 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ MD-144/FREDERICK RD/EXIT 13	3.07	15 m	253	93,081



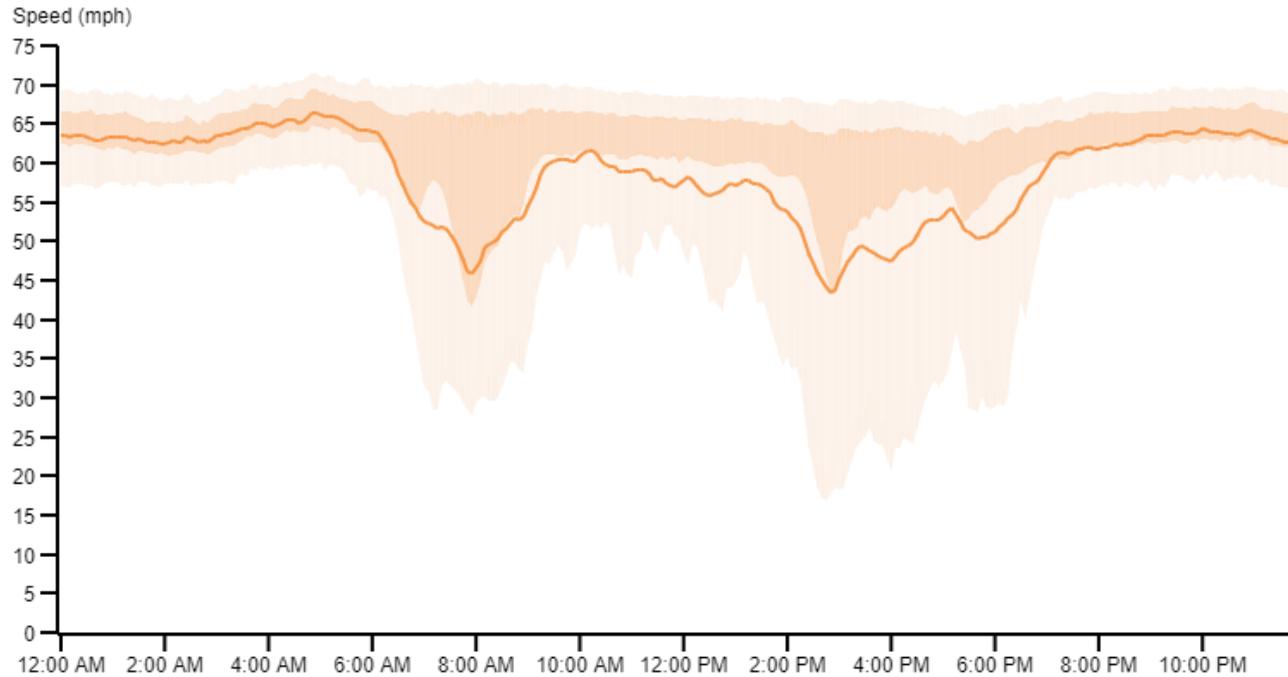
**Notes:** The core congestion extends from just south of US 40/Baltimore National Pike to MD 140/Reisterstown Rd in both the morning and afternoon rush hour with the AM rush being more severe. A beltway widening project is underway in the area.

### #3 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ MD-144/FREDERICK RD/EXIT 13	3.07	15 m	253	93,081

Speed for I-695 OL @ MD-144/FREDERICK RD/EXIT 13  
Averaged per five minutes for Oct 01, 2020 through Dec 31, 2020

Outer Loop

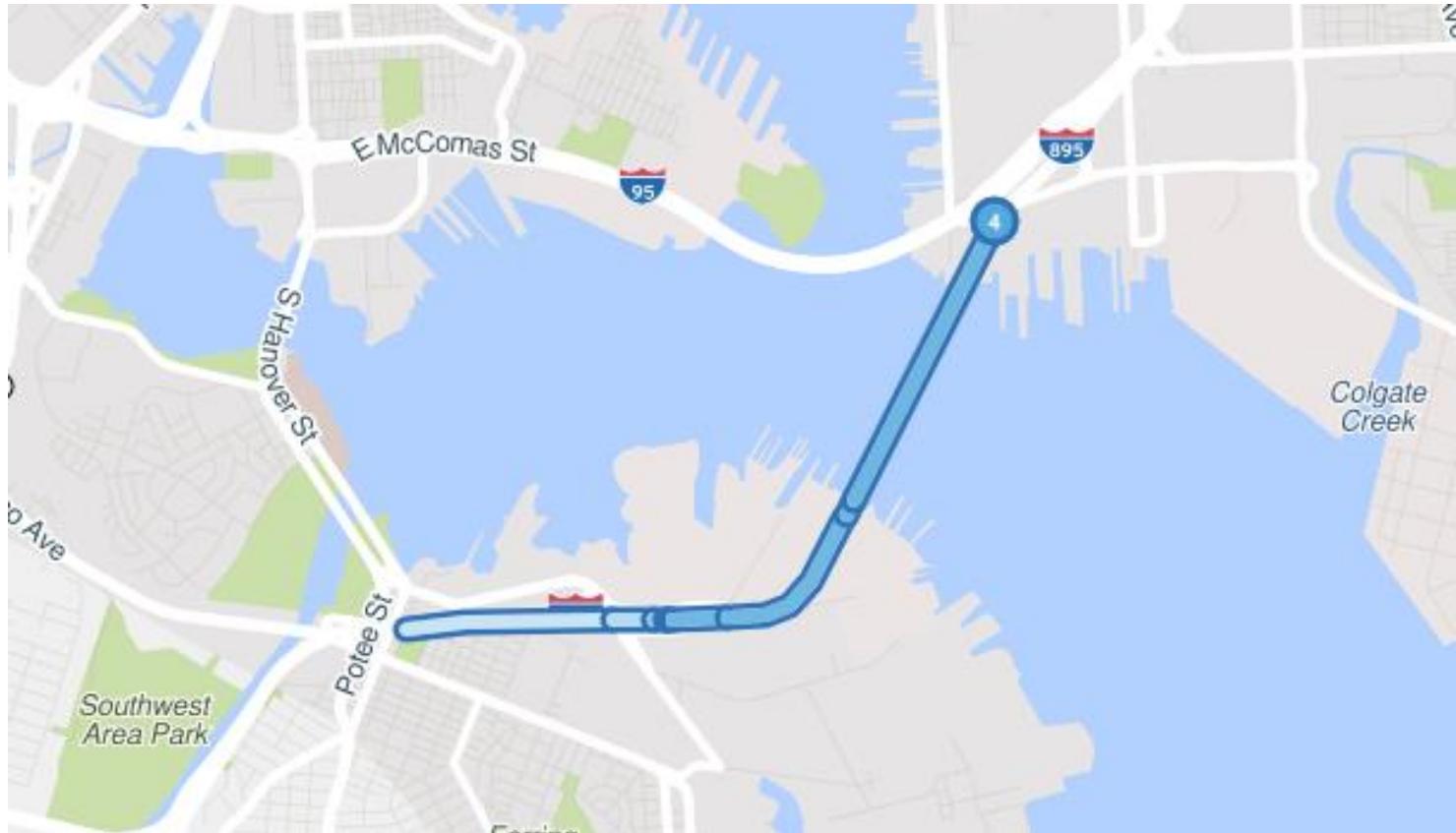


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Oct 01, 2020 through Dec 31, 2020 - INRIX
- Oct 01, 2020 through Dec 31, 2020 25th and 75th percentile - INRIX
- Oct 01, 2020 through Dec 31, 2020 5th and 95th percentile - INRIX

## #4 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-895 N @ HARBOR TUNNEL THWY (NORTH)	1.92	2 h 10 m	117	34,334

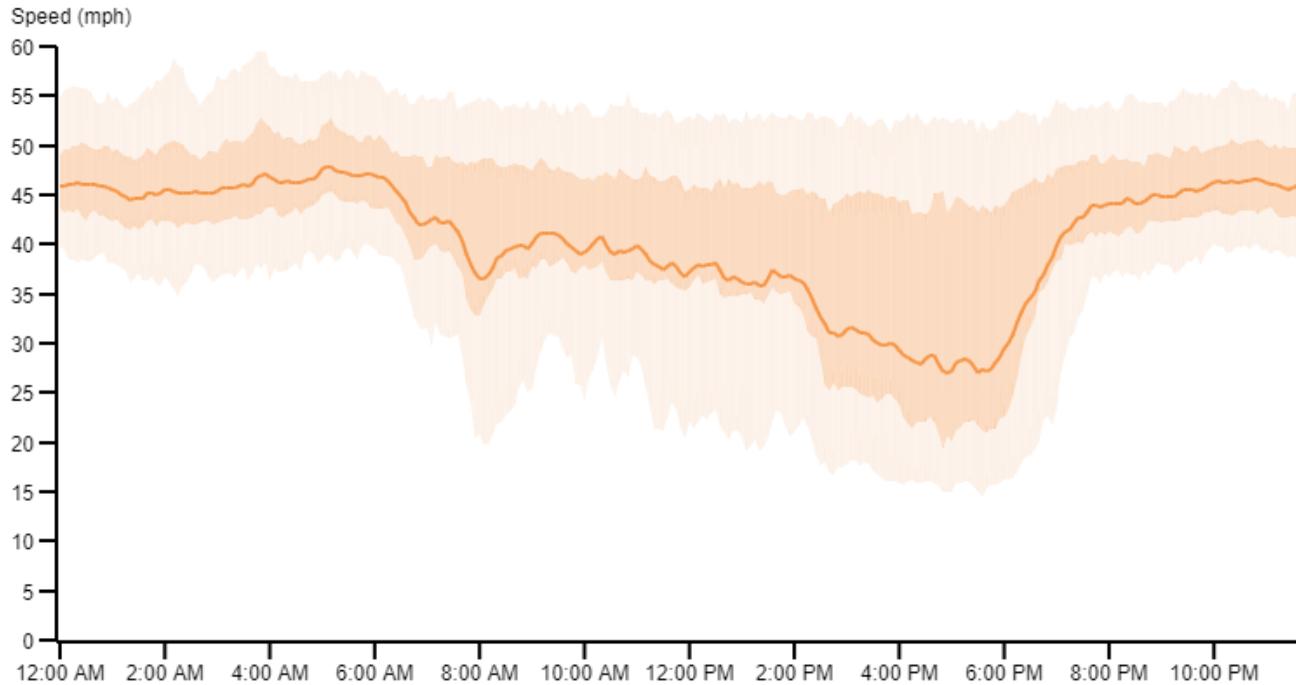


**Notes:** Major construction project impacting I-895 from November 2018 until summer 2021. The Northbound bore of the Harbor Tunnel is closed to traffic and the southbound bore is currently 2-way traffic. The I-895/Holabird Avenue exit ramp (Exit 10) will close completely during this time. For more information visit the MdTA at: <https://mdta.maryland.gov/I-895BridgeProject/Home.html>

## #4 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-895 N @ HARBOR TUNNEL THWY (NORTH)	1.92	2 h 10 m	117	34,334

Speed for I-895 N @ HARBOR TUNNEL THWY (NORTH)  
 Averaged per five minutes for Oct 01, 2020 through Dec 31, 2020  
 Northbound

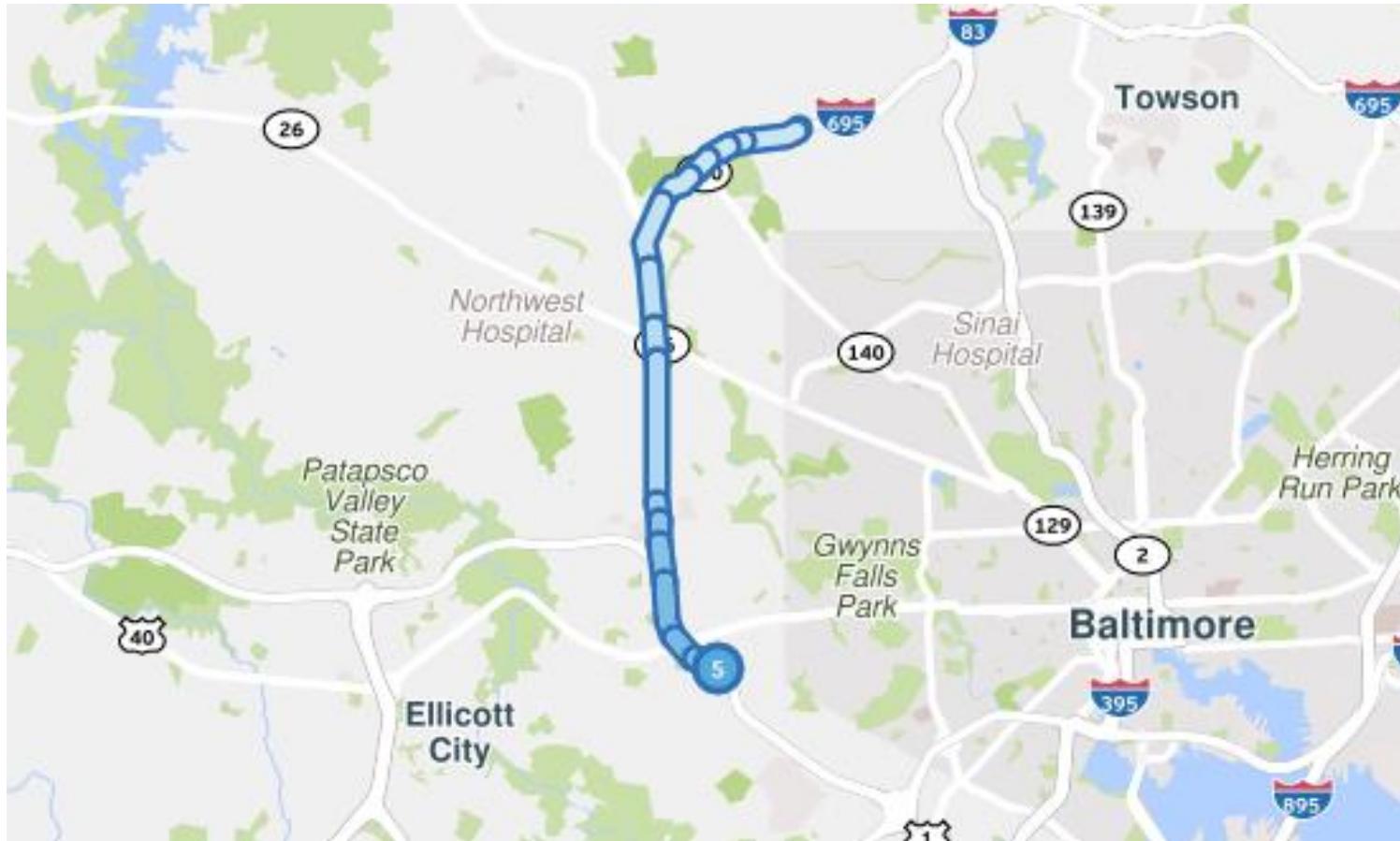


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Oct 01, 2020 through Dec 31, 2020 - INRIX
- Oct 01, 2020 through Dec 31, 2020 25th and 75th percentile - INRIX
- Oct 01, 2020 through Dec 31, 2020 5th and 95th percentile - INRIX

## #5 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ EDMONDSON AVE/EXIT 14	2.25	41 m	233	101,212

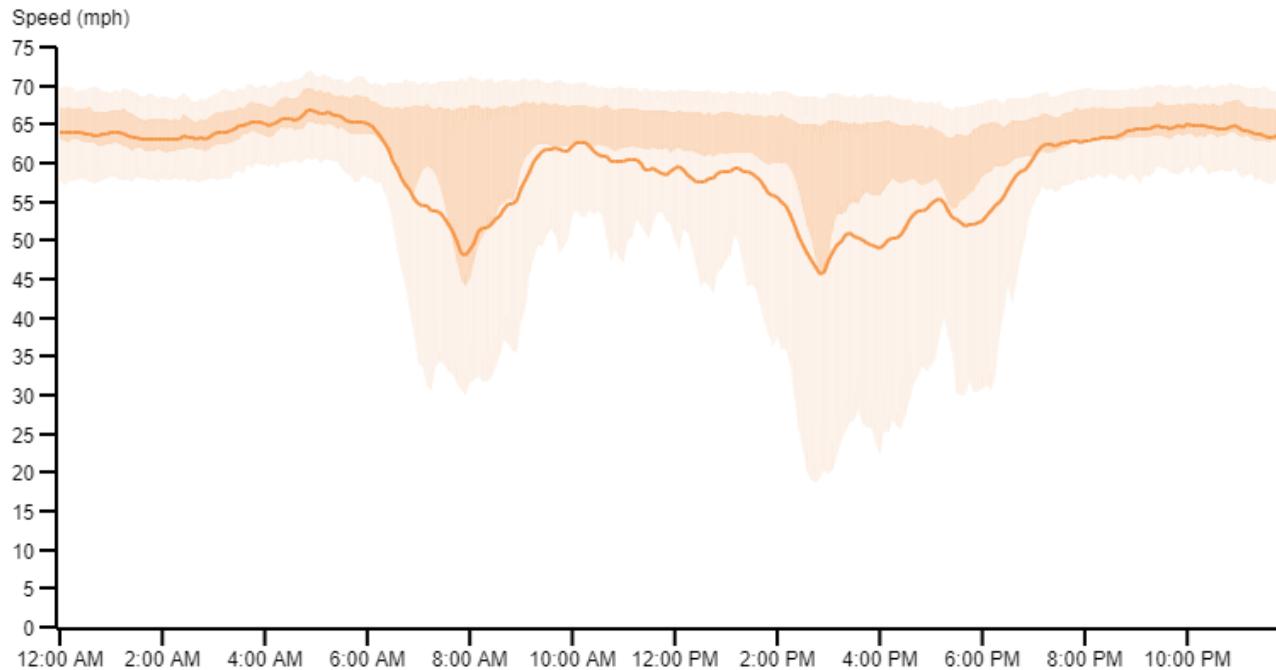


**Notes:** See bottleneck #3. This is an overlapping bottleneck that starts in different places and is at times the #1 bottleneck in the region. Covid 19 conditions at the end of the quarter may have contributed to this split with the bottleneck head starting at different points.

## #5 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ EDMONDSON AVE/EXIT 14	2.25	41 m	233	101,212

Speed for I-695 OL @ EDMONDSON AVE/EXIT 14  
 Averaged per five minutes for Oct 01, 2020 through Dec 31, 2020  
 Outer Loop

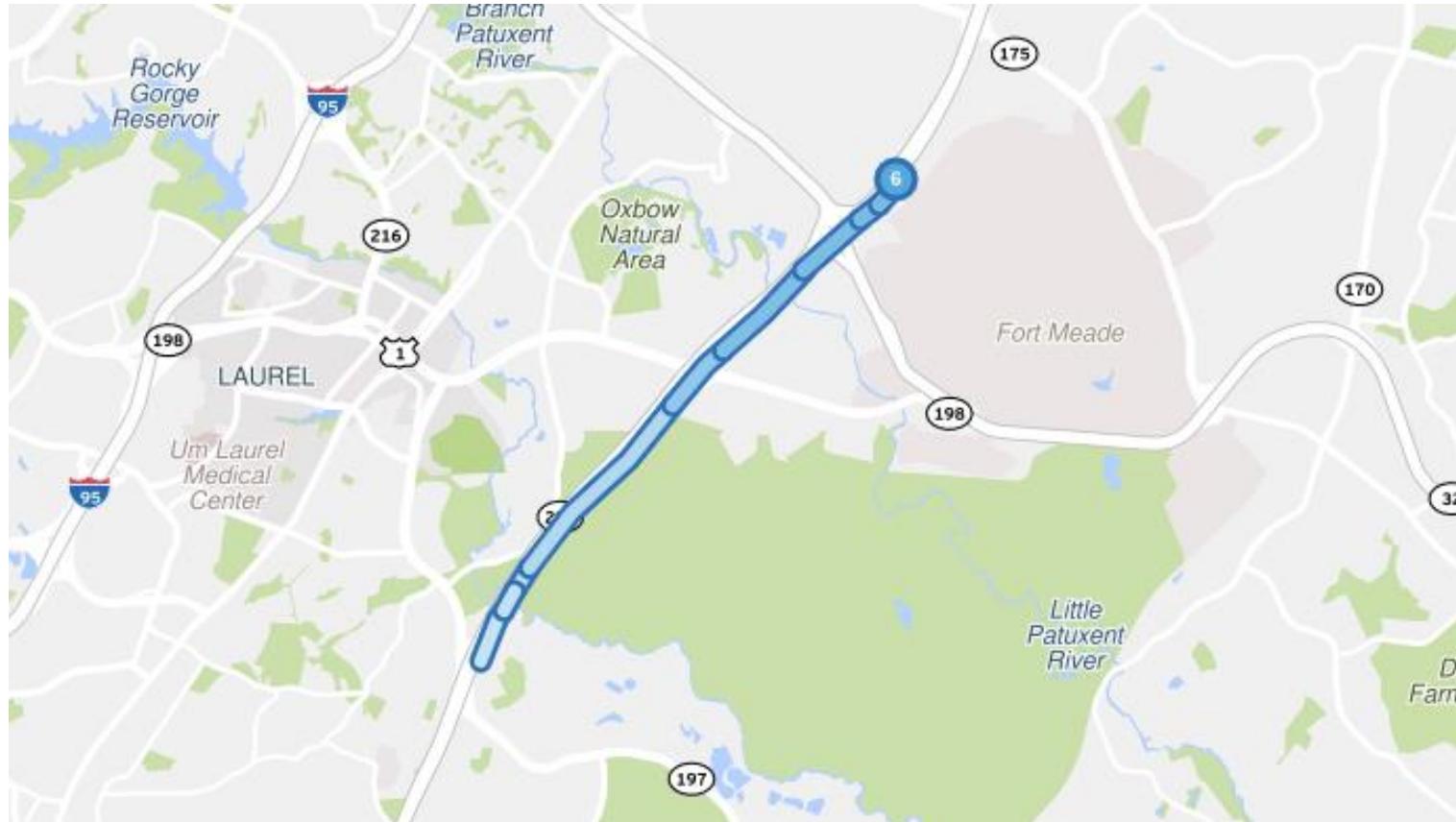


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Oct 01, 2020 through Dec 31, 2020 - INRIX
- Oct 01, 2020 through Dec 31, 2020 25th and 75th percentile - INRIX
- Oct 01, 2020 through Dec 31, 2020 5th and 95th percentile - INRIX

## #6 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
MD-295 N @ CANINE RD	2.08	59 m	42	48,933

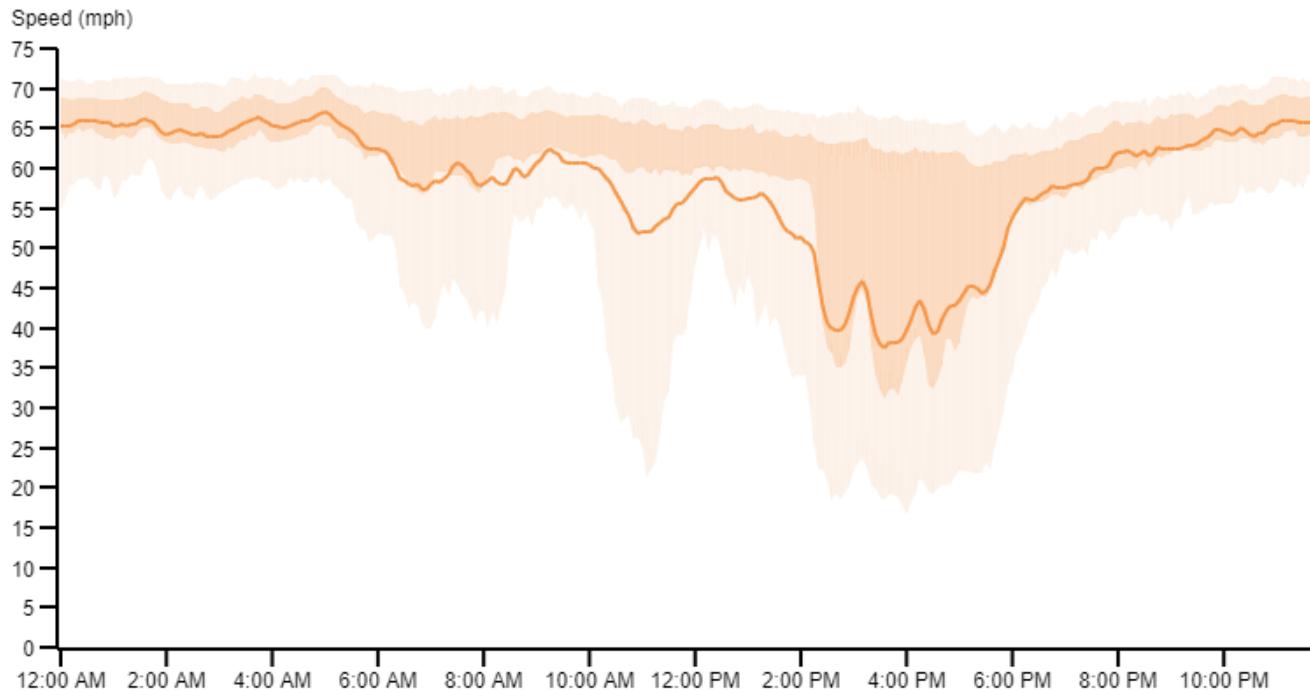


**Notes:** Afternoon congestion. Level of Service "F" from 3:00 to 6:00pm. A primary cause appeared to be the discharge of traffic from NSA / Ft. Meade onto northbound MD 295 via the Connector Rd. Weaving and merging at the MD 32 interchange also contributed to the congestion.

## #6 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
MD-295 N @ CANINE RD	2.08	59 m	42	48,933

Speed for MD-295 N @ CANINE RD  
 Averaged per five minutes for Oct 01, 2020 through Dec 31, 2020  
 Northbound

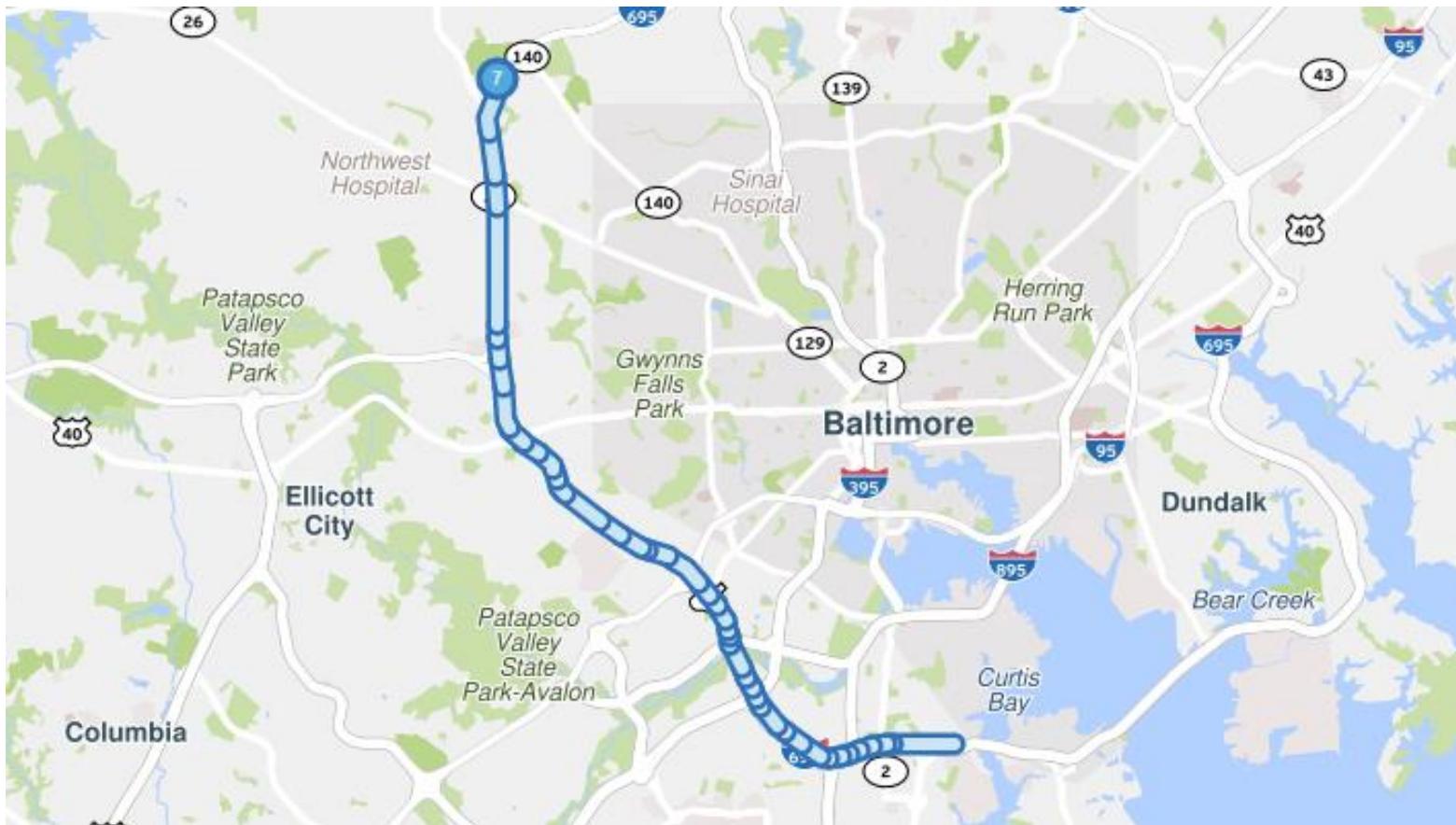


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Oct 01, 2020 through Dec 31, 2020 - INRIX
- Oct 01, 2020 through Dec 31, 2020 25th and 75th percentile - INRIX
- Oct 01, 2020 through Dec 31, 2020 5th and 95th percentile - INRIX

## #7 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 IL @ I-795/NORTHWEST EXPY/EXIT 19	3.95	7 m	478	98,699

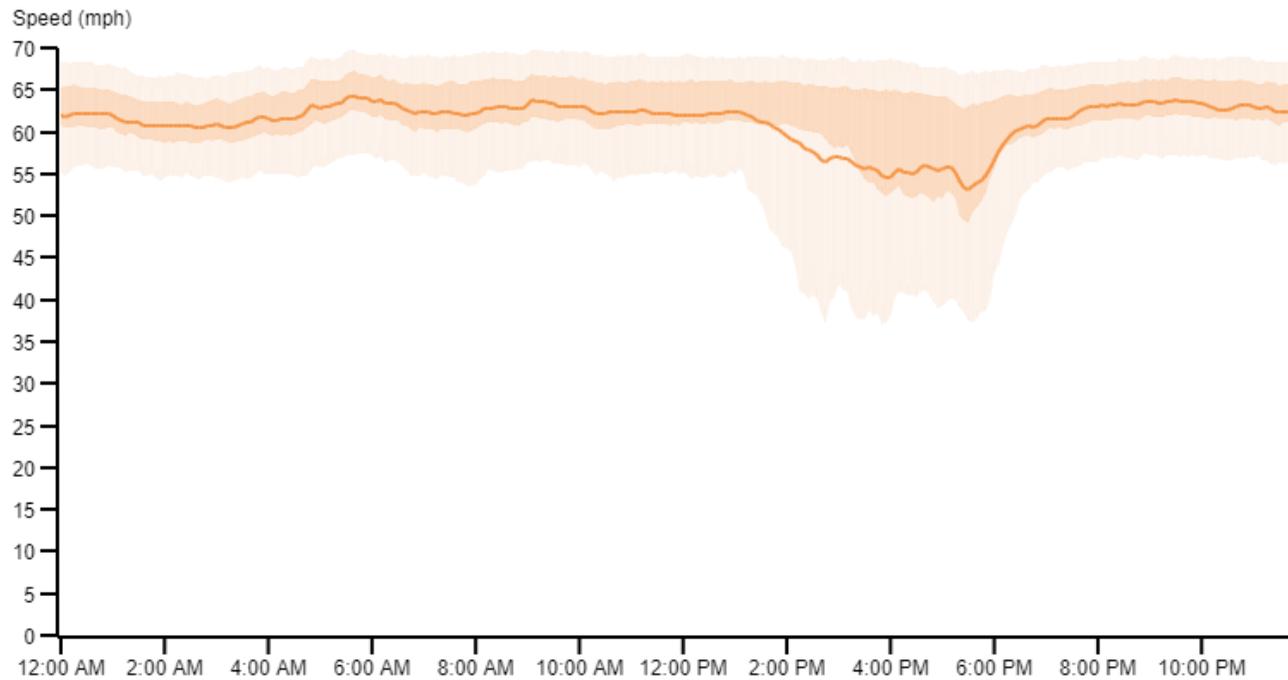


**Notes:** High volume traffic area. Ongoing construction project utilizing the inside shoulder to create a new travel lane on the inner and outer loops of I-695 during daily peak travel periods from I-70 to MD 43.

## #7 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 IL @ I-795/NORTHWEST EXPY/EXIT 19	3.95	7 m	478	98,699

Speed for I-695 IL @ I-795/NORTHWEST EXPY/EXIT 19  
 Averaged per five minutes for Oct 01, 2020 through Dec 31, 2020  
 Inner Loop

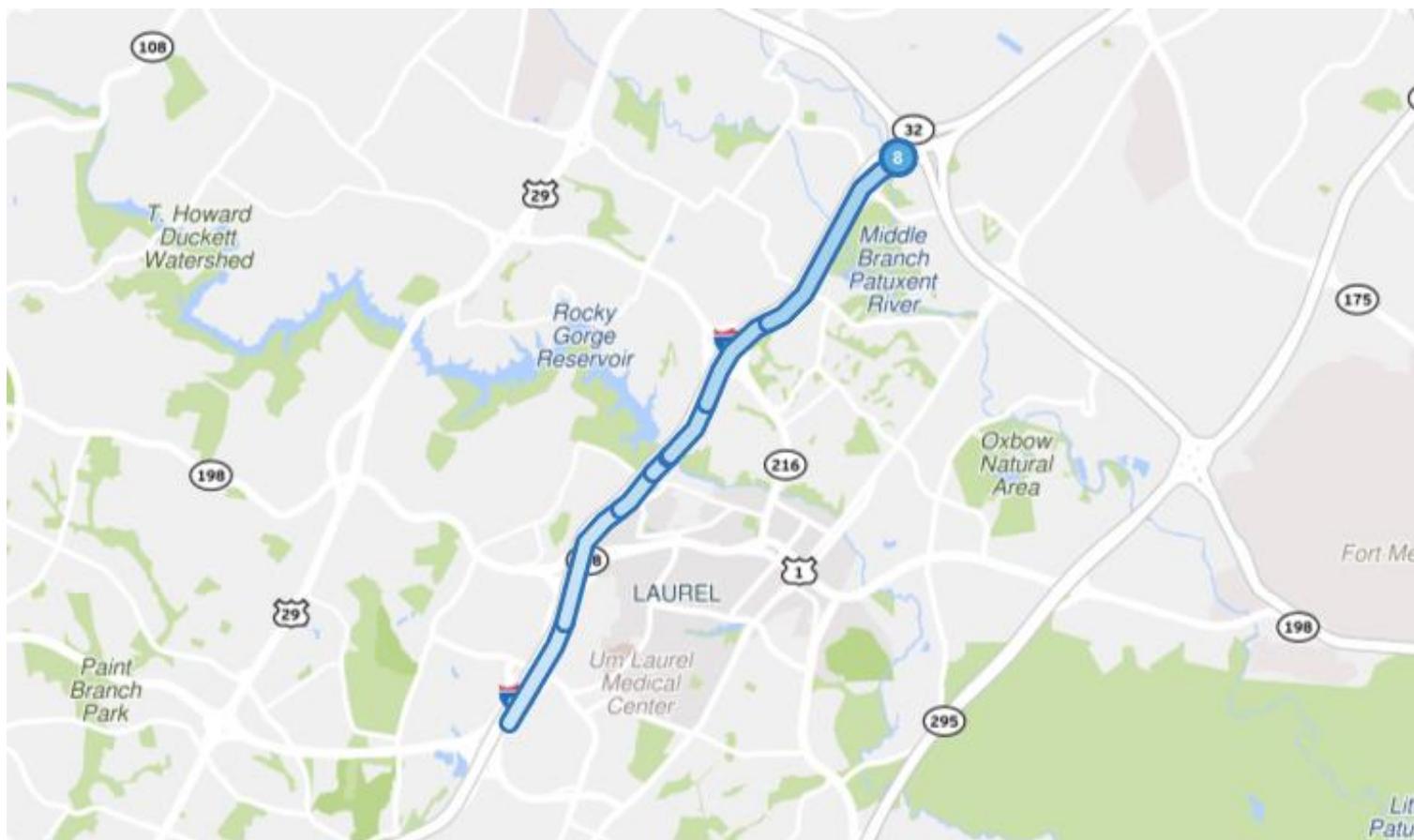


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Oct 01, 2020 through Dec 31, 2020 - INRIX
- Oct 01, 2020 through Dec 31, 2020 25th and 75th percentile - INRIX
- Oct 01, 2020 through Dec 31, 2020 5th and 95th percentile - INRIX

## #8 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 N @ MD-32/EXIT 38	3.59	11 m	102	99,324



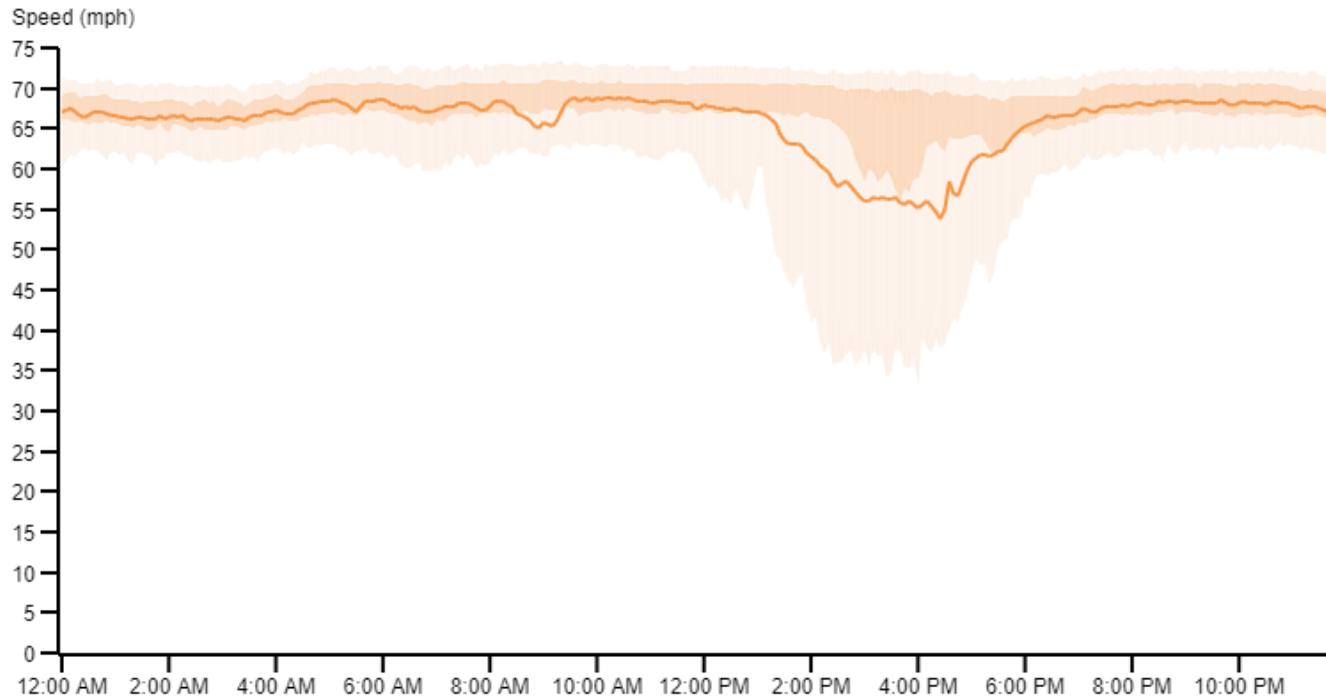
**Notes:** Congestion in the afternoon rush hour. Contributing factors include traffic entering at MD-32 as well as high volumes. This sometimes extends as far south as the Capital Beltway. The head of the bottleneck sometimes appears farther north in a very congested afternoon rush hour.

## #8 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 N @ MD-32/EXIT 38	3.59	11 m	102	99,324

Speed for I-95 N @ MD-32/EXIT 38  
Averaged per five minutes for Oct 01, 2020 through Dec 31, 2020

Northbound

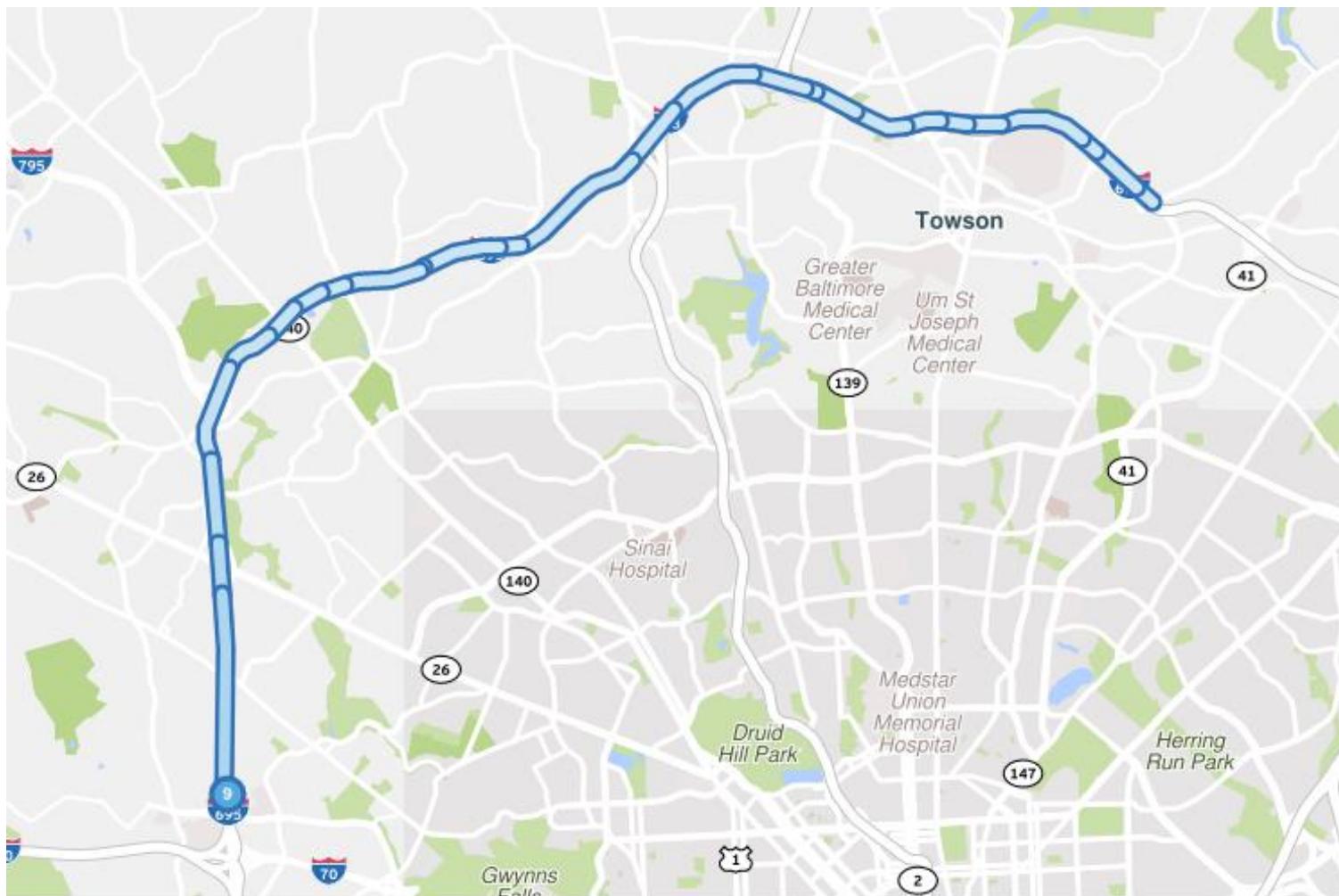


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Oct 01, 2020 through Dec 31, 2020 - INRIX
- Oct 01, 2020 through Dec 31, 2020 25th and 75th percentile - INRIX
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## #9 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ MD-122/SECURITY BLVD/EXIT 17	4.03	8 m	395	98,754

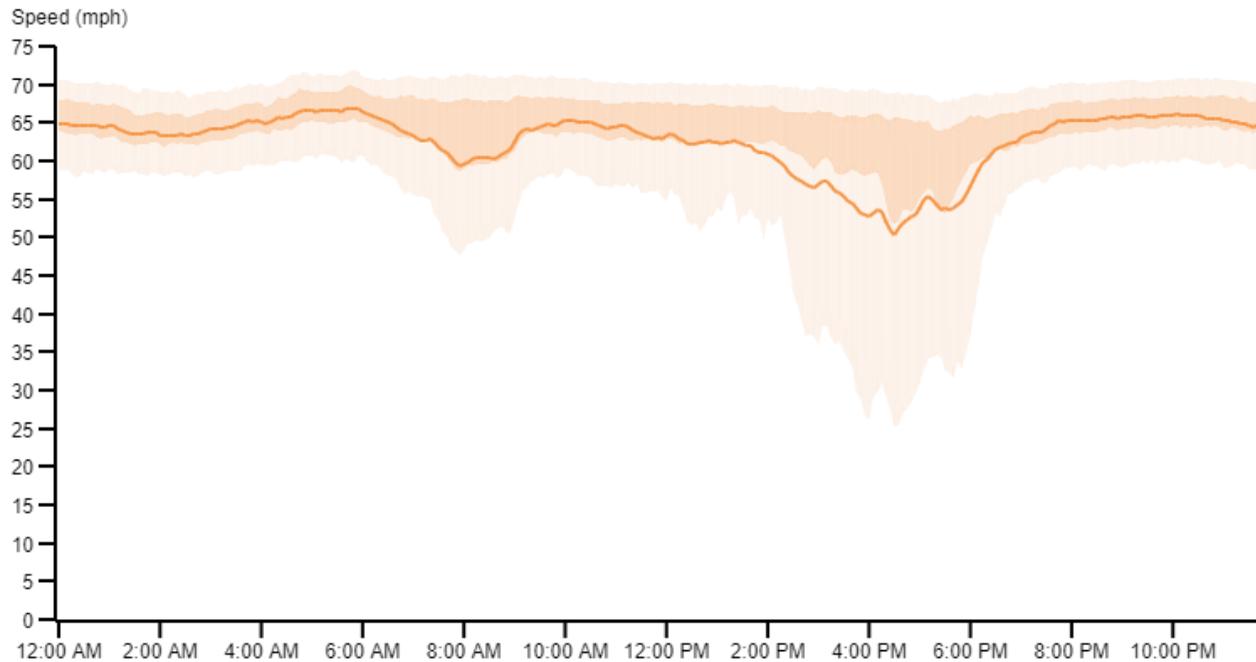


**Notes:** See bottleneck #'s 3 & 5. This is an overlapping bottleneck that starts in different places and is at times the #1 bottleneck in the region. Covid 19 conditions and the amount of vehicle probes available may have contributed to this split with the bottleneck head starting at different points.

## #9 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-695 OL @ MD-122/SECURITY BLVD/EXIT 17	4.03	8 m	395	98,754

Speed for I-695 OL @ MD-122/SECURITY BLVD/EXIT 17  
 Averaged per five minutes for Oct 01, 2020 through Dec 31, 2020  
 Outer Loop

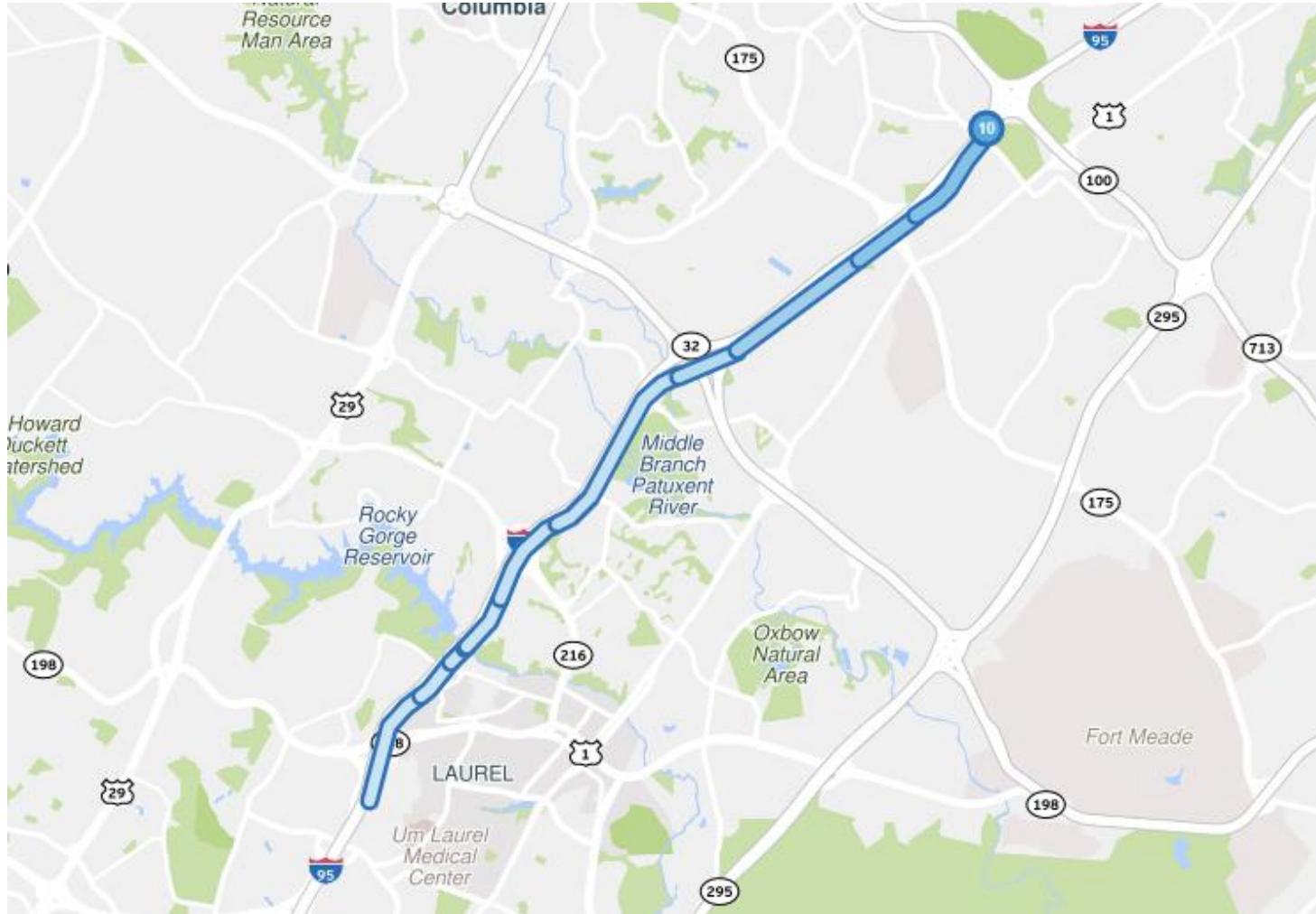


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Oct 01, 2020 through Dec 31, 2020 - INRIX
- Oct 01, 2020 through Dec 31, 2020 25th and 75th percentile - INRIX
- Oct 01, 2020 through Dec 31, 2020 5th and 95th percentile - INRIX

## #10 Ranked Bottleneck in the Baltimore Region –4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 N @ MD-100/EXIT 43	2.96	32 m	128	103,606

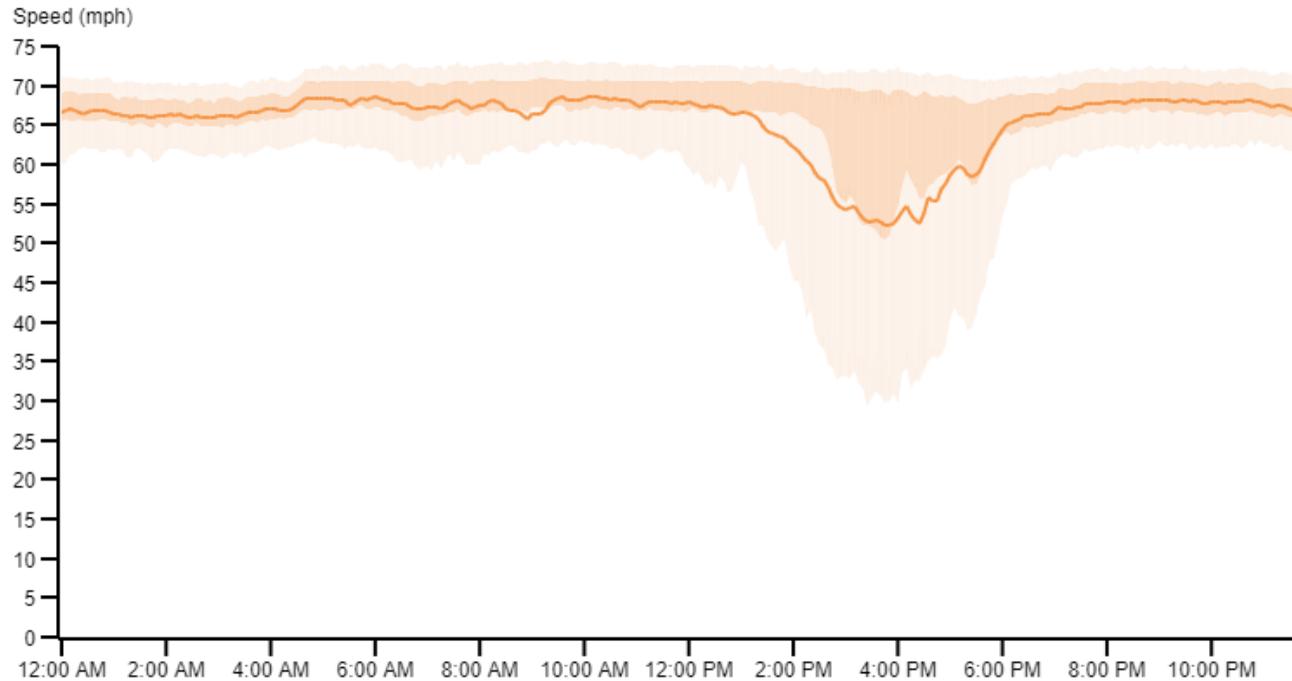


**Notes:** Congestion in the afternoon rush hour. Contributing factors include traffic entering at MD-175, weaving to exit at MD-100, and the half-mile uphill grade midway between MD-175 and MD-100.

## #10 Ranked Bottleneck in the Baltimore Region – 4th Quarter 2020

Location	Average max length (miles)	Average Daily Duration	All Events/ Incidents	Volume Estimate (AADT)
I-95 N @ MD-100/EXIT 43	2.96	32 m	128	103,606

Speed for I-95 N @ MD-100/EXIT 43  
 Averaged per five minutes for Oct 01, 2020 through Dec 31, 2020  
 Northbound



Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

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- Oct 01, 2020 through Dec 31, 2020 25th and 75th percentile - INRIX
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# Traffic Volume Trends

# Traffic Volumes

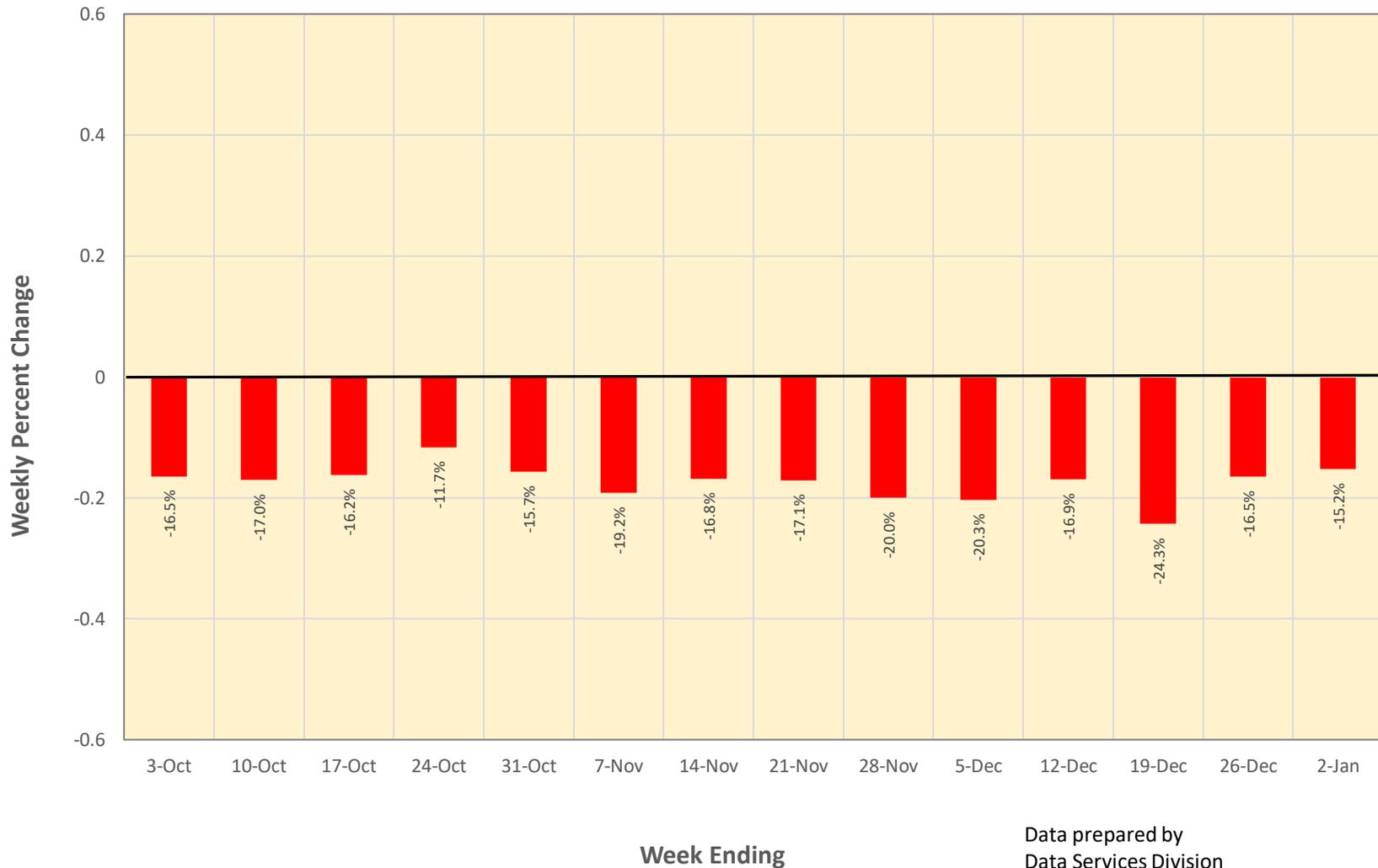
## Traffic Volumes – Weekly Changes at Permanent Counters 2019 vs. 2020

Week Ending	Comparing weekly average ATR Volume 2019 to 2020 *
<b>3-Oct</b>	<b>-16.5%</b>
<b>10-Oct</b>	<b>-17.0%</b>
<b>17-Oct</b>	<b>-16.2%</b>
<b>24-Oct</b>	<b>-11.7%</b>
<b>31-Oct</b>	<b>-15.7%</b>
<b>7-Nov</b>	<b>-19.2%</b>
<b>14-Nov</b>	<b>-16.8%</b>
<b>21-Nov</b>	<b>-17.1%</b>
<b>28-Nov</b>	<b>-20.0%</b>
<b>5-Dec</b>	<b>-20.3%</b>
<b>12-Dec</b>	<b>-16.9%</b>
<b>19-Dec</b>	<b>-24.3%</b>
<b>26-Dec</b>	<b>-16.5%</b>
<b>2-Jan</b>	<b>-15.2%</b>

# Traffic Volumes



## Weekly Changes at Permanent Counters (ATR) from 2019 to 2020



Data prepared by  
Data Services Division

# Truck Volumes

## Truck Volumes – Weekly Changes at Permanent Counters 2019 vs. 2020

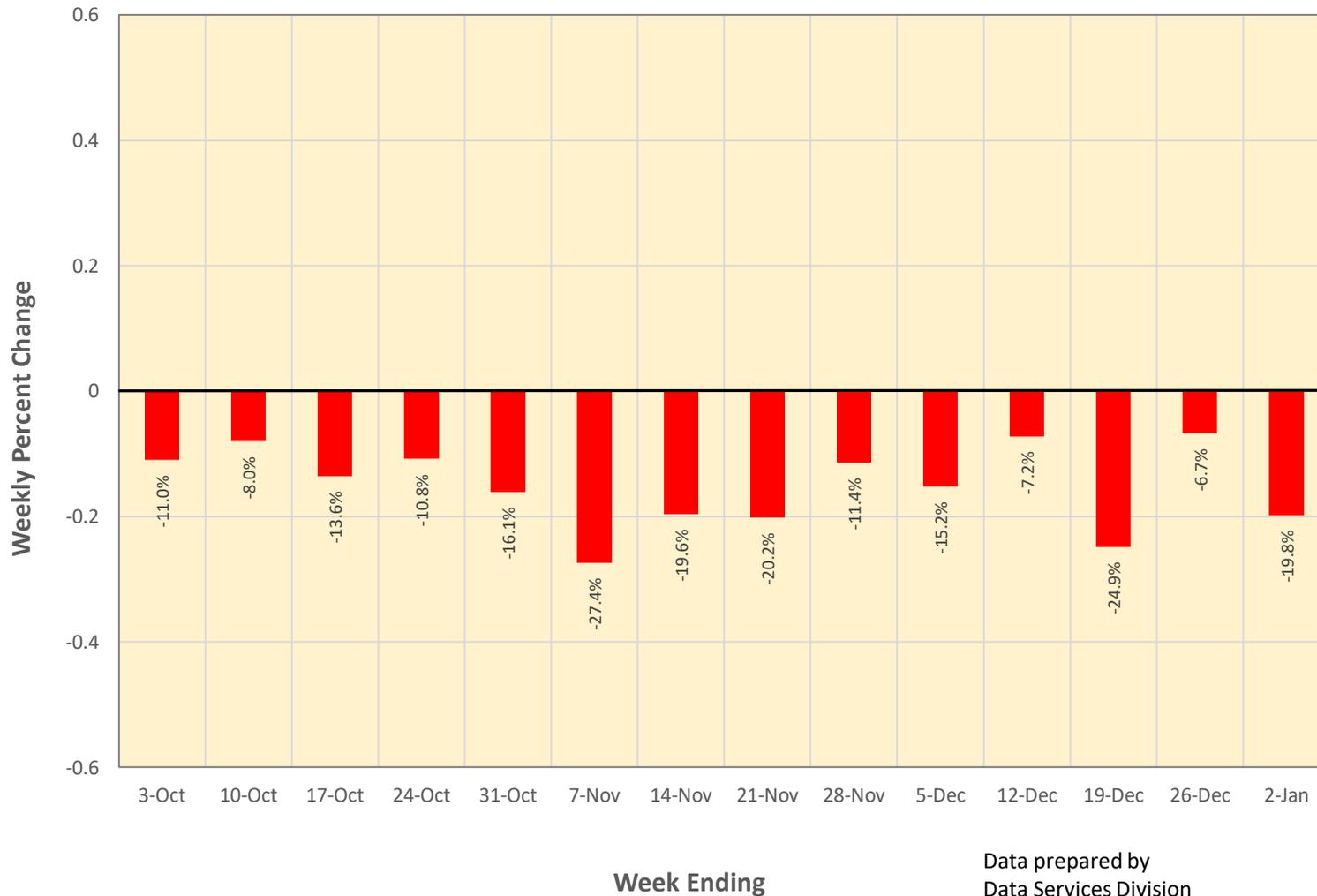
Weekly Changes in Truck Volumes at Permanent Counters (ATR) from  
2019 to 2020  
(FHWA Class 5- 13)

Week Ending	Comparing weekly average Truck Volumes ATR Volume 2019 to 2020 *
<b>3-Oct</b>	<b>-11.0%</b>
<b>10-Oct</b>	<b>-8.0%</b>
<b>17-Oct</b>	<b>-13.6%</b>
<b>24-Oct</b>	<b>-10.8%</b>
<b>31-Oct</b>	<b>-16.1%</b>
<b>7-Nov</b>	<b>-27.4%</b>
<b>14-Nov</b>	<b>-19.6%</b>
<b>21-Nov</b>	<b>-20.2%</b>
<b>28-Nov</b>	<b>-11.4%</b>
<b>5-Dec</b>	<b>-15.2%</b>
<b>12-Dec</b>	<b>-7.2%</b>
<b>19-Dec</b>	<b>-24.9%</b>
<b>26-Dec</b>	<b>-6.7%</b>
<b>2-Jan</b>	<b>-19.8%</b>

# Truck Volumes



## Weekly Changes in Truck Volumes at Permanent Counters (ATR) from 2019 to 2020



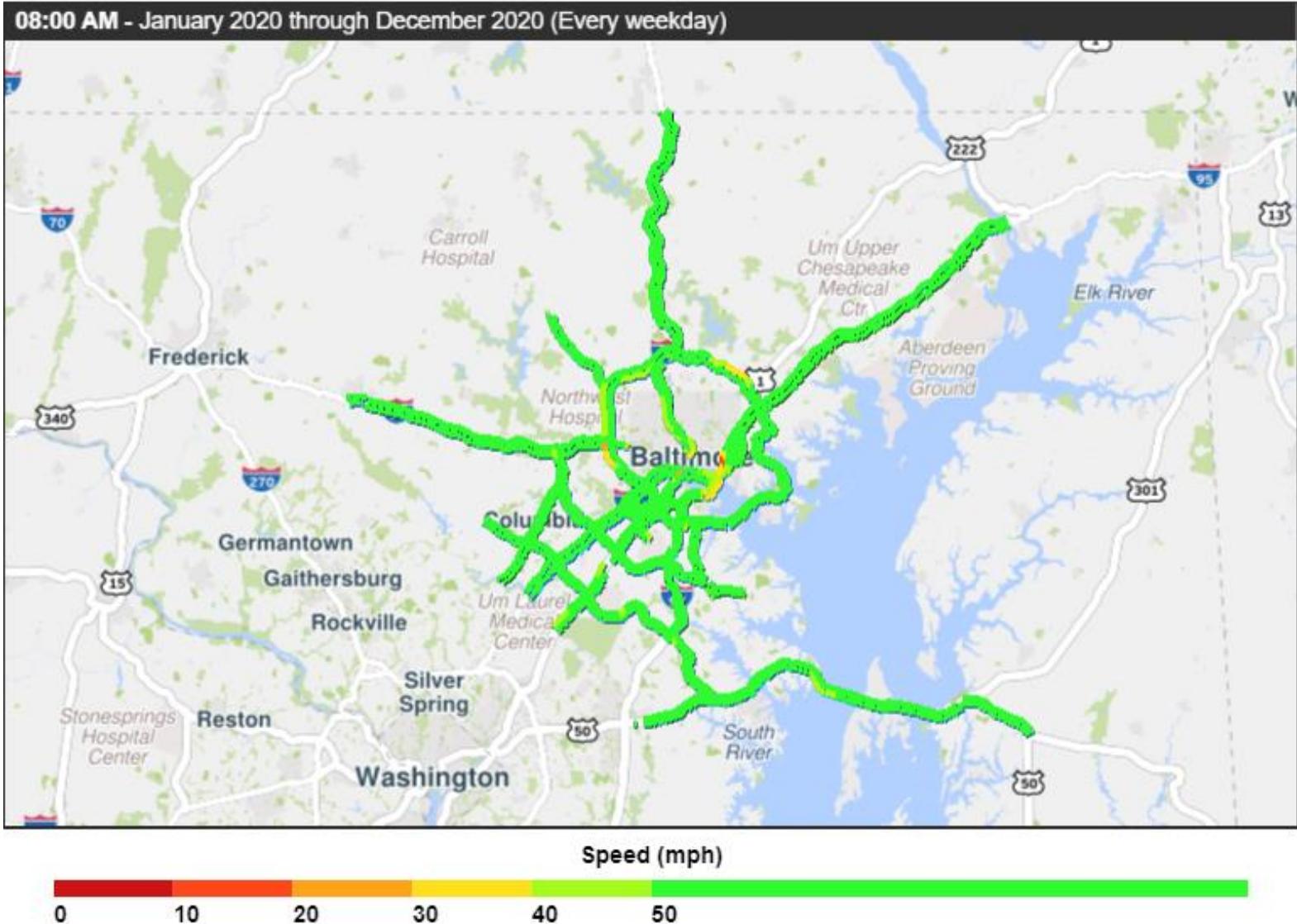
Data prepared by  
Data Services Division

Trucks are FHWA Class 5-13

# Regional Speed Maps

# AM Peak Period Rush Hour –October 1– December 31th

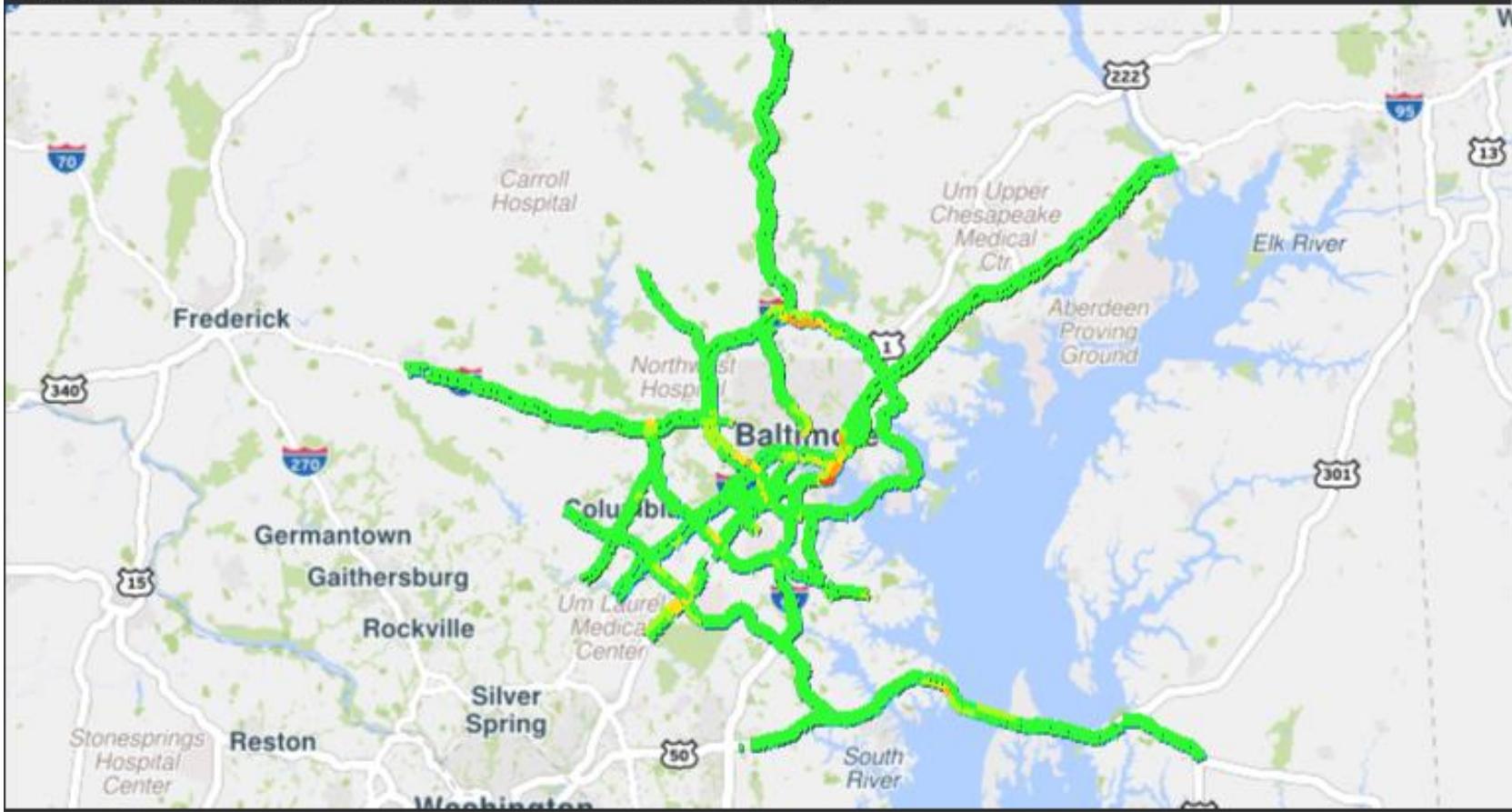
BMC Region - AVG Speeds on Limited Access Roads - AM Peak Period - 4th Quarter



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

BMC Region - AVG Speeds on Limited Access Roads - PM Peak Period - 4th Quarter

05:00 PM - January 2020 through December 2020 (Every weekday)



Speed (mph)



# For More Information

**Ed Stylc**

**Transportation Analyst**

**(410) 732-0500 x1031**

**[estylc@baltometro.org](mailto:estylc@baltometro.org)**

**[www.baltometro.org](http://www.baltometro.org)**