



Quarterly Congestion Analysis Report. Top 10 Bottlenecks

2nd Quarter 2020

July 28, 2020



INTRODUCTION

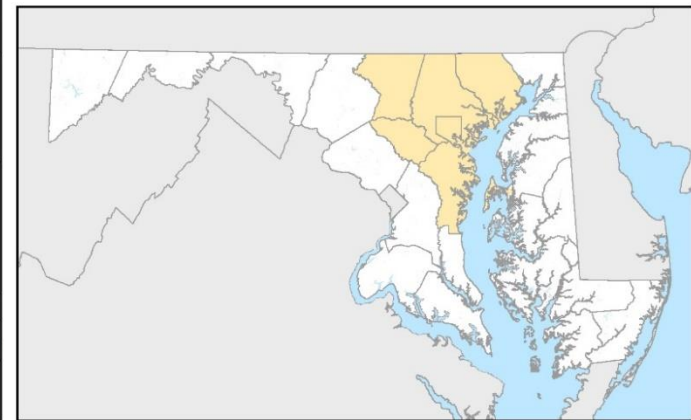
About the Region

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

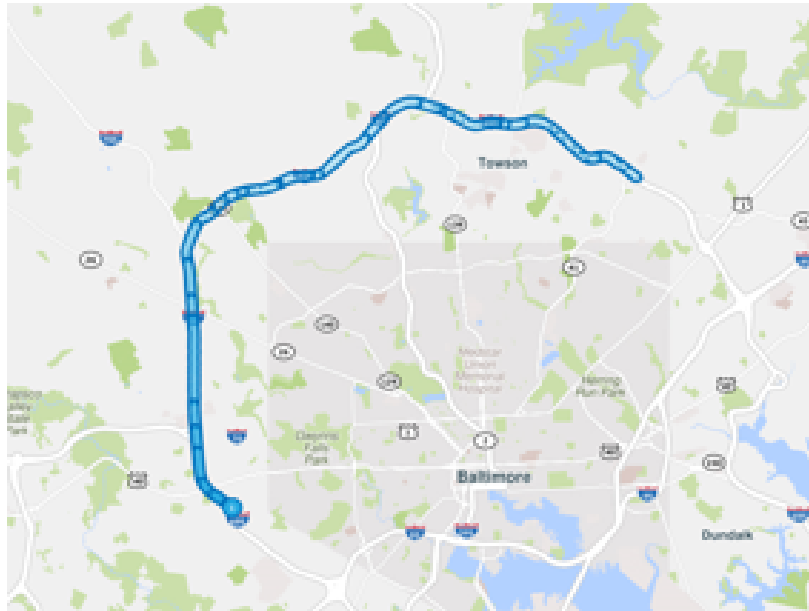
the aggregation of queue length over time for congestion at each location in mile minutes

| 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 |

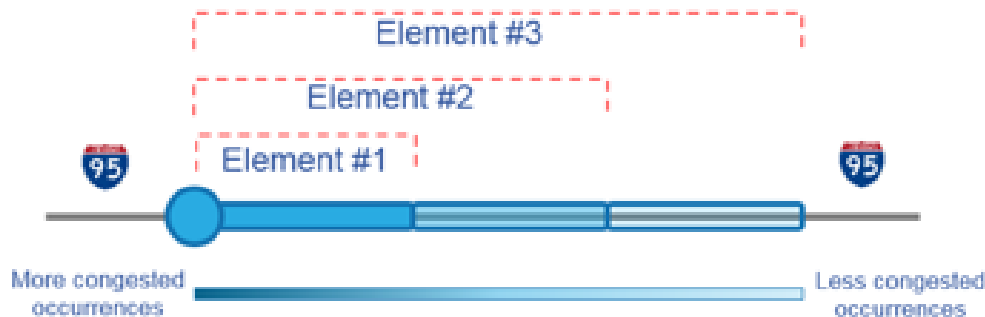
IL = Inner Loop

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.

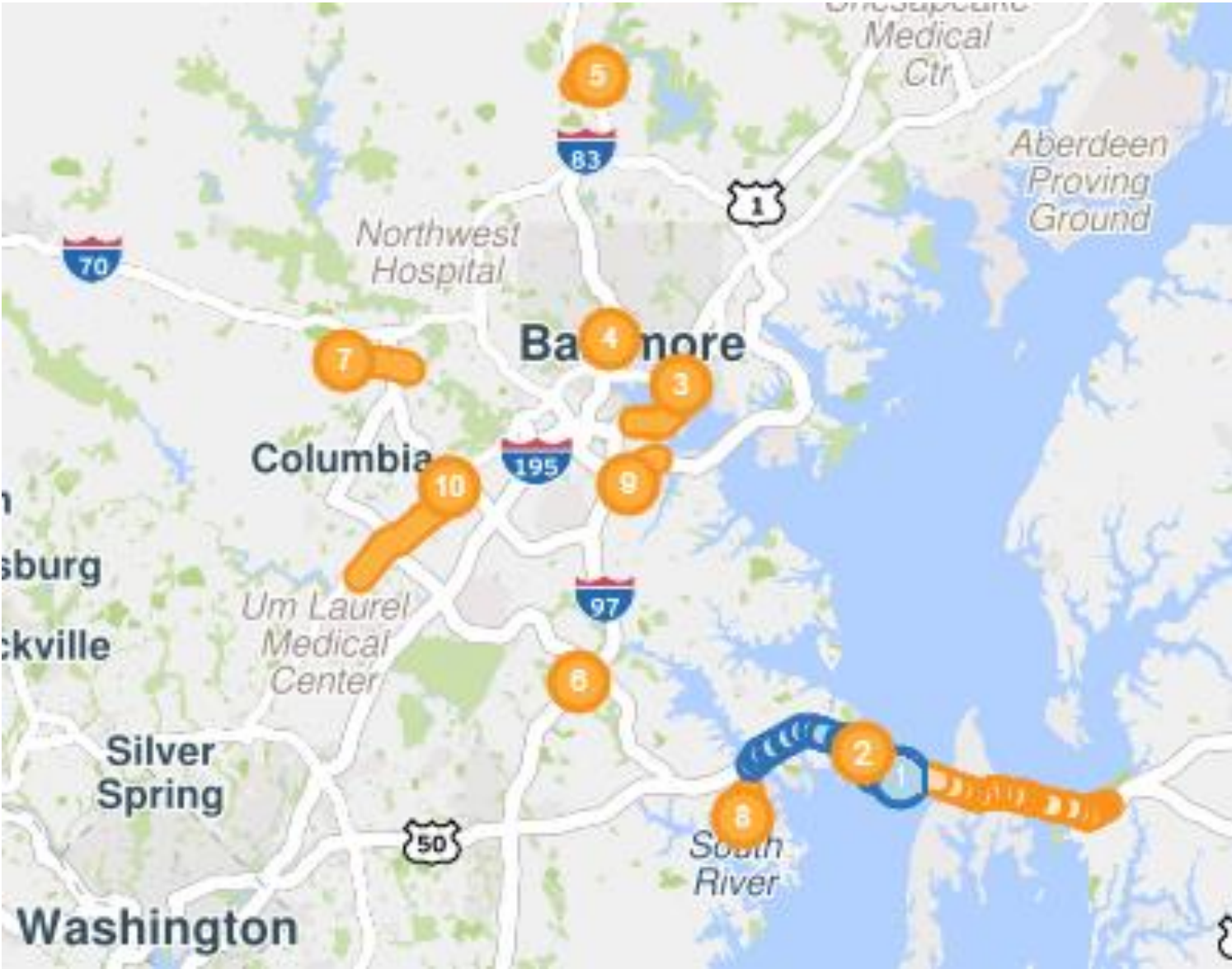


Top 10 Bottleneck Rankings – 2nd Quarter 2020

Disclaimer: This 2nd Quarter Report is the first report fully under Covid 19 conditions. The rankings are unusual compared to any results observed in 2019.

Top 10 Bottlenecks in the Baltimore Region
2nd Quarter 2020

Overview Map



Top 10 Bottlenecks in the Baltimore Region 2nd 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

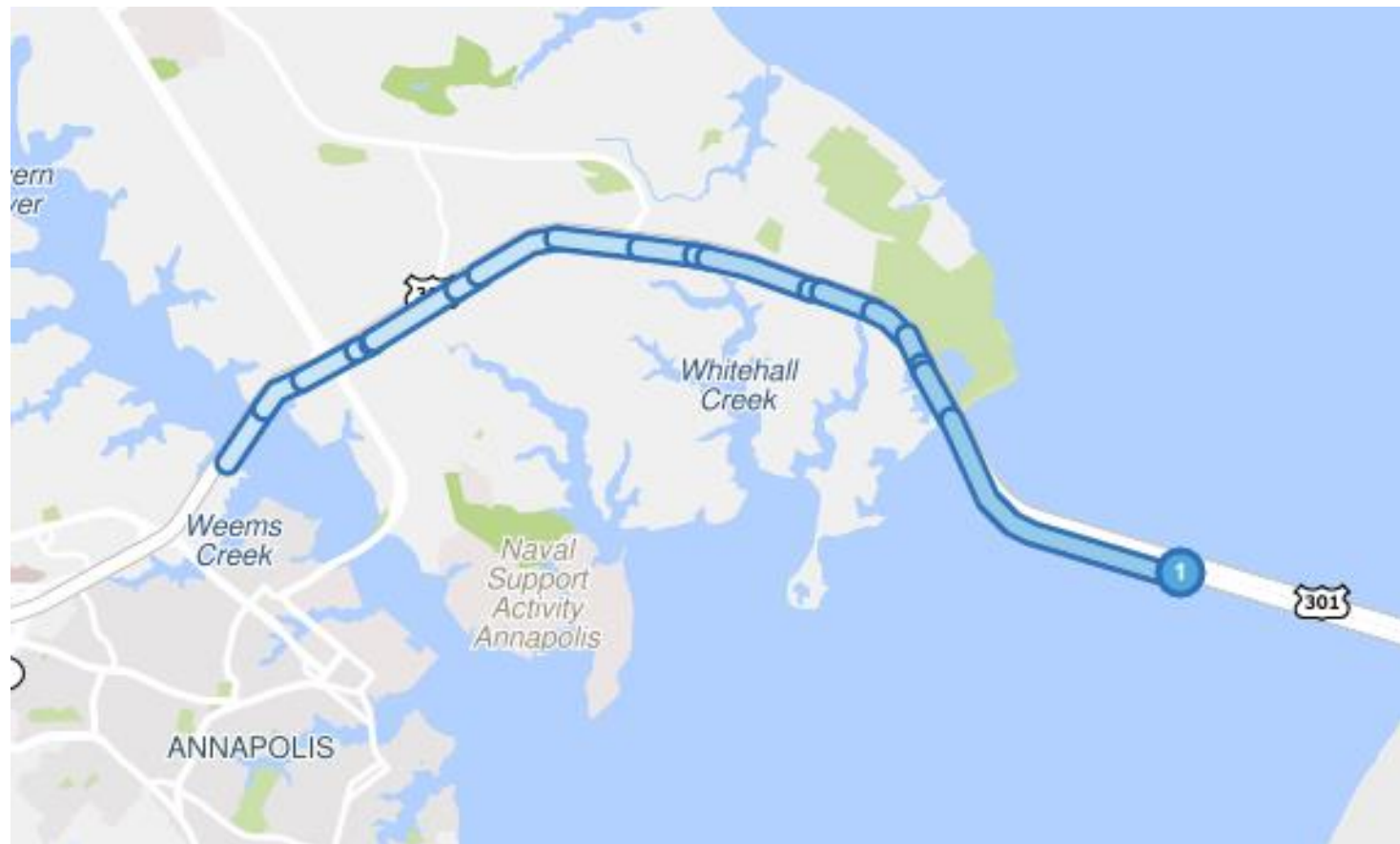
| Rank | Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|------|----------------------------------------------|----------------------------|------------------------|-----------------------|------------------------|
| 1 | US-50 E @ BAY BRIDGE TOLL PLAZA | 3.92 | 38 m | 581 | 35,111 |
| 2 | US-50 W @ BAY BRIDGE TOLL PLAZA | 4.32 | 48 m | 457 | 35,835 |
| 3 | I-895 N @ HARBOR TUNNEL THWY (NORTH) | 1.65 | 1 h 32 m | 125 | 33,932 |
| 4 | W FRANKLIN ST @ N MARTIN LUTHER KING JR BLVD | 0.18 | 5 h 46 m | No Data | 26,628 |
| 5 | WARREN RD @ MD-45/YORK RD | 0.52 | 1 h 49 m | 3 | 27,675 |
| 6 | MD-175 N @ MD-3/CRAIN HWY | 0.19 | 13 h 20 m | No Data | 8,786 |
| 7 | FREDERICK RD @ US-40/BALTIMORE NATIONAL PIKE | 0.23 | 8 h 51 m | No Data | 13,126 |
| 8 | MD-387 S/SPA RD @ FOREST DR | 0.22 | 7 h 33 m | No Data | 15,412 |
| 9 | E ORDNANCE RD @ MD-2/RITCHIE HWY | 0.31 | 7 h 50 m | No Data | 20,202 |
| 10 | I-95 N @ MD-100/EXIT 43 | 3.09 | 4 m | 52 | 103,003 |

IL = Inner Loop

OL = Outer Loop

#1 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

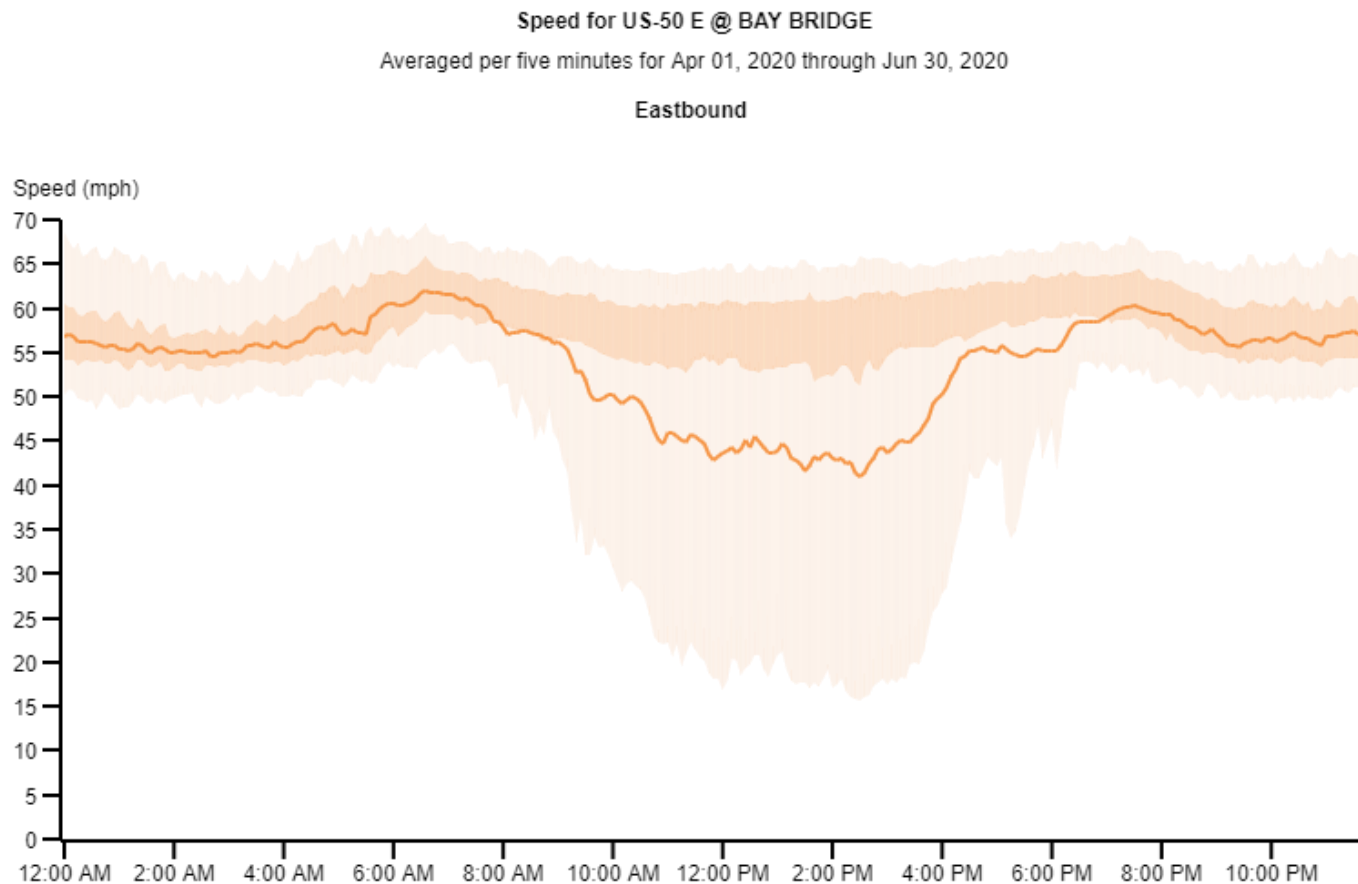
| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|---------------------------------|----------------------------|------------------------|-----------------------|------------------------|
| US-50 E @ BAY BRIDGE TOLL PLAZA | 3.92 | 38 m | 581 | 35,111 |



Notes: Spring traffic pattern showing traffic heading to the Maryland and Delaware beaches. Weekend traffic readings show primary congestion between 8am and 6pm.

#1 Ranked Bottleneck in the Baltimore Region –2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|---------------------------------|----------------------------|------------------------|-----------------------|------------------------|
| US-50 E @ BAY BRIDGE TOLL PLAZA | 3.92 | 38 m | 581 | 35,111 |

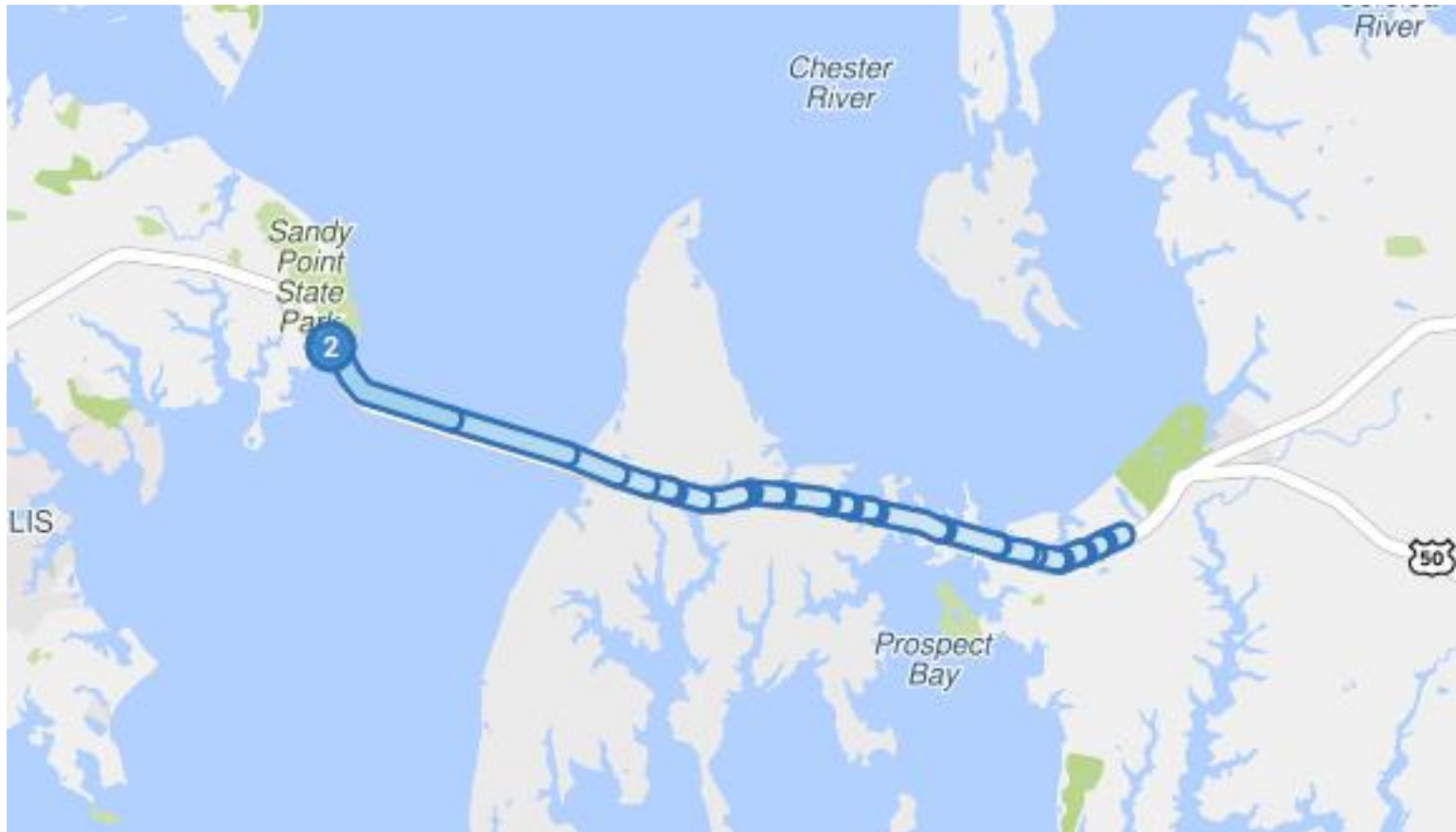


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Apr 01, 2020 through Jun 30, 2020 - INRIX
- Apr 01, 2020 through Jun 30, 2020 25th and 75th percentile - INRIX
- Apr 01, 2020 through Jun 30, 2020 5th and 95th percentile - INRIX

#2 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

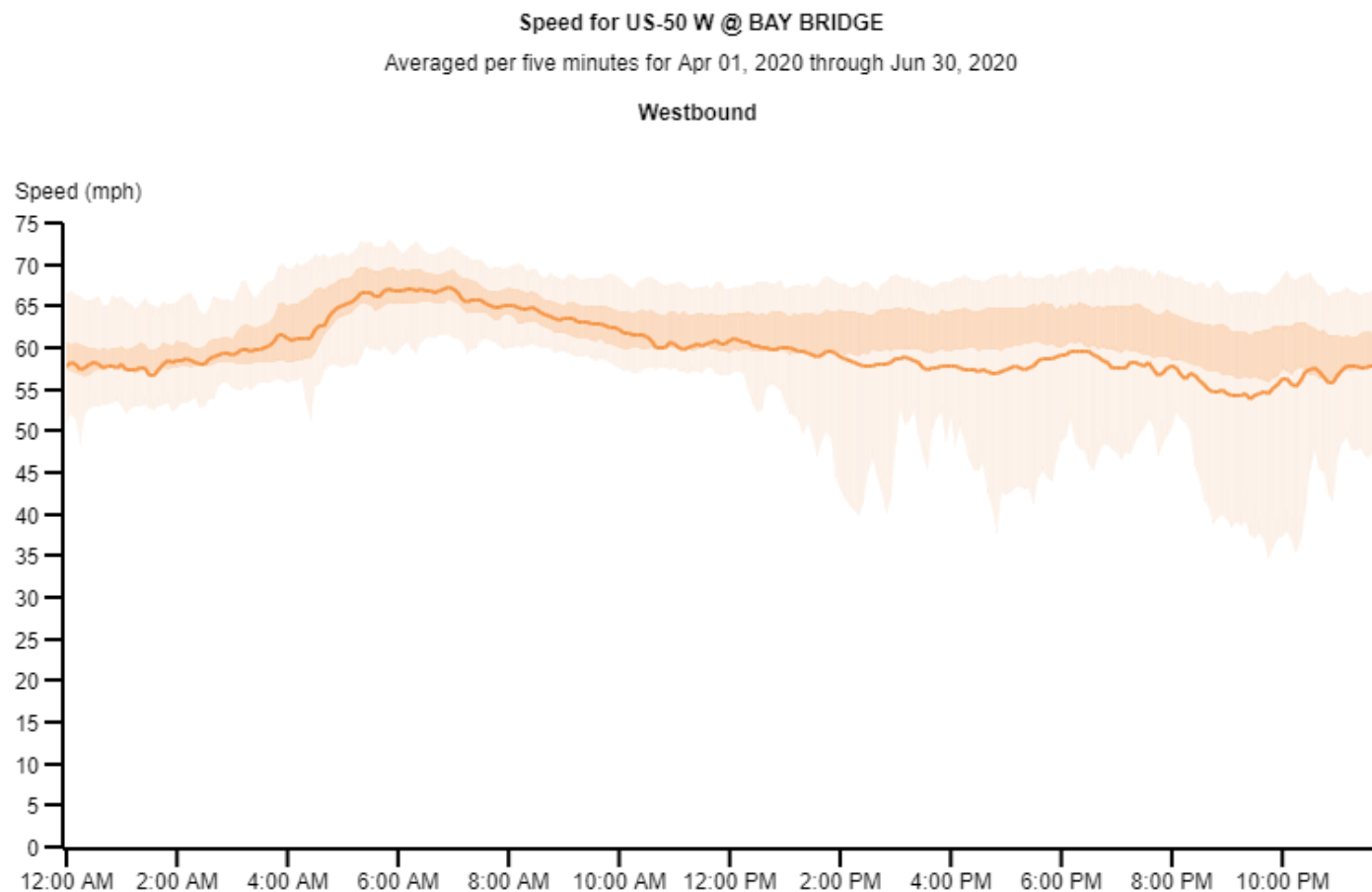
| | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|---------------------------------|----------------------------------|---------------------------|--------------------------|------------------------------|
| US-50 W @ BAY BRIDGE TOLL PLAZA | 4.32 | 48m | 457 | 35,835 |



Notes: Westbound off peak has lane closures due to deck rehabilitation on the Bay Bridge. Project expected end date September 7, 2023. Spring traffic pattern showing traffic heading back from Maryland beaches primarily on Sundays..

#2 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|---------------------------------|----------------------------------|---------------------------|--------------------------|------------------------------|
| US-50 W @ BAY BRIDGE TOLL PLAZA | 4.32 | 48m | 457 | 35,835 |

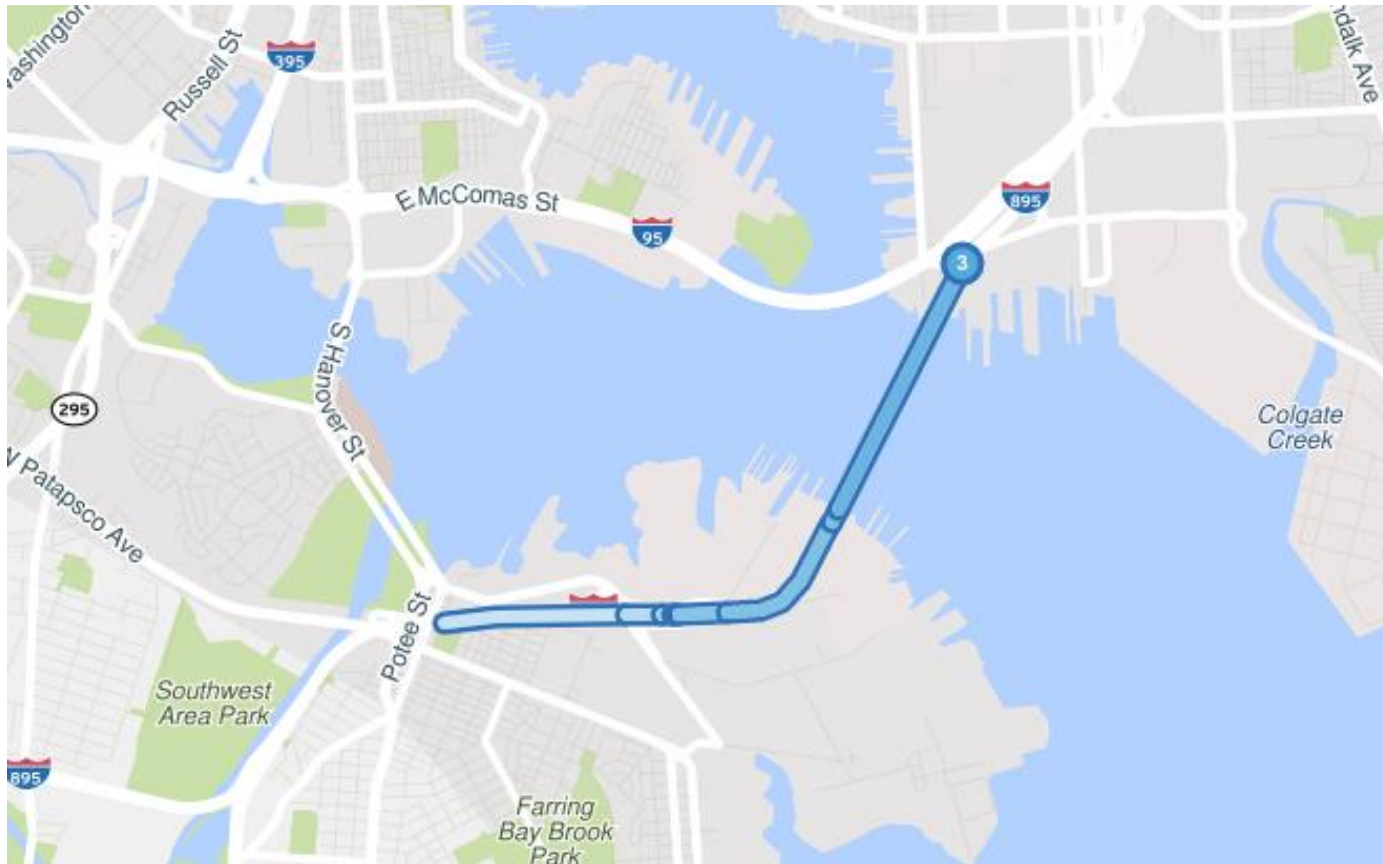


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Apr 01, 2020 through Jun 30, 2020 - INRIX
- Apr 01, 2020 through Jun 30, 2020 25th and 75th percentile - INRIX
- Apr 01, 2020 through Jun 30, 2020 5th and 95th percentile - INRIX

#3 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|--------------------------------------|----------------------------|------------------------|-----------------------|------------------------|
| I-895 N @ HARBOR TUNNEL THWY (NORTH) | 1.65 | 1 h 32 m | 125 | 33,932 |



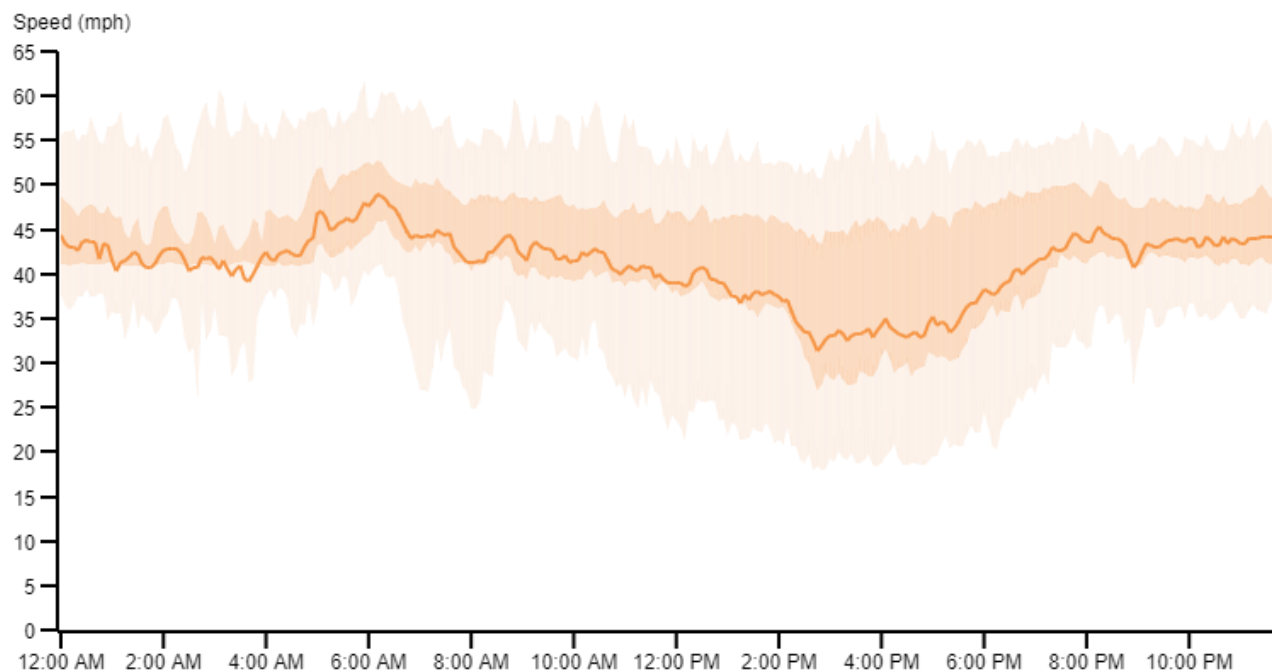
Notes: Major construction project impacting I-895 from November 2018 until summer 2021. The Northbound bore of the Harbor Tunnel is closed to traffic and the southbound bore is currently 2 way traffic. The I-895/Holabird Avenue exit ramp (Exit 10) will close completely during this time. For more information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

#3 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|--------------------------------------|----------------------------|------------------------|-----------------------|------------------------|
| I-895 N @ HARBOR TUNNEL THWY (NORTH) | 1.65 | 1 h 32 m | 125 | 33,932 |

Speed for I-895 N @ HARBOR TUNNEL THWY (NORTH)
Averaged per five minutes for Apr 01, 2020 through Jun 30, 2020

Northbound

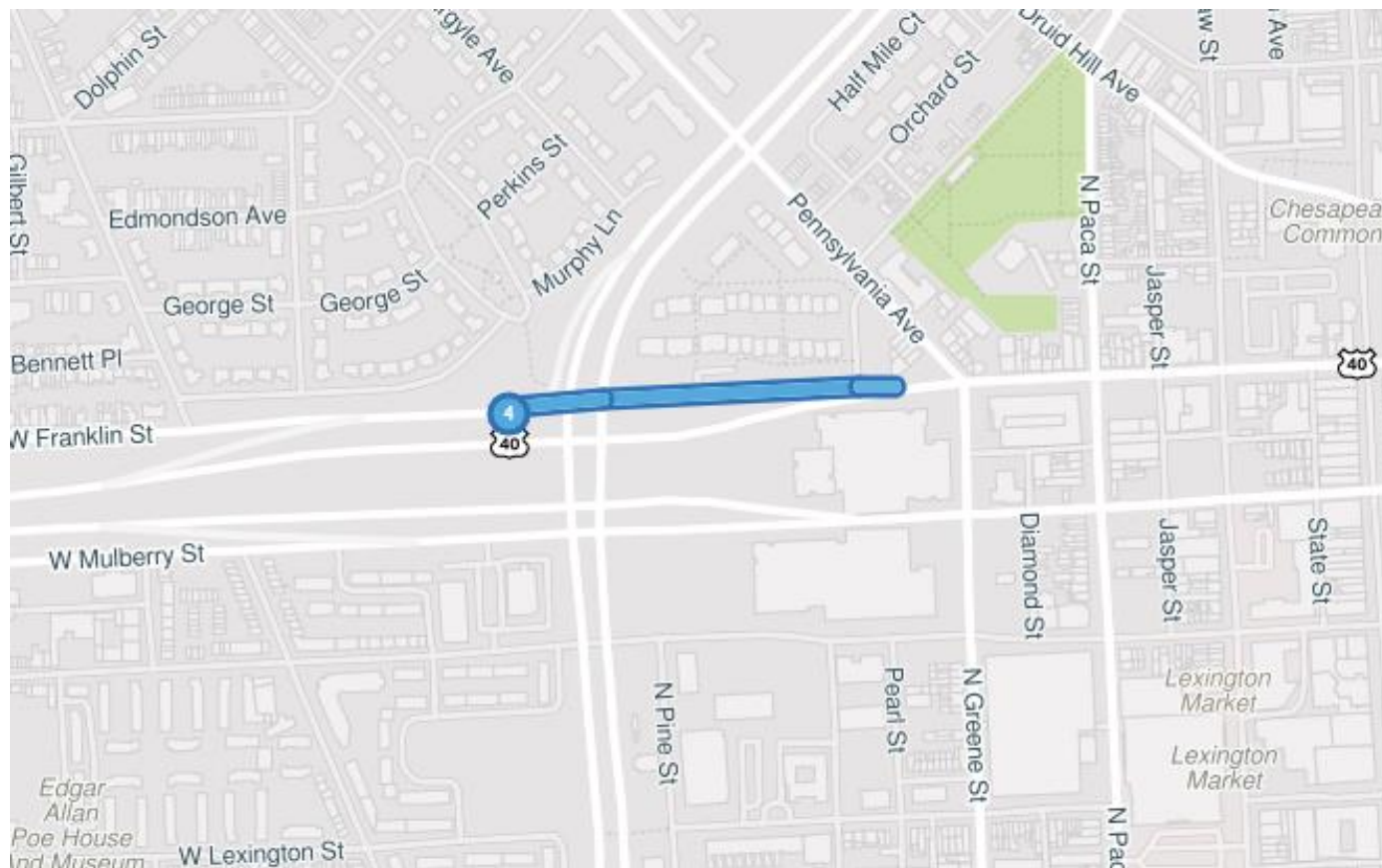


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Apr 01, 2020 through Jun 30, 2020 - INRIX
- Apr 01, 2020 through Jun 30, 2020 25th and 75th percentile - INRIX
- Apr 01, 2020 through Jun 30, 2020 5th and 95th percentile - INRIX

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

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|----------------------------|----------------------------|------------------------|-----------------------|------------------------|
| W FRANKLIN ST @ N MLK BLVD | 0.18 | 5 h 46 m | No Data | 26,628 |



Notes: Traffic signal queue times waiting to cross Martin Luther King Jr Blvd most likely cause the observed delay from 8am to 9pm

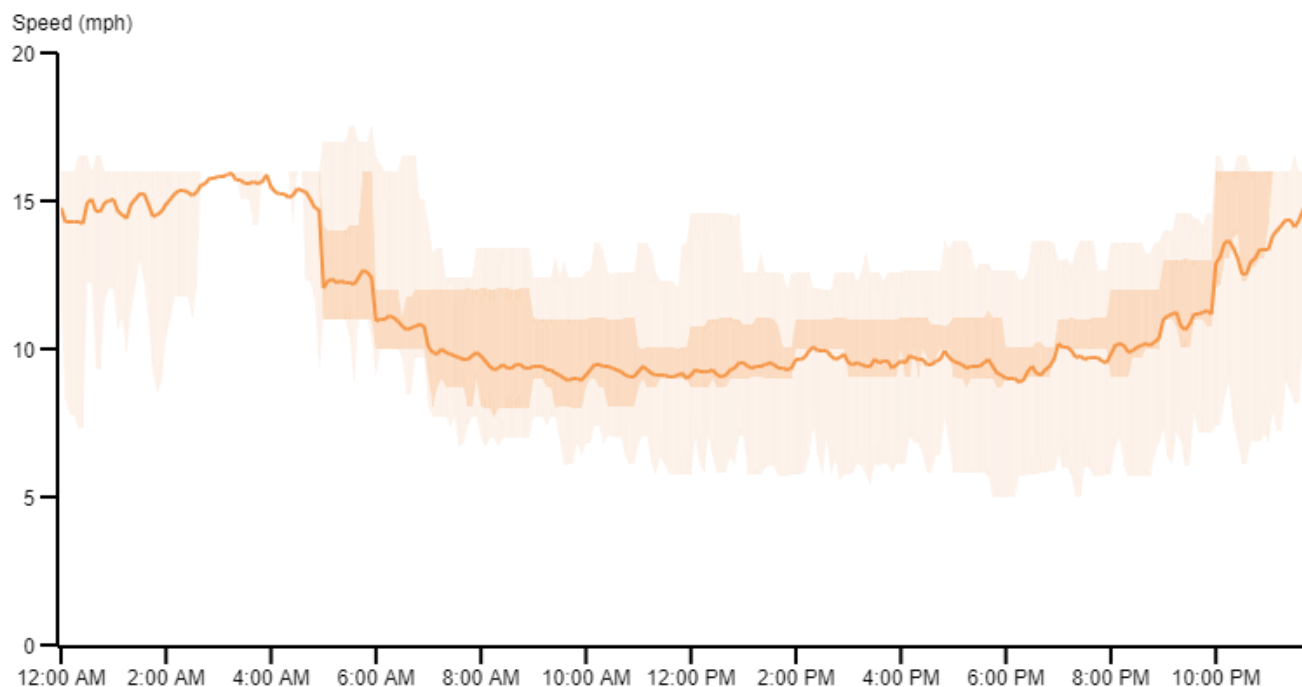
#4 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|----------------------------|----------------------------|------------------------|-----------------------|------------------------|
| W FRANKLIN ST @ N MLK BLVD | 0.18 | 5 h 46 m | No Data | 26,628 |

Speed for W FRANKLIN ST W @ N MARTIN LUTHER KING JR BLVD

Averaged per five minutes for Apr 01, 2020 through Jun 30, 2020

Westbound

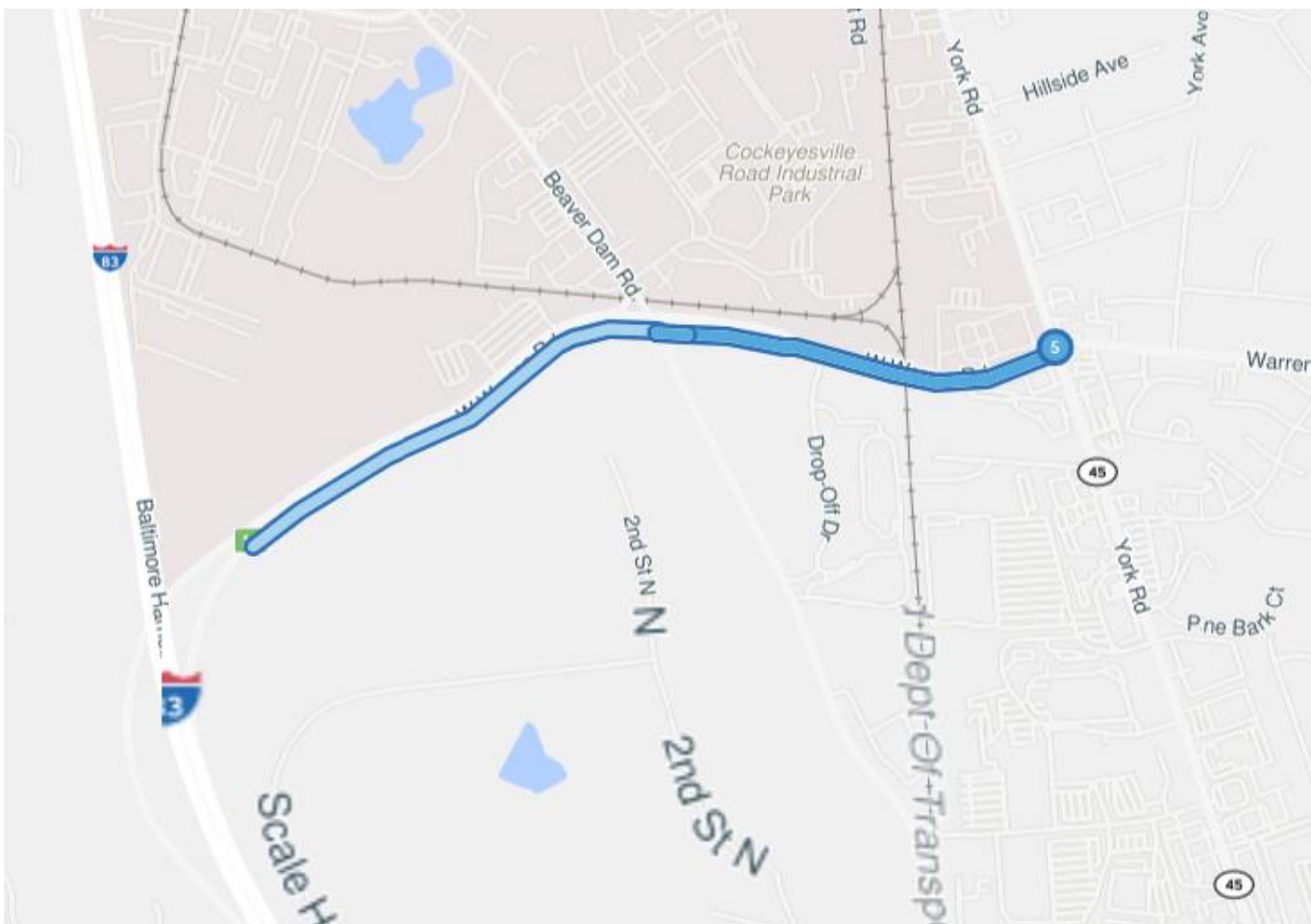


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Apr 01, 2020 through Jun 30, 2020 - INRIX
- Apr 01, 2020 through Jun 30, 2020 25th and 75th percentile - INRIX
- Apr 01, 2020 through Jun 30, 2020 5th and 95th percentile - INRIX

#5 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|---------------------------|----------------------------|------------------------|-----------------------|------------------------|
| WARREN RD @ MD-45/YORK RD | 0.52 | 1 h 49 m | 3 | 27,675 |

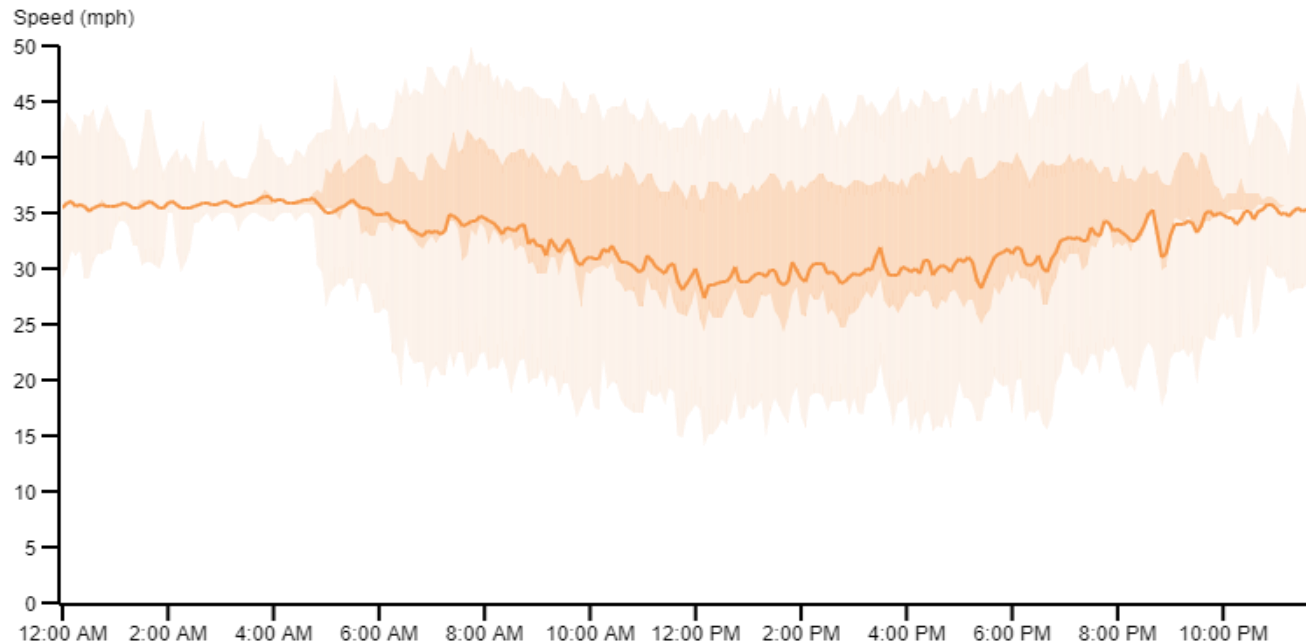


Notes: East of Beaver Dam Rd, Warren Rd goes from a 4 lane divided highway to 4 lanes with a center turn lane. A light rail crossing periodically stops traffic. This is followed by a traffic signal 325 ft. east at the entrance to the BGE service and final signal at MD-45/York Rd which has an AADT of 26,330.

#5 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|---------------------------|----------------------------|------------------------|-----------------------|------------------------|
| WARREN RD @ MD-45/YORK RD | 0.52 | 1 h 49 m | 3 | 27,675 |

Speed for WARREN RD E @ MD-45/YORK RD
Averaged per five minutes for Apr 01, 2020 through Jun 30, 2020
Eastbound

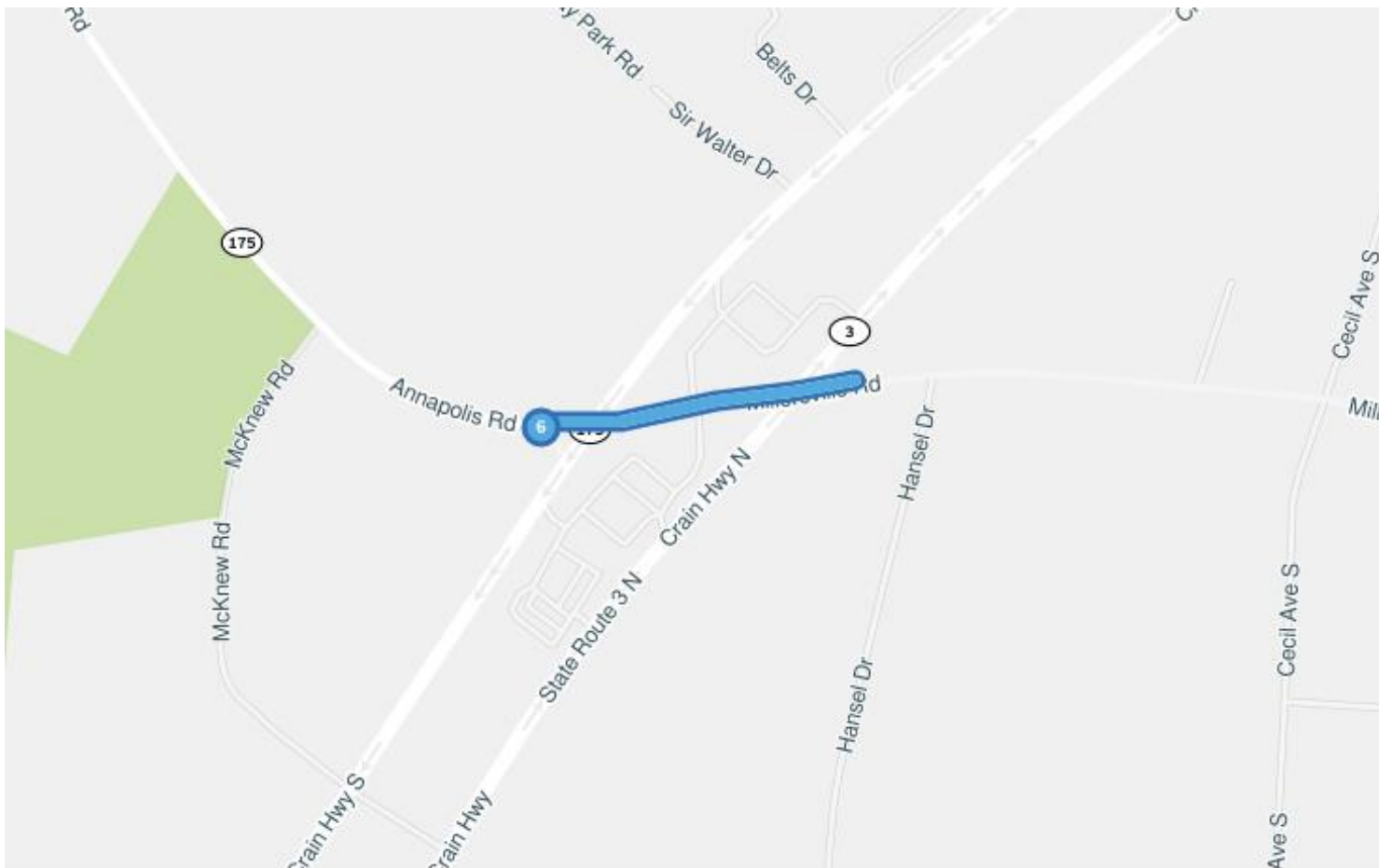


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Apr 01, 2020 through Jun 30, 2020 - INRIX
- Apr 01, 2020 through Jun 30, 2020 25th and 75th percentile - INRIX
- Apr 01, 2020 through Jun 30, 2020 5th and 95th percentile - INRIX

#6 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|---------------------------|----------------------------|------------------------|-----------------------|------------------------|
| MD-175 N @ MD-3/CRAIN HWY | 0.19 | 13 h 20 m | No Data | 8,786 |

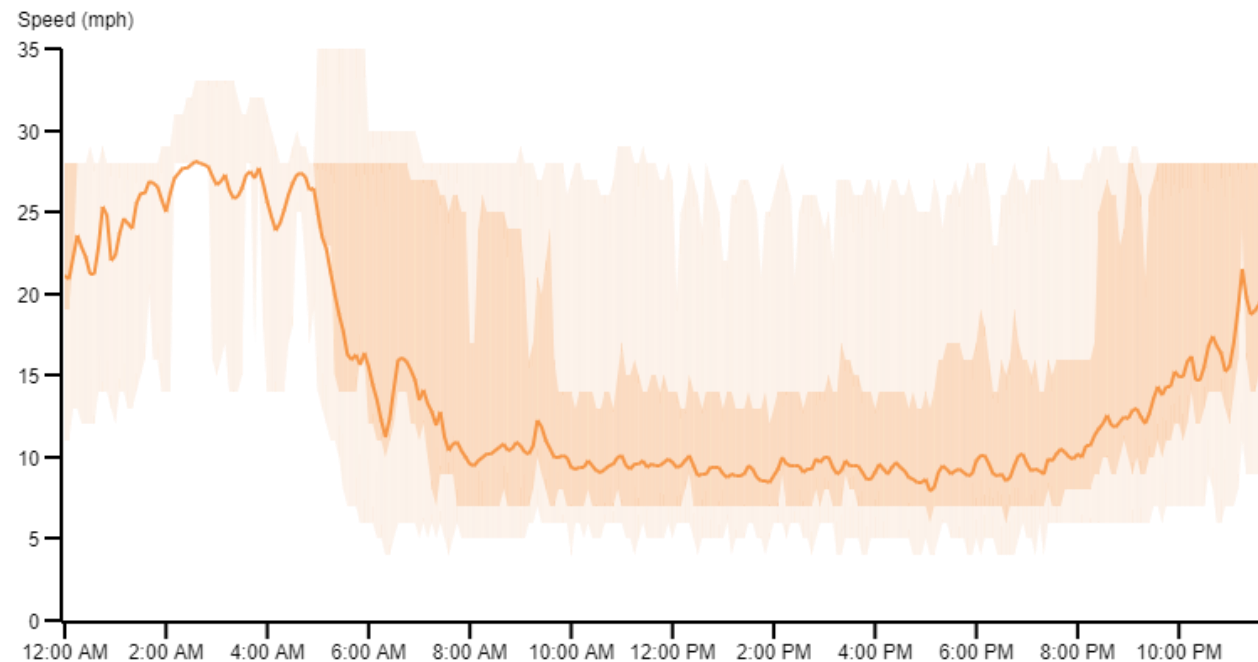


Notes: Complex road geometry with MD-175 crossing dualized MD-3 at a sharp angle makes turning movements difficult and MD-3 is a high traffic corridor between Baltimore and Washington, DC with an AADT of 74,010

#6 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|---------------------------|----------------------------|------------------------|-----------------------|------------------------|
| MD-175 N @ MD-3/CRAIN HWY | 0.19 | 13 h 20 m | No Data | 8,786 |

Speed for MD-175 N @ MD-3/CRAIN HWY
Averaged per five minutes for Apr 01, 2020 through Jun 30, 2020
Northbound

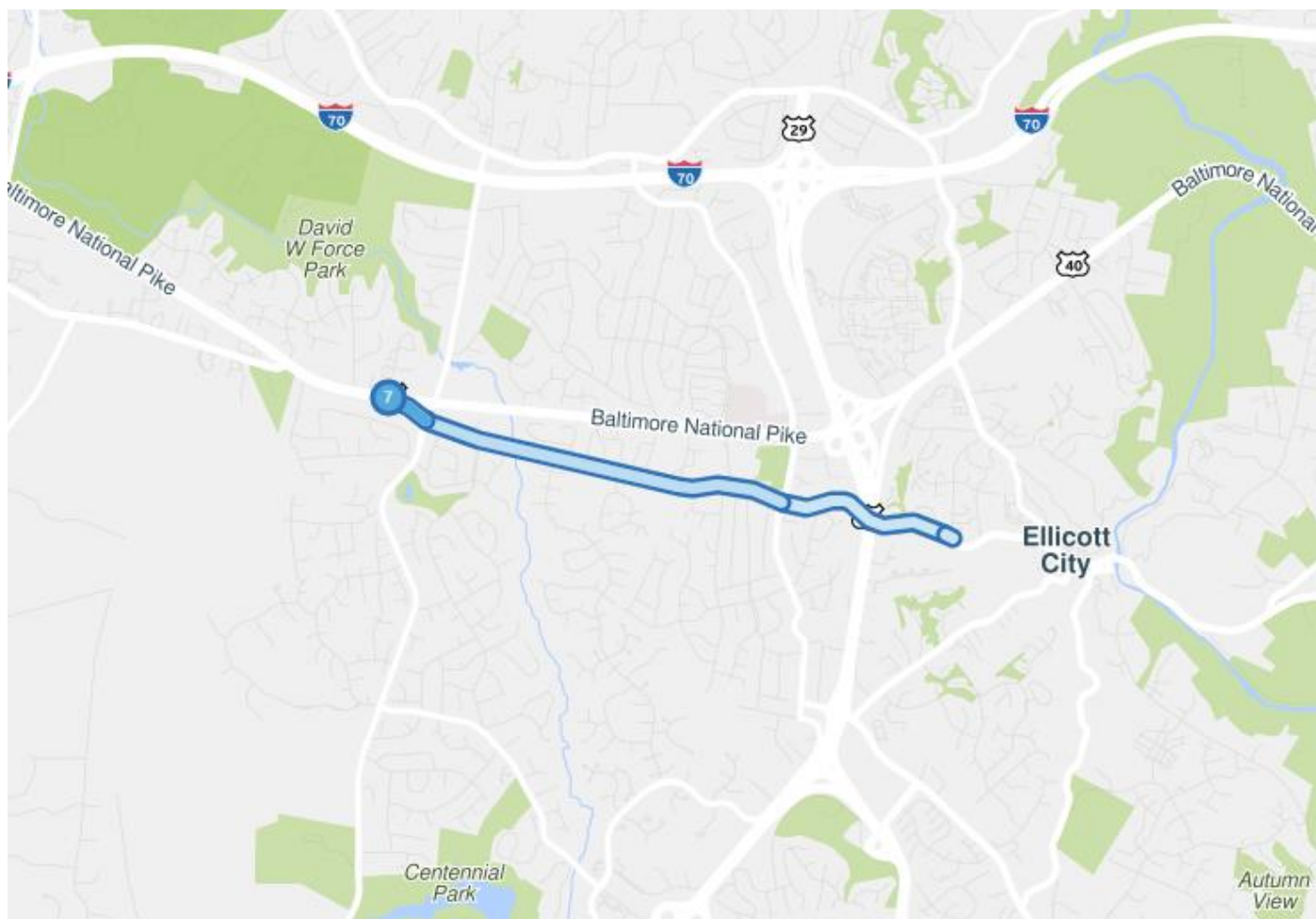


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Apr 01, 2020 through Jun 30, 2020 - INRIX
- Apr 01, 2020 through Jun 30, 2020 25th and 75th percentile - INRIX
- Apr 01, 2020 through Jun 30, 2020 5th and 95th percentile - INRIX

#7 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|----------------------------------------------|----------------------------|------------------------|-----------------------|------------------------|
| FREDERICK RD @ US-40/BALTIMORE NATIONAL PIKE | 0.23 | 8 h 51 m | No Data | 13,126 |



Notes: Primary cause is the traffic signal at US-40/Baltimore National Pike. Frederick Rd has an AADT of 11,951. US-40/Baltimore National Pike's AADT is 31,800.

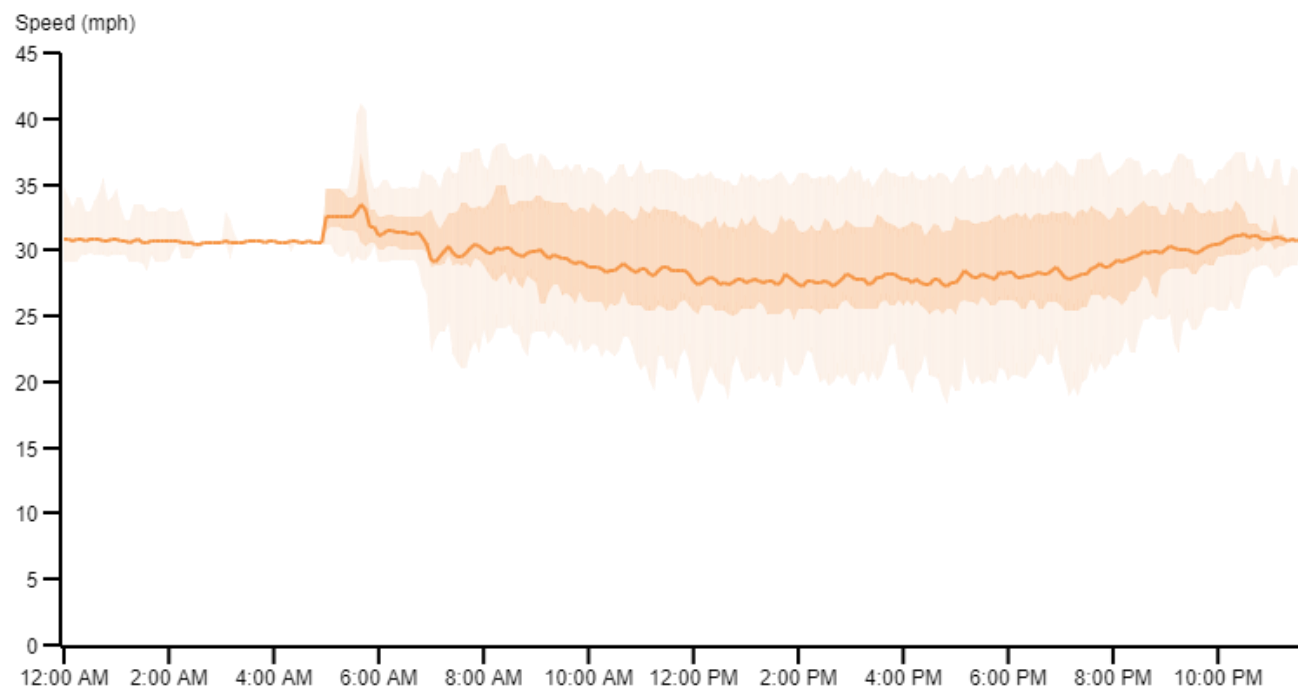
#7 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|----------------------------------------------|----------------------------|------------------------|-----------------------|------------------------|
| FREDERICK RD @ US-40/BALTIMORE NATIONAL PIKE | 0.23 | 8 h 51 m | No Data | 13,126 |

Speed for FREDERICK RD W @ US-40/BALTIMORE NATIONAL PIKE

Averaged per five minutes for Apr 01, 2020 through Jun 30, 2020

Westbound

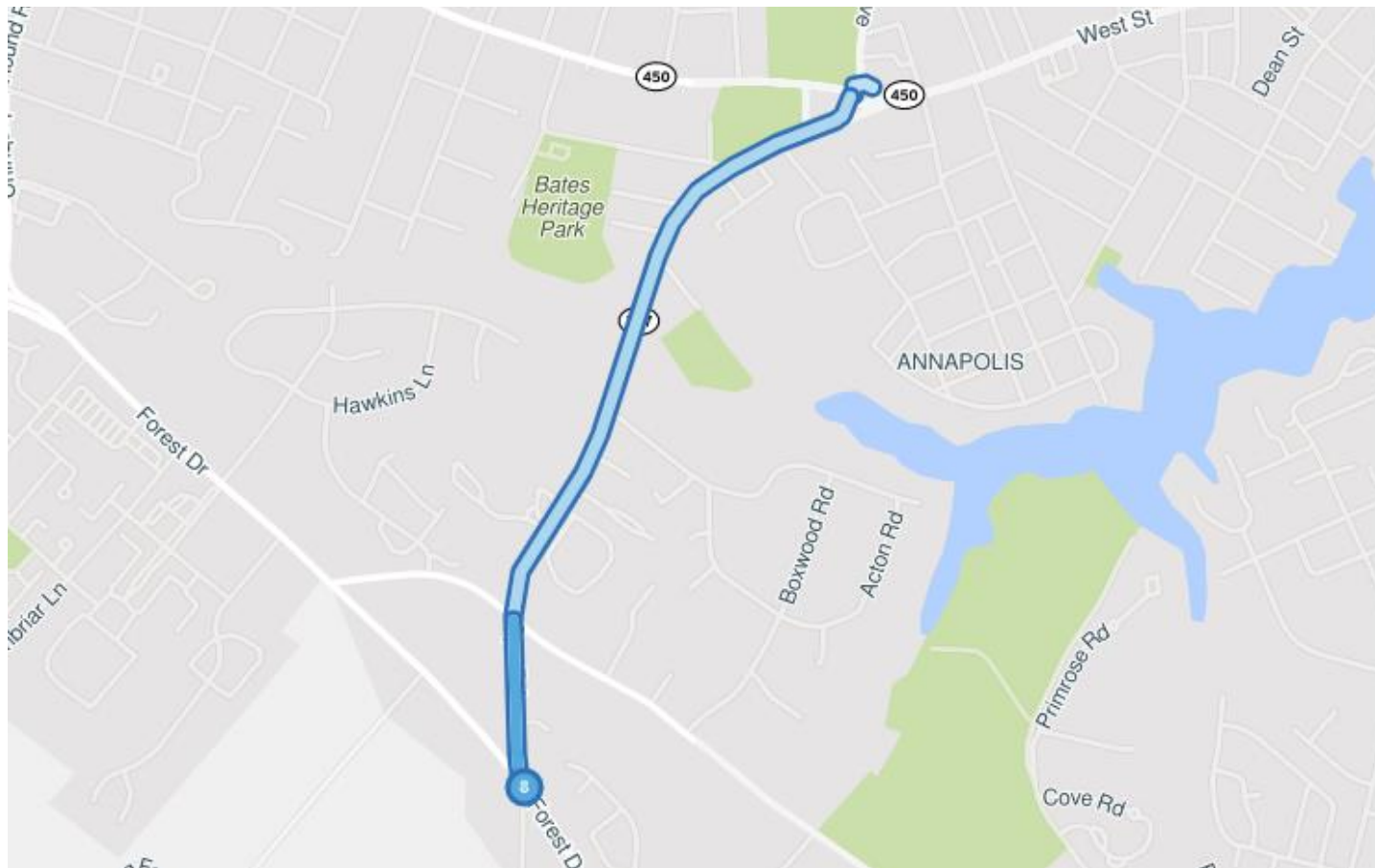


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Apr 01, 2020 through Jun 30, 2020 - INRIX
- Apr 01, 2020 through Jun 30, 2020 25th and 75th percentile - INRIX
- Apr 01, 2020 through Jun 30, 2020 5th and 95th percentile - INRIX

#8 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

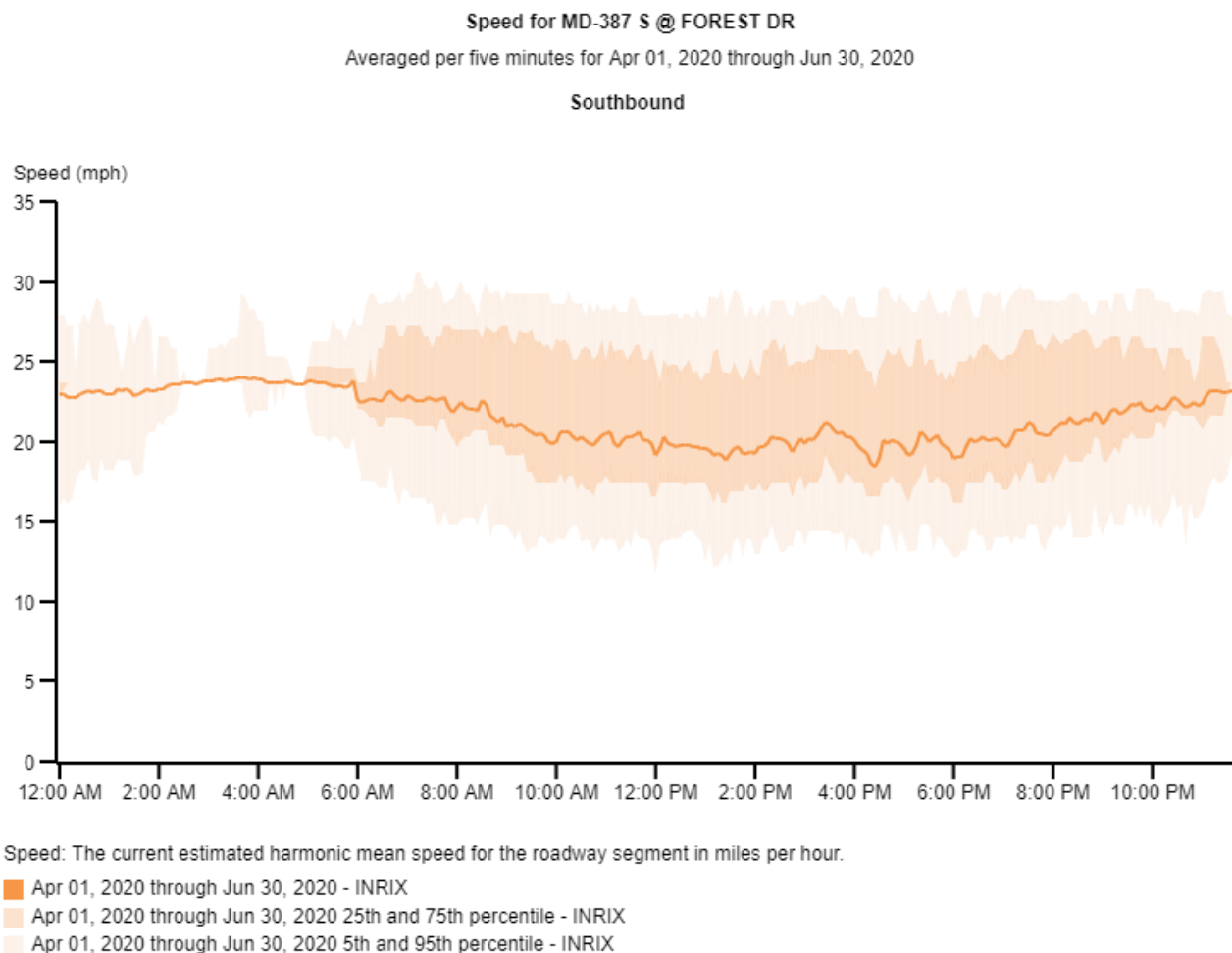
| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|-----------------------------|----------------------------|------------------------|-----------------------|------------------------|
| MD-387 S/SPA RD @ FOREST DR | 0.22 | 7 h 33 m | No Data | 15,412 |



Notes: Bottleneck is primarily between Forest Dr and Hilltop La southbound but on occasion can extend back to West St. Complex road geometry at the MD-387 and Forest Dr intersection. AADT for Forest Dr is 42,081

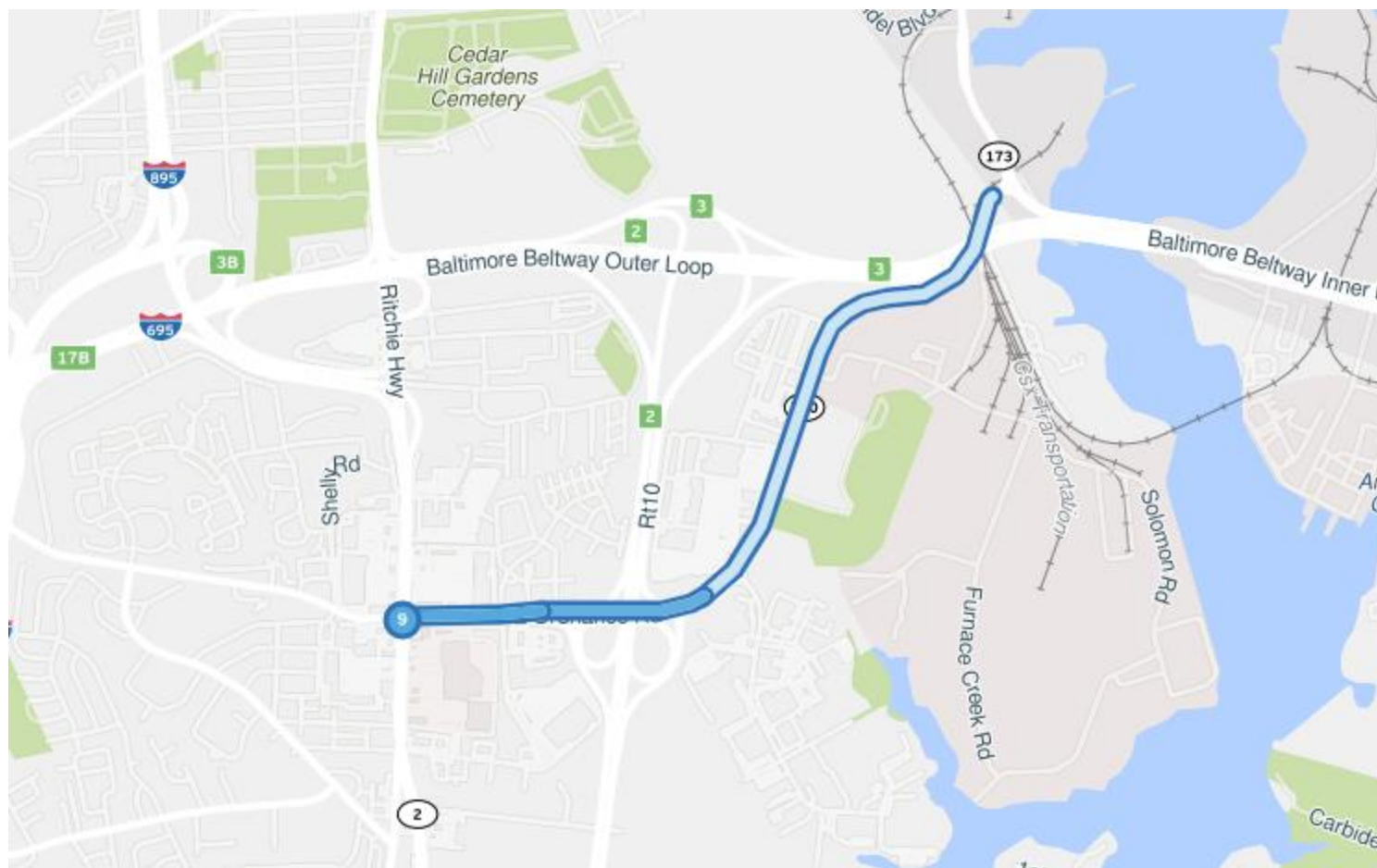
#8 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|-----------------------------|----------------------------|------------------------|-----------------------|------------------------|
| MD-387 S/SPA RD @ FOREST DR | 0.22 | 7 h 33 m | No Data | 15,412 |



#9 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|-----------------------------------------|----------------------------|------------------------|-----------------------|------------------------|
| MD-710/E ORDNANCE RD @ MD-2/RITCHIE HWY | 0.31 | 7 h 50 m | No Data | 20,202 |



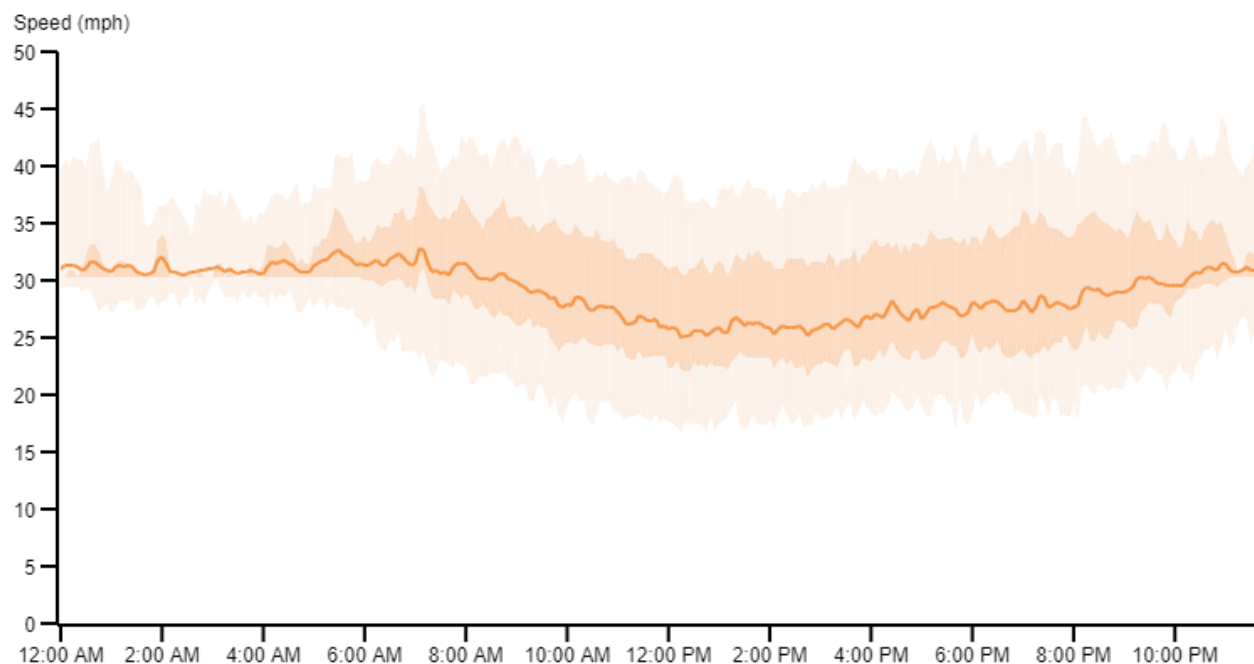
Notes: Major commercial area with 4 traffic signals within the bottleneck length. AADT: E Ordinance Rd: 21,601, MD-2/Ritchie Hwy: 34,791

#9 Ranked Bottleneck in the Baltimore Region – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|----------------------------------------|----------------------------|------------------------|-----------------------|------------------------|
| MD-710/E ORDANCE RD @ MD-2/RITCHIE HWY | 0.31 | 7 h 50 m | No Data | 20,202 |

Speed for ORDANCE RD S @ MD-2/RITCHIE HWY
Averaged per five minutes for Apr 01, 2020 through Jun 30, 2020

Southbound

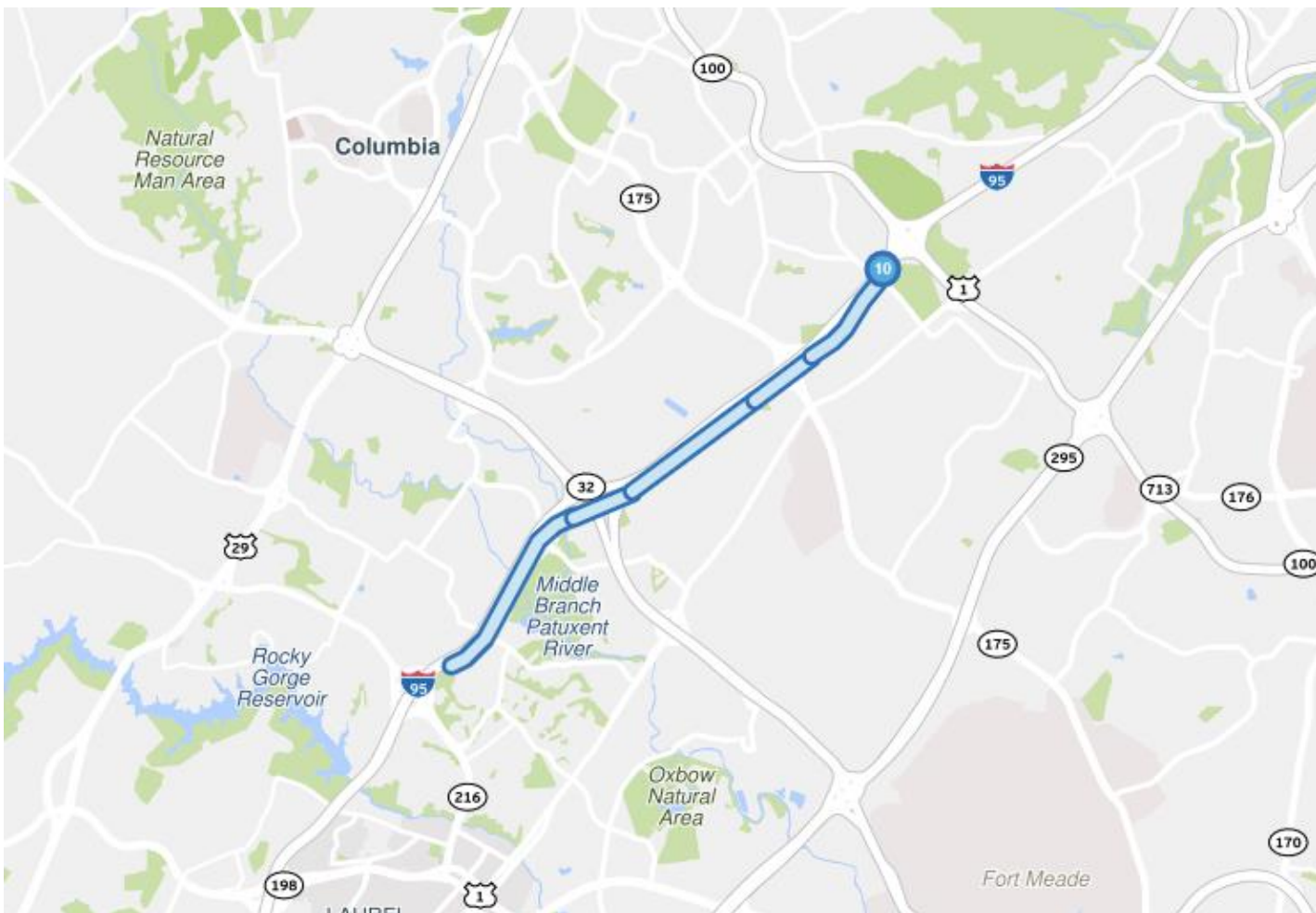


Speed: The current estimated harmonic mean speed for the roadway segment in miles per hour.

- Apr 01, 2020 through Jun 30, 2020 - INRIX
- Apr 01, 2020 through Jun 30, 2020 25th and 75th percentile - INRIX
- Apr 01, 2020 through Jun 30, 2020 5th and 95th percentile - INRIX

#10 Ranked Bottleneck in the Baltimore Region –2nd Quarter 2020

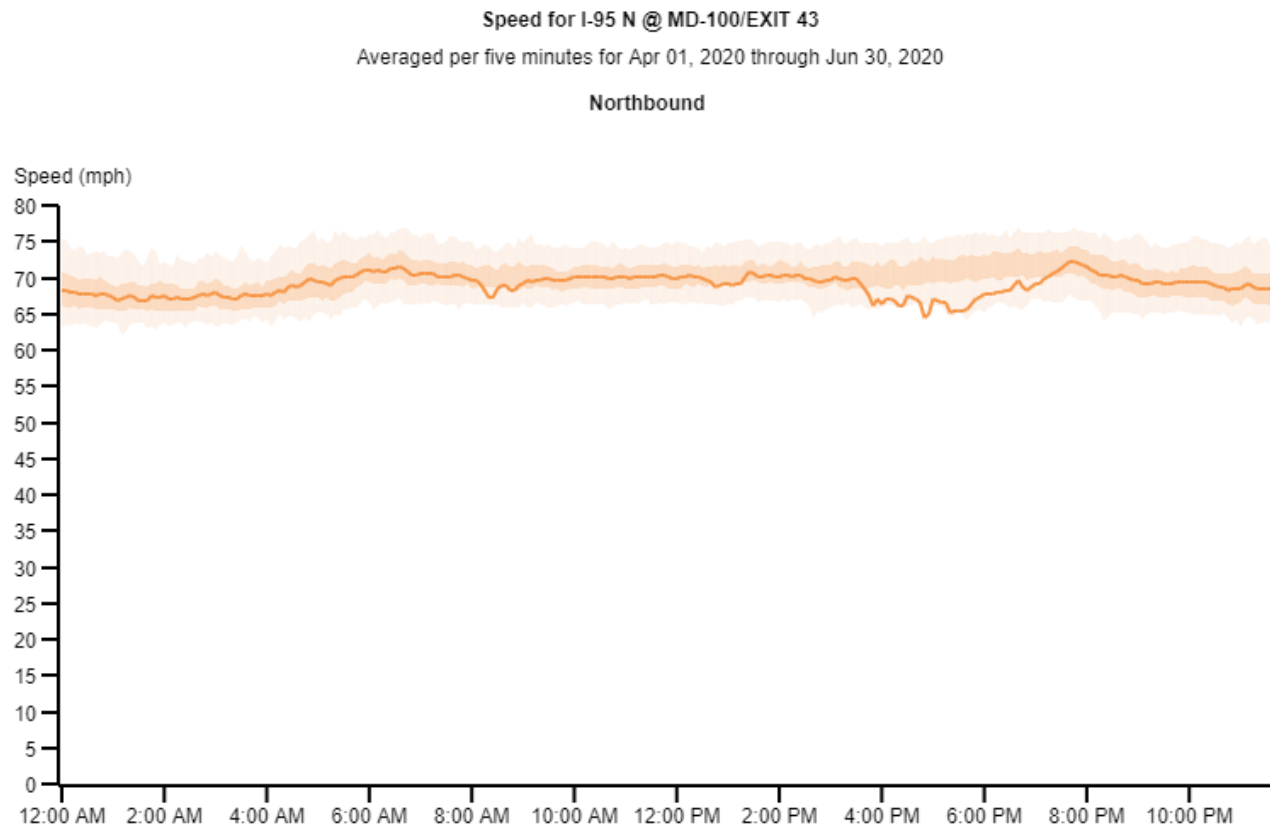
| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|-------------------------|----------------------------|------------------------|-----------------------|------------------------|
| I-95 N @ MD-100/EXIT 43 | 3.09 | 4 m | 52 | 103,003 |



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 – 2nd Quarter 2020

| Location | Average max length (miles) | Average Daily Duration | All Events/ Incidents | Volume Estimate (AADT) |
|-------------------------|----------------------------|------------------------|-----------------------|------------------------|
| I-95 N @ MD-100/EXIT 43 | 3.09 | 4 m | 52 | 103,003 |



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

- Apr 01, 2020 through Jun 30, 2020 - INRIX
- Apr 01, 2020 through Jun 30, 2020 25th and 75th percentile - INRIX
- Apr 01, 2020 through Jun 30, 2020 5th and 95th percentile - INRIX

Traffic Volume Trends

Traffic Volumes

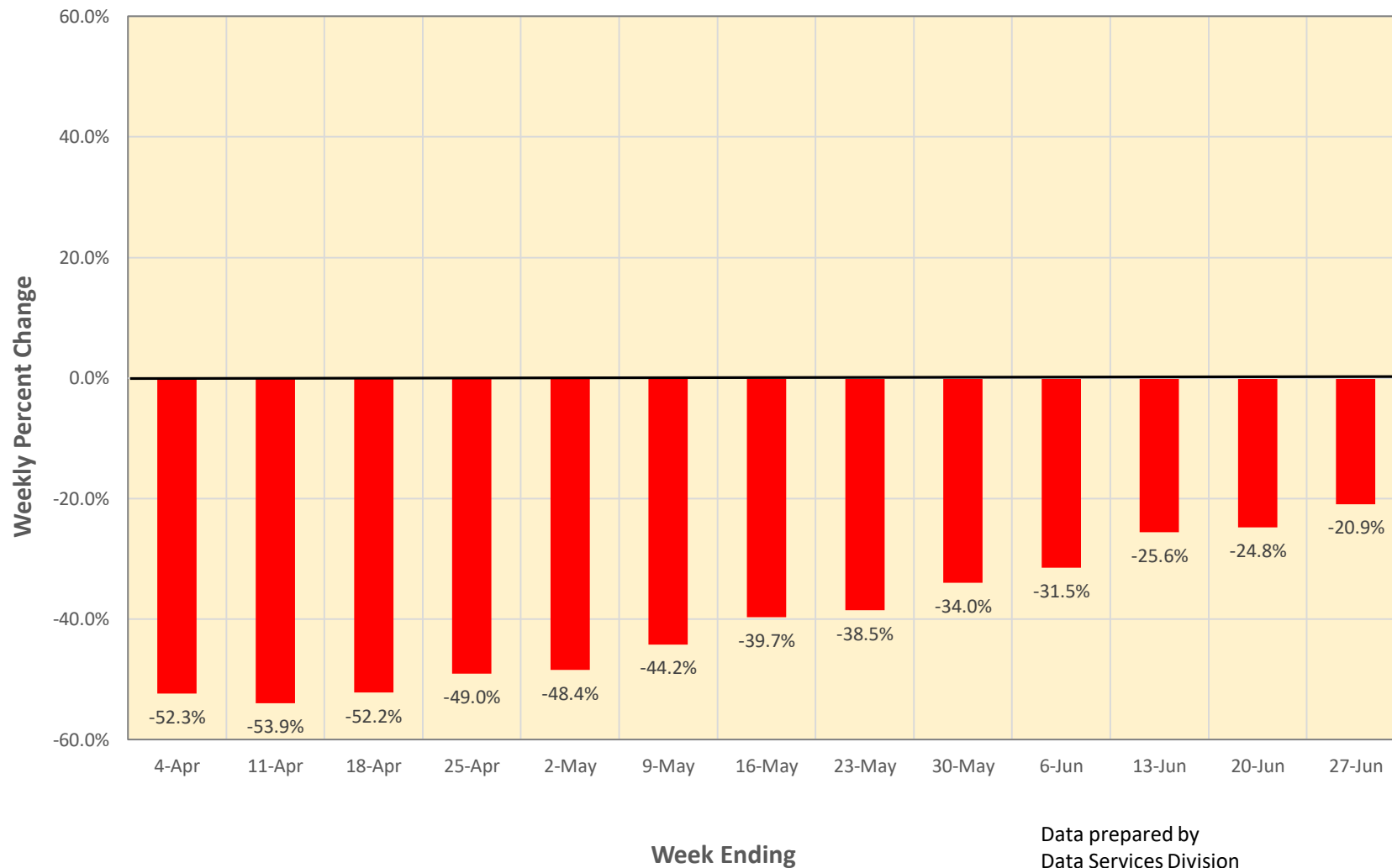
Traffic Volumes – Weekly Changes at Permanent Counters 2019 vs. 2020

| Week Ending | Comparing weekly average Truck ATR Volumes 2019 to 2020 * |
|---------------|--------------------------------------------------------------|
| 4-Apr | -52.3% |
| 11-Apr | -53.9% |
| 18-Apr | -52.2% |
| 25-Apr | -49.0% |
| 2-May | -48.4% |
| 9-May | -44.2% |
| 16-May | -39.7% |
| 23-May | -38.5% |
| 30-May | -34.0% |
| 6-Jun | -31.5% |
| 13-Jun | -25.6% |
| 20-Jun | -24.8% |
| 27-Jun | -20.9% |

Traffic Volumes



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

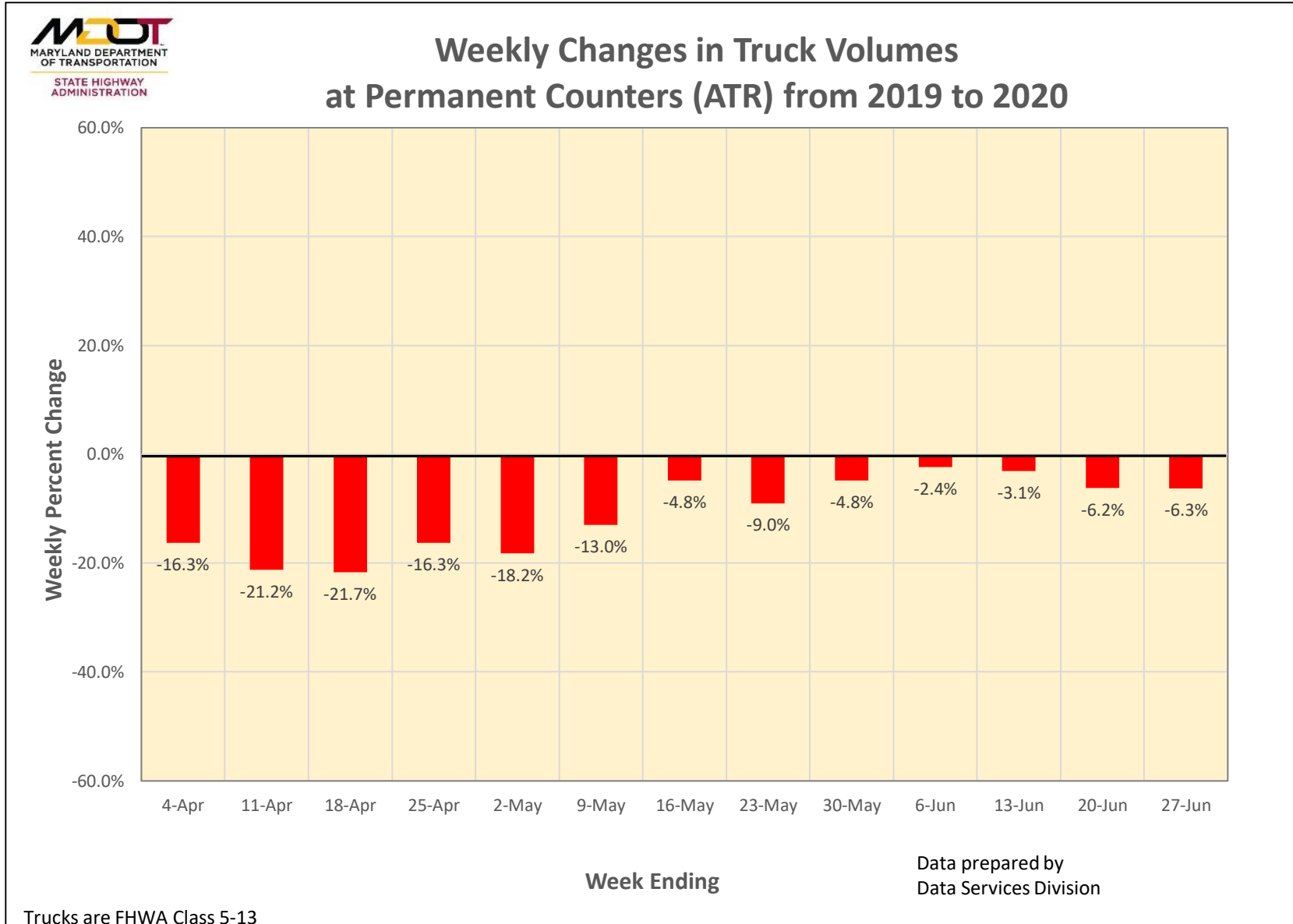


Truck Volumes

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

| Week Ending | Comparing weekly average Truck ATR Volumes 2019 to 2020 * |
|---------------|--------------------------------------------------------------|
| 4-Apr | -16.3% |
| 11-Apr | -21.2% |
| 18-Apr | -21.7% |
| 25-Apr | -16.3% |
| 2-May | -18.2% |
| 9-May | -13.0% |
| 16-May | -4.8% |
| 23-May | -9.0% |
| 30-May | -4.8% |
| 6-Jun | -2.4% |
| 13-Jun | -3.1% |
| 20-Jun | -6.2% |
| 27-Jun | -6.3% |

Truck Volumes



Regional Speed Maps

Figure 1 – AM Peak Period Rush Hour –April 1 – June 30th

BMC Region Limited Access Speed Trend Map for April 2020 through June 2020 (Every weekday)

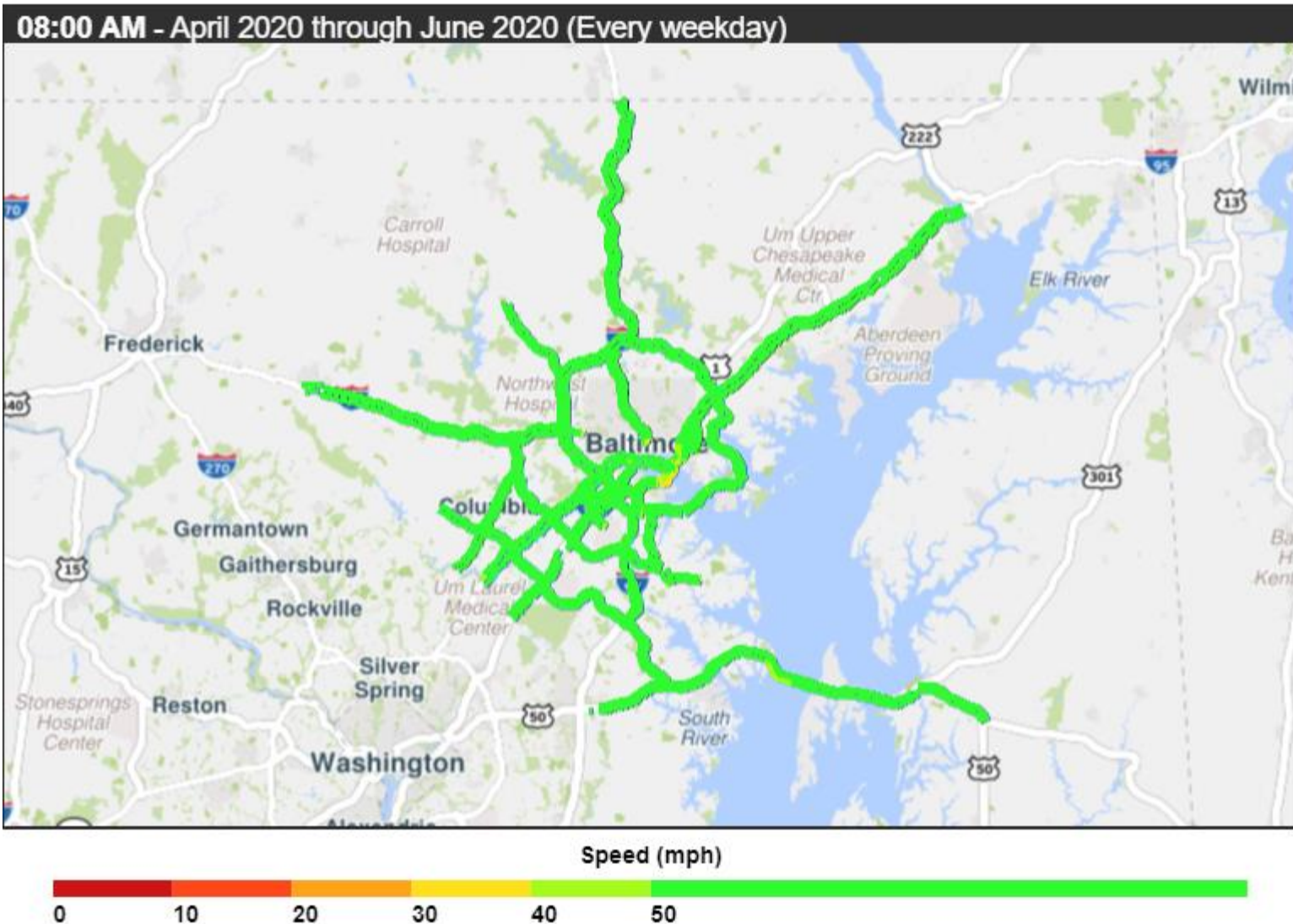
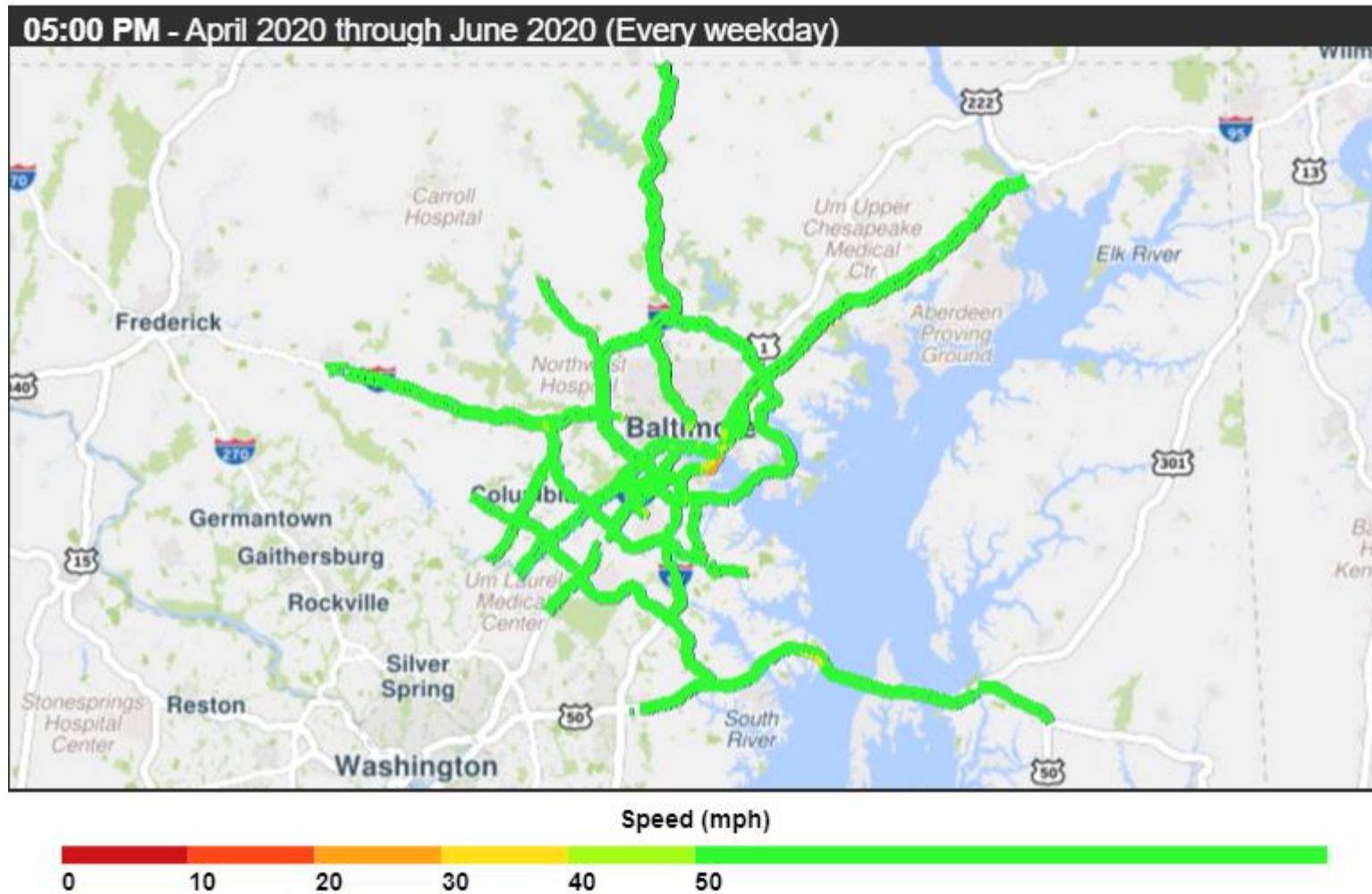


Figure 2 – PM Peak Period Rush Hour – April 1 – June 30th

BMC Region Limited Access Speed Trend Map for April 2020 through June 2020 (Every weekday)



For More Information

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Transportation Analyst

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