Quarterly Congestion Analysis Report For The Baltimore Region

Top 10 Bottleneck Locations

1st Quarter 2014

Baltimore Metropolitan Council

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The Vehicle Probe Project

Data and graphics in the following report were generated from the *Vehicle Probe Project* suite. *The Vehicle Probe Project* (VPP) is a groundbreaking initiative and collaborative effort among the I-95 Corridor Coalition, University of Maryland and INRIX and has been providing comprehensive and continuous real-time travel information for more than two years. Member agencies like the Baltimore Metropolitan Council have found numerous uses for the data beyond simply travel information.

There are **now** **7,000 centerline freeway miles**, more than **20,000 freeway and arterial miles** in all, including continuous coverage of the I-95 corridor from New Jersey through Florida. Coverage also exists in Rhode Island. The network includes full coverage of freeways and major arterials in North Carolina and the Tidewater area of Virginia, full or nearly full coverage of limited access roads in New Jersey, Maryland and South Carolina and the northern and eastern portions of Florida. In addition, coverage now includes ramps at 160 major highway-to- highway interchanges, with all states having interchanges included except Georgia.

Agency Participation
As the value of the data from the Vehicle Probe Project is realized through the various applications and the continued quality via the validation efforts, the member states have increased their commitment to this project. In fact, all of the participating states have committed their own funds to continue this project and many have increased their coverage far beyond the initial core area.

Numerous Uses for the Data
I-95 Corridor Coalition member agencies have found many uses for the vehicle probe data, including:

- Travel Information for 511 (web and phone) Systems, Dynamic Message Signs, and Kiosks
- Travel Time Calculations for Message Boards
- Performance Measures and Travel Time Reliability Support
- Traffic Pattern Observations (in-state and multi-state)
- Trip Planning (www.i95travelinfo.net)
- Performance Measures Tool – Continuing the momentum in performance analysis, the newest initiative from the Coalition is the Vehicle Probe Project Suite. The basic tools include:

Bottleneck and Incident dashboard
Massive Raw Data Downloader
Historical Data Visualizations and Performance Measures (Congestion Scan)
UMD CATT Lab made the VPP suite to participating agencies. For the training video, please visit
http://vpp.ritis.org/suite/screencast/

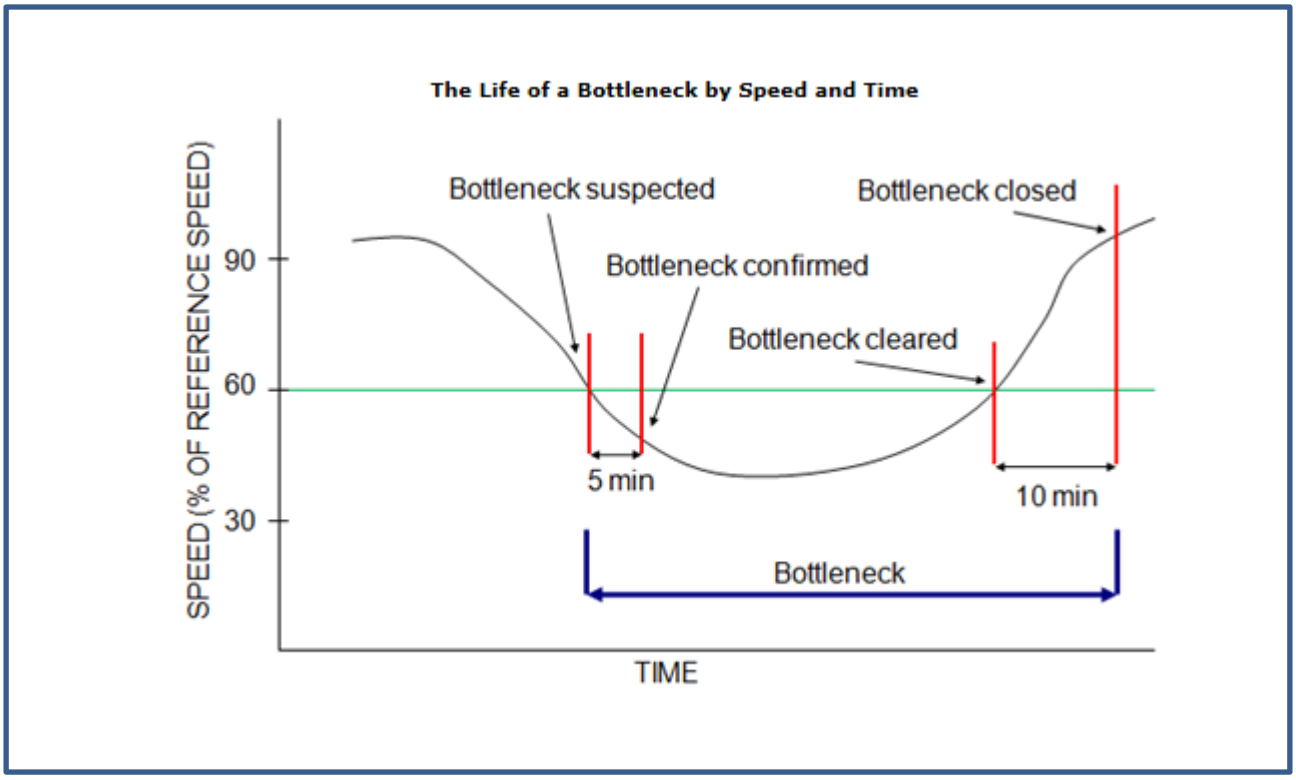
Should you have any questions, please contact:

- For general project questions, Marygrace Parker at 518-852-4083 or *i95mgp@ttlc.net*
- For Data Validation, Stan Young at 301-403-4593 or *seyoung@umd.edu*
- For Data, Rick Schuman at 407-298-4346 or *rick@inrix.com*
- For the Vehicle Probe Project Suite, Michael L. Pack at 301-405-0722 or *packml@umd.edu*

How are bottleneck conditions tracked?

If the reported speed falls below 60% of the reference, the road segment is flagged as a potential bottleneck

Bottleneck conditions are determined by comparing the current reported speed to the reference speed for each segment of road. Reference speed values are provided by INRIX for each segment, and represent the 85th percentile observed speed for all time periods, with a maximum value of 65 mph. If the reported speed falls below 60% of the reference, the road segment is flagged as a potential bottleneck. If the reported speed stays below 60% for five minutes, the segment is confirmed as a bottleneck location. Adjacent road segments meeting this condition are joined together to form the bottleneck queue. When reported speeds on every segment associated with a bottleneck queue have returned to values greater than 60% of their reference values and remained that way for 10 minutes, the bottleneck is considered cleared. Bottlenecks whose total queue length, determined by adding the length of each road segment associated with the bottleneck, is less than 0.3 miles are ignored.

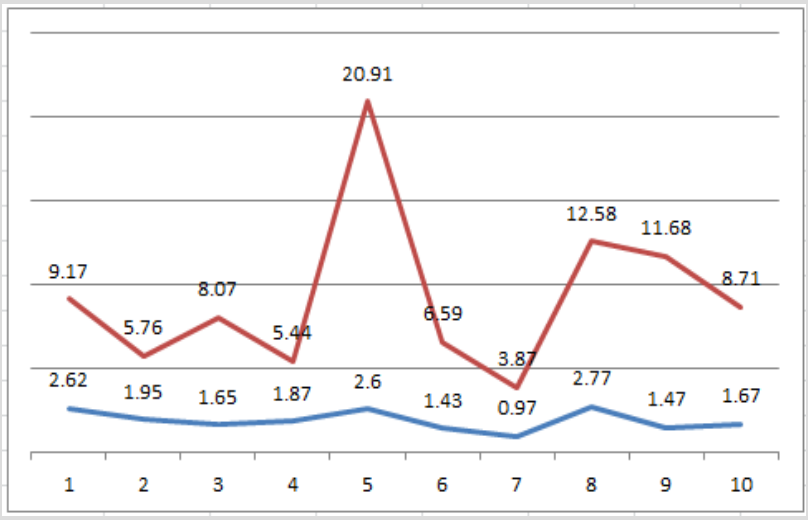


Top 10 Bottlenecks in the Baltimore Region
1st Quarter 2014

By Impact Factor

(Number of Occurrences x Average Duration in Minutes x Average Length)

	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	I-695 CW @ MD-147/Harford Rd/Exit 31	2 h 37 m	9.17	89	128,065
2	US-29 N @ MD-175	1 h 57 m	5.76	164	110,520
3	I-95 N @ MD-100/Exit 43	1 h 39 m	8.07	131	104,596
4	I-695 CCW @ Edmondson Ave/Exit 14	1 h 52 m	5.44	142	86,452
5	I-95 S @ I-495/Exit 27-25	2 h 36 m	20.91	26	84,812
6	I-695 CW @ I-83/MD-25/Exit 23	1 h 26 m	6.59	122	69,193
7	I-83 S @ I-695	58m	3.87	295	66,201
8	MD-295 S @ I-495/I-95	2 h 46 m	12.58	31	64,720
9	I-97 S @ US-301/US-50	1 h 28 m	11.68	58	59,607
10	MD-295 N @ I-195	1 h 40 m	8.71	68	59,222



Top 10 Bottlenecks in the Baltimore Region

By Impact Factor
(Number of Occurrences
x Average Duration in Minutes
x Average Length)

1st Quarter 2014

Average max length (miles)

Average duration (hours)

By Average Duration

	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	I-70 W @ US-40 Alt/Exit 48	4 h 12 m	28.76	1	7,248
2	US-50 W @ MD-197/Collington Rd/Exit 11	3 h 28 m	18.98	3	11,841
3	MD-295 S @ MD-202	3 h 28 m	22.18	9	41,518
4	MD-295 S @ MD-450	3 h 26 m	17.79	8	29,320
5	I-95 N @ Tydings Memorial Brg Toll Plaza	3 h 07 m	23.49	10	43,934
6	I-97 S @ MD-3 Bus/New Cut Rd/Exit 12	3 h 03 m	2.08	23	8,775
7	MD-295 S @ Eastern Ave	3 h 02 m	23.24	12	50,761
8	MD-295 S @ Riverdale Rd	3 h 01 m	15.77	17	48,535
9	MD-295 S @ I-495/I-95	2 h 46 m	12.58	31	64,720
10	I-695 CW @ MD-147/Harford Rd/Exit 31	2 h 37 m	9.17	89	128,065

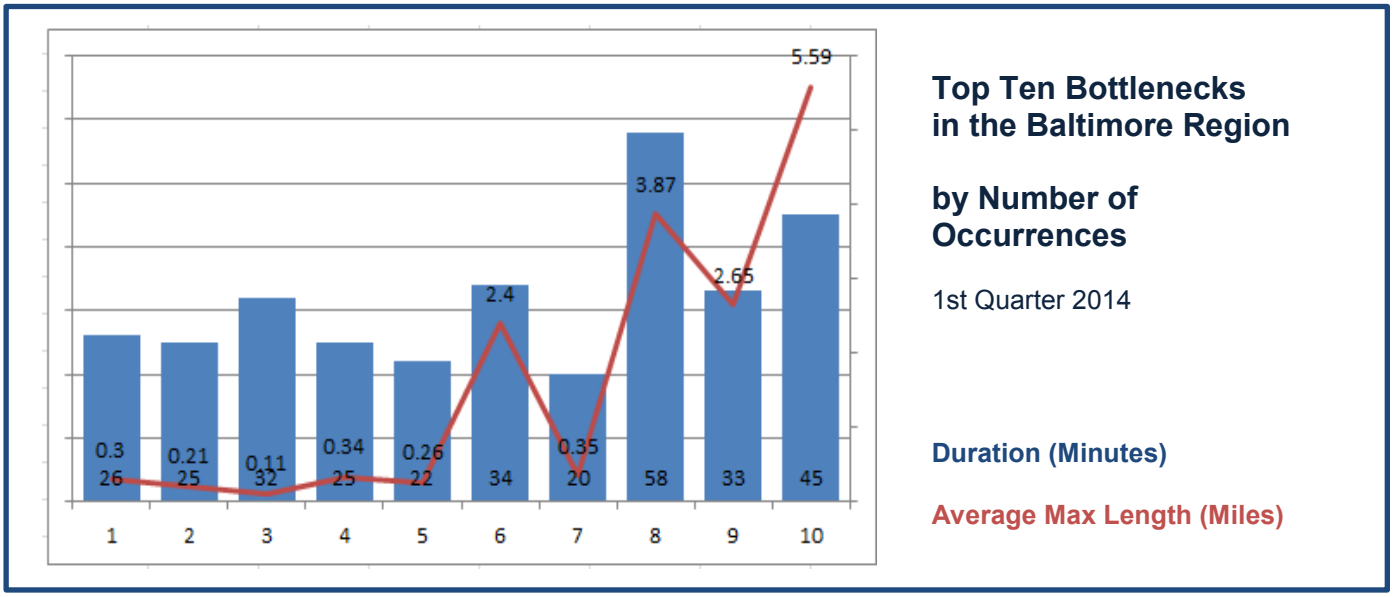
Top 10 Bottlenecks in the Baltimore Region
1st Quarter 2014

By Average Length

	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	I-70 W @ Frederick/Washington Co Line	1 h 45 m	38.25	2	8,032
2	I-70 W @ MD-66/Exit 35	1 h 32 m	35.34	2	6,502
3	I-95 N @ MD-DE State Border	2 h 05 m	34.48	4	17,241
4	US-50 W @ Garden City Dr/Exit 6	1 h 39 m	29.27	2	5,795
5	I-70 W @ US-40 Alt/Exit 48	4 h 12 m	28.76	1	7,248
6	I-70 W @ US-40 Alt/Exit 49	1 h 25 m	28.62	2	4,866
7	I-70 W @ South St/Exit 55	2 h 32 m	25.76	2	7,832
8	I-95 N @ Tydings Memorial Brg Toll Plaza	3 h 07 m	23.49	10	43,934
9	MD-295 S @ Eastern Ave	3 h 02 m	23.24	12	50,761
10	MD-295 S @ US-50/MD-201/Kenilworth Ave	2 h 19 m	22.46	7	21,853

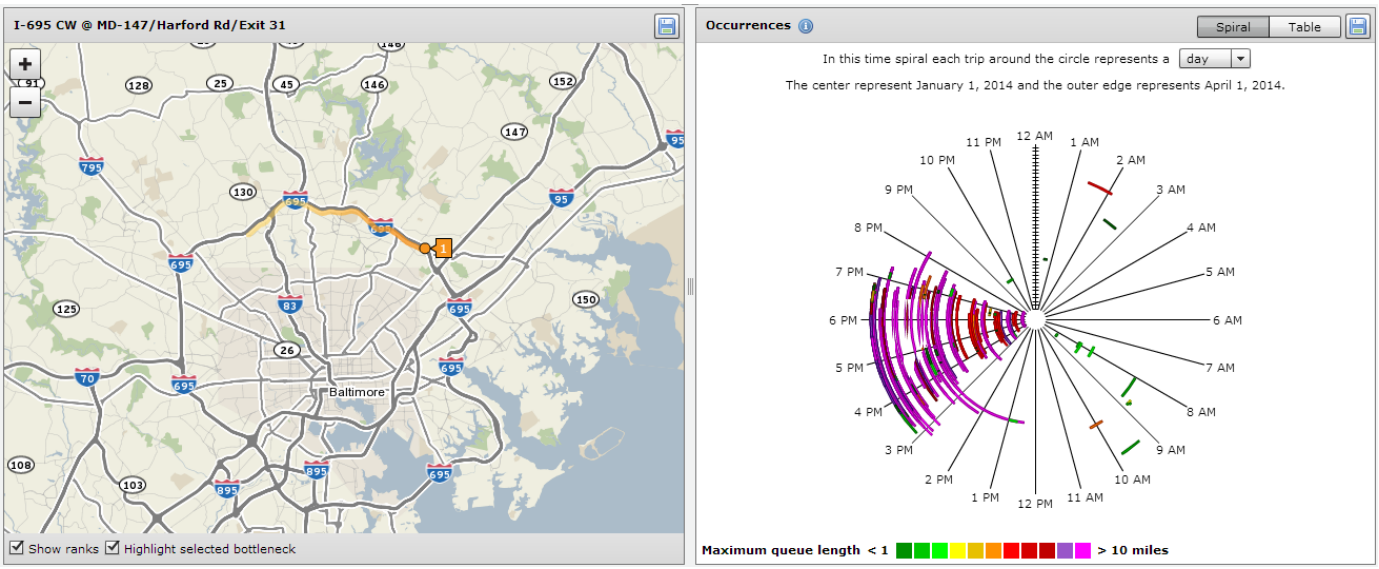
By Number of Occurrences

	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	I-895 N @Harbor Tunnel Toll Plaza	26 m	0.30	1383	10,283
2	I-95 N @ Keith Ave/Exit 56	25 m	0.21	1100	5,828
3	I-695 CW @ Authority Dr	32 m	0.11	1065	3,875
4	I-895 S @ Harbor Tunnel Toll Plaza	25 m	0.34	1027	8,701
5	I-895 S @ Frankfurst Ave/Shell Rd/Exit 8	22 m	0.26	704	3,963
6	US-50 E @ Bay Bridge	34 m	2.40	583	47,575
7	I-695 CCW @ Broening Hwy/Exit 44	20 m	0.35	471	3,282
8	I-83 S @ I-695	58 m	3.87	295	66,201
9	I-95 S @ Fort McHenry Tunnel Toll Plaza	33 m	2.65	236	20,661
10	I-70 E @ I-695/Exit 91	45 m	5.59	166	41,729



#1 Ranked Bottlenecks in the Baltimore Region – 1st Quarter 2014

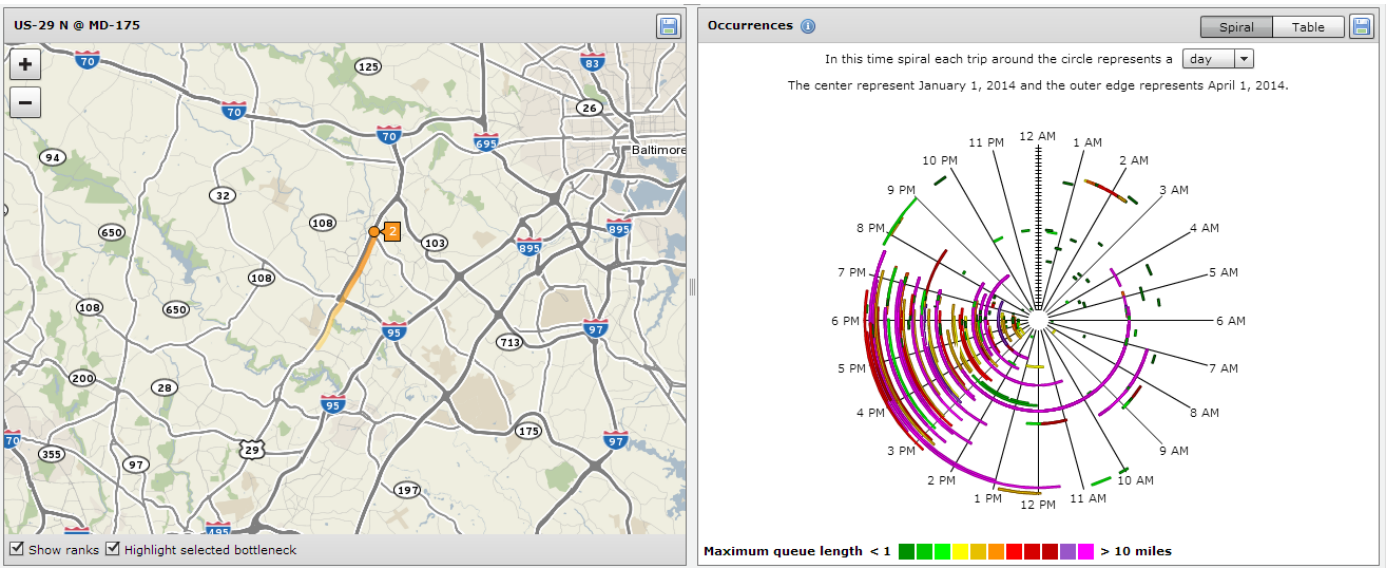
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CW @ MD-147/Harford Rd/Exit 31	2h 37m	9.17	89	128,065



Notes: Congestion was most severe between I-83 and Providence Rd. Factors contributing to this long standing and extended congested zone: merging and weaving associated with traffic at each interchange and a lane drop (to 3 lanes) at MD-45/York Rd.
Source: Skycomp Report

#2 Ranked Bottlenecks in the Baltimore Region – 1st Quarter 2014

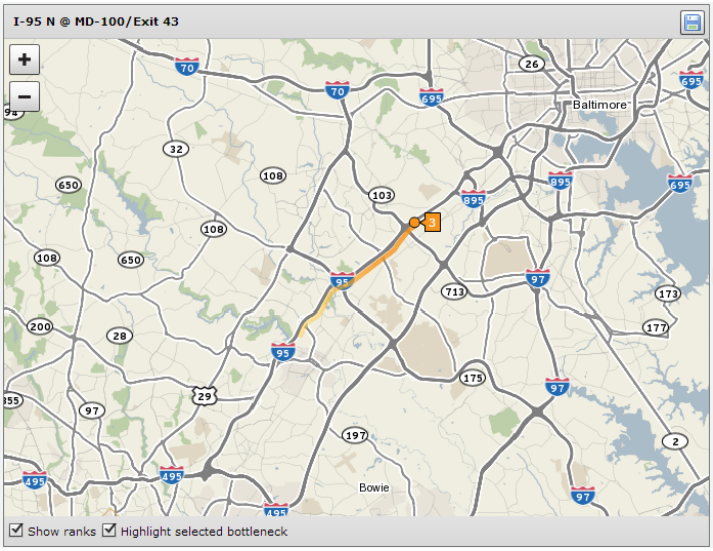
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
US-29 N @ MD-175	1h 57m	5.76	164	110,520

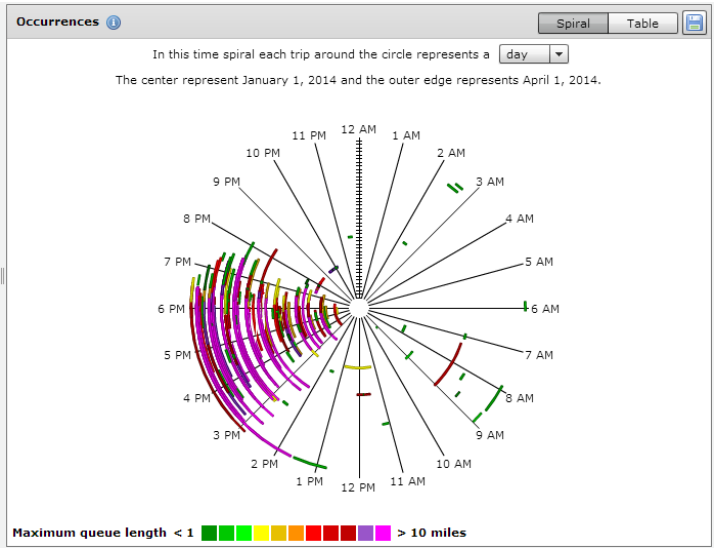


Notes: SHA widening project of US-29
Source: http://apps.roads.maryland.gov/webprojectlifecycle/ProjectInformation.aspx?projectno=HO3172113

#3 Ranked Bottlenecks in the Baltimore Region – 1st Quarter 2014

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-95 N @ MD-100/Exit 43	1h 39m	8.07	131	104,596

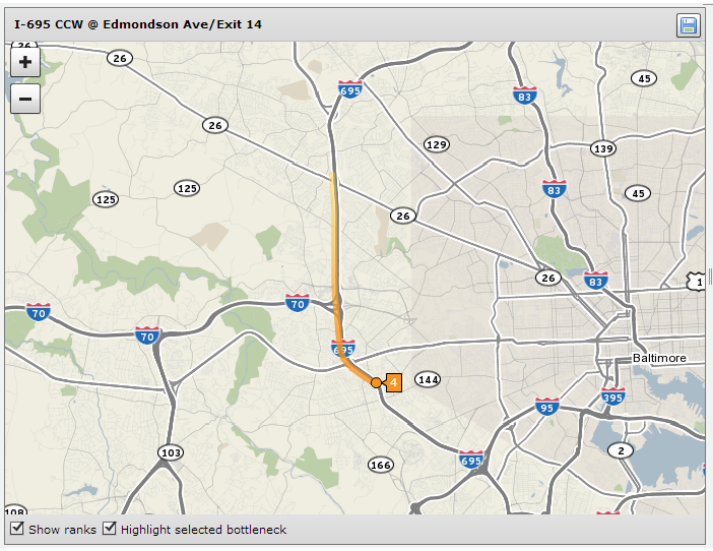


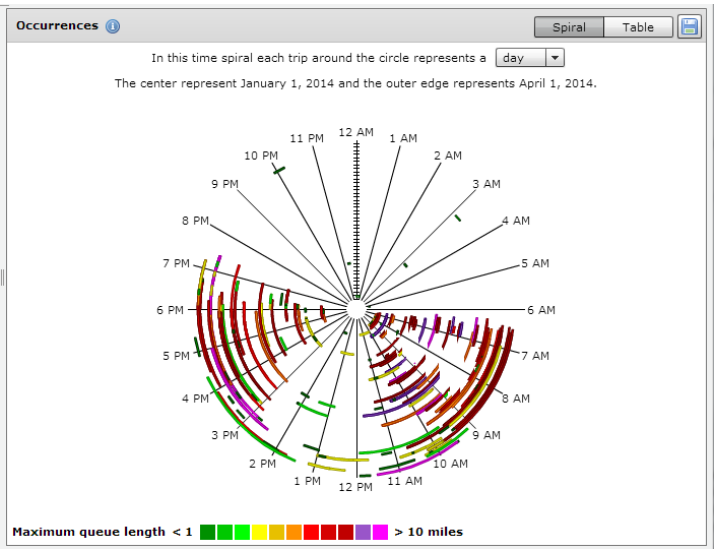


Notes: Contributing factors include traffic entering at MD-175, weaving to exit at MD-100, and the half-mile uphill grade midway between MD-175 and MD-100
Source: Skycomp Report

#4 Ranked Bottlenecks in the Baltimore Region – 1st Quarter 2014

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CCW @ Edmondson Ave/Exit 14	1h 52m	5.44	142	86,452

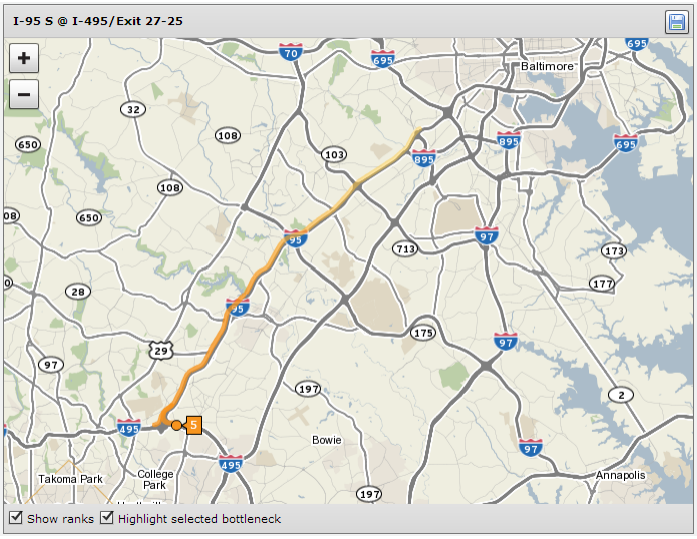


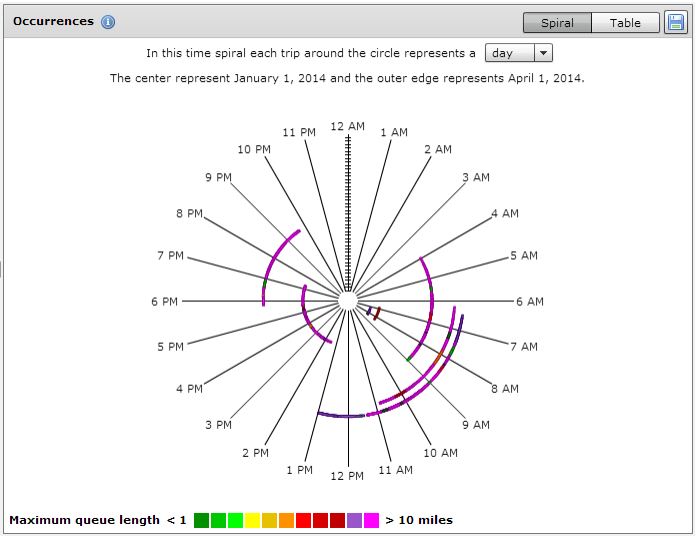


Notes: Longstanding bottlenecks in both the morning and afternoon.
Source: VPP observations

#5 Ranked Bottlenecks in the Baltimore Region – 1st Quarter 2014

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-95 S @ I-495/Exit 27-25	2h 36m	20.91	26	84,812

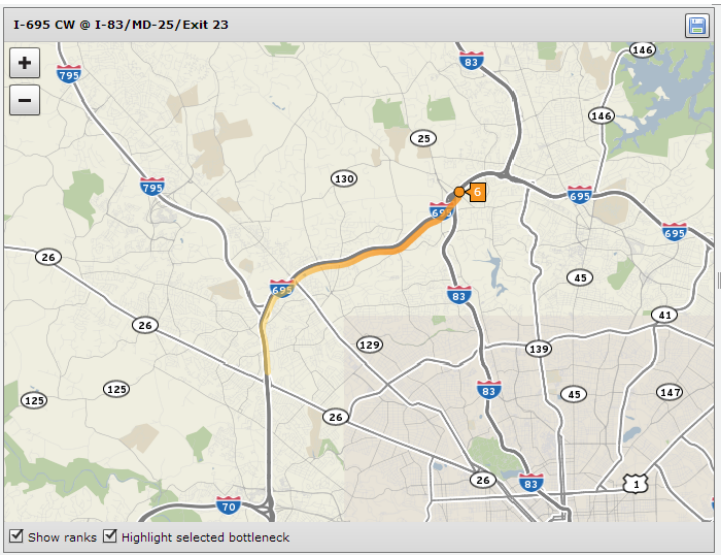


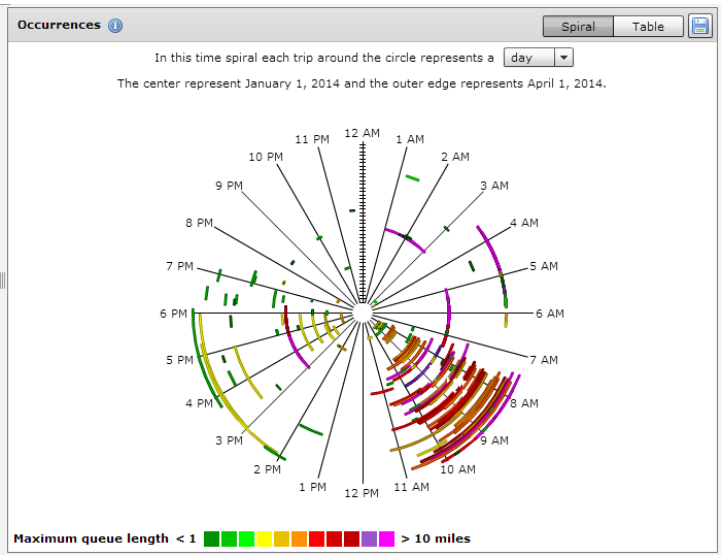


Notes: Incident related non-recurring congestion on 5 separate days caused major delays
Source: VPP Suite

#6 Ranked Bottlenecks in the Baltimore Region – 1st Quarter 2014

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CW @ I-83/MD-25/Exit 23	1h 26m	6.59	122	69,193

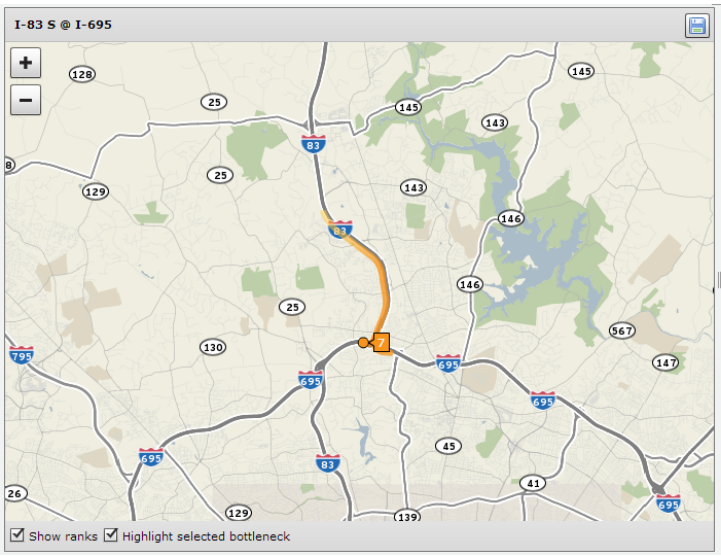


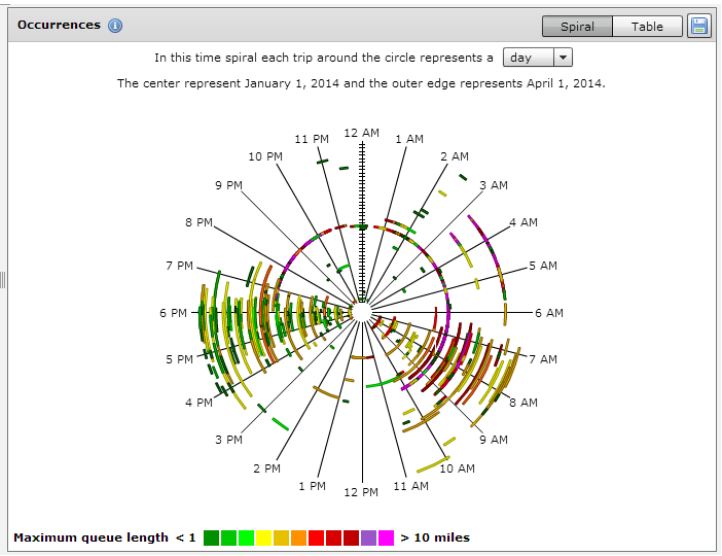


Notes: The lane drop approaching the ramp to southbound I-83 is a contributing factor, as are merging and weaving at the interchanges in this segment.
Source: Skycomp Report

#7 Ranked Bottlenecks in the Baltimore Region – 1st Quarter 2014

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-83 S @ I-695	58m	3.87	295	66,201

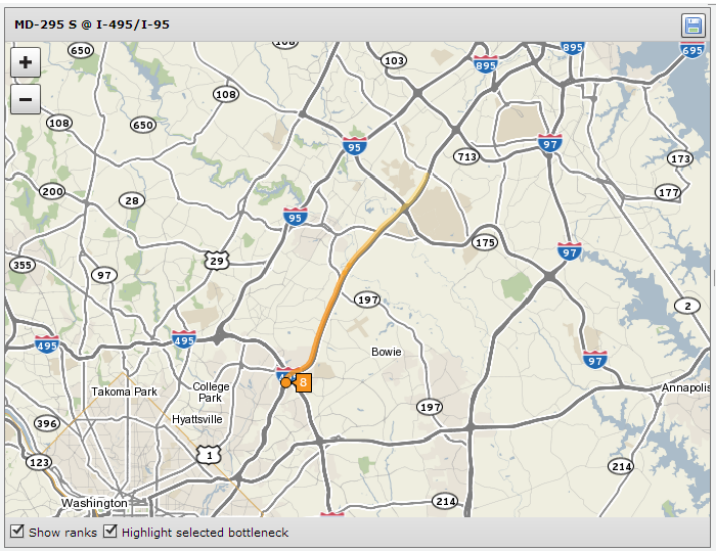


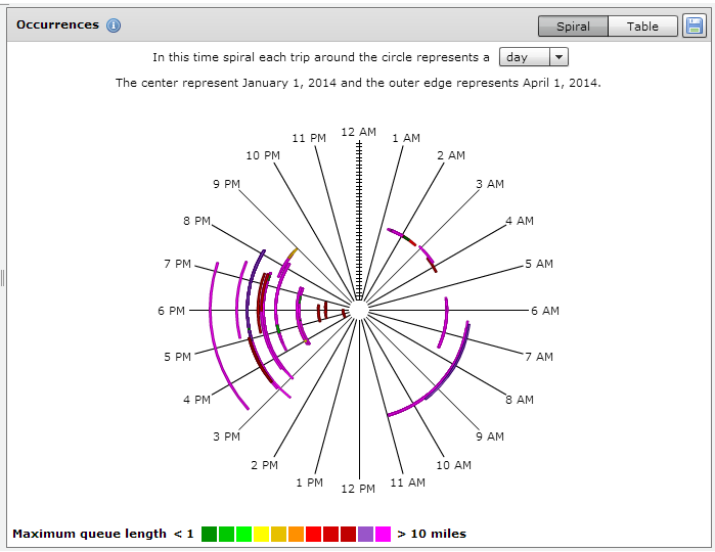


Notes: Recurring morning and afternoon delays due to volume and the merge with I-695 East and Westbound
Source: VPP Suite

#8 Ranked Bottlenecks in the Baltimore Region – 1st Quarter 2014

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 S @ I-495/I-95	2h 46m	12.58	58	64,720

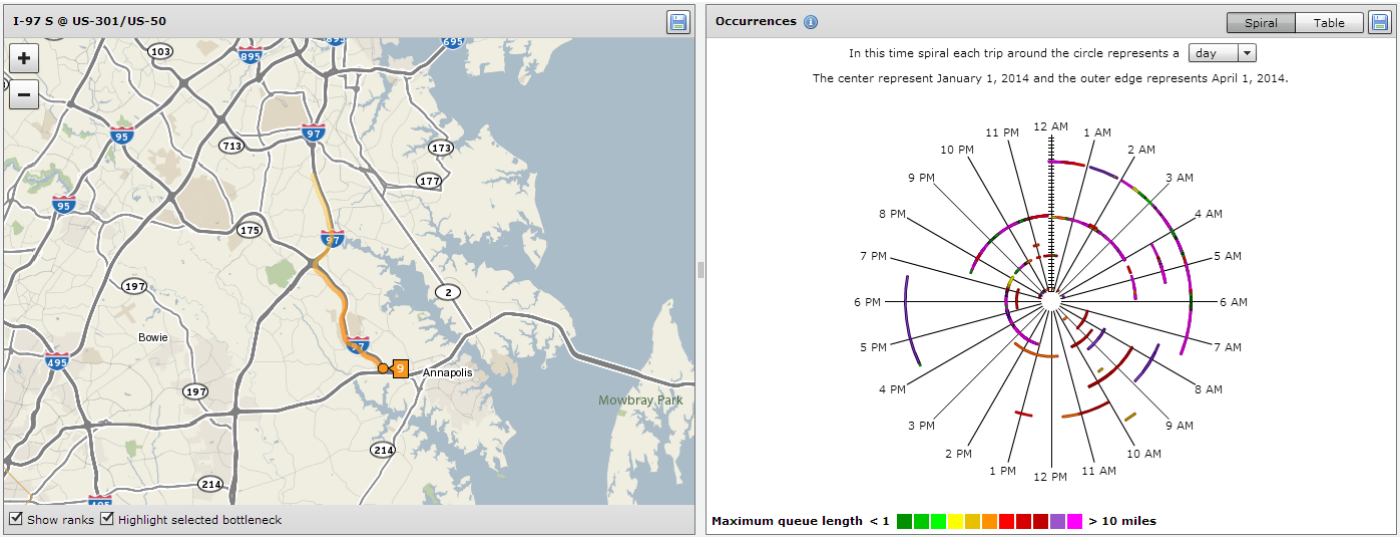




Notes: Southbound congestion extending from the Capital Beltway into the southern portion of the Baltimore region near Fort Meade
Source: VPP Suite

#9 Ranked Bottlenecks in the Baltimore Region – 1st Quarter 2014

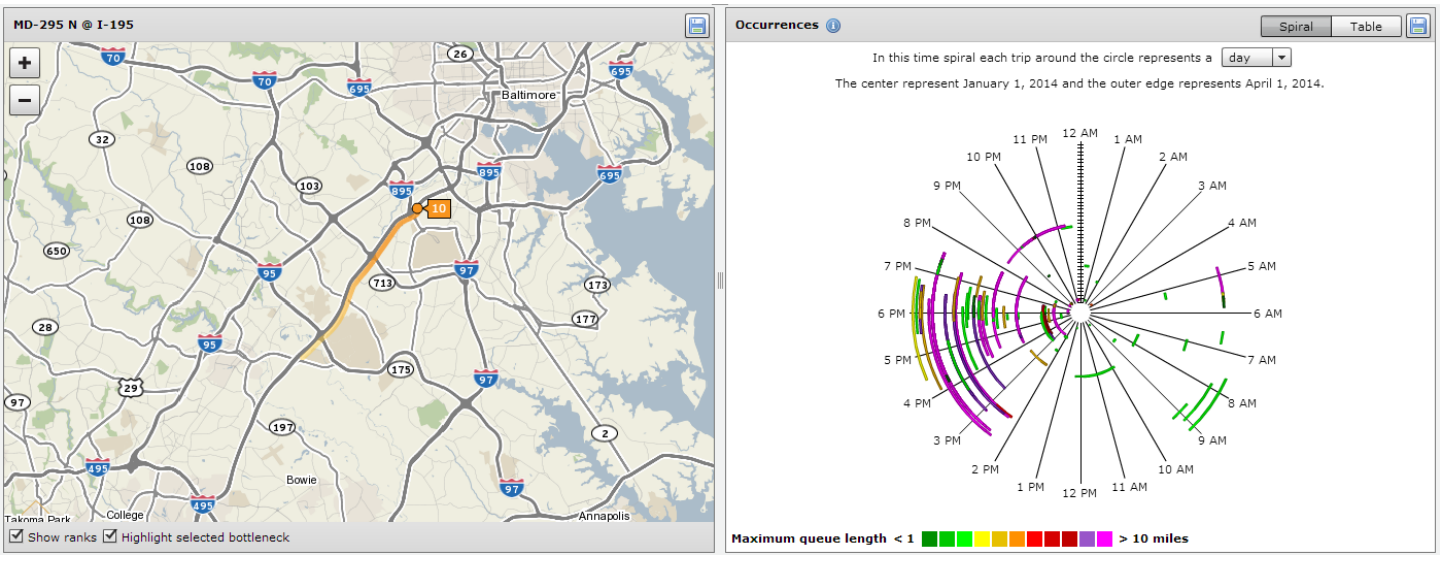
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-97 S @ US-301/US-50	1h 28m	11.68	58	59,607



Notes: Winter related weather conditions contributed to non-recurring congestion in this corridor with a February 13th snowstorm being the primary factor in this bottleneck
Source: VPP Suite

#10 Ranked Bottlenecks in the Baltimore Region – 1st Quarter 2014

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 N @ I-195	1h 40m	8.71	68	59,222



Notes: This moderate to severe congestion was primarily caused by merging traffic from Nursery Rd, probably exacerbated by additional traffic from MD 195. (The Nursery Rd merge occurs .5 miles before MD 295 widens to 3 northbound lanes.) Occasionally, upstream traffic was also affected by this bottleneck, almost as far back as MD 100.
Source: Skycomp Report

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