Quarterly Congestion Analysis Report For The Baltimore Region

Top 10 Bottleneck Locations

4th Quarter 2013

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/

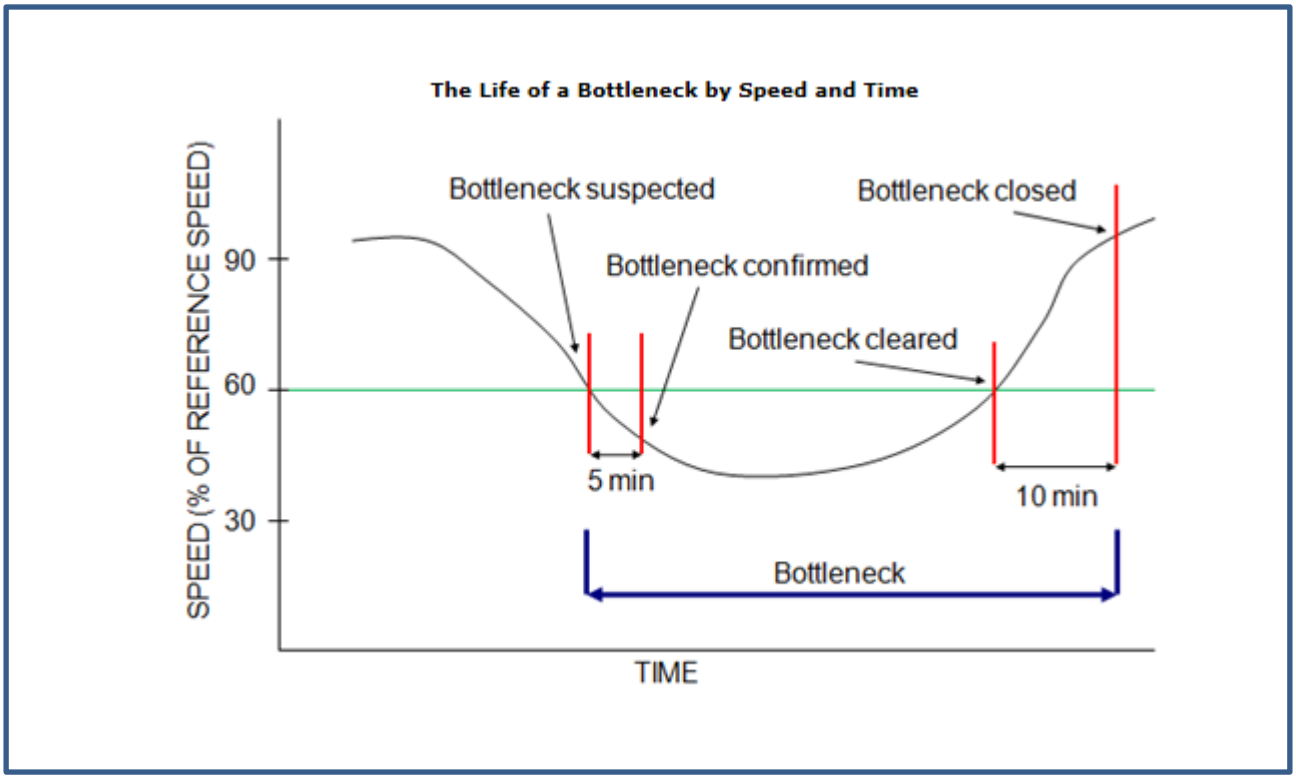
Should you have any questions, please contact:

- 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.

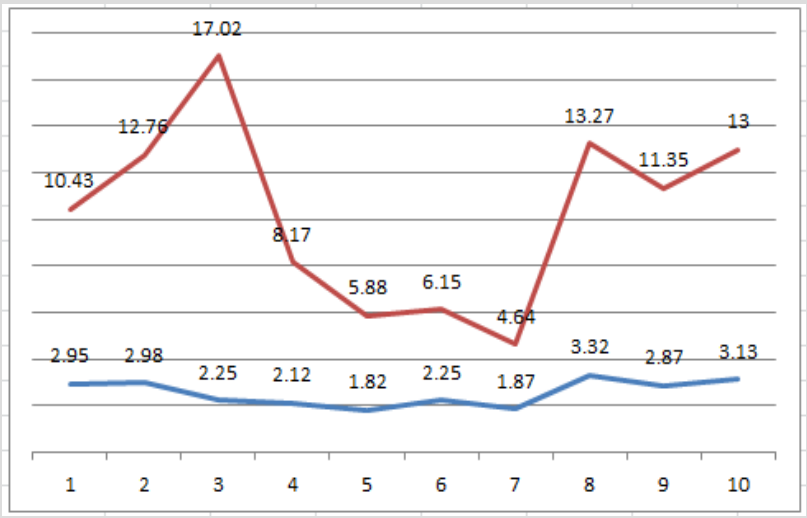


Top 10 Bottlenecks in the Baltimore Region
4th Quarter 2013

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 57 m	10.43	116	214,146
2	MD-295 N @ I-195	2 h 59 m	12.76	67	153,034
3	I-695 CCW @ US-1/Southwestern Blvd/Exit 12	2 h 15 m	17.02	61	140,184
4	I-95 N @ MD-100/Exit 43	2 h 7 m	8.17	125	129,694
5	MD-295 N @ MD-175	1 h 49 m	5.88	155	99,341
6	I-695 CCW @ Edmondson Ave/Exit 14	2 h 15 m	6.15	114	94,724
7	I-695 CW @ I-795/Exit 19	1 h 52 m	4.64	159	82,627
8	MD-295 S @ I-495/I-95	3 h 19 m	13.27	31	81,889
9	MD-295 S @ MD-193	2 h 52 m	11.35	37	72,210
10	I-95 S @ MD-24/Exit 77	3 h 8 m	13	29	70,888



Top 10 Bottlenecks in the Baltimore Region

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

4th Quarter 2013

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/Exit 9	4 h 30 m	82.67	3	66,959
2	I-95 N @ MD-279/Exit 109	4 h 16 m	52.86	5	67,655
3	MD-295 S @ Riverdale Rd	3 h 33 m	15.51	17	56,157
4	MD-295 S @ I-495/I-95	3 h 19 m	13.27	31	81,889
5	I-95 S @ MD-24/Exit 77	3 h 8 m	13	29	70,888
6	MD-295 S @ MD-450	3 h 5 m	12.38	1	2,291
7	MD-295 N @ I-195	2 h 59 m	12.76	67	153,034
8	I-695 CW @ MD-147/Harford Rd/Exit 31	2 h 57 m	10.43	116	214,146
9	MD-295 S @ MD-193	2 h 52 m	11.35	37	72,210
10	I-695 CCW @ MD-144/Frederick Rd/Exit 13	2 h 52 m	6.27	34	36,657

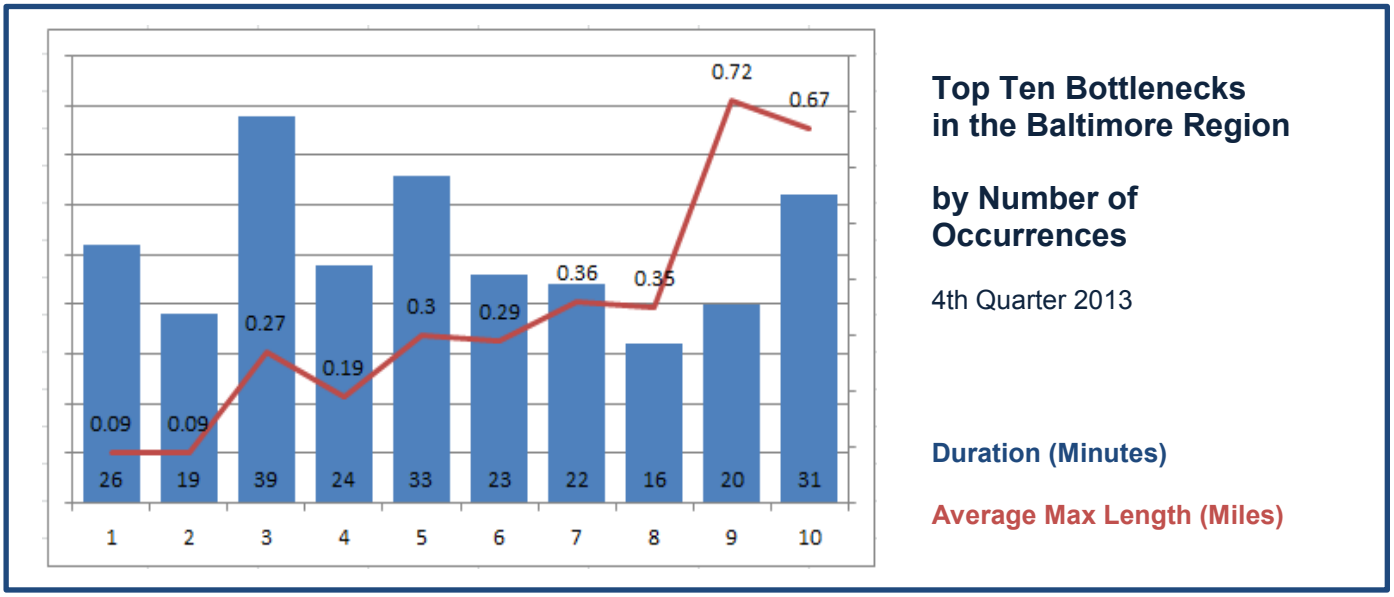
Top 10 Bottlenecks in the Baltimore Region
4th Quarter 2013

By Average Length

	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	I-70 W @ US-40/Exit 9	4 h 30 m	82.67	3	66,959
2	I-95 N @ MD-279/Exit 109	4 h 16 m	52.86	5	67,655
3	I-70 W @ South St/Exit 55	1 h 3 m	22.47	1	1,415
4	US-29 S @ MD-650/New Hampshire Ave	2 h 15 m	20.34	2	5,492
5	MD-295 S @ MD-202	1 h 56 m	20.04	3	6,974
6	I-695 CCW @ US-1/Southwestern Blvd/Exit 12	2 h 15 m	17.02	61	140,184
7	MD-295 S @ Eastern Ave	2 h 48 m	16.5	2	5,545
8	I-95 N @ MD-222/Exit 93	1 h 51 m	16.16	1	1,794
9	MD-32 W @ Burntwoods Rd	2 h 31 m	16.03	3	7,260
10	MD-295 S @ Riverdale Rd	3 h 33 m	15.51	17	56,157

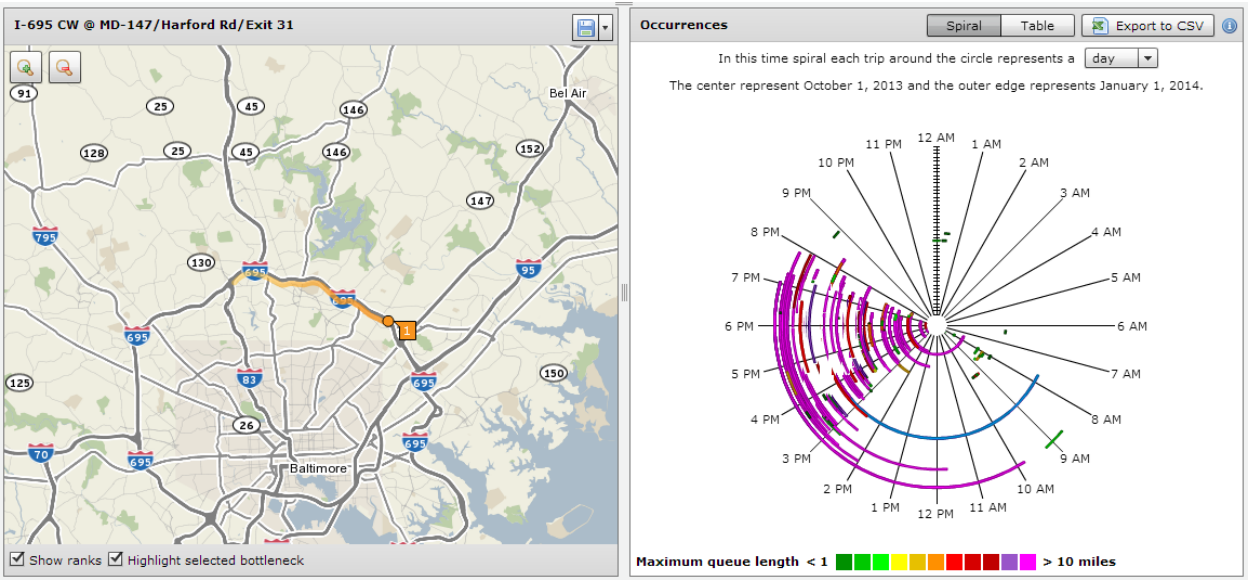
By Number of Occurrences

	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	I-95 N @ US-40/Pulaski Hwy/Exit 61	26 m	0.09	1585	3,690
2	I-695 CW @ Authority Dr	19 m	0.09	1067	1,747
3	I-83 S @ Fayette St/Exit 1	39 m	0.27	894	9,531
4	MD-295 N @ Bayard St	24 m	0.19	661	2,959
5	MD-295 S @ W Pratt St	33 m	0.3	616	6,082
6	I-895 N @ Childs St/Exit 9	23 m	0.29	570	3,770
7	I-895 S @ Frankfurst Ave/Shell Rd/Exit 8	22 m	0.36	528	4,125
8	I-895 S @ Childs St/Exit 9	16 m	0.35	453	2,529
9	I-395 S @ S Martin Luther King Blvd	20 m	0.72	441	6,328
10	MD-295 N @ US-40/Mulberry St/Franklin St	31 m	0.67	408	8,437



#1 Ranked Bottlenecks in the Baltimore Region – 4th Quarter 2013

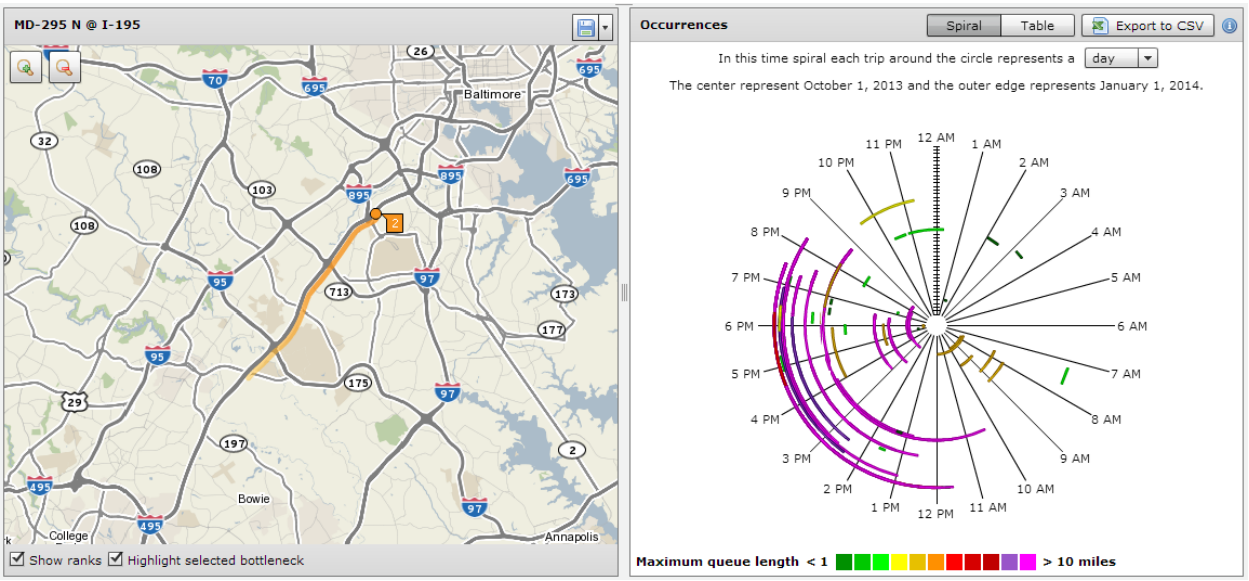
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CW @ MD-147/Harford Rd/Exit 31	2h 57m	10.43	116	214,146



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 – 4th Quarter 2013

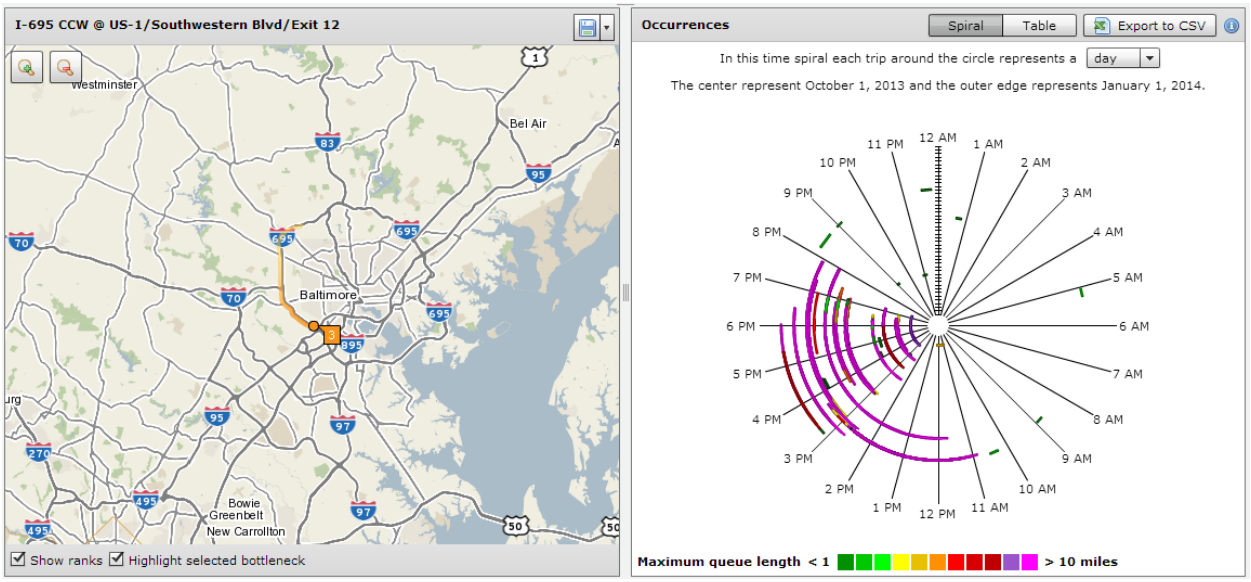
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 N @ I-195	2h 59m	12.76	67	153,034



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

#3 Ranked Bottlenecks in the Baltimore Region – 4th Quarter 2013

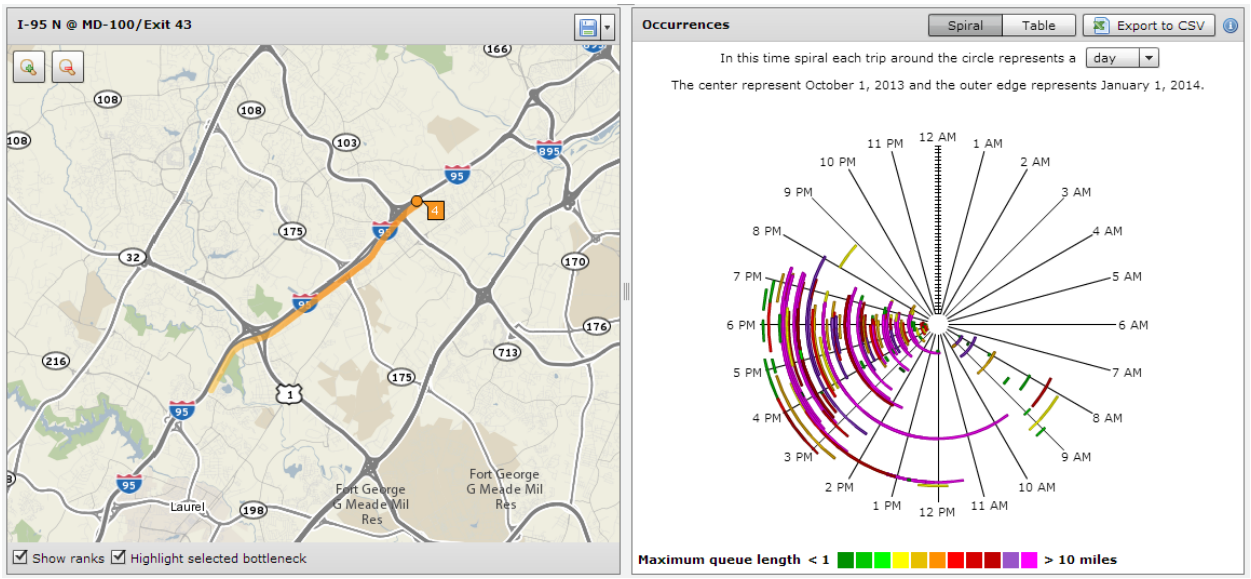
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CCW @ US-1/Southwestern Blvd/Exit 12	2h 15m	17.02	61	140,184



Notes: Incident related delay due to an overturned vehicle on the afternoon of March 28th contributed to additional congestion. Accident on March 14th closed 1 lane and the shoulder.
Source: VPP Suite

#4 Ranked Bottlenecks in the Baltimore Region – 4th Quarter 2013

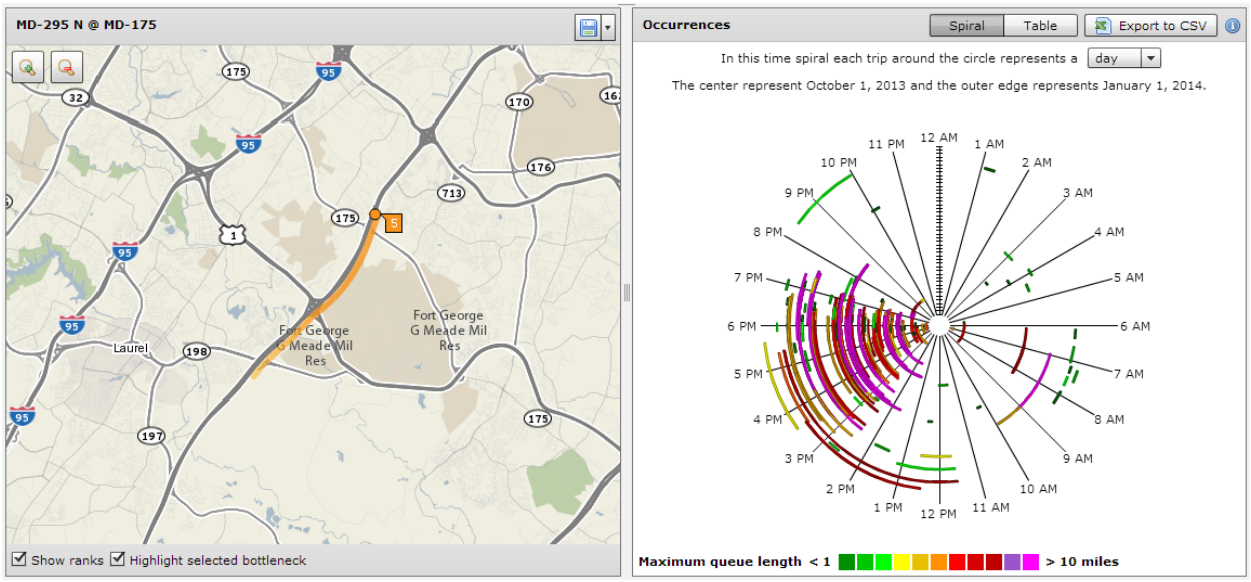
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-95 N @ MD-100/Exit 43	2h 07m	8.17	125	129,694



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

#5 Ranked Bottlenecks in the Baltimore Region – 4th Quarter 2013

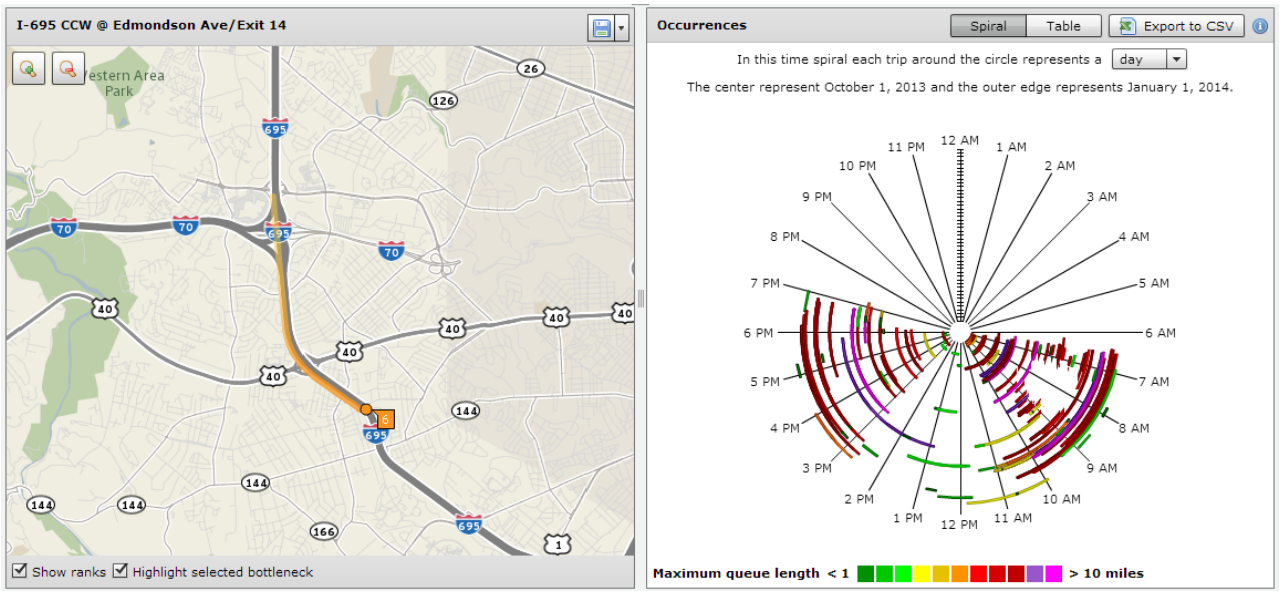
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 N @ MD-175	1h 49m	5.88	155	99,341



Notes: Recurring afternoon congestion. Level of Service "F" from 4:00 to 5:00pm. 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
Source: Skycomp Report

#6 Ranked Bottlenecks in the Baltimore Region – 4th Quarter 2013

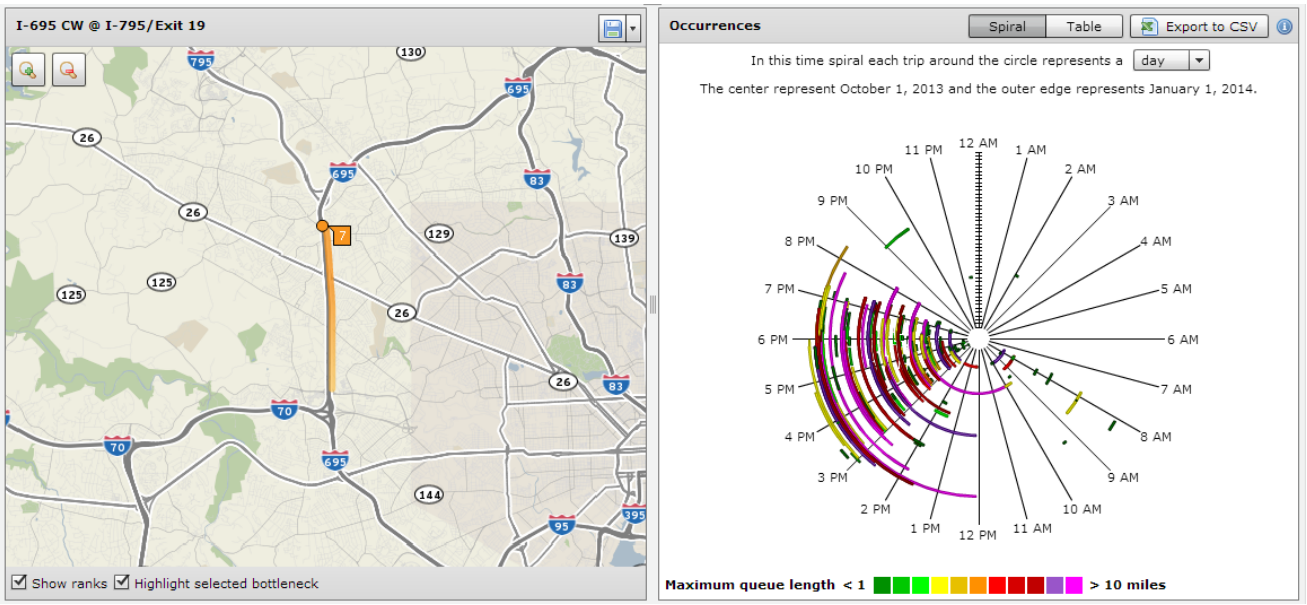
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CCW @ Edmondson Ave/Exit 14	2h 15m	6.15	114	94,724



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

#7 Ranked Bottlenecks in the Baltimore Region – 4th Quarter 2013

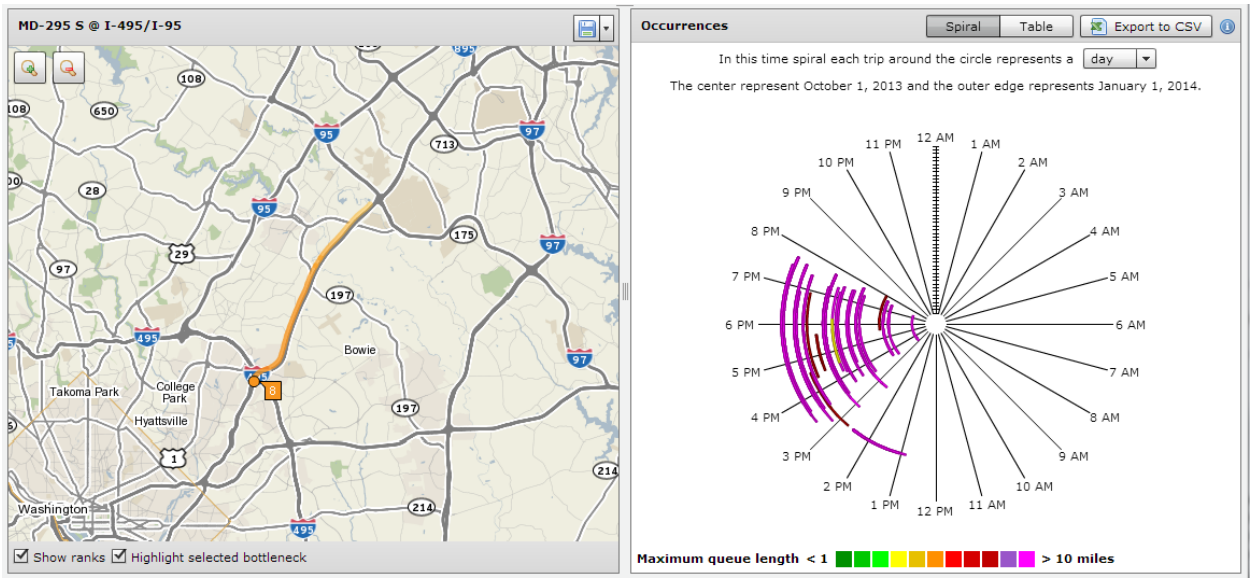
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CW @ I-795/Exit 19	1h 52m	4.64	159	82,627



Notes: Normal inner-loop congestion extended from I-95 to Liberty Rd, 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.
Source: Skycomp report

#8 Ranked Bottlenecks in the Baltimore Region – 4th Quarter 2013

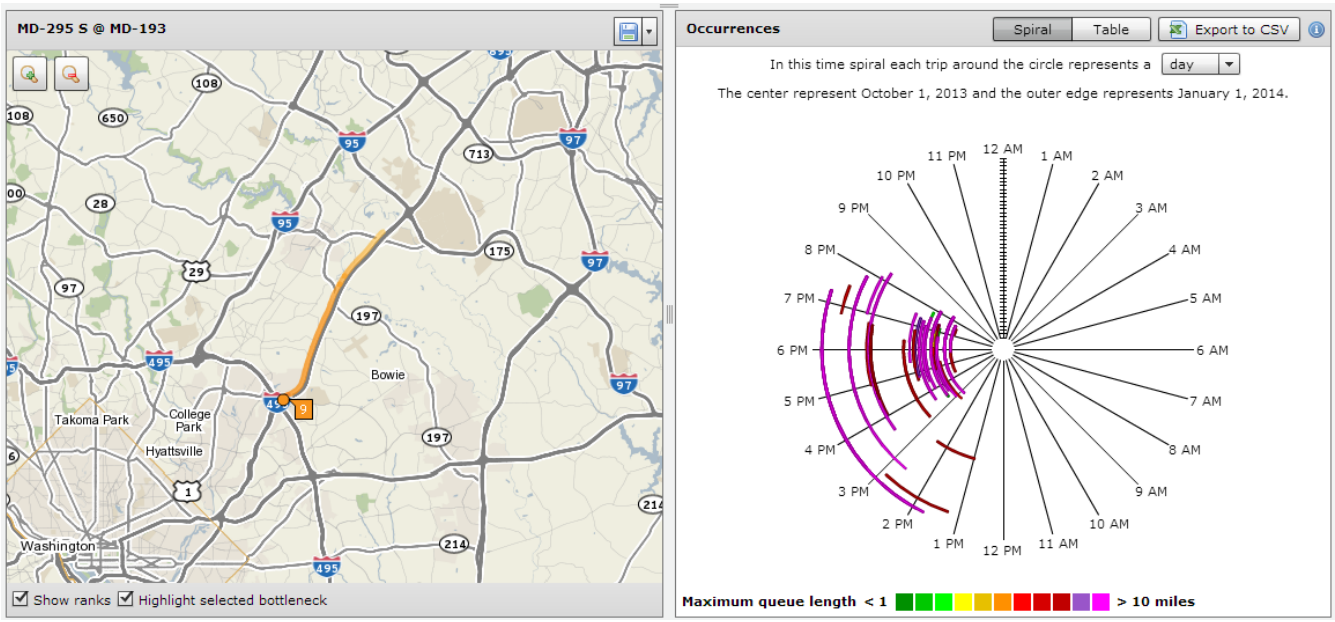
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 S @ I-495/I-95	3h 19m	13.27	31	81,889



Notes: Southbound congestion extending from Powder Mill Rd just barely extending into the southern portion of the Baltimore region near Fort Meade
Source: VPP Suite

#9 Ranked Bottlenecks in the Baltimore Region – 4th Quarter 2013

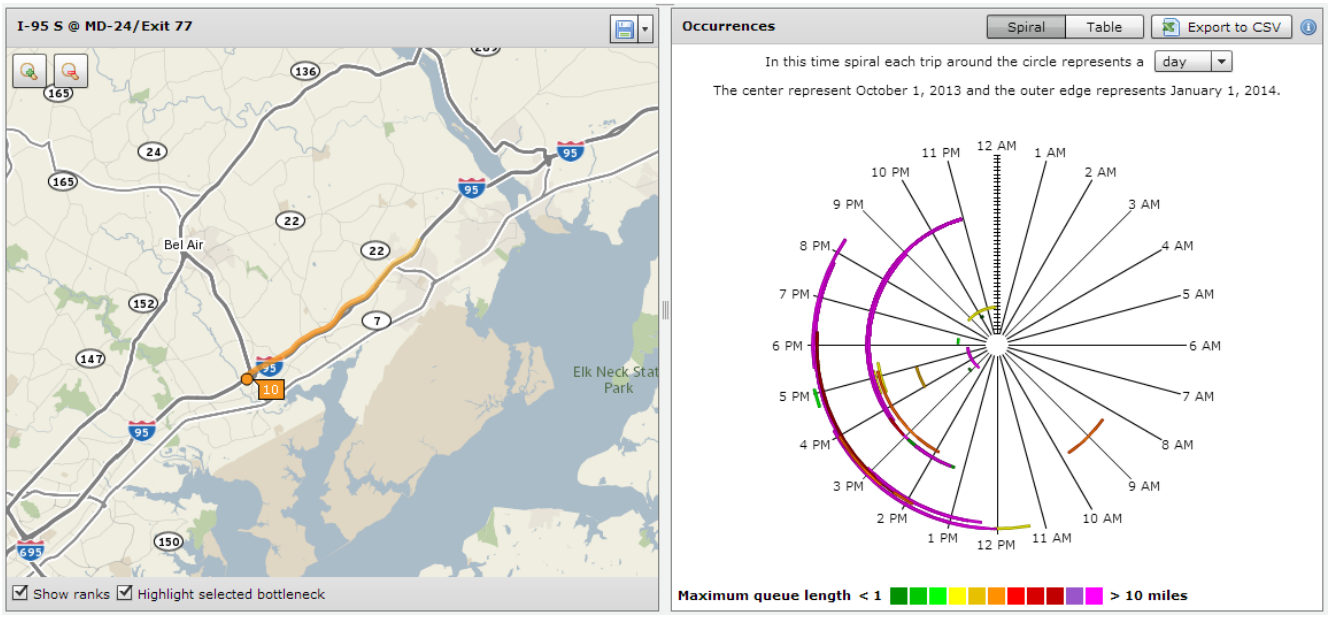
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 S @ MD-193	2h 52m	11.35	37	72,210



Notes: Southbound evening congestion extending from the Capital Beltway extending into the southern portion of the Baltimore region near MD-32
Source: VPP Suite

#10 Ranked Bottlenecks in the Baltimore Region – 4th Quarter 2013

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-95 S @ MD-24/Exit 77	3h 08m	13.00	29	70,888



Notes: Non recurring traffic on I-95 during the Thanksgiving and Christmas travel holidays
Source: VPP Observations

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