Quarterly Congestion Analysis Report For The Baltimore Region

Top 10 Bottleneck Locations

3rd Quarter 2013

Baltimore Metropolitan Council

Table of Contents

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/

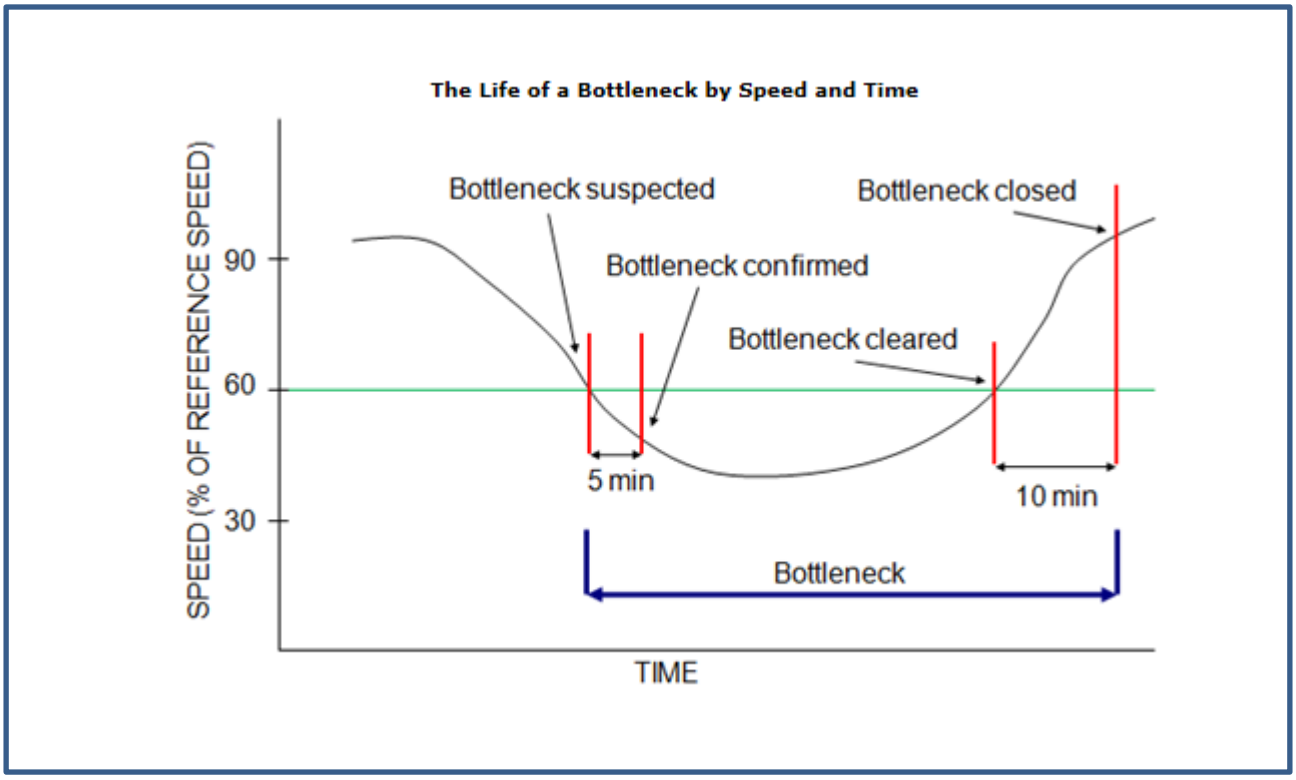
Should you have any questions, please contact:

- 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.

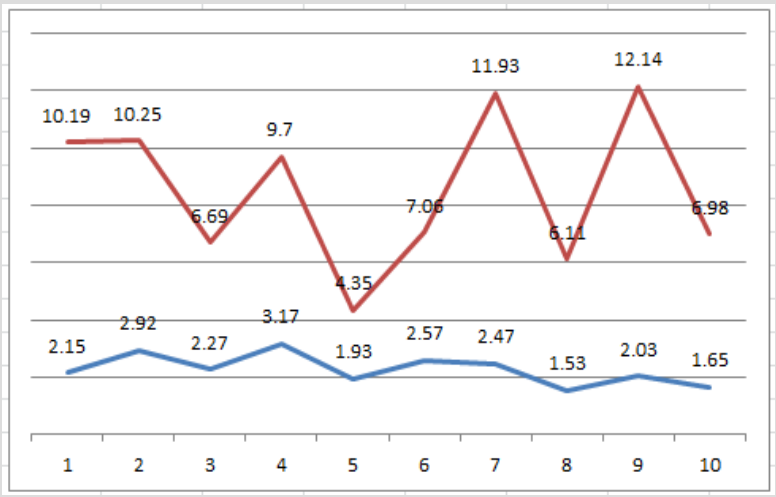


Top 10 Bottlenecks in the Baltimore Region
3rd Quarter 2013

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-95 N @ MD-100/Exit 43	2h 09m	10.19	156	205,036
2	I-695 CW @ MD-147/Harford Rd/Exit 31	2h 55m	10.25	97	173,967
3	I-695 CCW @ Edmondson Ave/Exit 14	2h 16m	6.69	184	167,508
4	MD-295 N @ MD-175	3h 10m	9.70	87	160,411
5	I-695 CW @ MD-26/Exit 18	1h 56m	4.35	218	109,576
6	MD-295 S @ Powder Mill Rd	2h 34m	7.06	65	70,683
7	MD-295 S @ MD-193	2h 28m	11.93	37	65,329
8	I-95 N @ MD-43/White Marsh Blvd/Exit 67	1h 32m	6.11	113	63,472
9	I-695 CCW @ MD-144/Frederick Rd/Exit 13	2h 02m	12.14	34	50,374
10	MD-295 N @ Canine Rd	1h 39m	6.98	69	47,671



Top 10 Bottlenecks in the Baltimore Region

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

3rd 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 E @ MD-94/Exit 73	8h 42m	5.55	1	2,899
2	US-50 W @ MD-2/MD-450/Ritchie Hwy/Exit 27	5h 49m	9.61	3	10,060
3	I-95 S @ MD-212/Exit 29	5h 07m	8.29	2	5,088
4	I-95 N @ Chesapeake House Travel Plaza	4h 42m	12.03	1	3,392
5	US-50 W @ Bay Dale Dr/Ferguson Rd/Exit 28	3h 36m	9.01	1	1,945
6	MD-295 N @ MD-175	3h 10m	9.70	87	160,411
7	MD-295 S @ Riverdale Rd	3h 07m	15.18	7	19,870
8	MD-295 S @ Eastern Ave	3h 04m	17.08	4	12,570
9	I-695 CW @ MD-147/Harford Rd/Exit 31	2h 55m	10.25	97	173,967
10	MD-295 S @ I-495/I-95	2h 49m	12.66	11	23,544

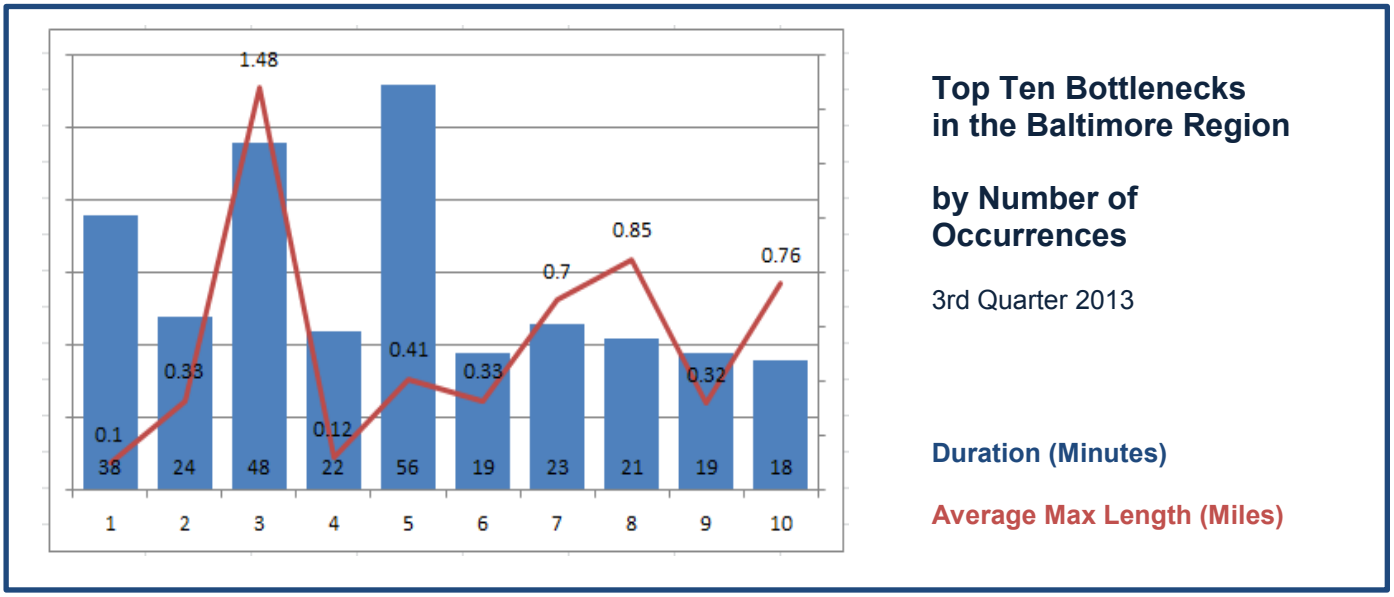
Top 10 Bottlenecks in the Baltimore Region
3rd Quarter 2013

By Average Length

	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	MD-295 S @ Eastern Ave	3h 04m	17.08	4	12,570
2	MD-295 S @ US-50/MD-201/Kenilworth Ave	3h 28m	16.40	2	6,822
3	MD-295 S @ MD-450	2h 30m	15.97	3	7,188
4	MD-295 S @ Riverdale Rd	3h 07m	15.18	7	18,870
5	MD-295 S @ I-495/I-95	2h 49m	12.66	11	23,544
6	I-695 CCW @ MD-144/Frederick Rd/Exit 13	2h 02m	12.14	34	50,374
7	I-95 N @ Chesapeake House Travel Plaza	4h 42m	12.03	1	3,392
8	MD-295 S @ MD-193	2h 28m	11.93	37	65,329
9	I-95 S @ I-495/Exit 27-25	2h 04m	11.12	7	9,651
10	I-95 CW @ MD-147/Harford Rd/Exit 31	2h 55m	10.25	97	173,967

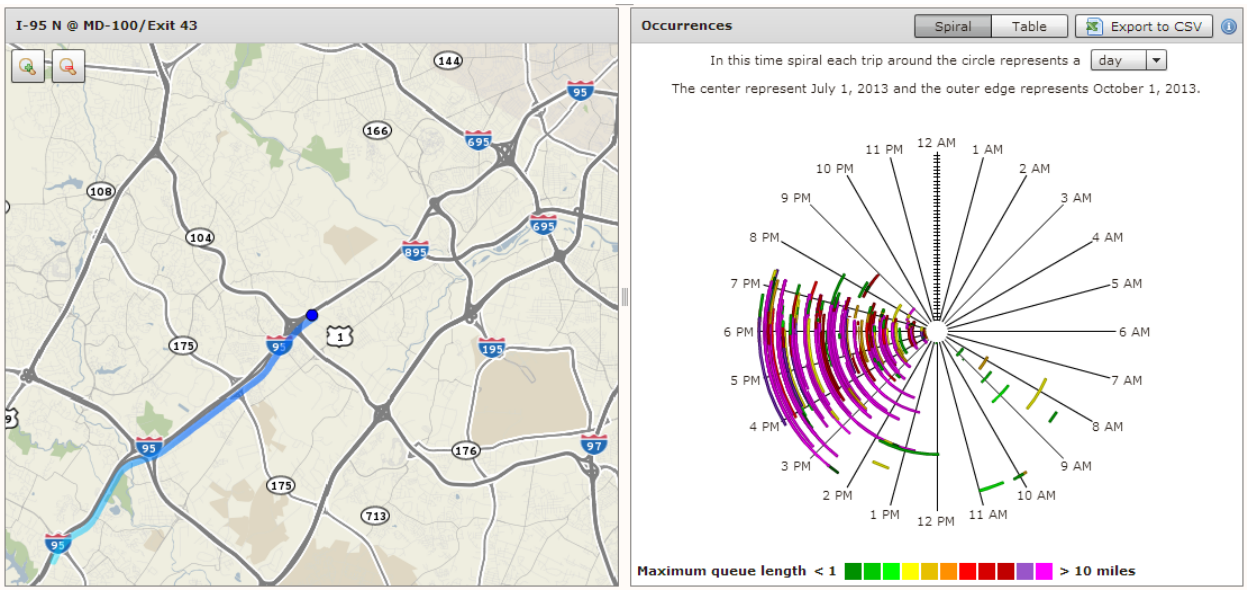
By Number of Occurrences

	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	I-695 CW @ Authority Dr	38m	0.10	994	3,633
2	I-895 N @ Childs St/Exit 9	24m	0.33	837	6,675
3	US-50 E @ William Preston Lane Brg	48m	1.48	631	44,770
4	I-895 N @ Harbor Tunnel Toll Plaza	22m	0.12	612	1,662
5	I-895 S @ Frankfurst Ave/Shell Rd/Exit 8	56m	0.41	609	14,014
6	I-895 S @ Childs St/Exit 9	19m	0.33	548	3,373
7	MD-10 N @ MD-100	23m	0.70	514	8,312
8	MD-100 E @ MD-295/B.W. Pkwy	21m	0.85	428	7,639
9	I-695 CCW @ Broening Hwy/Exit 44	19m	0.32	397	2,414
10	MD-295 S @ MD-32	18m	0.76	264	3,594



#1 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2013

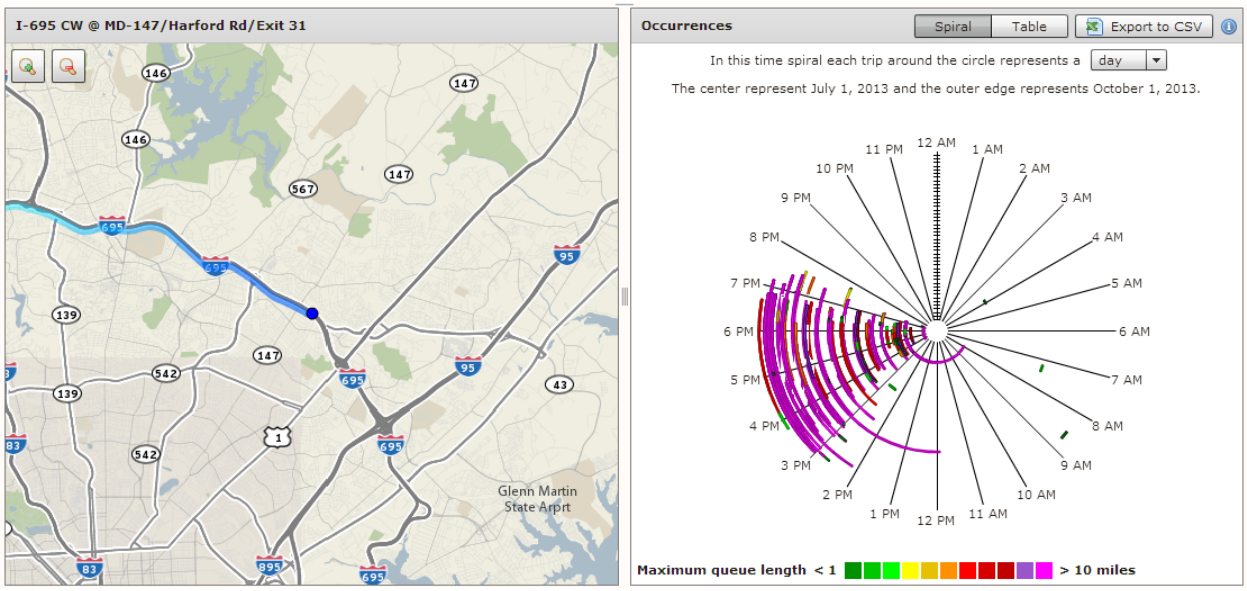
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-95 N @ MD-100/Exit 43	2h 09m	10.19	156	205,036



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

#2 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2013

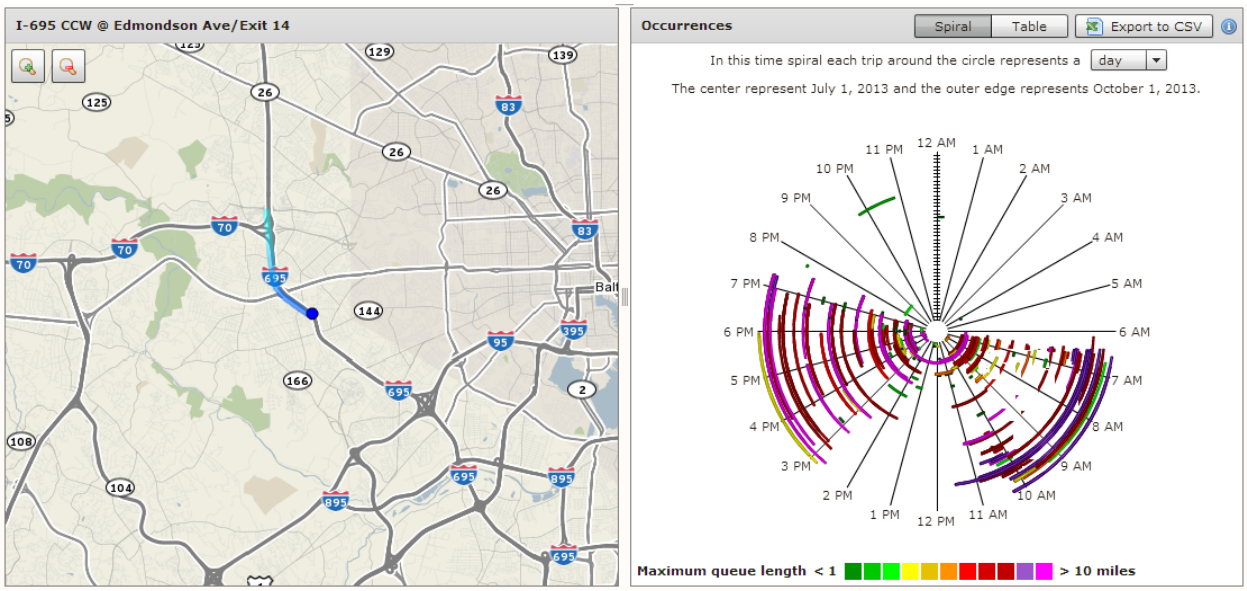
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CW @ MD-147/Harford Rd/Exit 31	2h 55m	10.25	97	173,967



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

#3 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2013

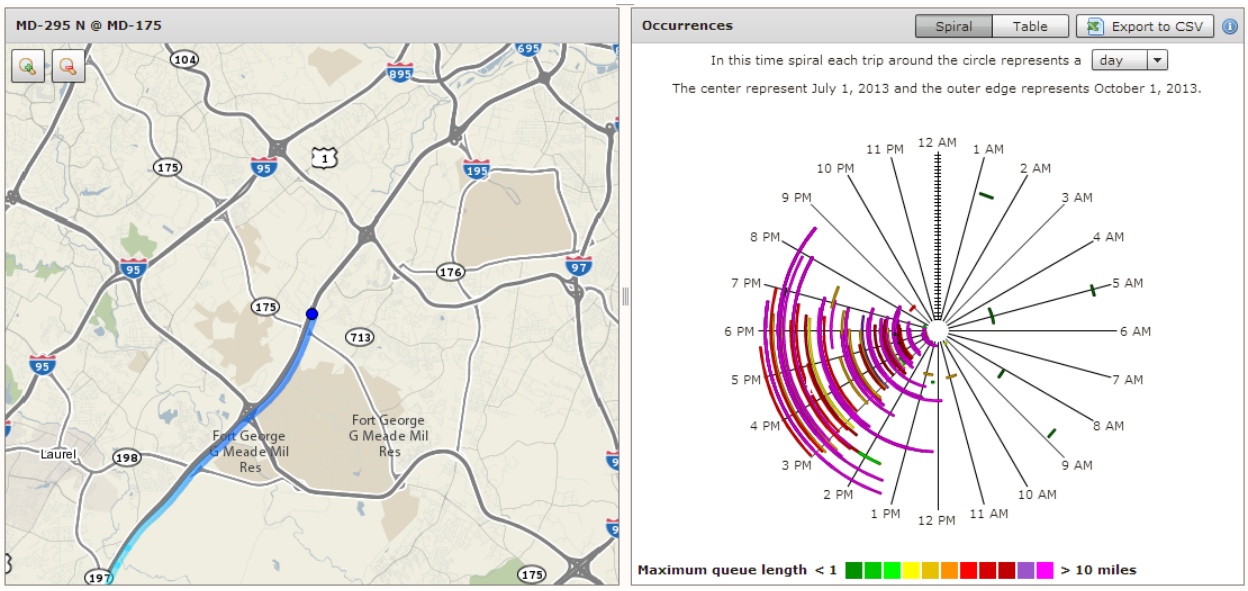
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CCW @ Edmondson Ave/Exit 14	1h 53m	5.86	170	112,542



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

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

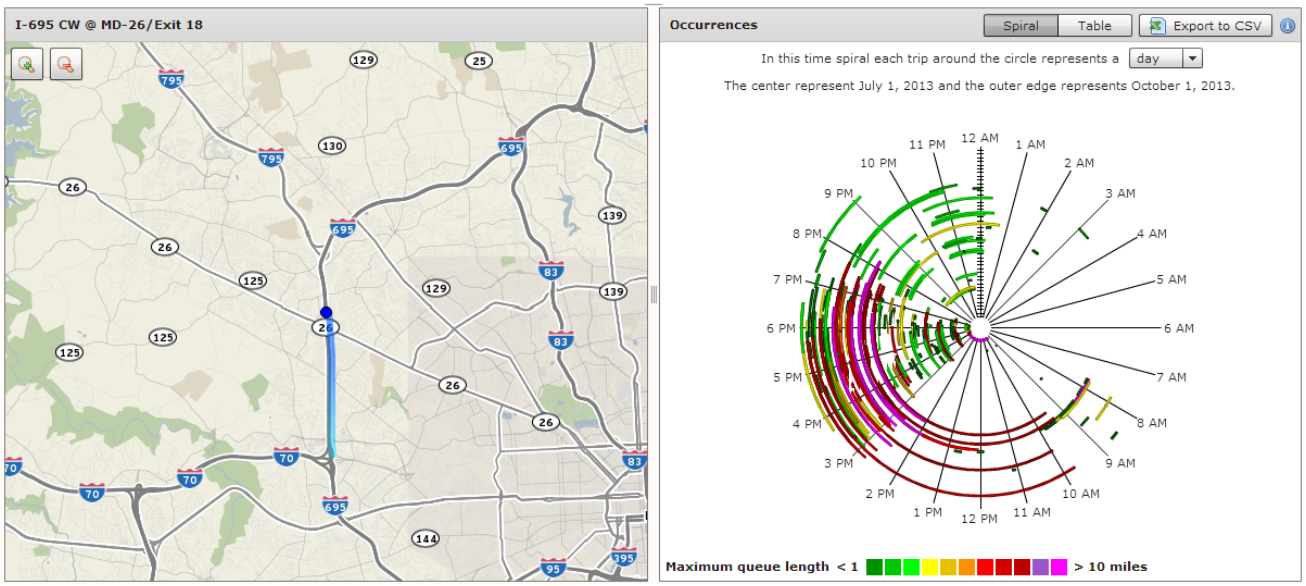
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 N @ MD-175	3h 10m	9.70	87	160,411



Notes: 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

#5 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2013

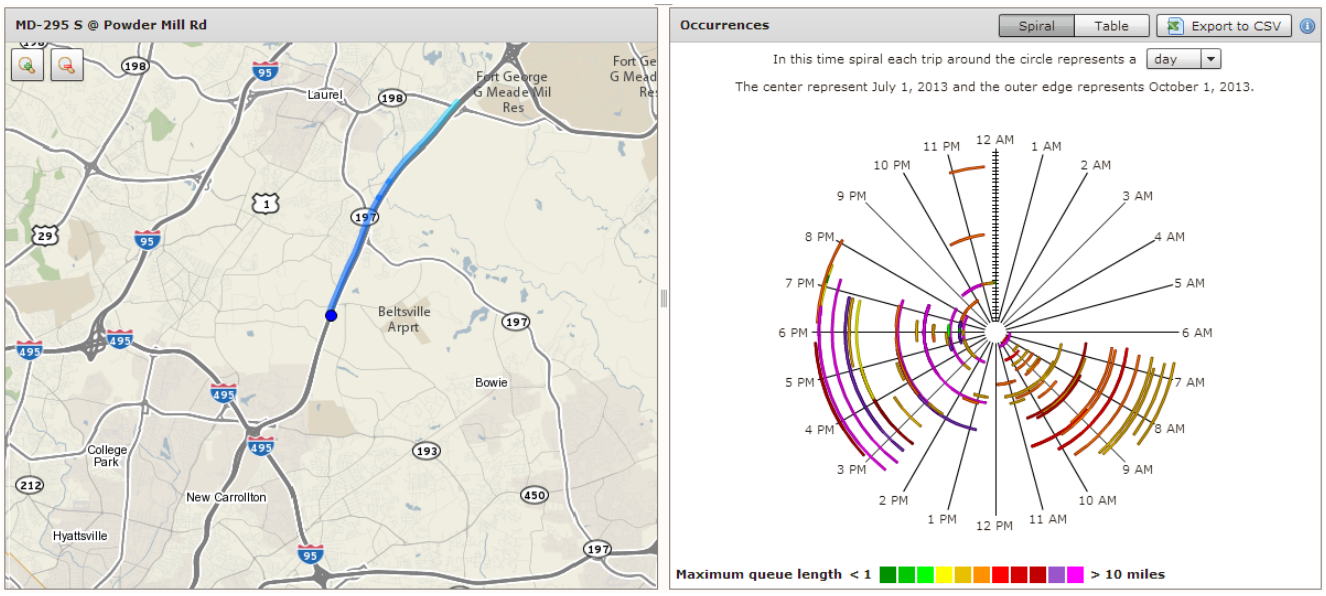
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CW @ MD-26/Exit 18	1h 56m	4.35	218	109,576



Notes: Longstanding recurring afternoon congestion on the westside inner loop of the beltway
Source: VPP Suite

#6 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2013

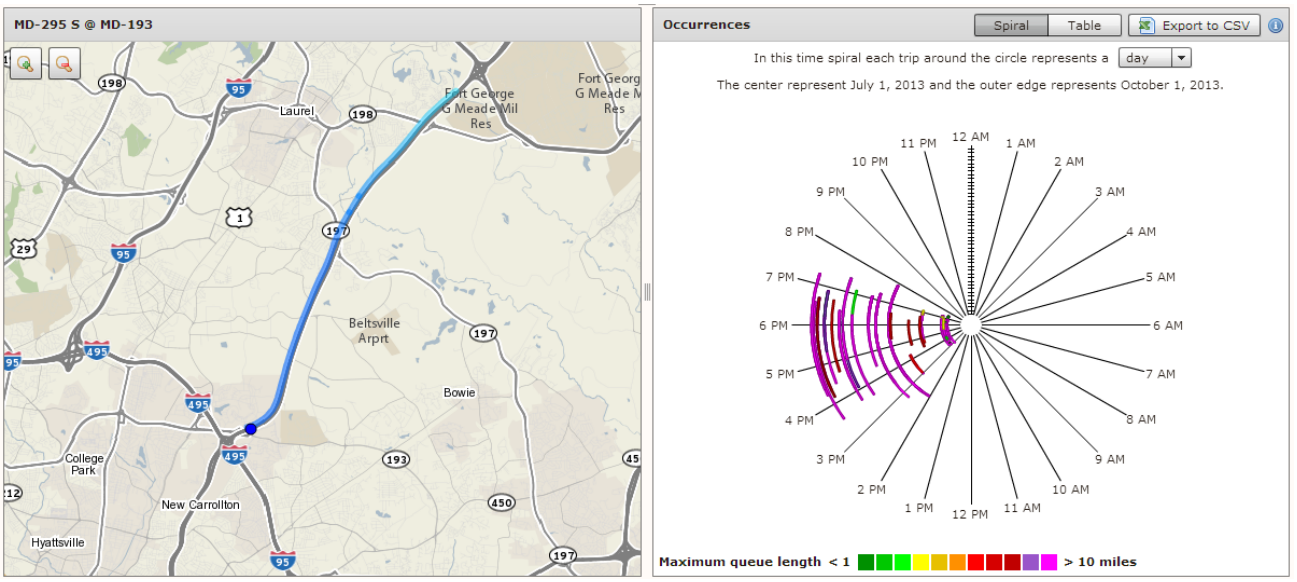
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 S @ Powder Mill Rd	2h 34m	7.06	65	70,683



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

#7 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2013

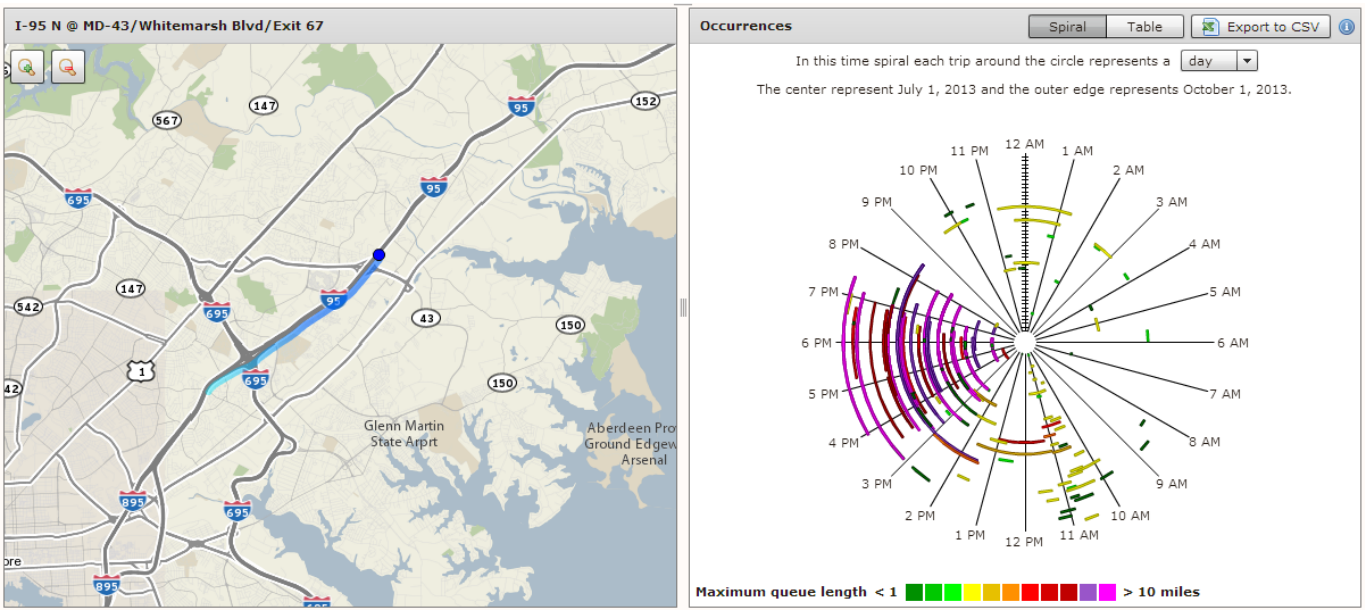
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 S @ MD-193	2h 28m	11.93	37	65,329



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

#8 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2013

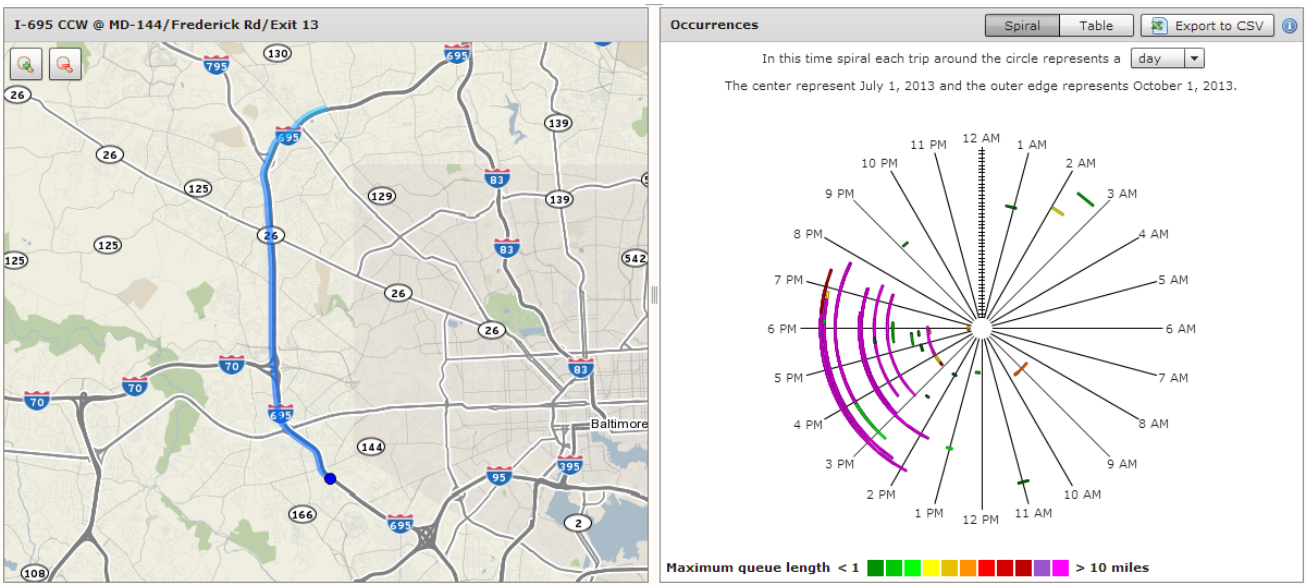
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-95 N @ MD-43/White Marsh Blvd/Exit 67	1h 32m	6.11	113	63,472



Notes: Express toll lane construction ongoing from merge with I-895 to ramsp at MD-43
Source: http://www.i-95expresstolllanes.com

#9 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2013

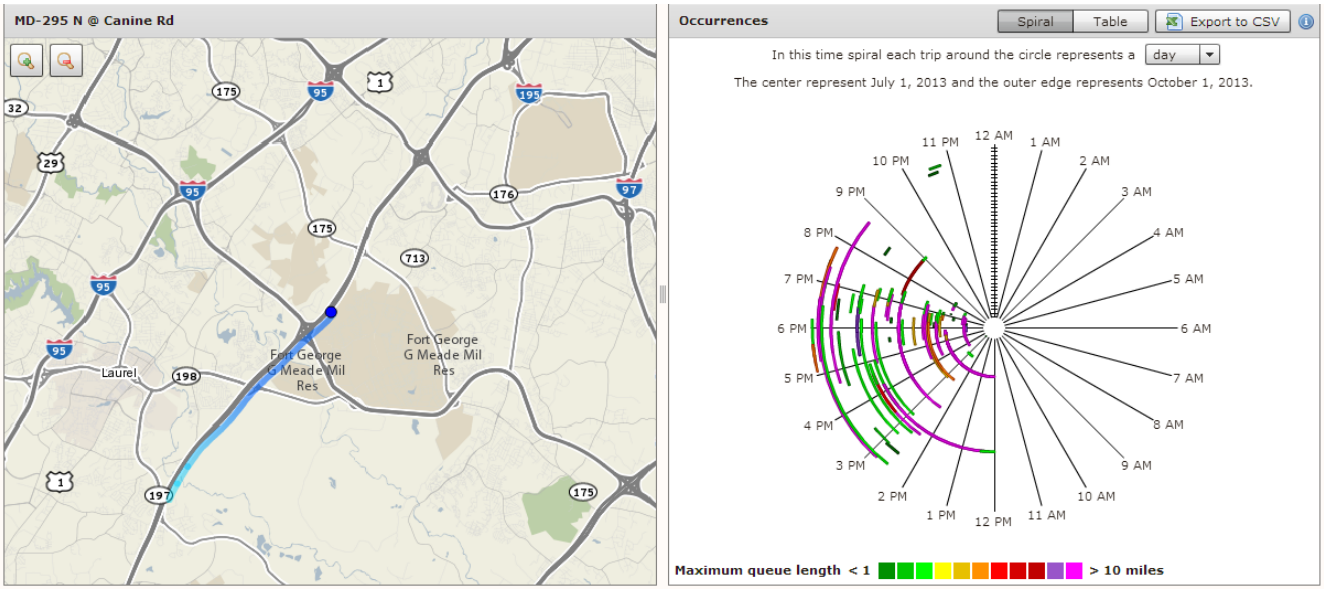
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CCW @ MD-144/Frederick Rd/Exit 13	2h 02m	12.14	34	50,374



Notes: Recurring afternoon congestion on the Baltimore Beltway outer loop
Source: VPP Suite

#10 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2013

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 N @ Canine Rd	1h 39m	6.98	69	47,671



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. This is a similar to the #2 ranked bottleneck that occurs farther north on MD-295 @ MD-175 although this instance begins closer to the edge of Anne Arundel County with most of its length extending into the DC region.
Source: Skycomp Report

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