Quarterly Congestion Analysis Report For The Baltimore Region

Top 10 Bottleneck Locations

3rd Quarter 2014

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/

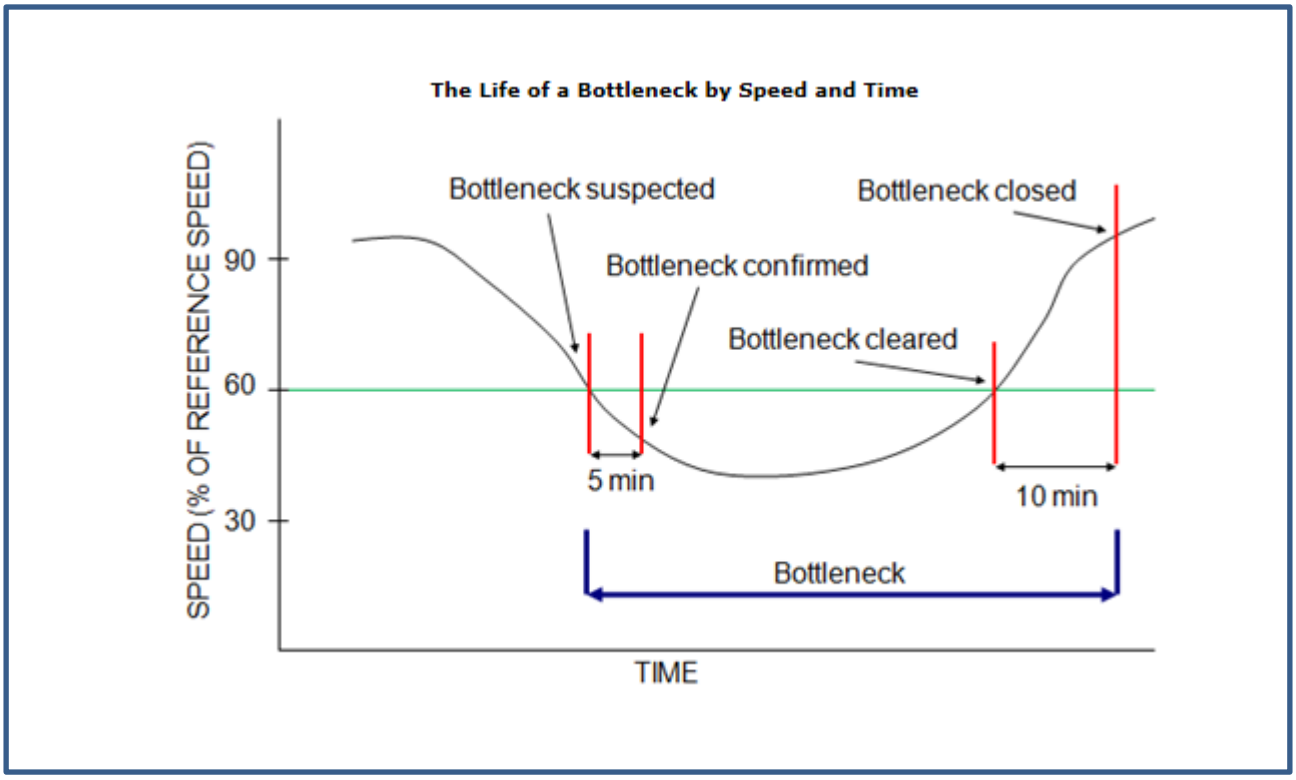
Should you have any questions, please contact:

- 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.

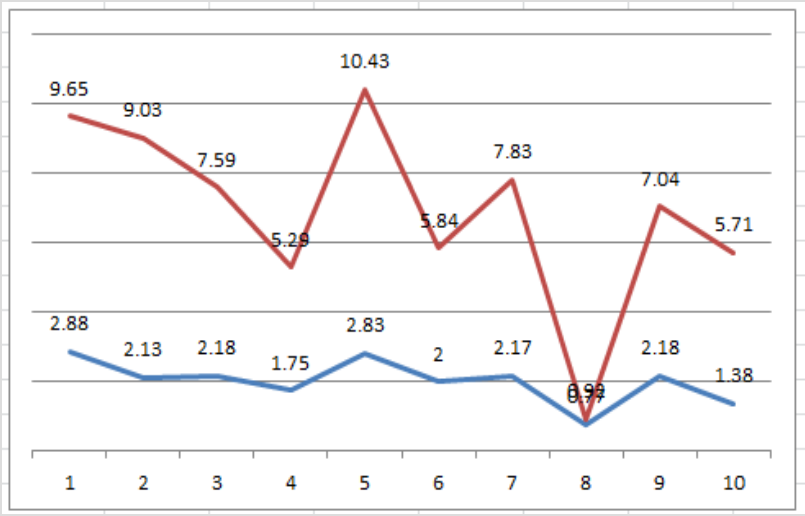


Top 10 Bottlenecks in the Baltimore Region
3rd Quarter 2014

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	MD-295 S @ Powder Mill Rd	2 h 53 m	9.65	140	233,706
2	I-95 N @ MD-100/Exit 43	2 h 08 m	9.03	156	180,258
3	I-695 CW @ MD-41/Perring Pkwy/Exit 30	2 h 11 m	7.59	145	144,165
4	US-29 N @ MD-175	1 h 45 m	5.29	148	82,156
5	I-695 CW @ MD-147/Harford Rd/Exit 31	2 h 50 m	10.43	45	79,810
6	I-695 CCW @ Edmondson Ave/Exit 14	2 h	5.84	112	78,484
7	I-695 CW @ I-795/Exit 19	2 h 10 m	7.83	77	78,427
8	US-50 E @ Bay Bridge	46 m	0.92	1620	68,349
9	MD-295 N @ I-195	2 h 11 m	7.04	71	65,446
10	I-695 CCW @ US-40/Exit 15	1 h 23 m	5.71	128	60,666



Top 10 Bottlenecks in the Baltimore Region

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

3rd Quarter 2014

Average max length (miles)

Average duration (hours)

By Average Duration

	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	I-895 N @ Harbor Tunnel Thwy (South)	6 h 35 m	0.85	15	5,041
2	I-95 N @ Chesapeake House Travel Plaza	5 h 28 m	12.82	2	8,413
3	MD-295 N @ US-40/Mulberry St/Franklin St	5 h 13 m	3.69	44	50,866
4	US-50 E @ MD-8/Exit 37	4 h 34 m	8.07	1	2,211
5	MD-295 N @ S Martin Luther King Blvd	4 h 27 m	1.45	84	32,590
6	I-95 N @ MD-222/Exit 93	3 h 34 m	7.79	10	16,681
7	MD-295 S @ MD-450	3 h 26 m	14.76	1	3,041
8	I-895 N @ Holabird Ave/Exit 10	3 h 18 m	0.56	23	2,552
9	I-95 S @ I-495/Exit 27-25	3 h 15 m	9.35	6	10,934
10	MD-295 S @ Goddard Rd	3 h 02 m	12.19	2	4,436

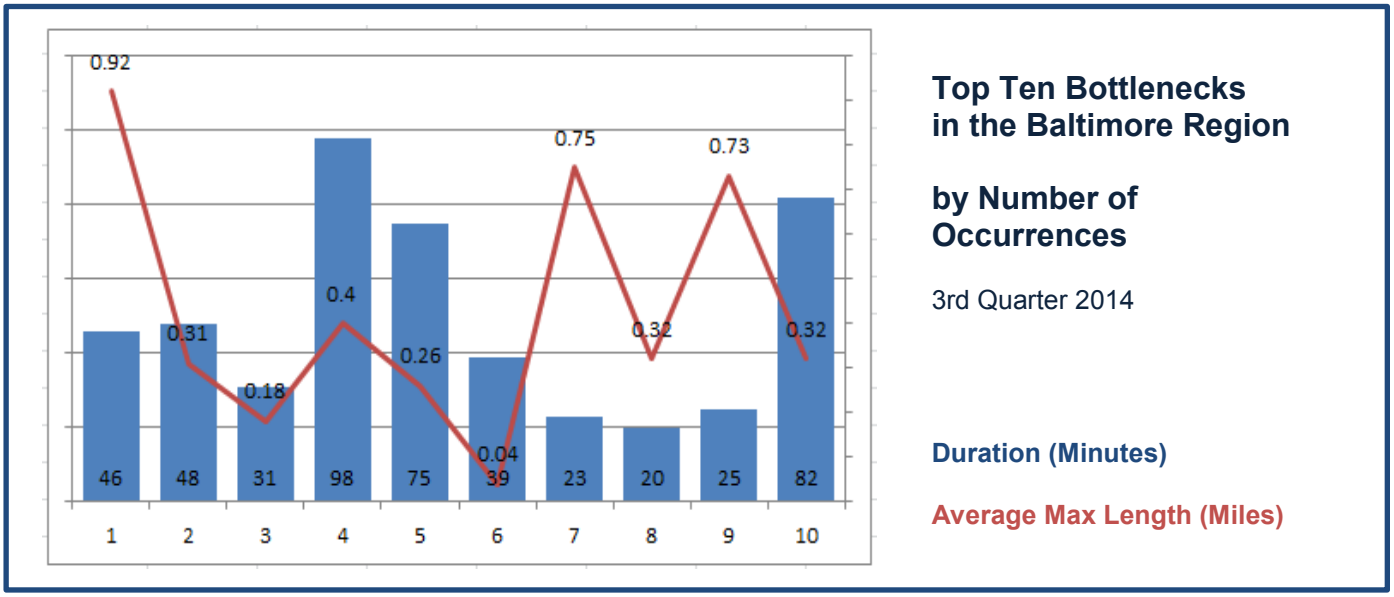
Top 10 Bottlenecks in the Baltimore Region
3rd Quarter 2014

By Average Length

	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	MD-295 S @ MD-450	3 h 26 m	14.76	1	3,041
2	I-95 N @ Chesapeake House Travel Plaza	5 h 28 m	12.82	2	8,413
3	MD-295 S @ Goddard Rd	3 h 02 m	12.19	2	4,436
4	I-695-CW @ MD-147/Harford Rd/Exit 31	2 h 50 m	10.43	45	79,810
5	MD-295 S @ Powder Mill Rd	2 h 53 m	9.65	140	233,706
6	I-95 S @ I-495/Exit 27-25	3 h 15 m	9.35	6	10,934
7	I-95 N @ MD-100/Exit 43	2 h 08 m	9.03	156	180,258
8	I-95 N @ MD-152/Exit 74	1 h 32 m	8.79	20	16,166
9	I-95 N @ Tydings Memorial Bridge Toll Plaza	2 h 28 m	8.60	1	1,272
10	US-50 E @ MD-8/Exit 37	4 h 34 m	8.07	1	2,211

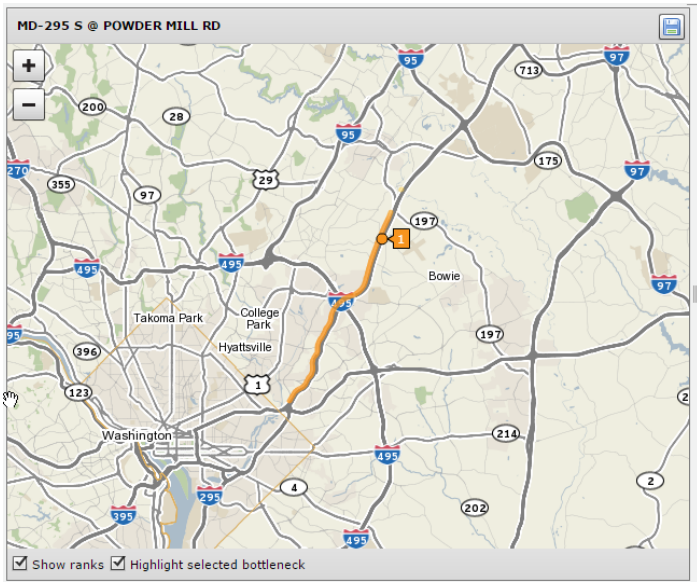
By Number of Occurrences

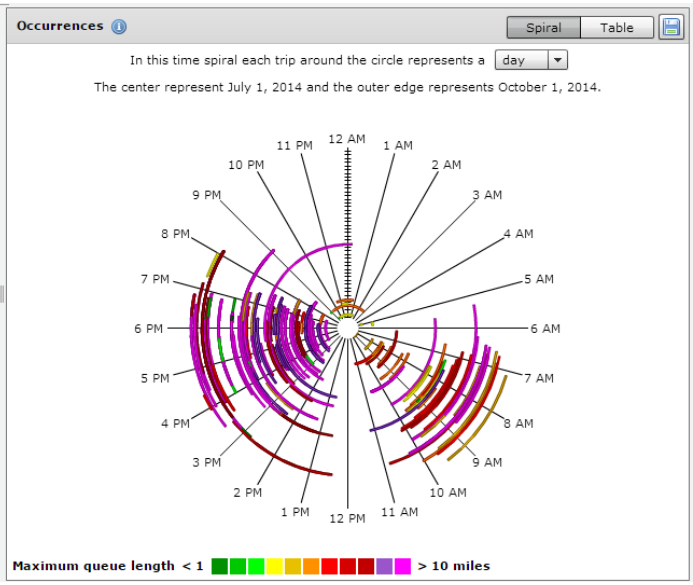
	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	US-50 E @ Bay Bridge	46 m	0.92	1620	68,349
2	I-895 S @ Childs St/Exit 9	48 m	0.31	1523	22,430
3	I-895 S @ Frankfurst Ave/Shell Rd/Exit 8	31 m	0.18	1412	7,821
4	I-895 N @ Harbor Tunnel Toll Plaza	1 h 38 m	0.40	1012	39,479
5	I-895 N @ Childs St/Exit 9	1 h 15 m	0.26	1004	19,339
6	I-695 CW @ Authority Dr	39 m	0.04	993	1,619
7	I-95 N @ Keith Ave/Exit 56	23 m	0.75	854	14,773
8	I-695 CCW @ Broening Hwy	20 m	0.32	744	4,765
9	I-95 S @ MD-2/Hanover St/Exit 54	25 m	0.73	569	10,326
10	I-695 CW @ Key Bridge Toll Plaza	1 h 22 m	0.32	509	13,287



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

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 S @ Powder Mill Rd	2 h 53 m	9.65	140	233,706

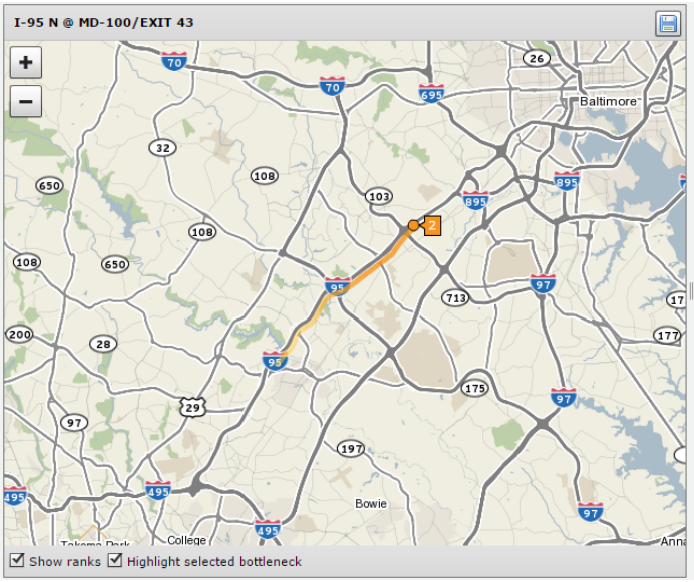


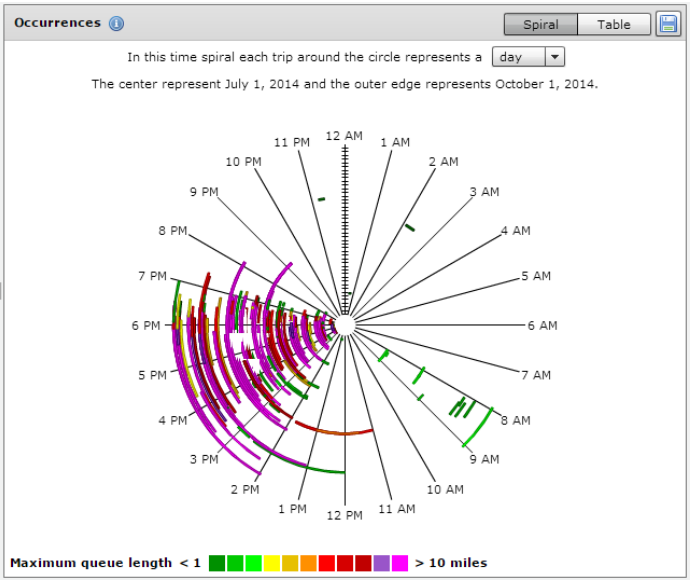


Notes: Southbound congestion extending from Powder Mill Rd just barely extending into the southern portion of the Baltimore region near Fort Meade
Source: VPP Suite

#2 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2014

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-95 N @ MD-100/Exit 43	2 h 08 m	9.03	156	180,258

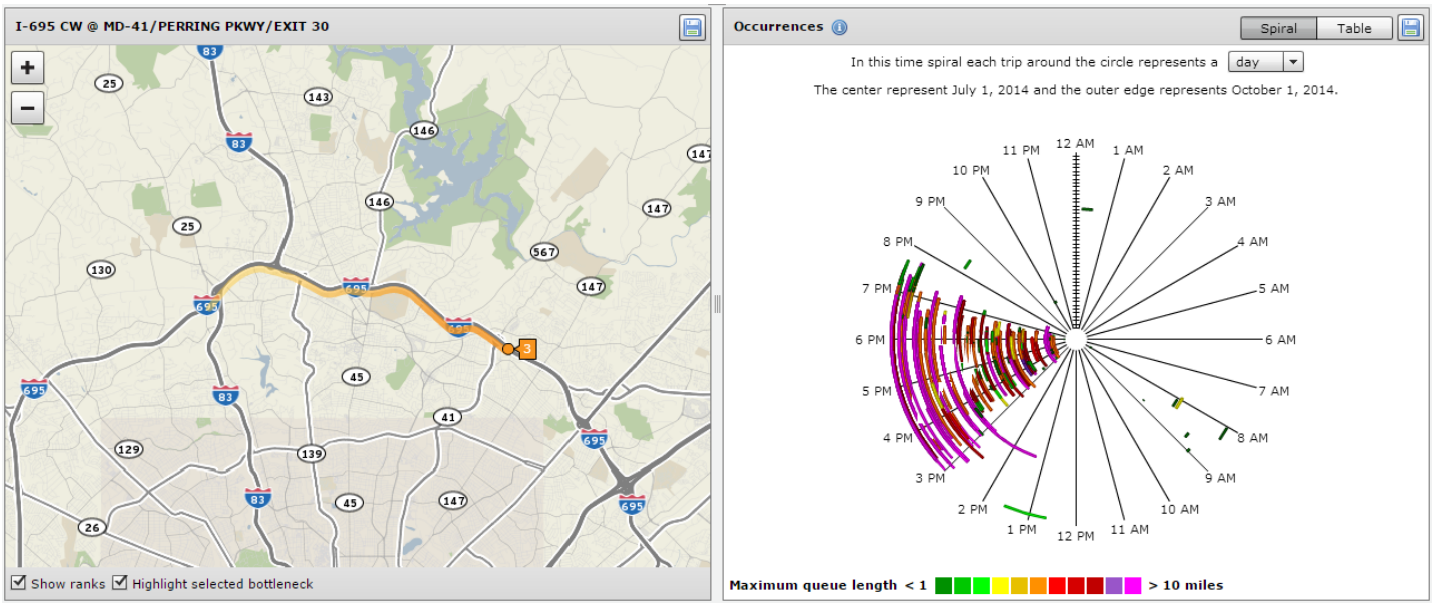




Notes: Contributing factors include traffic entering at MD-175, weaving to exit at MD-100, and the half-mile uphill grade midway between MD-175 and MD-100
Source: Skycomp Report

#3 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2014

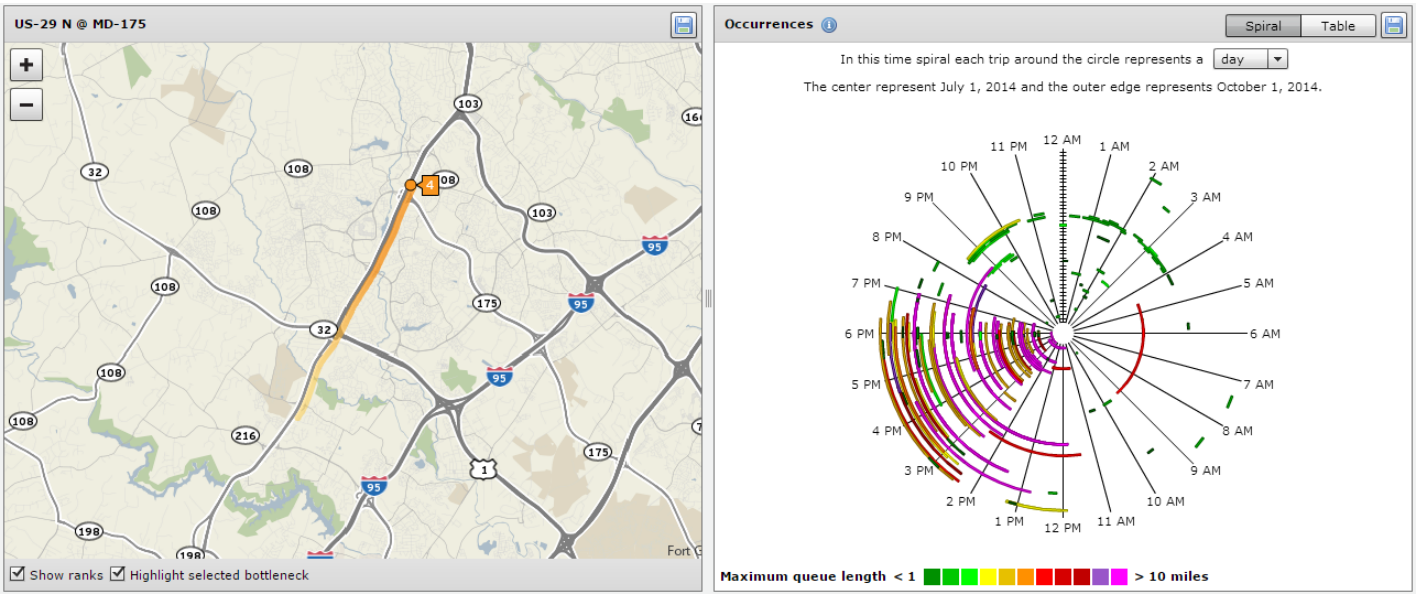
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CW @ MD-41/Perring Pkwy/Exit 30	2 h 11 m	7.59	145	144,165



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

#4 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2014

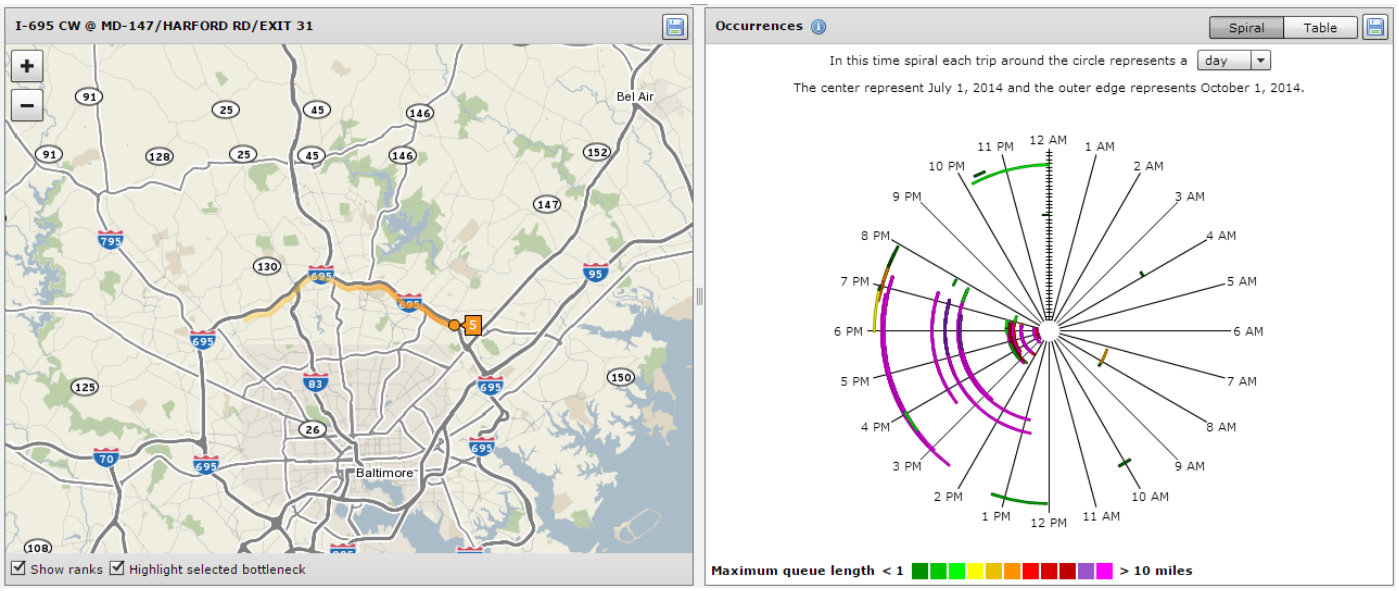
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
US-29 N @ MD-175	1 h 45 m	5.29	148	82,156



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

#5 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2014

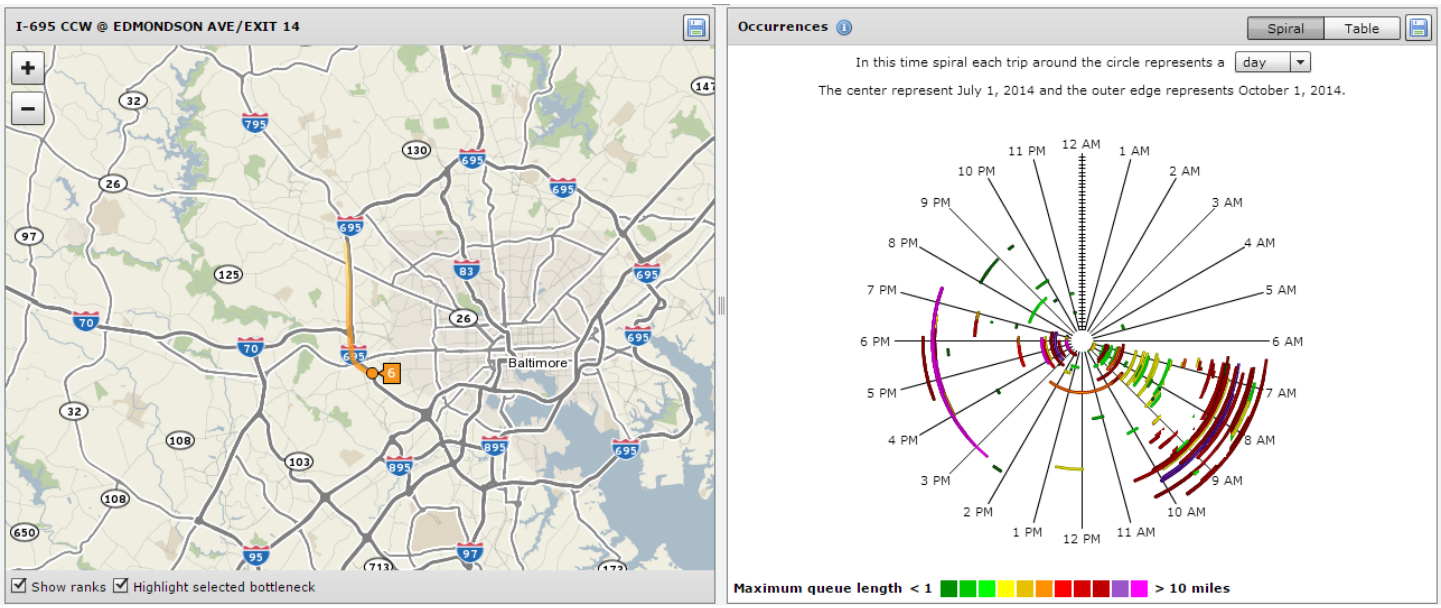
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CW @ MD-147/Harford Rd	2 h 50 m	10.43	45	79,810



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

#6 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2014

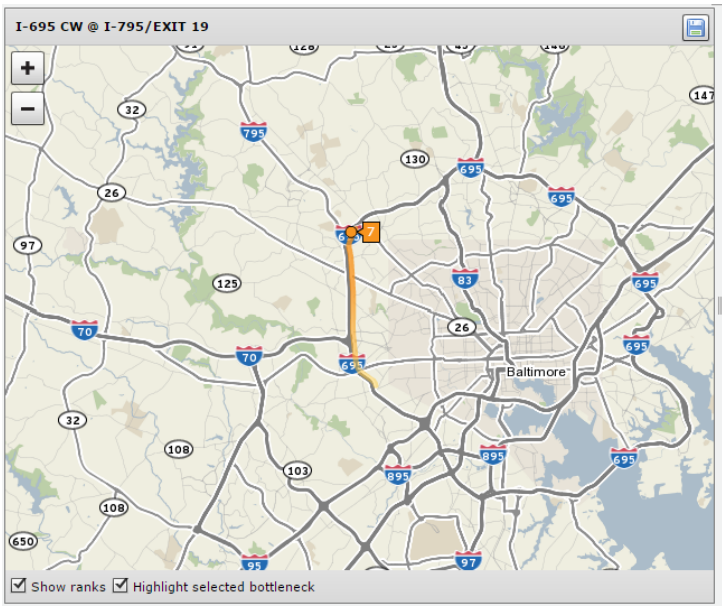
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CCW @ Edmondson Ave/Exit 14	2 h	5.84	112	78,484

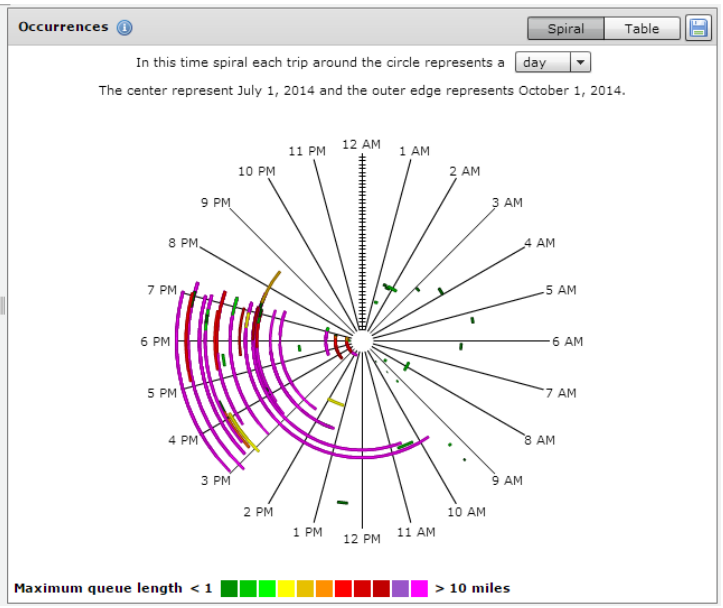


Notes: Longstanding bottlenecks primarily in the morning peak period.
Source: VPP observations

#7 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2014

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CW @ I-795/Exit 19	2 h 10 m	7.83	77	78,427

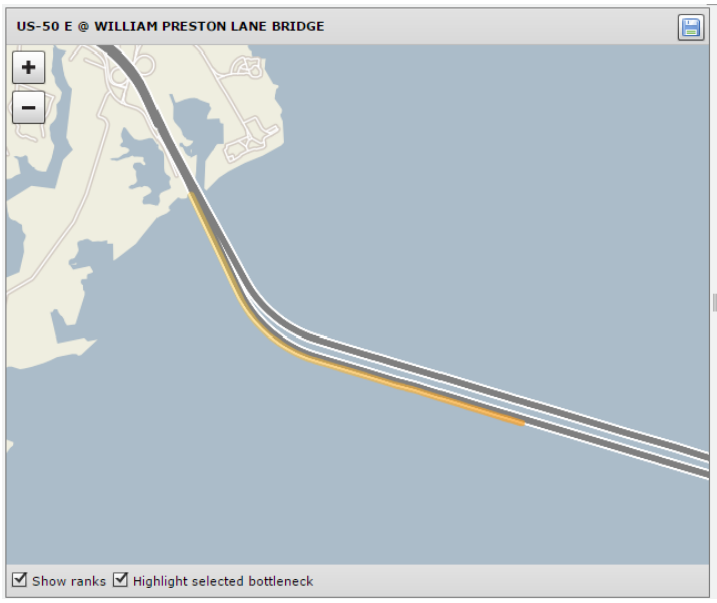


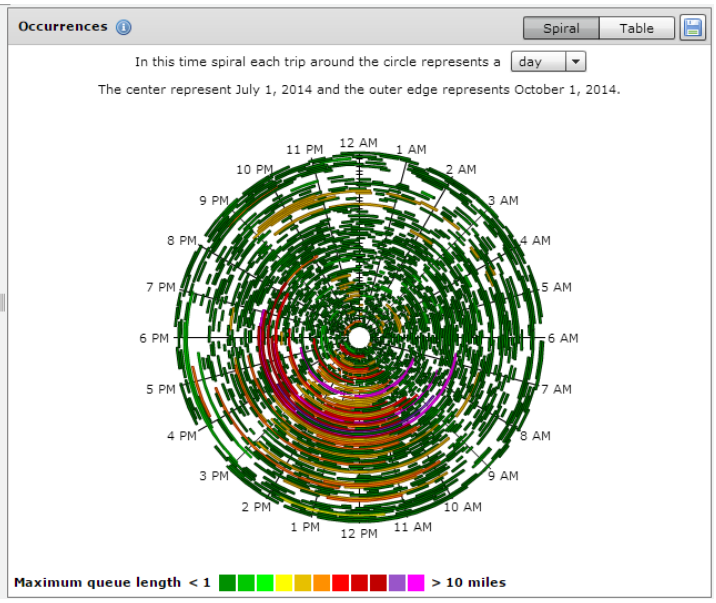


Notes: Longstanding westside beltway inner loop congestion in the afternoon.
Source: Skycomp Report

#8 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2014

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
US-50 E @ Bay Bridge	46 m	0.92	1620	68,349

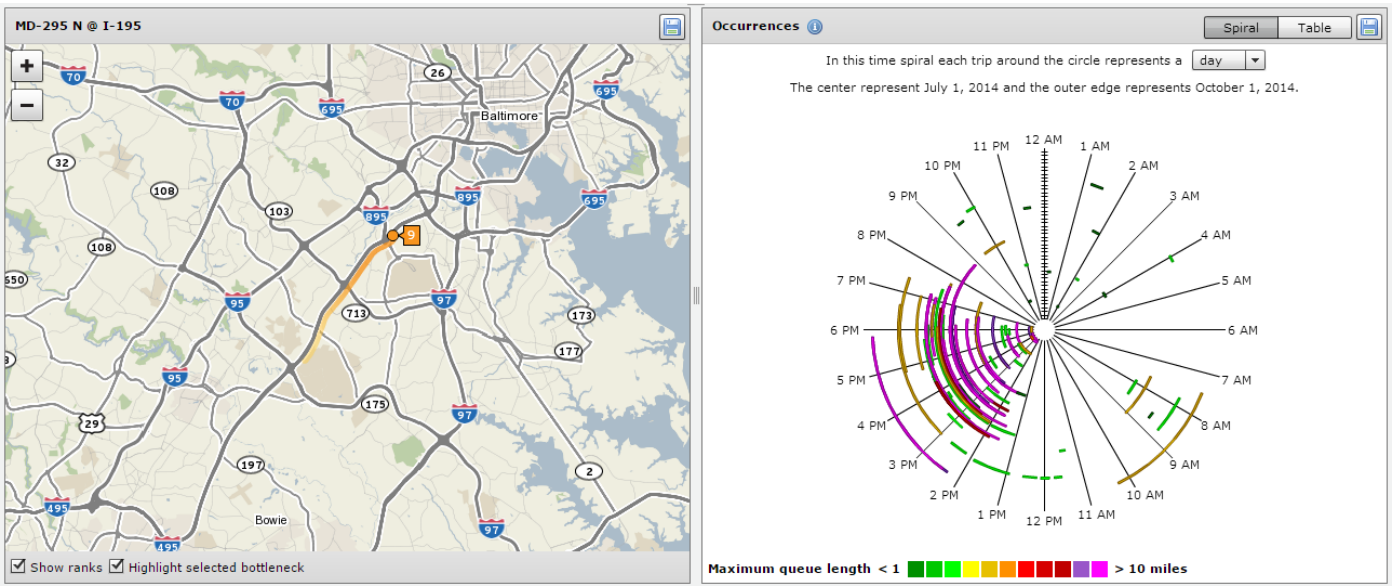




Notes: Increased traffic volumes throughout the summer months combined with lane closures for bridge maintenance
Source:
http://www.baybridge.maryland.gov/News_Center/Bay_Bridge_Traffic_Advisories/Bay_Bridge_US_50301_Lane_Closures_and_Traffic_Patterns_Scheduled_for_the_Week_of_Aug_10__16_2014

#9 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2014

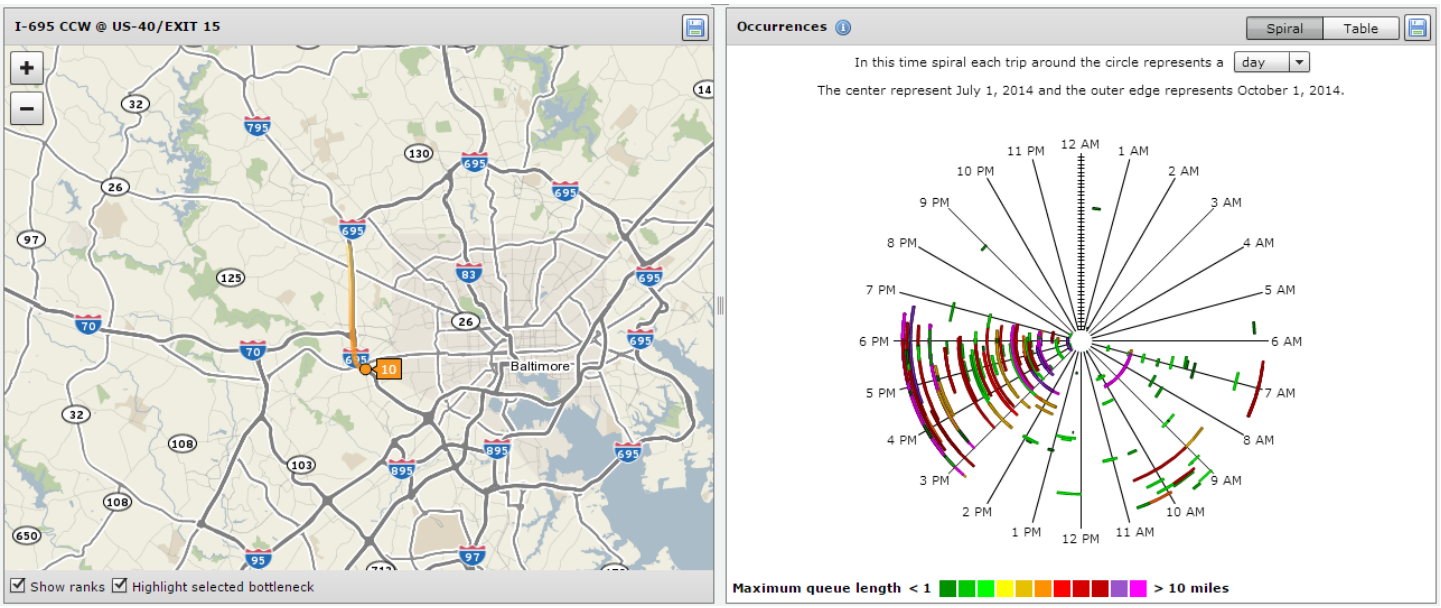
Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 N @ I-195	2 h 11 m	7.04	71	65,446



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 boteleneck, almost as far back as MD 100.
Source: Skycomp Report

#10 Ranked Bottlenecks in the Baltimore Region – 3rd Quarter 2014

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CCW @ US-40/Exit 15	1 h 23 m	5.71	128	60,666



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

Project Manager · Victor Henry

Author · Edward Stylc

Data Collection Contributors
I-95 Corridor Coalition · University of Maryland CATT Lab · INRIX
Skycomp

Larry Klimovitz, Executive Director
Todd Lang, Director of Transportation Planning
Regina Aris, Assistant Director of Transportation Planning

Baltimore Metropolitan Council
Offices @ McHenry Row | 1500 Whetstone Way, Suite 300 | Baltimore, Maryland 21230
www.baltometro.org