Quarterly Congestion Analysis Report For The Baltimore Region

Top 10 Bottleneck Locations

2nd 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.
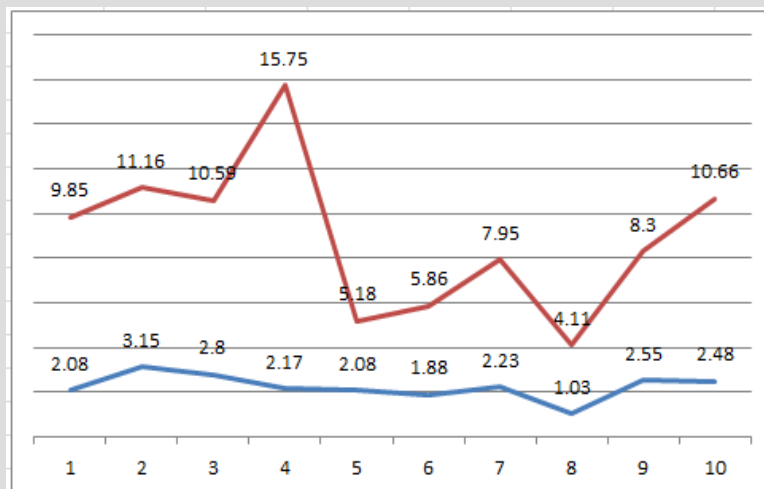

The Life of a Bottleneck by Speed and Time
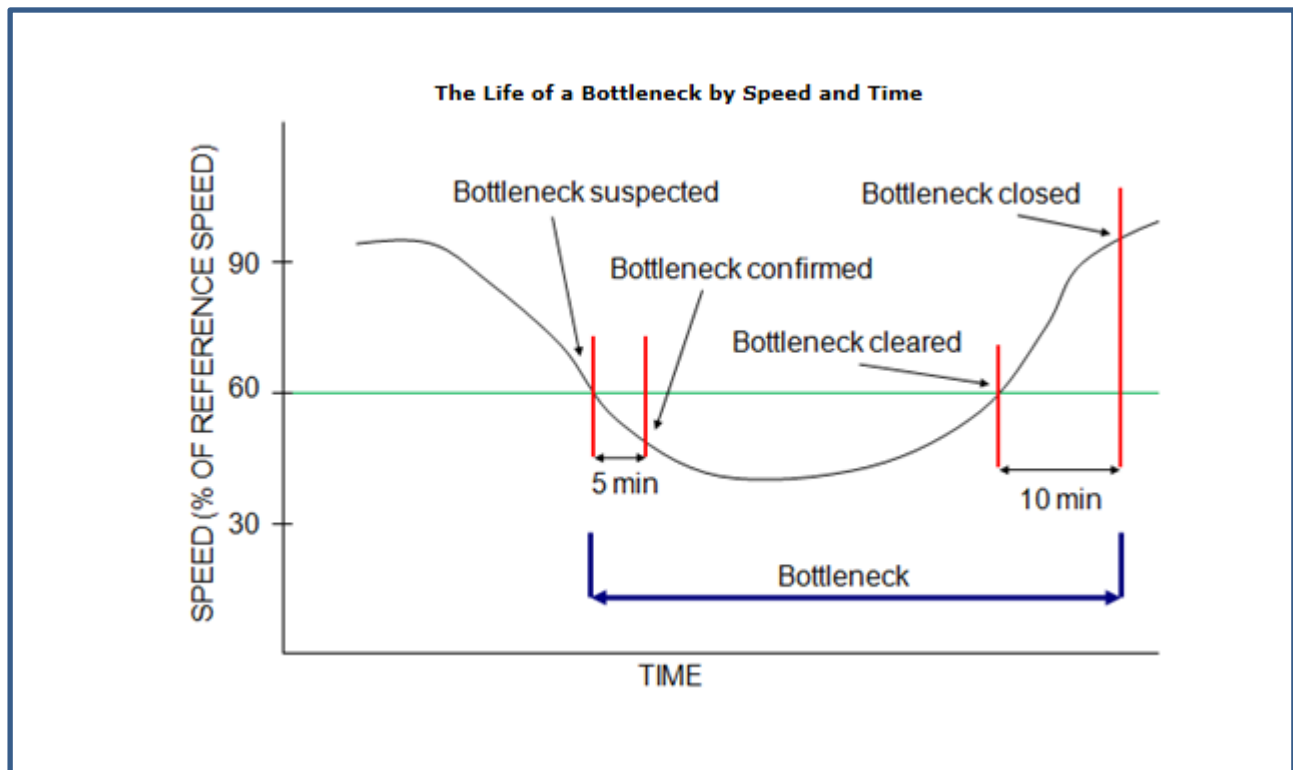
Top 10 Bottlenecks in the Baltimore Region
2nd Quarter 2013

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 05m	9.85	176	216,806
2	MD-295 N @ MD-175	3h 09m	11.16	94	198,330
3	I-695 CW @ MD-147/Harford Rd/Exit 31	2h 48m	10.59	96	170,745
4	I-695 CCW @ MD-144/Frederick Rd/Exit 13	2h 10m	15.75	72	147,380
5	I-695 CW @ MD-140/Reisterstown Rd/Exit 20	2h 05m	5.18	186	120,366
6	I-695 CCW @ Edmondson Ave/Exit 14	1h 53m	5.86	170	112,542
7	I-95 N @ MD-43/White Marsh Blvd/Exit 67	2h 14m	7.95	97	103,350
8	MD-295 N @ I-195	1h 02m	4.11	307	78,310
9	MD-295 S @ Powder Mill Rd	2h 33m	8.30	58	73,655
10	MD-295 S @ MD-193	2h 29m	10.66	35	55,586

Top 10 Bottlenecks in the Baltimore Region

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

2nd Quarter 2013

Average max length (miles)

Average duration (hours)

By Average Duration

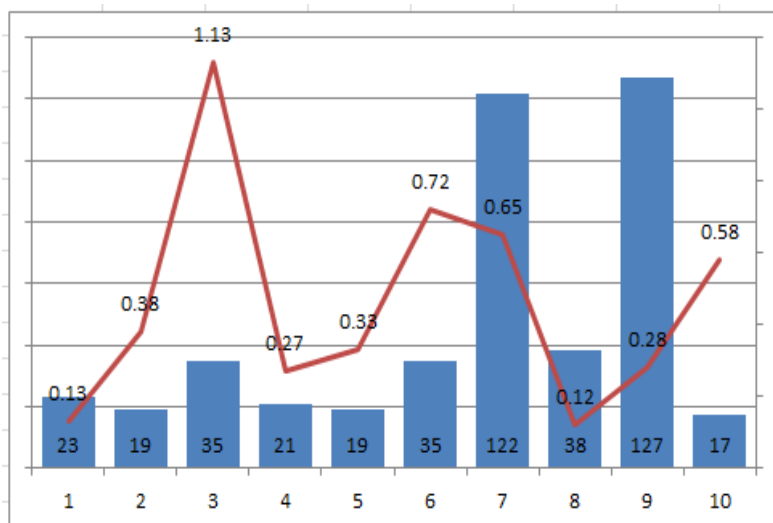|	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	I-95 N @ Chesapeake House Travel Plaza	3h 48m	14.79	2	6,746
2	MD-295 S @ MD-450	3h 35m	20.20	3	13,026
3	MD-295 N @ MD-175	3h 09m	11.16	94	198,330
4	MD-295 S @ MD-202	3h 03m	14.33	2	5,244
5	I-95 N @ MD-22/Exit 85	2h 53m	4.05	8	5,604
6	I-695 CW @ MD-147/Harford Rd/Exit 31	2h 48m	10.59	96	170,745
7	I-95 N @ MD-152/Exit 74	2h 41m	12.95	17	35,444
8	MD-295 S @ I-495/I-95	2h 37m	13.25	5	10,399
9	MD-295 S @ Riverdale Rd	2h 36m	17.75	6	16,618
10	I-695 CCW @ MD-144/Frederick Rd/Exit 13	2h 33m	6.42	46	45,207

Top 10 Bottlenecks in the Baltimore Region
2nd Quarter 2013

By Average Length

	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	MD-295 S @ MD-450	3h 35m	20.20	3	13,026
2	MD-295 S @ Riverdale Rd	2h 36m	17.75	6	16,618
3	MD-295 S @ Eastern Ave	3h 14m	16.51	4	12,809
4	I-695 CCW @ MD-144/Frederick Rd/Exit 13	2h 10m	15.75	72	147,380
5	I-95 N @ Chesapeake House Travel Plaza	3h 48m	14.79	2	6,746
6	MD-295 S @ MD-202	3h 03m	14.33	2	5,244
7	MD-295 S @ I-495/I-95	2h 37m	13.25	5	10,399
8	I-95 N @ MD-152/Exit 74	2h 41m	12.95	17	35,444
9	MD-295 N @ MD-175	3h 09m	11.16	94	198,330
10	MD-295 S @ Goddard Rd	2h 30m	10.80	21	34,019

By Number of Occurrences

	Location	Average Duration	Average max length (miles)	Occurrences	Impact Factor
1	I-895 N @ Harbor Tunnel Toll Plaza	23m	0.13	1129	3,252
2	MD-10 S @ MD-100	19m	0.38	1029	7,473
3	US-50 E @ Bay Bridge	35m	1.13	1025	40,637
4	I-895 N @ Childs St/Exit 9	21m	0.27	939	5,380
5	I-695 CCW @ Broening Hwy/Exit 44	19m	0.33	637	4,020
6	I-95 N @ I-695/Exit 64	35m	0.72	601	15,144
7	I-895 S @ Frankfurst Ave/Shell Rd/Exit 8	2h 02m	0.65	573	45,614
8	I-895 S @ Childs St/Exit 9	38m	0.12	409	1,928
9	I-695 CW @ Authority Dr	2h 07m	0.28	340	12,182
10	I-95 S @ Keith Ave/Exit 56	17m	0.58	186	1,829

Top Ten Bottlenecks in the Baltimore Region
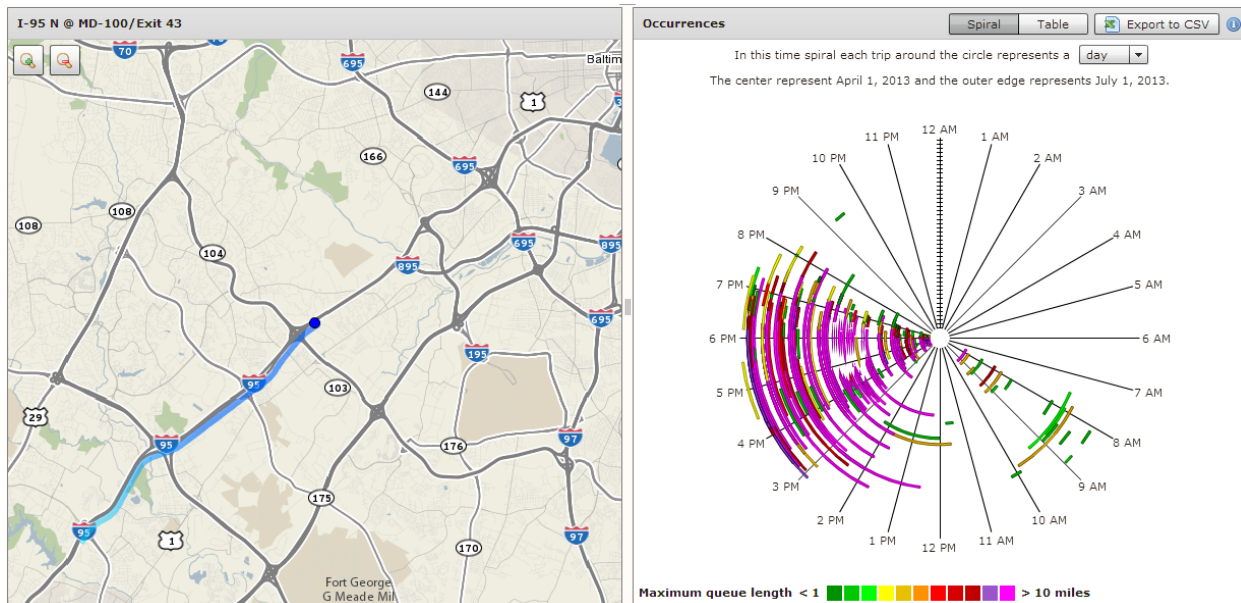
by Number of Occurrences

2nd Quarter 2013

Duration (Minutes)

Average Max Length (Miles)

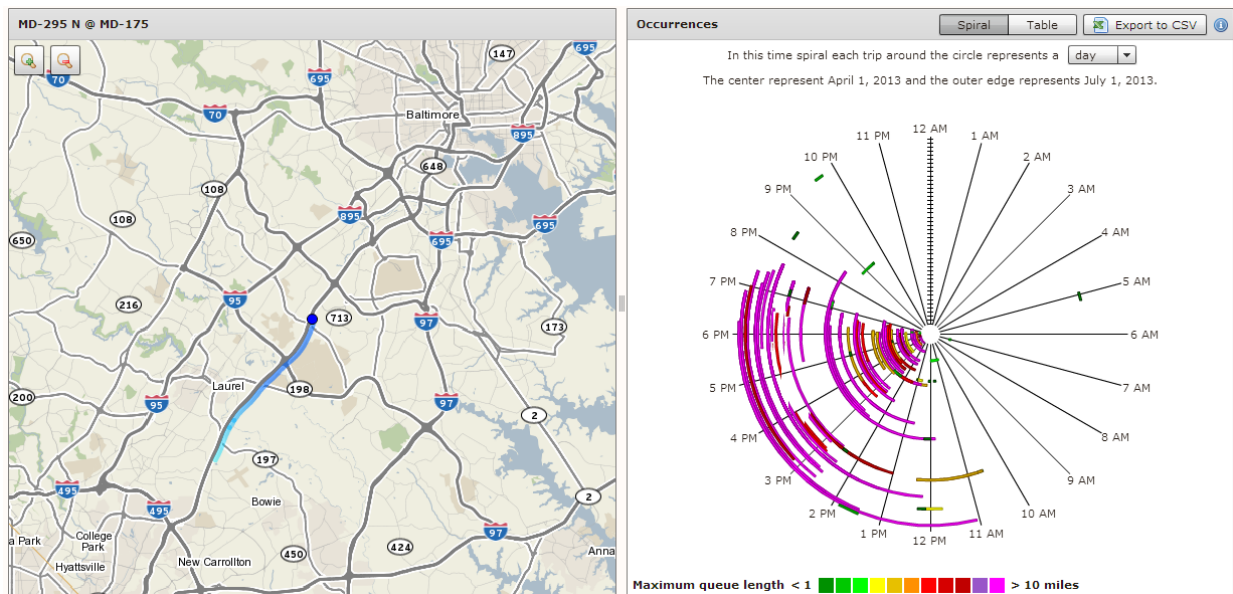# #1 Ranked Bottlenecks in the Baltimore Region – 2ndQuarter 2013

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-95 N @ MD-100/Exit 43	2h 05m	9.85	176	216,806

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
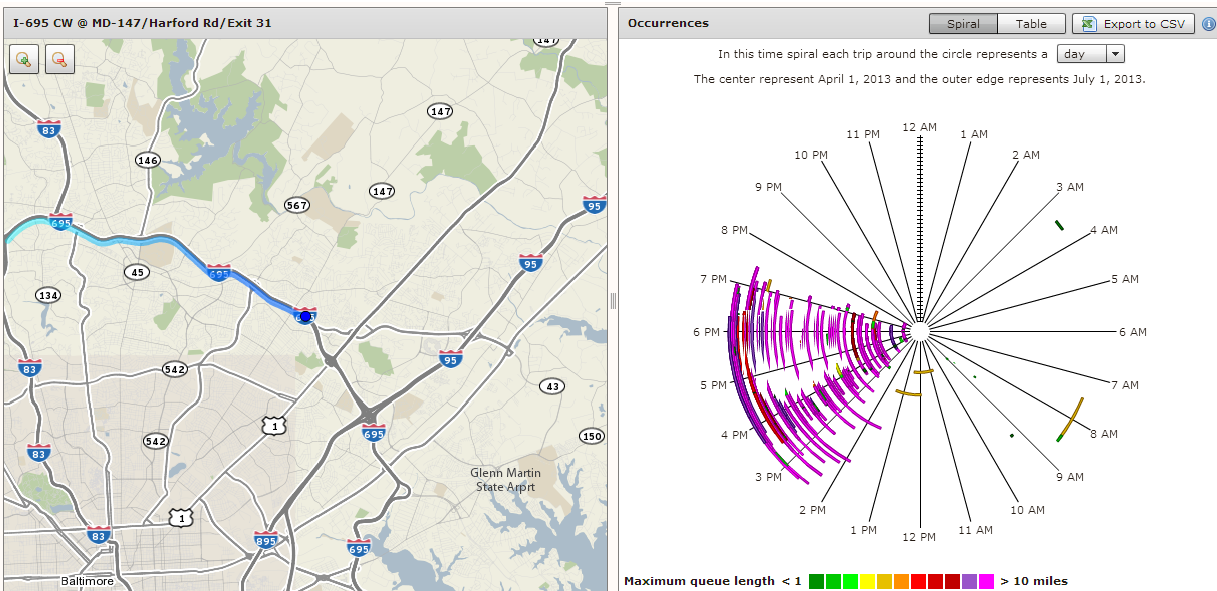
#2 Ranked Bottlenecks in the Baltimore Region – 2nd Quarter 2013

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 N @ MD-175	3h 09m	11.16	94	198,330

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

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

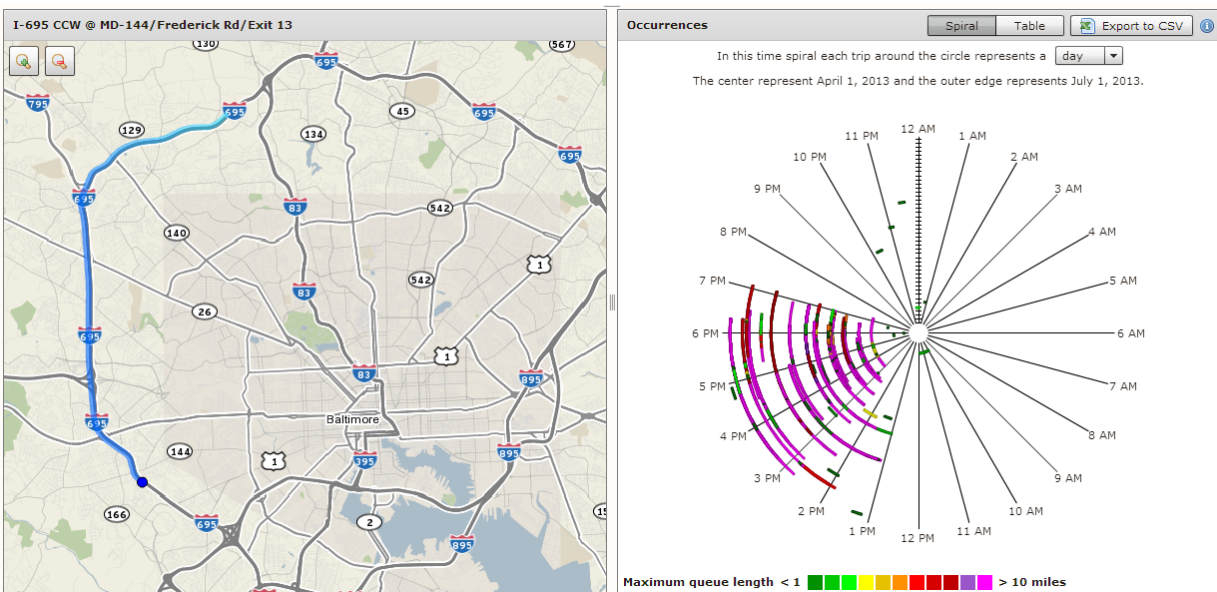| Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CW @ MD-147/Harford Rd/Exit 31	2h 48m	10.59	96	170,745

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 – 2nd Quarter 2013

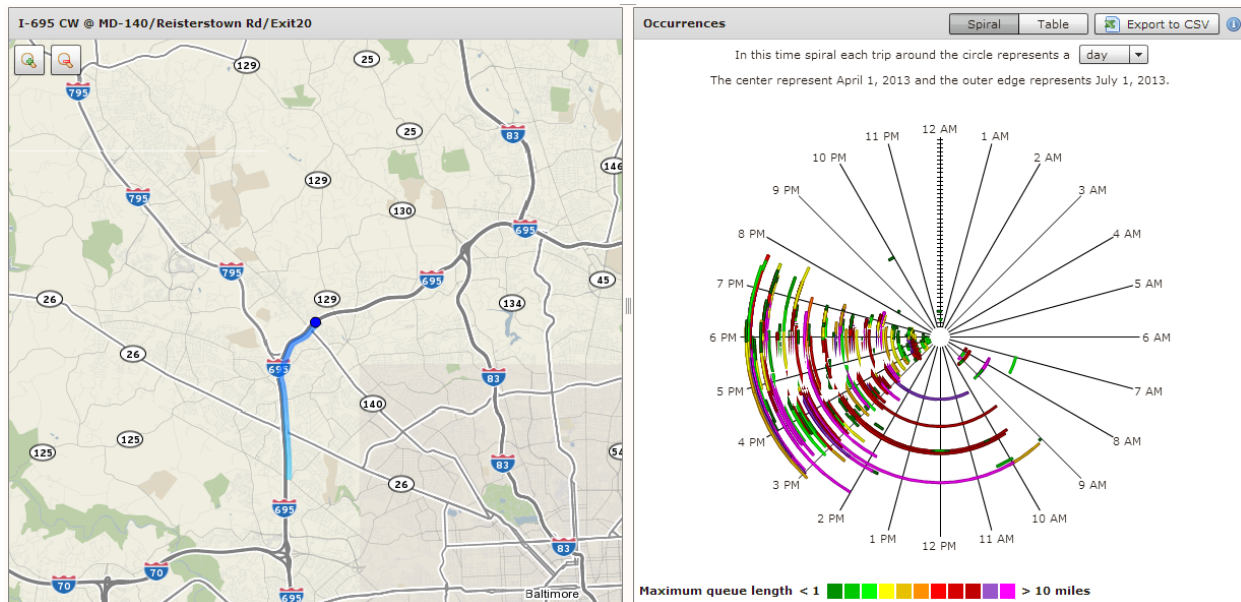| Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-695 CCW @ MD-144/Frederick Rd/Exit 13	2h 10m	15.75	72	147,380

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

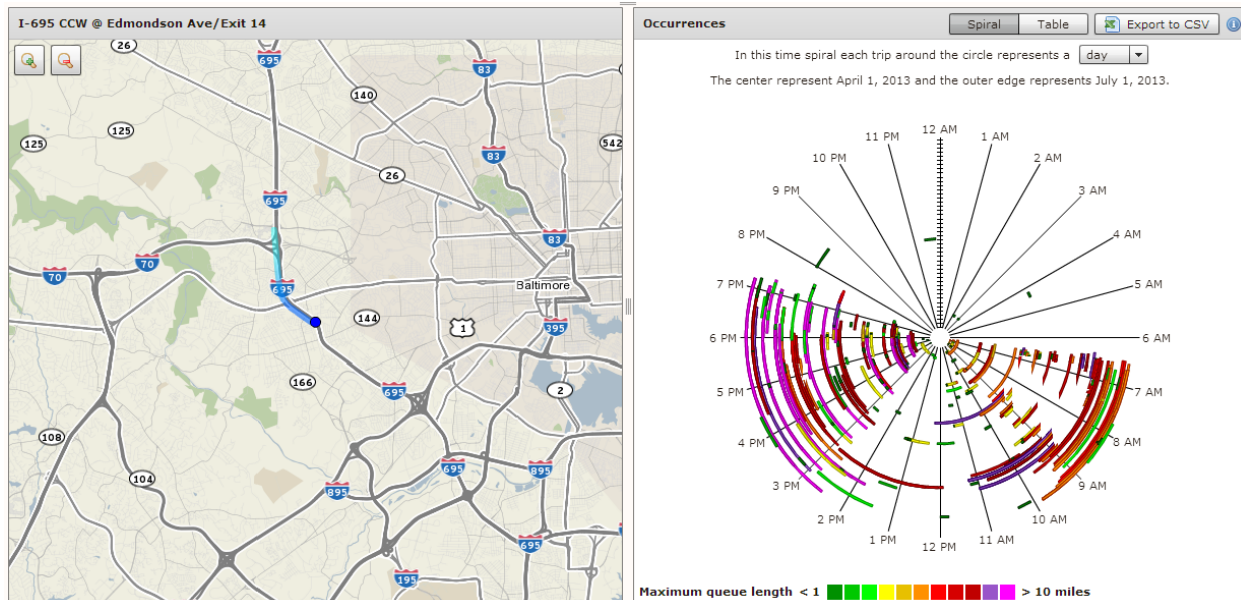## #5 Ranked Bottlenecks in the Baltimore Region – 2ndQuarter 2013

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-95 N CW @ MD-140/Reisterstown Rd/Exit 20	2h 05m	5.18	186	120,366

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

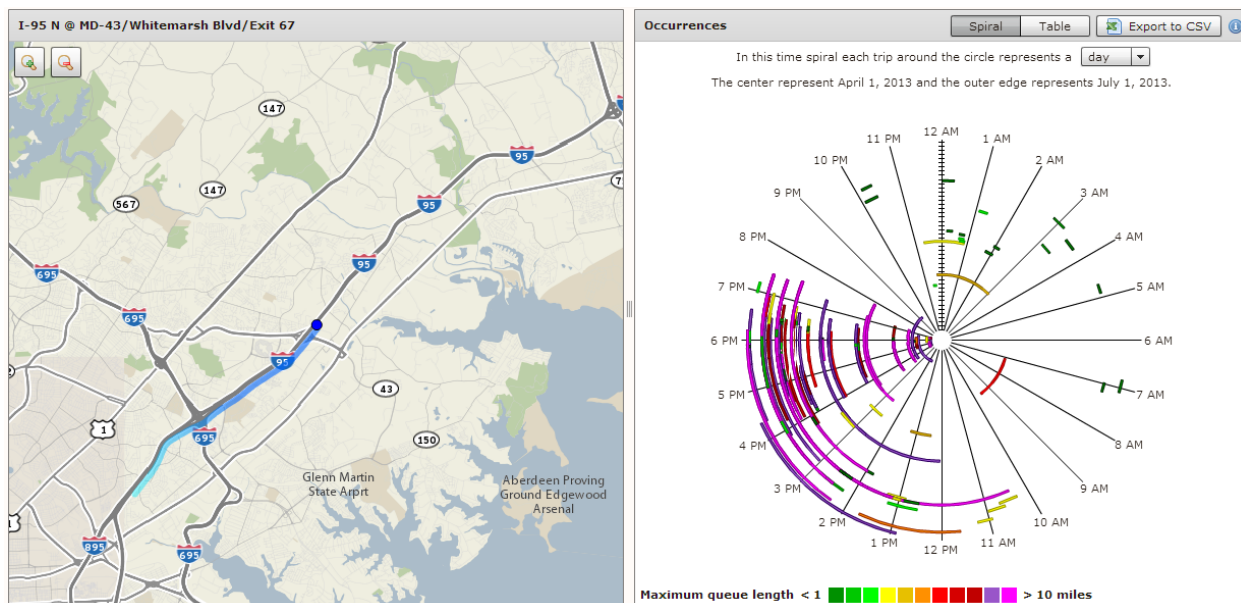## #6 Ranked Bottlenecks in the Baltimore Region – 2nd Quarter 2013

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

#7 Ranked Bottlenecks in the Baltimore Region – 2nd Quarter 2013

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
I-95 N @ MD-43/White Marsh Blvd	2h 14m	7.95	97	103,350

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

#8 Ranked Bottlenecks in the Baltimore Region – 2nd Quarter 2013

| Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 N @ I-195	1h 02m	4.11	307	78,310
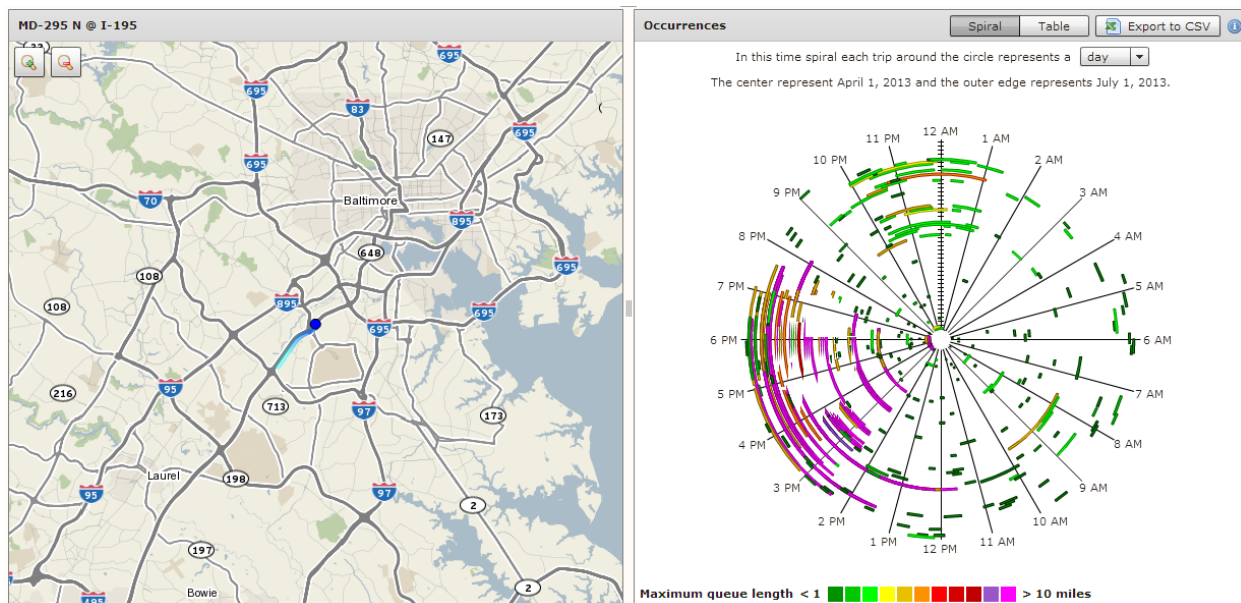
Notes: A $6 million construction project is under way that includes replacing two bridges on West Nursery Road over the parkway.
Source: http://apps.roads.maryland.gov/WebProjectLifeCycle/ProjectInformation.aspx?projectno=AA259512

# #9 Ranked Bottlenecks in the Baltimore Region – 2nd Quarter 2013

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 S @ Powder Mill Rd	2h 33m	8.30	58	73,655
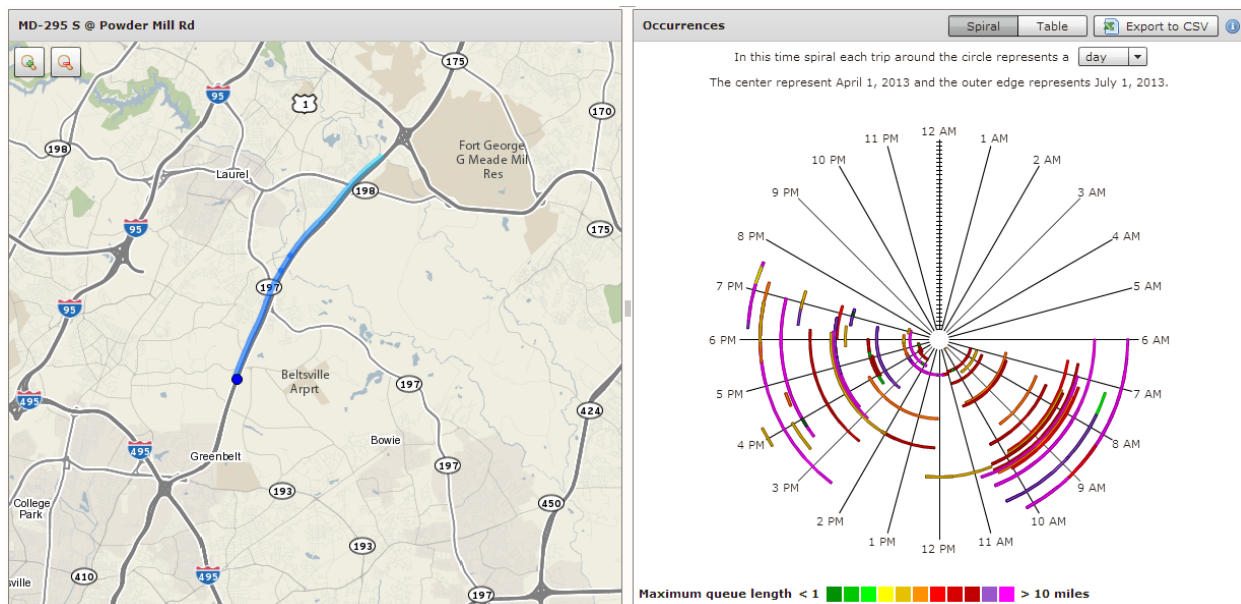
Notes: Southbound congestion extending from Powder Mill Rd just barely extending into the southern portion of the Baltimore region near Fort Meade
Source: VPP Suite

#10 Ranked Bottlenecks in the Baltimore Region – 2nd Quarter 2013

Location	Average Duration	Average max length (miles)	Occurrences	*Impact Factor
MD-295 S @ MD-193	2h 29m	10.66	35	55,586
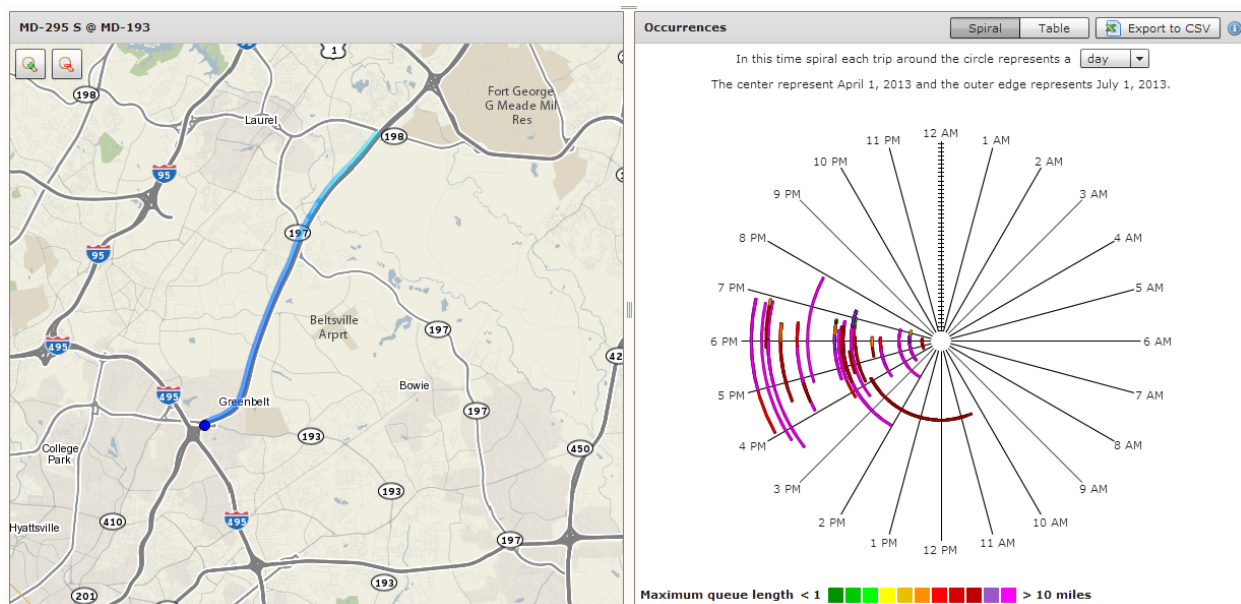
Notes: Southbound evening congestion extending from the Capital Beltway extending into the southern portion of the Baltimore region near MD-32
Source: VPP Suite

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
Dunbar Brooks, Manager of Data Development

Baltimore Metropolitan Council