CONGESTION REPORT
3rd Quarter 2016

A quarterly update of the National Capital Region's traffic congestion, travel time reliability, top-10 bottlenecks and featured spotlight

October 4, 2017

National Capital Region
Transportation Planning Board

ABOUT TPB

Transportation planning at the regional level is coordinated in the Washington area by the National Capital Region Transportation Planning Board (TPB). Members of the TPB include representatives of the transportation agencies of the states of Maryland and Virginia, and the District of Columbia, local governments, the Washington Metropolitan Area Transit Authority, the Maryland and Virginia General Assemblies, and nonvoting members from the Metropolitan Washington Airports Authority and federal agencies. The TPB is staffed by the Department of Transportation Planning of the Metropolitan Washington Council of Governments.

CREDITS

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CONGESTION REPORT

3rd Quarter 2016

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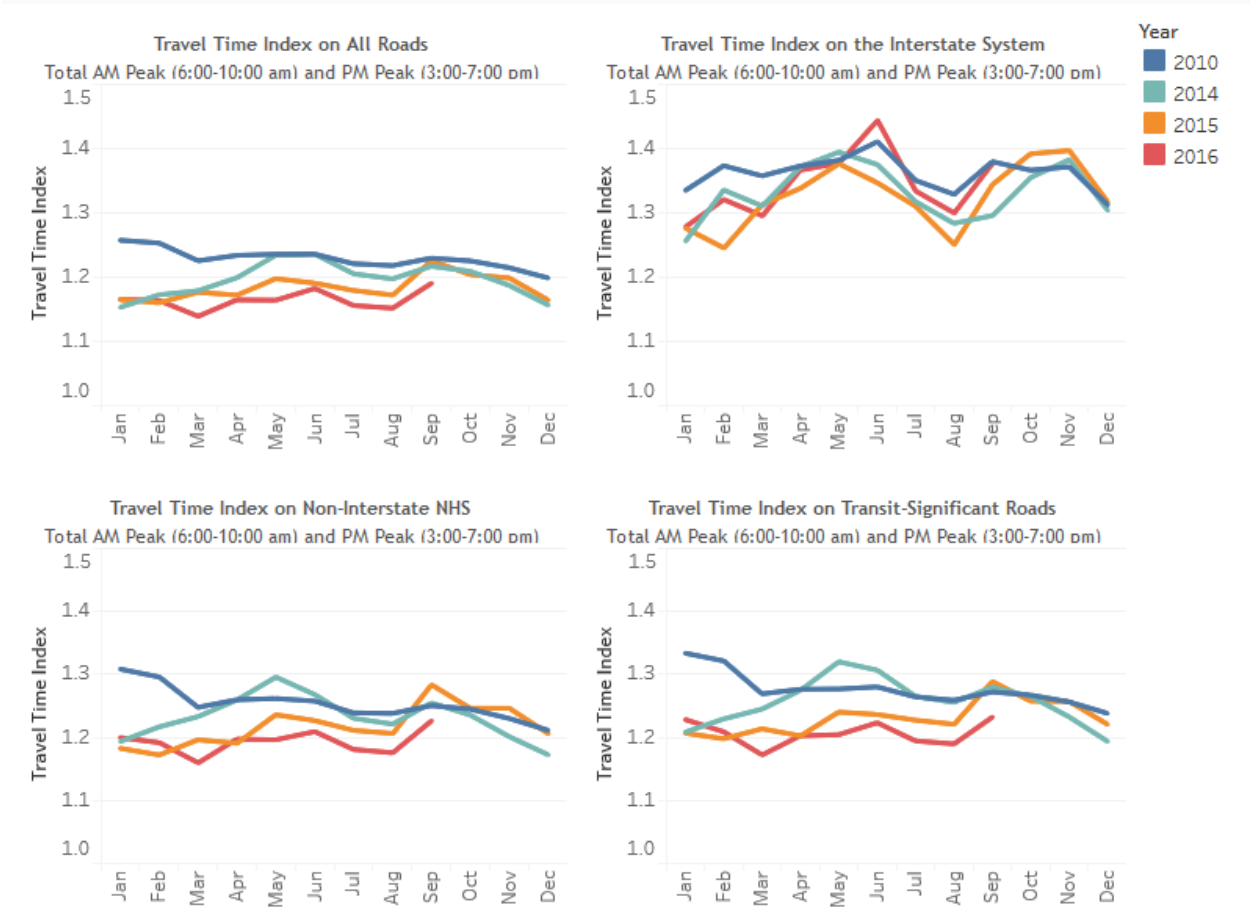
CONGESTION – TRAVEL TIME INDEX (TTI)

Interstate System		
TTI 3rd Quarter 2016:	1.34	↑2.7% or 0.04[1]
TTI Trailing 4 Quarters:	1.35	↑2.2% or 0.03[2]
Transit-Significant[4]		
TTI 3rd Quarter 2016:	1.21	↓3.2% or -0.04
TTI Trailing 4 Quarters:	1.22	↓0.9% or -0.01
Non-Interstate NHS[3]		
TTI 3rd Quarter 2016:	1.19	↓3.2% or -0.04
TTI Trailing 4 Quarters:	1.20	↓0.5% or -0.01
All Roads		
TTI 3rd Quarter 2016:	1.17	↓2.2% or -0.03
TTI Trailing 4 Quarters:	1.17	↓1.0% or -0.01

[1] Compared to 3rd Quarter 2015; [2]Compared to one year earlier;[3] NHS: National Highway System; [4] See "Background" section.

Figure 1 Monthly Travel Time Index for Total AM peak (6:00-10:00 am) and PM peak (3:00-7:00 pm)



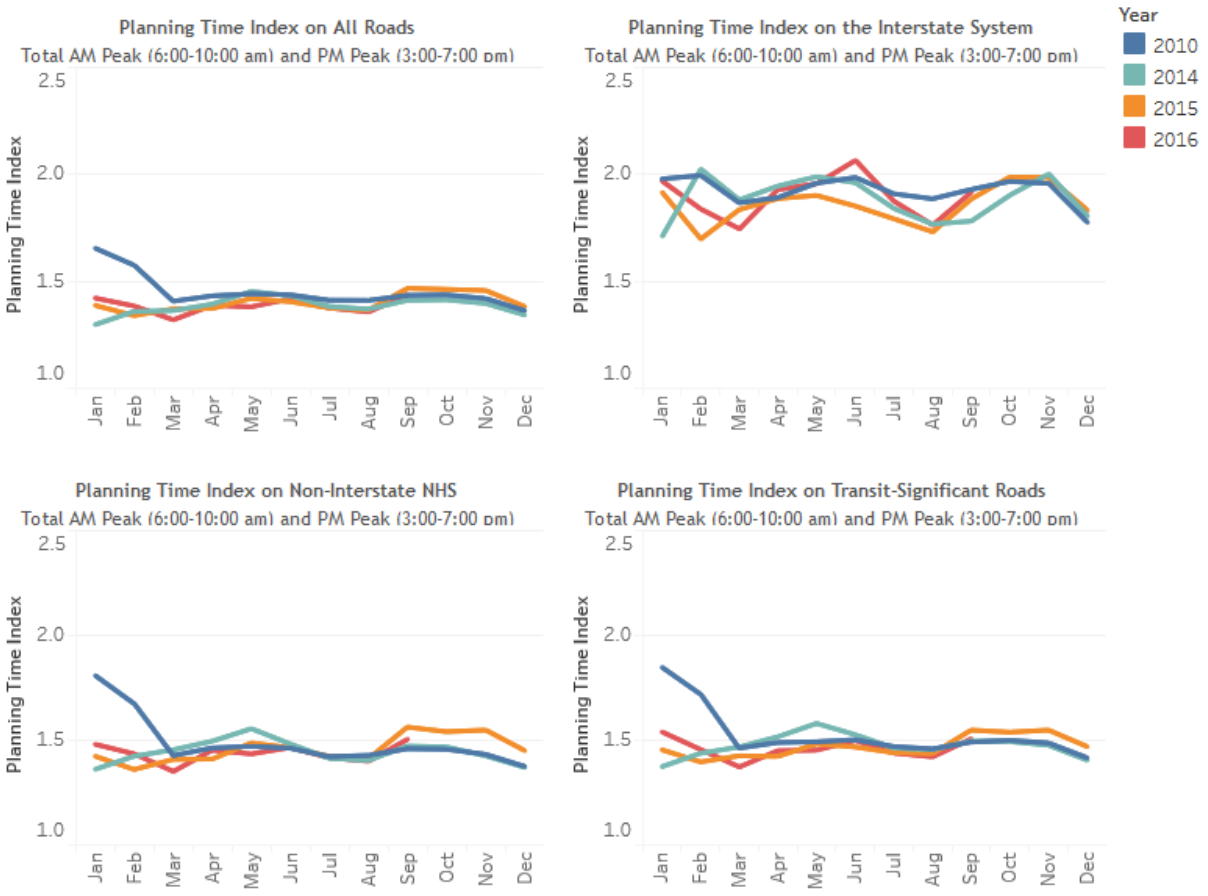
Travel Time Index (TTI), defined as the ratio of actual travel time to free-flow travel time, measures the intensity of congestion. The higher the index, the more congested traffic conditions it represents, e.g., TTI = 1.00 means free flow conditions, while TTI = 1.30 indicates the actual travel time is 30% longer than the free-flow travel time.

UNRELIABILITY – PLANNING TIME INDEX (PTI)

Interstate System		
PTI 3rd Quarter 2016:	1.85	↑2.7% or 0.05[1]
PTI Trailing 4 Quarters:	1.90	↑2.9% or 0.05[2]
Transit-Significant[4]		
PTI 3rd Quarter 2016:	1.46	↓1.3% or -0.02
PTI Trailing 4 Quarters:	1.47	↑1.4% or 0.02
Non-Interstate NHS[3]		
PTI 3rd Quarter 2016:	1.44	↓1.8% or -0.03
PTI Trailing 4 Quarters:	1.46	↑1.5% or 0.02
All Roads		
PTI 3rd Quarter 2016:	1.39	↓0.9% or -0.01
PTI Trailing 4 Quarters:	1.40	↑0.8% or 0.01

[1] Compared to 3rd Quarter 2015;[2]Compared to one year earlier; [3] NHS: National Highway System; [4] See "Background" section.

Figure 2 Monthly Planning Time Index for Total AM peak (6:00-10:00 am) and PM peak (3:00-7:00 pm)

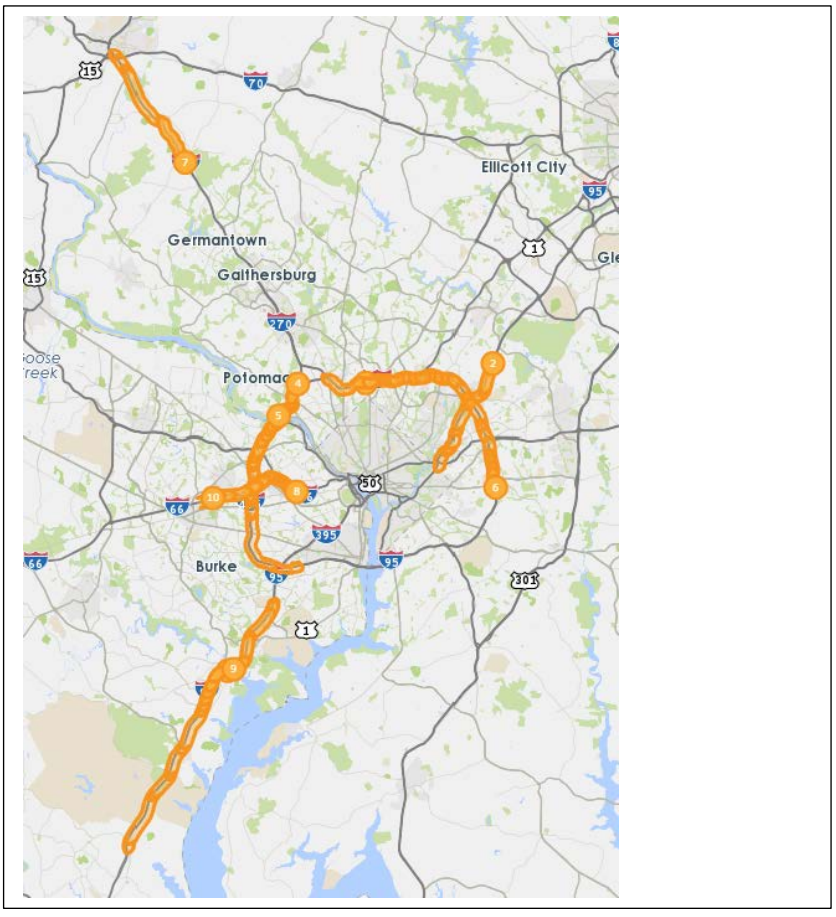


> ***Planning Time Index*** *(PTI), defined as the ratio of 95th percentile travel time to free flow travel time, measures travel time reliability. The higher the index, the less reliable traffic conditions it represents, e.g., PTI = 1.30 means a traveler has to budget 30% longer than the uncongested travel time to arrive on time 95% of the instances (i.e., 19 out of 20 trips).*

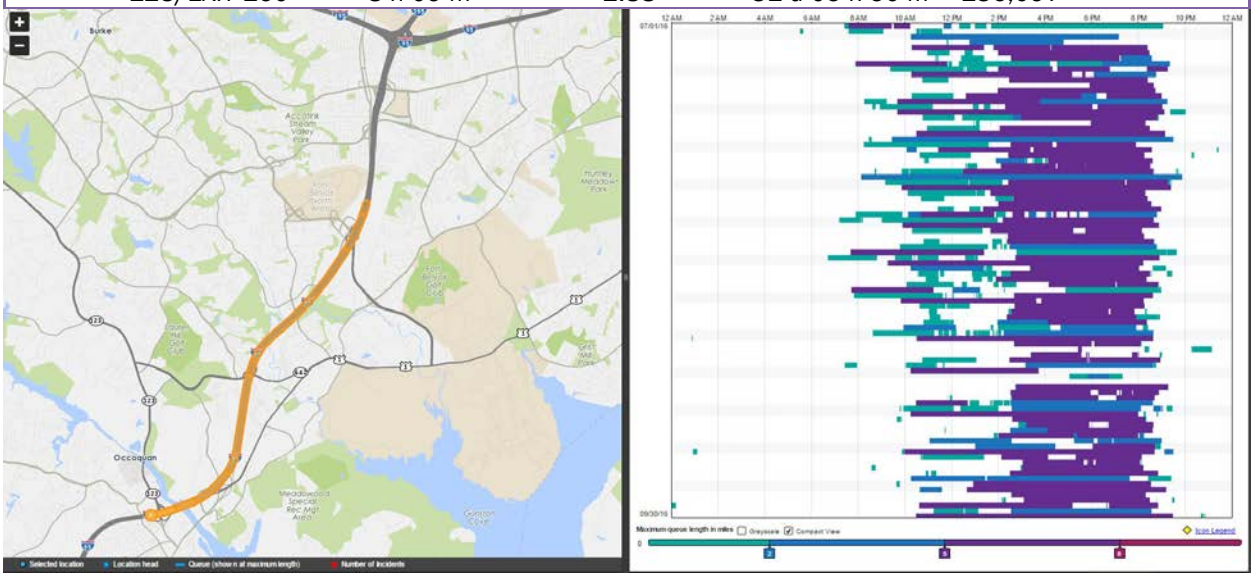
TOP 10 BOTTLENECKS

Rank (Last Quarter Rank)	Location	Average duration	Average max length (miles)	Total duration	Impact factor
1 (1)*	I-95 S @ VA-123/EXIT 160	8 h 09 m	2.88	31 d 05 h 50 m	136,097
2 (2)	BALTIMORE-WASHINGTON PKWY N @ POWDER MILL RD	7 h 17 m	2.75	27 d 23 h 07 m	94,142
3 (14)	DC-295 S @ EAST CAPITOL ST	10 h 46 m	1.3	41 d 06 h 49 m	78,882
4 (3)	I-495 CCW @ MD-97/GEORGIA AVE/EXIT 31	4 h 11 m	2.73	16 d 02 h 08 m	74,102
5 (8)	I-66 E @ SYCAMORE ST/EXIT 69	7 h 14 m	1.86	27 d 18 h 15 m	72,505
6 (5)	I-495 CW @ CLARA BARTON PKWY/EXIT 41	4 h 40 m	3.2	17 d 22 h 31 m	72,256
7 (4)	I-495 CW @ I-270 SPUR	2 h 25 m	4.18	9 d 06 h 20 m	71,830
8 (9)	I-95 N @ VA-123/EXIT 160	4 h 21 m	3.12	16 d 16 h 40 m	70,787
9 (6)	I-495 CW @ MD-214/CENTRAL AVE/EXIT 15	3 h 06 m	3.04	11 d 22 h 31 m	62,133
10 (10)	I-66 W @ VADEN DR/EXIT 62	4 h 55 m	1.42	18 d 20 h 34 m	59,729

** See "Bottlenecks" section in the "Background" chapter for ranking variability from quarter to quarter.*

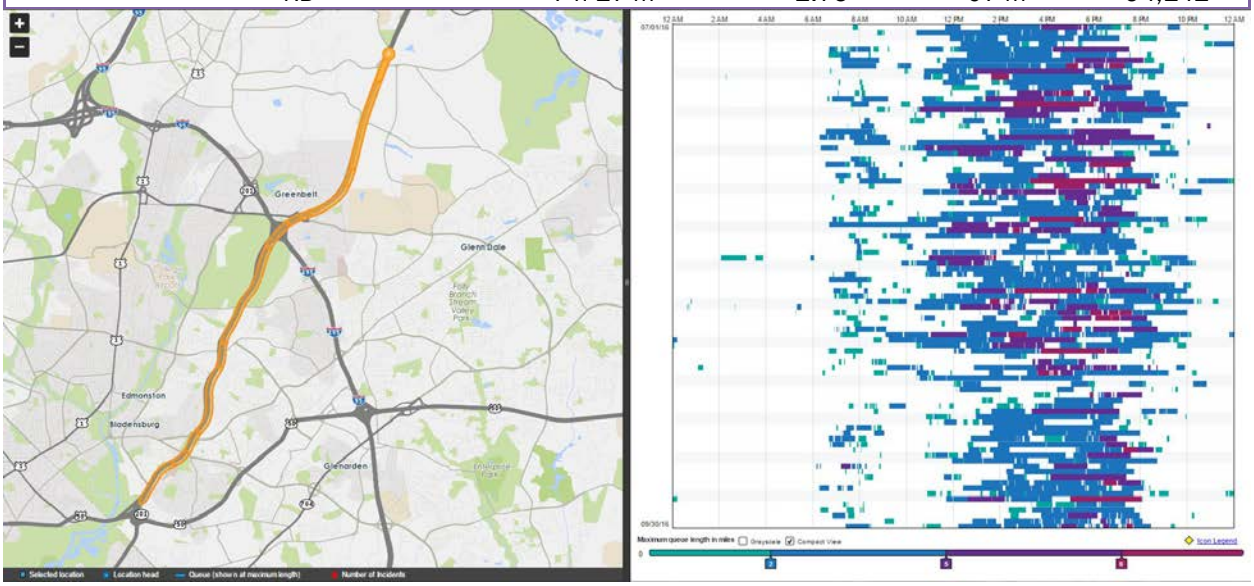


Rank	Location	Average duration	Average max length (miles)	Total duration	Impact factor*
1	I-95 S @ VA-123/EXIT 160	8 h 09 m	2.88	31 d 05 h 50 m	136,097



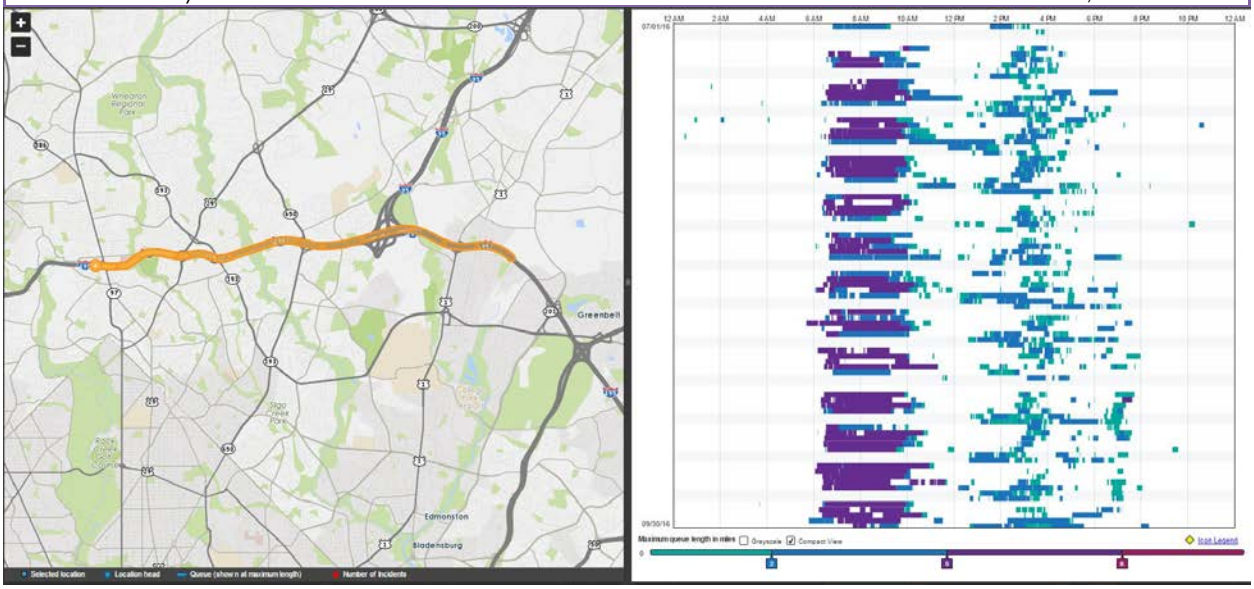
** The Impact Factor of a bottleneck is simply the product of the Average Duration (minutes), Average Max Length (miles) and the number of occurrences.*

Rank	Location	Average duration	Average max length (miles)	Total duration	Impact factor
2	BALTIMORE-WASHINGTON PKWY N @ POWDER MILL RD	7 h 17 m	2.75	27 d 23 h 07 m	94,142



Rank	Location	Average duration	Average max length (miles)	Total duration	Impact factor
3	DC 295 S @ East Capitol Street	10 h 46 m	1.3	41 d 06 h 49 m	78,882

Rank	Location	Average duration	Average max length (miles)	Total duration	Impact factor
4	I-495 CCW @ MD-97/GEORGIA AVE/EXIT 31	4 h 11 m	2.73	16 d 02 h 08 m	74,102



Rank	Location	Average duration	Average max length (miles)	Total duration	Impact factor
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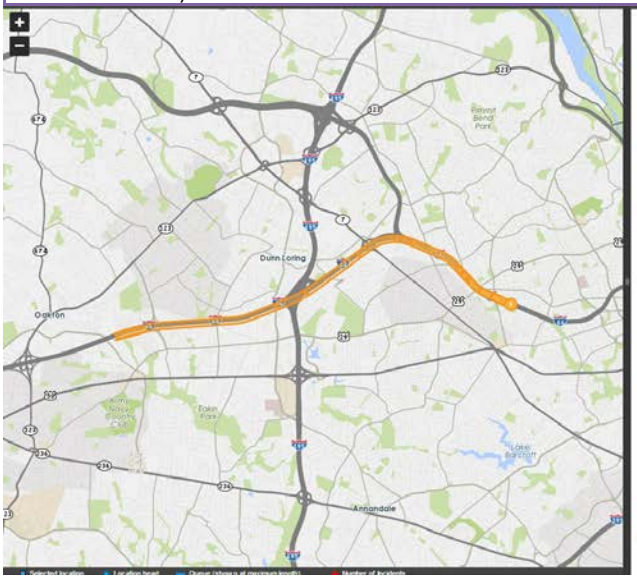

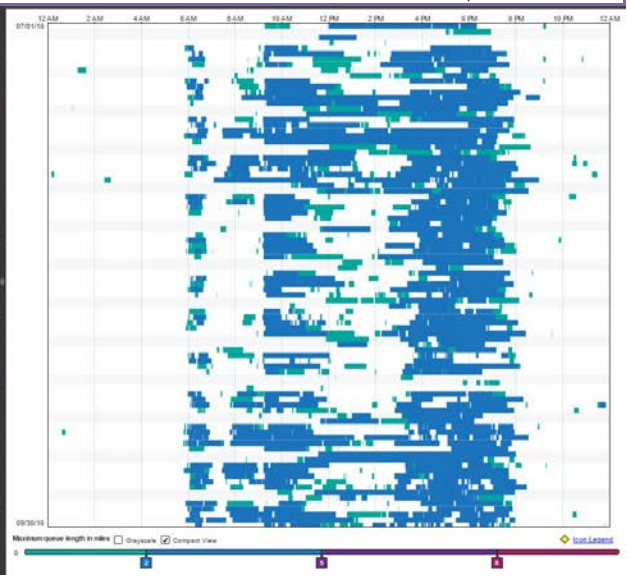

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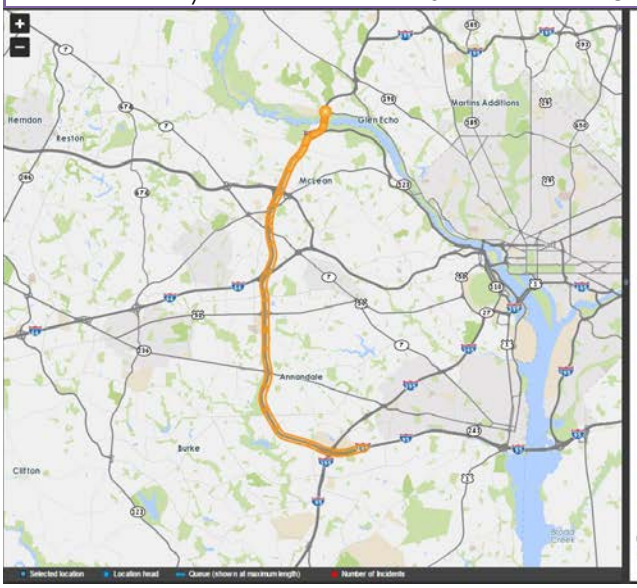
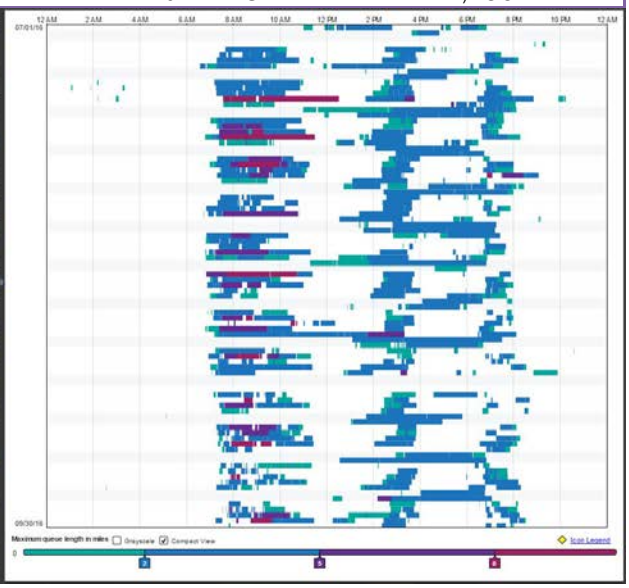
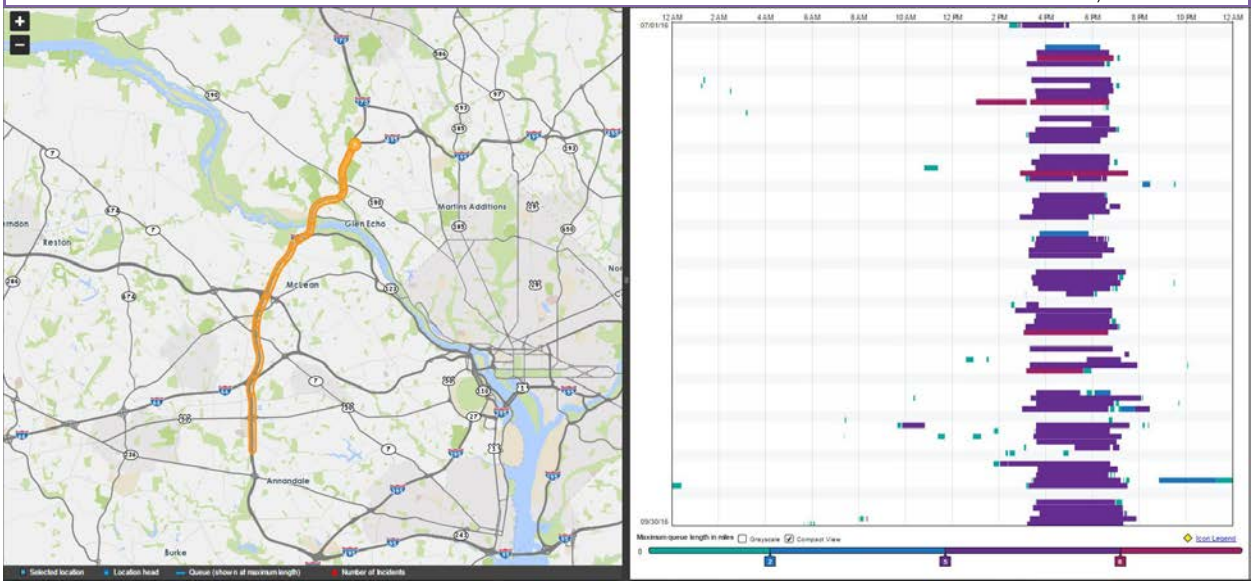




Rank	Location	Average duration	Average max length (miles)	Total duration	Impact factor
7	I-495 CW @ I-270 SPUR	2 h 25 m	4.18	9 d 06 h 20 m	71,830



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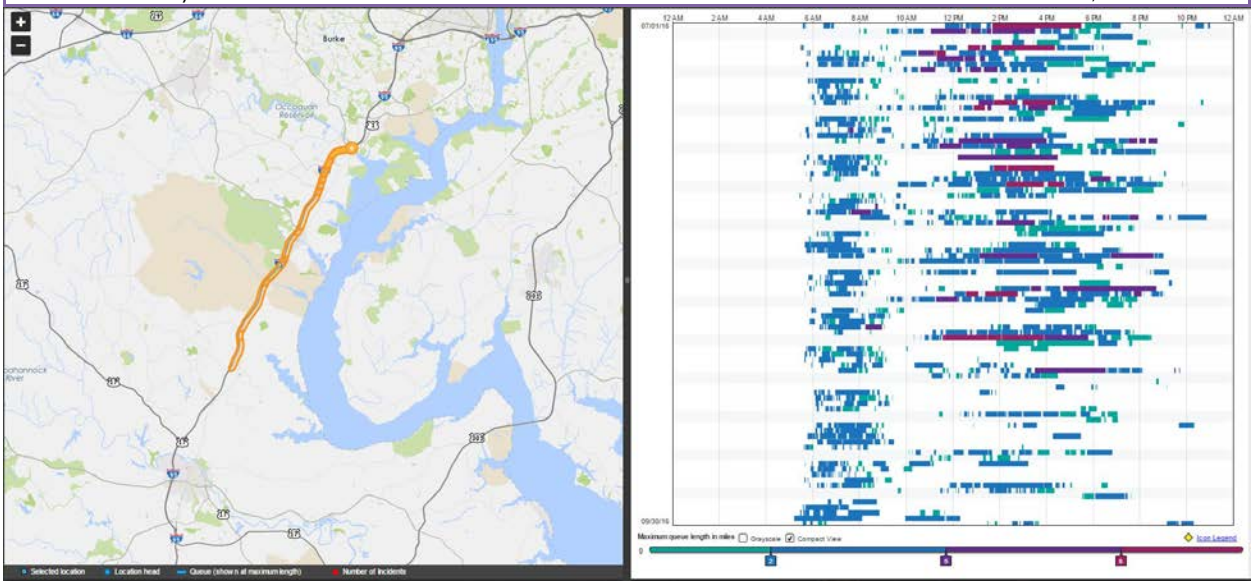
8	I-95 N @ VA-123/EXIT 160	4 h 21 m	3.12	16 d 16 h 40 m	70,787



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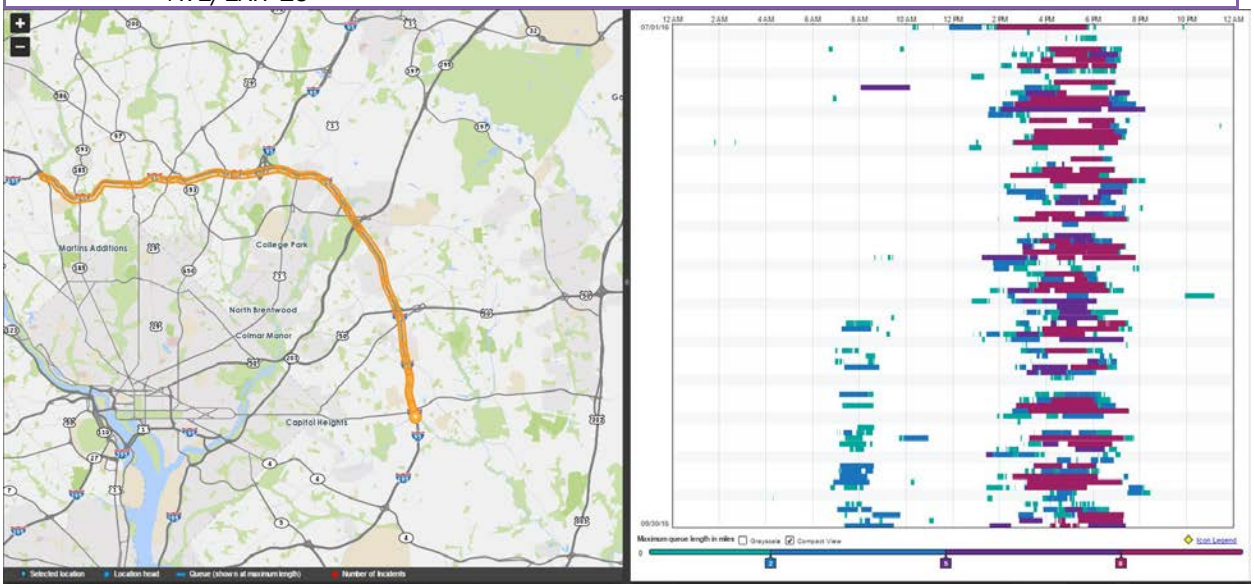


Rank	Location	Average duration	Average max length (miles)	Total duration	Impact factor
10	I-66 W @ VADEN DR/EXIT 62	4 h 55 m	1.42	18 d 20 h 34 m	59,729

CONGESTION MAPS

Figure 3. Travel Time Index during weekday 8: 00-9:00 A.M. in 3nd Quarter 2016

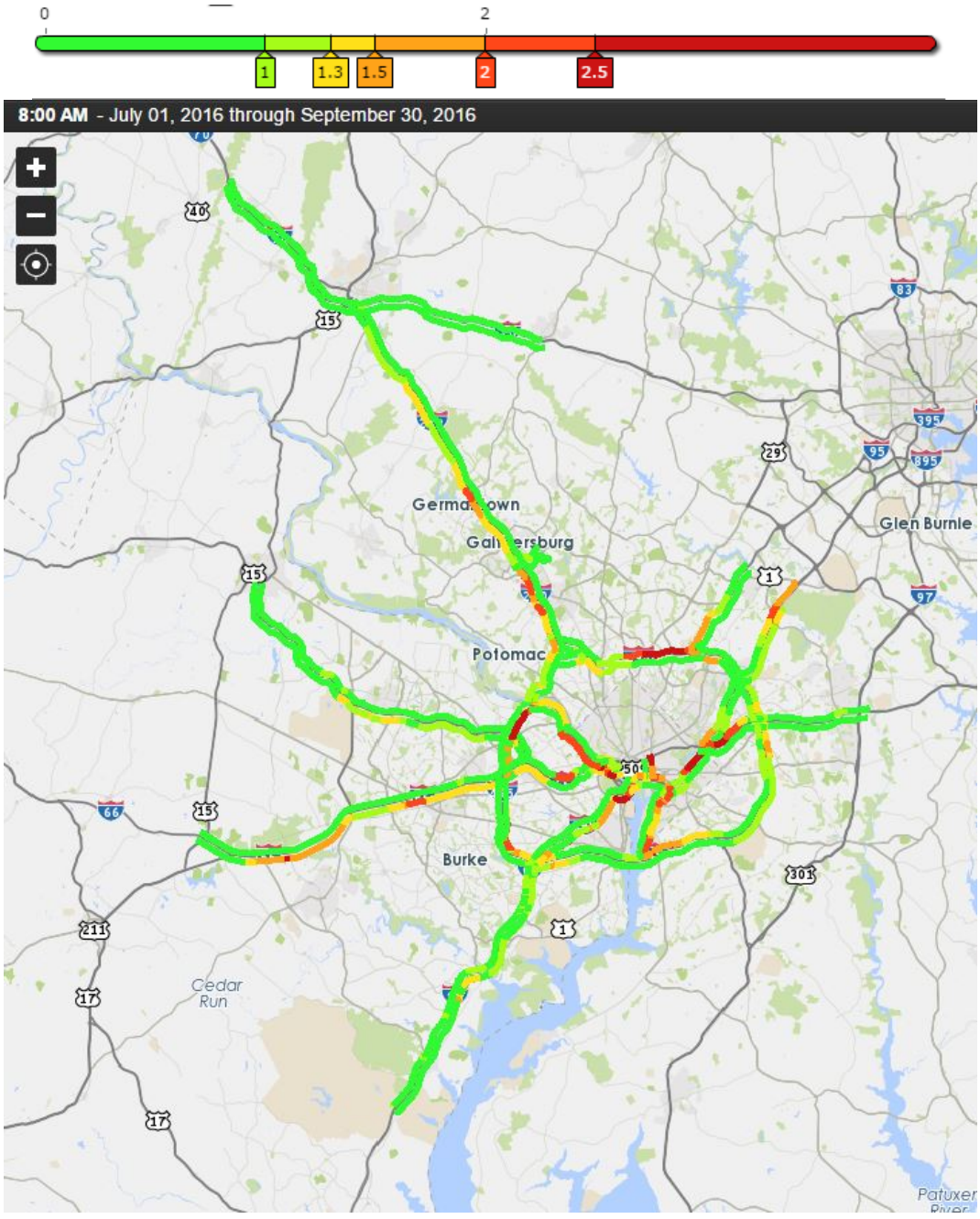
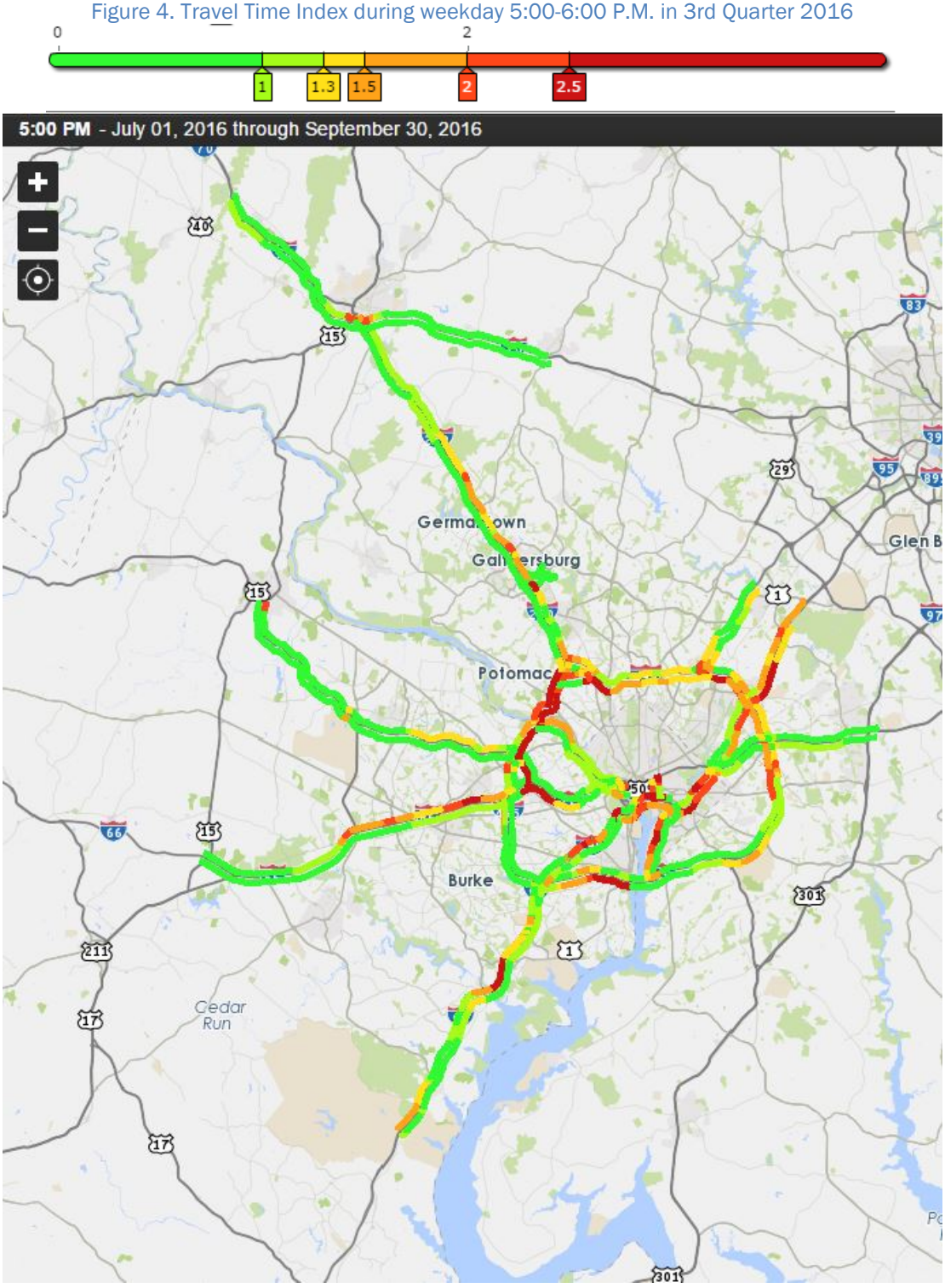


Figure 4. Travel Time Index during weekday 5:00-6:00 P.M. in 3rd Quarter 2016



2016Q3 SPOTLIGHT – 2ND HIGHEST "SEPTEMBER SHOCK" SINCE 2010 OBSERVED

Introduction

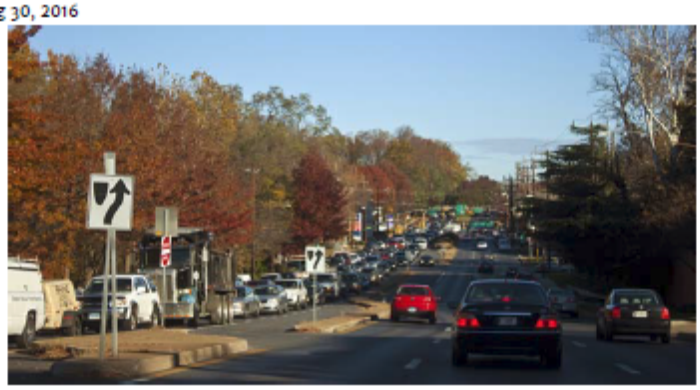
This quarterly spotlight reproduces the August 30, 2016 edition of TPB News, with a post-publication addendum. The August 30 article projected travel conditions after the then-upcoming Labor Day holiday weekend, based on data from recent years. Now we can add what actually happened after Labor Day 2016, the second-highest September Shock since this series of analyses began with data for 2010.

Metropolitan Washington Council of Governments

TPB NEWS

Get ready for traffic to pick back up as part of "September Shock"

Aug 30, 2016



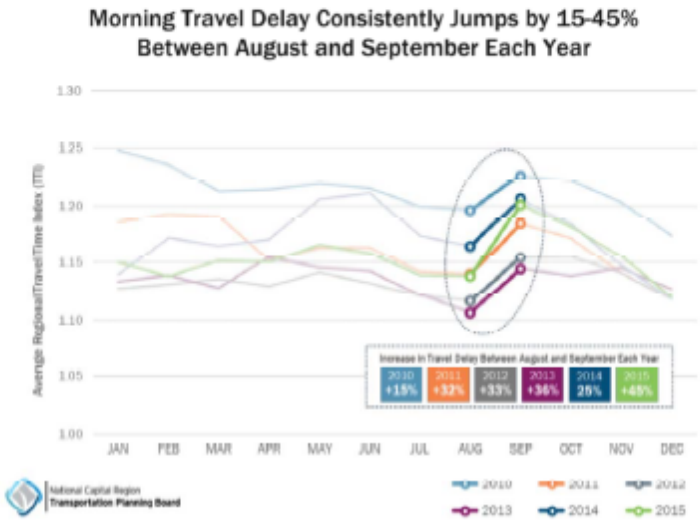
(Photo by thisisbossi)

Next week marks the beginning of what area traffic experts have dubbed "September Shock," the month-long phenomenon in which traffic delays on the region's roadways bounce back in a big way from their annual summertime lull. This jump is one of the most predictable and pronounced traffic events of the year, according to a recent analysis by researchers at the TPB.

One of the most predictable and pronounced traffic events of the year

The days leading up to two major holidays—Memorial Day and Thanksgiving Day—usually grab headlines for having some of the worst traffic of the year. As holiday travelers spill onto area roadways on their way out of town, traffic picks up and travel speeds drop. That's what happens every September, too—sort of. This time, it's commuter traffic picking up after summer comes to a close.

In its recent analysis, the TPB compared average weekday travel times in August to those in September across the entire road network for the past six years. The analysis found that the average regional increase in morning travel delay between the two months ranged from as little as 15% in 2010 to as much as 45% in 2015. That means that an extra hour spent sitting in traffic during your morning commute in August could have grown to 90 minutes or more in September.



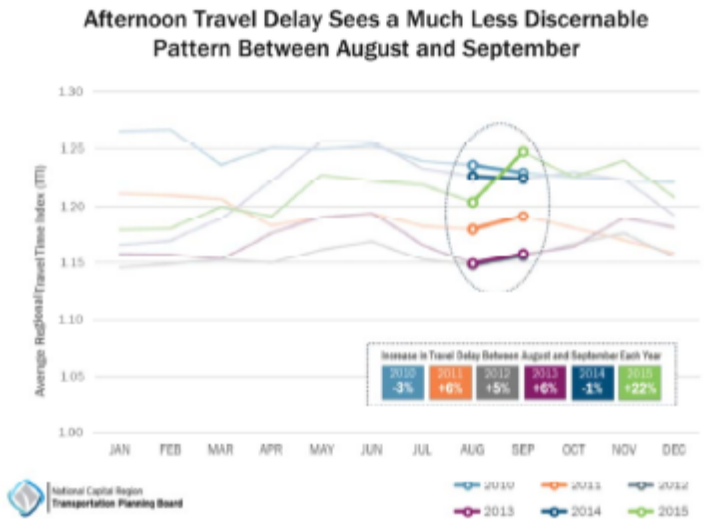
For everyday travelers, the extra delay can add up to hours of extra time spent in the car each week. Regionally, added up across all travelers, it amounts to a drain on productivity and economic competitiveness.

The annual jump is so consistent from year to year that the TPB analysts say it's one of the most predictable and pronounced traffic events the region sees. Their analysis also revealed that September is consistently one of the region's top two or three worst traffic months.

It's mainly a morning phenomenon—and here's why that's important

The effects of September Shock are not spread evenly throughout the day, and that gives the TPB's traffic analysts clues about the exact cause of the increases.

According to the analysis, afternoon travel delays see a much less discernable pattern between August and September. Most of the past six years saw some increase in afternoon delays, but they were far smaller than the ones observed during the morning commute. Two years even saw a decrease in congestion.



This difference points to changes in morning travel behaviors as the main culprit of September Shock—and is a caution to area drivers as they plan their morning commutes.

The TPB's analysts surmise that the morning jump results mainly from changes in what times of day people travel. With schools back in session, parents who must ferry or send their children off to school again at the same time each morning are probably less free to choose earlier or later times to travel to work. People are less likely to take time off from work for summertime sporting events or recreational activities—days when they might have still driven, just not at peak commuting times. And the return of Congress and the normal seasonal rhythms of work all lead to more drivers trying to hit the road at around the same time each morning.

The TPB's traffic analysts advise commuters to be mindful of when they choose to leave for work in the morning. If they can adjust their departure time earlier or later to avoid the worst back-ups, they should. September might also be a good time to try teleworking to avoid being on the roads altogether.

Related: Detailed Traffic Information Helps Explain "Back-to-School" Jump in Travel Delays

"Terrible Traffic Tuesday" isn't always so terrible

In recent years, the Tuesday after Labor Day has received the nickname of "Terrible Traffic Tuesday." With the end of summer and schools and Congress back in session, it seems to many that there is a sudden jump in traffic headaches. In its recent analysis, however, the TPB found that Terrible Traffic Tuesday isn't always the traffic nightmare it's made out to be.

Daily Morning Traffic Conditions in August and September 2015

More: See how "Terrible Traffic Tuesday" stacked up from 2010 to 2015 in this animation

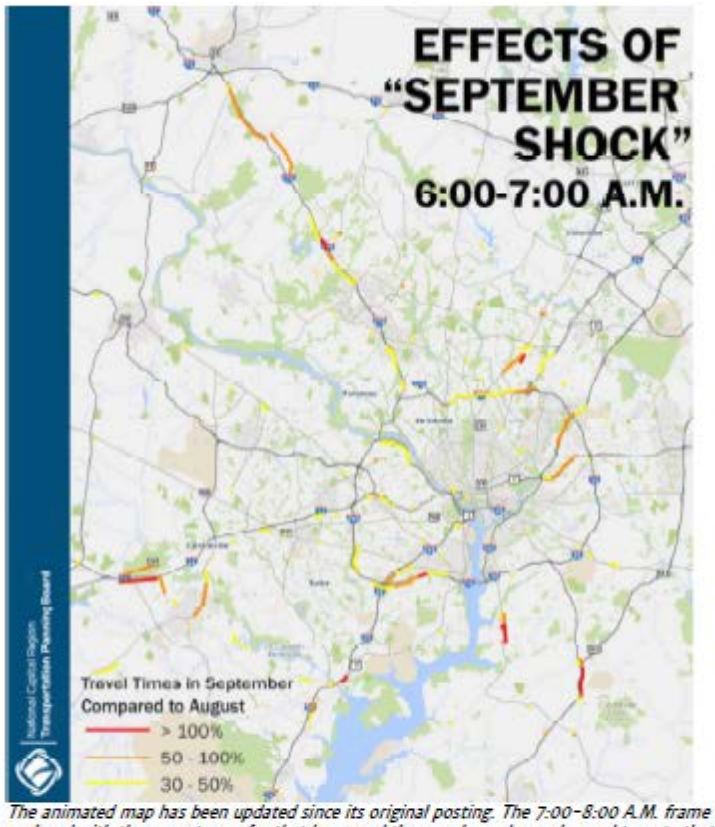
In 2015, the Tuesday after Labor Day indeed saw worse traffic than any day in August—making it a memorable kick-off to the longer September Shock phenomenon. But there were worse days to come, both that week and the next.

Four of the other five years the TPB studied saw no clear "Terrible Traffic Tuesday" phenomenon. Instead, in those years, the Tuesday after Labor Day blended in with the broader ramp-up of traffic that occurred between August and September.

Here's where last year's "September Shock" was felt most

Regional analyses and averages can gloss over the local variations in traffic patterns that give different travelers different individual experiences. Some routes and times see increases in traffic that far exceed the regional average, while others might even see slight improvements.

The animated maps below show what routes and times saw the greatest increases in traffic between August and September last year. **Click the map image below to open and play the hour-by-hour animation.**



The animated map has been updated since its original posting. The 7:00-8:00 A.M. frame was replaced with the correct map for that hour, and the map legend was changed to note that what is shown on the map are changes in travel times, not travel delay.

Addendum - Observations

"September Shock" was observed in 2016, as predicted. What may not have been expected is that it was the second highest since 2010. From a regional perspective, the travel time index (TTI) increased to 1.19 in September from 1.15 in August. The difference of 0.04 indicates that the actual travel time is 4% longer than the free-flow travel time in September than in August - a significant difference on the regional scale.

The magnitude of TTI growth between August and September on the region's Interstate system was 0.08, the third highest increase since 2010. Both non-Interstate national highway system (NHS) and transit-significant roads had the second highest increase on TTI respectively; the increments were 0.05 for non-Interstate NHS and 0.04 for transit-significant roads in the region. These observations suggest that the "September Shock" would be more noticeable on the Interstate system than on the non-Interstate NHS or transit-significant roads. All these observations are supported by the TTI estimations shown in Table 1 below.

Table 1 TTI Estimations in August and September by Facility Types

Year	All Roads		Interstate System		Non-Interstate NHS		Transit-Significant Roads	
	Aug	Sep	Aug	Sep	Aug	Sep	Aug	Sep
2010	1.22	1.23	1.33	1.38	1.24	1.25	1.26	1.27
2011	1.16	1.19	1.25	1.35	1.19	1.23	1.21	1.24
2012	1.13	1.16	1.23	1.28	1.16	1.19	1.17	1.20
2013	1.13	1.15	1.24	1.29	1.15	1.19	1.17	1.20
2014	1.20	1.22	1.28	1.30	1.22	1.25	1.26	1.28
2015	1.17	1.23	1.25	1.34	1.21	1.28	1.22	1.29
2016	1.15	1.19	1.30	1.38	1.18	1.23	1.19	1.23

NOTE: The highlights show where the highest increase of TTI since 2010.

Table 2 PTI Estimations in August and September by Facility Types

Year	All Roads		Interstate System		Non-Interstate NHS		Transit-Significant Roads	
	Aug	Sep	Aug	Sep	Aug	Sep	Aug	Sep
2010	1.41	1.43	1.89	1.93	1.43	1.46	1.46	1.49
2011	1.31	1.37	1.74	1.94	1.35	1.44	1.38	1.44
2012	1.26	1.31	1.70	1.76	1.30	1.38	1.31	1.38
2013	1.26	1.30	1.71	1.73	1.29	1.36	1.31	1.37
2014	1.37	1.41	1.77	1.78	1.40	1.47	1.46	1.50
2015	1.37	1.47	1.73	1.88	1.41	1.56	1.44	1.55
2016	1.36	1.44	1.76	1.92	1.40	1.50	1.42	1.51

NOTE: The highlights show where the highest increase of TTI since 2010.

Planning Time Index (PTI) estimations shown in Table 2 also agreed with the "September Shock" phenomenon in the National Capital Region. From a regional perspective, a traveler would need to budget 8% longer than the uncongested travel time to arrive on time 95% of the instances in September (PTI=1.44) than in August (PTI=1.36).

According to the PTI increments of September Shock shown in Table 2, it may be worthwhile to dig deeper into conditions on the regional Interstate system due to its 16% lower reliable traffic condition in 2016, as well as a trend of decreasing reliability since 2012.

Outlook

September Shock seems to be here to stay for the region. Travelers should expect longer travel time and less reliable traffic conditions in September versus August. This phenomenon has more significant impacts on the regional Interstate system than on non-Interstate NHS or on transit-significant roads. There are a number of factors that contribute to this shockwave, such as students going back to school after summer break, or Congress reconvening. Additionally, conditions vary from year to year, due to quirks of the calendar, school and Congressional schedules, weather, and perhaps other factors. We will continue to study the September Shock in order to gain more insight as to why it occurs, and look into strategies to lessen the impacts.

National Capital Region
Transportation Planning Board

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