



MEMORANDUM

TO: TPB Technical Committee
FROM: Wenjing Pu, TPB Transportation Engineer
SUBJECT: Traffic Conditions During SafeTrack Surge 1, June 4-16, 2016
DATE: July 7, 2016

This memorandum provides an overview of the traffic conditions during SafeTrack Surge 1 from a regional perspective and identifies the most-impacted time periods, road segments and routes.

SAFETRACK SURGE 1

SafeTrack is an accelerated track work plan of the Washington Metropolitan Area Transit Authority (WMATA) to address safety recommendations and rehabilitate the Metrorail system to improve safety and reliability. SafeTrack accelerates three years' worth of work into approximately one year. The plan significantly expands maintenance time on weeknights, weekends, and midday hours, and includes 15 "Safety Surges" – long-duration track outages for major projects in key parts of the system.¹

During Surge 1, Orange and Silver line trains were continuously single-tracking between East Falls Church and Ballston stations from June 4 through June 16, 2016 (Figure 1). As a result, the number of trains running on the entire Orange and Silver lines, which mainly provide east-west trips to, from or traverse the downtown area, was significantly reduced. WMATA estimated the reduction in the AM peak hour was 70% and 67% on Orange and Silver lines respectively west of East Falls Church station, 68% between East Falls Church and Ballston stations, and 28-47% east of Ballston station – including the entire Silver line to Largo Town Center terminal station in Prince George's County, MD and the Orange line up to the Stadium-Armory station in DC. WMATA also estimated that there were 255,000 impacted peak trips per day during this Surge.

METHODOLOGY

This memorandum used INRIX data provided by the I-95 Corridor Coalition Vehicle Probe Project to analyze traffic conditions in the TPB Planning Area. In general, this analysis compares average traffic conditions during the nine weekdays in Surge 1 to typical conditions observed in May 2016 or June 2015.

FINDINGS

1. Weekday peak period traffic congestion was higher during Surge 1 compared to typical conditions (Figure 2).

¹ WMATA, SafeTrack: <http://www.wmata.com/rail/safetrack.cfm>

- a. Freeways saw the largest increases, especially in the morning. Freeway travel times between 7:00 and 8:00 AM were 11% higher, on average, whereas the largest increase in the afternoon was 6%, which occurred between 4:00 and 5:00 P.M.
 - b. Arterial roadways also experienced increased travel times but the increase was less than 3% throughout the day. The PM peak period had a slightly higher increase than the AM peak period.
2. Although freeways had larger increases in congestion in the AM peak period than in the PM peak period, the PM peak period remained the most congested time to travel (Figure 3).
 - a. During Surge 1, both the AM and PM peak periods were longer and worse than normal.
 - b. The worst traffic occurred between 8:00 and 9:00 A.M. and 5:00 and 6:00 P.M., the same peak hours as a typical weekday. However, the greatest increase in congestion in the AM peak was observed one hour earlier than the normal peak hour (as described in Finding 1.a).
3. A new traffic condition pattern was noticeable between 7:00 and 8:00 A.M. on area's freeways. Congestion levels during this time were higher than the same time one year earlier and May 2016, including the week before Memorial Day, when traffic is usually worse than normal (Figure 4).
4. Congestion patterns changed in notable ways over the course of Surge 1 and they might be an indication of travelers' adjustments to the new travel pattern in the region.
 - a. During the first four weekdays of Surge 1 (Monday (6/6) through Thursday (6/9)), the AM peak period saw much larger increases in congestion than the PM peak period (Figure 5);
 - b. From Friday (6/10) through Tuesday (6/14), excluding Saturday and Sunday, that pattern reversed and the PM peak period saw the greatest increases in congestion. (Figure 6); and
 - c. Toward the end of the surge, from Wednesday (6/15) through Thursday (6/16), the AM peak period again had larger increases than the PM peak period, but still less than in the first four weekdays of the surge (Figure 7).
5. Congestion impacts varied significantly by geography and route.
 - a. In the AM peak hour (8:00-9:00 A.M.):
 - i. Greatest increases in congestion occurred in the triangle formed by I-66 EB inside I-495, George Washington Parkway, I-495 and VA-267, as shown in Figure 8.
 - ii. Significant increases in congestion occurred on I-95/I-495 inner-loop from MD-5 to I-295, US 50 WB between I-95/I-495 and MD-201/Baltimore-Washington Parkway, I-495 outer-loop at I-95 in MD.
 - iii. Notable increases in congestion occurred on: VA-267 EB from VA-286 to VA-7; I-395 NB; and I-95 SB in MD.
 - b. In the PM peak hour (4:00-5:00 P.M.):
 - i. The greatest increases in congestion occurred mostly on arterial routes in DC and a few other spots, including I-495 outer-loop at VA-267, VA-267 EB at I-495, I-

495 outer-loop at Springfield interchange, I-66 WB at I-495, and US-50 WB at I-495 (Figure 9).

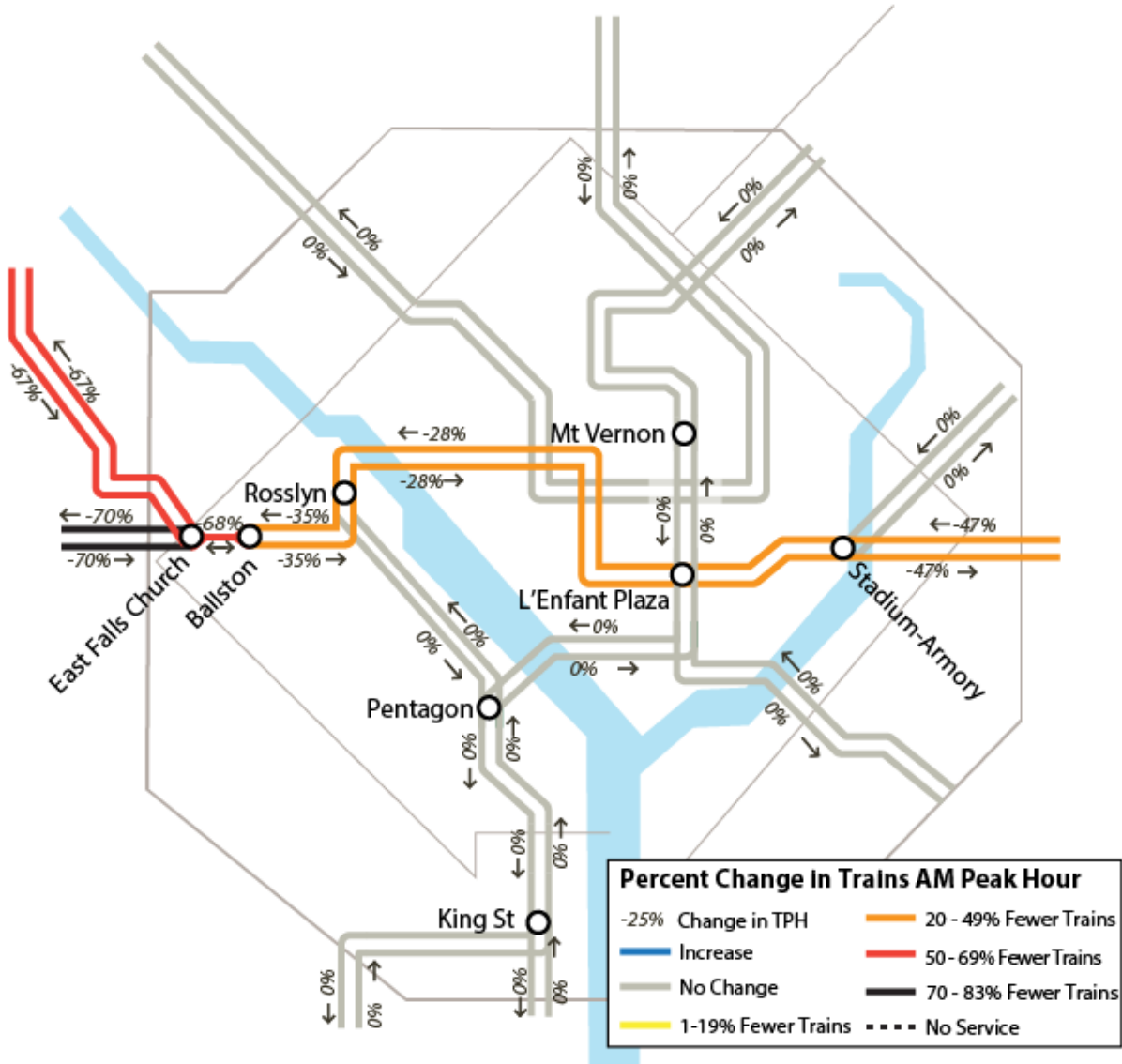
- ii. Increases in the PM peak hour were far less severe than in the AM peak hour.
6. Route-specific travel times along several freeway and arterial corridors are provided in Figure 10 through Figure 17. Notable observations include:
- a. I-66 EB inside the Beltway (parallel facility along Surge 1) had the largest increases in travel times among all corridors.
 - b. Freeways had larger increases in travel times than arterials.
 - c. For most routes, both the average and the 90th percentile travel times increased over typical conditions. The 90th percentile travel time is an indication of the longest travel times a traveler could experience and the possibility to have such a long travel time is 10%, i.e., one out of 10 trips.

CAVEATS

Traffic congestion changes could be a result of many factors including incidents and adverse weather conditions; the analysis did not exclude possible impacts of such events. However, given the large magnitude regional overall congestion increases observed during the two week Surge 1, it is believed that the changes observed could not all be due to the impact of incidents and weather events and thus likely a result of the reduced Metrorail services and shifted modes.

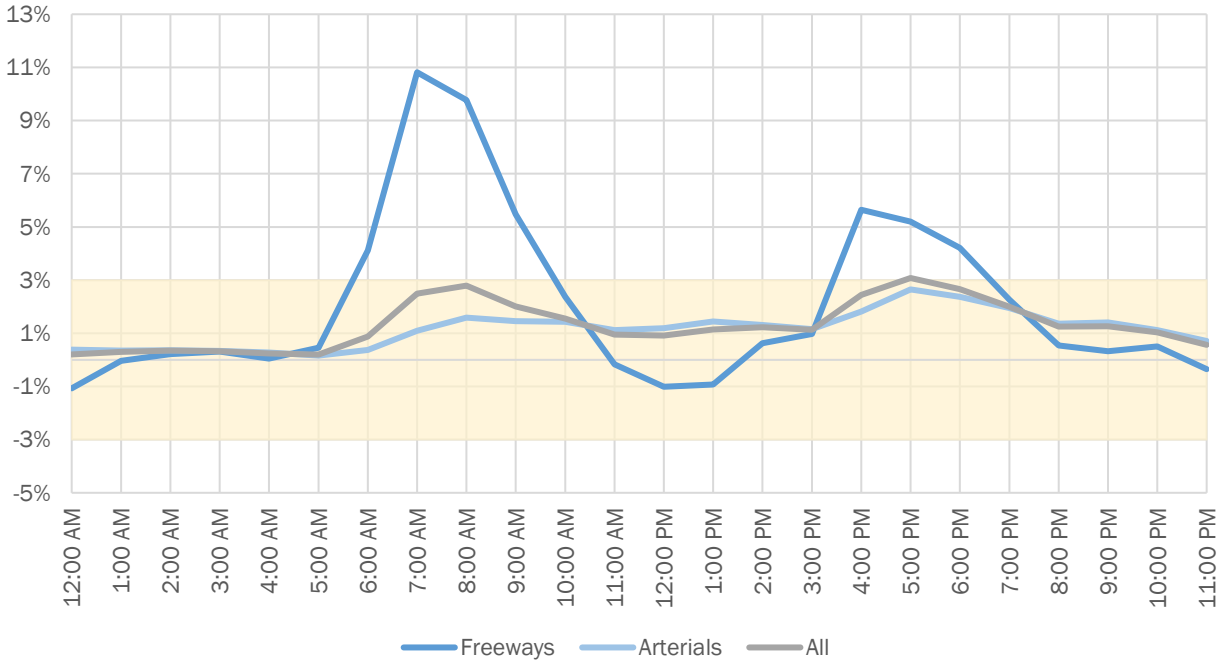
The “typical conditions”, to which the Surge 1 weekdays were compared, did not include days from June 2015 because there could be year-to-year system-wide variations as observed in the past. Status in the most recent month could be a good candidate for the most up-to-date typical conditions. On the other hand, traffic congestion could increase or decrease from May to June as observed from 2010-2015. For example, weekday peak period traffic congestion decreased by 2% from May to June in 2015 on freeways. The analysis did not consider such month-to-month variations.

Figure 1. Changes in Metrorail Service During SafeTrack Surge 1



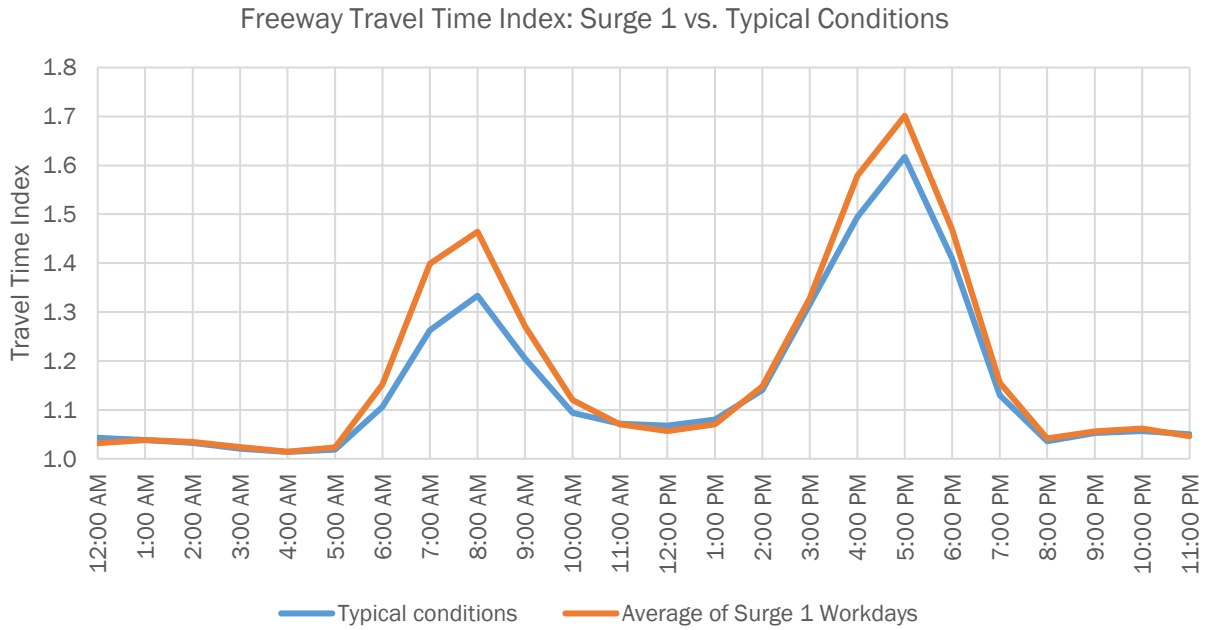
Source: WMATA

Figure 2. Changes in Travel Times during Surge 1 Compared to Typical Conditions



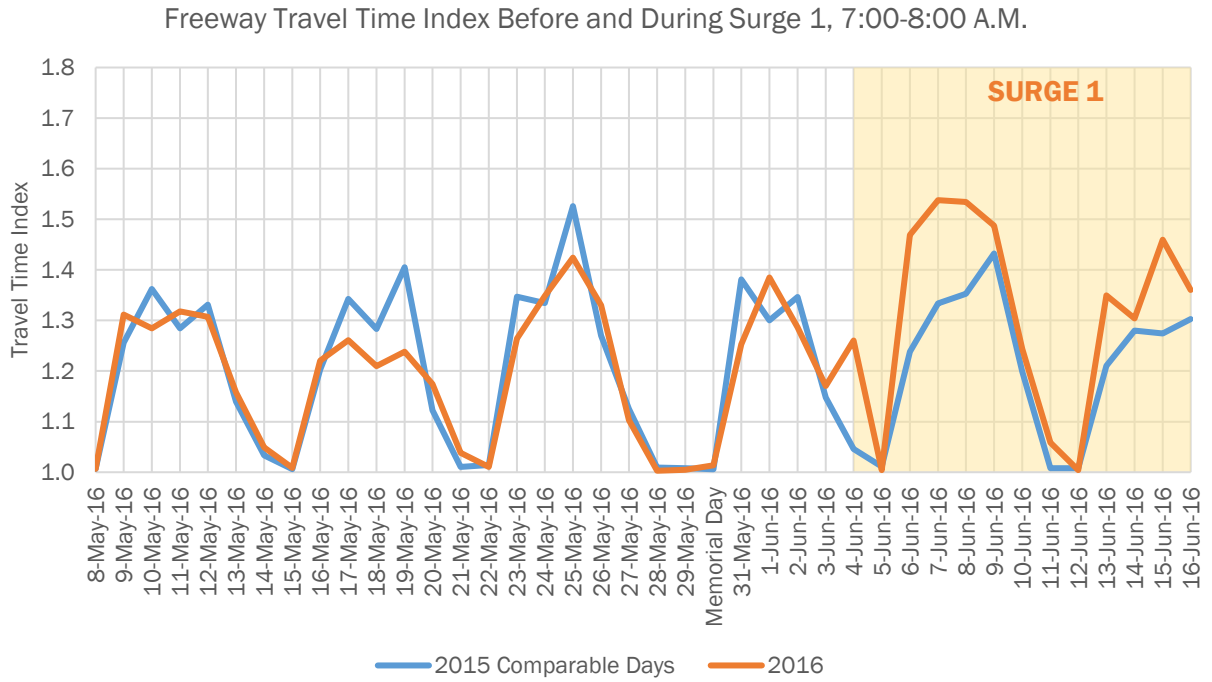
Note: For each weekday, the calculation is regional average Travel Time Index in Surge 1 minus regional average Travel Time Index of the same three weekdays in May 2016 and then divided by the latter. The graph shows the average changes of the nine weekdays in Surge 1. The percentage change in Travel Time Index is equivalent to the percentage change in Travel Time.

Figure 3. Regional Average Travel Time Index (TTI) for All Freeways in Both Directions



Note: Typical conditions is the average of all weekdays in May 2016 except Wednesday through Friday prior to Memorial Day.

Figure 4. Freeway Travel Time Index Before and During Surge 1 in 7:00-8:00 A.M.



Note: 2015 days were synchronized with 2016 days by the Memorial Day.

Figure 5. Freeway Travel Time Changes from Typical Conditions for the First Four Weekdays in Surge 1, June 6-9

Freeway Travel Time Changes from Typical Conditions: Jun 6-9

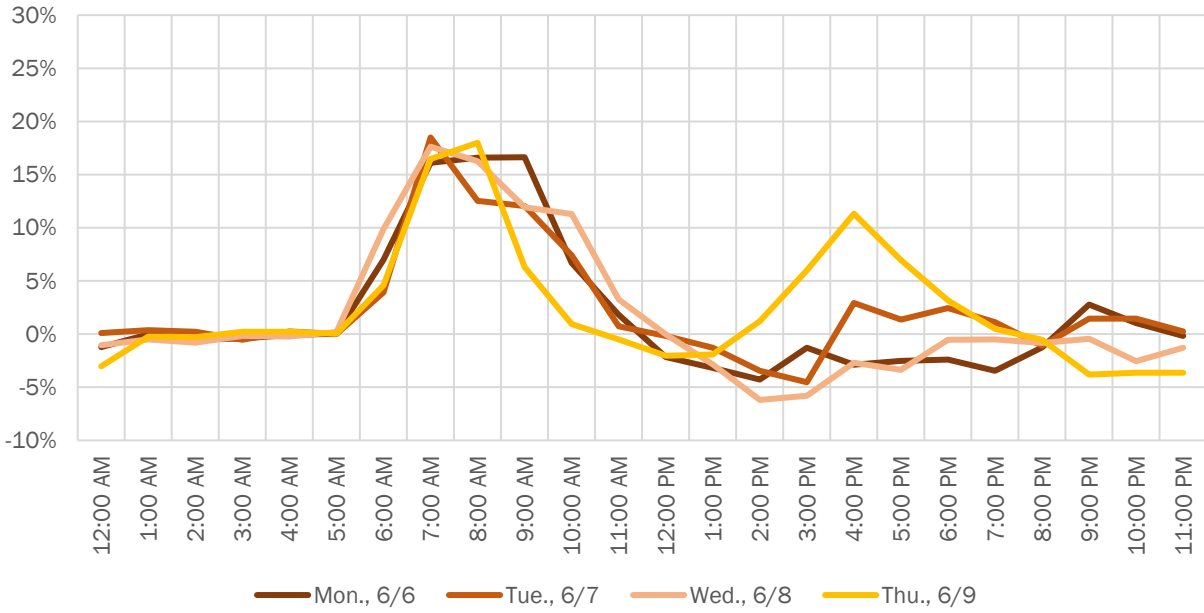


Figure 6. Freeway Travel Time Changes from Typical Conditions for the Three Weekdays from June 10-14 in Surge 1

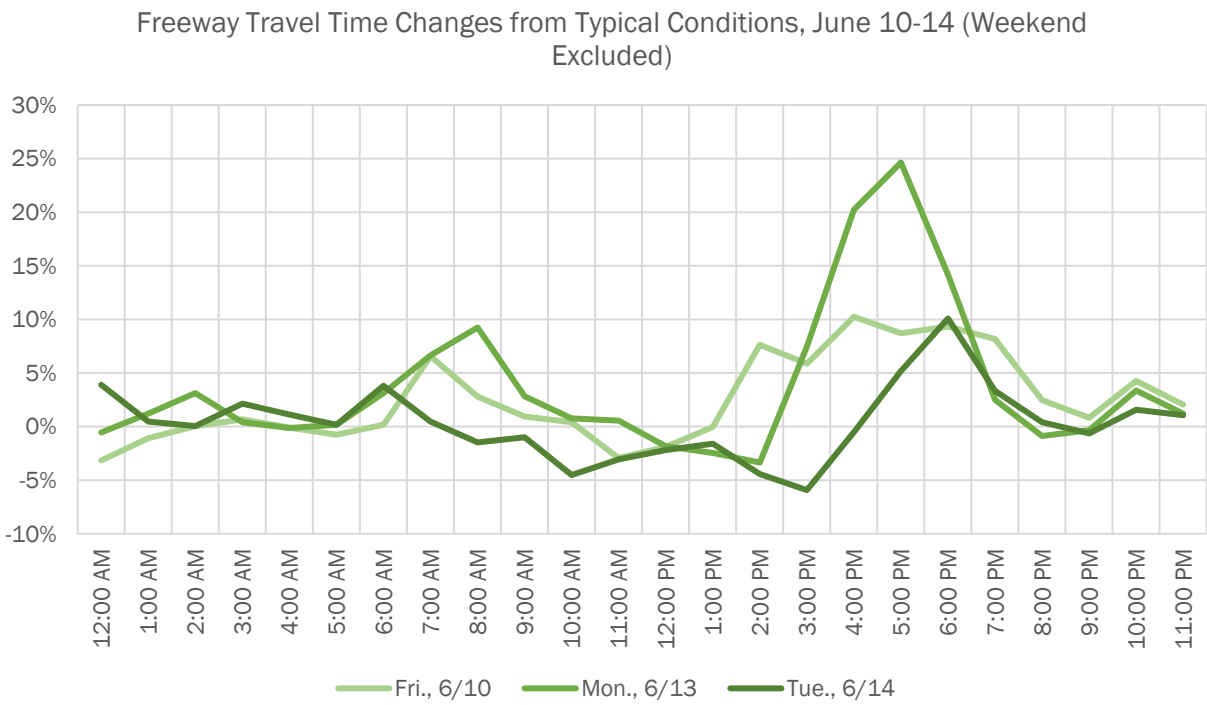


Figure 7. Freeway Travel Time Changes from Typical Conditions for the Last Two Weekdays of Surge 1, June 15-16

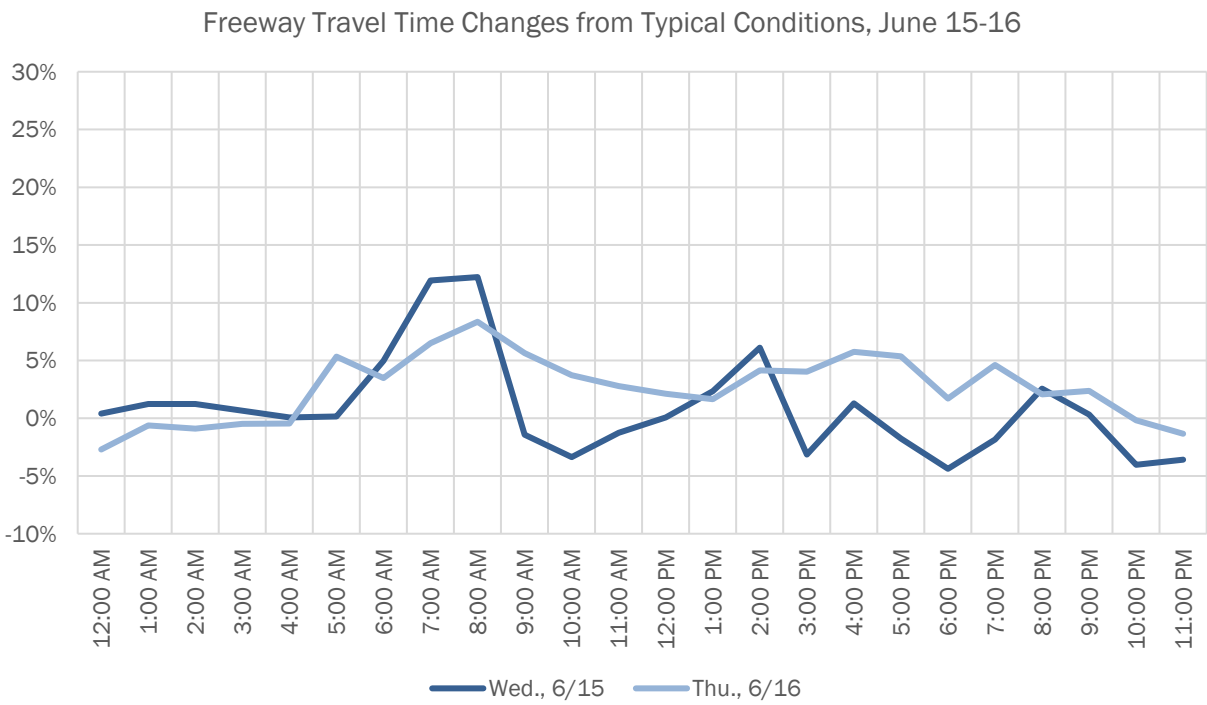


Figure 8. Travel Time Increases in AM Peak Hour (8:00-9:00 A.M.) in Surge 1 Compared to Typical Conditions Observed in May 2016

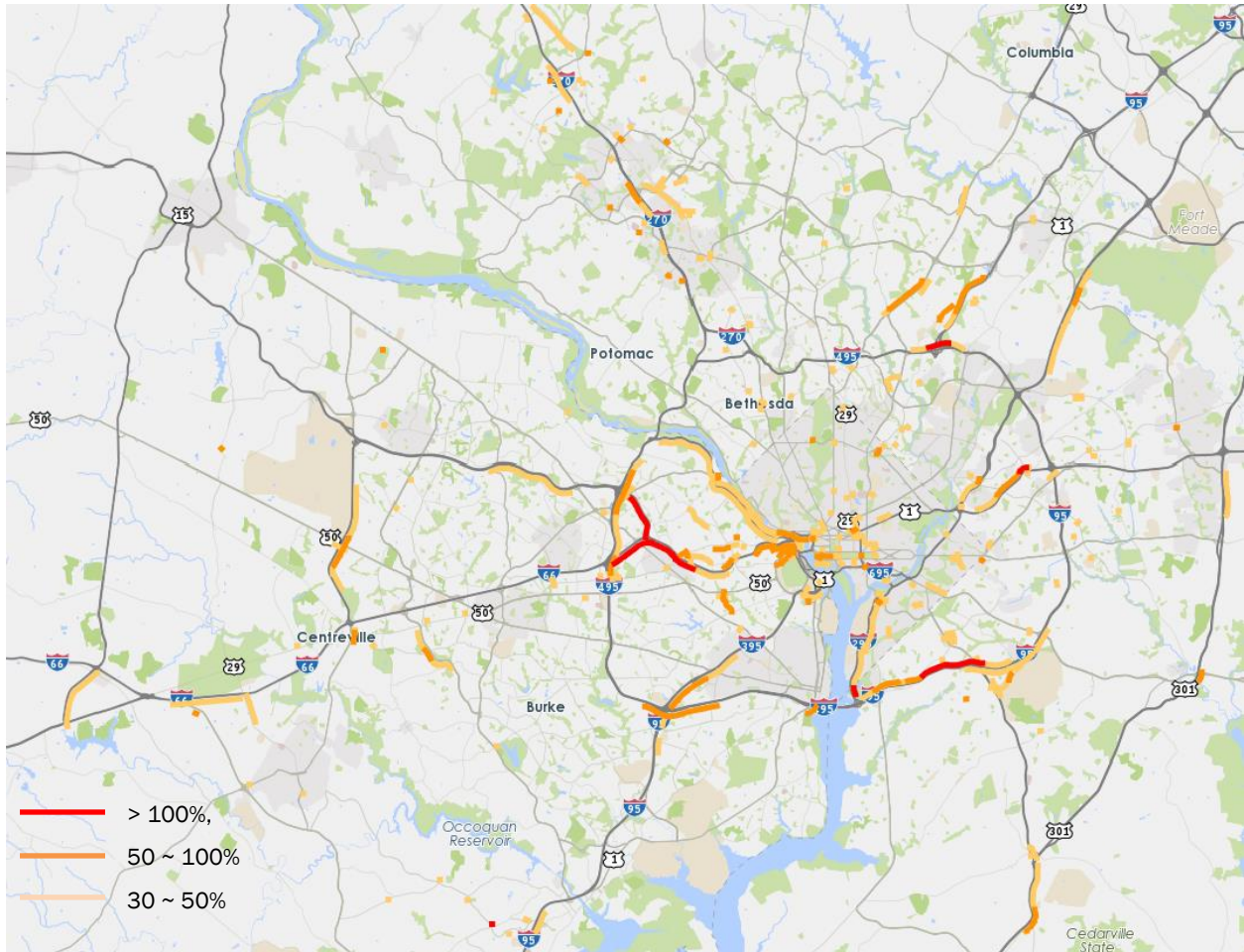


Figure 9. Travel Time Increases in PM Peak Hour (5:00-6:00 P.M.) in Surge 1 Compared to Typical Conditions Observed in May 2016

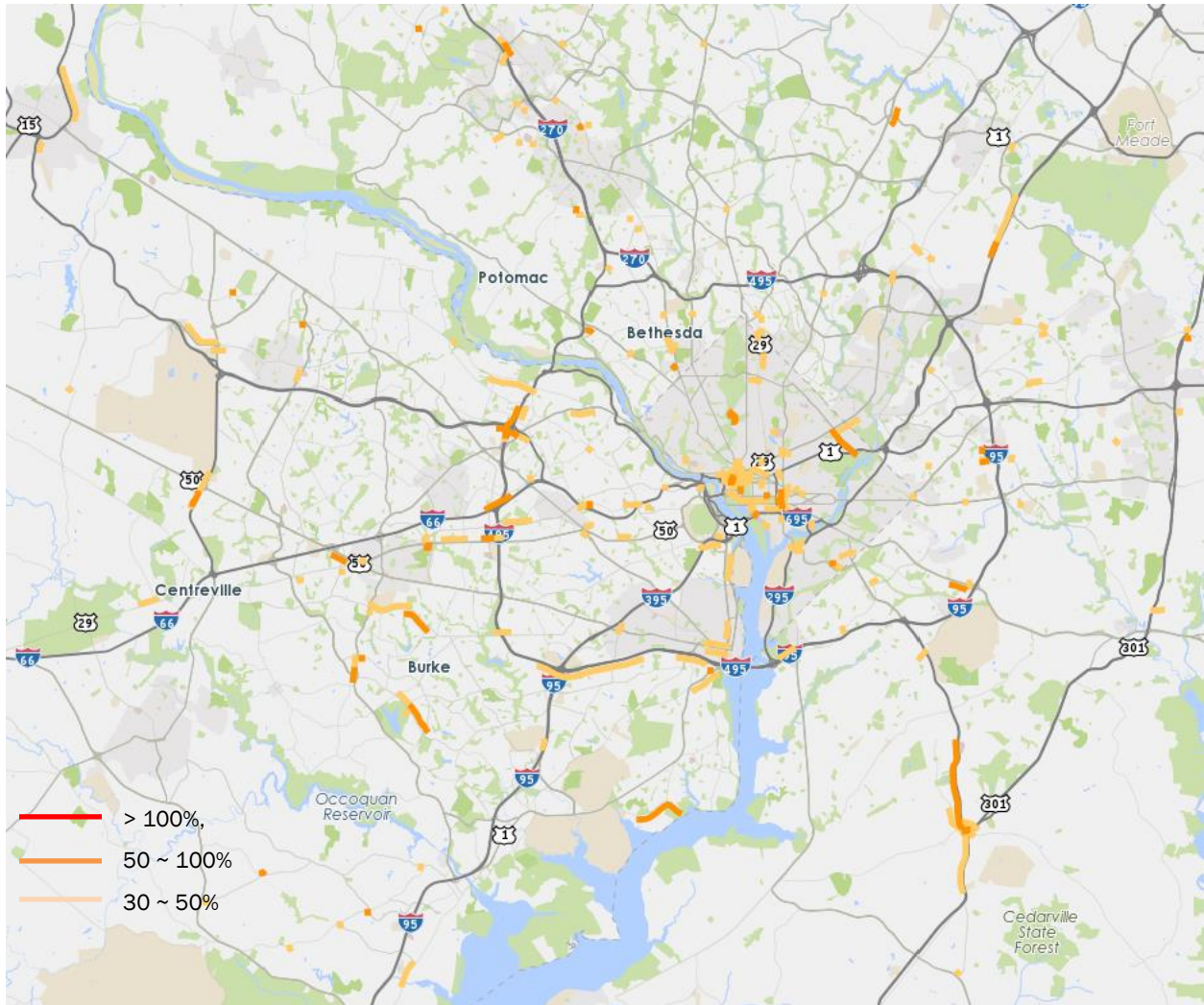


Figure 10. Travel Time Comparison along I-66 Eastbound Inside I-495

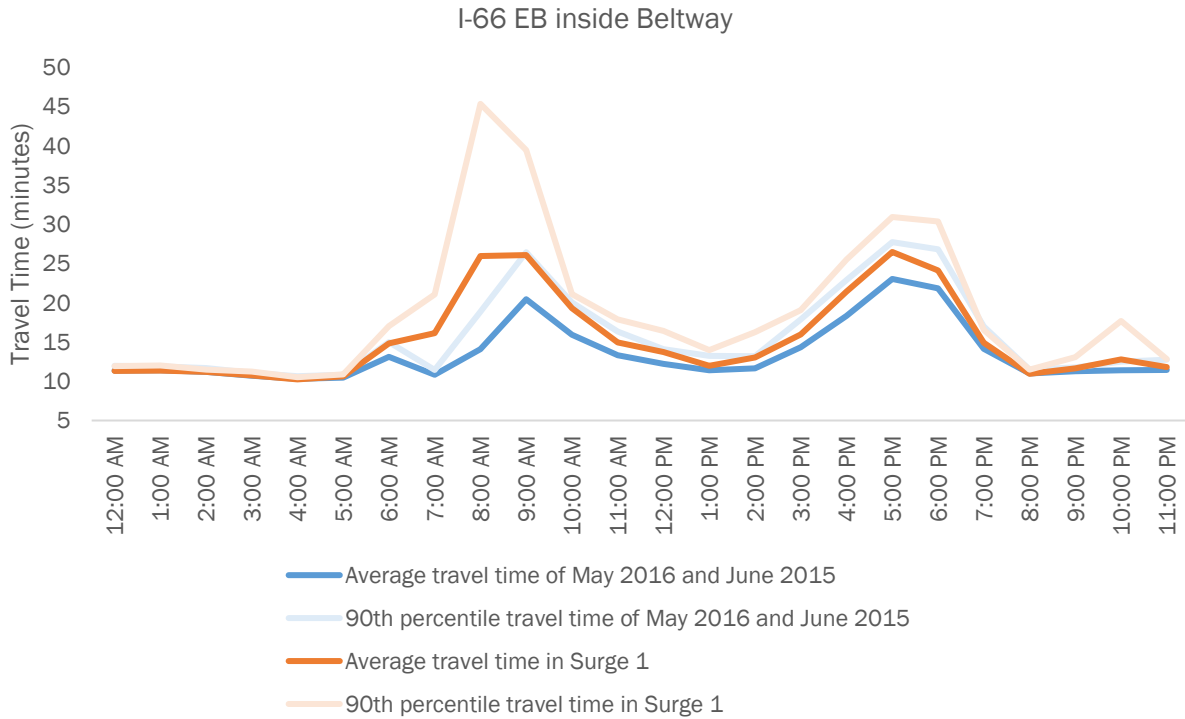


Figure 11. Travel Time Comparison along GW Pkwy Southbound from I-495 to I-395

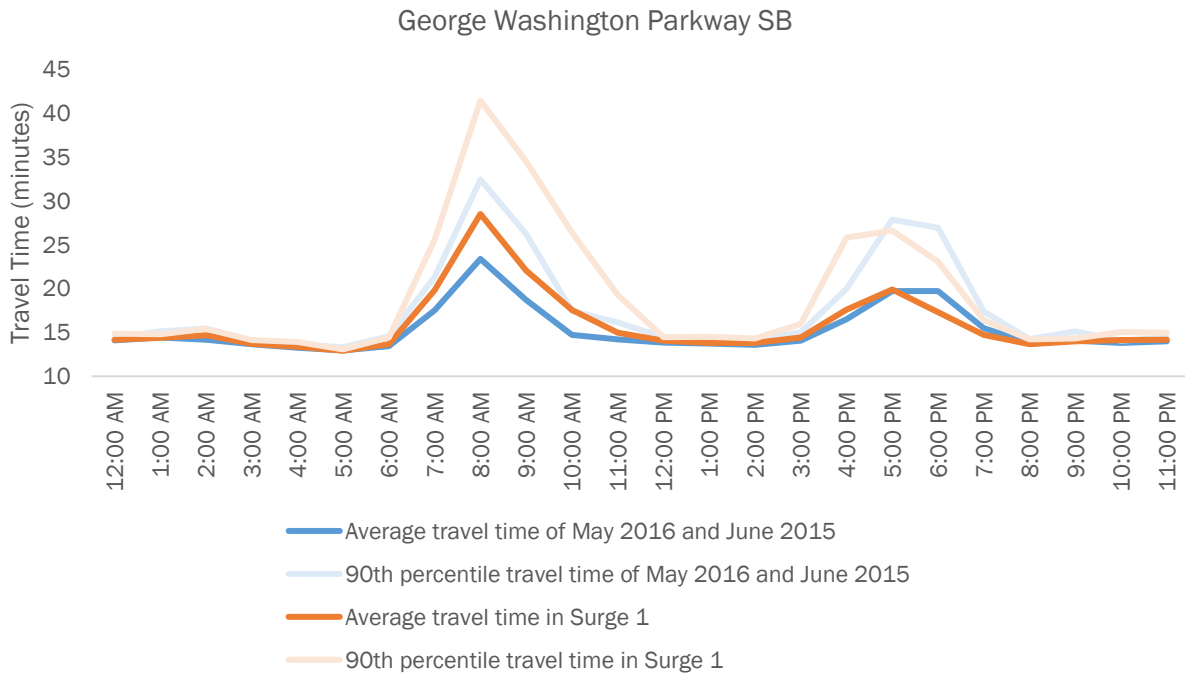


Figure 12. Travel Time Comparison along I-395 Northbound from I-95/I-495 to the Potomac River

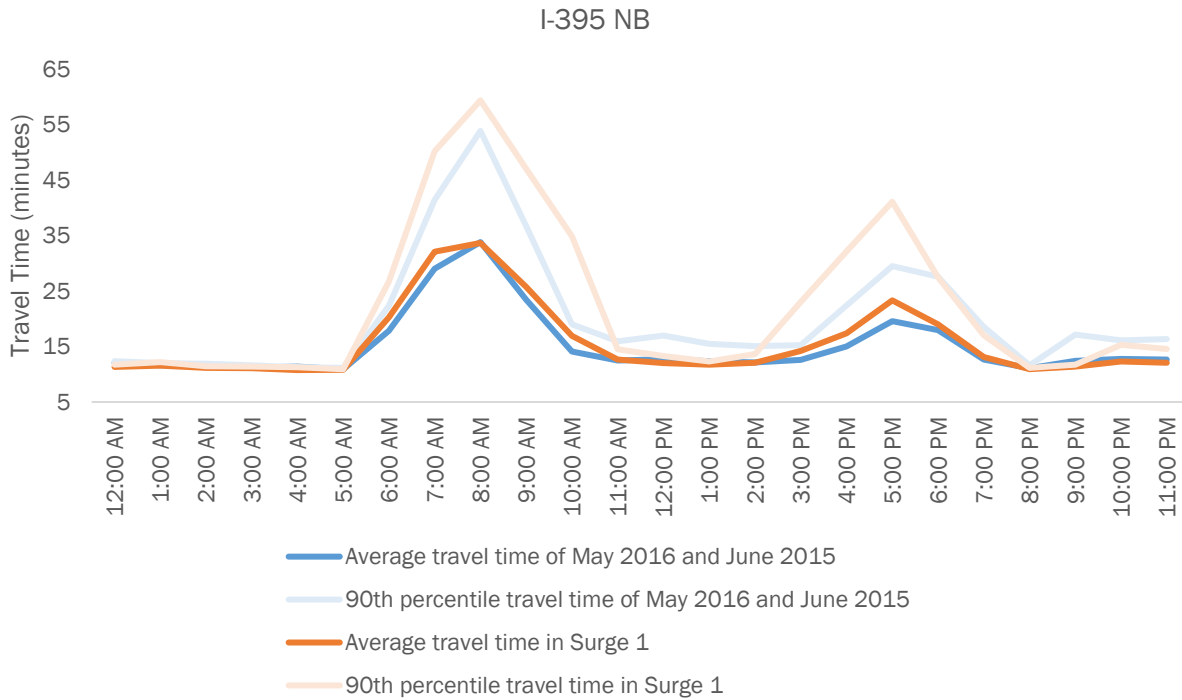


Figure 13. Travel Time Comparison along I-295 Northbound from I-95/I-495 to 11th Street Bridge

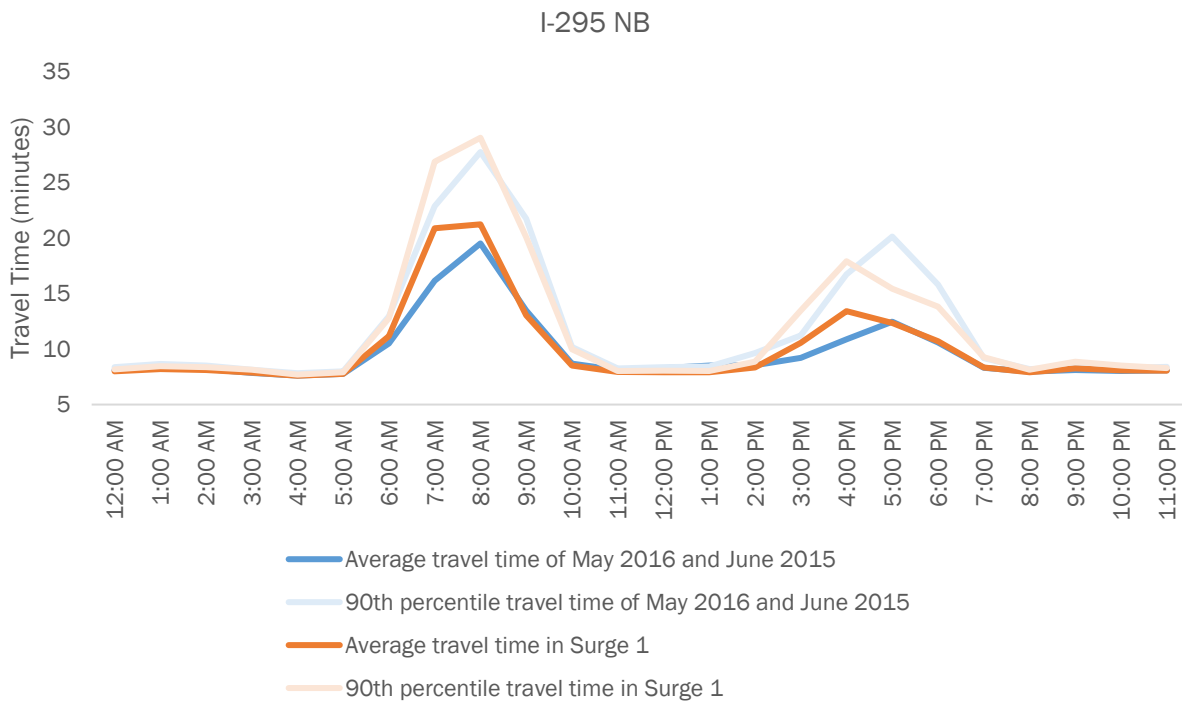


Figure 14. Travel Time Comparison along I-495 IL from US-50 to the American Legion Bridge

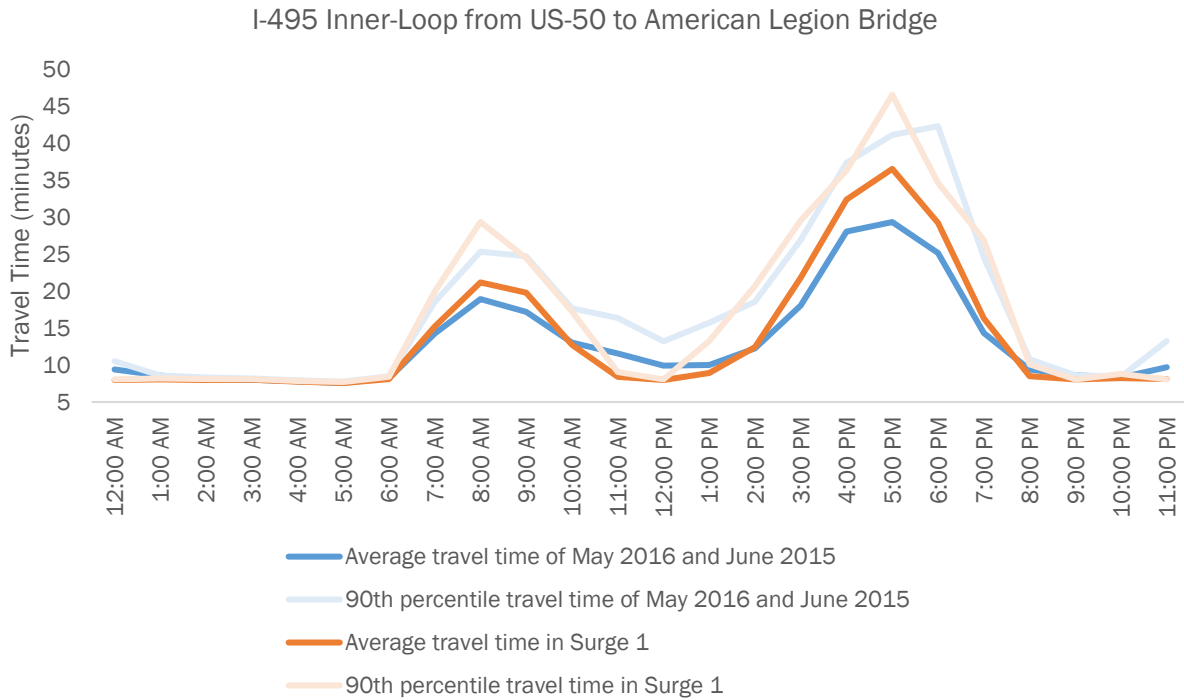


Figure 15. Travel Time Comparison along VA-267 Eastbound from VA-286 to I-66

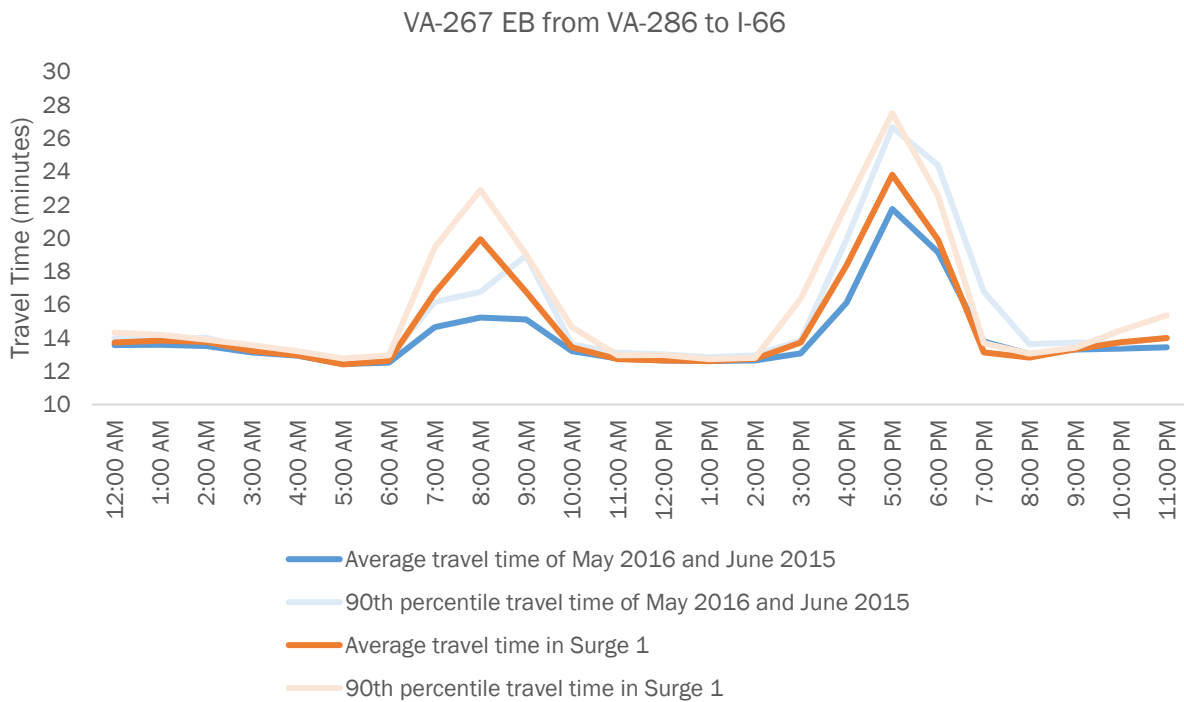


Figure 16. Travel Time Comparison along US-29 Northbound in Northern Virginia from I-495 to the Potomac River

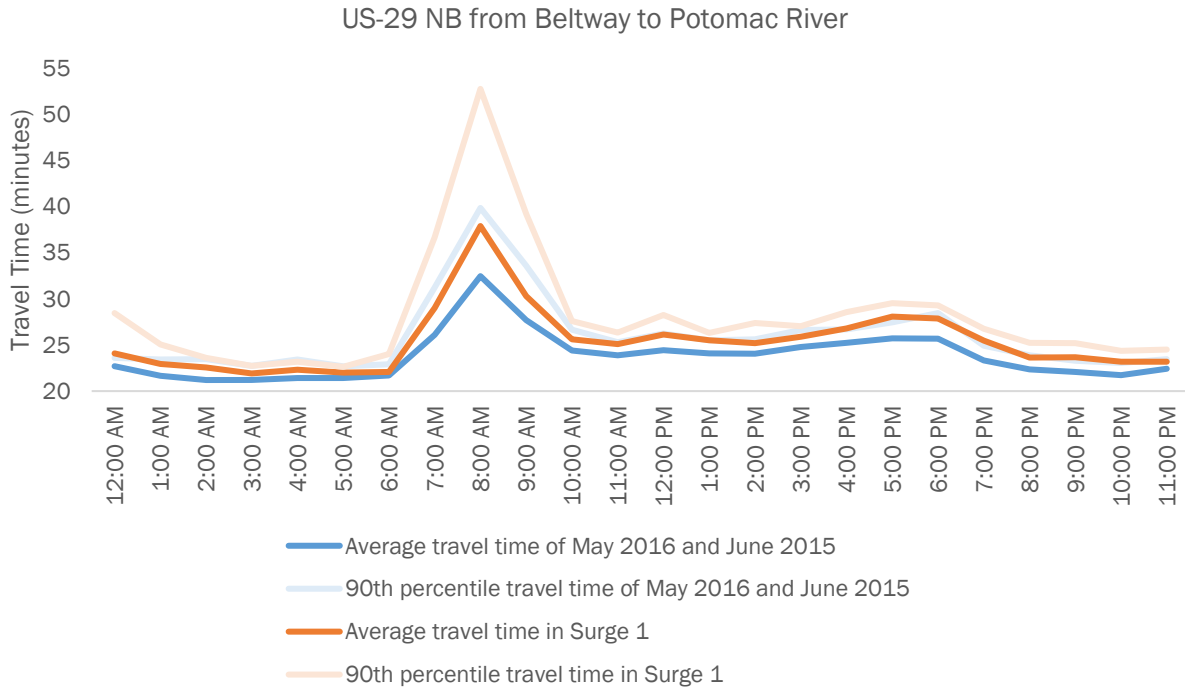


Figure 17. Travel Time Comparison along US-50 Eastbound in Northern Virginia from I-495 to the Potomac River

