Metro SafeTrack Impact on Individual Travel Behavior & Regional Traffic Conditions

Volume 1 | Issue 1 | June 10, 2016

1. Introduction

The National Transportation Center (NTC@Maryland) at the University of Maryland (UMD), College Park conducts travel surveys (mail, web, and smartphone-based) and transportation system modeling analysis to observe and predict how individual travelers adjust their travel decisions in response to specific Metro SafeTrack maintenance events that temporarily shut down or reduce the level of Metrorail service from June 2016 through March 2017. The UMD research team is also working to predict and track transportation system performance and regional traffic conditions before, during, and after each of the 15 SafeTrack safety surges. For each SafeTrack event, NTC@Maryland will publish a volume consisting of several Issues that summarize research findings before, during, and after the surge project.

While universities, agencies, and companies may be mentioned in this report series, the UMD research team, led by Dr. Lei Zhang (lei@umd.edu; 301-405-2881), Herbert Rabin Distinguished Professor of Civil Engineering and NTC@Maryland Director, is solely responsible for the accuracy of these reports. The views in this report series do not necessarily represent the official views of UMD or that of any other organizations mentioned herein. These information products include preliminary data as part of an ongoing effort by NTC@Maryland to inform the public, commuters, and local agencies with time- sensitive information needs. Due to the immediacy of SafeTrack work plans, these data are being made available prior to undergoing a peer-review process. All data are considered to satisfy the quality standards relative to the purpose for which the data were collected.

2. Focus of this Volume & Issue

SafeTrack Surge Project 1: June 4–16 involves continuous single-tracking between the East Falls Church and Ballston stations, directly affecting Metrorail Orange and Silver Lines. Questions addressed by this Issue of the NTC@Maryland study are:

- How would affected Metrorail riders change their travel plans based on their self-reported survey responses before the surge project?

- How will regional traffic be impacted by this surge project based on the UMD traffic modeling and simulation predictions? This Issue includes both our predicted traffic impact (previously released on June 3) and actual observed traffic impact based on real-world data collected on Monday, June 6, as well as data from the previous eight Mondays for comparison purposes.

3. Individual Travel Behavior Responses

On June 2, 2016, NTC@Maryland reached out to nearly 1,000 Metrorail customers at the Vienna, Dunn Loring, and East Falls Church stations on the Orange Line, and the Wiehle-Reston East and Tysons Corner stations on the Silver Line, who are likely to be affected by this surge project. Survey findings as of June 8, 2016, based on 210 completed surveys, are summarized below.

3.1 Of All Metro Riders Surveyed Who Have Submitted Responses

- 30% reported that they will not change their travel plans at all.
- 34% said that they would still use Metro but will change departure time. The majority of them plan to depart earlier by 0–30 minutes or 30–60 minutes. Very few plan to depart later.
- 9% will drive alone instead.
- 8% will use regular bus or station-bridging shuttle services.
- 5% will cancel trip or telecommute.
- 4% will change to carpool with family members or others.
- 3% plan to use Uber/Lyft or walk/bike to destinations.
- 2% will change destination.
- A small number of Metrorail riders reported that they might use a combination of these options.

Survey margin of error: plus or minus 4%.

Interpretation of these survey findings: These statistics show how affected Metrorail riders planned to change travel behavior on the first weekday, Monday, June 6, of the first surge project. Later on, travelers may further adjust their travel plans as they accumulate new travel experience and learn more about the SafeTrack project impact. NTC@Maryland will report on how travelers actually adjust their travel decisions during and after the surge project in later report Issues.

3.2. What Kind of Assistance is Desired by Affected Metro Riders

- 57% would like to see additional rush hour bus services.

- 25% want help with ride sharing.

3.3. Are Metro Riders Well Informed about this SafeTrack Project

- More than 96% felt that they had been sufficiently informed.
- 31% reported that they know about this project very well.
- 67% know about this project to some extent.
- 2% expressed that they had never heard about this project or SafeTrack.

4. Predicted Regional Traffic & Transit Impact

NTC@Maryland has previously developed an integrated travel behavior and traffic simulator that covers the entire Washington, D.C. metropolitan area. This modeling system is used to predict the regional traffic impact of individual SafeTrack projects. The predictions are for typical **weekday** traffic demand and conditions in the affected area(s). Based on model runs completed on June 3, 2016, NTC@Maryland predicts that, due to this SafeTrack project, the overall travel delay in the affected area will increase by just 0.2%, the average travel speed will decrease by 0.1%, and travel time on I-66 and I-495 will increase by less than 0.1%. Drivers would not notice any atypical difference in traffic conditions. In addition, no major increase in local traffic queuing is observed from simulation results. Therefore, drivers (or previous Metrorail riders who plan to drive, carpool, or take buses during the surge project period) should not worry about new gridlocks during this first SafeTrack surge project.

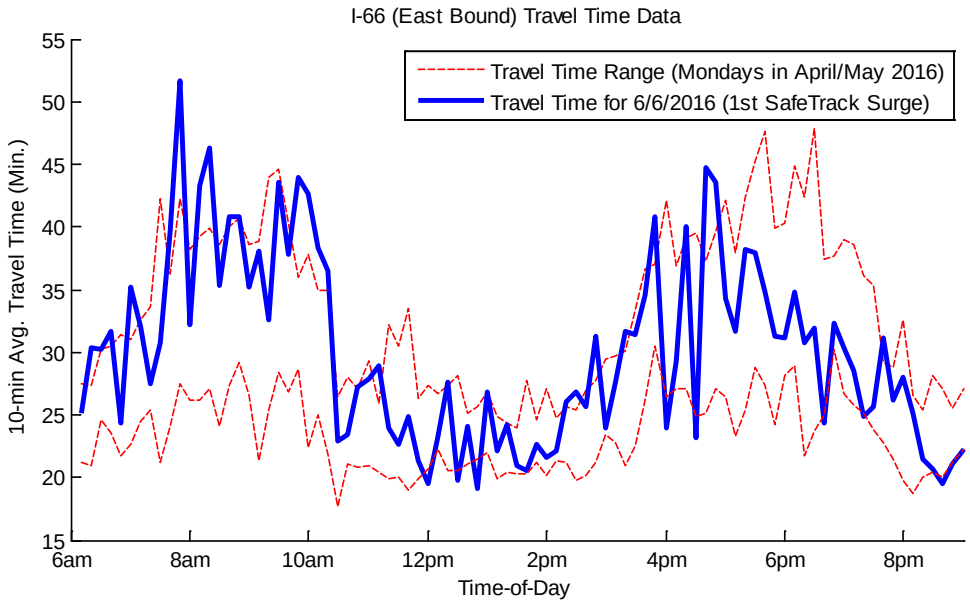
Metrorail riders, however, should expect longer delays and significantly more crowding on trains. Since many Metrorail riders (34%) are planning to depart earlier during the SafeTrack project period, longer delays and Metrorail station crowdedness will likely take place even before the start time of the usual peak period. Those who want to beat the crowds and avoid major Metrorail delays should plan on either departing very early (e.g., an hour before the rush hour starts) or after the peak period.

5. Observed Regional Traffic Impact on Monday, June 6

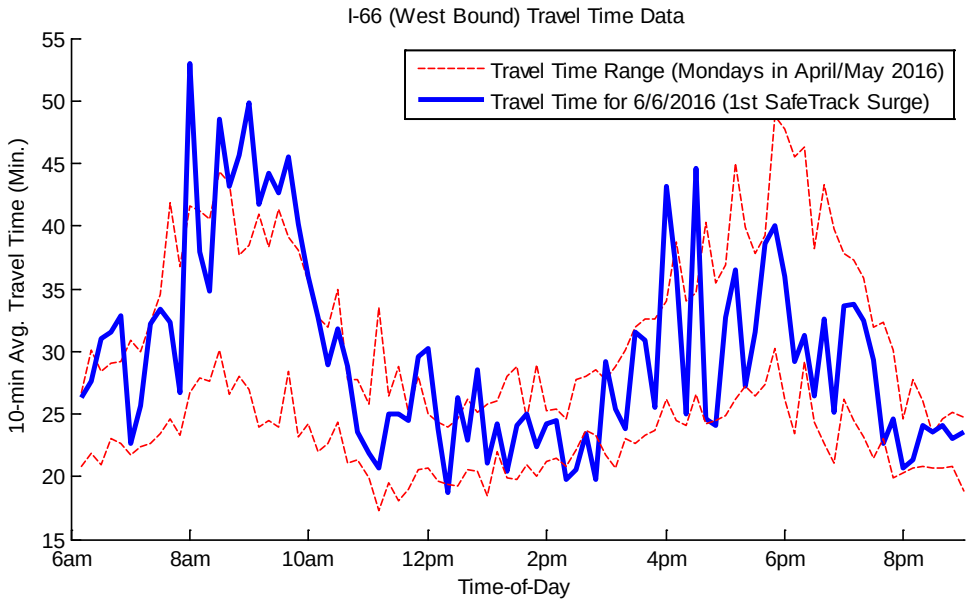
Based on traffic count and travel time data from the UMD Center for Advanced Transportation Technology (CATT), NTC@Maryland observed that traffic volumes from 6am–9pm on Monday, June 6, on I-66, I-395, and I-495 in the study area near the location of the first SafeTrack surge project increased by 3% in comparison to the previous eight Mondays in April and May 2016. However, such a small demand increase is well within the typical demand fluctuation on Mondays, and may not be entirely attributed to the SafeTrack Surge project.

Observed travel times along I-66, I-395, and I-495 from 6 a.m. until 9 p.m. on Monday, June 6 (shown as a blue solid line in the graphs below), are compared with the travel time range based on the previous eight Mondays in April and May 2016 (shown as the two thinner red lines in the graphs that indicate lower bound/best and upper bound/worst travel times). In summary, traffic congestion and the resulting travel times on Monday, June 6, are within the range of congestion levels travelers typically experience on these three major routes. In other words, the level of congestion on June 6 is within the bounds of what travelers are already used to. A closer examination of the data suggests that the morning/AM peak congestion is near the upper bound of the range—or, in other words, on par with the worst congestion travelers had experienced on Mondays in the previous two months. The afternoon/PM peak congestion is about average.

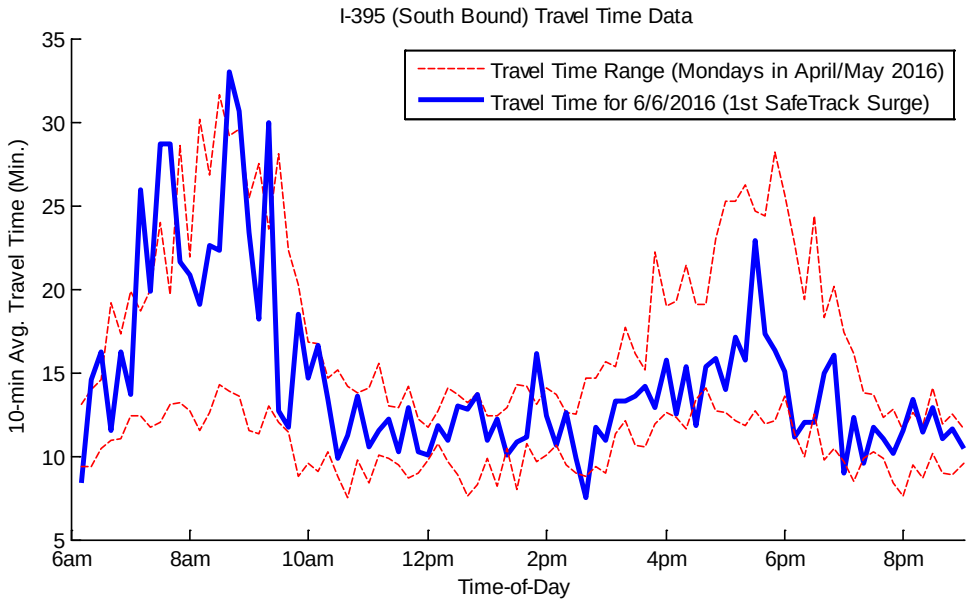
I-66 East Bound (6am–9pm, Monday, 6/6/2016)



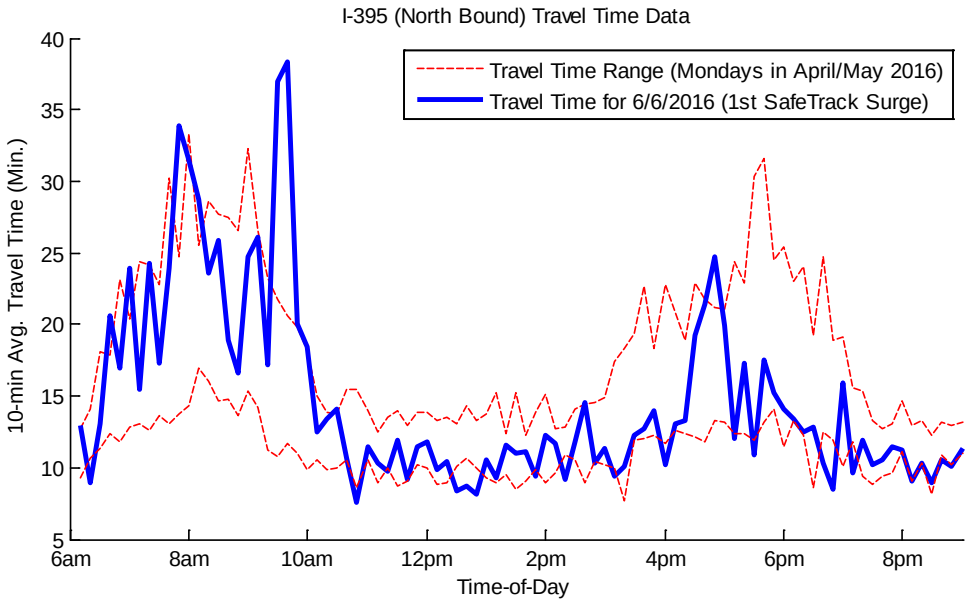
I-66 West Bound (6am–9pm, Monday, 6/6/2016)



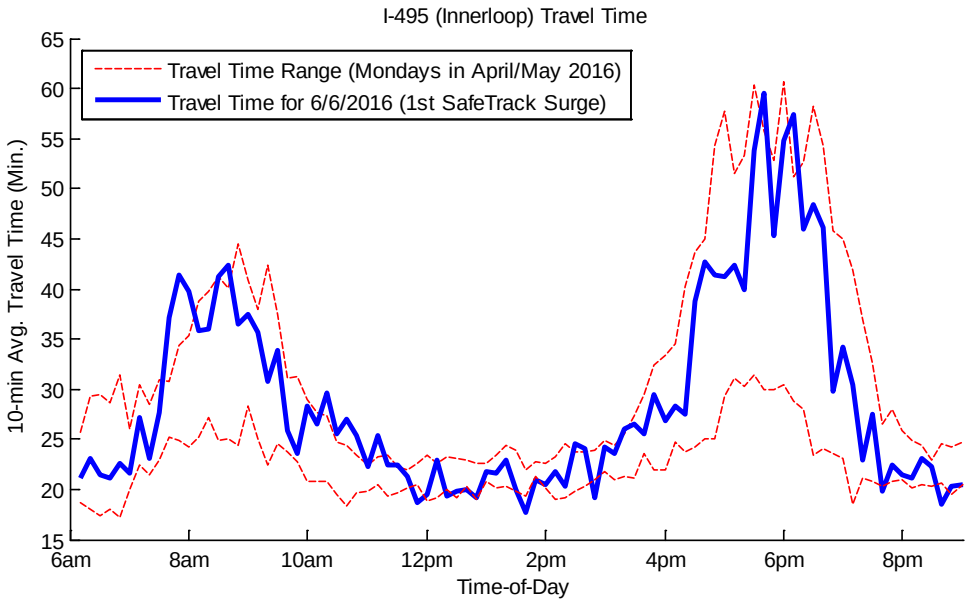
I-395 South Bound (6am–9pm, Monday, 6/6/2016)



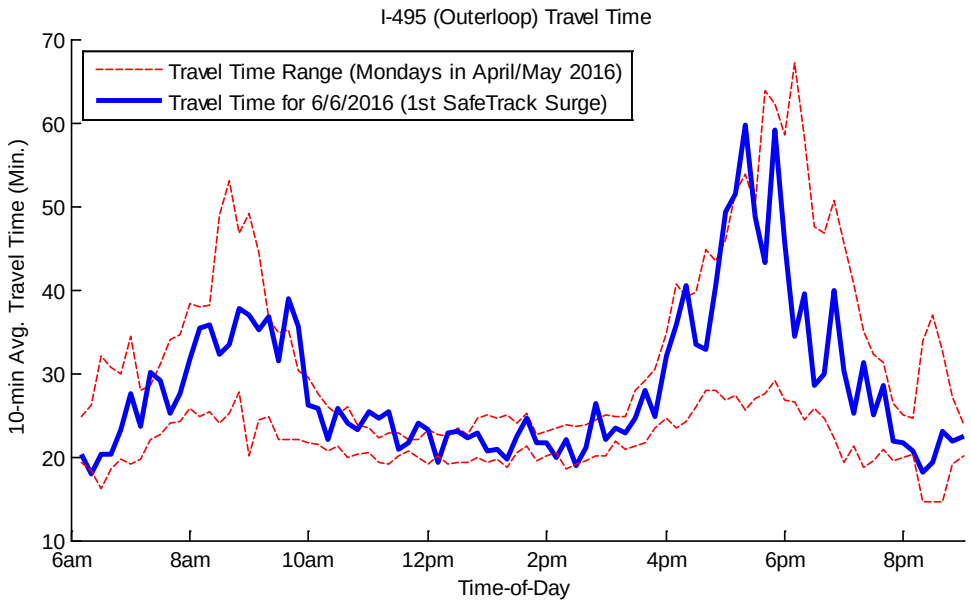
I-395 North Bound (6am–9pm, Monday, 6/6/2016)



I-495 Inner-loop (6am–9pm, Monday, 6/6/2016)



I-495 Outer-loop (6am–9pm, Monday, 6/6/2016)



6. Highlights of the Next Issue

NTC@Maryland plans to publish the next Issue around June 16. It will summarize both survey findings based on surveys conducted during and after the first surge project, and our predictions on travel behavior and regional traffic impact of the second surge project that will shut down Metrorail service entirely on the Orange, Blue, and Silver Lines between the Eastern Market and Minnesota Ave/Benning Road stations.