Metro SafeTrack Impact on Individual Travel Behavior & Regional Traffic Conditions

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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 2: June 18–July 3 involves line-segment shutdown between Eastern Market & Minnesota Ave/Benning Road, directly affecting Metrorail Orange, Blue 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 16) and actual observed traffic impact based on real-world data collected on June 20-22 (Monday to Wednesday), as well as data from the previous eight Mondays, Tuesdays, and Wednesdays for comparison purposes.

3. Individual Travel Behavior Responses

Between June 14 and 17, 2016, NTC@Maryland, in collaboration with George Mason University, reached out to over 2,150 Metrorail customers who are likely to be affected by this surge project, at the following stations:

Orange/Silver/Blue Line: Eastern Market, Potomac Ave, Stadium-Armory
Orange Line: Minnesota Ave, Deadwood, Cheverly, Landover, New Carrollton
Blue/Silver Line: Benning Rd, Morgan Blvd, Largo Town Center

Survey findings as of June 22, 2016, based on 295 completed surveys, are summarized below.

3.1 Of All Metro Riders Surveyed Who Have Submitted Responses

- 23% reported that they will not change their travel plans at all and/or will use bridging bus service between affected stations.
- 13% said that they would still use Metro with the bridging bus service 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.
- 6% will use other Metro stations instead.
- 12% will drive alone instead.
- 11% will use regular bus service.
- 9% will use MARC Train or Commuter Bus.
- 6% will cancel trip or telecommute.
- 3% will change to carpool with family members or others.
- 4% plan to use Uber/Lyft or walk/bike to destinations.
- 10% 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 would change travel behavior on the first weekday, **Monday** (6/20),

of this SafeTrack 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 the next Issue.

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

- 51% would like to see additional rush hour bus services.
- 34% want help with ride sharing.

3.3. Are Metro Riders Well Informed about this SafeTrack Project

- More than 97% felt that they had been sufficiently informed.
- 74% reported that they know about this project very well.
- 24% 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

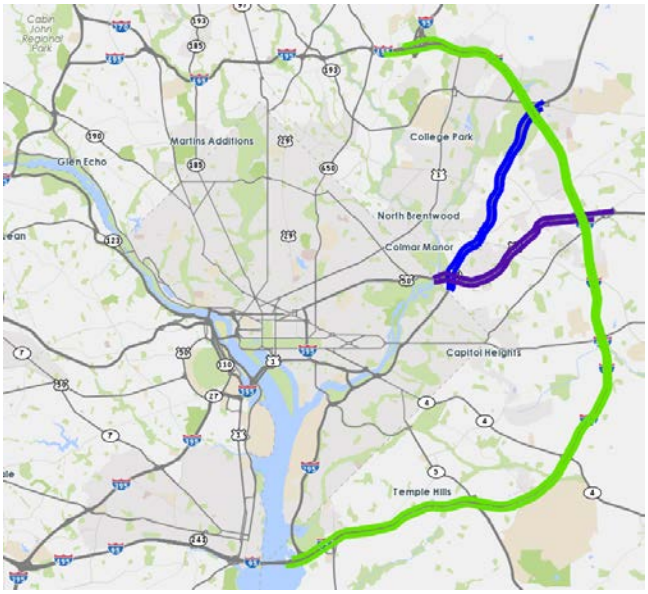
NTC@Maryland has previously developed an integrated travel behavior and traffic simulator that covers the entire Washington, D.C. metropolitan area. This modeling system is used to predict the regional traffic impact of individual SafeTrack projects. The predictions are for typical **weekday** traffic demand and conditions in the affected area(s). Based on model runs completed on June 16, 2016, NTC@Maryland predicts that, due to this SafeTrack project, the overall travel delay in the affected area will increase by 2.1%, the average travel speed will decrease by 3.2%. Travel time on MD-295 and US-50 will increase by less than 1.0%, while I-495 travel time will increase by 3.3%. Drivers on I-495 near the affected Metro stations may notice slightly worse traffic conditions. No major increase in local traffic queuing on arterial streets is observed from simulation results. Most 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. The impact of this SafeTrack project is slightly more significant than that from the first SafeTrack surge project, but should not cause major traffic concerns in our region. I-495 drivers in that area may want to depart five minutes earlier on weekday mornings, for the same arrival times. NTC@Maryland will work with the Center for Advanced Transportation Technology (CATT) at UMD to track actual traffic impact during this and other safety surge periods, and will report out findings.

Metrorail riders, however, should expect longer delays and significantly more crowding on trains and bridging buses. Since many Metrorail riders (13%) are

planning to depart earlier during the SafeTrack project period, longer delays and Metro station/bridging bus 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.

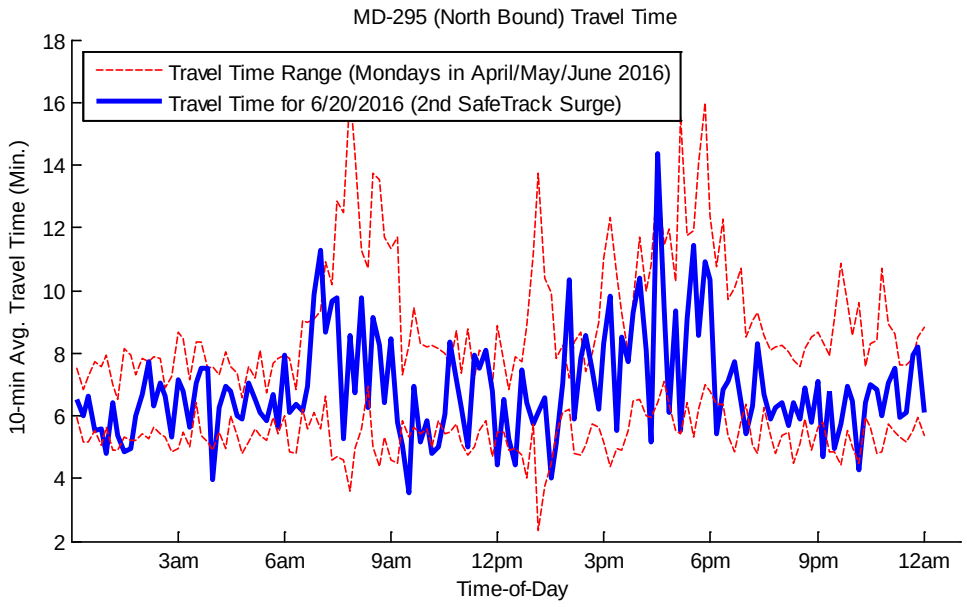
5. Observed Regional Traffic Impact on Monday, June 20

Observed travel times along MD-295, US-50, and I-495 from 12 a.m. until 11:59 p.m. on Monday, June 20 (shown as a blue solid line in the graphs below), are compared with the travel time range based on the previous 11 Mondays in April, May and June 2016 (shown as the two thinner red lines in the graphs that indicate lower bound/best and upper bound/worst travel times). Traffic data are provided by the Center for Advanced Transportation Technology Lab at the University of Maryland. On MD-295, traffic congestion and the resulting travel times on Monday, June 20, are within the range of congestion levels travelers typically experience. In other words, the level of congestion on MD-295 is within the bounds of what travelers are already used to. On I-495 the Capital Beltway and US-50, the morning/AM peak congestion is near the upper bound of the range—or, in other words, morning traffic is on par with the worst congestion travelers had experienced on Mondays in the previous two months. The afternoon/PM peak congestion is about average. In both of the first two SafeTrack surges (See our Volume 1 report for observed traffic impact for Surge #1), we have observed more significant traffic impact in the morning peak period than in the early evening peak period.

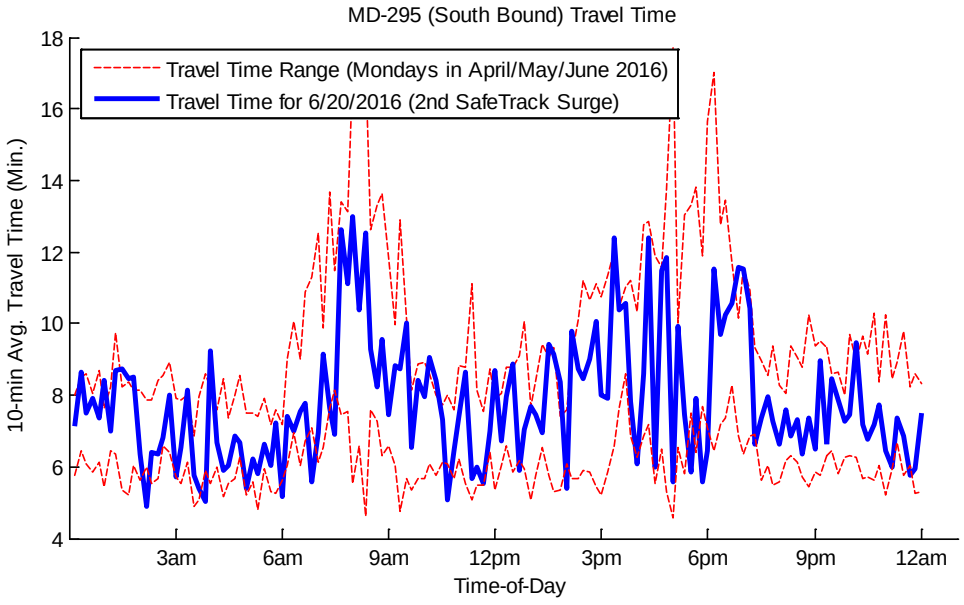


US-50 (shown in purple, from DC/MD Border to I-495 Exit 7), MD-295 (shown in blue, from Eastern Ave to I-495 Exit 22), I-495 (shown in green, I-295 Intersection to Exit 27)

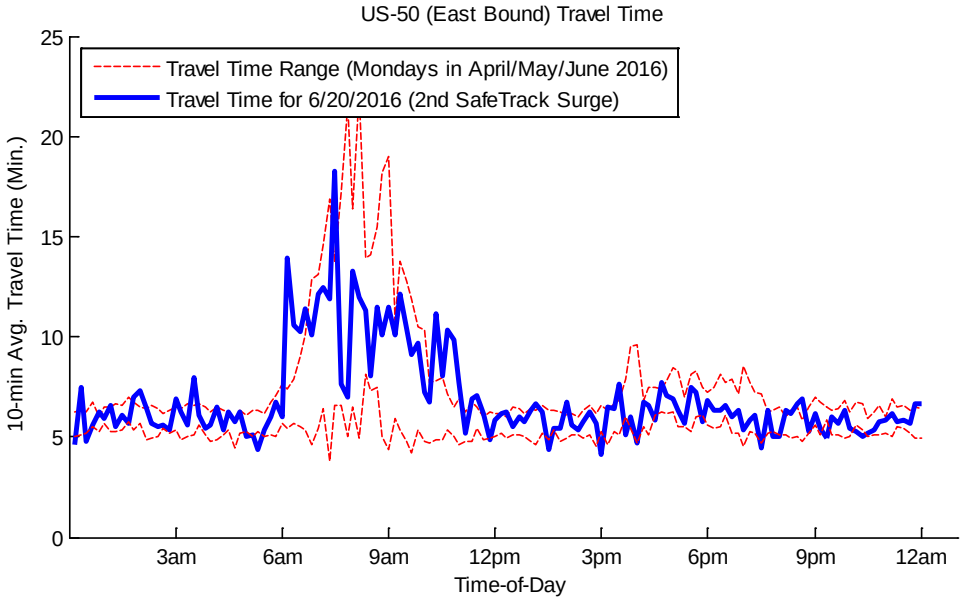
MD-295 North Bound (12:00 a.m. – 11:59 p.m., Monday, 6/20/2016)



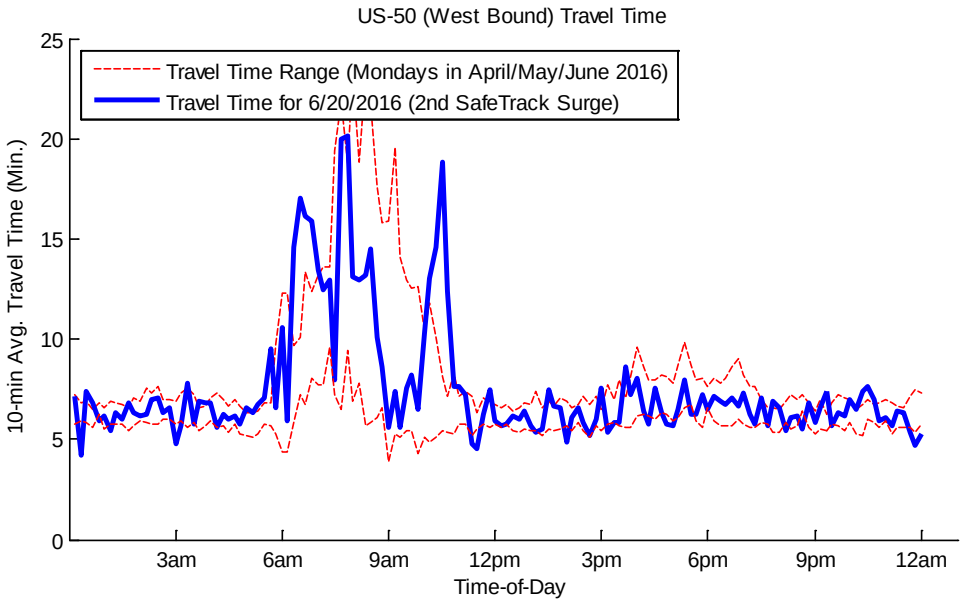
MD-295 South Bound (12:00 a.m. – 11:59 p.m., Monday, 6/20/2016)



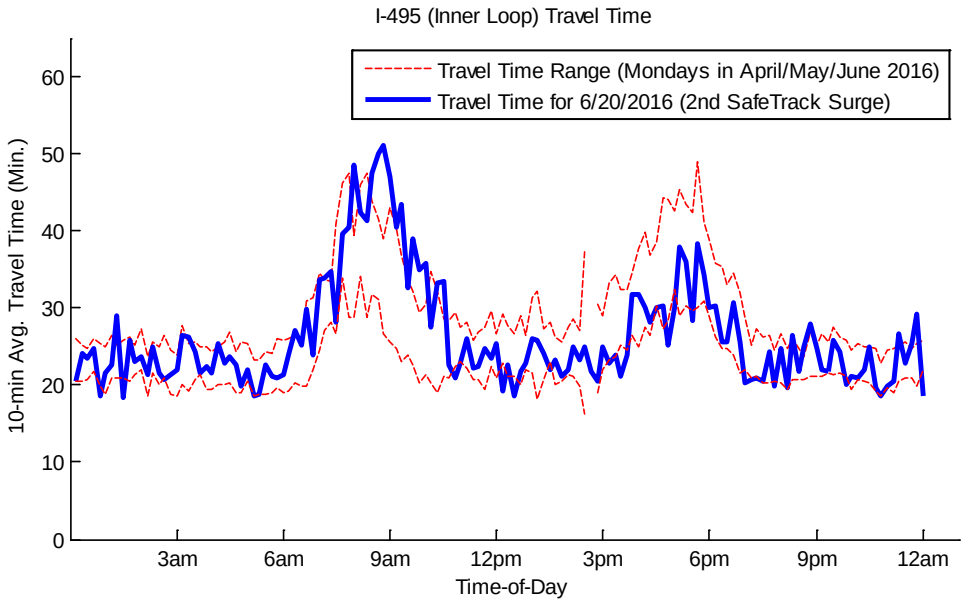
US-50 East Bound (12:00 a.m. – 11:59 p.m., Monday, 6/20/2016)



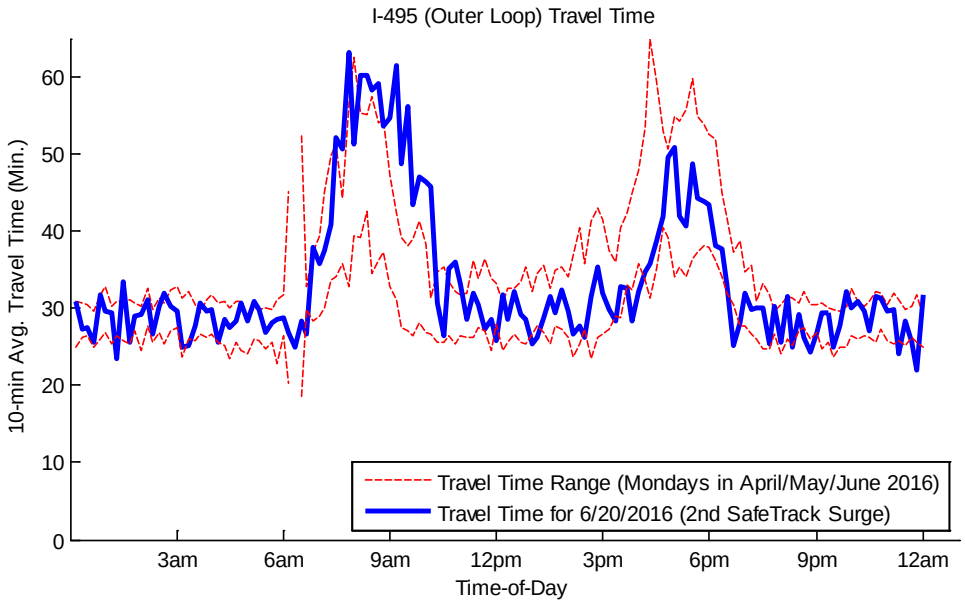
US-50 West Bound (12:00 a.m. – 11:59 p.m., Monday, 6/20/2016)



I-495 Inner-loop (12:00 a.m. – 11:59 p.m., Monday, 6/20/2016)



I-495 Outer-loop (12:00 a.m. – 11:59 p.m., Monday, 6/20/2016)



6. Highlights of the Next Issue

In the next issue of the NTC@Maryland Metro SafeTrack report series, we expect to publish survey results on how travelers have actually changed their travel decisions during and after the first SafeTrack surge. We previously published survey results on how travelers thought they would change travel behavior before the first surge. We also expect to include results on the increase or decrease of the number of vehicles on major roadways near the surge projects.