Response to "14th Street Corridor Traffic Analysis Overview"

We reviewed the new analysis released by NYCDOT called "14th Street Corridor Traffic Analysis Overview."

Salient new information

- **Off-peak bus ridership on 14th Street:** Even the *off-peak* bus ridership on 14th Street is higher than the *peak* bus ridership of almost any other bus route in NYC. This makes 24/7 dedication of the 14th Street Busway even more critical.
- **Speeds on the Williamsburg Bridge:** Speeds on the Williamsburg Bridge are slow from 7am to 7pm. Free flow speeds (i.e., speeds without traffic) would be around 30mph. However, speeds are only 7mph between 7am and 11am, with between 10am and 11am being the slowest. Speeds remain under 12mph from 7am and 7pm. The benefits of the proposed HOV lane would thus be realized all day.
- **13th Street bike lane:** NYCDOT's justification for choosing 13th Street for the bike lane is solid. 13th Street is closer to 14th Street than 12th St, and more continuous than 15th, 16th options. The two-way bike lane on 13th Street reduces parking loss over an alternative of one-way bike lanes on two streets. They are projecting 5,000 new daily cyclists on 13th Street.
- **Curbside bus lanes on 14th Street:** In a scenario with only curbside bus lanes on 14th Street and mixed traffic running alongside it (known as the SBS-only scenario), the model showed that buses will move very slowly as they will get stuck behind turning vehicles. There was, therefore, no additional analysis done on this scenario. This is why DOT prefers a full busway on 14th Street, at least for some portion of it. We agree with this assessment.
- **Target bus travel times for 14th Street:** DOT gave the consultants a target of reducing 14th Street bus travel times from end to end by 37% from the current baseline in which buses travel about 4.5mph. They claim that their current busway proposal and a shorter busway proposal can meet this target. We don't agree that they can meet this target with the currently proposed measures, as explained in detail in our January 2018 report.
- **Traffic on 12th, 13th, and 15th streets:** The "Do Nothing" scenario shows an 18% increase in traffic on 12th, 13th, and 15th streets. The study shows the "Short Busway" scenario (14th Street Busway between 3rd and 6th Avenues only) had a severely negative traffic impact on those streets, with a 68% increase in mixed travel times. As a result, it was not further considered. The "Busway" scenario (current busway proposal on 14th Street from 3rd to 8th Avenues) shows a very marginal (24 seconds of additional delay in the AM peak) increase of traffic on those streets. This is because in the longer "Busway" scenario, cars are likely to distribute to any number of parallel crosstown streets and not the ones immediately nearby, whereas in the "Short Busway" scenario, cars are more likely to use 14th Street for some portion of their journeys and then turn onto a nearby parallel street to complete their journeys. This seems like a reasonable conclusion. However, we believe the study underestimates the adverse traffic impacts on these streets because the model used is unable to consider modal shift to for-hire vehicles (see "Our Response" below).

How their analysis was done

DOT's analysis primarily relied on AIMSUN, a micro-simulation traffic impact assessment model. As input data, they used primarily traffic counts and turning movement counts, and a transit origin and destination matrix from the MTA. The MTA created a transit OD matrix from the ticketing system (the same person's morning boarding as shown from their farecard ID is assumed to be their 'origin' and its matched up with their afternoon boarding which is assumed to be their 'destination'). The data was processed in TransCAD and seems to be within 5% accuracy.

Our Response

The study is limited by the capabilities of the AIMSUN model, and what the consultants were asked to model. AIMSUN is mainly used to optimize intersection designs. The authors are quite honest about the limitations of the study, but as a result they are not able to demonstrate the full impact of the shutdown and the various middle-of-the-road options. The following three points describe the key shortcomings of the L Train Shutdown study, making it difficult for MTA/NYCDOT to paint a realistic picture of what is to come:

1. **AIMSUN cannot account for modal shifts from public transit to private or for-hire vehicles if the bus speeds are very slow.**

If the bus speeds on 14th Street or the Brooklyn shuttles are very low, far fewer people will take buses and far more will take for-hire vehicles (FHVs). The model does not account for this. Any amount of shift to private automobiles will then have significant adverse impacts on traffic speeds on both 14th Street and other parallel cross-town streets, which is also not accounted for in the model.

As a result, we are left with fairly weak statements in the report which acknowledge – but do not actually quantify – these potentially significant impacts. For example, when looking at the traffic impacts on 12th, 13th, and 15th Streets for the "Do Nothing" scenario (an 18% increase, they say), the report says:

> *"This does not take into consideration a likely induced shift to personal and for-hire vehicles which would further increase volumes and travel times."*

It would have been more helpful if they had tried to measure these results and adjusted their main results accordingly.

Similarly, when comparing the "Do Nothing" to the "Busway" scenario, (where the "Busway" shows a very minor deterioration in speeds on 12th, 13th, and 15th Streets compared to the Do Nothing scenario), the report says:

> *"With an anticipated 10,000 bus riders in the AM peak hour, if only 3%-5% of those riders choose taxi instead, the "Do Nothing" scenario could actually see worse traffic conditions on the side streets than with the proposed Busway."*

Again, it would have been more helpful had they estimated these impacts and included these estimates in their headline.

2. AIMSUN is not designed to measure busway speeds or saturation

AIMSUN is primarily designed for intersection simulation so it is good for measuring congestion delays and delays faced by buses at the intersections. However, it does not have a means of calculating site-specific and design-specific bus stop delay and potential bus stop saturation.

In high volume bus corridors, saturation occurs at the bus stop, not at the intersection. AIMSUN uses a single bus stop delay value that varies only based on bus frequencies. However, the number of passengers getting on or off at any given stop and the features employed for speeding the boarding process, all have a significant impact on bus stop delay.

On 14th Street, there is huge variance in boarding and alighting volumes at each stop which will have a huge impact on delay. Additionally, while DOT and MTA are considering off-board fare collection along 14th Street, they are not currently considering all-door boarding on the M14A and M14D, which will continue to operate. Nor are they considering at-level boarding platforms. The lack of these elements will also have a significant impact on delay at bus stops. AIMSUN is not designed to measure these. As a result, it is not an effective tool for calculating bus speeds under alternative design scenarios.

The authors appear partially aware of this shortcoming. They state the following:

> *"Very frequent service means multiple buses at stops simultaneously, which in an SBS scenario then become delayed as they wait to pull out into passing traffic. Blockage factors are applied to bus lanes and bus stops in DOT traffic models, but modeling efforts still tend to underrepresent the degree to which these instances can bring bus service to a halt for multiple signal cycles."*

For these reasons, we believe this study significantly understates the degree to which bus stop saturation is likely to undermine bus performance even under their proposed Busway scenario.

3. The study does not analyze an extension of the busway to Avenue A or 1st Avenue or other design elements like platform-level boarding

The authors did not analyze whether there would be significant additional benefits to extending the busway to 1st Avenue or Avenue A. However, they do show greater negative impacts to the "Short Busway" scenario on parallel streets than to the longer "Busway" scenario, for reasons described above.

As such, it is likely that extending the busway even further would displace even fewer vehicles on nearby parallel streets. With the current "Busway" scenario, there will be huge volumes of FHVs picking up and discharging passengers at Stuyvesant Town, driving west on 14th Street to 3rd Avenue, and then turning onto 3rd Avenue and taking the nearest parallel street. These large turning volumes at 3rd Avenue will cause significant delays to the bus lanes which will be shared with this turning traffic. As such, the impacts of extending the busway to 1st Avenue or Avenue A should have been studied, as it might have shown better results.