Project Goals

Expected outcomes and benefits of the Multi-mode traffic flow optimization in Marysville

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Project Goals

- Flow Optimization
  - Less congestion on main corridors throughout City, meeting current traffic need and preparing for future growth
  - Smoother flow = reduced Greenhouse Gas Emissions

- Freight priority
  - Higher priority to larger vehicles, who slow traffic flow when starting and stopping at red lights, and also produce the most greenhouse gas emissions

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Validation Testing Results

How did we stack up with the project goals?

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Test Procedure

- The test was performed between January 6 and February 22, 2025
  - Total of six weeks = Three cycles of one week on and one week off
- Data was collected during all six weeks of the study
- Delay incurred by vehicles and pedestrians at each of the TFE controlled intersections was calculated, by comparing when the system was on vs. when it was off
- If the calculated delay is positive, that indicates a benefit to traffic at that intersection. But if it is negative, that indicates an increase in time spent at that intersection.

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Modalities

- The following colors are used to denote the different modalities that were observed at each of the intersections:
  - Passenger Vehicle
  - Semi-Truck
  - School Buses
  - Pedestrians

- The volumes of other modalities (like mobility scooters, bicycles, etc.) were too low to compare them in a statistically correct way.

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Priorities

- TFE operates the traffic signals based off of priorities for each modality
- The following priorities were used for the different modalities:
  - Bus = Top Priority
  - Semi Truck = 2nd Priority
  - Pedestrian = 3rd Priority
  - Passenger Vehicle = 4th Priority
- Larger vehicles, who have more trouble starting and stopping and produce higher levels of GHG emissions, are given the highest priority to meet the previously stated project goals

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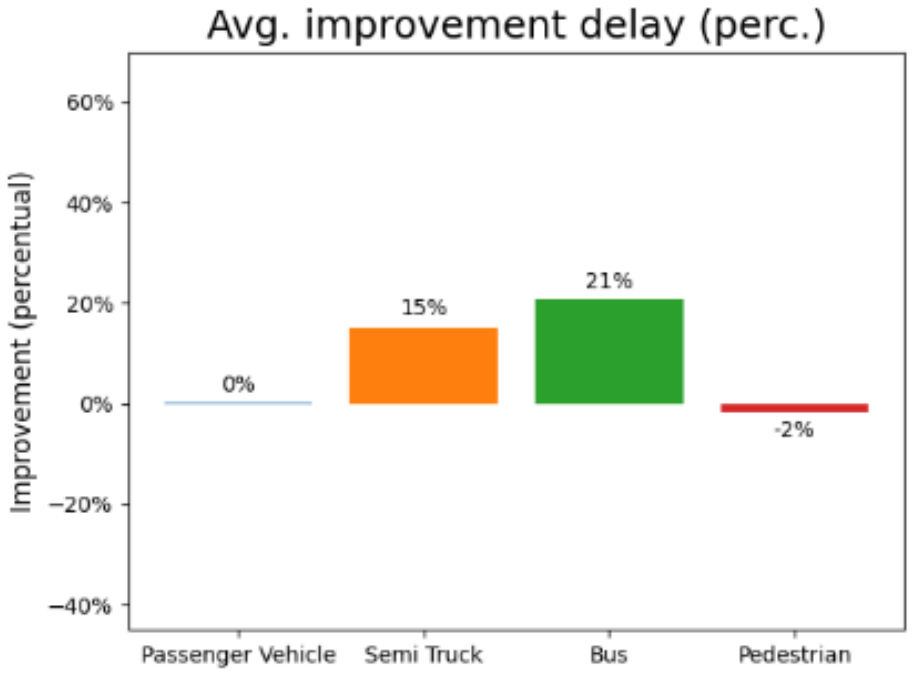
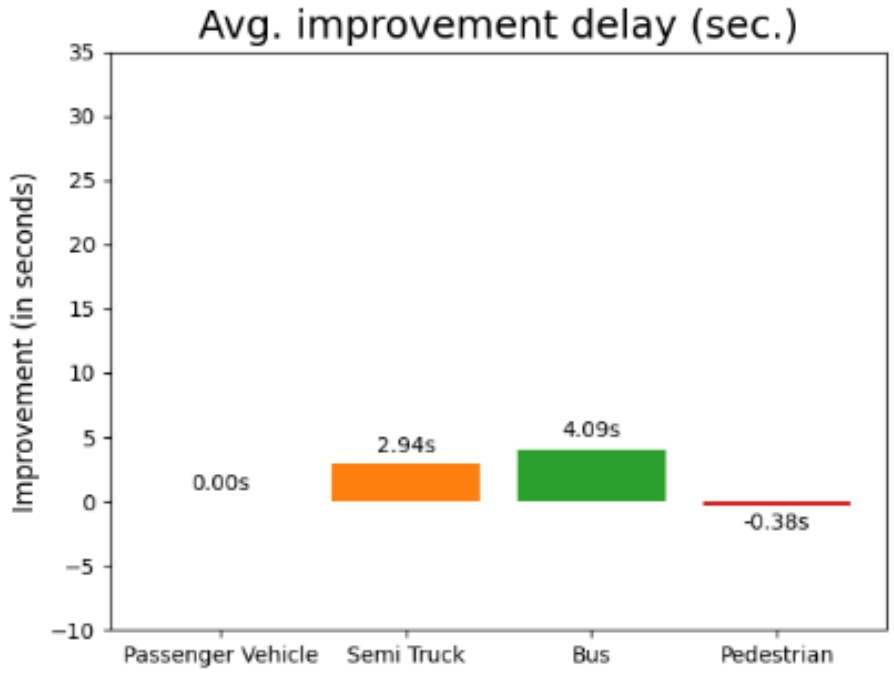
Delaware Corridor Results





The figures above show the improvement for the whole corridor. This is a weighted average on the data for all intersections on this corridor, for the mainline as well as the minor approaches (side streets).

These graphs clearly show that the priority is given to Semi-Trucks and Buses, just as the system was programmed.

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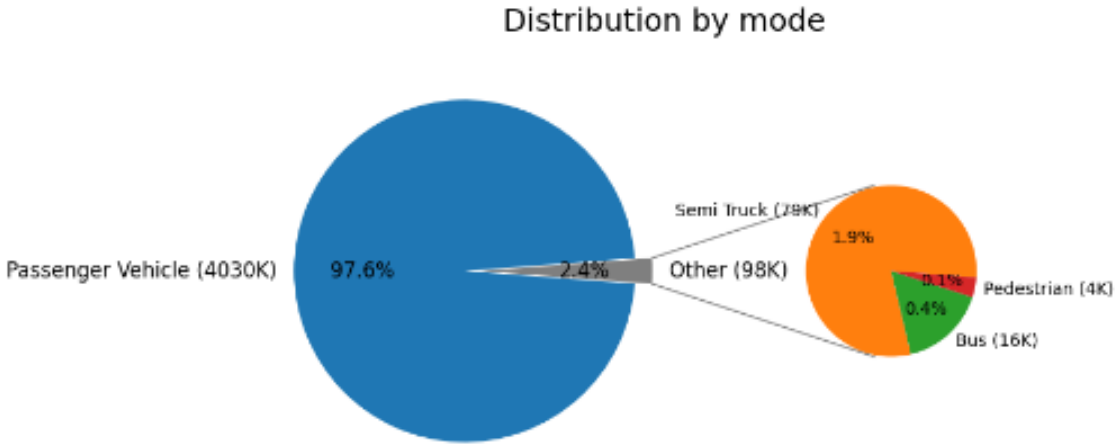
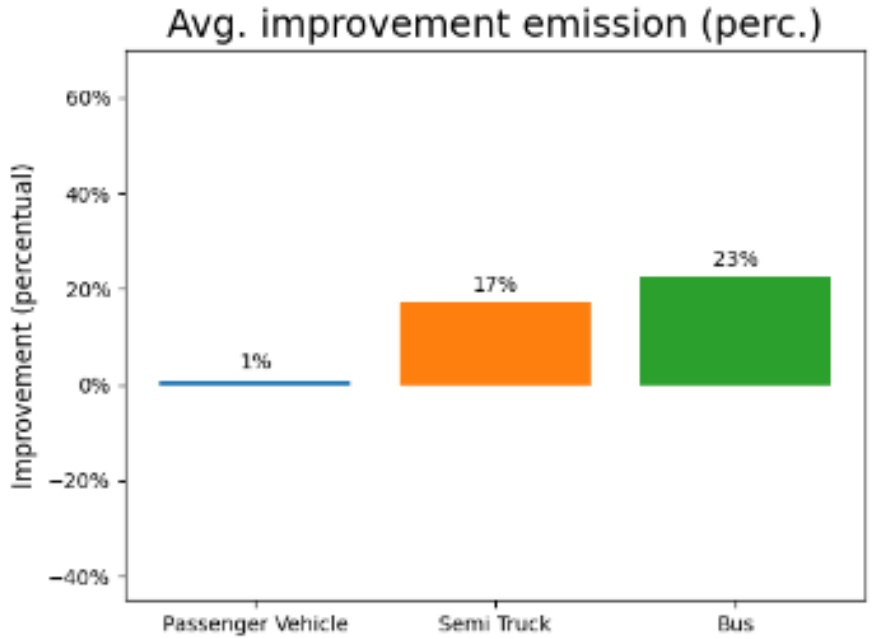
Delaware Corridor Results (Con.)





Vast majority of vehicles recorded on the corridor during testing period were passenger vehicles (97.6%).

However, because of the priority given the trucks and buses, we were able to reduce emissions produced by those modalities by 17% and 23%, respectively, with an additional 1% from the passenger vehicles.

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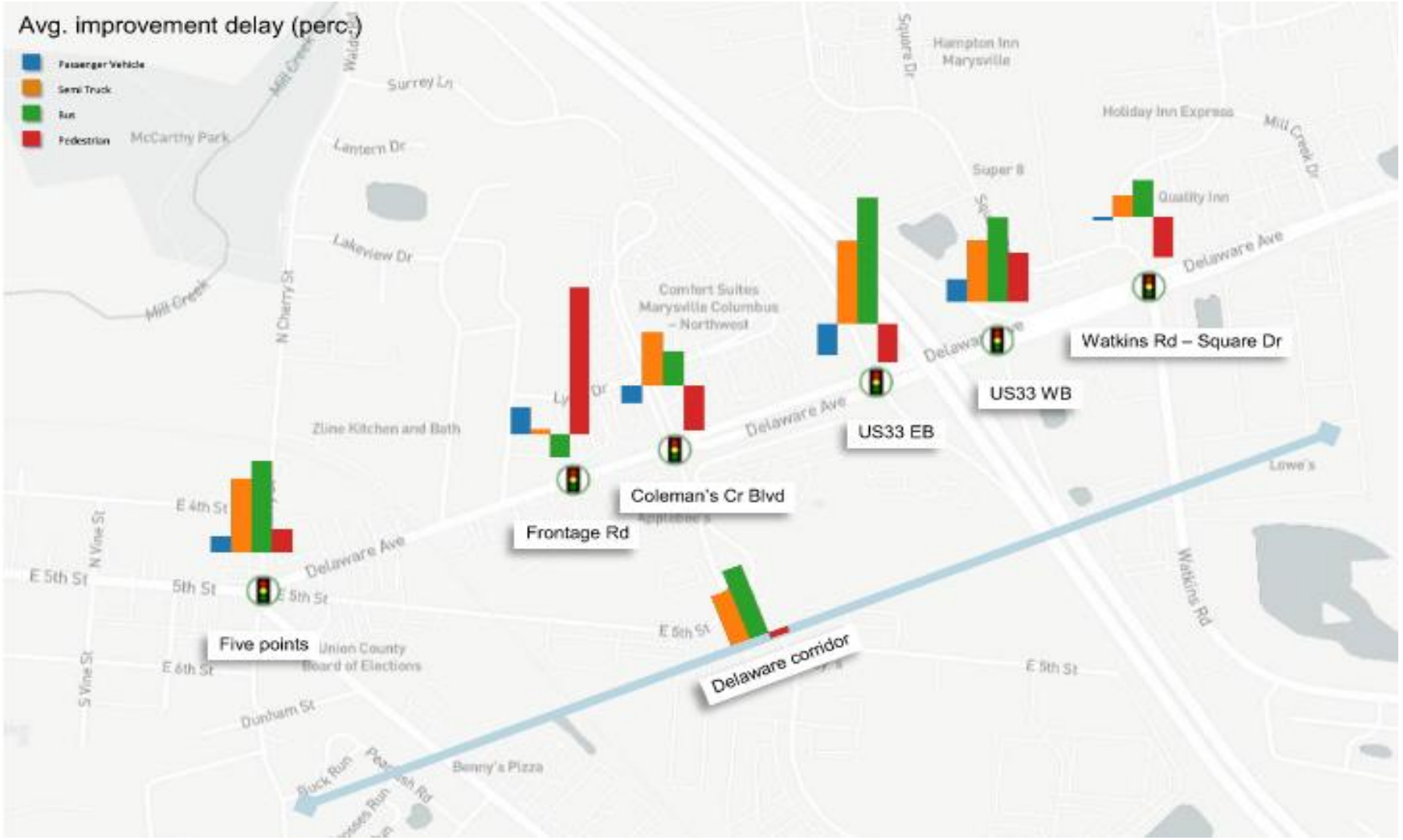
Delaware Corridor Results (Con.)



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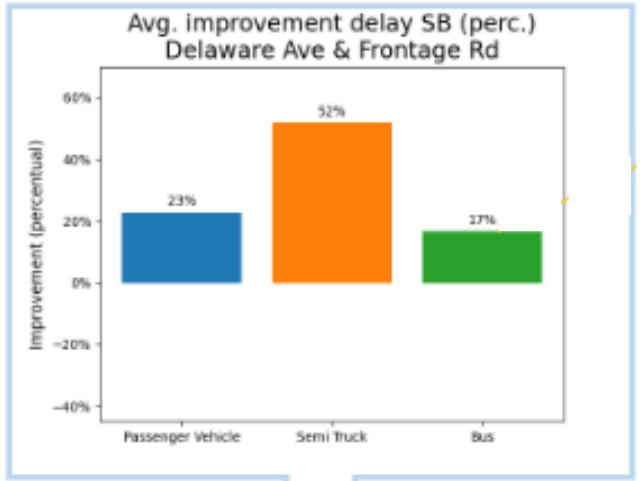

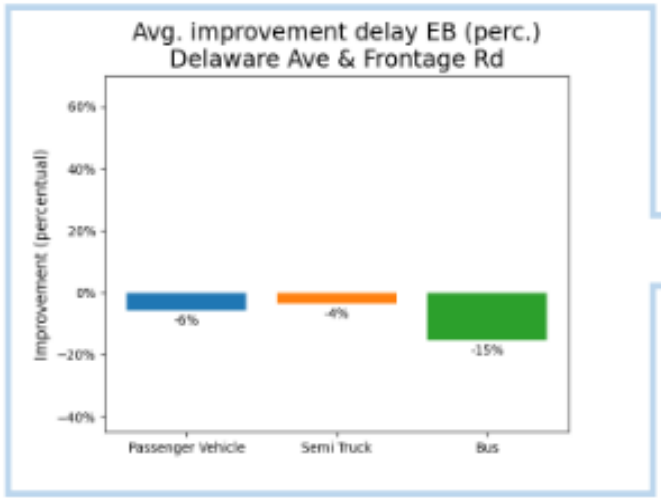

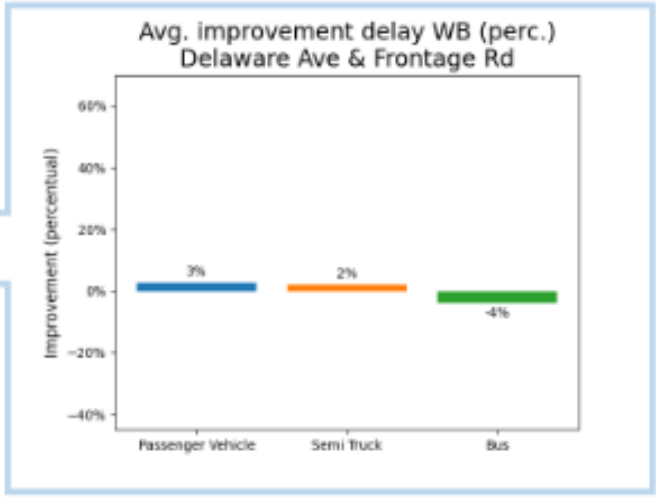

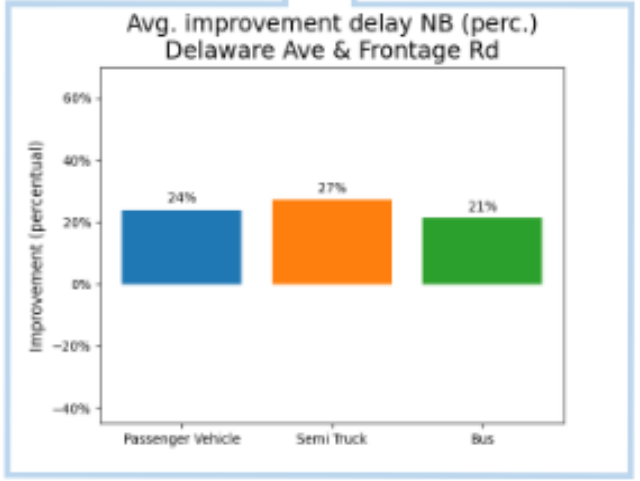

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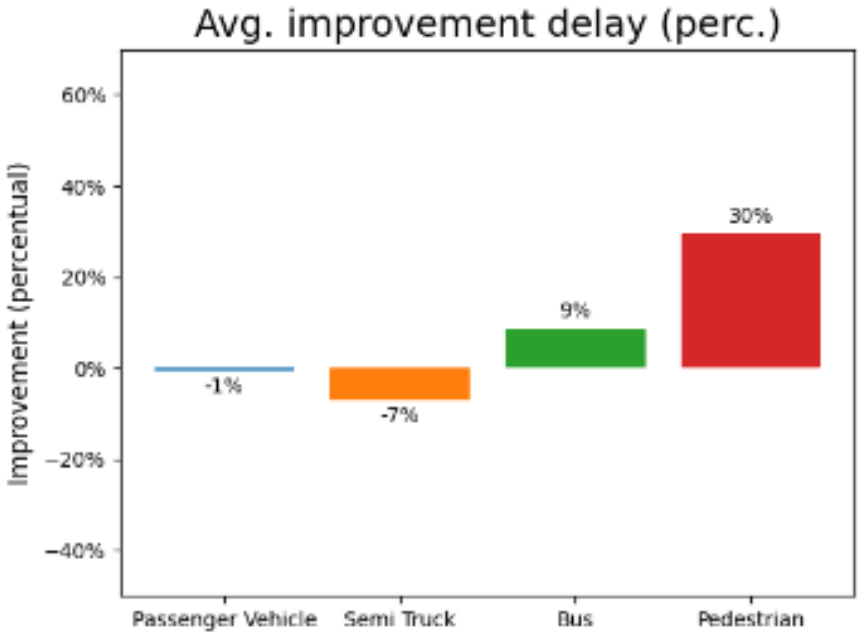
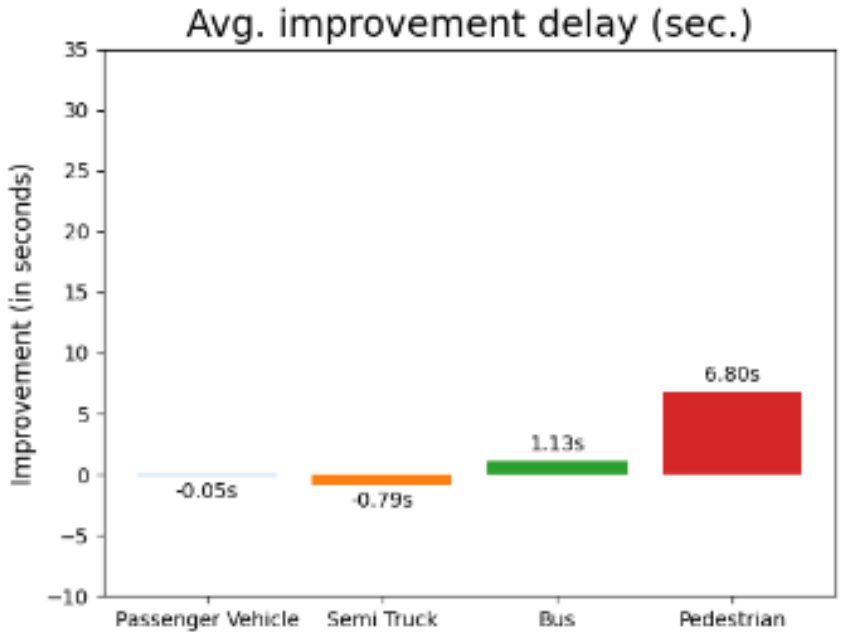
SR-31 Corridor Results





The figures above show the biggest improvements in the corridor are seen by Buses and Pedestrians. However, we are seeing a slight decrease for Passenger Vehicles and Semi-Trucks.

The biggest benefit along SR-31 can be seen on the side streets, but this is at a cost to the main line.

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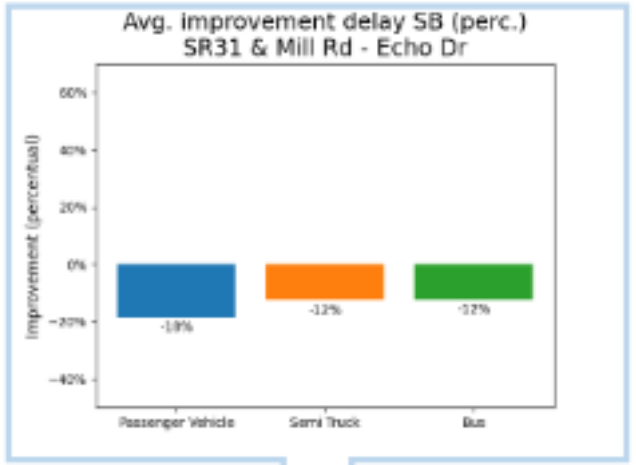

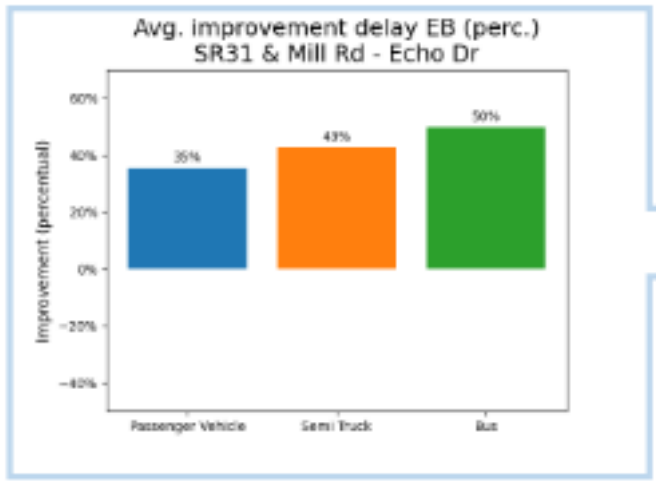

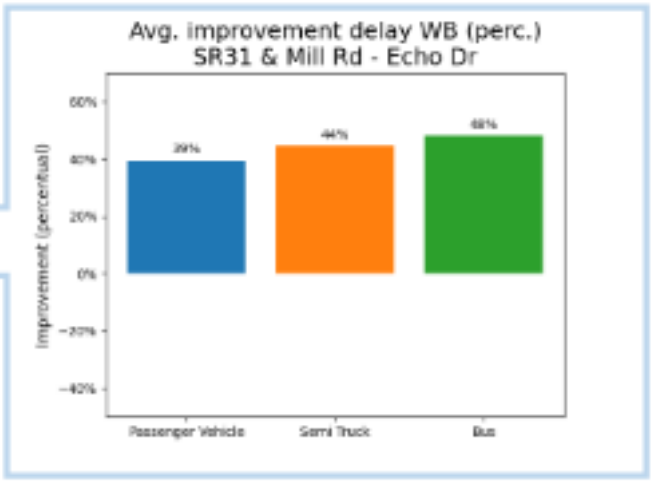

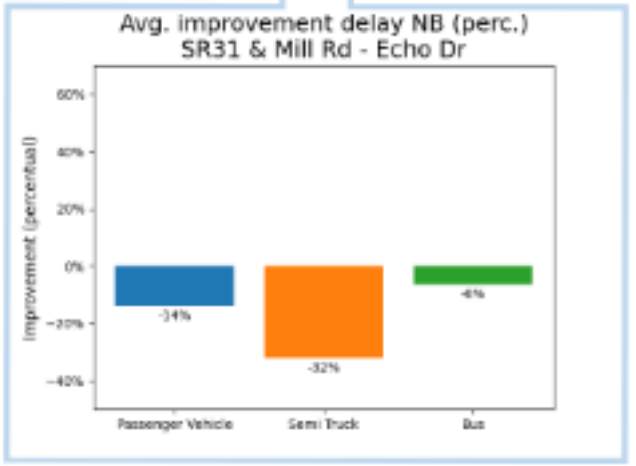

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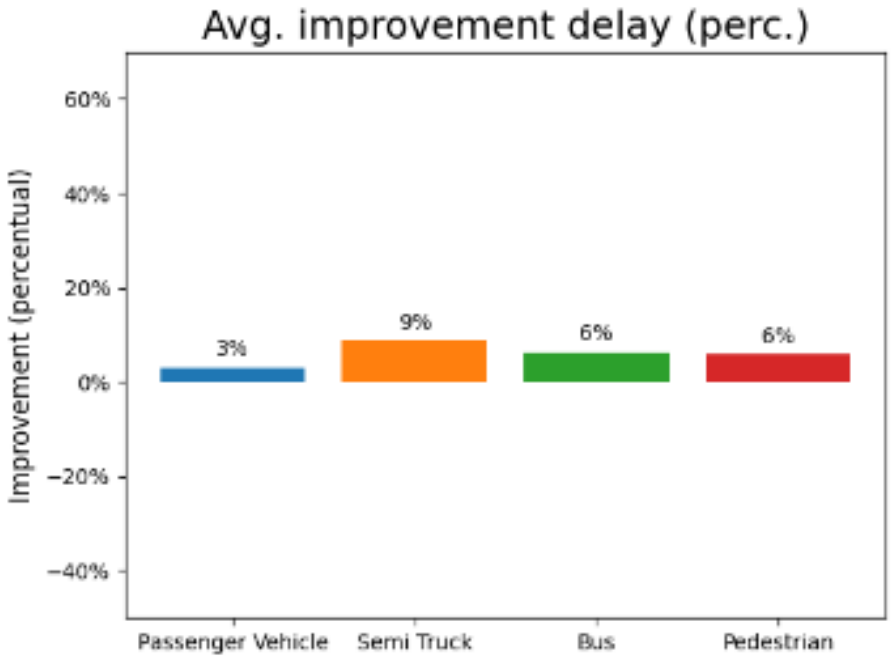
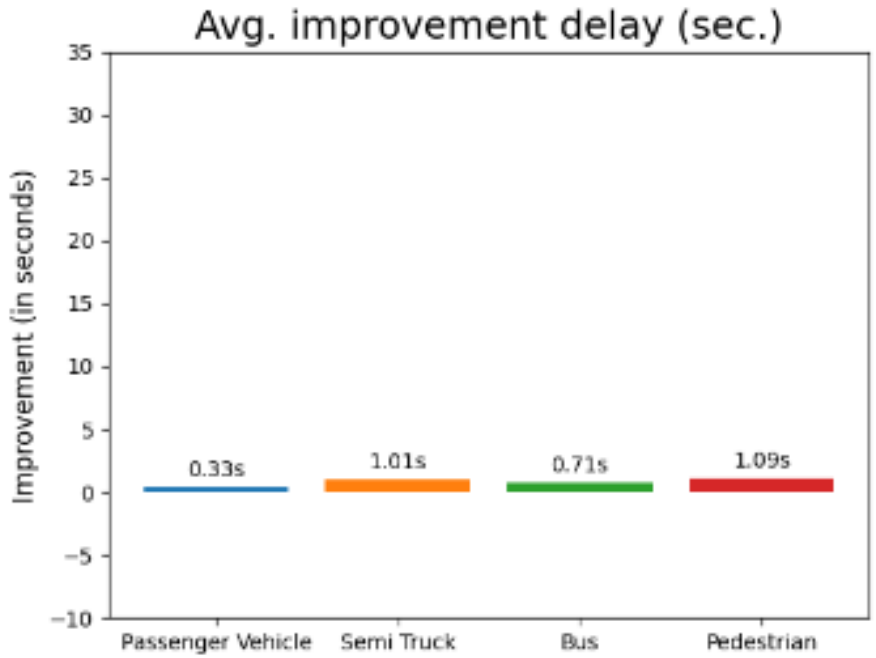
Uptown Area Results





The figures above show the improvement for the whole corridor.

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Conclusions & Recommendations

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Conclusions

- Overall, the TFE performed as programmed
  - Greatest benefit was seen by the modalities with the highest priorities (Semi-Trucks and Buses)
  - Improvements to traffic flow and reduction in emissions were observed throughout the areas tested
- Side streets seeing greatest benefits, sometimes at the cost of the Mainline
  - This is can especially be seen along the SR-31 corridor
  - System give shorter but more frequent green times, due to the faster cycling through the different phases.
- TFE has potential to make Marysville more “Walkable”
  - Uptown Area pedestrians are now able to trigger walk signals, even though there are no push buttons
  - SR-31 Corridor sees a huge benefit to pedestrians, even though there is relatively few of them compared to other areas
  - Delaware Corridor sees a small benefit to pedestrian, even though they have the second highest percentage of them – priorities may need tweaking

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Recommendations from TNL

- Decide if the current reduction of performance on the mainline, in favor of the side streets, is acceptable or if the system should be tweaked to favor the mainline
  - This could improve overall at the SR31 corridor and intersections like Delaware Ave & Frontage Rd and 5th & Coleman's Crossing Blvd.
- Decide if priorities for the different modalities should be adjusted to match policy goals.
  - E.g.: reduce priority of semi trucks to match those of passenger vehicles, increase pedestrian in Uptown Area and Delaware corridor, etc.
- If changes are made to the system, retest to see effectiveness of the changes to renewed project goals.

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Questions?

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