Project Team 3 - Buses

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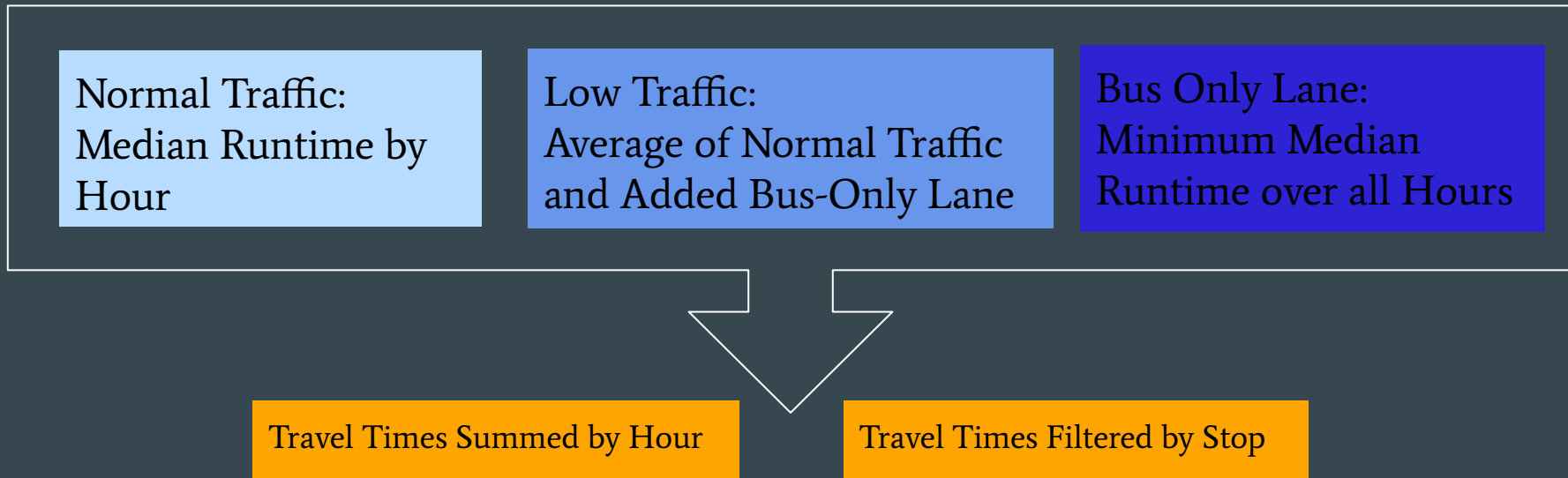
Problem

- Parking is limited in and around Chester Square, so many residents need a reliable bus for their transportation needs.

- Currently, the buses are not reliable. They are often delayed and impacted heavily by traffic along their routes.

- Runtime of a bus varies heavily based on time of day.

Project Goal

1. Show the benefits of adding a Bus-Only lane to the Route 1 Outbound bus route, in regards to travel time.
2. Compare different traffic scenarios in order to greater emphasize this benefit.
3. Display the impact of a Bus-Only lane across the whole route, as well as between individual stops.
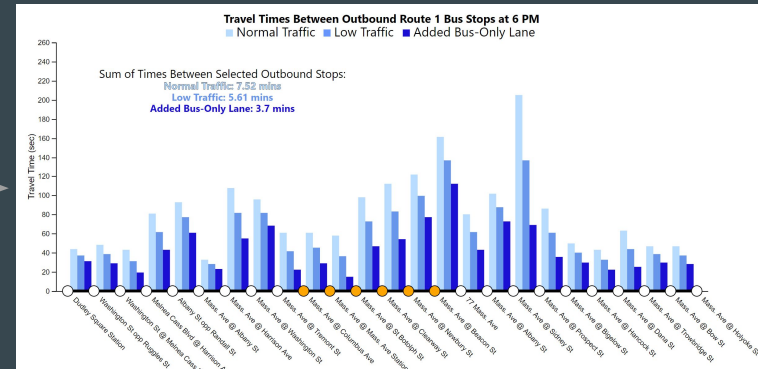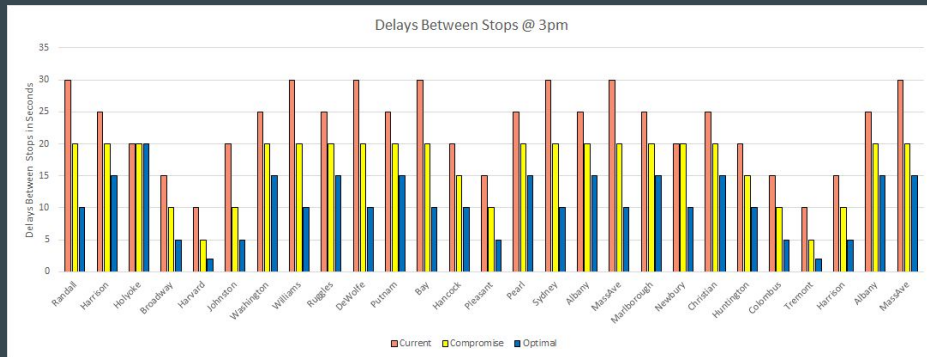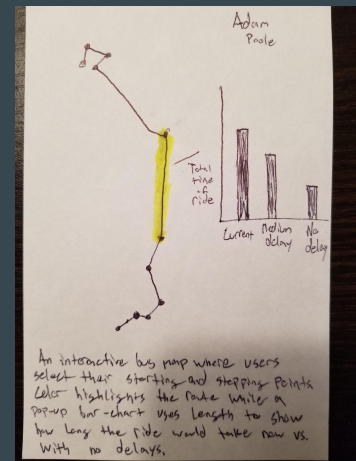4. Give geographical context for the route as well.

Collection Process & Data Analysis

- We employed the MBTA's "Segment Level Delay Analysis" dataset for our visualizations, and focused the Route 1 Outbound route runtimes.

Normal Traffic: Median Runtime by Hour

Low Traffic: Average of Normal Traffic and Added Bus-Only Lane

Bus Only Lane: Minimum Median Runtime over all Hours

Travel Times Summed by Hour
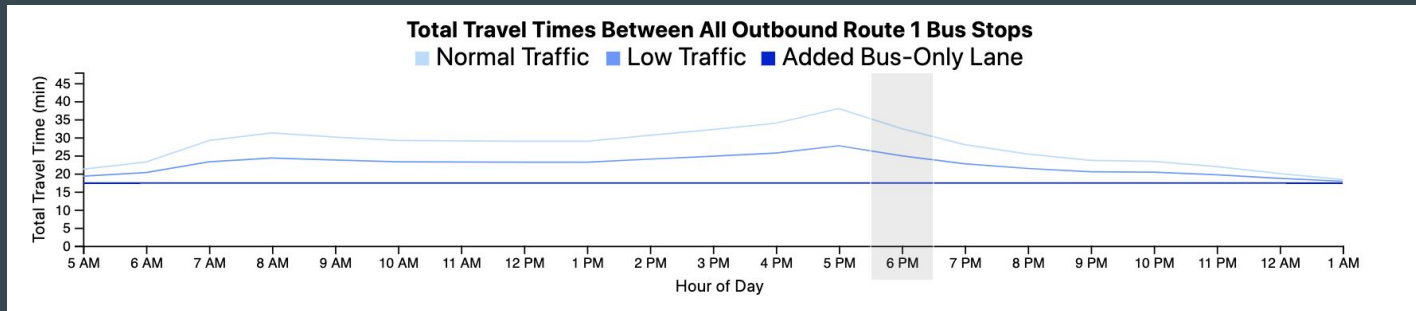
Travel Times Filtered by Stop

Design Process

- Sketches mainly focused on most effective presentation over style

- Feedback from basic interaction design had us change color scheme and focus on how we could make our visualization more effective and less confusing
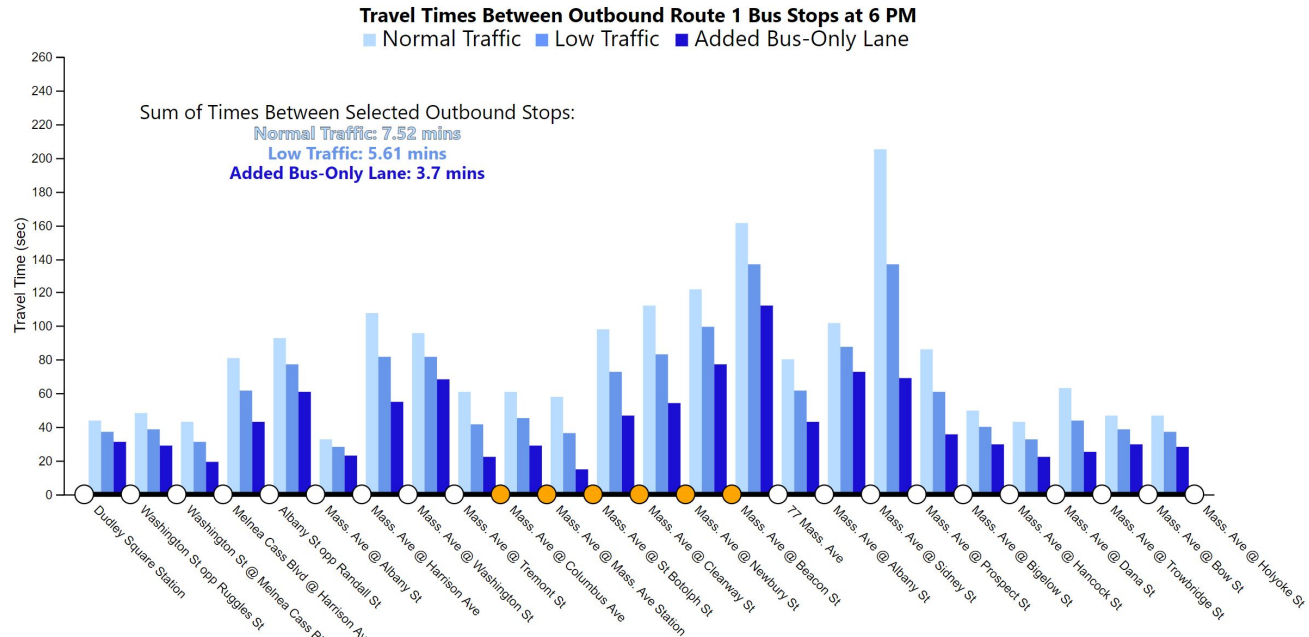
Line Chart

➔ Shows the overall travel time from one end of the Outbound Route 1 route to the other

➔ Normal Time - Current median runtime

➔ Low Traffic - Runtime given low traffic conditions

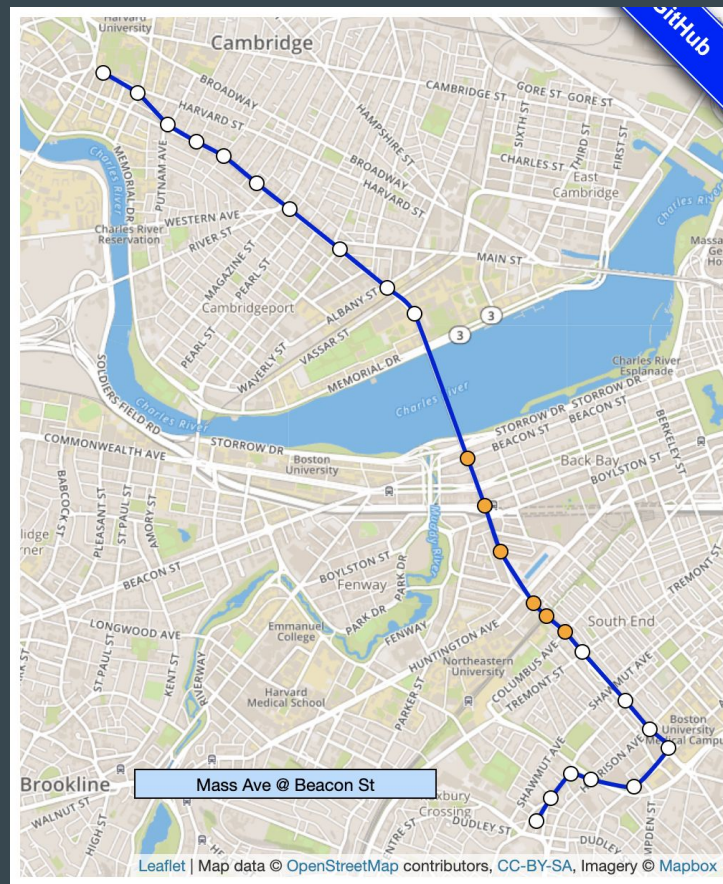➔ Added Bus-Only Lane - Runtime with an added bus-only lane

Total Travel Times Between All Outbound Route 1 Bus Stops
■ Normal Traffic ■ Low Traffic ■ Added Bus-Only Lane

Total Travel Time (min)

Hour of Day

Bar Chart

Travel Times Between Outbound Route 1 Bus Stops at 6 PM

➔ Runtime between stops on Route 1

➔ Displays times for each possible traffic scenario

➔ Displays summed times between selected stops for each given scenario

Map

➔ Visual display of Route 1 buses outbound
route

➔ Displays stop names of all stops on the
outbound route

➔ Can select stops on the map to see travel
times between stops on the bar chart

Demo Video

Conclusion

- In its current state, the Route 1 bus is unreliable.
- Even in low traffic scenarios, the bus is unreliable
- An added Bus-Only lane could drastically improve the reliability and efficiency of the bus.

Future Directions

- Incorporate the Inbound Route 1 bus route as well.
- Incorporate other bus routes around the Chester Square area.

https://northeastern-ds-4200-f19.github.io/project-team-3-buses/