OFFICE OF
TRANSPORTATION, INFRASTRUCTURE & SUSTAINABILITY

MEMORANDUM

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Date: January 26, 2022

To: Michael Carrol, P.E.
Kelley Yemen
Lily Reynolds

From: Andrew Simpson

Re: Washington Avenue Transit Reliability

The purpose of this memo is to describe reliability trends for buses running on Washington Avenue to better inform conversations around corridor reliability and travel flows.

Methodology

- Source: Swiftly Running Time API, collected from SEPTA GPS vehicle locations
- Processing: Used scripts written by Andrew Simpson to convert Swiftly data into corridor-level analytics
- Dates: April 1 - 30, 2021 (Monday – Friday)[1]
- Times: 3:45PM – 6:15PM[2]
- Sample size:
    - n = 138 trips observed for westbound buses
    - n = 118 trips observed for eastbound buses

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[1] Analysis was attempted for October ’21 and January ’22, but there was a significant gap in data for eastbound buses. This could be due to a construction detour, labor shortages, data errors, other issues, or a combination of many factors. April ’21 provided adequate samples.

[2] Timestamps represent when bus enters corridor, so this effectively measures 4-6:30pm peak for corridor. Time period was expanded from traditional peak to ensure adequate sample size and show variability between peak and peak-edges.

Results

This analysis showed that, generally, transit running times on Washington Avenue are reliable. Washington Avenue does not have particularly high ridership levels, which are known to decrease reliability by increasing the odds of bus bunching. The results shown below indicate a passenger could expect their trip to take between 10 and 15 minutes to ride the full length of the corridor. 10^{th} and 90^{th} percentile travel times deviate roughly 15-20% from the mean (see Figure 2).

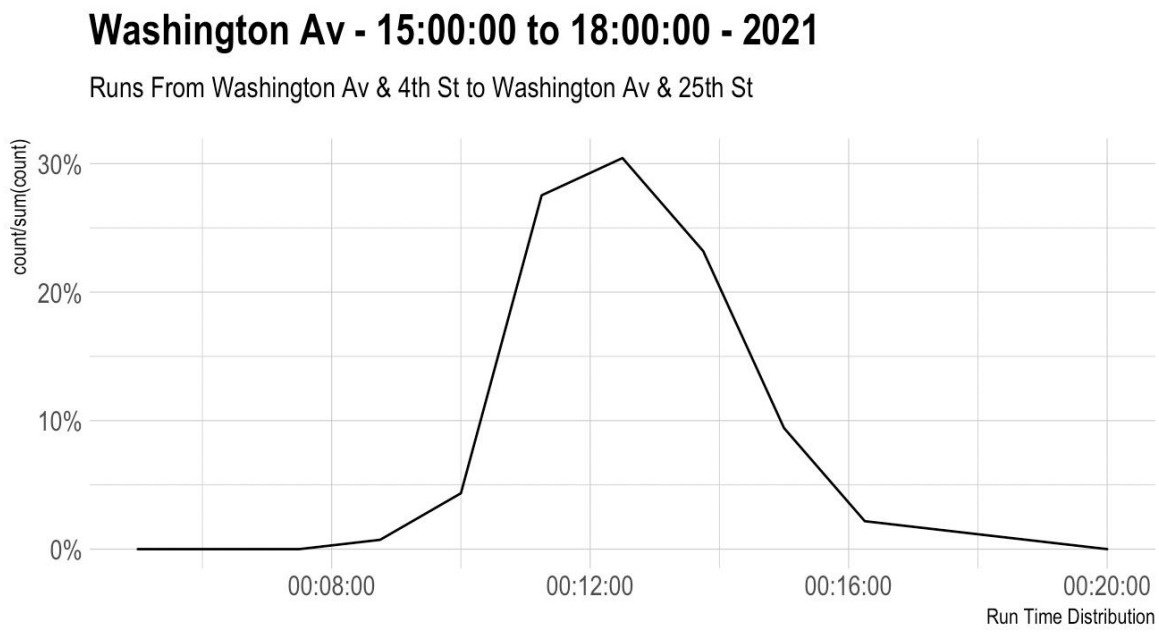
Westbound bus movements show similar reliability trends across the PM peak hours, while eastbound buses show slightly worse reliability in the 4pm period versus the 5pm period (Figure 3). Overall, eastbound buses have a slightly tighter spread, but not drastically (Figure 4).

The actual values for the 10^{th}/50^{th}/90^{th} percentiles are as follows:

Direction	Samples	10^{th} Percentile	50^{th} Percentile	90^{th} Percentile
Westbound	138	0:10:45	0:12:47	0:14:50
Eastbound	118	0:10:37	0:13:04	0:15:53

Supporting Figures

Figure 1: Distribution of Running times for Washington Avenue Buses, Westbound vs. Eastbound, April ‘21



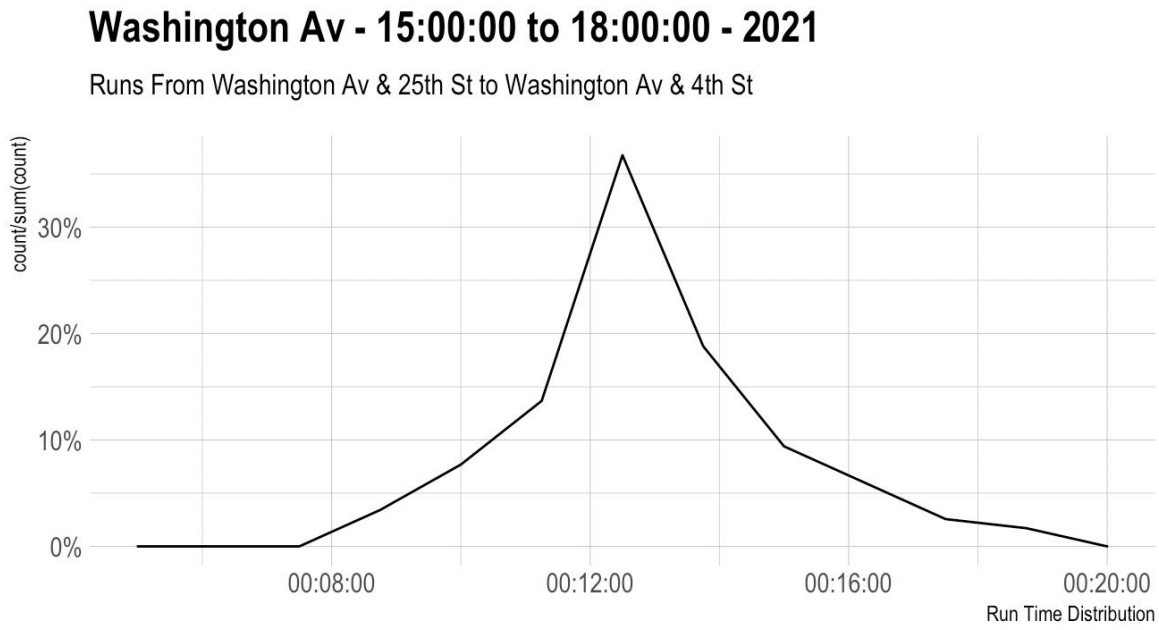


Figure 2: Percent Spread in Running Times, 3:45PM to 6:15PM, Westbound vs. Eastbound

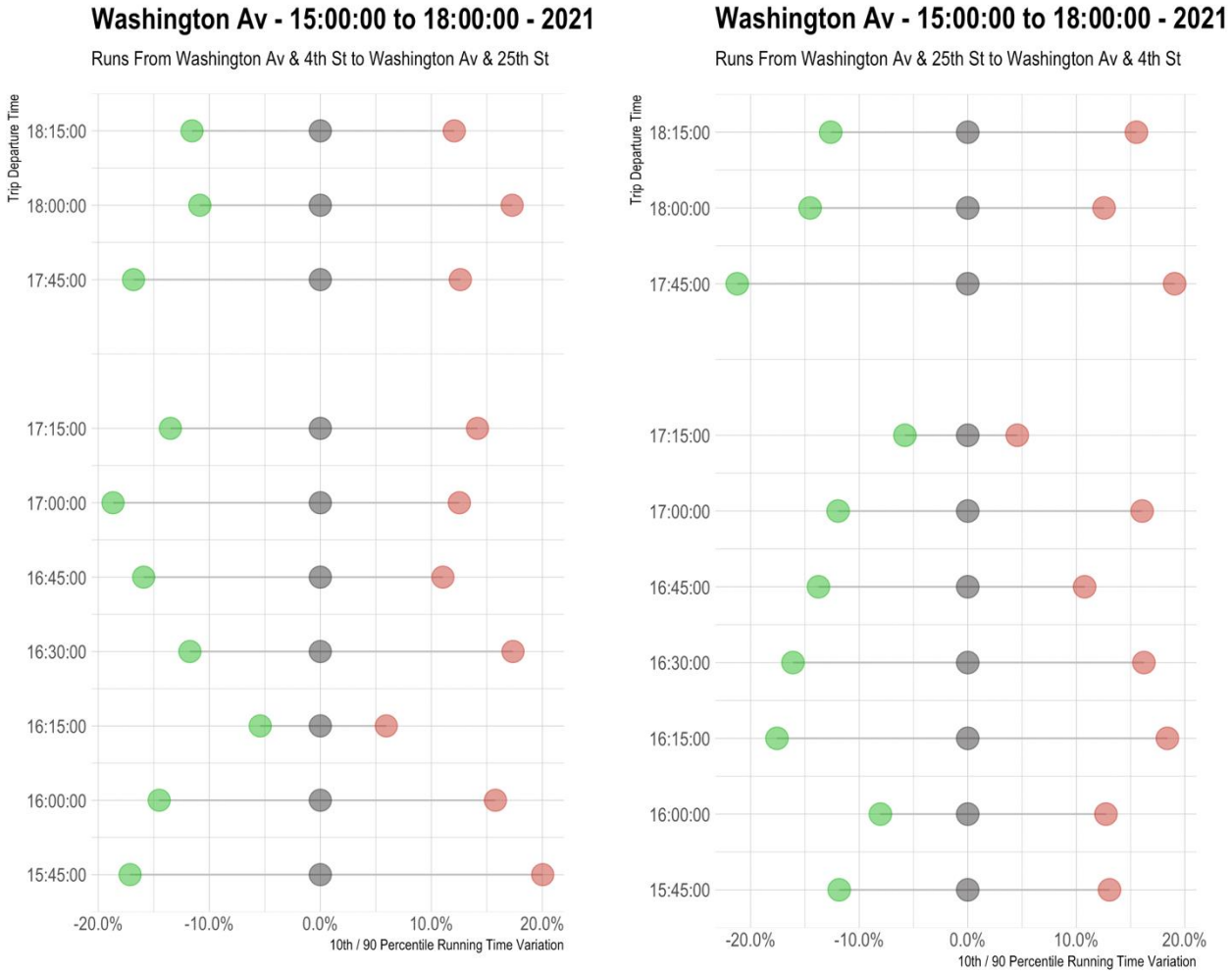


Figure 3: Absolute Spread in Running Times, 3:45PM to 6:15PM, Westbound vs. Eastbound

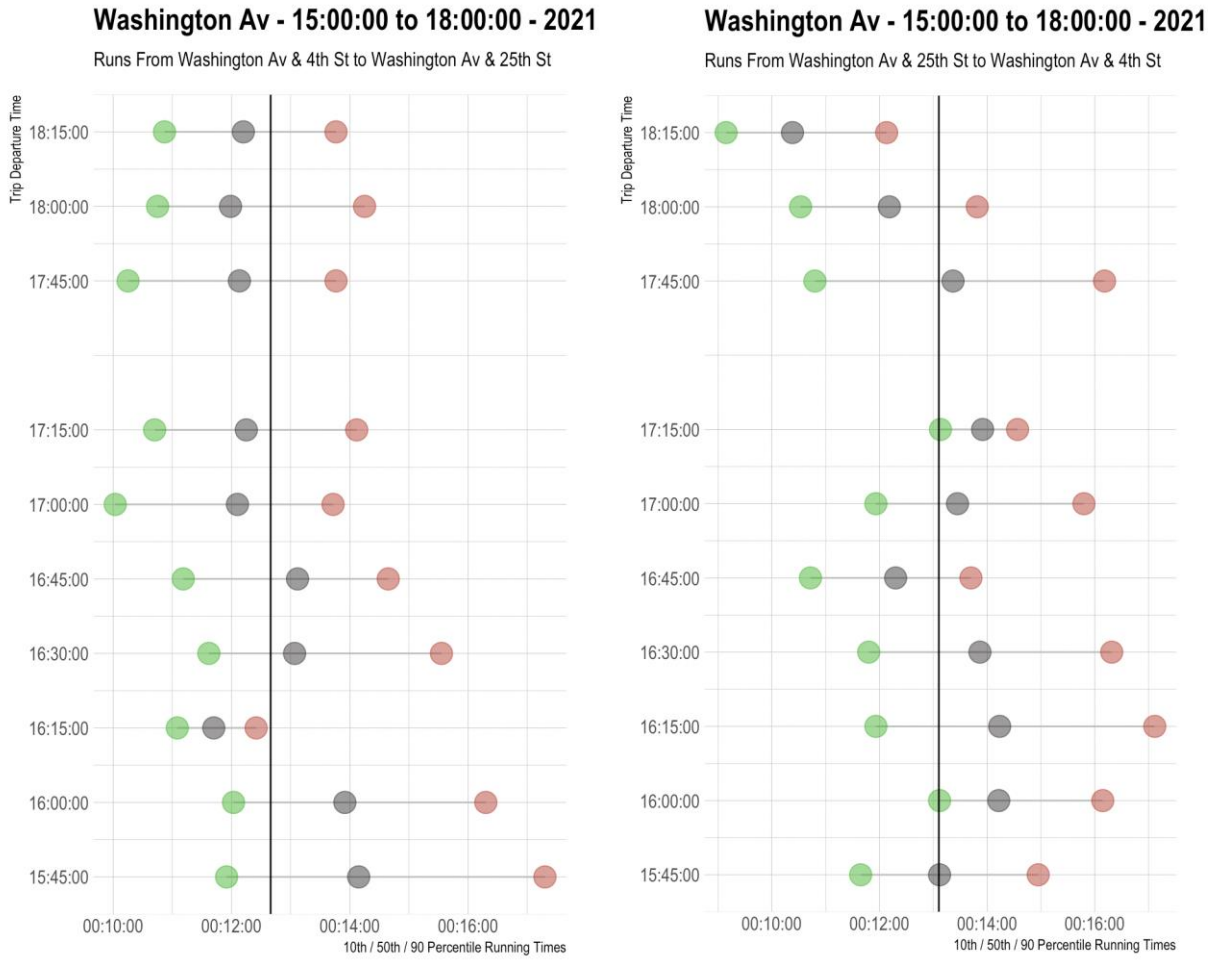


Figure 4: Distribution of Running Times by 15-minute Bins for Washington Avenue Buses, Westbound vs. Eastbound, April '21