Segment Analysis Output

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Preface

The following analytics are created using Spring 2019 APC Data from SEPTA.
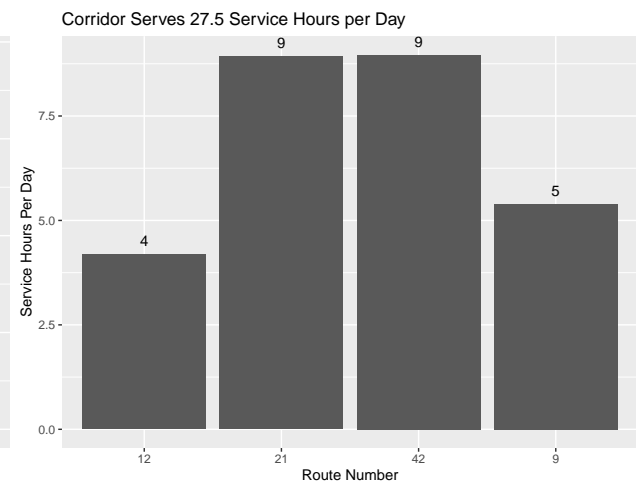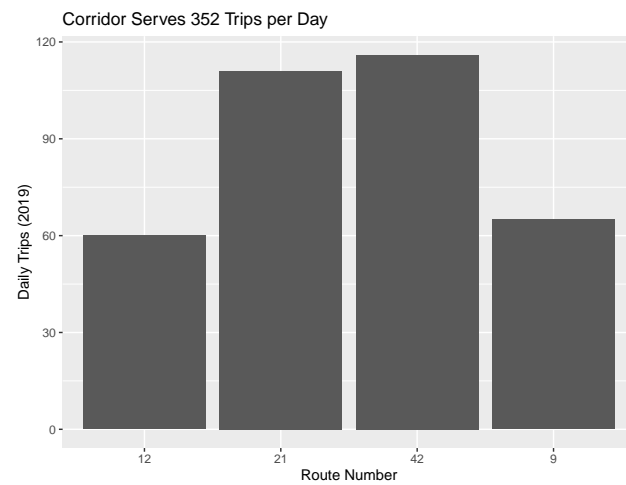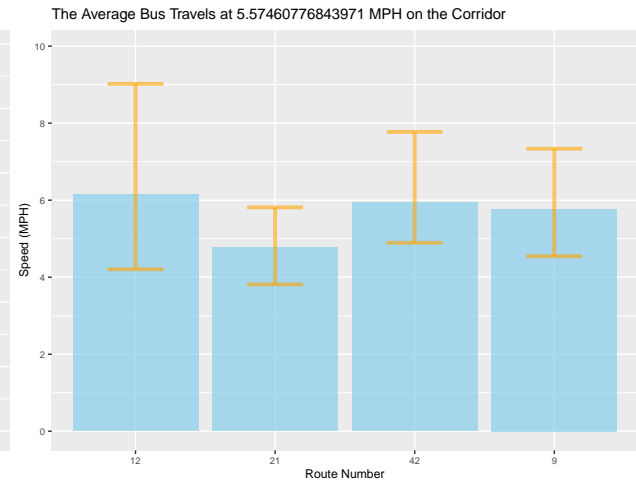
Data warnings:

- Dwell time only available on some routes;
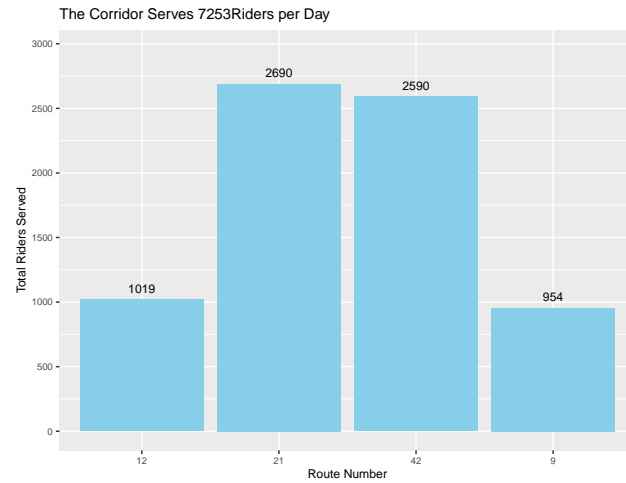- Be wary of route directions (e.g. the SB Route 48 annd the NB Route 17 both actual run East on Market Street)
- Ridership is defined as all people riding the bus on a corridor and is calculated as `load_entering_corridor + all_boards_along_corridor = corridor_ridership`; and
- Full excel sheets of data can be downloaded using app.

Selected Corridor
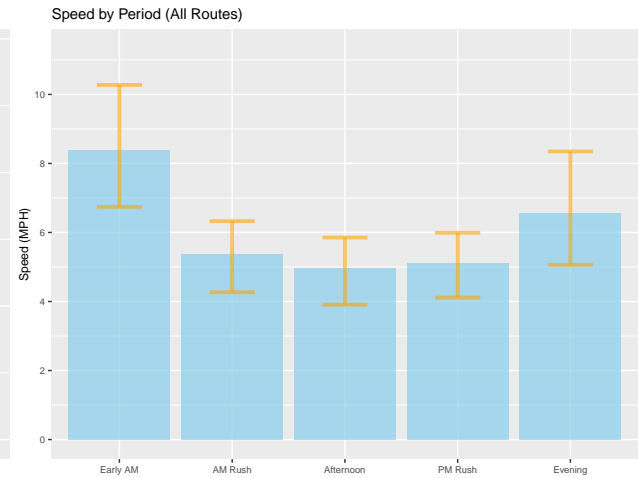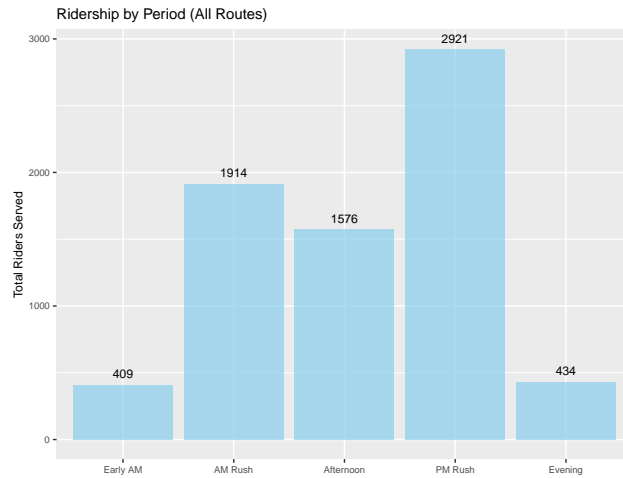
To Add: Map of User's Corridor

Daily Analytics

route_id	daily_ridership	trips	routes_served	service_hours	riders_per_hour	dwell_per_onoff	avg_segment_speed	avg_speed_10_pct	avg_speed_90_pct
12	1019	60	12	4.186667	243.39	NA	6.148881	4.206772	9.021657
21	2690	111	21	8.928611	301.28	6.37	4.775544	3.811328	5.812368
42	2590	116	42	8.963333	288.96	6.29	5.933723	4.893143	7.774023
9	954	65	9	5.400556	176.65	NA	5.773705	4.543690	7.336713
Total	**7253**	**352**	**9, 21, 42, 12**	**27.479167**	**263.95**	**NA**	**5.574608**	**4.152054**	**7.356845**

The Corridor Serves 7253Riders per Day

The Average Bus Travels at 5.57460776843971 MPH on the Corridor

Corridor Serves 352 Trips per Day

Corridor Serves 27.5 Service Hours per Day

Period Analytics

timeframe	daily_ridership	trips	routes_served	service_hours	riders_per_hour	dwell_per_onoff	avg_segment_speed	avg_speed_10_pct	avg_speed_90_pct
Early AM	409	34	9, 21, 42, 12	1.66	247.13	6.16	8.40	6.74	10.28
AM Rush	1914	95	9, 21, 42, 12	7.57	252.88	4.95	5.37	4.27	6.33
Afternoon	1576	74	9, 21, 42, 12	6.42	245.34	4.69	4.96	3.91	5.85
PM Rush	2921	120	9, 21, 42, 12	9.92	294.32	4.52	5.11	4.11	5.99
Evening	434	29	9, 21, 42, 12	1.91	227.59	5.68	6.56	5.06	8.35
Daily	**7253**	**352**	**9, 21, 42, 12**	**27.48**	**263.95**	**NA**	**5.57**	**4.15**	**7.36**

Ridership by Period (All Routes)


Speed by Period (All Routes)
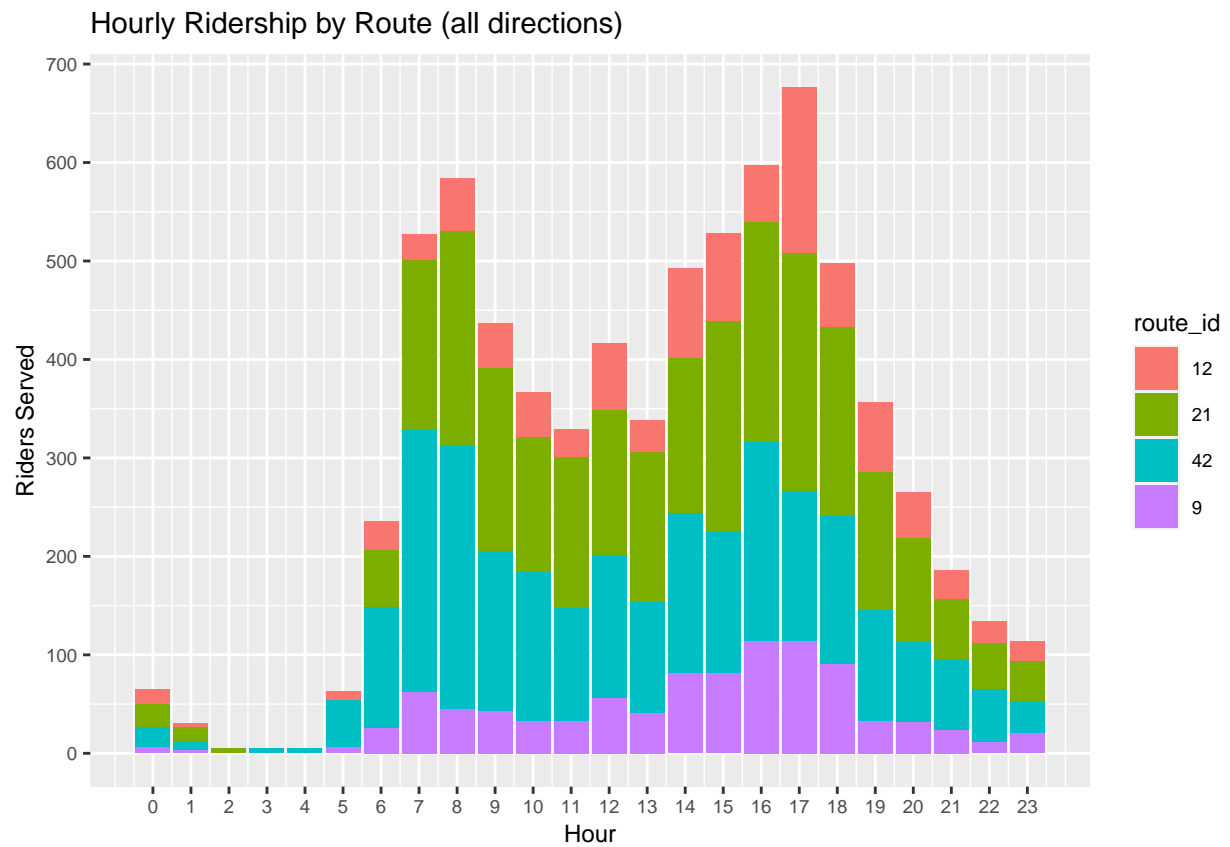
Hourly Analytics

trip_hour	daily_ridership	trips	avg_headway	routes_served	service_hours	riders_per_hour	dwell_per_onoff	avg_segment_speed	avg_speed_10_pct	avg_speed_90_pct
0	65	7	514.29s (~8.57 minutes)	9, 21, 42, 12	0.33	196.97	8.71	8.14	6.88	9.53
1	30	5	720s (~12 minutes)	9, 21, 42, 12	0.23	130.43	9.40	9.24	8.29	10.11
2	5	1	3600s (~1 hours)	21	0.05	100.00	Inf	7.13	7.13	7.13
3	5	2	1800s (~30 minutes)	42	0.04	125.00	3.33	9.28	9.28	9.28
4	5	2	1800s (~30 minutes)	42	0.09	55.56	30.00	10.19	9.98	10.40
5	63	5	720s (~12 minutes)	9, 42, 12	0.22	286.36	6.73	9.60	8.66	10.72
6	236	12	300s (~5 minutes)	9, 21, 42, 12	0.69	342.03	5.08	7.43	6.30	8.36
7	527	24	150s (~2.5 minutes)	9, 21, 42, 12	1.68	313.69	5.20	6.14	5.16	7.17
8	583	27	133.33s (~2.22 minutes)	9, 21, 42, 12	2.21	263.80	4.95	5.25	4.37	5.85
9	437	24	150s (~2.5 minutes)	9, 21, 42, 12	1.98	220.71	4.76	5.10	4.22	5.79
10	367	20	180s (~3 minutes)	9, 21, 42, 12	1.70	215.88	4.88	4.92	3.89	5.77
11	329	17	211.76s (~3.53 minutes)	9, 21, 42, 12	1.45	226.90	4.69	5.17	4.17	6.13
12	416	20	180s (~3 minutes)	9, 21, 42, 12	1.78	233.71	4.32	4.99	4.05	5.89
13	337	16	225s (~3.75 minutes)	9, 21, 42, 12	1.40	240.71	5.01	4.71	3.72	5.56
14	494	21	171.43s (~2.86 minutes)	9, 21, 42, 12	1.79	275.98	4.82	4.95	3.82	5.86
15	527	20	180s (~3 minutes)	9, 21, 42, 12	1.70	310.00	4.42	4.91	4.14	5.81
16	597	22	163.64s (~2.73 minutes)	9, 21, 42, 12	1.91	312.57	4.64	4.78	3.92	5.56
17	676	23	156.52s (~2.61 minutes)	9, 21, 42, 12	1.99	339.70	3.87	4.81	3.98	5.47
18	499	22	163.64s (~2.73 minutes)	9, 21, 42, 12	1.71	291.81	4.45	5.71	4.65	6.20
19	357	18	200s (~3.33 minutes)	9, 21, 42, 12	1.48	241.22	5.17	5.10	4.19	5.89
20	265	15	240s (~4 minutes)	9, 21, 42, 12	1.13	234.51	5.38	5.41	4.71	6.19
21	186	11	327.27s (~5.45 minutes)	9, 21, 42, 12	0.79	235.44	5.57	6.27	4.95	8.41
22	134	9	400s (~6.67 minutes)	9, 21, 42, 12	0.56	239.29	5.83	6.52	4.86	7.63
23	114	9	400s (~6.67 minutes)	9, 21, 42, 12	0.56	203.57	5.75	6.95	5.52	7.96

Hourly Speed (All Routes)
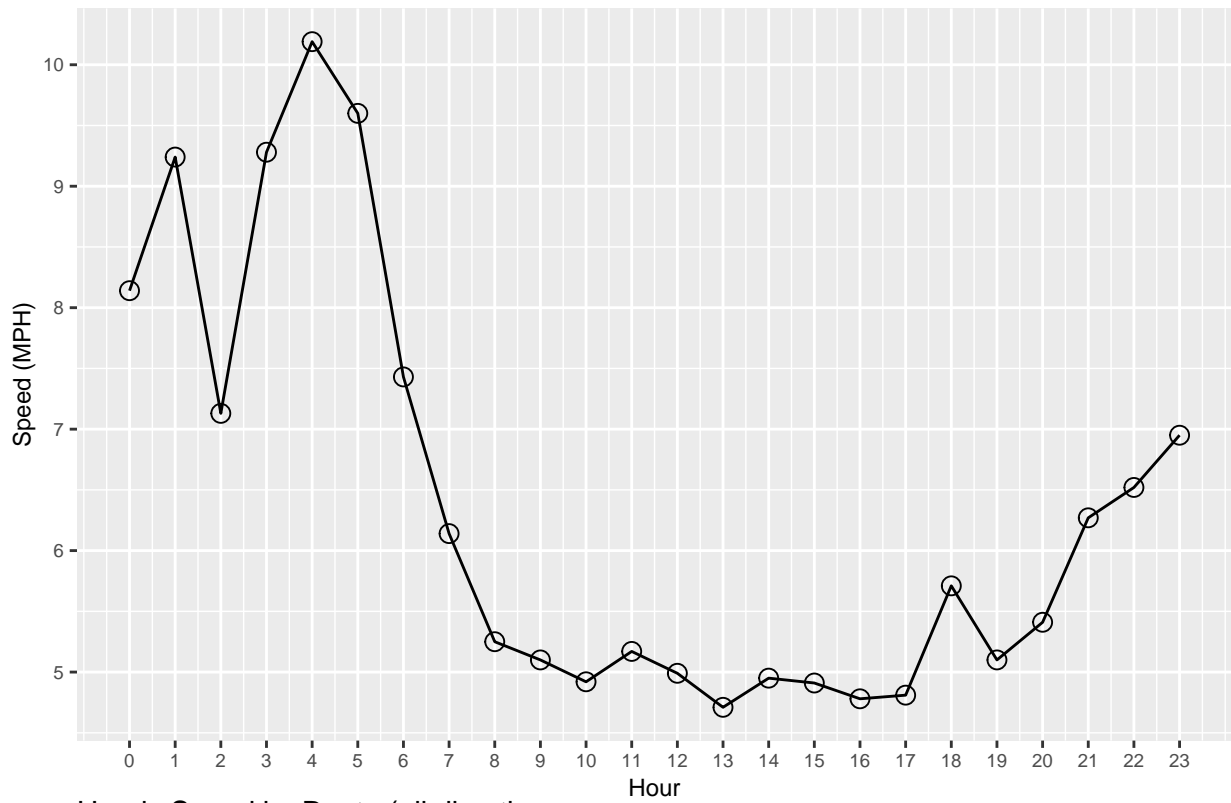
Hourly Speed by Route (all directions

Hourly Ridership by Route (all directions)
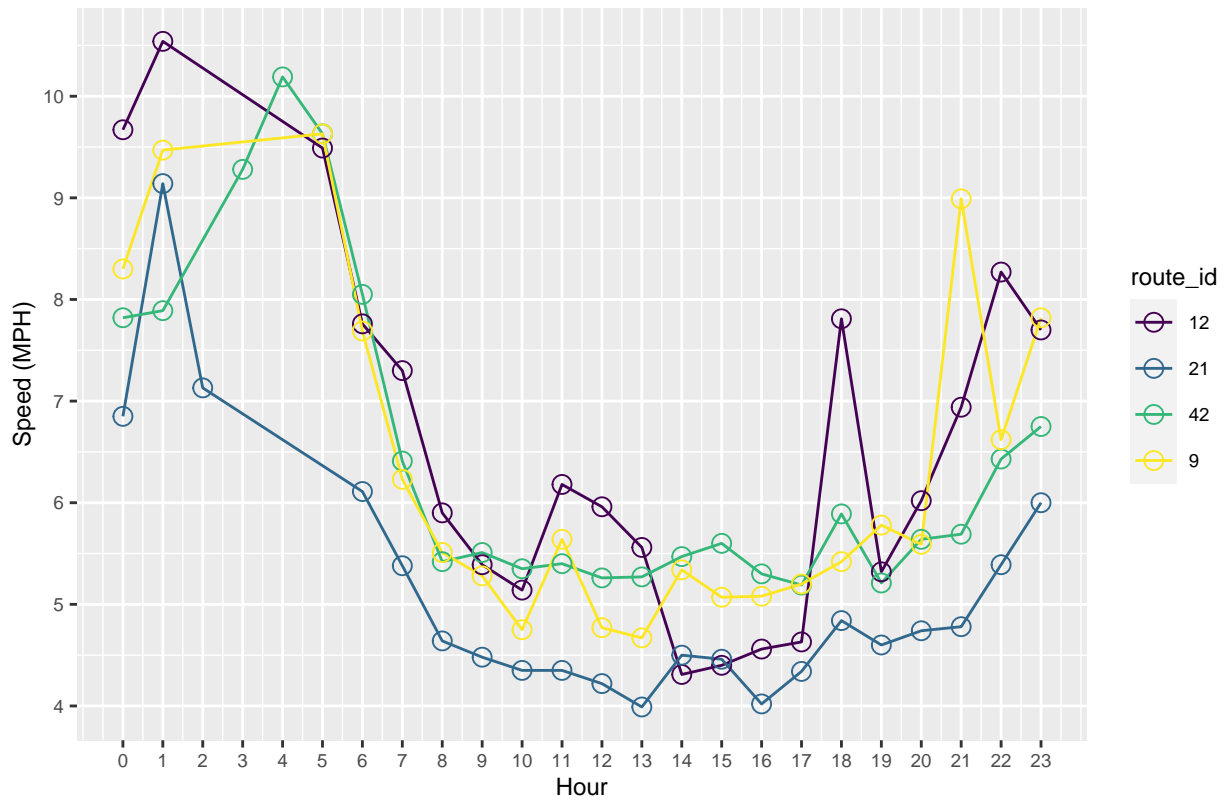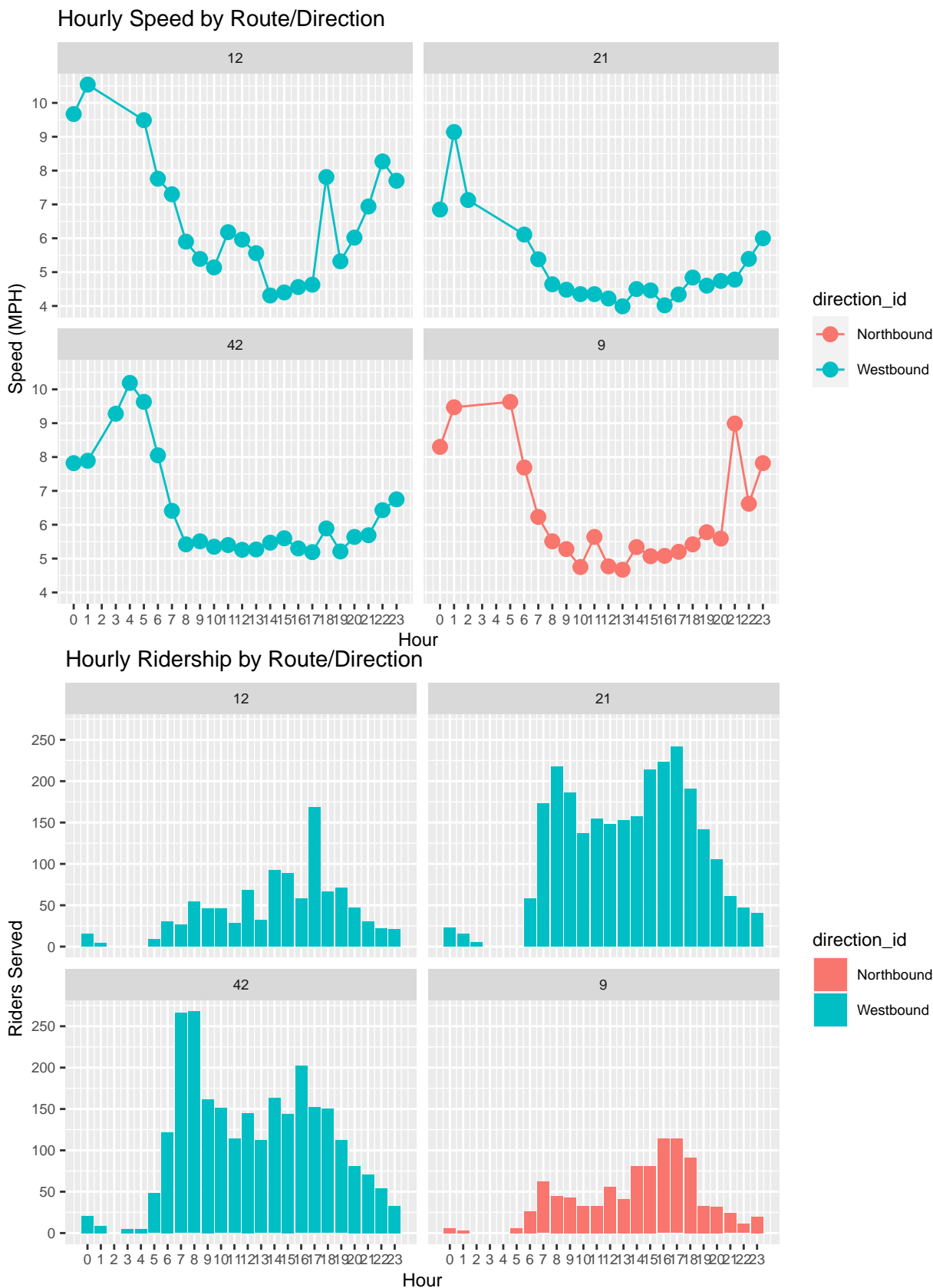
Hourly Analytics by Direction

Hourly Speed by Route/Direction

Hourly Ridership by Route/Direction

Value of Potential Improvements

The following represents the value of theoretical improvements to the corridor analyzed above.

Key Assumptions

This this analysis makes the following assumptions:

1. Reductions will be applied equally across all trips and across the day along the corridor;
2. Time savings ignore dwell time, as this uses both Infodev and UTA APC data, the latter of which does not include dwell time; and
3. Any savings in running time can immediately be recouped and/or has inherent monetary value.

Theoretical Time Savings

The following charts show the potential immprovements that bus lane installation could provide across different levels of time savings, ranging from 5% to 20%. See the Transit Plan's Toolkit section for a range of potential interventions and guidance on what may succeed on this corridor.
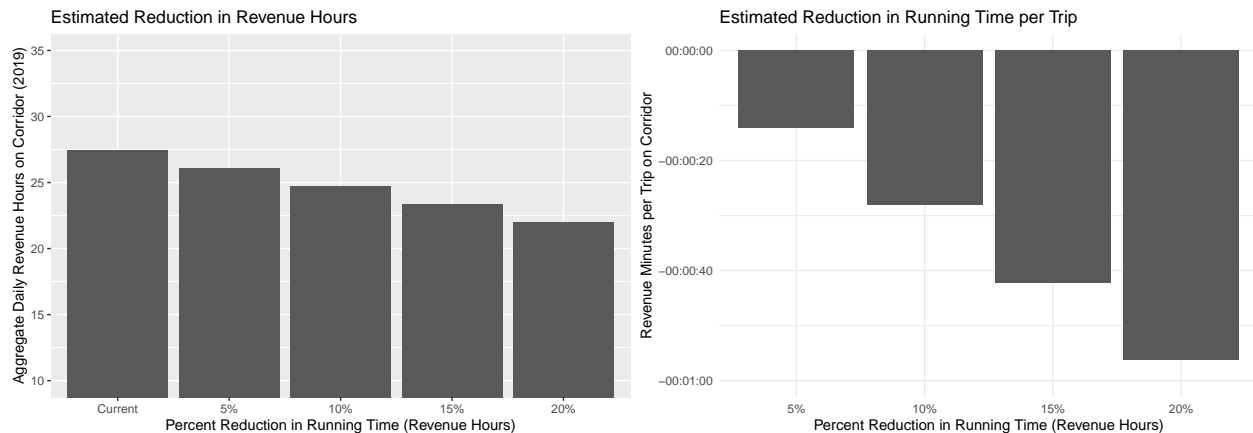
On a per trip basis, passengers would see a per-trip reduciton of 20 seconds per trip at a 10% reduction. *Note: a more accurate measure would look at individual trips and calculate a per-rider time savings.*

Value of Time Savings

Perhaps mostly importantly, however, is the value proposition. This chart shows the potential cost savings from running time improvements that could be reallocated to additional service.

Estimated Reduction in Operating Costs
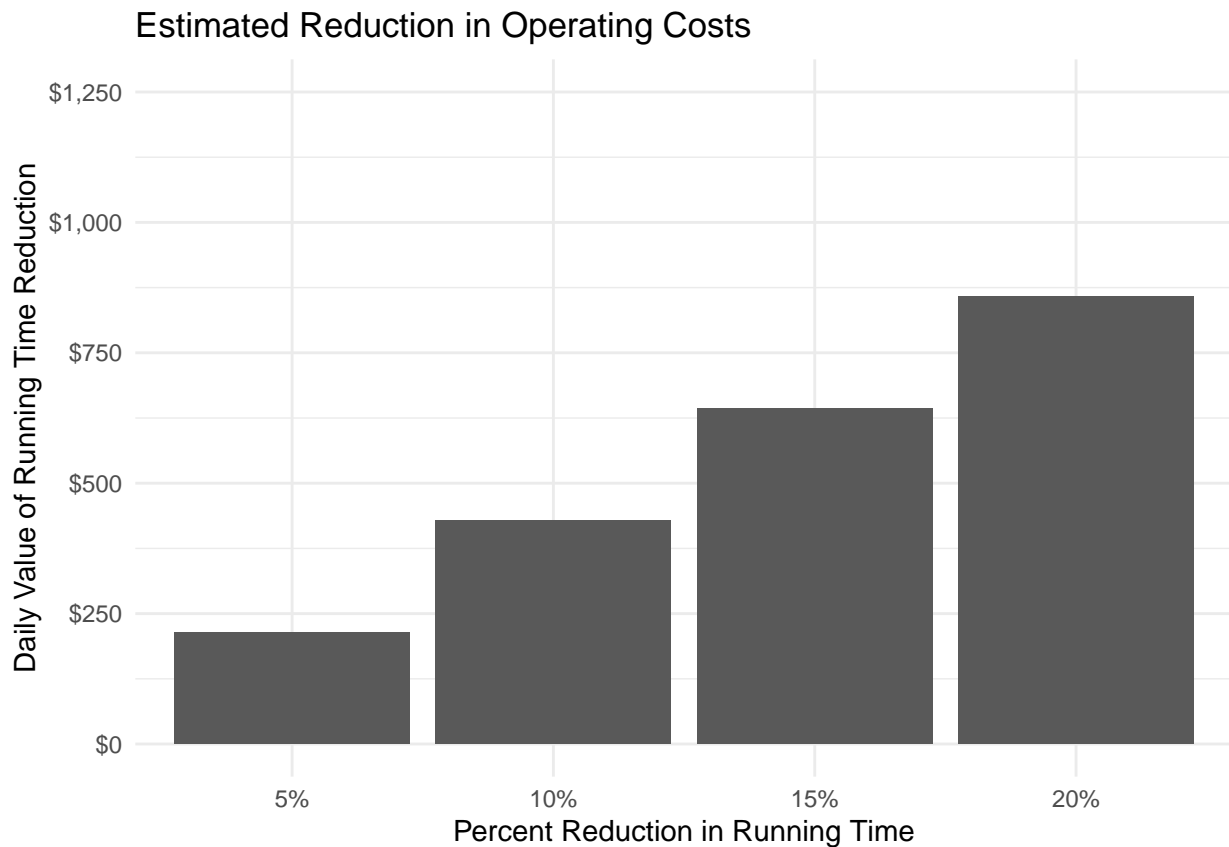
Results

- A 10% reduction time across a day's worth of trips could be valued at approximately **$428.81** . Given that there are approximately 250 working weekdays in 2020, this estimate would put value the bus lane at **$107,203** per year in terms of operational savings.

These results do not take into account more advanced measures that should be considered when evaluating a Transit First project. Future work should explore:

- Reviewing assumptions about how different improvements generate different time savings;
- Modeling more complexly the disparate impacts of improvements at different times of day;
- More complely modeling the value of time savings at different times of day; and
- Incorporate scheduling information to highlight periods where time savings could "save a bus."