MTA 2021 Staffing Decisions

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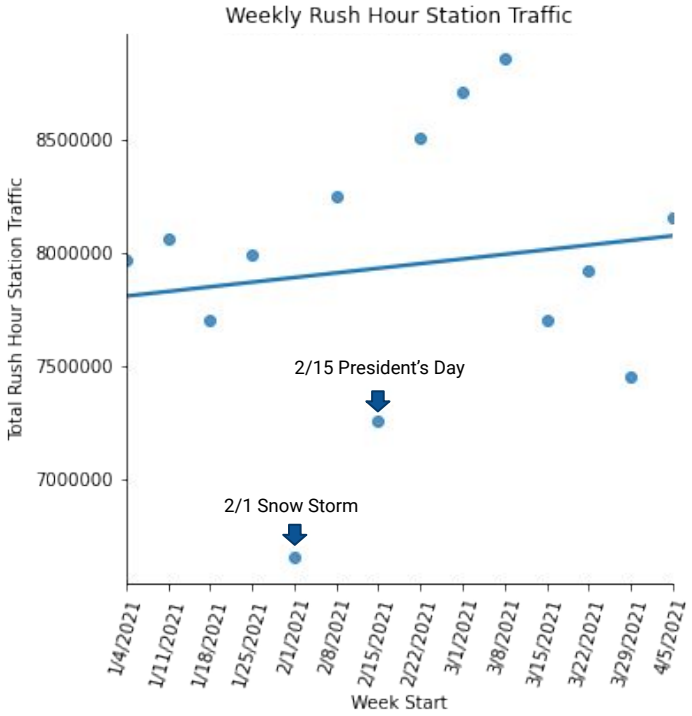
In 2021, as NYC has begun to reduce covid restrictions, rush hour station traffic shows potential for increase.



High Rush Hour Traffic Stations - Defined

Rush Hour

- Monday to Friday
- Each Station measured potentially different 4 hour intervals
  - Limited morning rush hour to intervals ending between 8 AM and 11 AM M-F
  - Limited evening rush hour to intervals ending between 6 PM and 10 PM M-F

Station Traffic

- Defined as total entries and exits in a given station for a given 4 hour time frame
  - Goal is to measure # of people in the station.
- High station traffic has 2 main considerations
  - Average weekly traffic in a station over the first 3 months of 2021
  - Average weekly change in traffic over the first 3 months of 2021

High Rush Hour Traffic Stations - Determined

Ranking

- Building off the definition of high station traffic, we rank each station in total traffic and change in traffic

- We create a weighted rank for each station based on the 2 ranks
  - Rank of Average weekly traffic in a station over the 3 months
    - Weighted at 75%
  - Rank of Average weekly change in traffic over the 3 months
    - Weighted at 25%

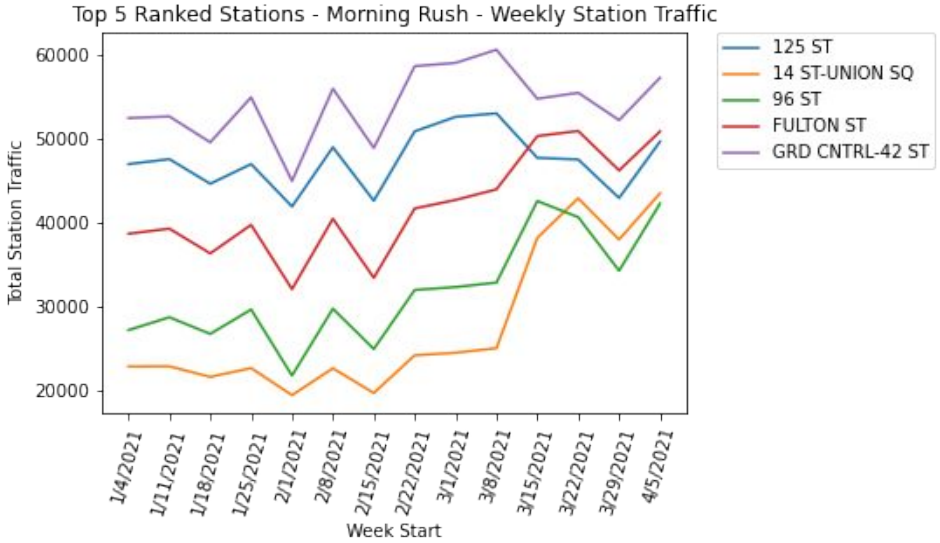
Deciles

- With the weighted rank, we can place our stations in deciles for easier staffing determination

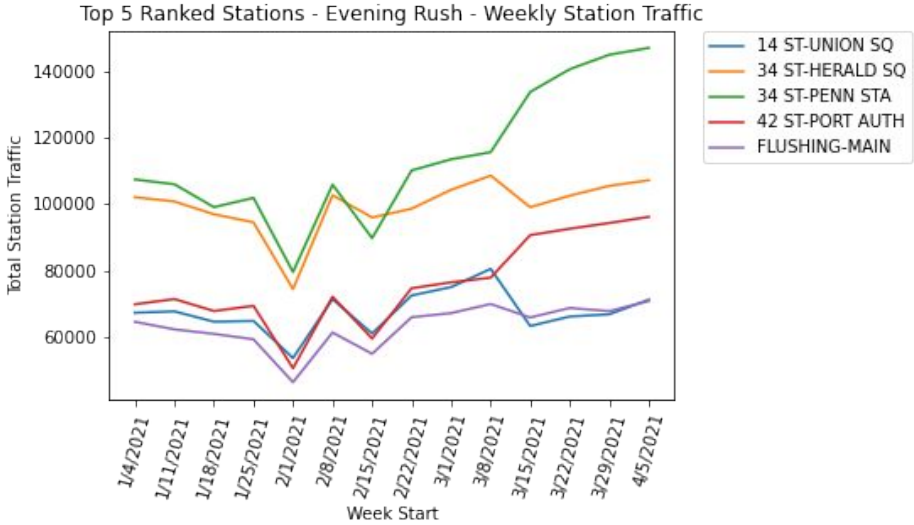
	STATION	rush_hour	avg_traffic	avg_change	traffic_ranked	change_ranked	weighted_rank	final_rank	traffic_decile
122	34 ST-PENN STA	Evening rush	113877.571429	3035.769231	1.0	1.0	1.00	1.0	1.0
453	FULTON ST	Morning rush	41921.642857	941.153846	10.0	5.0	8.75	1.0	1.0
136	42 ST-PORT AUTH	Evening rush	76032.428571	2016.153846	4.0	2.0	3.50	2.0	1.0
231	96 ST	Morning rush	31813.071429	1163.769231	15.0	2.0	11.75	2.0	1.0
118	34 ST-HERALD SQ	Evening rush	99499.714286	390.307692	2.0	12.0	4.50	3.0	1.0
...	...	...	...	...	...	...	...	...	...
325	BROAD CHANNEL	Morning rush	270.214286	3.923077	376.0	198.0	331.50	376.0	10.0
272	BAY 50 ST	Evening rush	777.714286	-4.692308	374.0	257.0	344.75	377.0	10.0
283	BEACH 105 ST	Morning rush	184.785714	7.461538	378.0	194.0	332.00	377.0	10.0
243	AQUEDUCT RACETR	Morning rush	190.785714	1.230769	377.0	202.0	333.25	378.0	10.0
256	AVENUE I	Evening rush	1643.714286	-27.538462	357.0	311.0	345.50	378.0	10.0

Top 5 Ranked Stations for Each Rush Hour

Total Station Traffic - Morning Rush

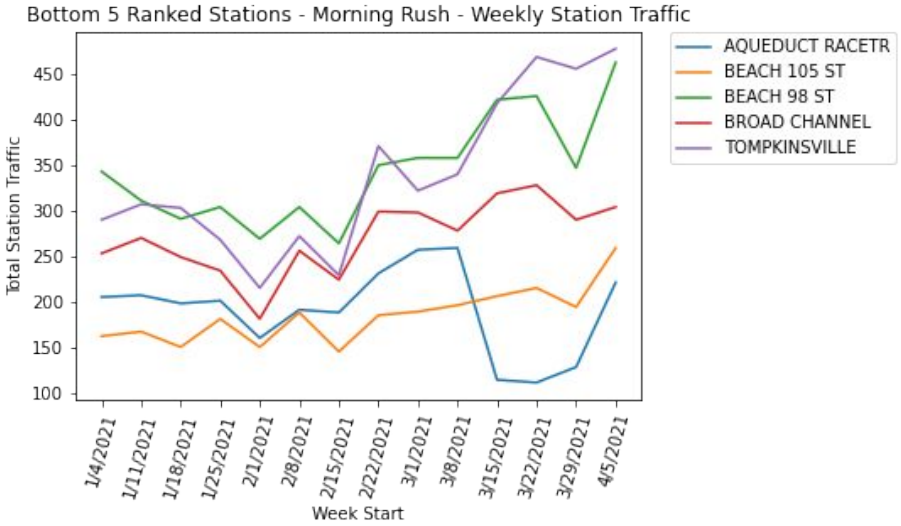


Total Station Traffic - Evening Rush

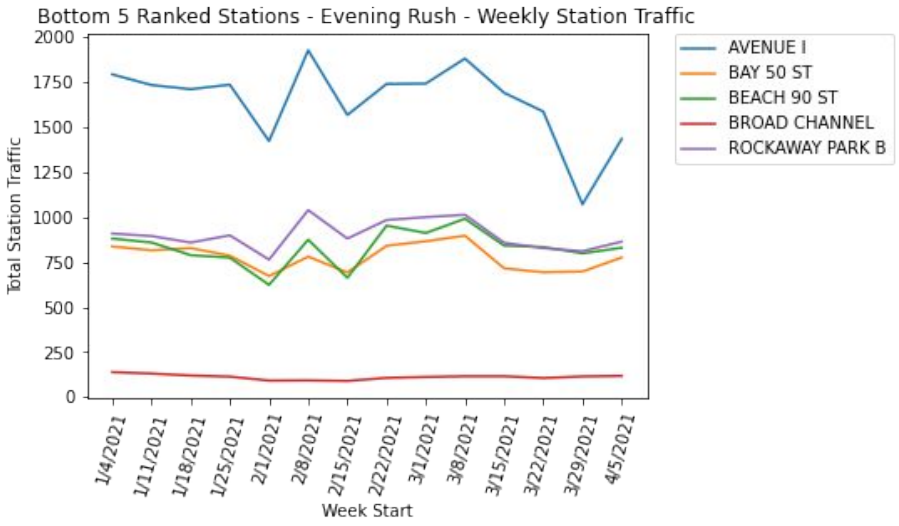


Bottom 5 Ranked Stations for Each Rush Hour

Total Station Traffic - Morning Rush



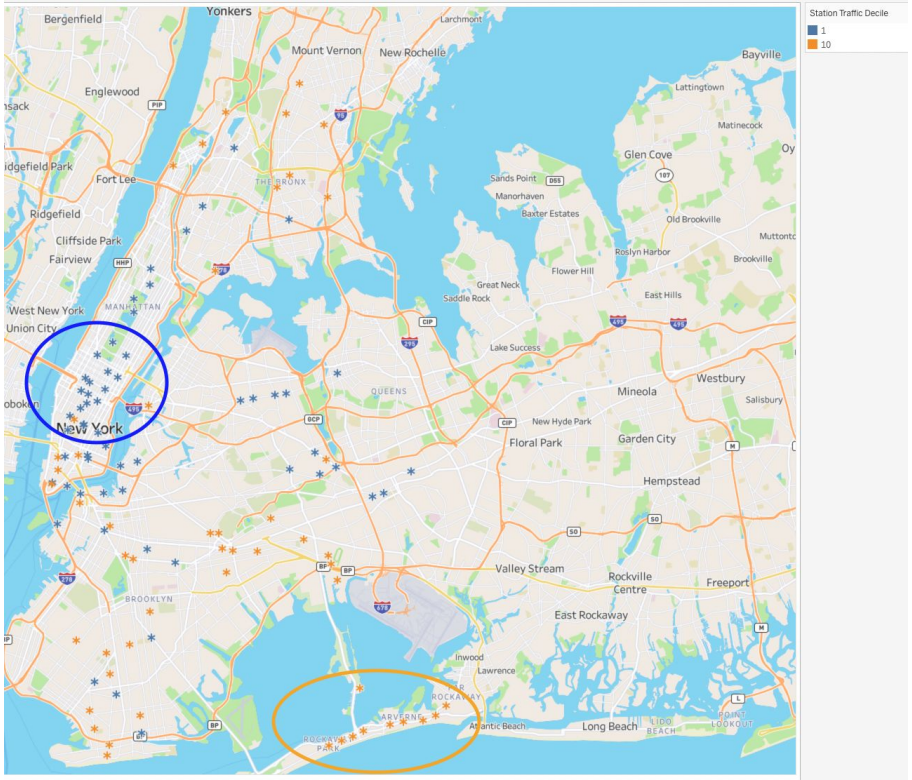
Total Station Traffic - Evening Rush



Location of the Top & Bottom 10% of Stations

- This was primarily used for qualitative review in the ranking weights

- Understanding the locations of high and low traffic stations allows for better hierarchical staffing in the future
  - Less total staffing need along Southern portion of NYC
  - More total staffing needed in the Manhattan area



Staffing Decisions

- Using deciles, we can determine which set of stations need less headcount and which need more.
    - This creates a source for head count (higher deciles) to provide to higher traffic stations

- Current method accounts for station growth on a weekly basis, so it can be refreshed weekly to update staffing as necessary.

Appendix

Future Considerations

- Stronger Geographical allocation of headcount.
  - Create geographic pools, and use the deciles within the pool to allocate headcount
- Defined cut-offs for minimum headcount for a station.
- Incorporation of 3rd party data to strengthen ranking system.
  - Reported incidents at a station during rush hour