Top NYC Subway Stations for Rental Scooter Deployment

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Project Goal

- Perform EDA on NYC MTA Turnstile data
- Produce results/findings that can benefit rental scooter companies (Bird, Lime, Lyft etc.)
  - Determine best stations to deploy scooters

Design

- Focus : Station Exit Data
- Higher exit traffic ➡ Higher potential for rental
- High traffic areas 🔁 Recirculation of scooters
- ⬆ Revenue
- ⬆ Brand visibility

Data

- (Pre-Covid) 4/27/2019 to 7/26/2019 (91 days)
- Stations with highest average daily exits
- Top Stations per borough (Bronx, Brooklyn, Queens, Manhattan)

Data

- Exit counts updated every 4 hours, last count at 20:00
- Scooters collected for recharging starting at 21:00

Algorithms (Pandas)

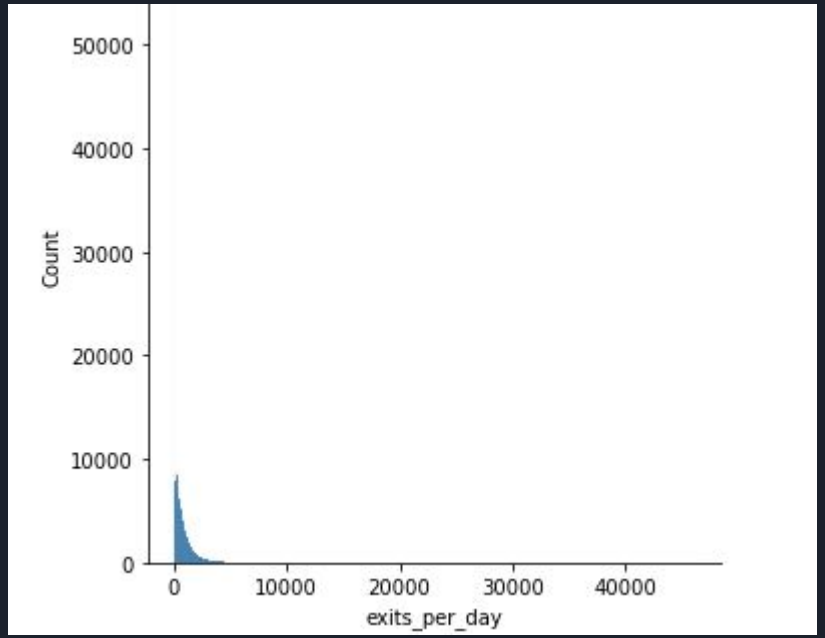
- SCP daily exit count
  - max value - min value
  - dataframe sorted by DESC
  - found inexplicable increases

C008	R099	00-00-00	DEKALB AV	BDNQR	BMT	07/26/2019	00:00:00	REGULAR	0006897017	0008702864
C008	R099	00-00-00	DEKALB AV	BDNQR	BMT	07/26/2019	04:00:00	REGULAR	0006897017	0008702864
C008	R099	00-00-00	DEKALB AV	BDNQR	BMT	07/26/2019	08:00:00	REGULAR	2000093069	1850343553
C008	R099	00-00-00	DEKALB AV	BDNQR	BMT	07/26/2019	12:00:00	REGULAR	2000092817	1850343947
C008	R099	00-00-00	DEKALB AV	BDNQR	BMT	07/26/2019	16:00:00	REGULAR	2000092406	1850344366
C008	R099	00-00-00	DEKALB AV	BDNQR	BMT	07/26/2019	20:00:00	REGULAR	2000091967	1850344989

Algorithms (Pandas)

```
total_scp_exit.describe()
```

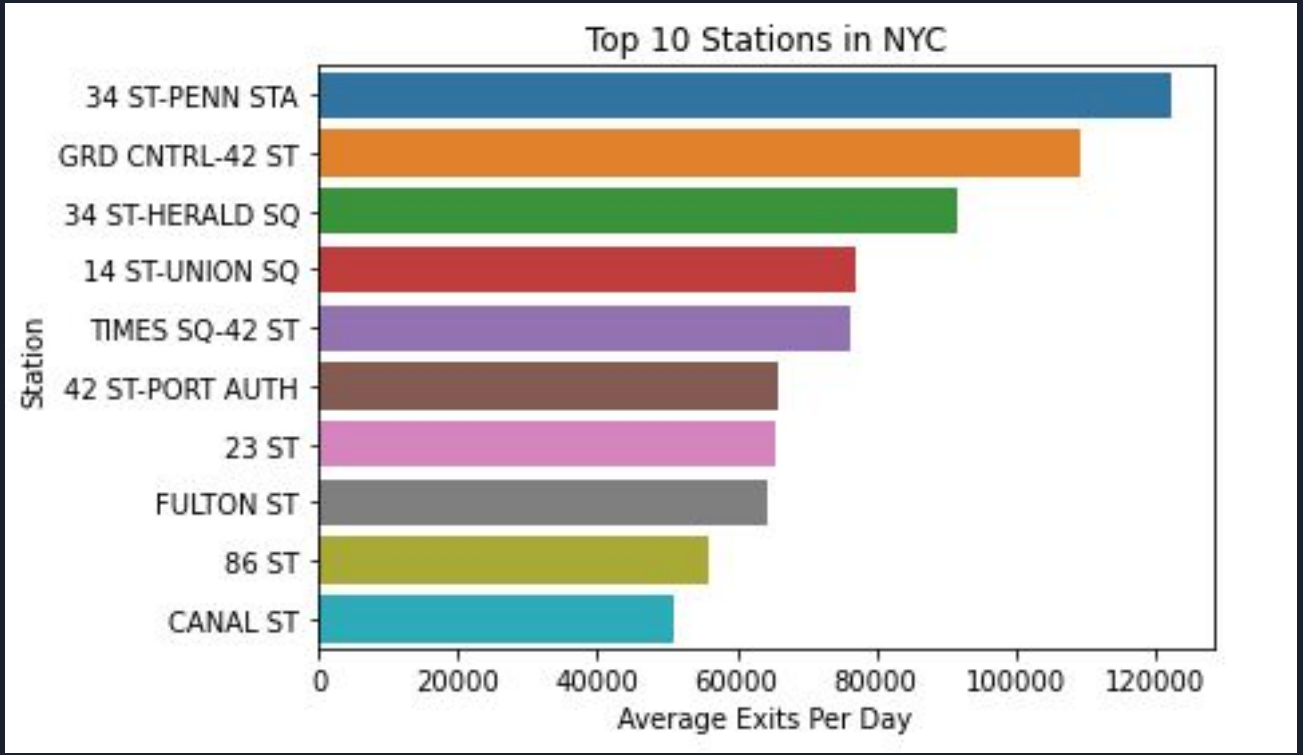
	EXITS_x	EXITS_y	exits_per_day
count	4.135410e+05	4.135410e+05	4.135410e+05
mean	3.615268e+07	3.610136e+07	5.132585e+04
std	2.013725e+08	2.012513e+08	7.086530e+06
min	0.000000e+00	0.000000e+00	0.000000e+00
25%	2.074170e+05	2.064270e+05	1.520000e+02
50%	1.422380e+06	1.420913e+06	4.610000e+02
75%	4.961140e+06	4.958675e+06	1.006000e+03
max	2.124127e+09	2.124125e+09	1.841642e+09



Algorithms (Pandas)

- Removed net exits >51325
- Found sum of exits per day per station
- Took mean of daily exits per station

Results - All Manhattan




New York City Subway Diagram
The Bronx
Manhattan
Queens
Brooklyn
Staten Island

Results Considerations

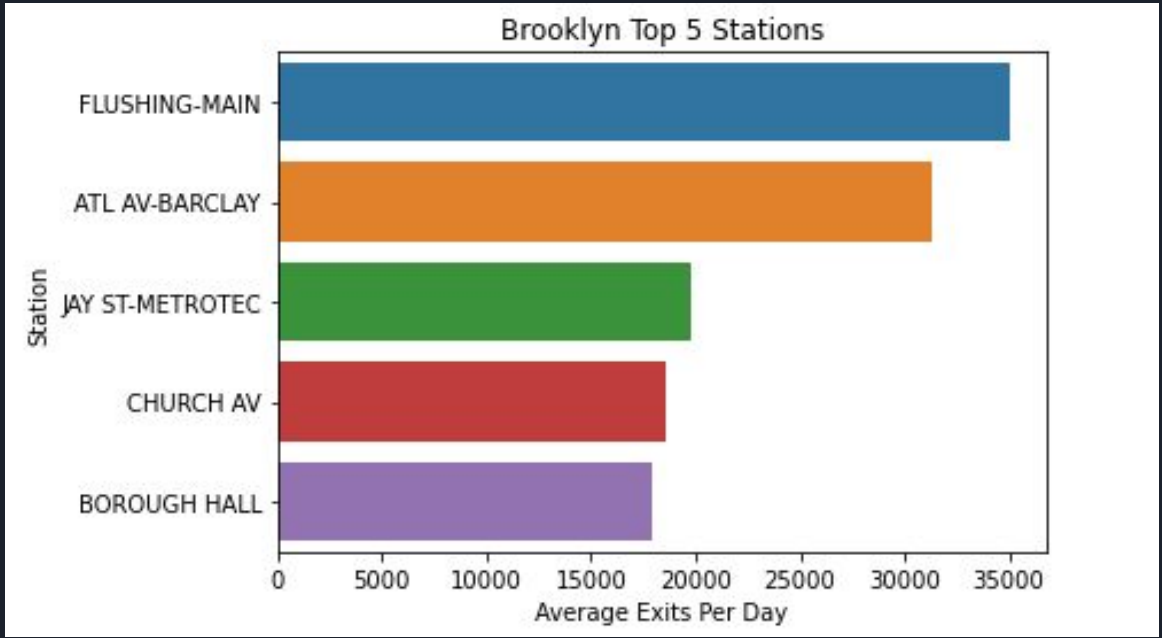
- Manhattan is dense with stations
  - Less need for scooter rides
- Busiest areas ≠ best areas for scooters
    - Sidewalk/street conditions not ideal for placement, riding, safety

Algorithms cont.

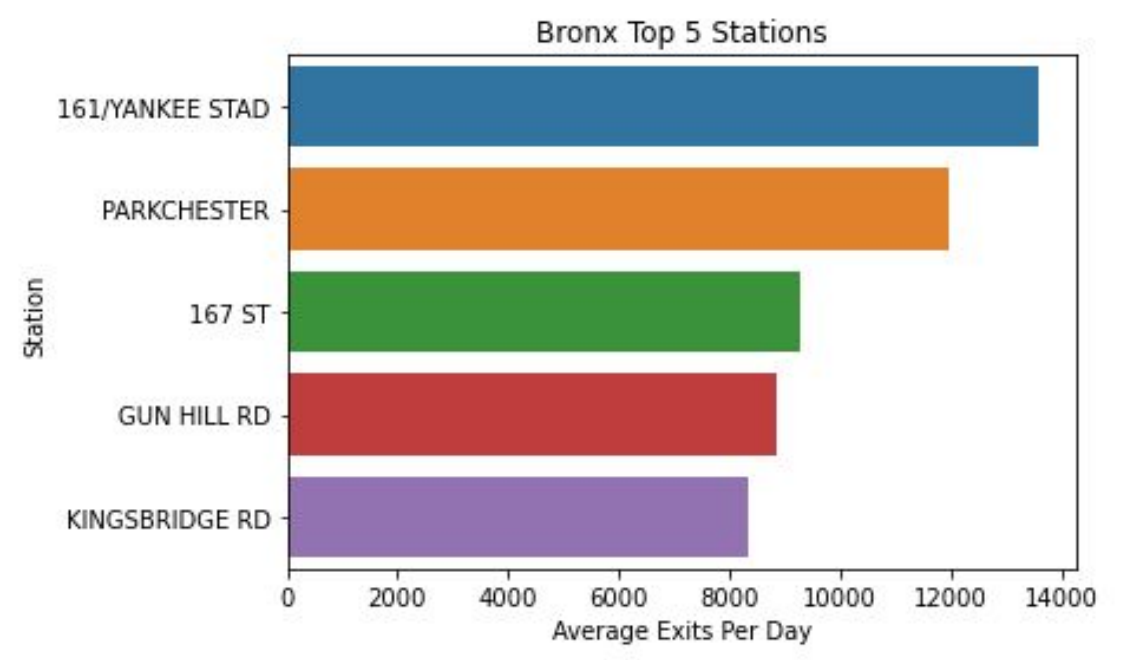
Finding TOP 5 Stations Per Borough

```
#Masks for each borough of interest
brooklyn = (station_daily.AREA == 'BROOKLYN')
bronx = (station_daily.AREA == 'BRONX')
queens = (station_daily.AREA == 'QUEENS')
manhattan = (station_daily.AREA == 'MANHATTAN')
```

Results - Top 5 Stations Per Borough



Results - Top 5 Stations Per Borough



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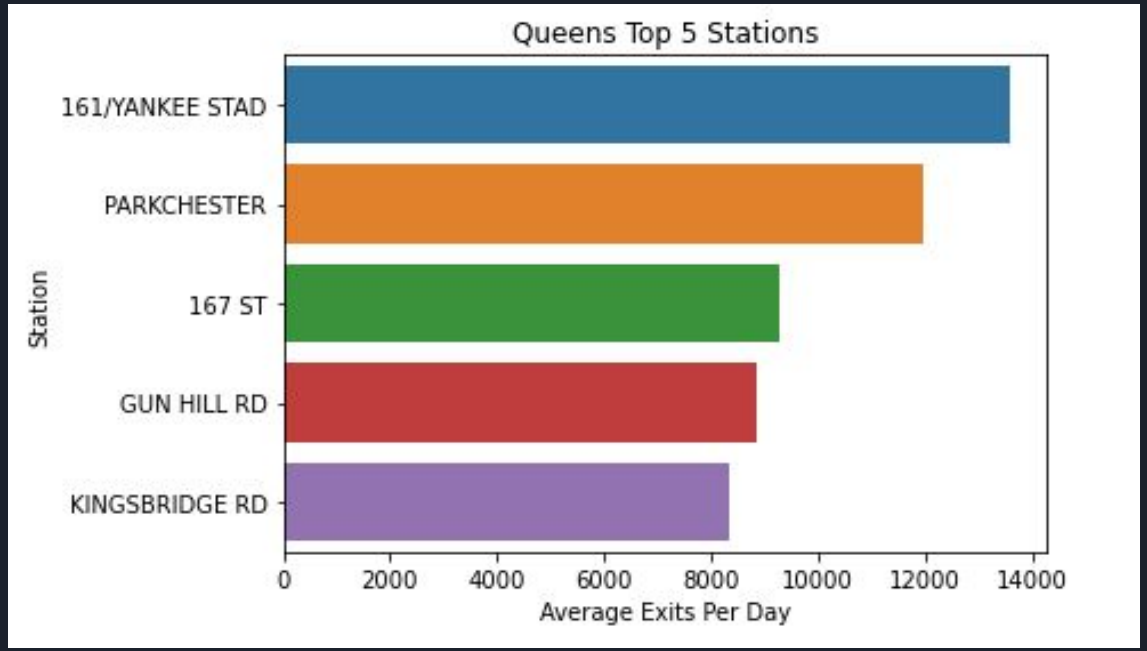

Future Work/Modeling

- Automatically pull new data
- Create predictive models incorporating scooter sales data by station
  - Factoring in holidays, special events