Exploratory Data Analysis on MTA Turnstile Data

By:
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Purpose

Problem:

Subway crime has been increasing during the pandemic, isolated stations and trains are becoming easy targets for criminal activity.

Solution:

Analysis on turnstile data to locate stations with fewer riders over days of the week and times of a day to practice caution

Soaring crime is killing NYC's subway system

By Nicole Gelinas

February 14, 2021 | 8:01pm | Updated

MTA in peril as New York City subway crime rate spikes, ridership plummets

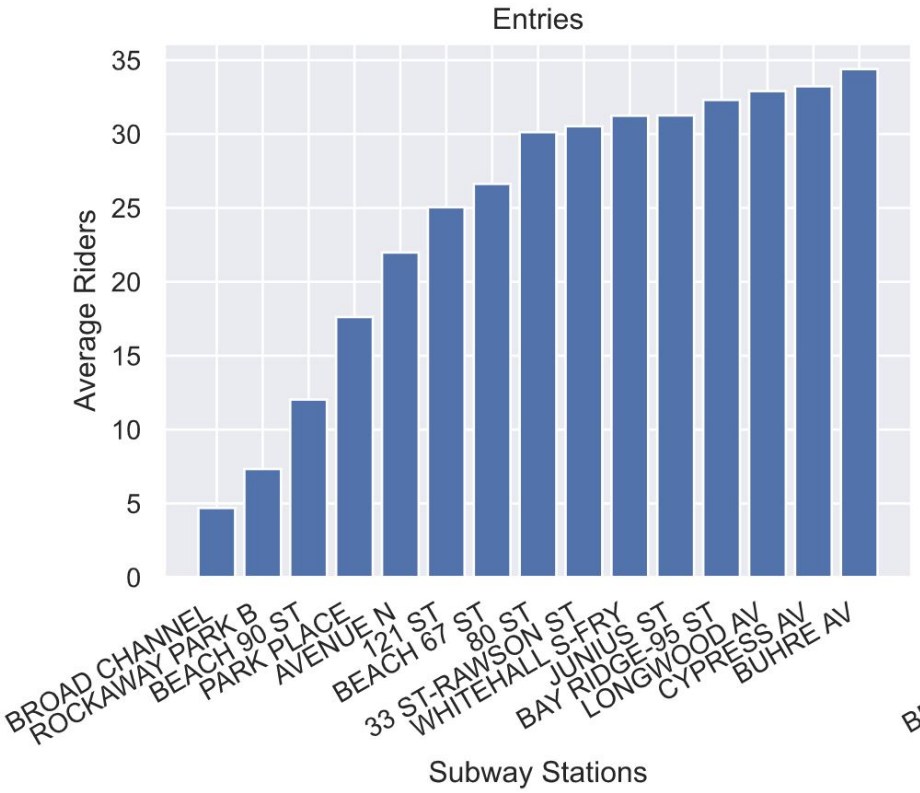
MTA survey suggests it's not just COVID keeping riders away from subway

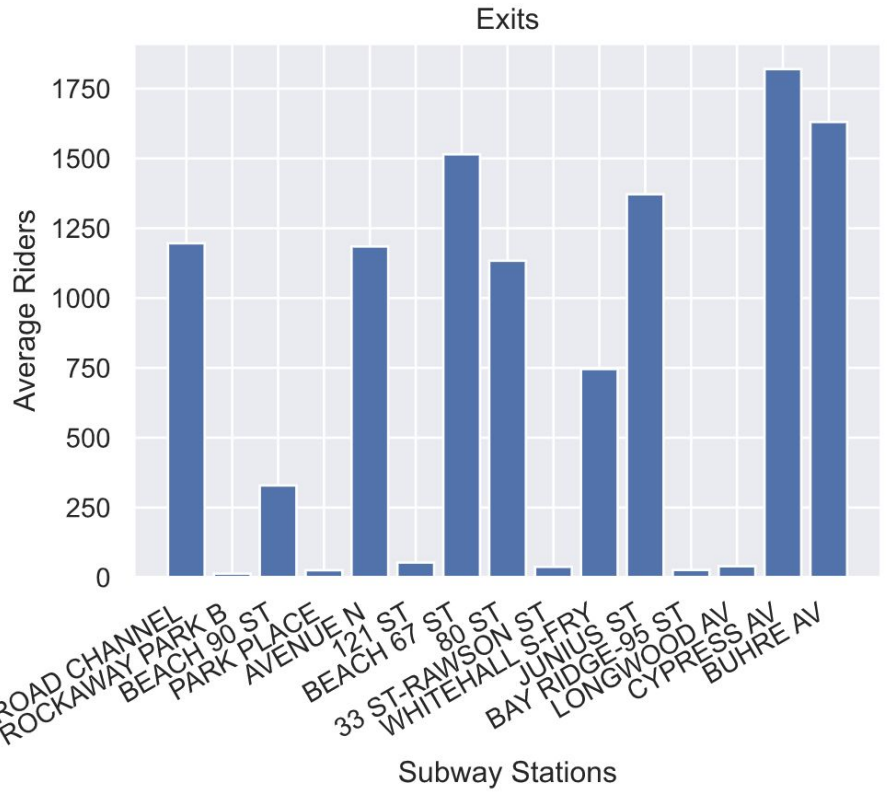
Monday, April 12, 2021

Data

- http://web.mta.info/developers/turnstile.html
- 3 month period - January to April 2021
- 2717672 rows and 10 columns
- Entry and exit counts from 378 Stations
- Imported into pandas and SQLite

Least Entered Stations from January to April 2021





Stabbing At Broad Channel A Train

Alison Kase | on March 30, 2021

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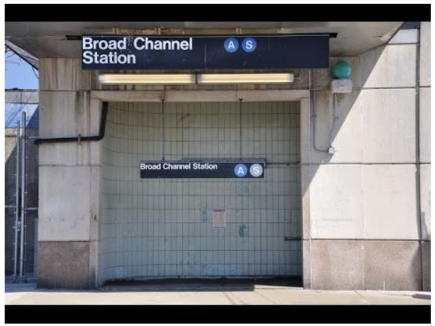
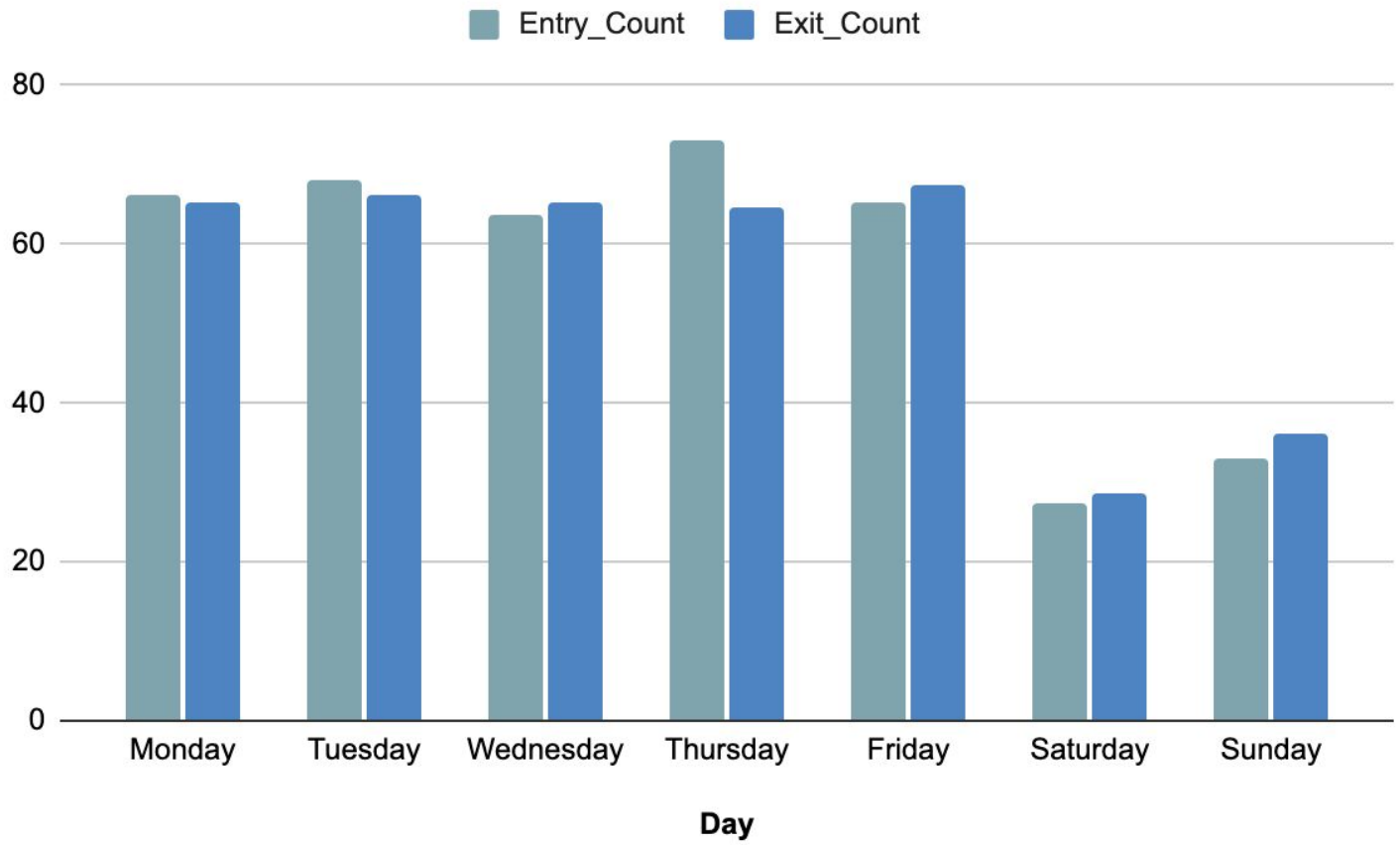


Police say a stabbing took place on Tuesday, March 30 at approximately 8:20 am on an A-Train.

According to the NYPD, a female stabbed a male victim, approximately 50 years of age amid a verbal dispute over a seat in the subway car. The man suffered superficial stab wounds to the left shoulder, arm and wrist; he was taken to an area hospital and is listed in stable condition.

Click ad for more information

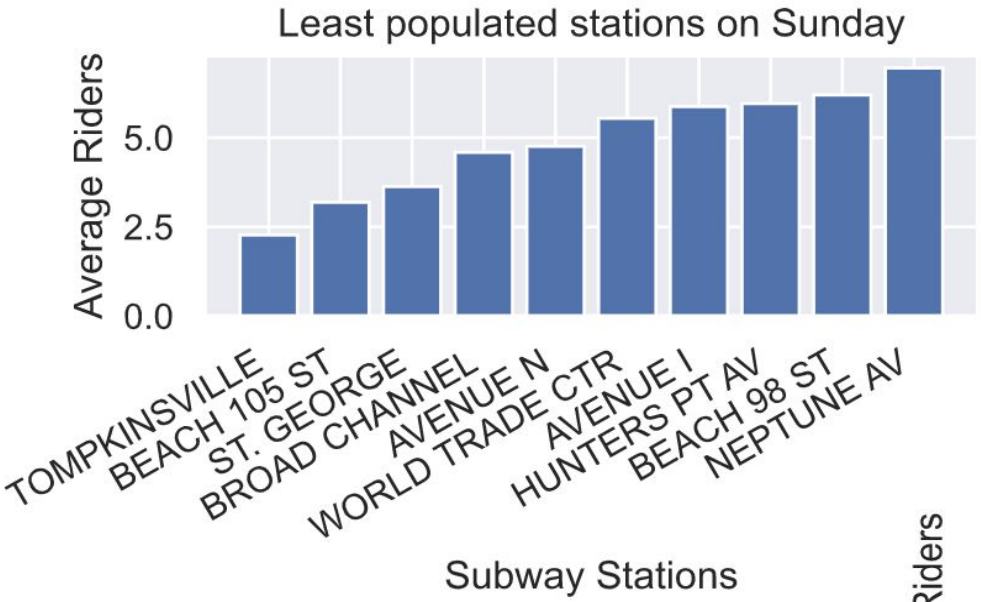

Entry_Count
Exit_Count
80
60
40
20
0
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
Day

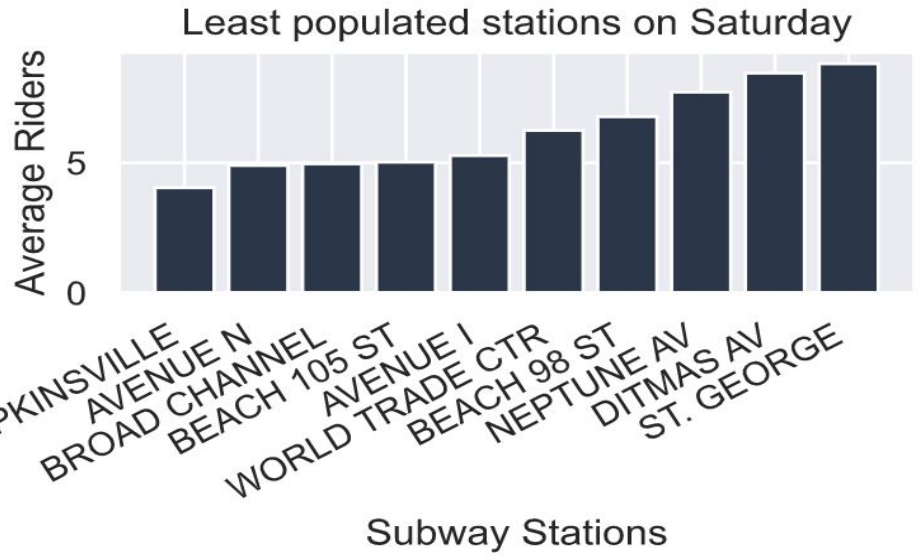
Metrics

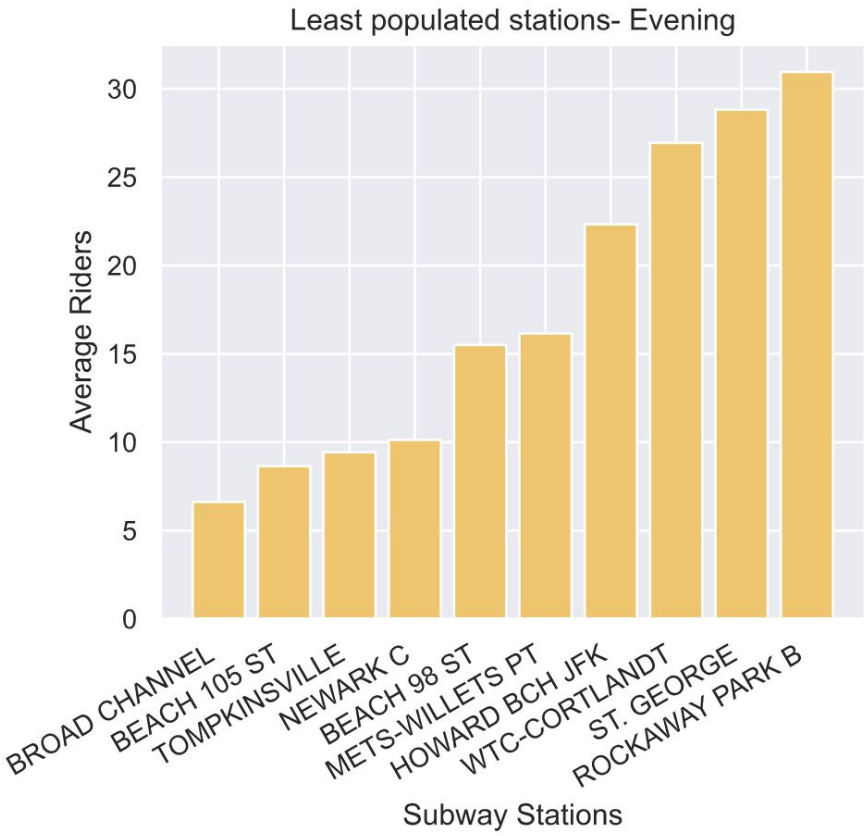
- Rider Traffic : Sum of Entry and Exit turnstile count
- Unsafe: less than 25% of average rider traffic for each day

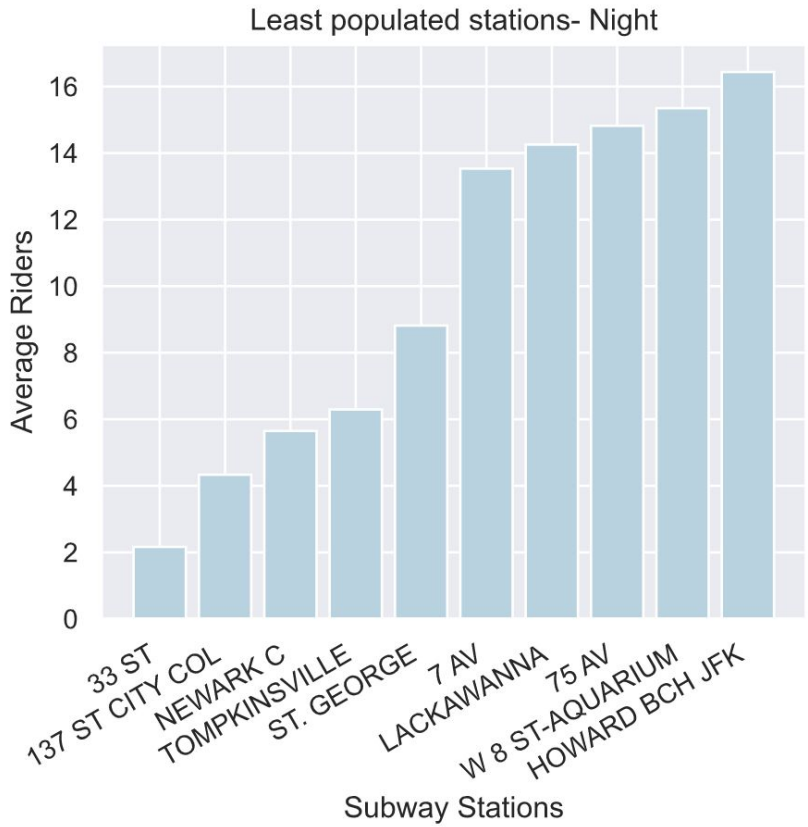
```
Station_Saturday.describe()
```

	Rider_Traffic
count	378.000000
mean	60.779127
std	29.655386
min	4.043659
25%	38.988241
50%	59.887304
75%	80.744359
max	156.089820


Least populated stations on Sunday
Average Riders
5.0
2.5
0.0
TOMPKINSVILLE
BEACH 105 ST
ST. GEORGE
BROAD CHANNEL
AVENUE N
WORLD TRADE CTR
AVENUE I
HUNTERS PT AV
BEACH 98 ST
NEPTUNE AV
Subway Stations


Least populated stations on Saturday
Average Riders
5
0
TOMPKINSVILLE
AVENUE N
BROAD CHANNEL
BEACH 105 ST
AVENUE I
WORLD TRADE CTR
BEACH 98 ST
NEPTUNE AV
DITMAS AV
ST. GEORGE
Subway Stations


Least populated stations- Evening
Average Riders
0
5
10
15
20
25
30
BROAD CHANNEL
BEACH 105 ST
TOMPKINSVILLE
NEWARK C
BEACH 98 ST
METS-WILLETS PT
HOWARD BCH JFK
WTC-CORTLANDT
ST. GEORGE
ROCKAWAY PARK B
Subway Stations


Least populated stations- Night
Average Riders
0
2
4
6
8
10
12
14
16
33 ST
137 ST CITY COL
NEWARK C
TOMPKINSVILLE
ST. GEORGE
7 AV
LACKAWANNA
75 AV
W 8 ST-AQUARIUM
HOWARD BCH JFK
Subway Stations

Conclusions

- A station is not unsafe at all times, varies by day and time of travel
- Analysis may be relevant only during COVID
- Findings are based on an assumption that travelling thru sparsely populated stations is risky

Future plan

- Analyze crime data and compare with the findings
- Studying socio economic conditions around low rider traffic stations

Thank you!