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MTA TURNSTILE DATA PROJECT

ADDRESSING HEALTHY EQUITY WITH MOBLIE COVID TESTING

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INTRODUCTION

- ▶ **Motivation:** In the first year of the COVID pandemic, Queens had a high burden of disease and deaths. Essential workers were especially vulnerable because of shift work and unpaid sick leave.
- ▶ **Research Question:** Could the New York health department address health equity by deploying mobile COVID testing units to subway stations during late nights hours to reach people who cannot access COVID services during regular hours?
- ▶ **Recommendation:** Assigning mobile COVID testing units to subway stations with high late night entries could provide testing services for many essential workers.



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MTA TURNSTILE DATA

METHODOLOGY

- ▶ Dataset: [NYC Subway Turnstile](#)
 - ▶ April to June 2019
 - ▶ Late night entries: 12:00 am to 4:00 am
 - ▶ Matplotlib and Seaborn
- ▶ [COVID cases by zip code \(2020\)](#)
- ▶ [Income level by zip code \(2019\)](#)



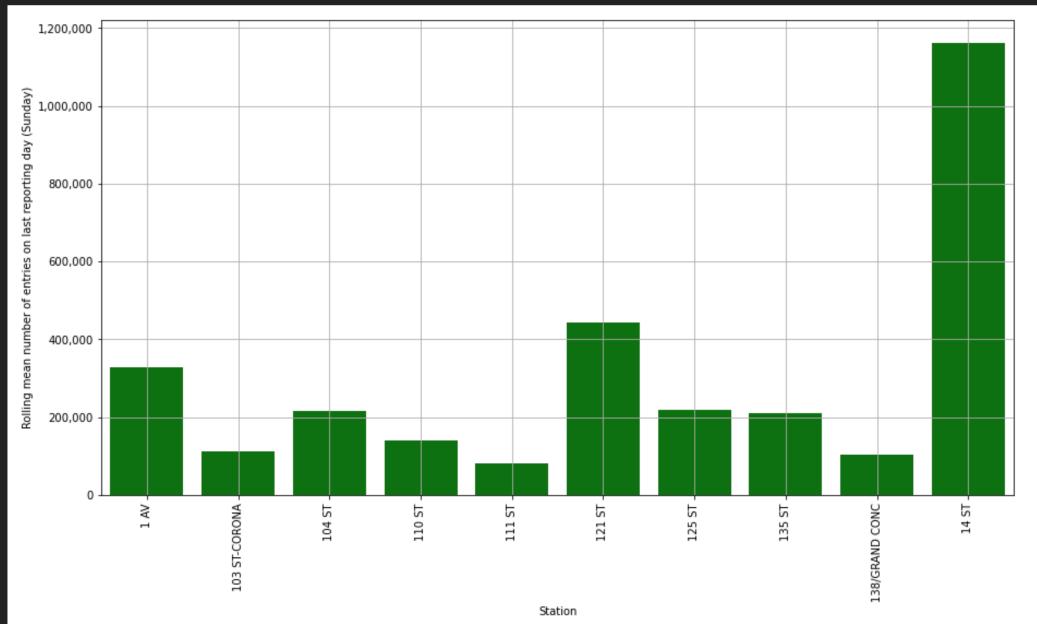
[NYC Late Night Service Map](#)

MTA TURNSTILE DATA

RESULTS

- ▶ Calculated rolling mean by week to compare station entries across New York.
- ▶ The majority of late night entry traffic is in Manhattan.
- ▶ However, one station in Queens was among the top 10 stations with the highest entries:
103rd Street-Corona Plaza

Figure 1.
Top 10: Rolling Mean Late Night Entries vs. Stations

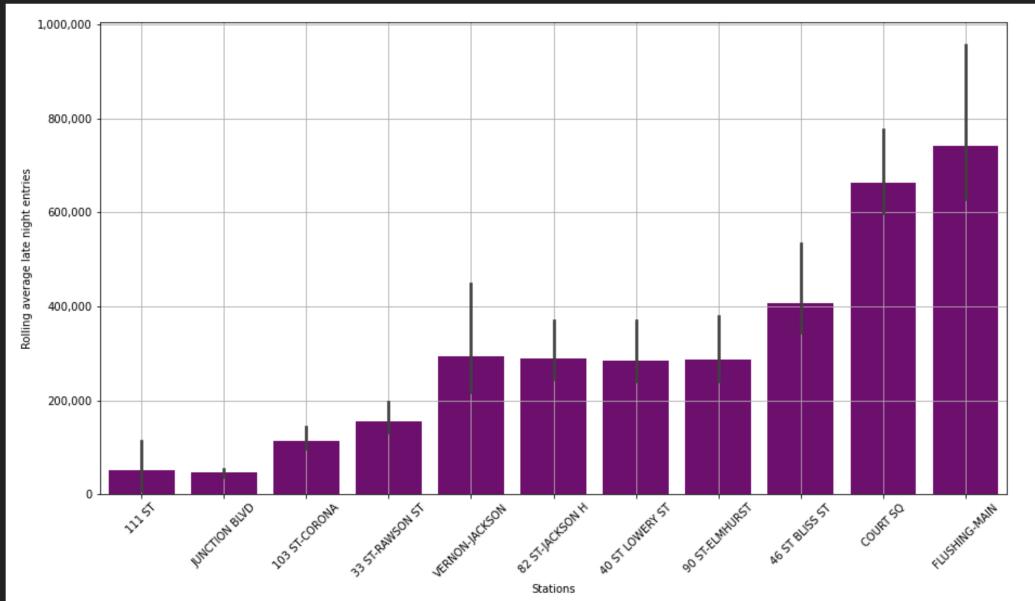


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RESULTS

- ▶ Used the rolling entry average to explore stations where only the 7 train stops in Queens.
- ▶ The majority of the entries were at the start of the 7 train in Queens and the stations just before the East River.
- ▶ However, one station on the 7 train had the highest late night entries:
Flushing-Main Street

Figure 2.
7 Train: Rolling Mean Late Night Entries vs. Stations

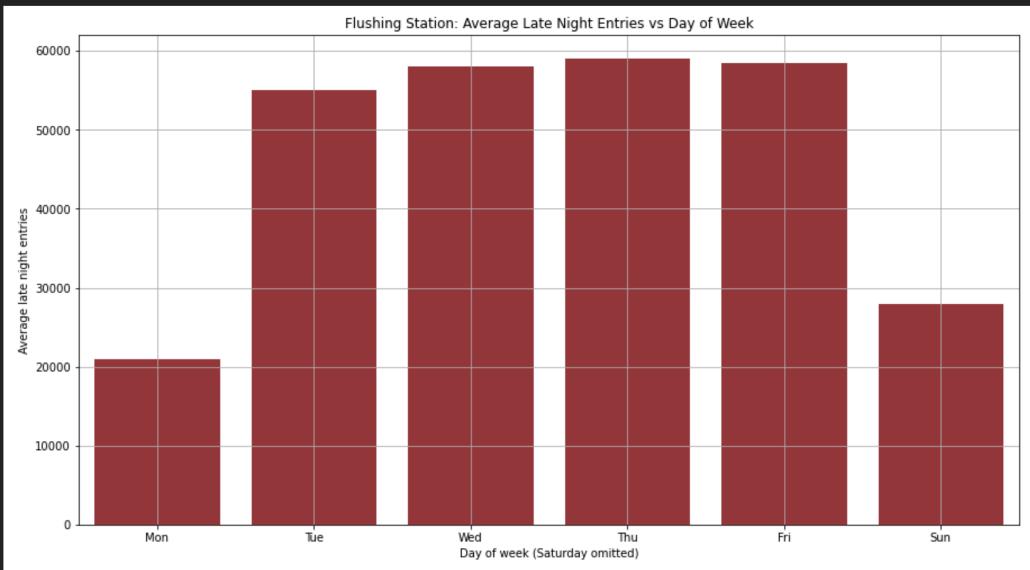


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RESULTS

- ▶ Calculated the average entries by weekday for the Flushing-Main Street station (7 train terminus).
- ▶ Omitted Saturday data with the assumption that it may capture party goers' activity..
- ▶ Weekdays had the highest average entry traffic, especially **Tuesday through Friday**

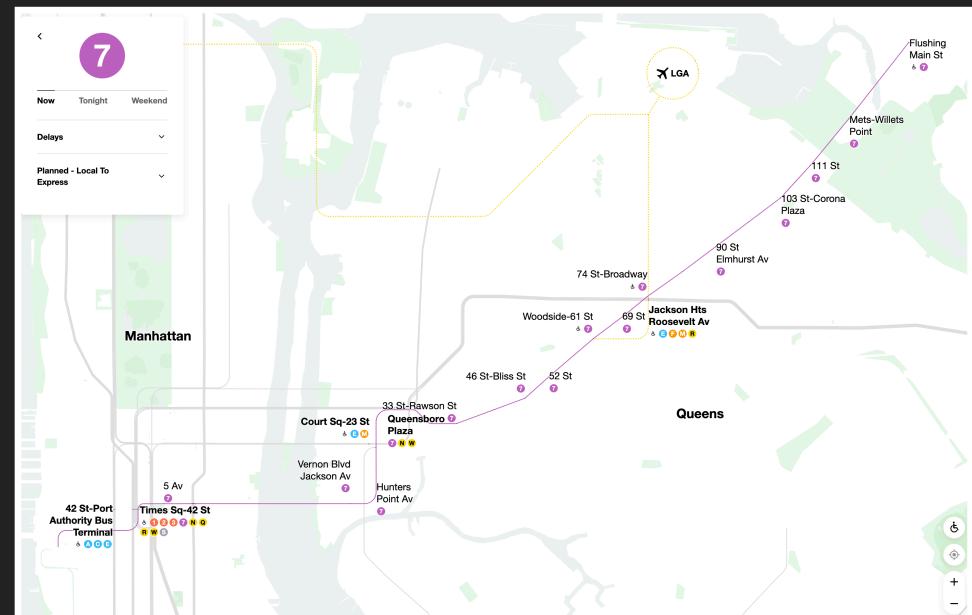
Figure 3.
Flushing Station: Mean Late Night Entries vs. Day



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CONCLUSIONS

- ▶ Select subway entrances have high foot traffic late at night.
- ▶ Based on the exploration of stations on the 7 train in Queens, the terminus, Flushing-Main Street, and stations close to Manhattan would be strategic places for mobile testing units.
- ▶ Recommend assigning mobile COVID testing units to subway stations with high late night entries to provide testing services for essential workers.

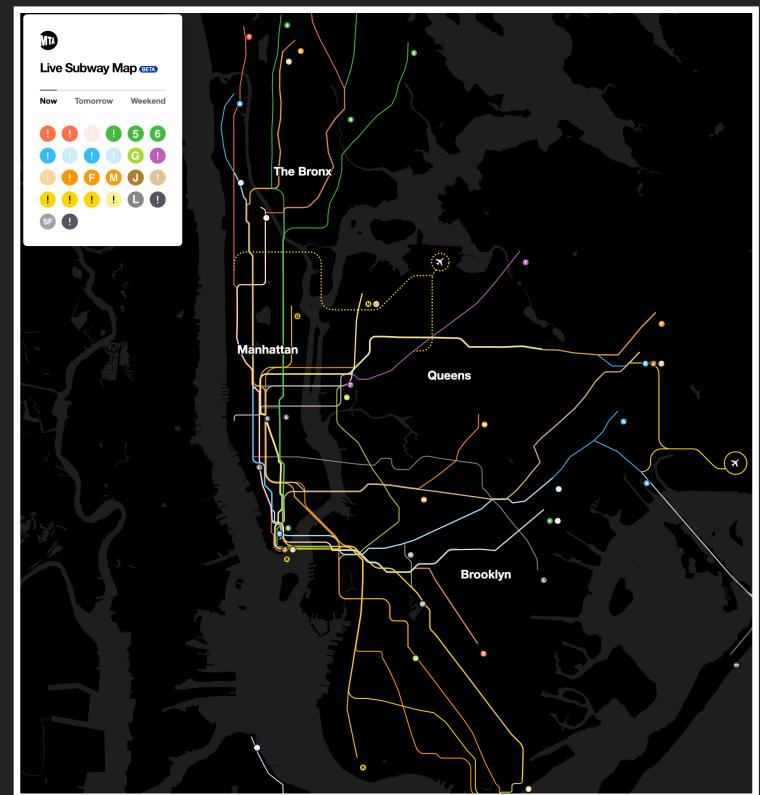


MTA 7 Train Route

MTA TURNSTILE DATA

FUTURE WORK

- ▶ Explore train lines in the outer borough
- ▶ Explore reporting intervals before 12 am and after 4 am
- ▶ Explore exit data in clusters to minimize travel time of mobile testing units



[MTA Live Subway Map](#)

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APPENDIX

- ▶ Slides and code are available at
github.com/slp22/eda-project



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