
Subway vs. Citi Bike Ridership Before and After Covid Hit NYC

— William Mai —

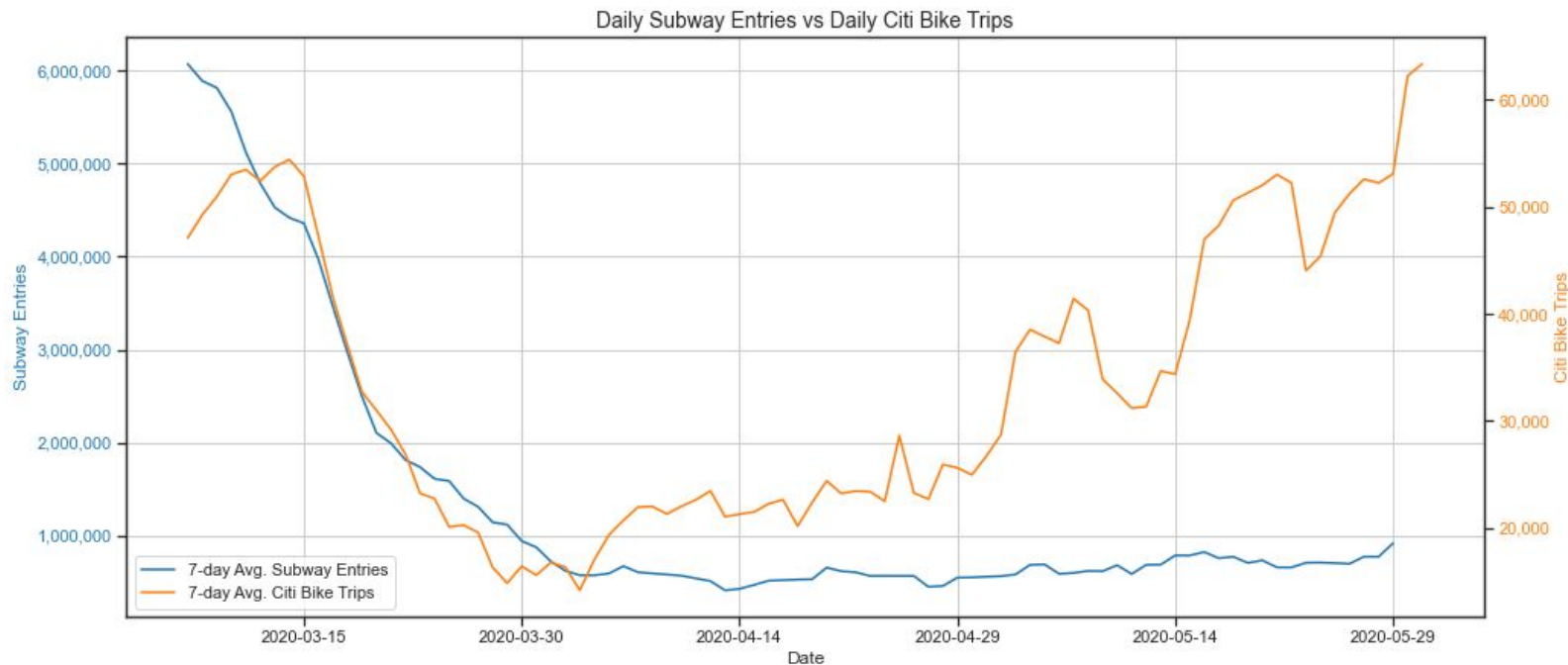
Introduction

- How did Covid change Subway and Citi Bike usage in New York City between March and May 2020?
- Could we observe a new usage pattern between March and May 2021?
- How should Citi Bike adjust the location and the number of bike stations to adapt to the new usage pattern in different areas?
 - Transportation hub
 - Business district
 - Residential Area

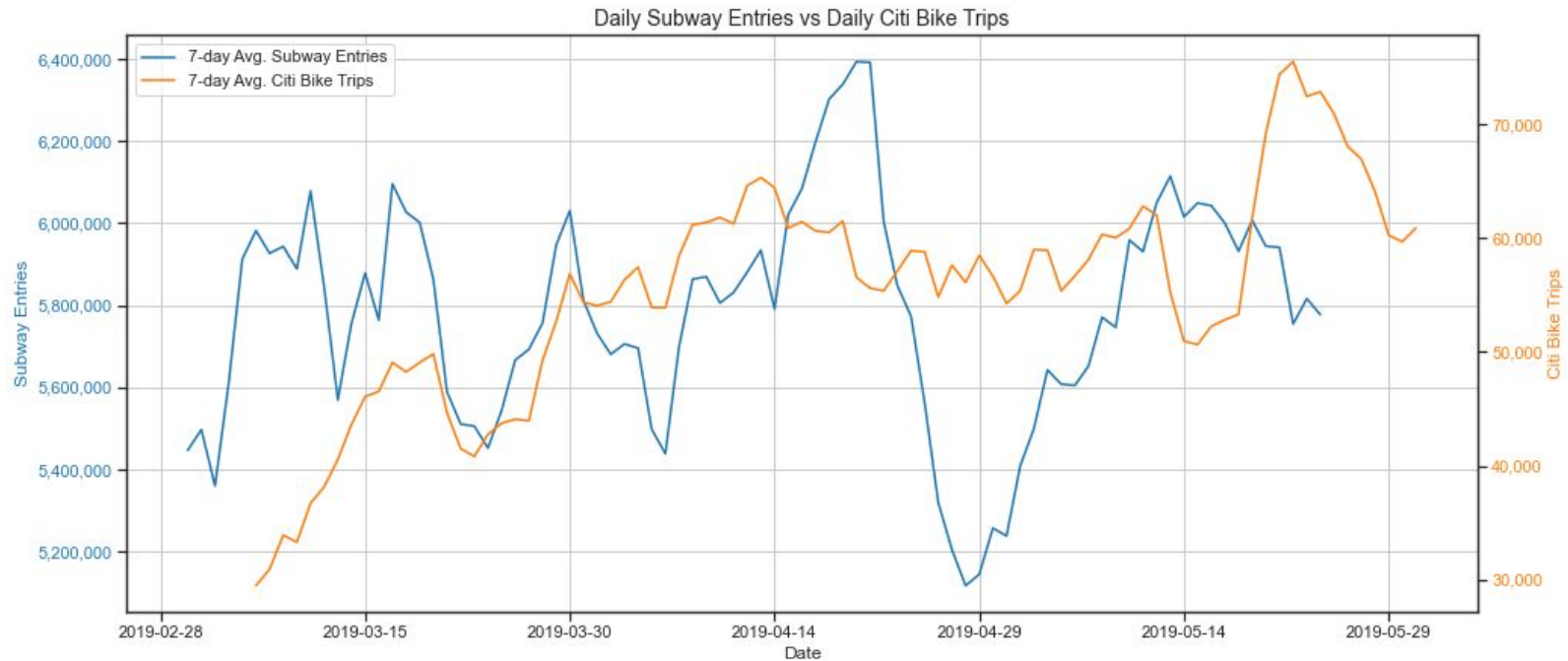
Methodology

- MTA Data: Daily entry count from March to May for 2019, 2020 and 2021
- Citi Bike Data: Daily bike trips from March to May for 2019, 2020 and 2021
- Matrics
 - Subway Daily Entry: 7-day moving average of daily entries
 - Citi Bike Daily Trips: 7-day moving average of daily bike trips

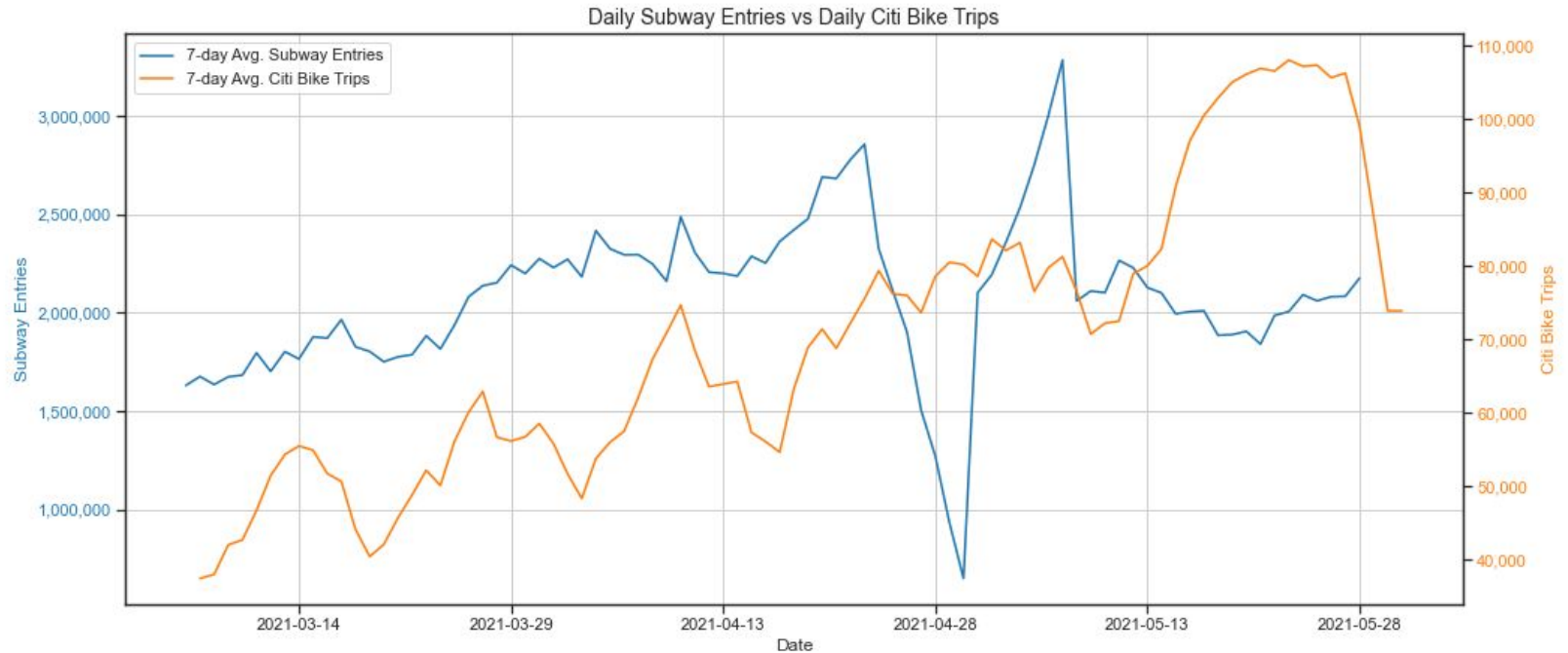
Results – Subway vs. Citi Bike in 2020



Results – Subway vs. Citi Bike in 2019



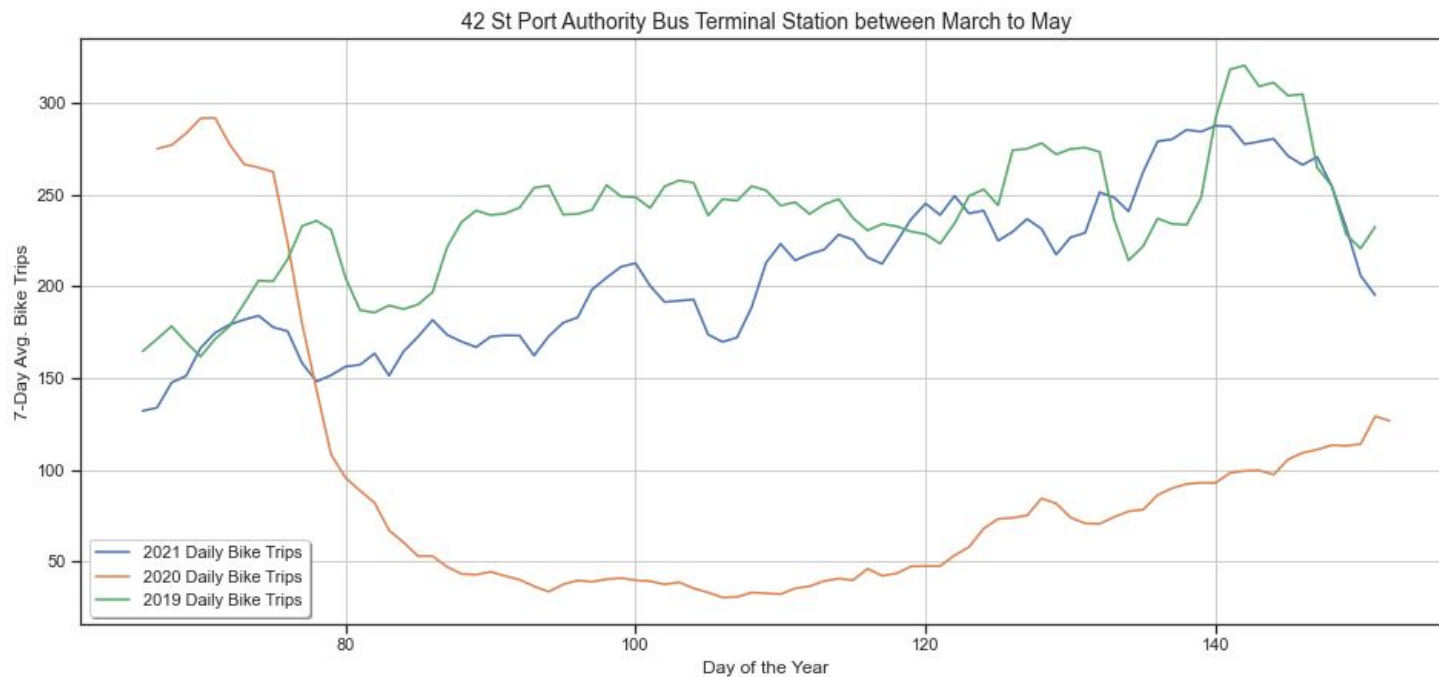
Results – Subway vs. Citi Bike in 2021



Results – Citi Bike Usage in 2019, 2020 and 2021

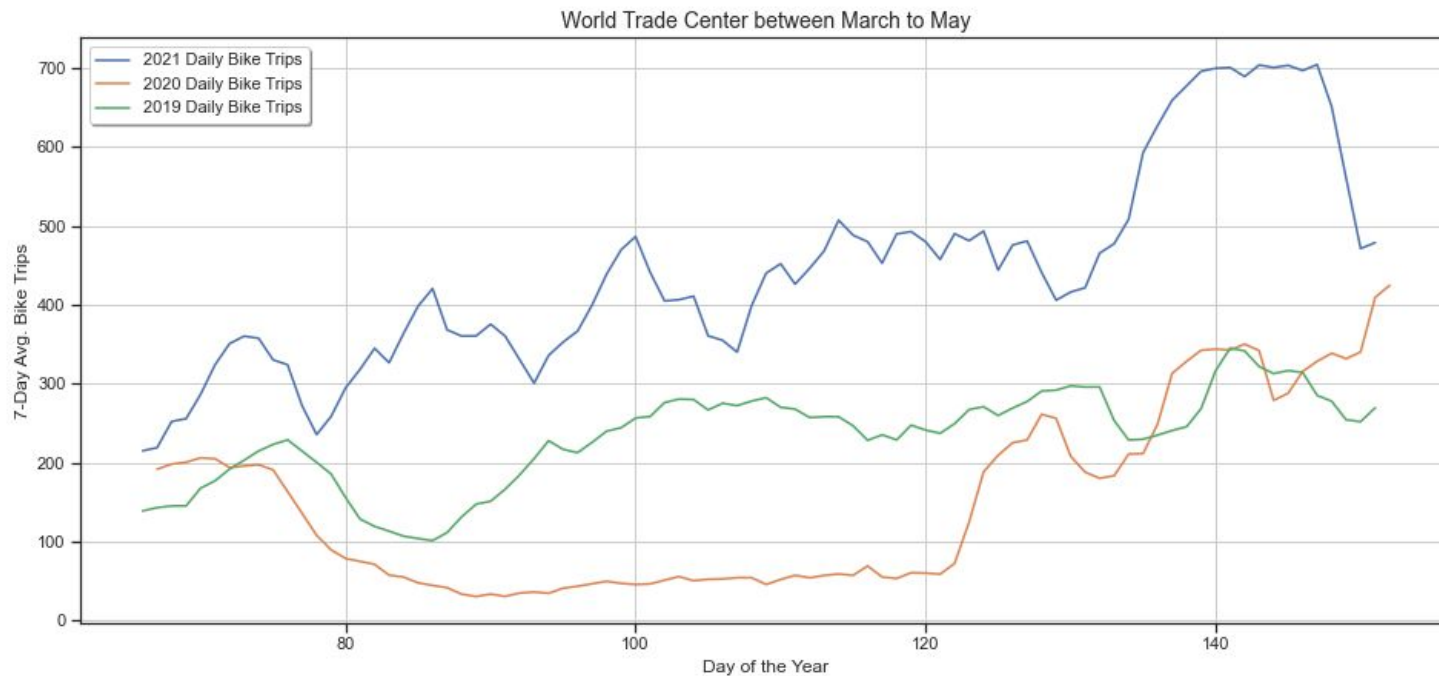


Results – Citi Bike Usage on 42 St Port Authority Bus Terminal Transportation Hub



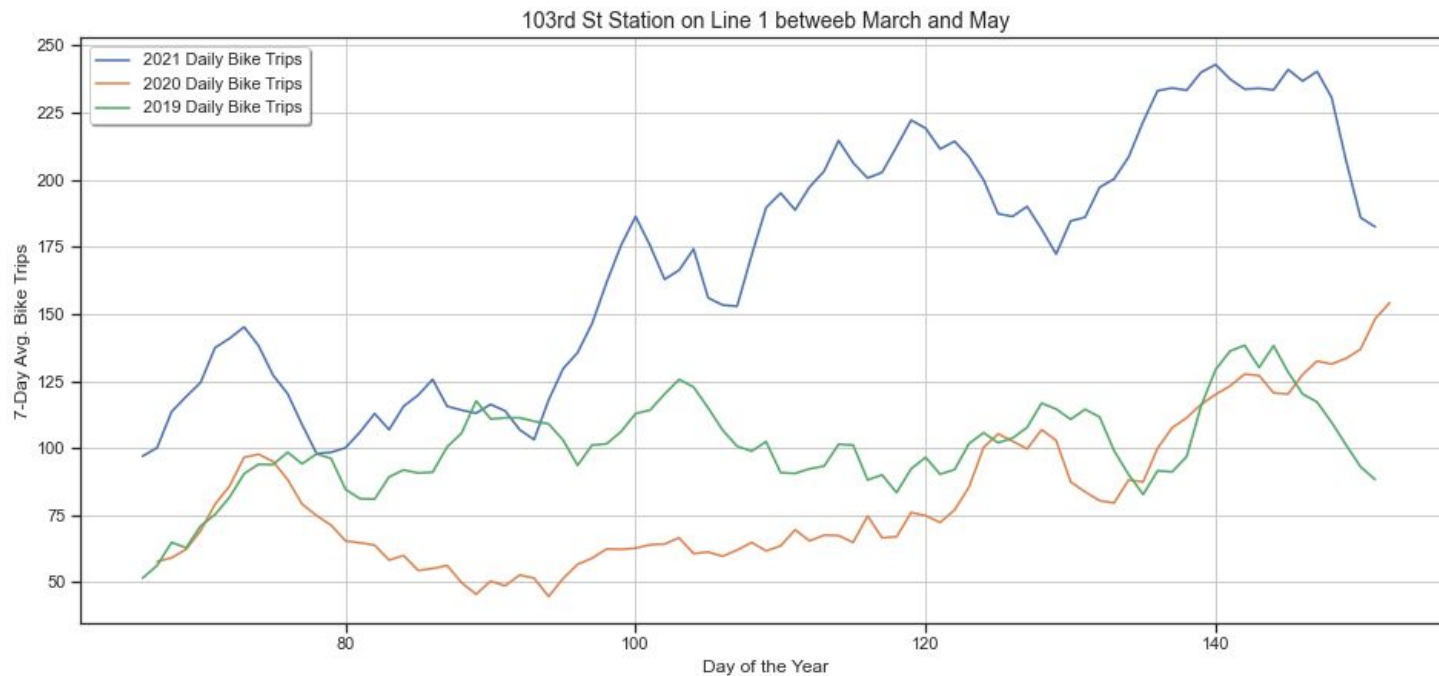
Results – Citi Bike Usage on World Trade Center

Commercial District



Results – Citi Bike Usage on 103 St Station on Line 1

Residential Area



Conclusions

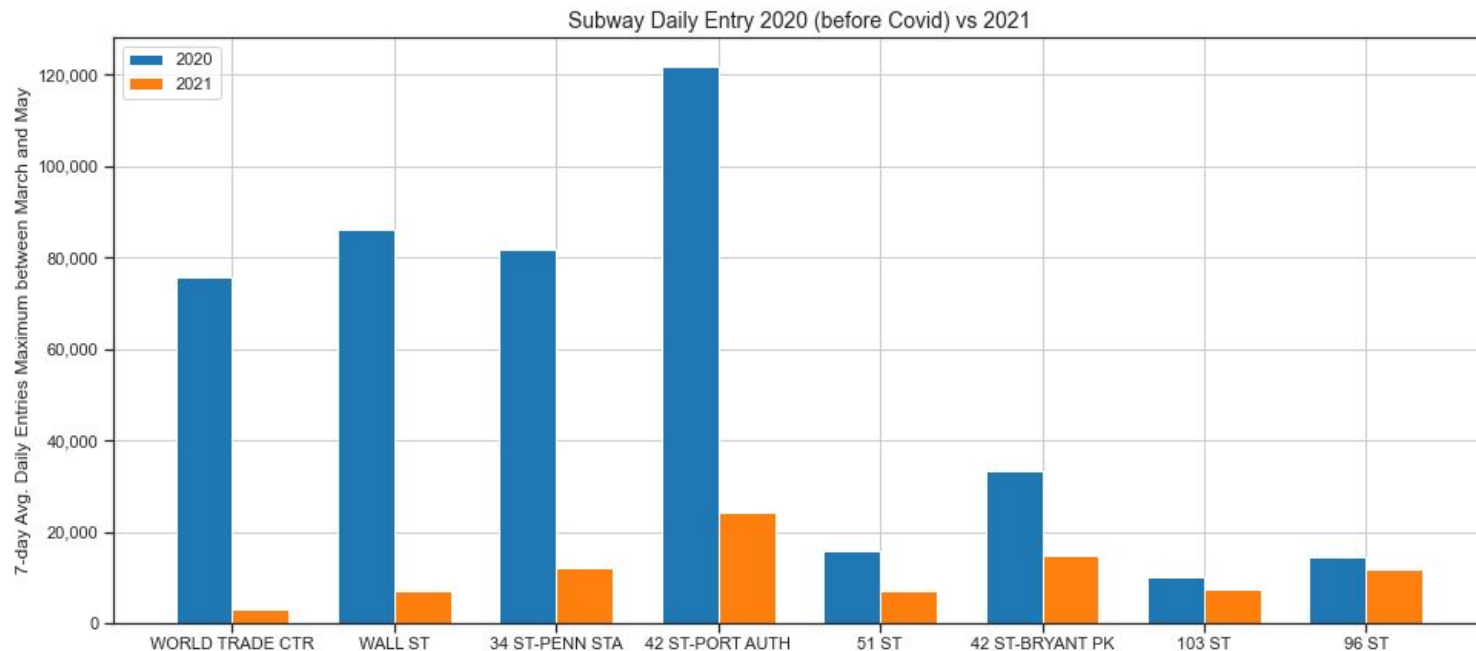
- Subway ridership was hit hard when Covid struck in March 2020
- Citi Bike bounced back to the previous year level by the end of May 2020
- Subway ridership has not recovered back to the 2019 level in 2021
- Citi Bike usage pattern has changed based on the location of bike stations when comparing the same period between 2021 and 2019
 - Transportation hubs: Usage had **remained** at the similar level
 - Commercial districts: Usage had **increased**
 - Residential areas: Usage had **increased**

Future Work

- To implement a more efficient way to analyze multiple subway stations simultaneously
- To classify subway stations into different groups, and study the Citi Bike usage based on these groups. Examples of groups could be grouping stations by location, by types of property around the station, etc.

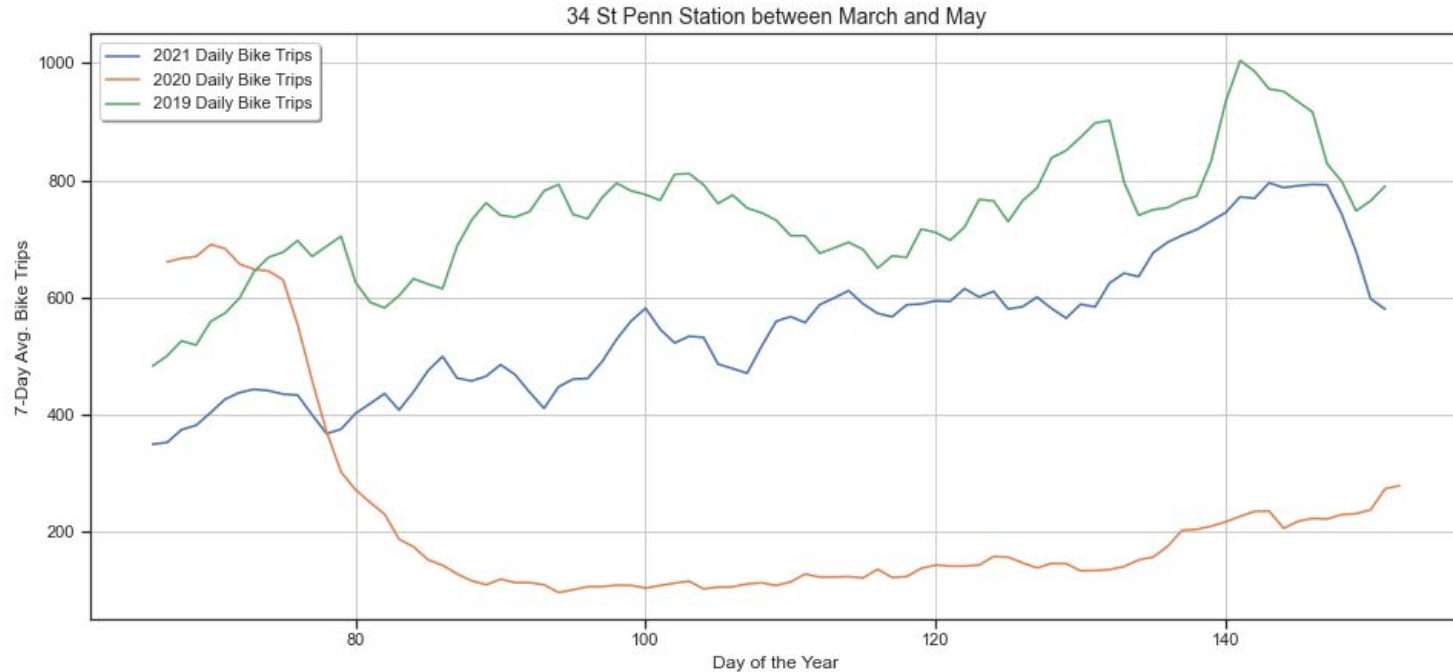
Appendix

Results – Subway Daily Entry Drop 2020 vs. 2021

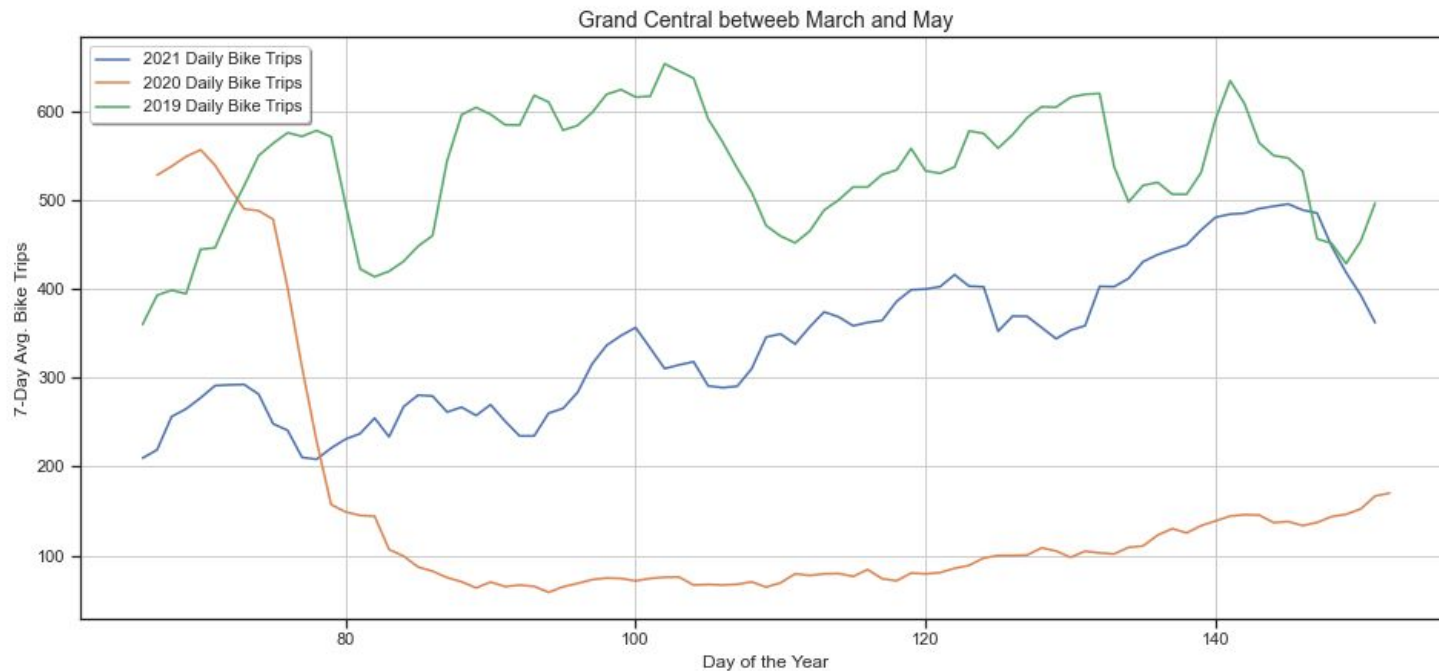


Results – Citi Bike Usage on Penn Station

Transportation Hub

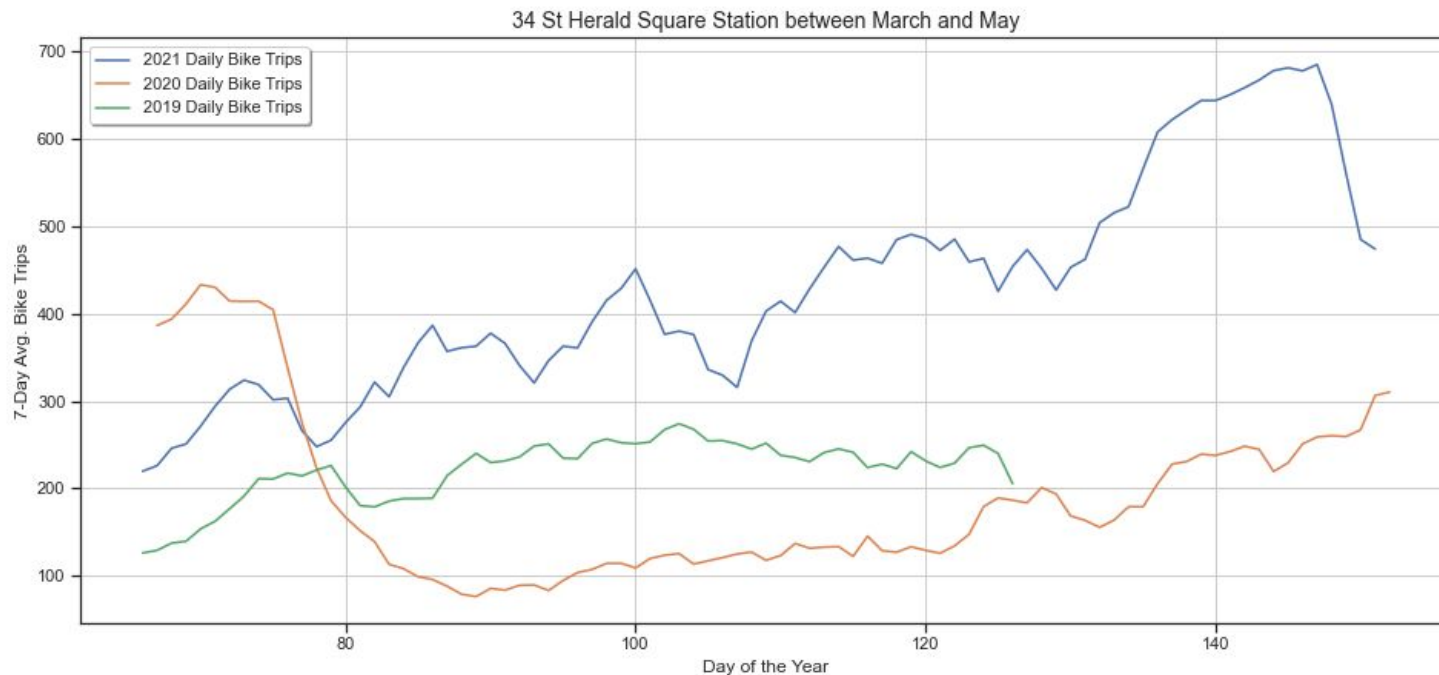


Results – Citi Bike Usage on Grand Central Transportation Hub



Results – Citi Bike Usage on 34 St Herald Square Station

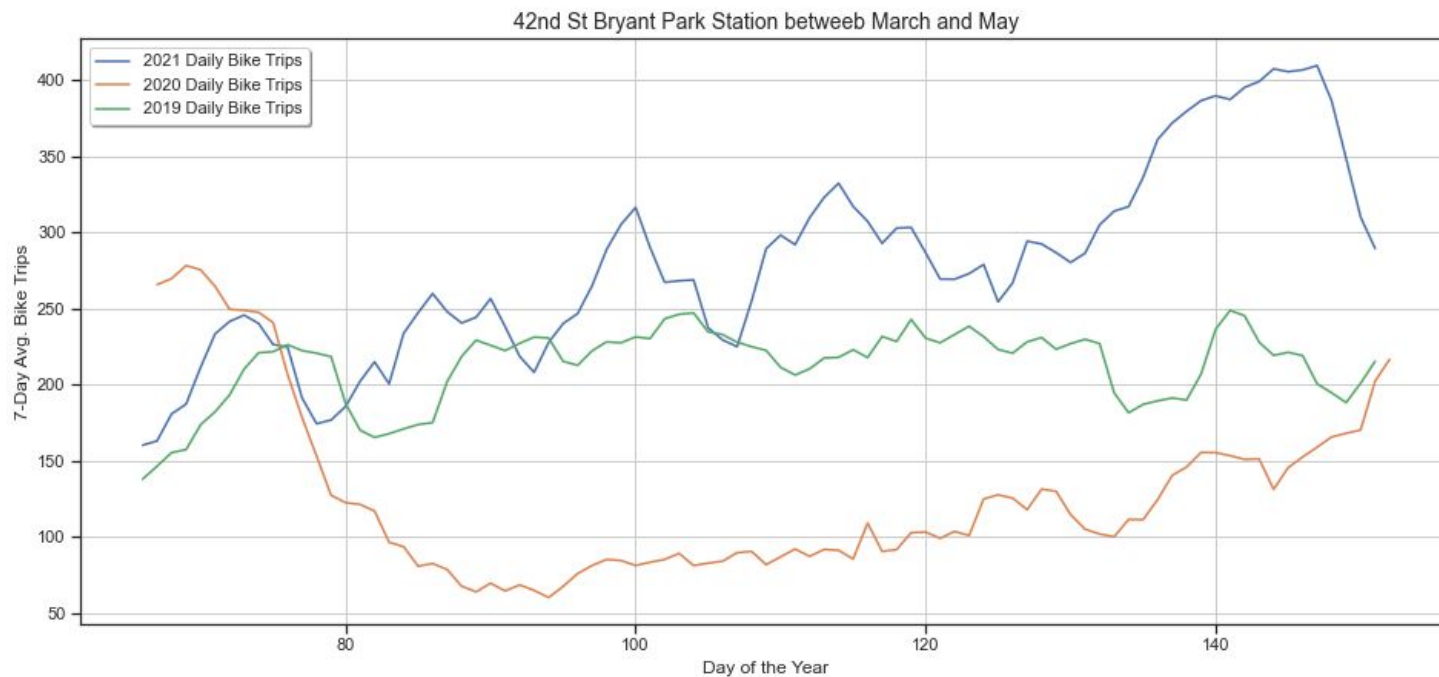
Transportation Hub



- Citi Bike data missing from the bike stations around 34 St Herald Square in May 2019

Results – Citi Bike Usage on 42 St Bryant Park Station

Commercial District



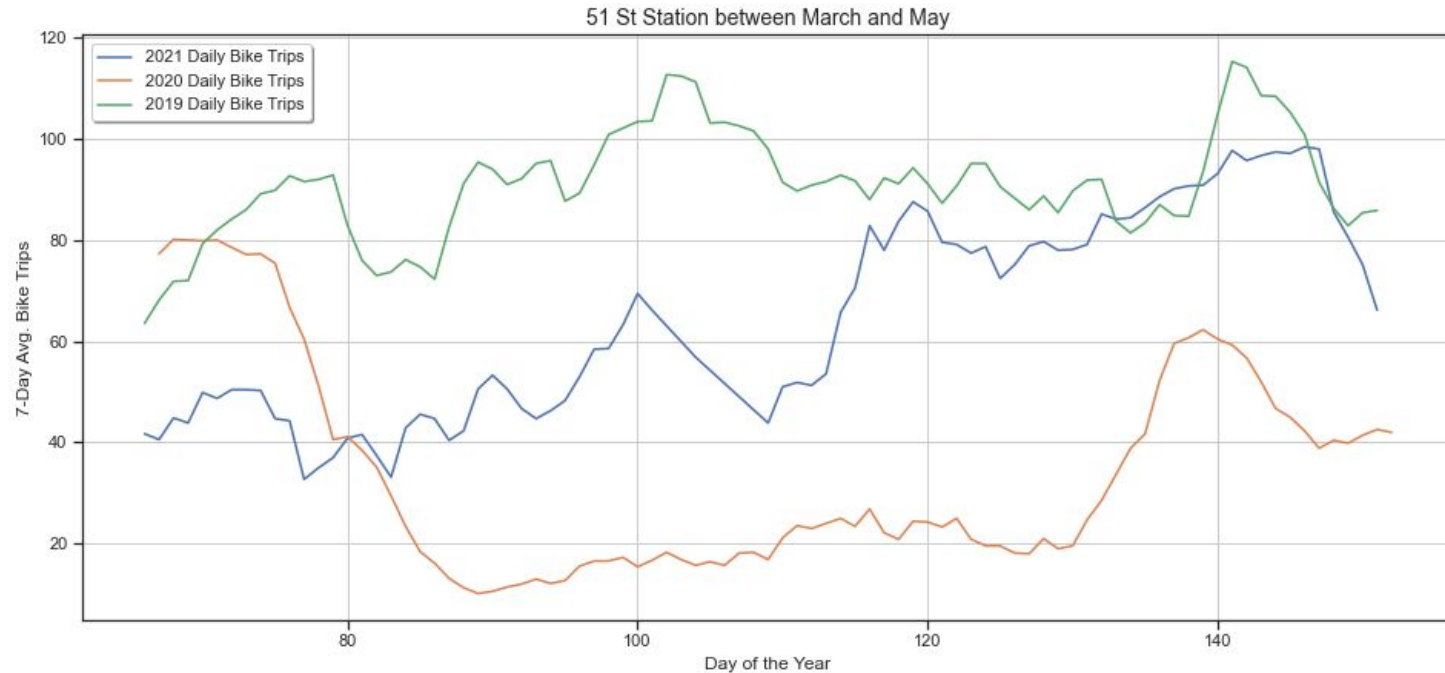
Results – Citi Bike Usage on Wall St Station

Commercial District



Results – Citi Bike Usage on 51 St Station

Commercial District



Results – Citi Bike Usage on 96 St Station on Line 6

Residential Area

