

# MTA Turnstile Exploratory Data Analysis

Liveboard Advertising Pricing



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# Issue

Across MTA stations, OutFront Media has a network of liveboards: digital advertising boards.

Given that liveboard advertisement spaces are available for purchase at different stations, at different times, and on different days, the pricing of these advertisement spaces can be optimized based on the foot traffic of the stations.

# Question

What stations and on what days and times could OutFront Media increase the pricing of their MTA advertising spaces in the year ahead?

14

N Q R W

2019 NFL DRAFT  
COUNTDOWN

02 days  
08 hours  
44 minutes  
19 seconds

April 26 9:15 AM

WHO'S NEXT?



DRAFT  
2019



2019 NFL DRAFT  
COUNTDOWN

02 days  
08 hours  
44 minutes  
19 seconds

WHO'S NEXT?



# Data

- MTA turnstile data
  - Jan - March 2019
  - Jan - March 2021

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# Tools

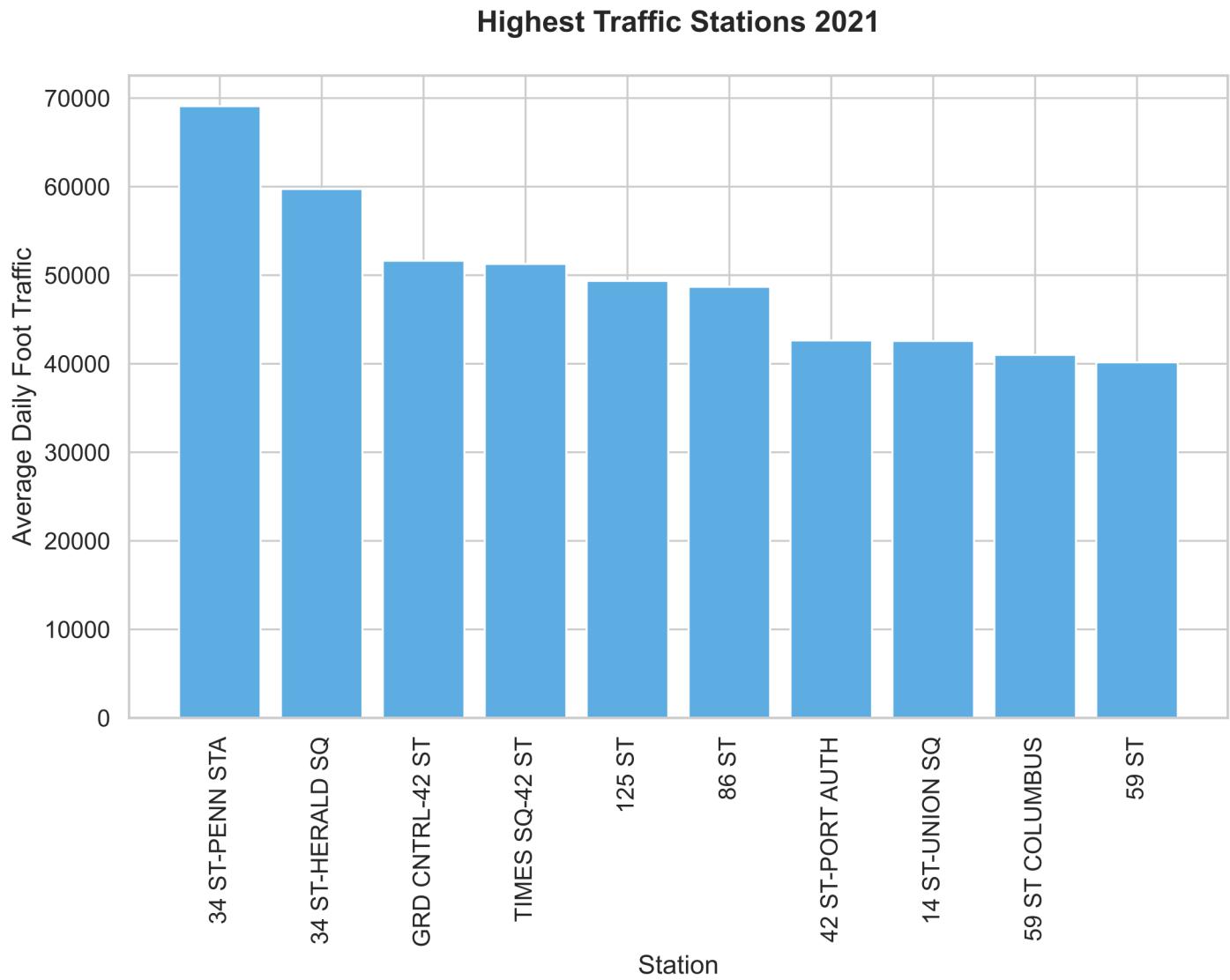
- SQL
- Pandas
- Matplotlib

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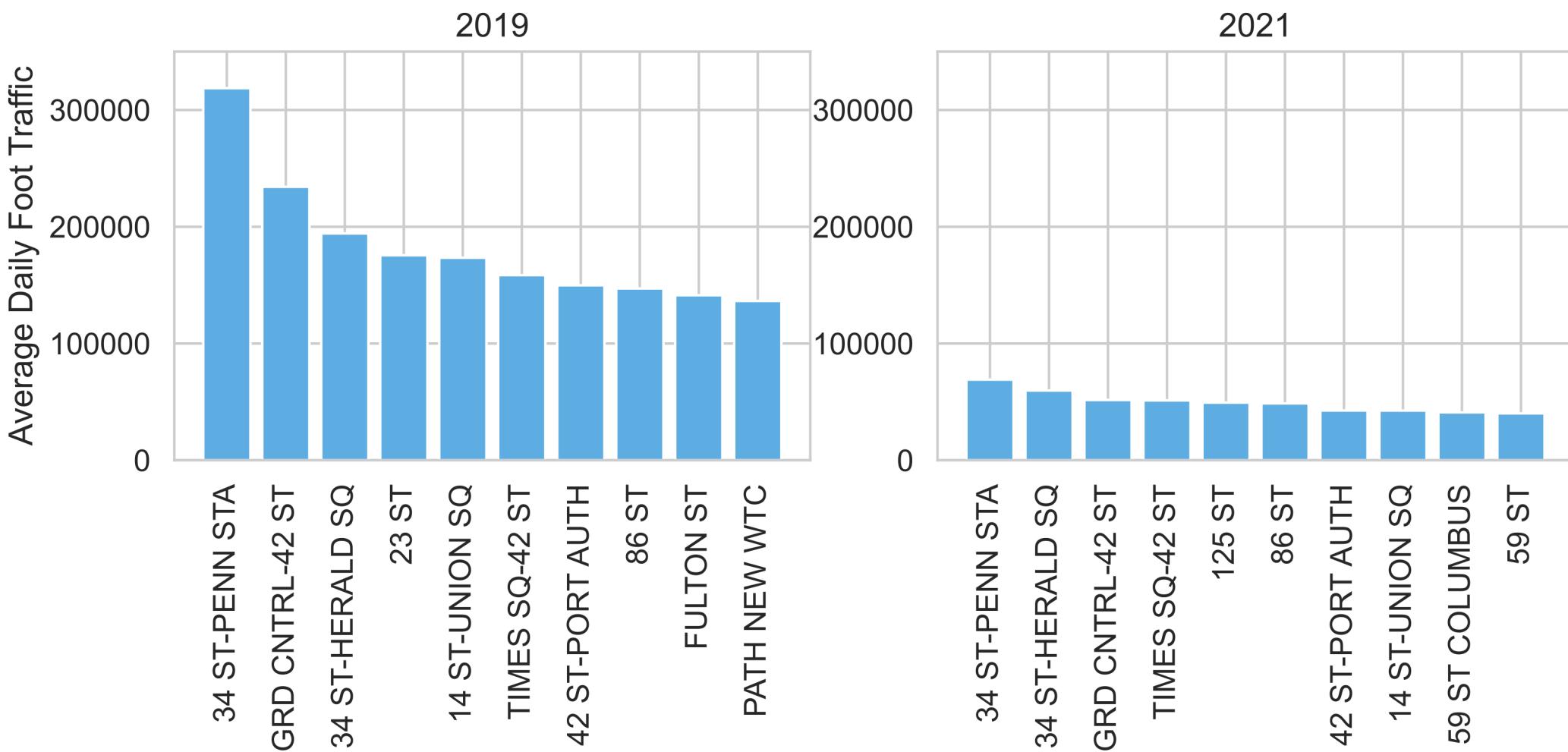
# Analysis

## Highest Traffic Stations

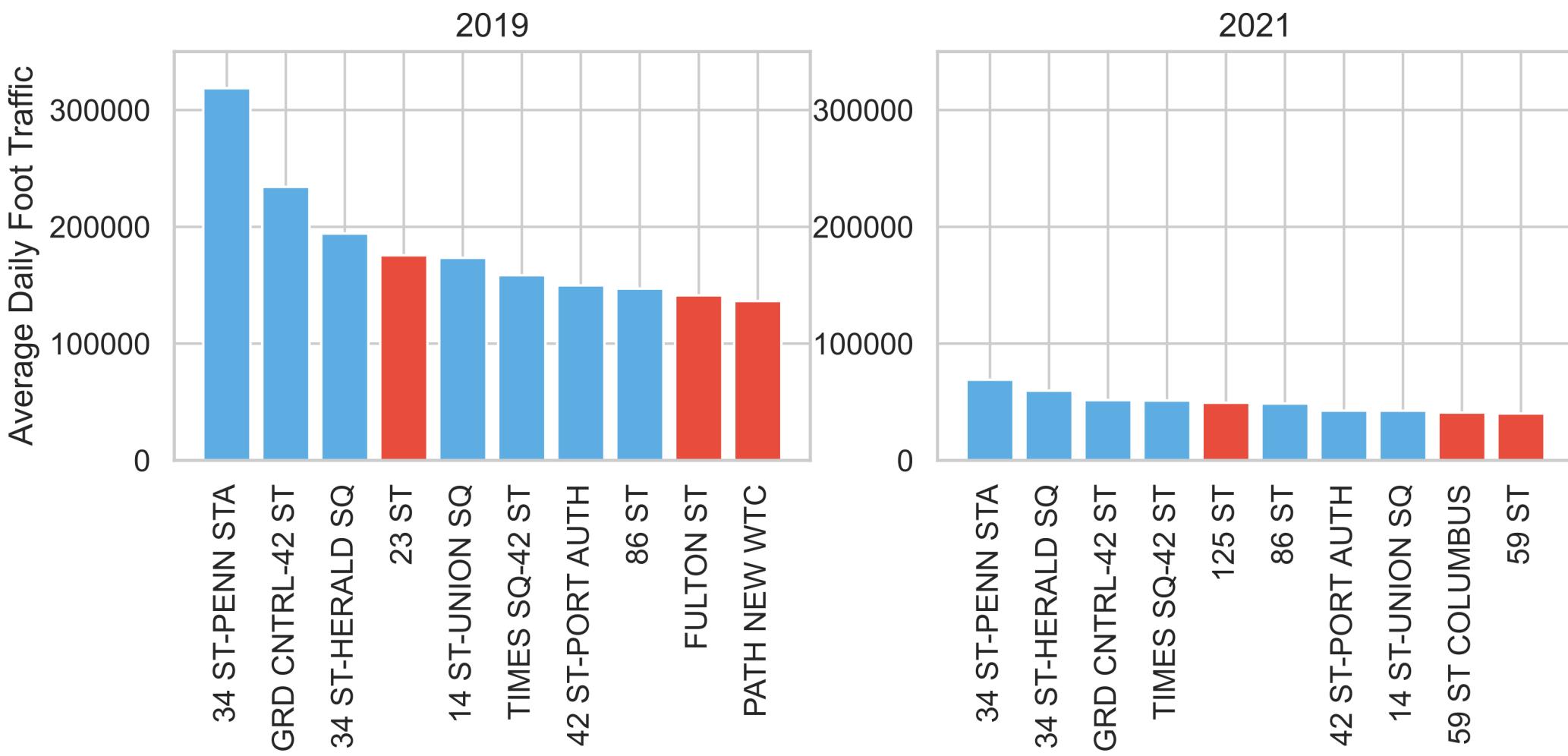
Foot traffic: sum of turnstile entries and exits



## Comparing the Highest Traffic Stations in 2019 and 2021



## Comparing the Highest Traffic Stations in 2019 and 2021



	<b>STATION</b>	<b>DAILY_ENTRIES_EXITS</b>	<b>TRAFFIC_LEVEL</b>
<b>376</b>	YORK ST	3429.322222	Low
<b>23</b>	167 ST	11616.655556	High
<b>153</b>	BEVERLEY ROAD	2188.533333	Low
<b>253</b>	JAMAICA VAN WK	3632.466667	Medium
<b>41</b>	21 ST	1277.588889	Low

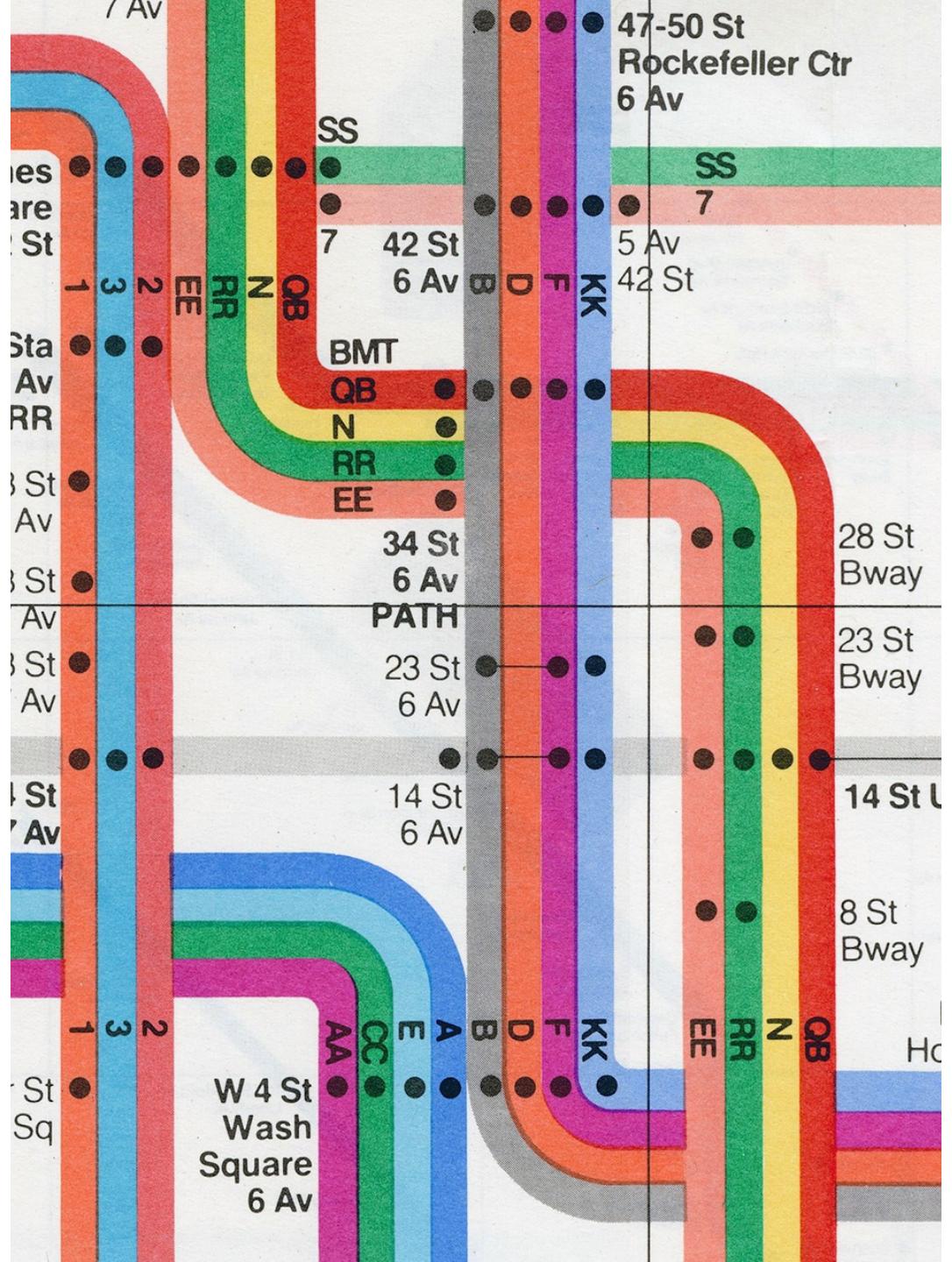
# Insights

## Highest Traffic Stations

- Stations in major business hubs like Fulton St have seen a relatively high reduction in foot traffic during the pandemic
  - Less central Manhattan stations like Harlem 125 St have seen a relative increase in foot traffic during the pandemic

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  - Consider increasing pricing of ad spaces in Manhattan stations located in non-commercial areas that are currently seeing high traffic

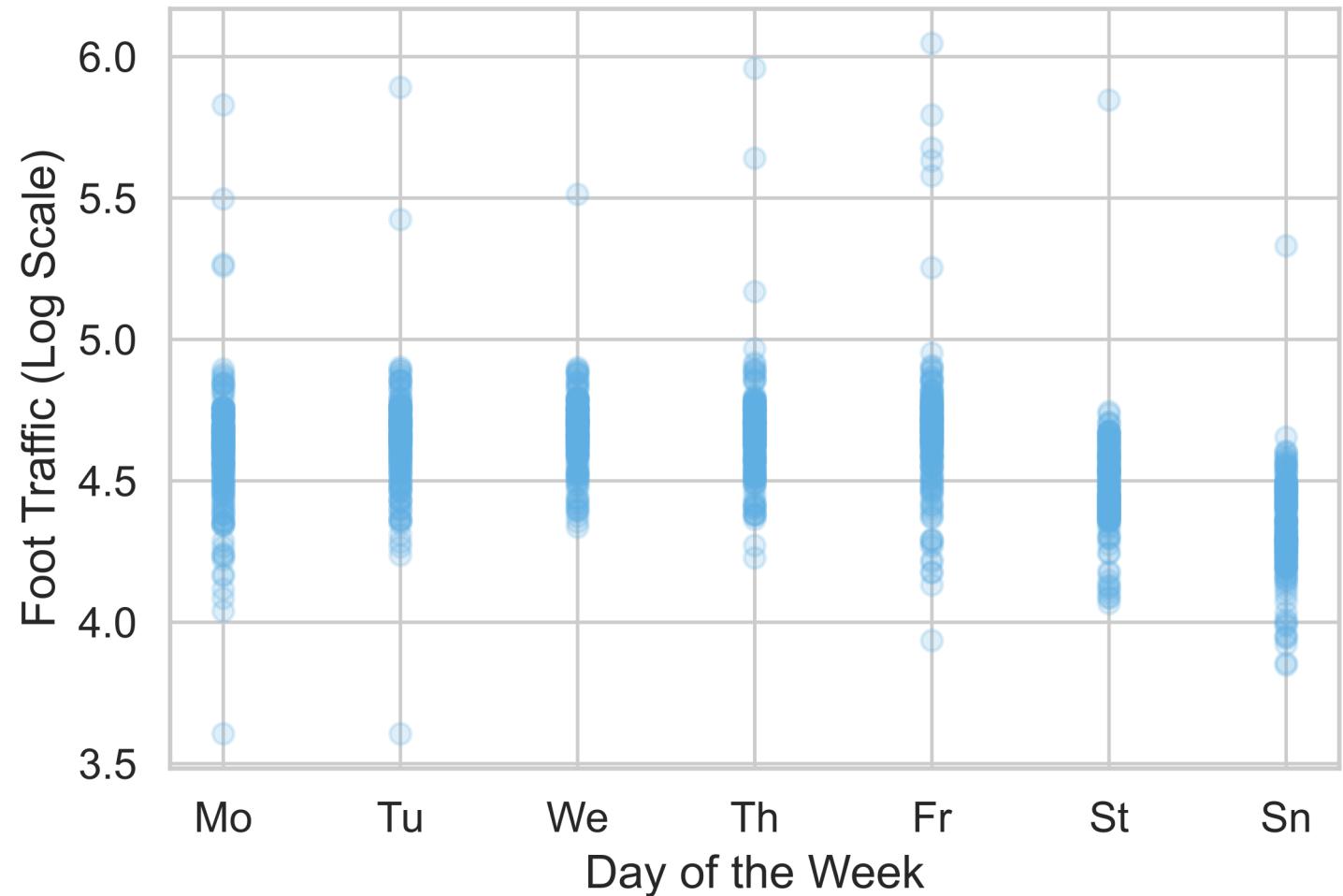


# Analysis

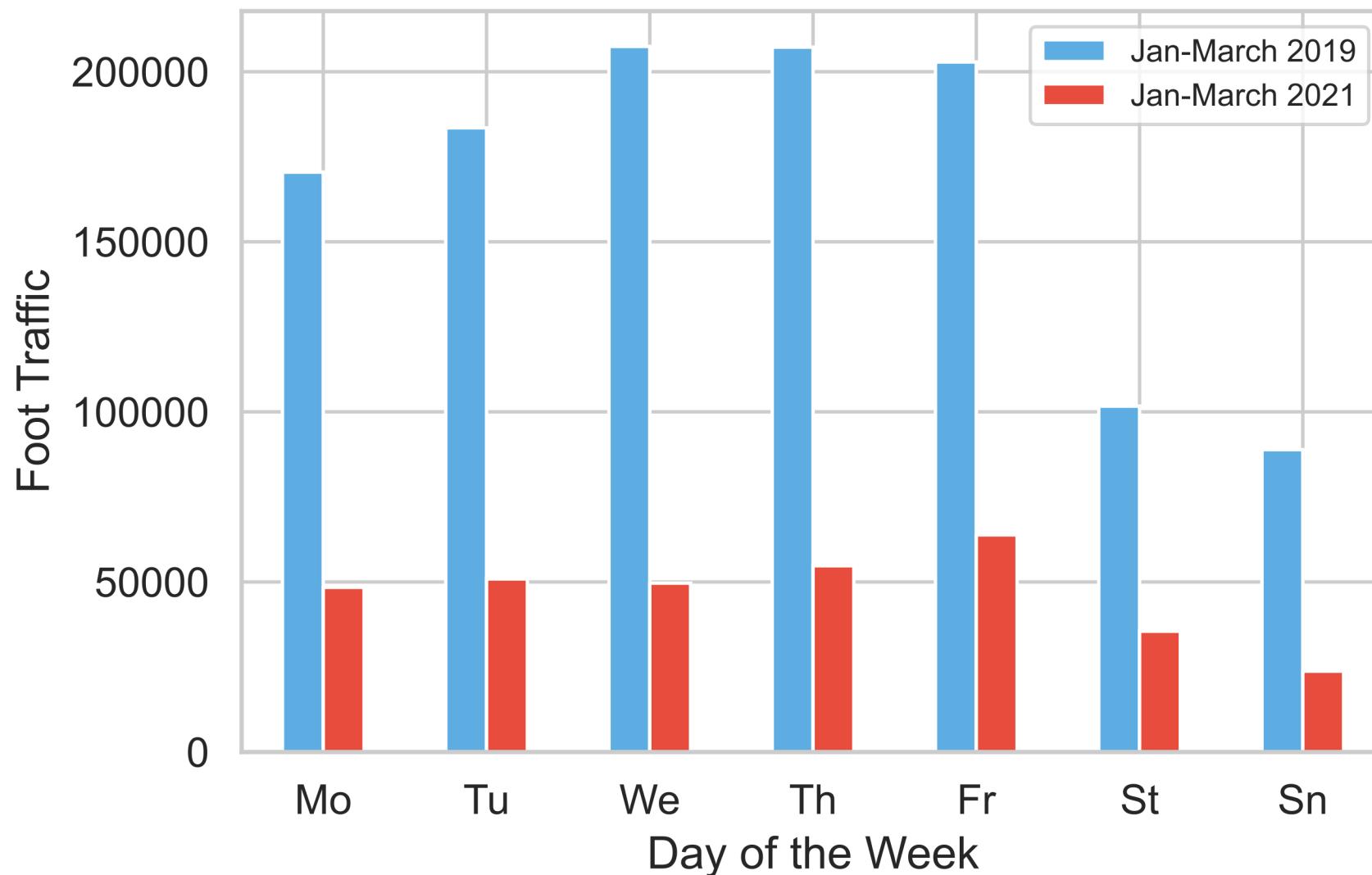
## Highest Traffic Days

Foot traffic: sum of turnstile entries and exits

**Foot Traffic For Each Day of the Week 2021  
(For the Highest Traffic Stations)**

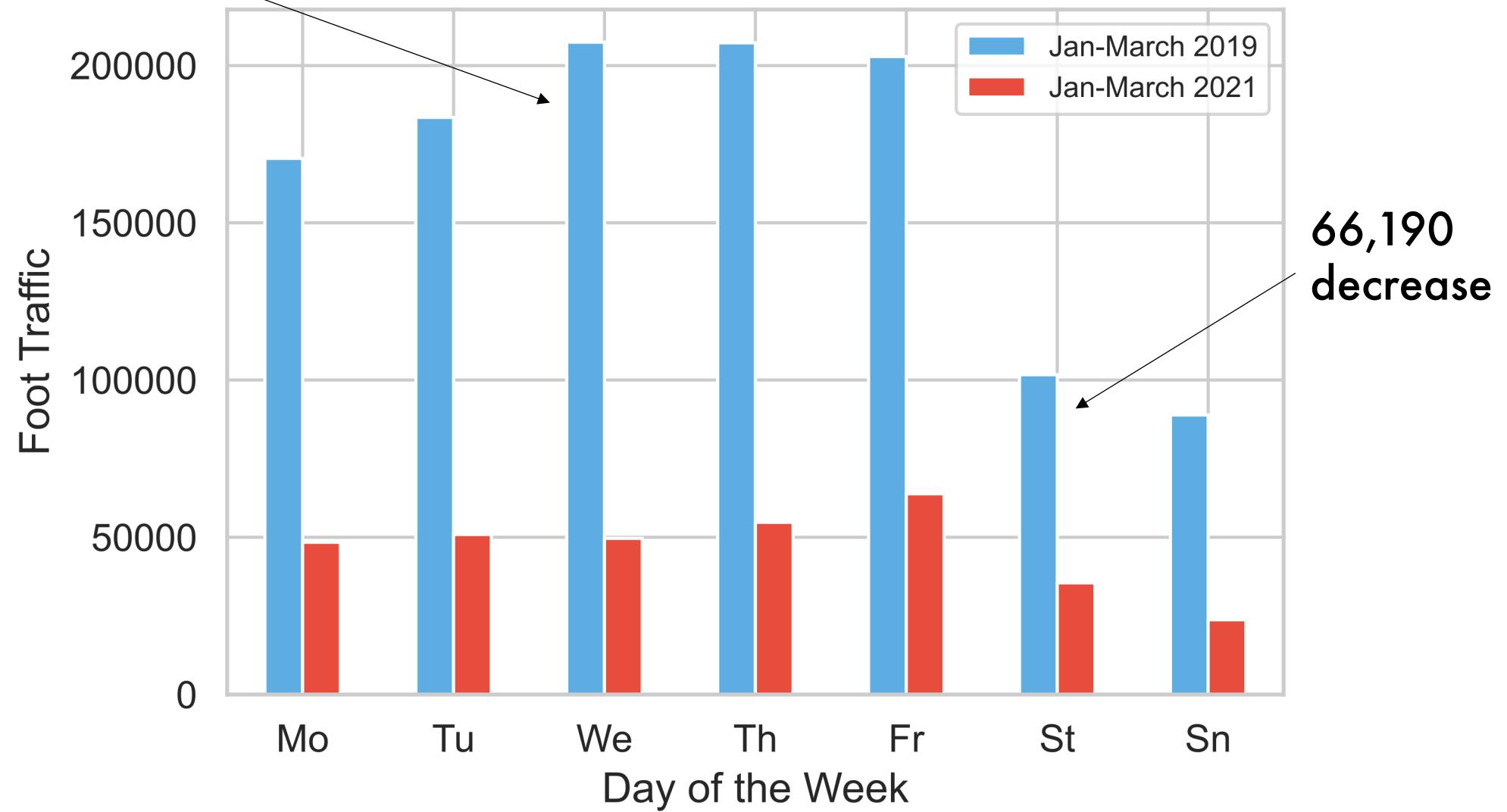


# **Foot Traffic For Each Day of the Week 2019-2021 (For the Highest Traffic Stations)**



**152,470  
decrease**

## **Foot Traffic For Each Day of the Week 2019-2021 (For the Highest Traffic Stations)**

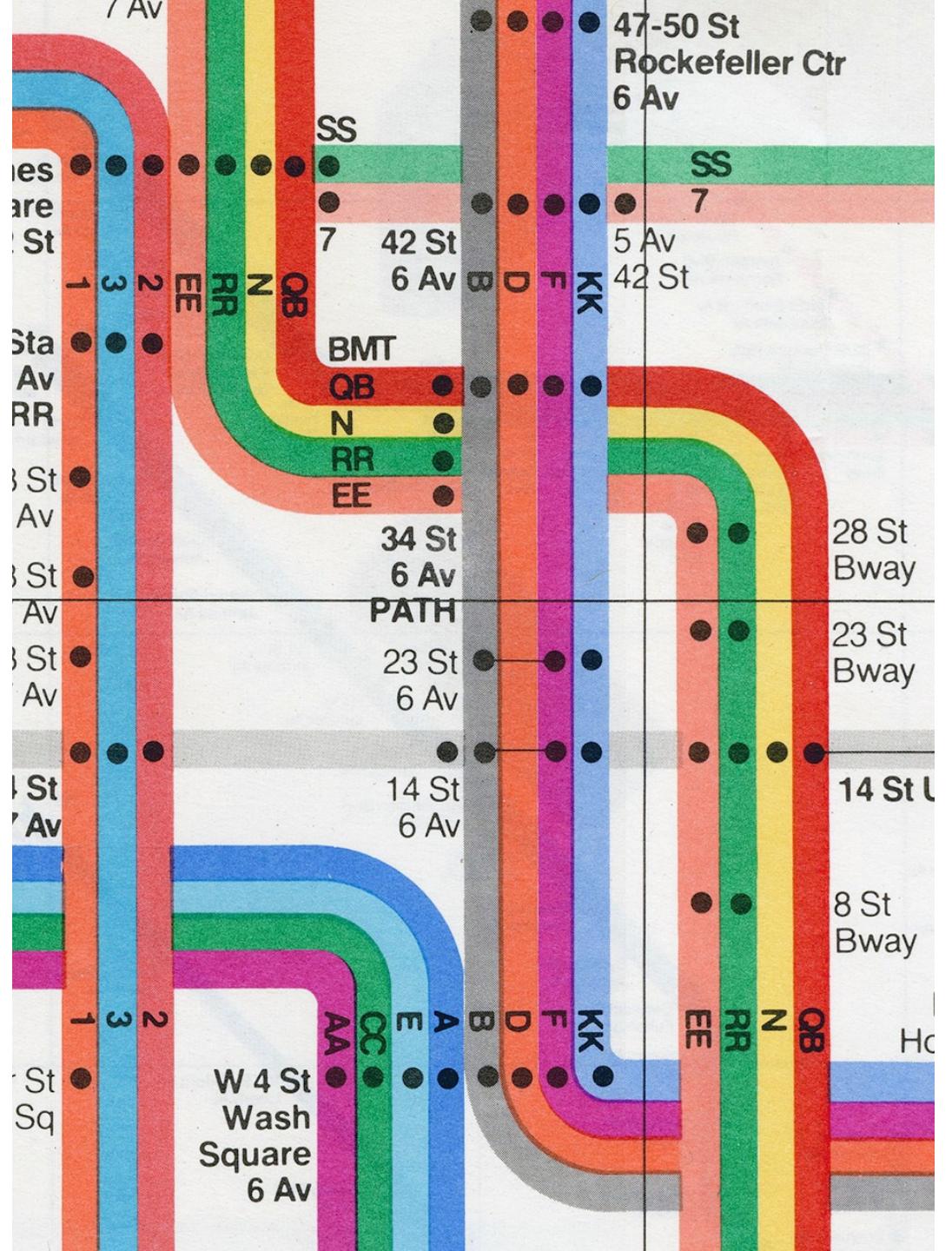


**66,190  
decrease**

# Insights

## Highest Traffic Days

- Foot traffic is highest during the working week
  - Foot traffic has decreased much more during the working week than the weekend during the pandemic
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- Consider increasing pricing of ad spaces on weekdays, especially once the pandemic ends
  - Note that the ad viewer demographic is currently composed of fewer non-essential workers

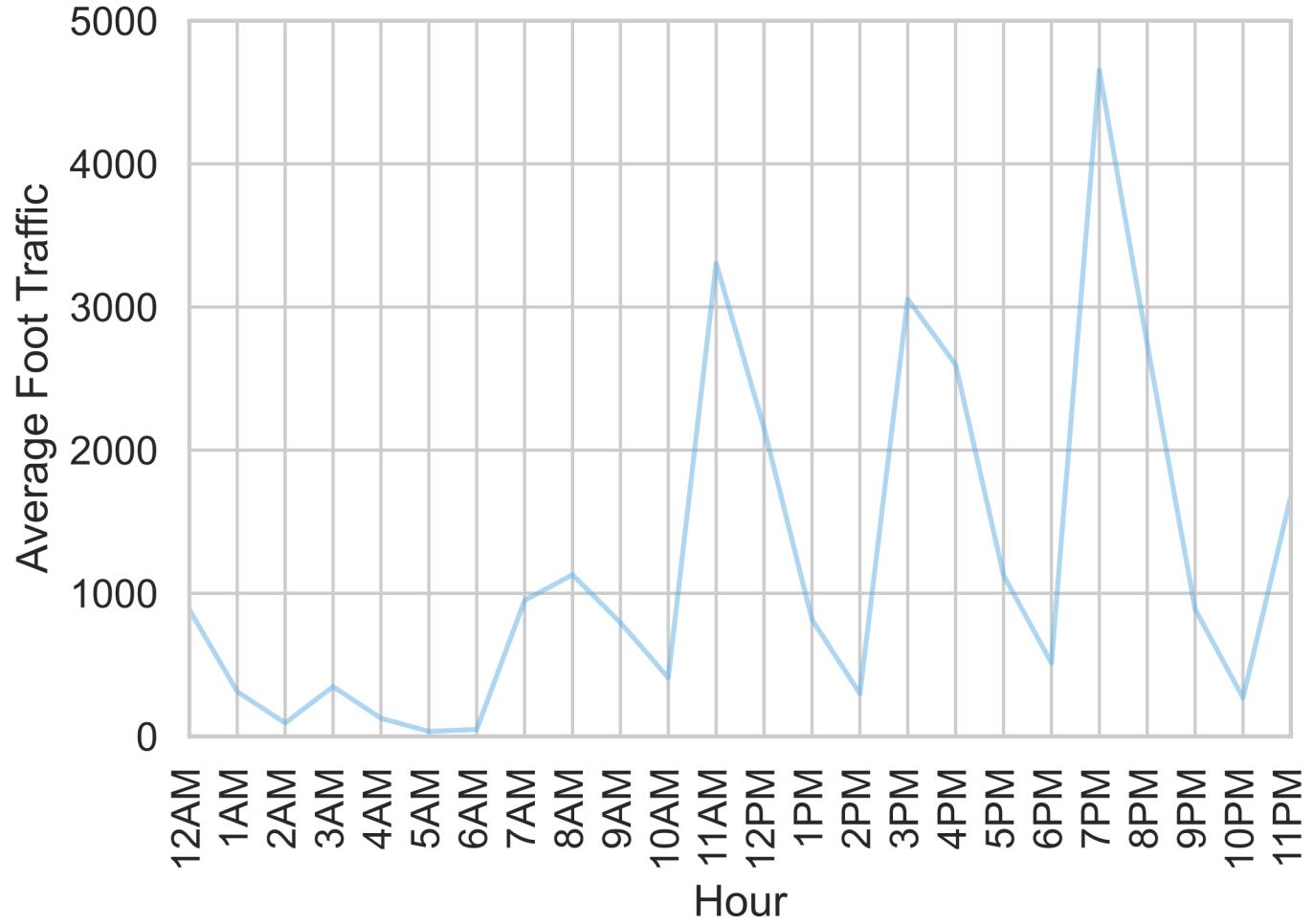


# Analysis

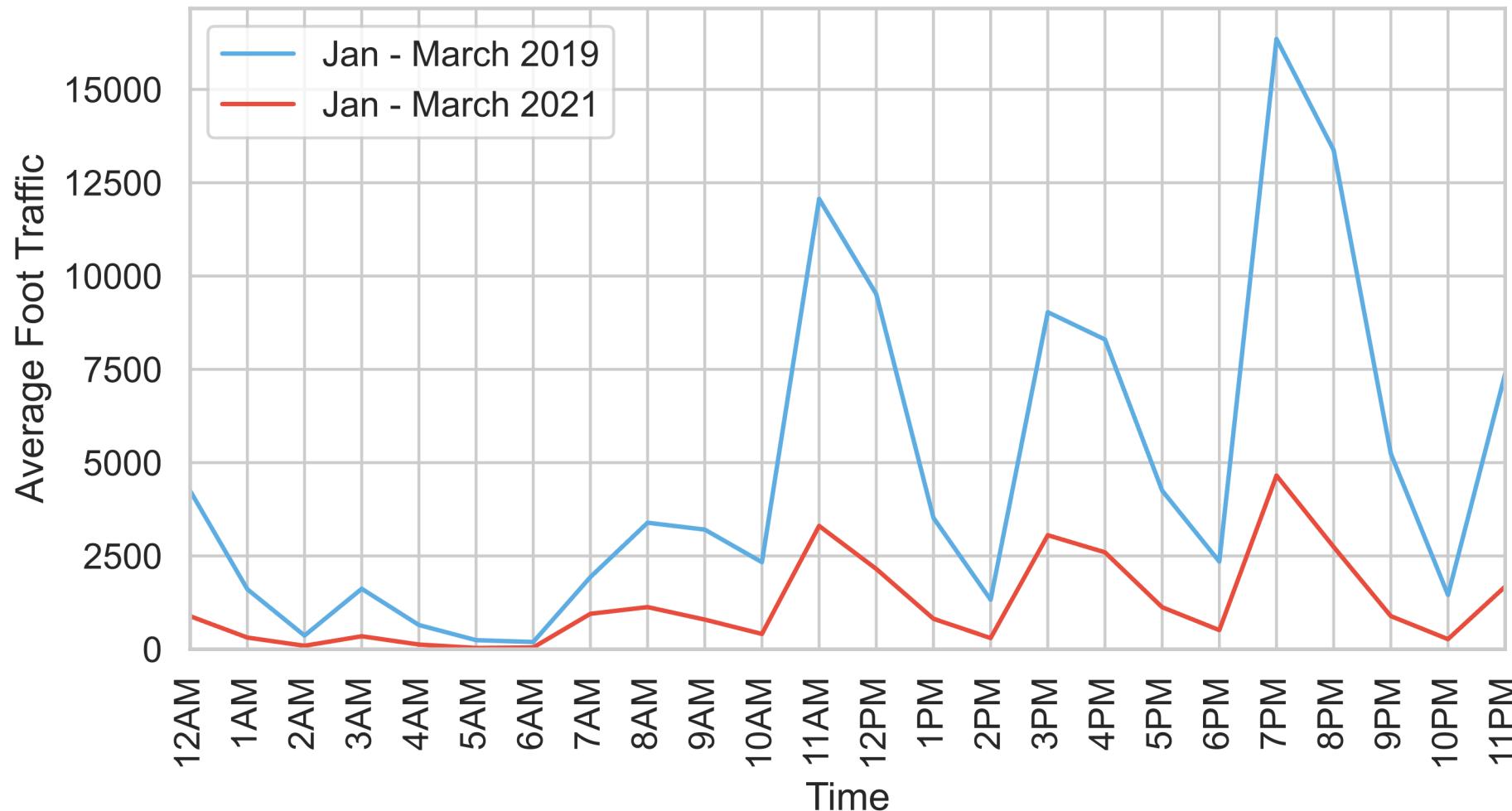
## Highest Traffic Hours

Foot traffic: sum of turnstile entries and exits

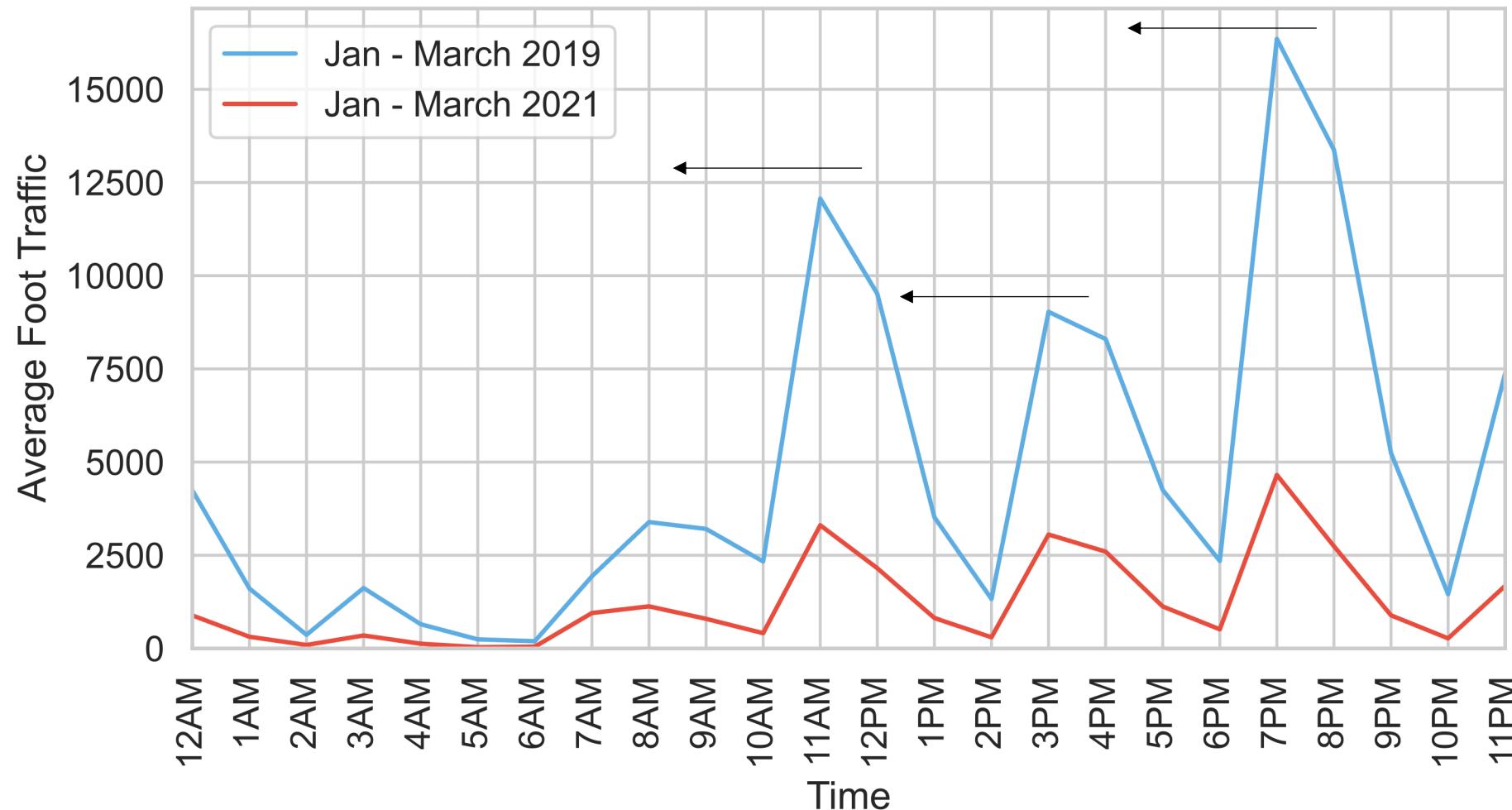
Average Foot Traffic For Each Hour of the Day 2021  
(For the Highest Traffic Stations)



## Comparing Average Foot Traffic for Each Hour of the Day 2019-2020 (For the Highest Traffic Stations)



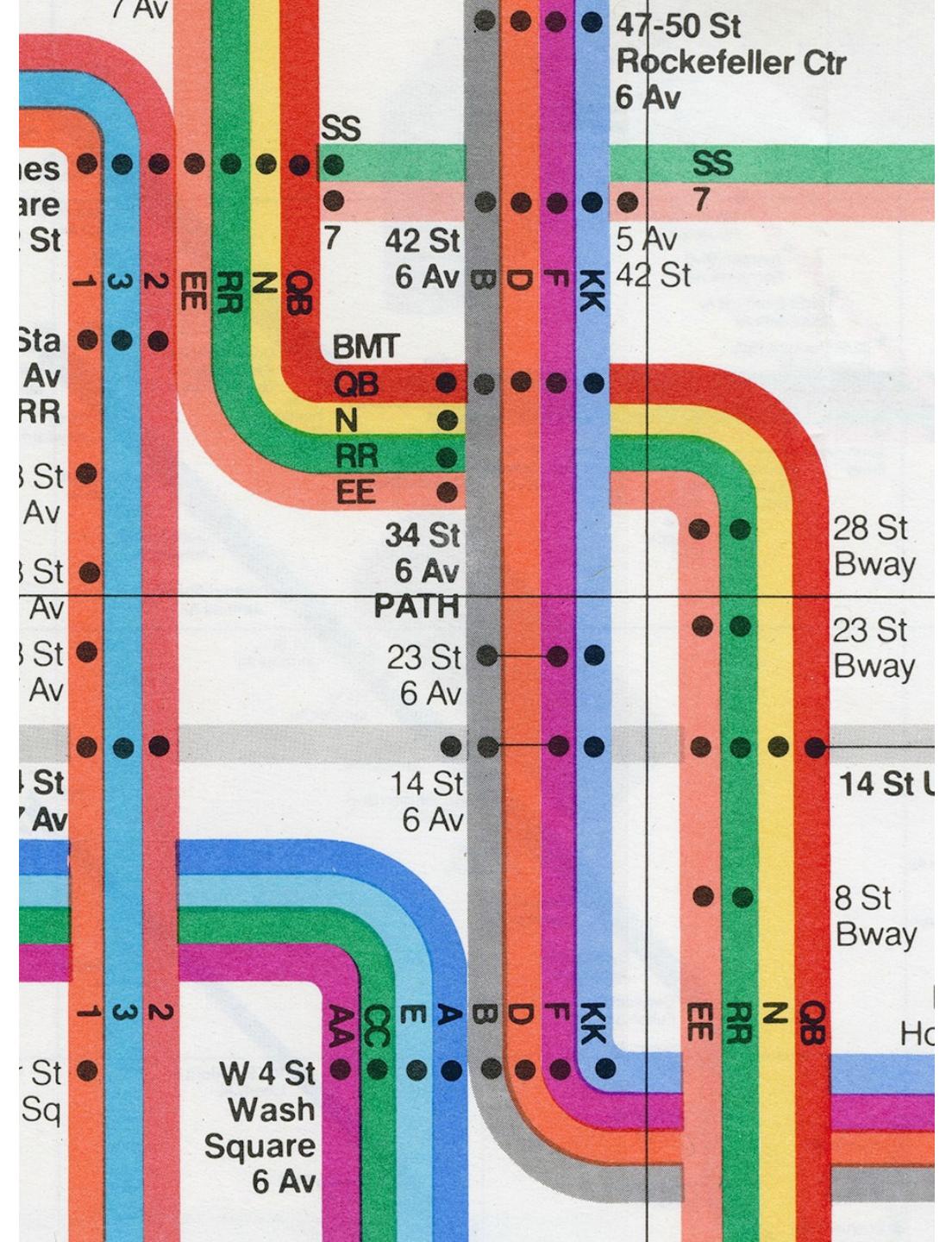
## Comparing Average Foot Traffic for Each Hour of the Day 2019-2020 (For the Highest Traffic Stations)



# Insights

## Highest Traffic Hours

- Foot traffic is highest in the evenings
- Foot traffic around midday is perhaps higher than expected
- Consider increasing pricing of midday ad spaces



# Conclusion

## Liveboard Advertising Pricing

- Consider increasing pricing of ad spaces in Manhattan stations located in non-commercial areas that are currently seeing high traffic
- Consider increasing pricing of ad spaces on weekdays, especially once the pandemic ends
- Consider increasing pricing of midday ad spaces

