COVID19 IMPACTS ON TRANSPORTATION

Produced by the NYC Department of City Planning's Transportation Division

April 28, 2020

- The NYC Department of City Planning's Transportation Division is compiling data to help understand the effects of COVID19 on the transportation network. This is our fifth weekly report.

- This week's report includes the following information:
    1. Executive Summary
    2. Citi Bike
    3. Sidewalk
    4. Subway
    5. Pre-COVID Workforce
    6. Timeline and Appendix

- We will be expanding the content of these weekly reports as new data become available to us, and are prioritizing work around understanding how mobility trends relate to the economic and employment landscape. We have moved much of the material from previous weeks into the appendix if no new takeaways are apparent.

- We are also now exploring pre-COVID commute patterns in attempt to anticipate impacts of an eventual economic reopening on our transportation system.

- This report may serve to help in pandemic response and longer-term recovery. We are eager for feedback in how to make this more useful. Feel free to reach out to Laura Smith (lsmith@planning.nyc.gov) with questions or comments.

Executive Summary

- Citi Bike ridership declines have been steep, but not as dramatic as declines in most other modes of travel. As with trends seen in other modes, declines are steepest in the CBD.

- Around hospitals, The average number of daily Citi Bike drop-offs and pick-ups was much lower in March 2020 vs March 2019, and the morning peak has shifted from 8am to 7am. The distribution of trips across the day is also much smoother than it was over the same period in 2019.

- "Social Distancing" was the most common 311 service complaint (20764 records) out of all 311 service complaints between April 19 and April 25, 2020. Manhattan had the most street/sidewalk complaints of any borough between April 19 and April 25.

- The week of Apr 11, the fourth week where 100% of the nonessential workforce was required to stay home, every subway station in the system saw MetroCard swipe declines of at least 70%.

- Looking at pre-COVID19 commute patterns may inform transportation planning as we shift from PAUSE to "GO":
  - Subway is the primary commute mode for most industries, but Healthcare and Social Assistance has the highest percentage of workers commuting by bus.
  - Compared to all occupations, the subset of essential worker occupations analyzed here skews towards earlier departures for work
  - Although Healthcare and Social Assistance only has average share of workers commuting by public transportation, it makes up 17% of public transportation commuters, which is the highest among all industries.
  - The percent of pre-COVID19 workers teleworking varied widely by industry, from 1% (Accommodation, Air Transportation) to 14% (Real Estate).

Citi Bike

Citi Bike Trip Totals

- The week of March 2020 saw higher daily ridership totals than the first week of March 2019.

- Following a peak of nearly 70,000 riders on March 10, 2020, ridership steadily declined.

- With the exception of one poor weather day in March 2019, daily ridership totals from March 11 were lower in 2020 than they were in 2019.

- Weather plays a lead role in daily variations.

March 2019 vs March 2020 total Citi Bike trips

Data sources: Citi Bike Open Data
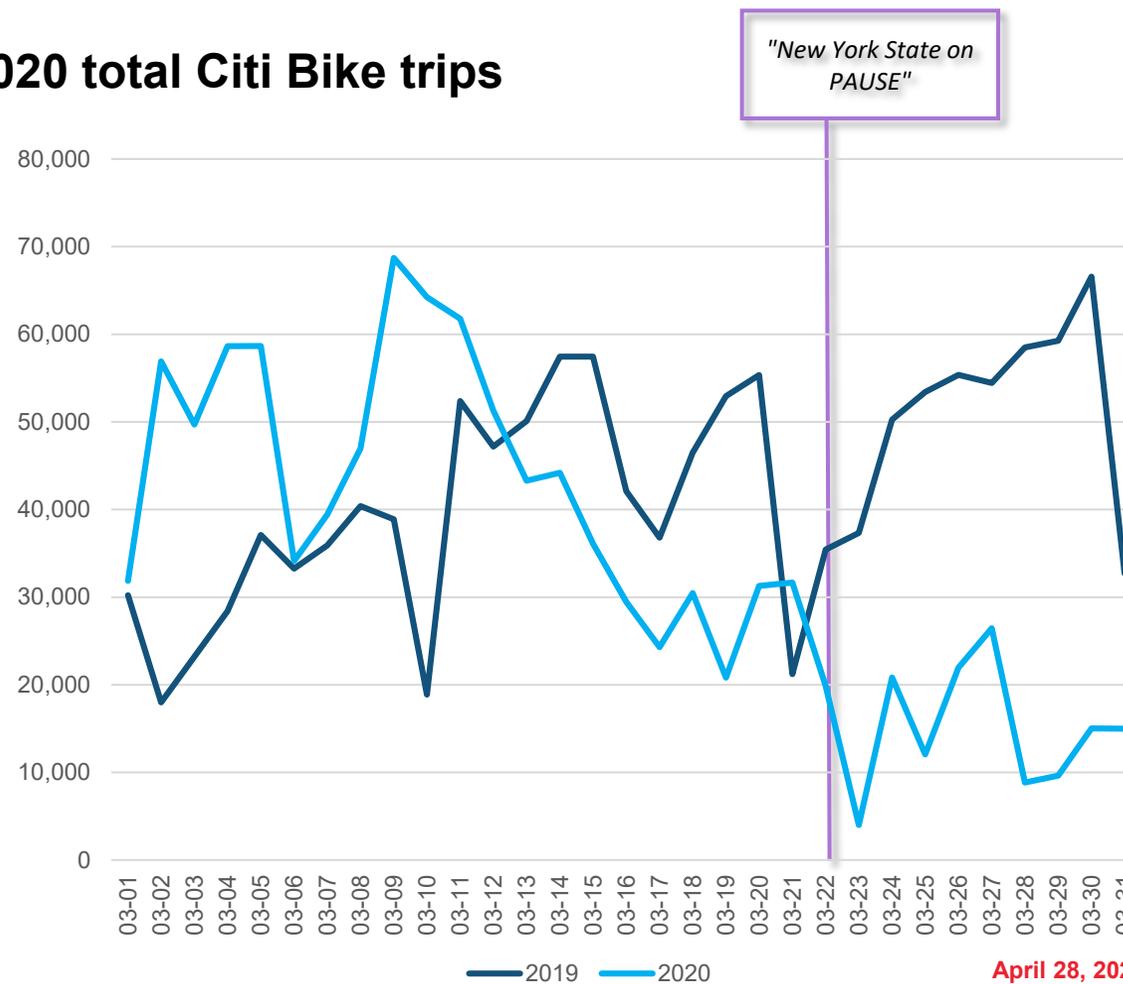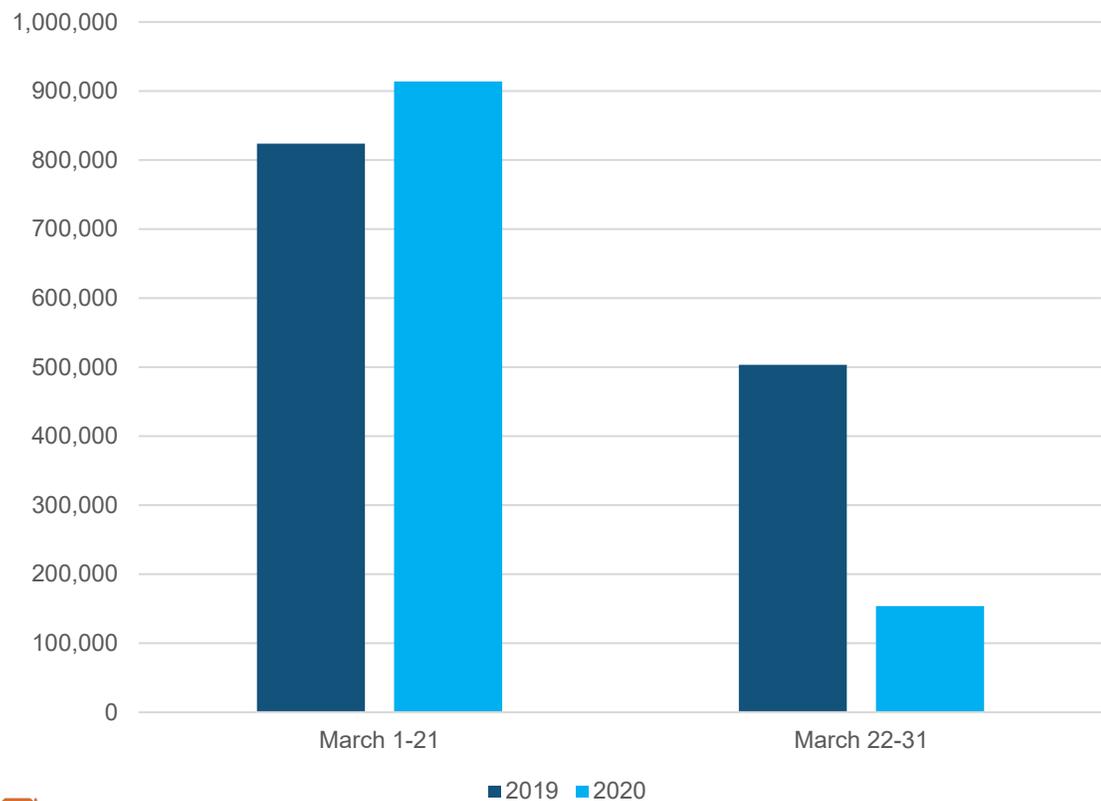
Overall Citi Bike Station Daily Activity

Station Activity : Pick ups & Drop offs

March 1-31 2019

March 1-21 2020

March 22-31 2020
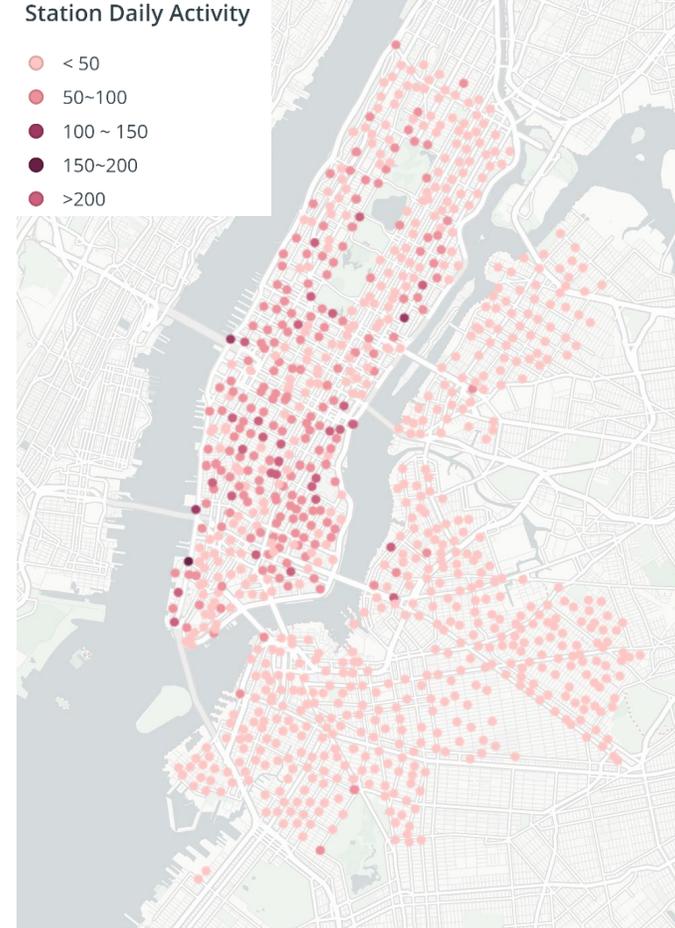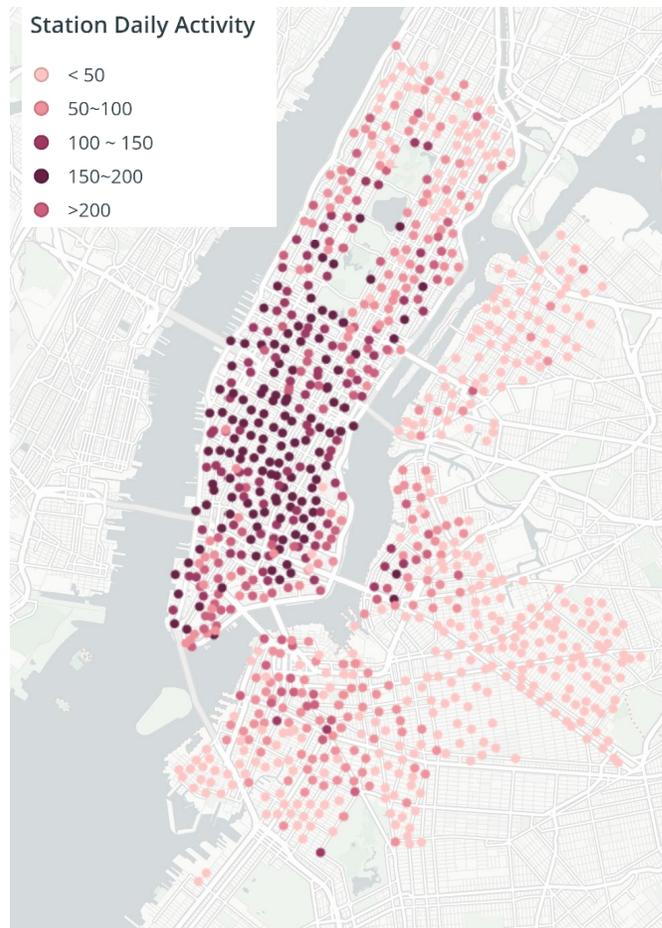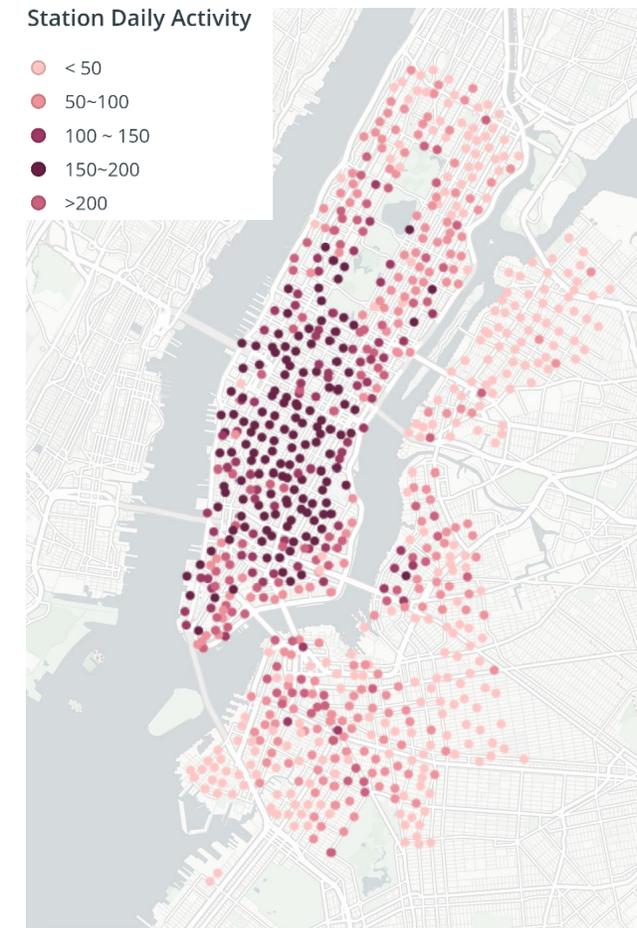
- Early March ridership patterns were similar in 2019 and 2020

- Average daily activity at each docking station dropped dramatically post-PAUSE

Data sources: Citi Bike Open Data

Citi Bike Station Daily Activity Change After Pause VS. 2019

Station Activity : Pick ups & Drop offs

Average Daily Activity Change by Station
(Mar-22 ~ Mar-31 2020 vs. March 2019)

| Top 10: Average daily change in bike pick-ups and drop-offs	
(Grand Central) Pershing Square North	-618
(Penn Station) 8 Ave & W 31 St	-474
Broadway & E 22 St	-406
E 17 St & Broadway	-388
W 21 St & 6 Ave	-387
8 Ave & W 33 St	-373
E 47 St & Park Ave	-335
Broadway & E 14 St	-326
W 38 St & 8 Ave	-319
W 31 St & 7 Ave	-315

Daily Activity Percentage Change

- > -30%
- -30% ~ -50%
- -50% ~ -70%
- -70% ~ -90%
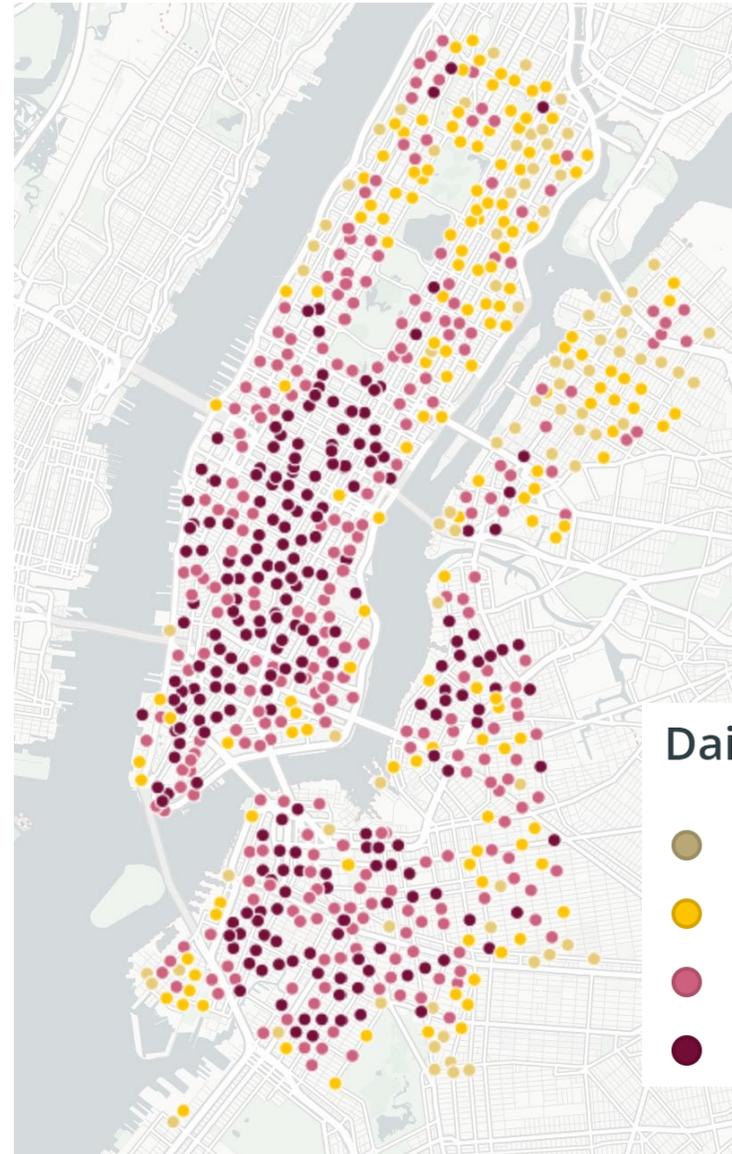
- Under the PAUSE, average daily station activity is less than half of what it was in March 2019.

- Stations on the periphery have seen the least amount of change.

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Origin Destination Trends- weekday

Origin Destination Average Daily Trips >10
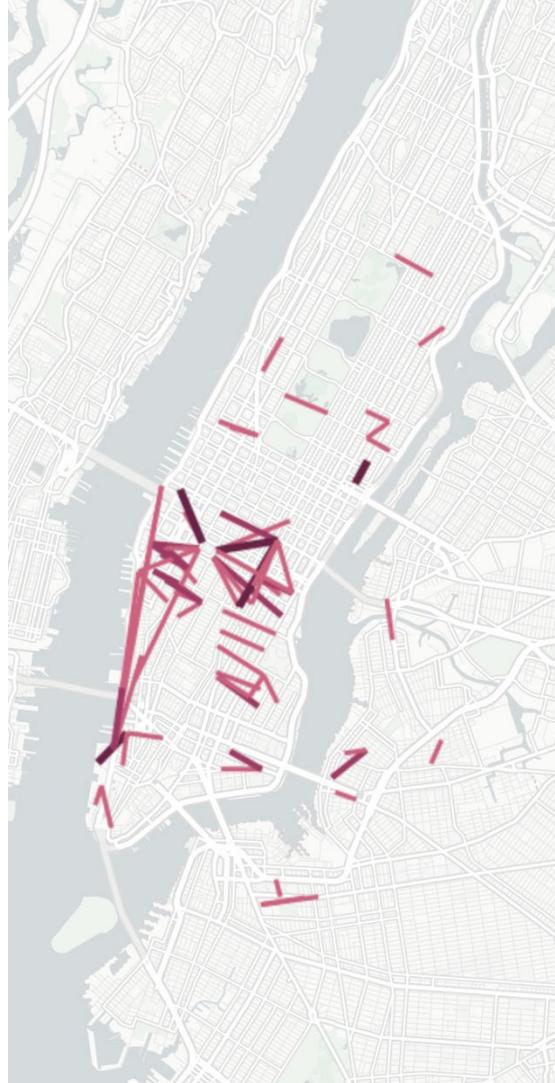
March 1-31 2019   March 1-21 2020   March 22-31 2020
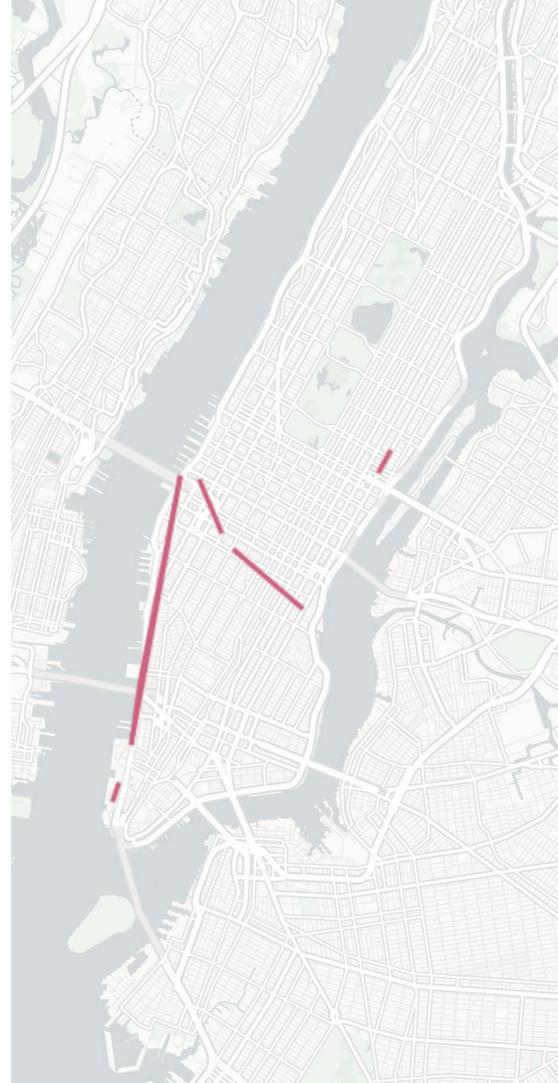
- Recurrent O/D pairings in March of 2019 were less frequent in the first few weeks of March 2020 and disappeared almost entirely under the PAUSE.

- Certain cross-town routes, and the west side greenway remain as O/D pairings that saw an average of more than 10 trips per day under the PAUSE.

https://nycplanning.carto.com/u/dcptransportation/builder/bbd50dae-b848-4e9c-8dea-bcab1c5aa395/embed

Data sources: Citi Bike Open Data

April 28, 2020   8

Origin Destination Trends- Weekend

Origin Destination Average Daily Trips >5

March 1-31 2019

March 1-22 2020
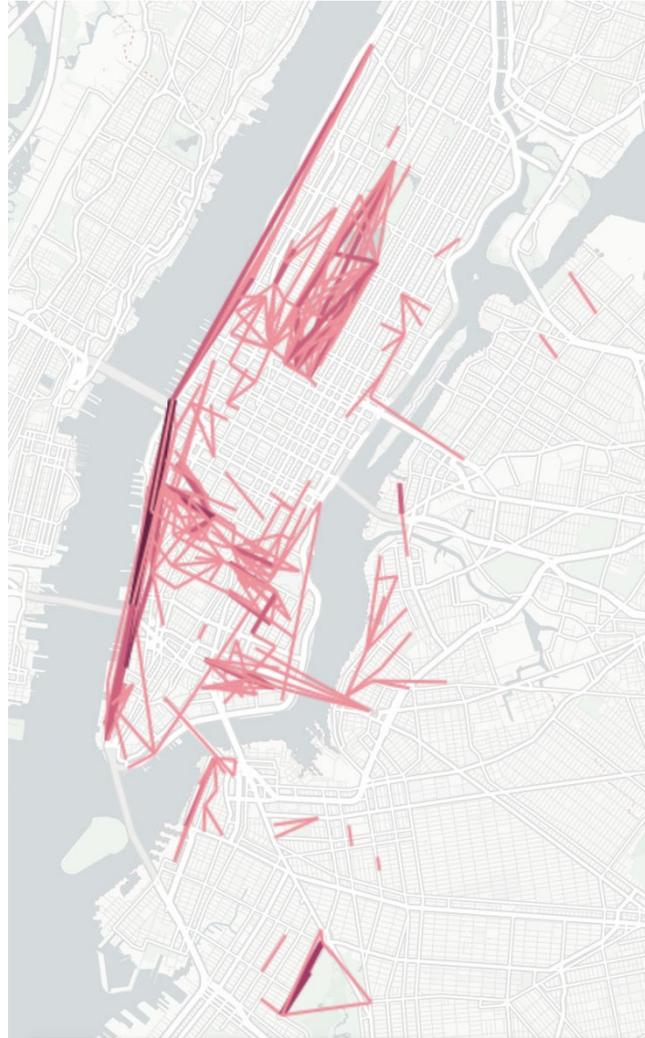
March 23-31 2020

- Under normal conditions, weekend Citi Bike ridership routes appear more recreation- and entertainment-based.

- Under the PAUSE, the most common weekend O/D pairings include the same West Side Greenway route as appears during weekdays, and the route along Prospect Park West, in Brooklyn.

Data sources: Citi Bike Open Data

COVID19 Hospital Station Activity Analysis

- We assumed a 1000' walk distance threshold to find a Citi Bike for any journey that starts or ends at a hospital. There are 32 Citi Bike stations in range.

- The average number of daily Citi Bike drop-offs and pick-ups was much lower in March 2020 vs March 2019, and the morning peak has shifted from 8am to 7am. The distribution of trips across the day is also much smoother than it was over the same period in 2019.

CITI BIKE STATION

HOSPITAL

Average Daily Drop offs & Pick ups from stations within range of hospitals

— March 2019   — March 2020-after pause

2020 After-Pause

HOSPITAL

Station Daily Activities

PICK UP & DROP OFF

141
88.3
58.3   AVG: 54.5
39.5
18.4

11.8

Data sources: Citi Bike Open Data
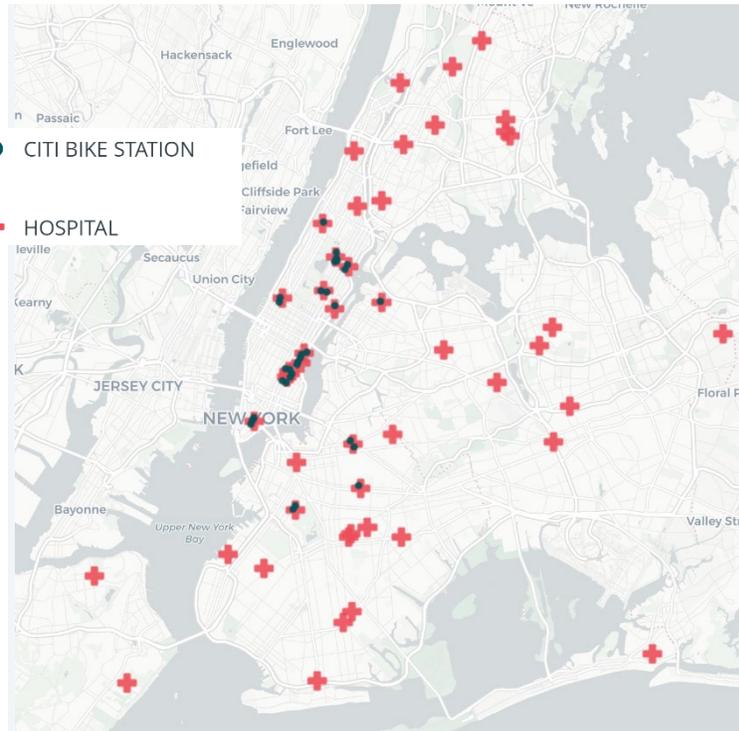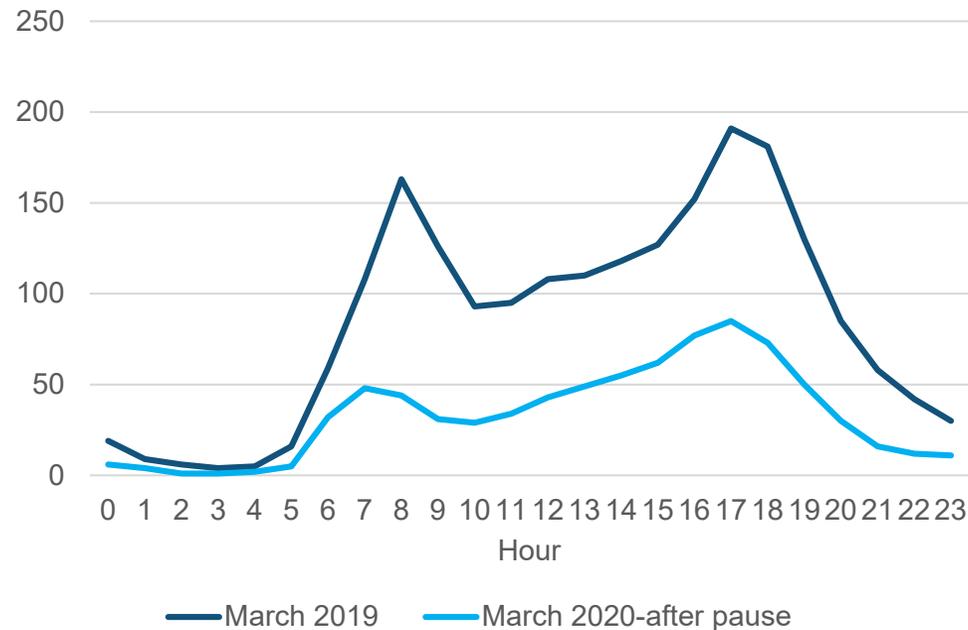
Sidewalks

311 Service Complaints: Street/Sidewalk March 28th through April 25th 2020

- "Social Distancing" was the most common 311 service complaint (20764 records) out of all 311 service complaints between April 19 and April 25, 2020.

- Manhattan had the most street/sidewalk complaints of any borough between April 19 and April 25.

- Upper Manhattan (CDs 12 & 10) and in lower Manhattan, had the highest concentrations of 311 street/sidewalk complaints.

- Weather continues to be the greatest predictor of 311 complaints for street/sidewalk social distancing. The final two weekends in April both had nice weather days and spikes in 311 calls.

311 Social Distancing Complaints

04/19 - 04/25

● STREET/SIDEWALK COMPLAINTS

Source: NYC Open Data: 311 Service Requests

https://nycplanning.carto.com/u/dcpbuilder/builder/de21abd9-3c00-4598-9ad5-22af327979d0/embed

311 Social Distancing Complaints

Store/Commercial	Residential Building/House	Other	Street/Sidewalk	Park/Playground
2013	1539	1003	1362	951

- Social Distancing Complaints 03/28 - 04/25
- Social Distancing Complaints 04/19 - 04/25
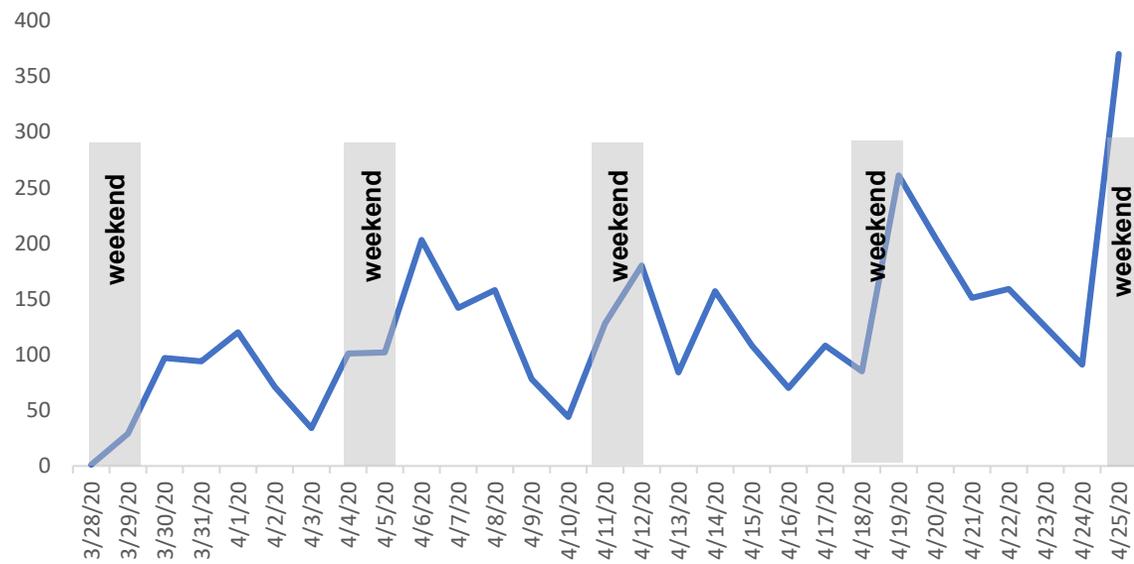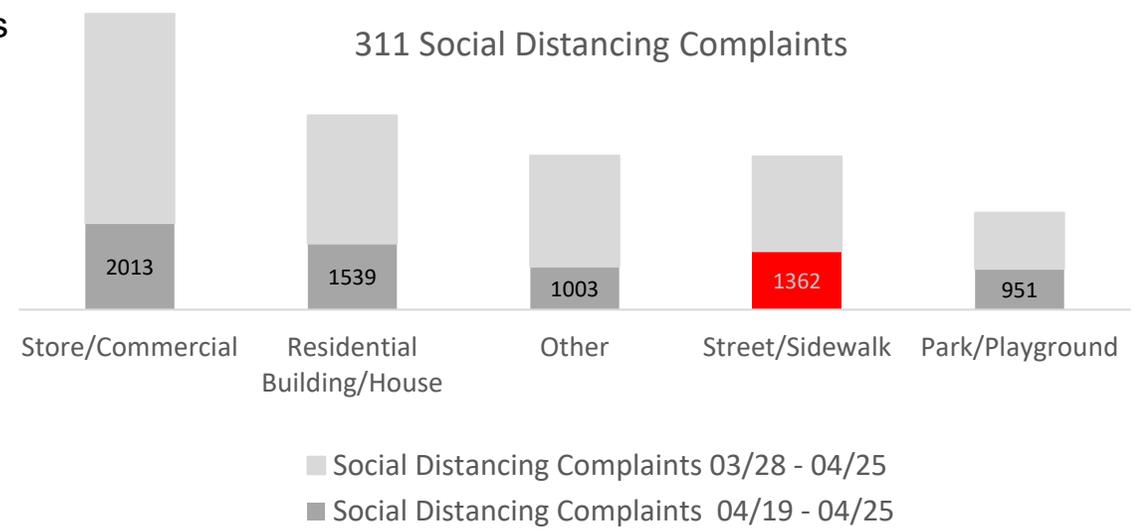
Subway

Subway System-wide Ridership Changes

- The citywide percent change of MetroCard swipes during Apr 11-17 vs weekly average of Jan 4- Feb 28 was **-91.97%.**
- There were still more than 2 million subway trips in the week of Apr 11-17, but **even three weeks into the PAUSE ridership continued to drop, indicating ongoing changes to how and whether people are travelling.**
- Trips to and from the Manhattan Central Business District remain extremely low.

Weekly MetroCard Swipe Trends (Jan 4 - Apr 17)
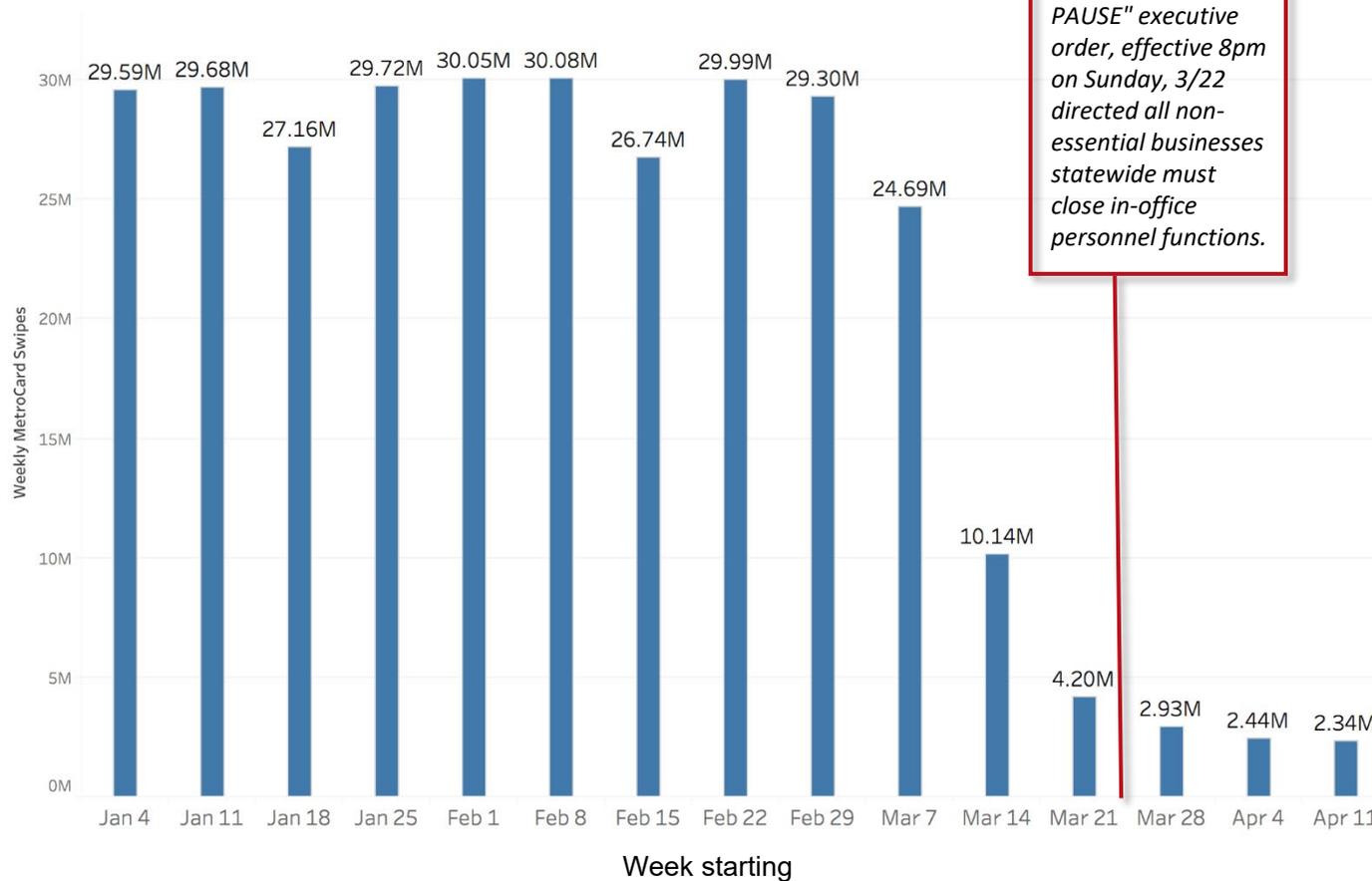
"New York State on PAUSE" executive order, effective 8pm on Sunday, 3/22 directed all non-essential businesses statewide must close in-office personnel functions.

Manhattan CBD PM Peak Subway Station Entries
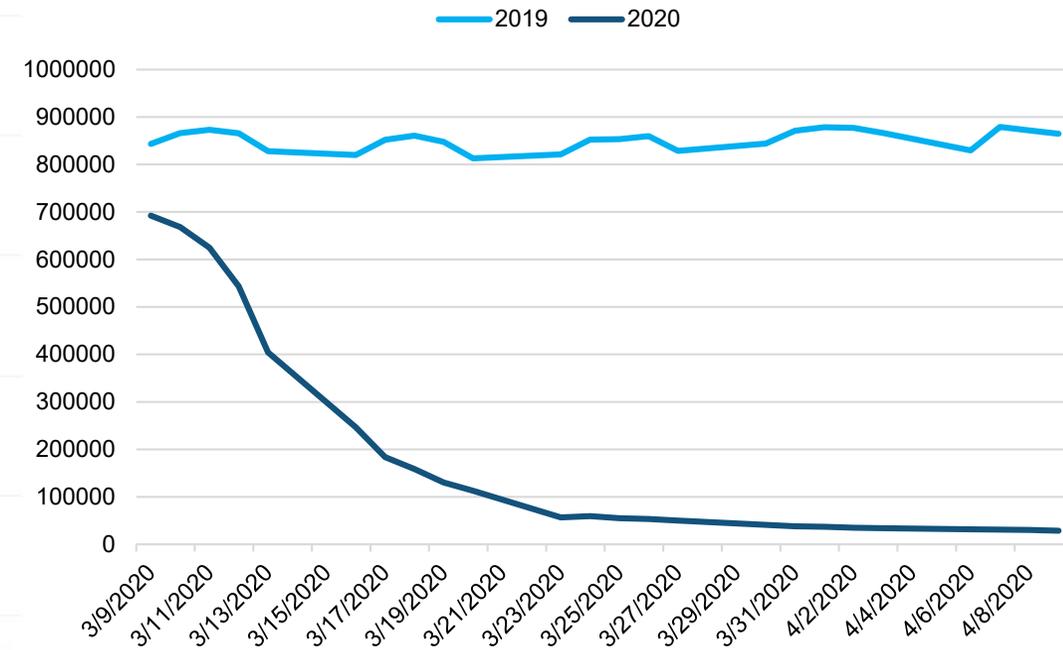
Interactive dashboard link:
https://public.tableau.com/profile/dcptransportation#!/vizhome/MetroCardSwipes/PercentChange Data sources: MTA Fare Data (http://web.mta.info/developers/fare.html) MTA Turnstile data (http://web.mta.info/developers/turnstile.html)

Notes: Holidays might lead to low subway swipes in the pre-COVID19 period. (Jan 18,2020: Martin Luther King Jr. Day; February 17, 2020: Presidents Day)

MetroCard Swipe Change Jan/Feb 2020 vs Apr 11-17 2020

15 stations with most and least dramatic declines in ridership

| Station (Route)	Perc Change	Station (Route)	Perc Change
Aqueduct Racetrack (A)	-98.94%	Gun Hill Rd	-70.06%
5 Av/53 St (E M)	-98.54%	138 St - Grand Concourse	-73.51%
Prince St (R W)	-98.39%	Van Siclen Av	-74.11%
Franklin St (1)	-97.75%	Alabama Av	-74.43%
Rector St (1)	-97.59%	New Lots Av	-74.43%
Eastern Pkwy - Brooklyn Museum (2 3)	-97.53%	Beach 60 St	-75.36%
Spring St (C E)	-97.51%	New Lots Av	-75.50%
47-50 Sts - Rockefeller Ctr (B D F M)	-97.48%	Tompkinsville	-76.17%
18 St (1)	-97.43%	Livonia Av	-76.37%
28 St (R W)	-97.42%	Rockaway Av	-76.52%
Canal St (1)	-97.40%	E 105 St	-76.89%
Rector St (R W)	-97.37%	Junius St	-77.03%
Spring St (6)	-97.36%	Beach 44 St	-77.48%
Canal St (A C E)	-97.27%	Wakefield - 241 St	-77.53%
8 St - NYU (R W)	-97.26%	Far Rockaway - Mott Av	-77.61%

Pct Change of Swipes (Apr 11-17 2020 vs. Weekly Average of Jan 4 to Feb 28 2020)
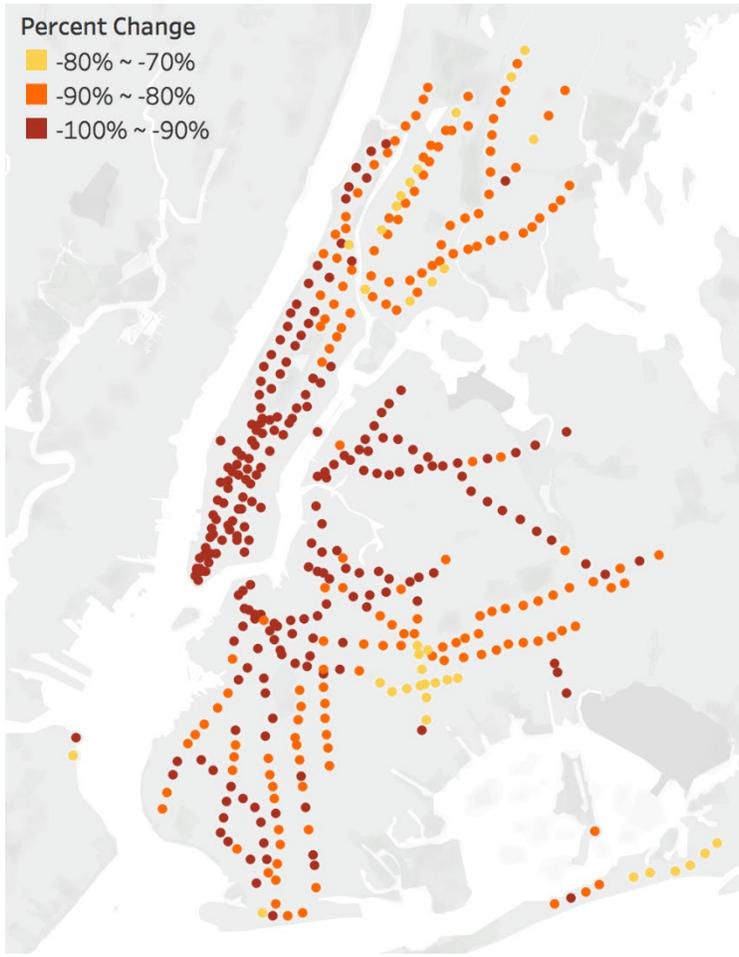
Percent Change
- -80% ~ -70%
- -90% ~ -80%
- -100% ~ -90%

- The week of Apr 11, the fourth week where 100% of the nonessential workforce was required to stay home, every subway station in the system saw MetroCard swipe declines of at least 70%.

- Outer borough stations continue to see more riders as a percent of their normal ridership than Manhattan Core stations

- The Bronx, eastern Brooklyn and the Rockaways still show a relatively high number of riders compared to pre-PAUSE.

Interactive dashboard link:
https://public.tableau.com/profile/dcptransportation#!/vizhome/MetroCardSwipes/PercentChange
Data sources: MTA Fare Data
(http://web.mta.info/developers/fare.html)

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Workforce

Looking at how workers commuted pre-COVID19 may help inform our planning around a shift from PAUSE to "GO".

- How many commuters do we think our transportation system can safely support during peak hour?

- Pre-COVID19, how did commutes vary by different economic sectors? What sectors tend to commute by what modes? And when, over the course of a typical day?

- Who will the first wave of commuters post-PAUSE be? Based on past patterns, what are their commute preferences likely to be?

- What economic sectors are best able to continue teleworking?

Means of Transportation to Work by Industry
(Universe: Workers who didn't work at home)

Legend:
- Bicycle
- Bus or trolley bus
- Car, truck, or van
- Ferryboat
- Motorcycle
- Other method
- Railroad
- Streetcar or trolley car
- Subway or elevated
- Taxicab
- Walked

Industries listed:
- Accommodation
- Air Transportation
- Arts, Entertainment, and Recreation
- Construction
- Dry Retail
- Education
- Farming, Mining, Extraction
- Finance and Insurance
- Food Services and Drinking Places
- Food, Beverage and Health Retail
- Ground and Water Transportation
- Healthcare and Social Assistance
- Manufacturing
- Private households
- Professional Services and Management
- Publishing, Film, Music, and Broadcasting
- Real Estate
- Religious, grantmaking, civic,…
- Repair and Maintenance; Laundry
- Telecommunications and Data
- Utilities, Waste Management
- Wholesale, Warehousing, and Storage

- Subway is the primary commute mode for most industries, except *Air Transportation*, *Ground and Water Transportation*, and *Utilities, Waste Management*, which are predominated by Auto.

- *Healthcare and Social Assistance* has the highest percentage of workers commuting by bus.

Data sources: 2014-2018 PUMS

Pre-COVID19 Time Leaving Home to Work

- Compared to all occupations, this subset of essential worker occupations skews towards earlier departures for work, with *Healthcare Practitioners and Technicians* demonstrating the greatest tendency.

- A significant share of *Healthcare Support* and *Food Service* workers leave home to work in the afternoon.

Time Leaving Home to Work by Occupation

Legend:
— Food preparation and serving related occupations
— Healthcare practitioners and technicians occupations
— Healthcare support occupations
— Total, all occupations

April 28, 2020
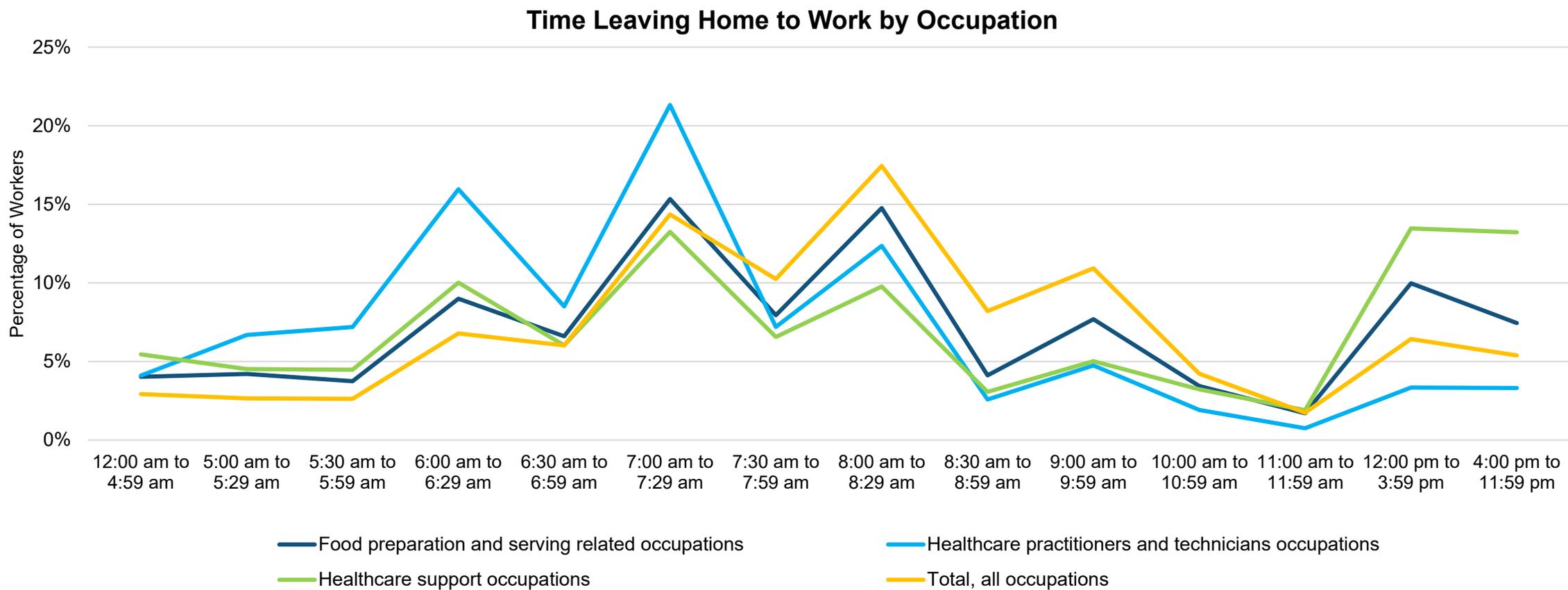
Pre-COVID19 Public Transportation Commuters by Industry

| Industry	% Workers Using Public Transportation
Accommodation	81%
Private households	74%
Food Services and Drinking Places	69%
Publishing, Film, Music, and Broadcasting	67%
Professional Services and Management	66%
Telecommunications and Data	64%
Finance and Insurance	63%
Dry Retail	63%
Religious, grantmaking, civic, professional, and similar organizations	61%
Manufacturing	60%
Arts, Entertainment, and Recreation	59%
Healthcare and Social Assistance	58%
Construction	55%
Food, Beverage and Health Retail	55%
Wholesale, Warehousing, and Storage	51%
Farming, Mining, Extraction	50%
Education	49%
Real Estate	49%
Repair and Maintenance; Laundry	48%
Air Transportation	42%
Utilities, Waste Management	40%
Ground and Water Transportation	40%

56%
All worker average

- ***Food Services and Drinking Places*** are among the industries with highest percentage of workers commuting by public transportation.

- Although ***Healthcare and Social Assistance*** only has average share of workers commuting by public transportation, it makes up 17% of public transportation commuters, which is the highest among all industries.

Public Transportation Commuters by Industry

Healthcare and Social Assistance 17%
Professional Services and Management 15%
Finance and Insurance 9%
Food Services and Drinking Places 8%
Education 8%
Dry Retail 7%
Construction 5%
Other 31%

Data source: 2014-2018 PUMS
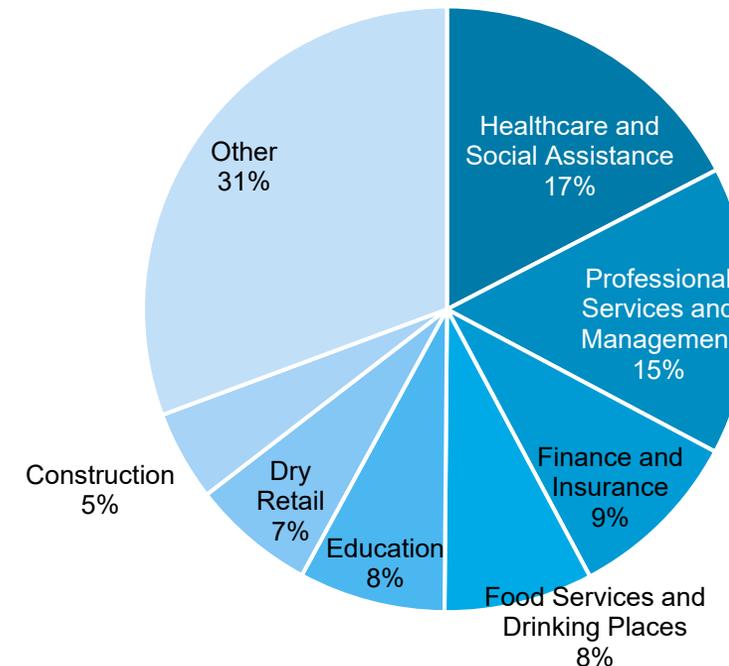
Pre-COVID19 Working at Home by Industry

Professional Services *and Management*, *Healthcare and Social Assistance*, *Finance and Insurance* have the highest numbers of workers working at home, while *Real Estate* and *Arts, Entertainment, and Recreation* have the highest percentages of workers who worked at home.

Workers Who Worked at Home by Industry
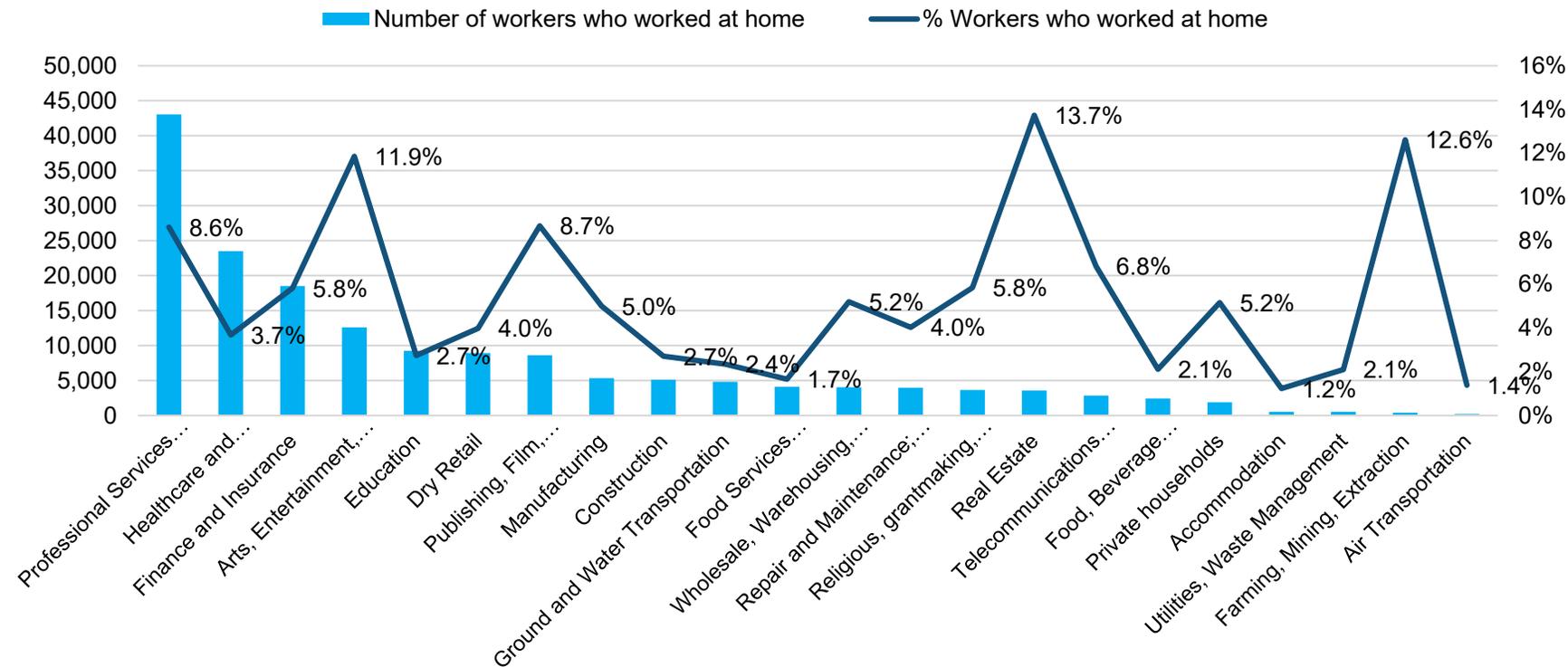
Industry	Number of worked at home	% worked at home
Professional Services and Management	43,042	9%
Healthcare and Social Assistance	23,498	4%
Finance and Insurance	18,518	6%
Arts, Entertainment, and Recreation	12,613	12%
Education	9,269	3%
Dry Retail	8,940	4%
Publishing, Film, Music, and Broadcasting	8,629	9%
Manufacturing	5,344	5%
Construction	5,120	3%
Ground and Water Transportation	4,820	2%
Food Services and Drinking Places	4,105	2%
Wholesale, Warehousing, and Storage	4,041	5%
Repair and Maintenance; Laundry	3,974	4%
Religious, grantmaking, civic, professional, and similar organizations	3,660	6%
Real Estate	3,573	14%
Telecommunications and Data	2,857	7%
Food, Beverage and Health Retail	2,433	2%
Private households	1,893	5%
Accommodation	532	1%
Utilities, Waste Management	527	2%
Farming, Mining, Extraction	406	13%
Air Transportation	211	1%
Grand Total*	**170,161**	**4.7%**

Data source: 2014-2018 PUMS. Note: Industry clusters are classified by HED; military and administrative industries are not on the HED industry cluster list thus not listed in this analysis. However, workers in those two industries are counted in Grand Total.

Timeline

New York COVID19 Pandemic Timeline

- March 1st, 2020: **First confirmed case** in New York (Manhattan healthcare worker) https://www.wsj.com/articles/first-case-of-coronavirus-confirmed-in-new-york-state-11583111692

- March 3rd, 2020: Second confirmed case https://www.businessinsider.com/new-york-second-coronavirus-case-attorney-law-firm-grand-central-2020-3?r=US&IR=T,

- March 5th, 2020: Mayor De Blasio says that a virus fears shouldn't keep New Yorkers off the subway https://www.nydailynews.com/coronavirus/ny-coronavirus-bill-de-blasio-coronavirus-subway-20200305-vmjdxjudbndlrjekashqs3hfou-story.html

- March 7th, 2020: Governor Cuomo **declares state of emergency** https://www.nytimes.com/2020/03/07/nyregion/coronavirus-new-york-queens.html

- March 8th, 2020: City and State implement **new travel guidelines**, asking sick people to stay off transit https://www.nbcnewyork.com/news/local/nyc-issues-new-commuter-guidelines-to-combat-coronavirus-spread/2317584/

- March 9th: **NYU** announces **suspension of in-person classes,** moving all classes online effective Wednesday 3/11 https://www.nydailynews.com/new-york/ny-nyu-coronavirus-online-instruction-20200310-jov5akxr4ngwjhxtv4zrz2ypea-story.html

- March 10th, 2020: Governor Cuomo declares **containment zone in New Rochelle** from March 12th through 25th https://www.nytimes.com/2020/03/10/nyregion/coronavirus-new-york-update.html

- March 11th, 2020: Governor Cuomo announces **closures of CUNY and SUNY schools** from March 12th-19th, moving to online classes after that for the rest of the semester

- March 12th, 2020: Governor Cuomo announces **restrictions on mass gatherings**, directing events with more than 500 people to be cancelled or postponed and any gathering with less than 500 people in attendance to cut capacity by 50 percent. In addition, only medically necessary visits would be allowed at nursing homes. **Broadway theaters** were also shut down effective that night. https://www.governor.ny.gov/news/during-novel-coronavirus-briefing-governor-cuomo-announces-new-mass-gatherings-regulations

- March 15th, 2020: **NYC school closures announced.** https://www.nytimes.com/2020/03/15/nyregion/nyc-schools-closed.html DeBlasio announces the **closure of schools, bars, and restaurants** (except takeout/delivery) effective the morning of the 17th https://www.nytimes.com/2020/03/15/nyregion/new-york-coronavirus.html

- March 16th: **Columbia University** reduces to **essential staff** and operations only https://preparedness.columbia.edu/news/update-covid-19-0

- March 18th: Governor Cuomo announces that **50% of non-essential employees** must work from home

- March 19th: The Governor announces that **75% of non-essential employees** must work from home. https://www.thestreet.com/lifestyle/health/ny-governor-cuomo-workers-must-stay-h

- March 20th: Governor Cuomo announces **statewide stay at home rules**, effective the evening of the 22nd. **100% of non-essential workers** must stay home. https://www.npr.org/sections/coronavirus-live-updates/2020/03/20/818952589/coronavirus-n-y-gov-cuomo-says-100-of-workforce-must-stay-home, travel on transit only when necessary

- March 23rd: NYC Ferry modified weekday service

- March 25th: MTA announces service reduction to **Essential Service** plan https://abc7ny.com/6047040/

- March 27th: The Governor halts **non-essential construction** https://thecity.nyc/2020/03/cuomo-calls-off-non-essential-construction-statewide.html

- March 30th: Staten Island Ferry reduced service to every hour

APPENDIX

The following slides have appeared in previous reports and may contain updated information but no new trends

Ferry Ridership

NYC Ferry Daily Ridership: 3/1/20 - 4/14/20

Peak ridership for 2020 to date was on Monday, March 9th — **18,692**

Largest incremental decrease in ridership on Monday, March 16th

Lowest total weekday ridership on Monday, April 13th — **720**

5,164

Normal fluctuations based on weekday and weekend ridership
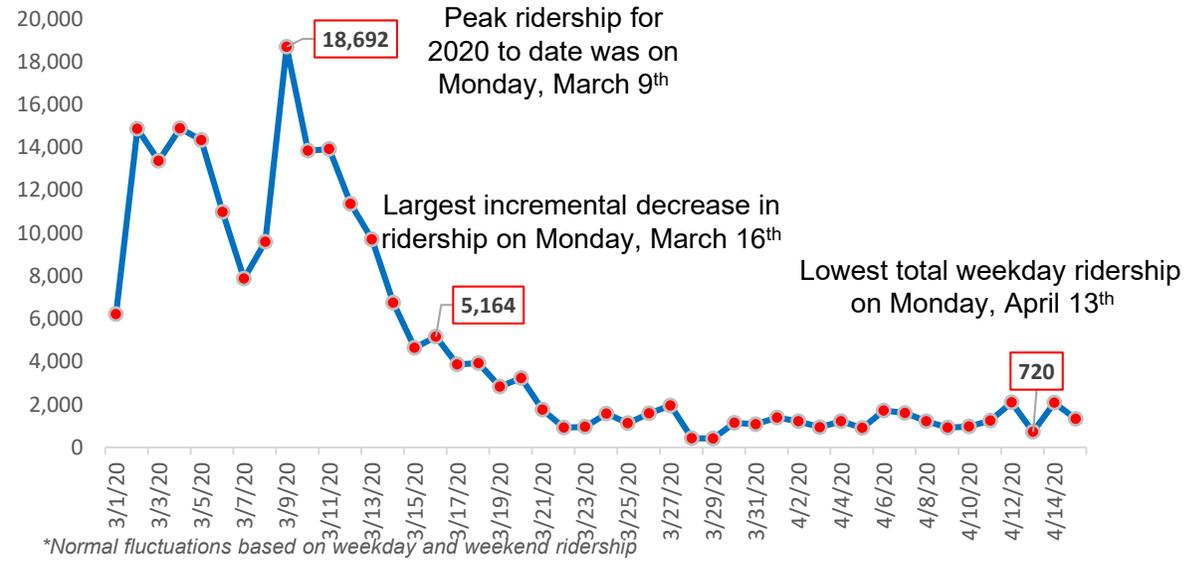
2020 Staten Island Ferry Inbound Weekday Ridership by Service

Peak Ridership **1,780**

Peak Ridership **377**

Weekday peak hour inbound trips from SI to MN changed from 7am in February to 6am in March

Legend: 1/28/20 Tuesday, 2/25/20 Tuesday, 3/24/20 Tuesday
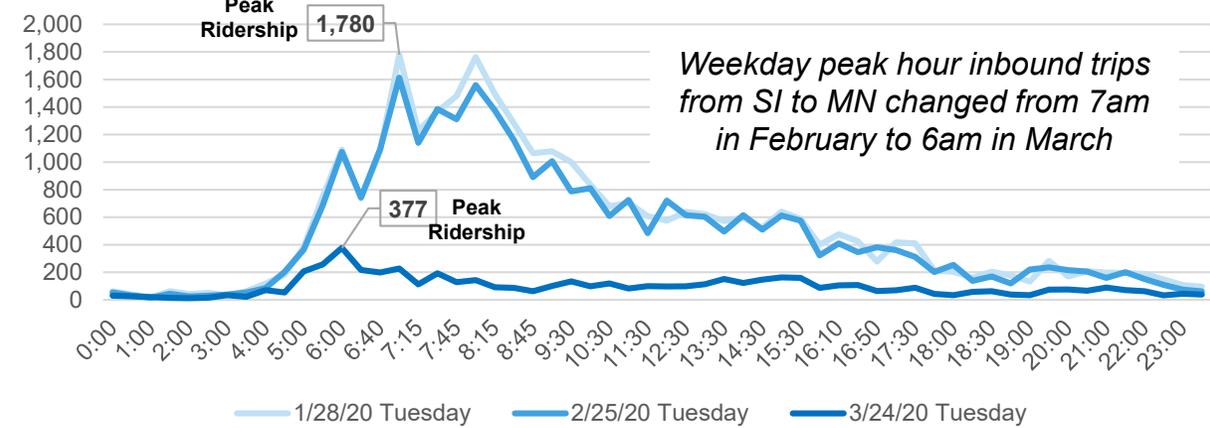
Staten Island Ferry Weekday Total Ridership: March 2019 vs. March 22

Staten Island Ferry Weekday Total Ridership & Percentage of Weekday Bike Passengers on the Staten Island Ferry: March 2019 vs. March 20202


Legend: Mar. 2019, Mar. 2020, % Bike Passengers Mar. 2019, % Bike Passengers Mar. 2020
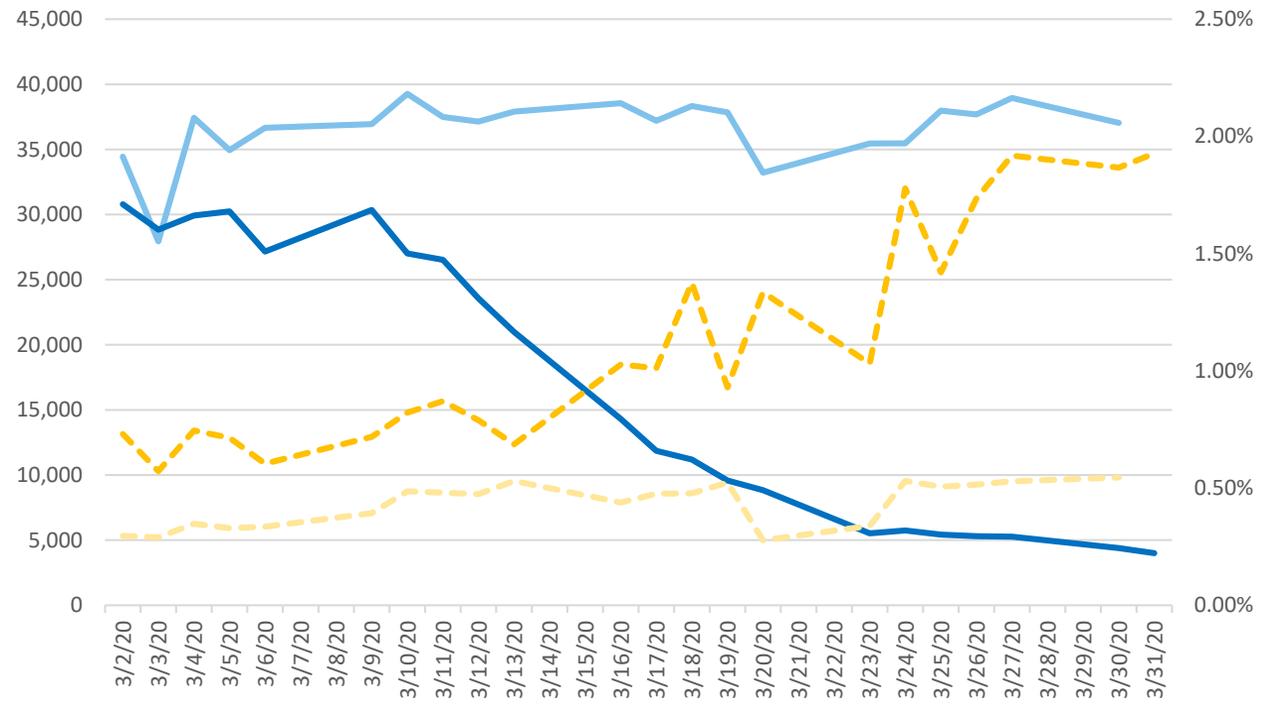
While overall ridership has plummeted, the percent of passengers travelling with a bike increased.

January 4-10 2020

March 14-20 2020

April 11-17 2020

Weekly MetroCard Swipes by Station
- <20K
- 20K-40K
- 40K-60K
- 60K-80K
- 80K-100K
- >100K

Data sources: MTA Fare Data (http://web.mta.info/developers/fare.html)

April 28, 2020   26
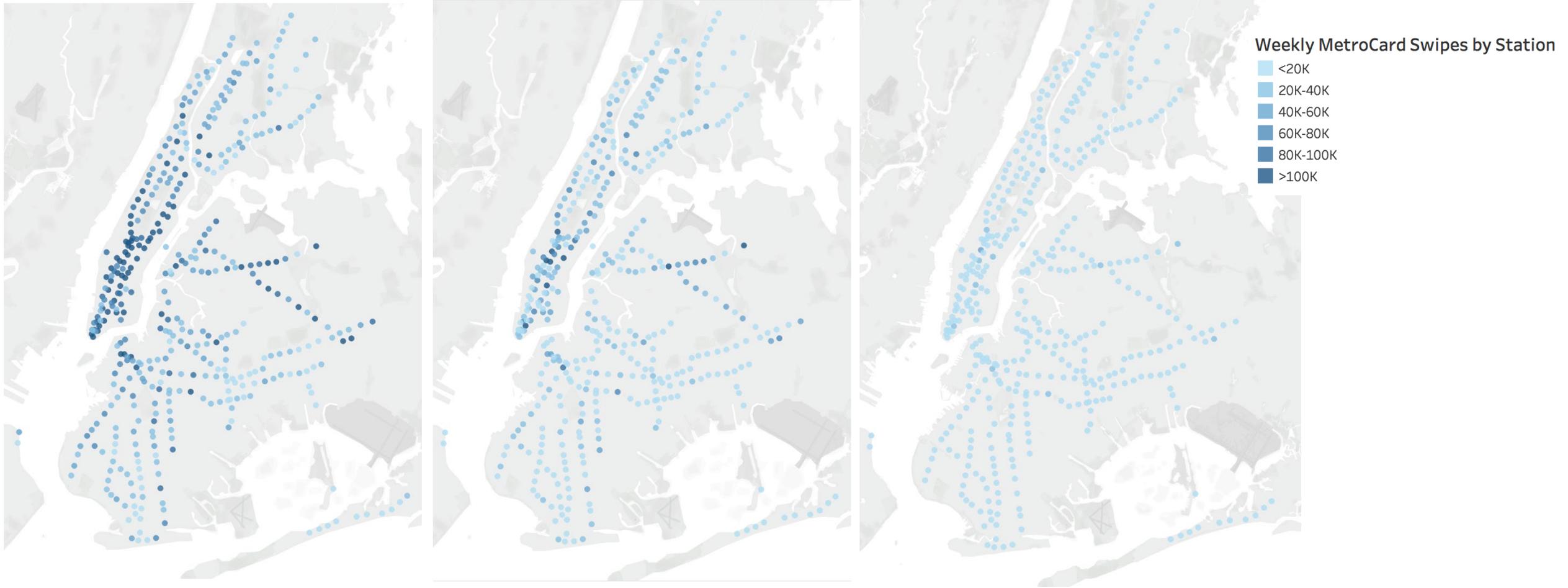
Subway System Service Changes

## System-wide Weekday Service Change by Hour
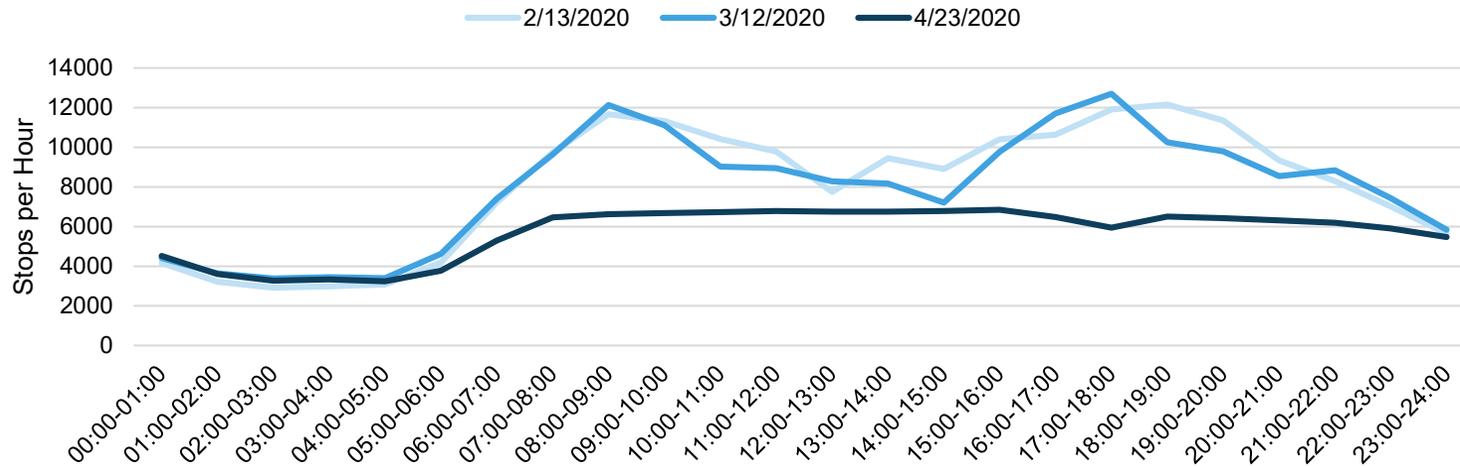
Weekday Peak Hour Service Change
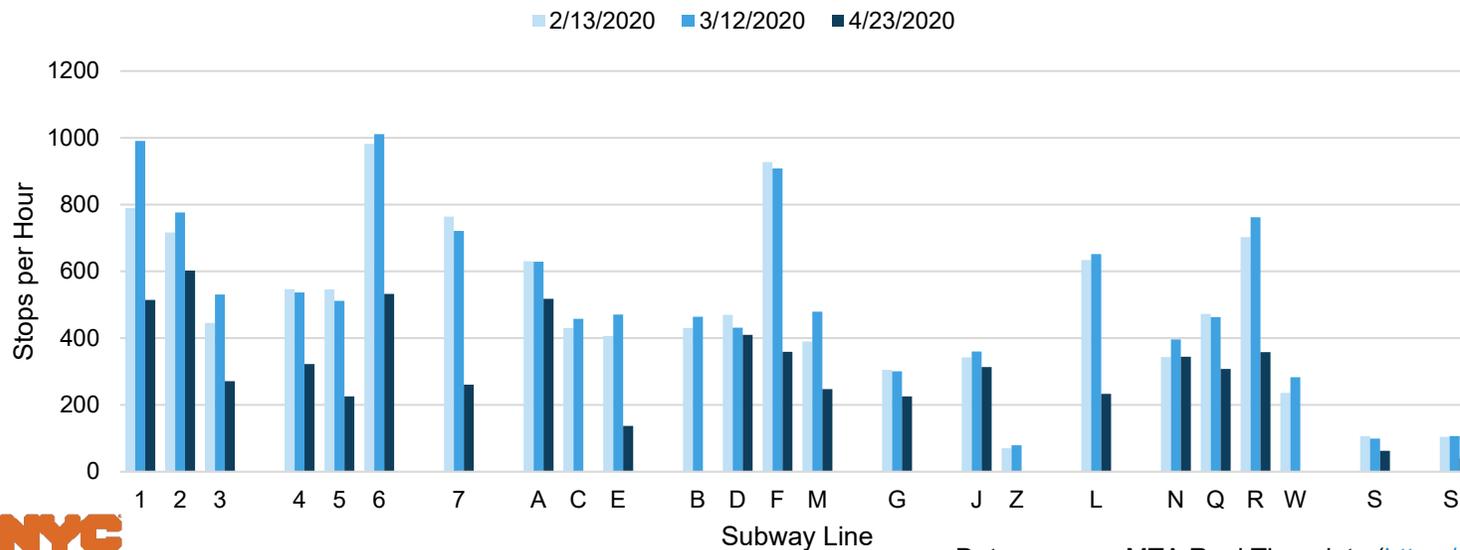
- MTA Subway started operating the essential service on March 25, 2020.

- The weekday peak hour services have been cut down to about 50% capacity, resulting in no distinction between daytime peak and daytime off-peak service.

- Stops per hour signifies the aggregated number of stops made by every train running (in the system on the top chart, and broken down by line, in the bottom chart)

Data sources: MTA Real Time data (https://api.mta.info/#/landing)

Degrees of Ridership Change by Station Activity
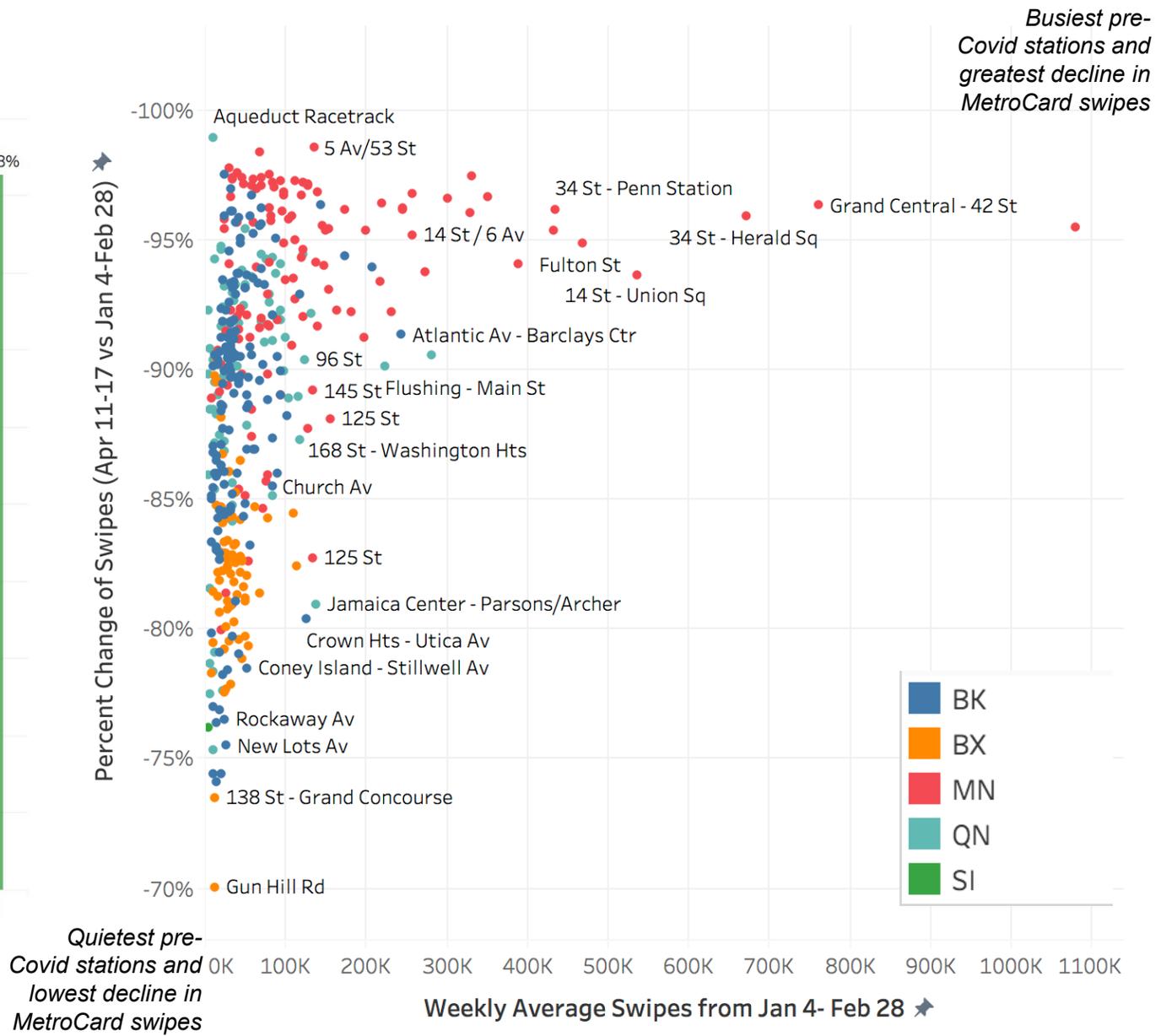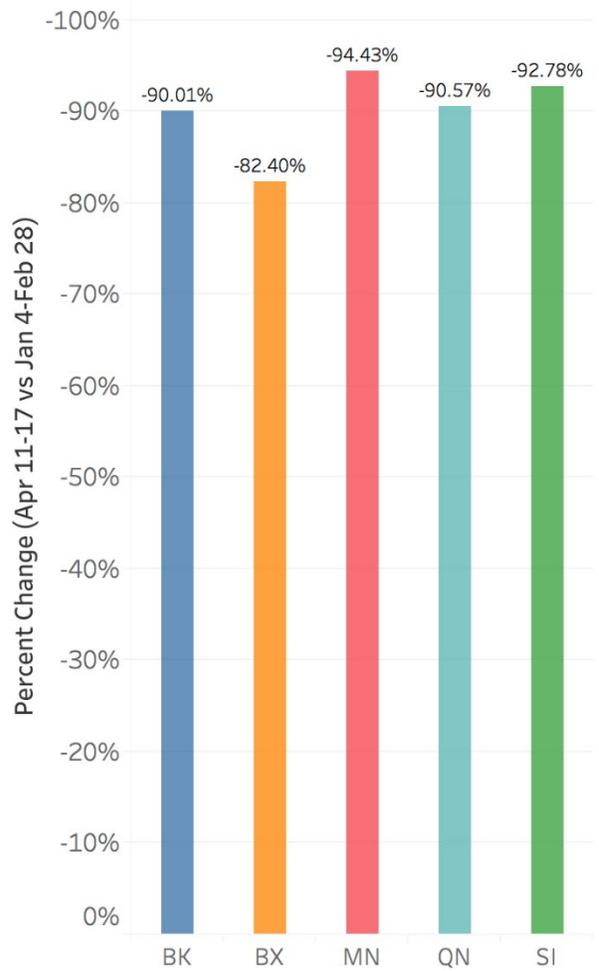
The scatter plot compares the average station activity with the scale of its ridership decline.

Overall, busier stations saw more dramatic declines, particularly in the central business districts.

In the Bronx, relatively quiet stations on average saw less dramatic declines; a greater share of its riders continued riding.

Change is measured by comparing the weekly average of January 4 – February 28th against the week of Apr 11-17.

Data sources: MTA Fare Data (http://web.mta.info/developers/fare.html)

MetroCard Swipes Percent Change by Distance to The Core
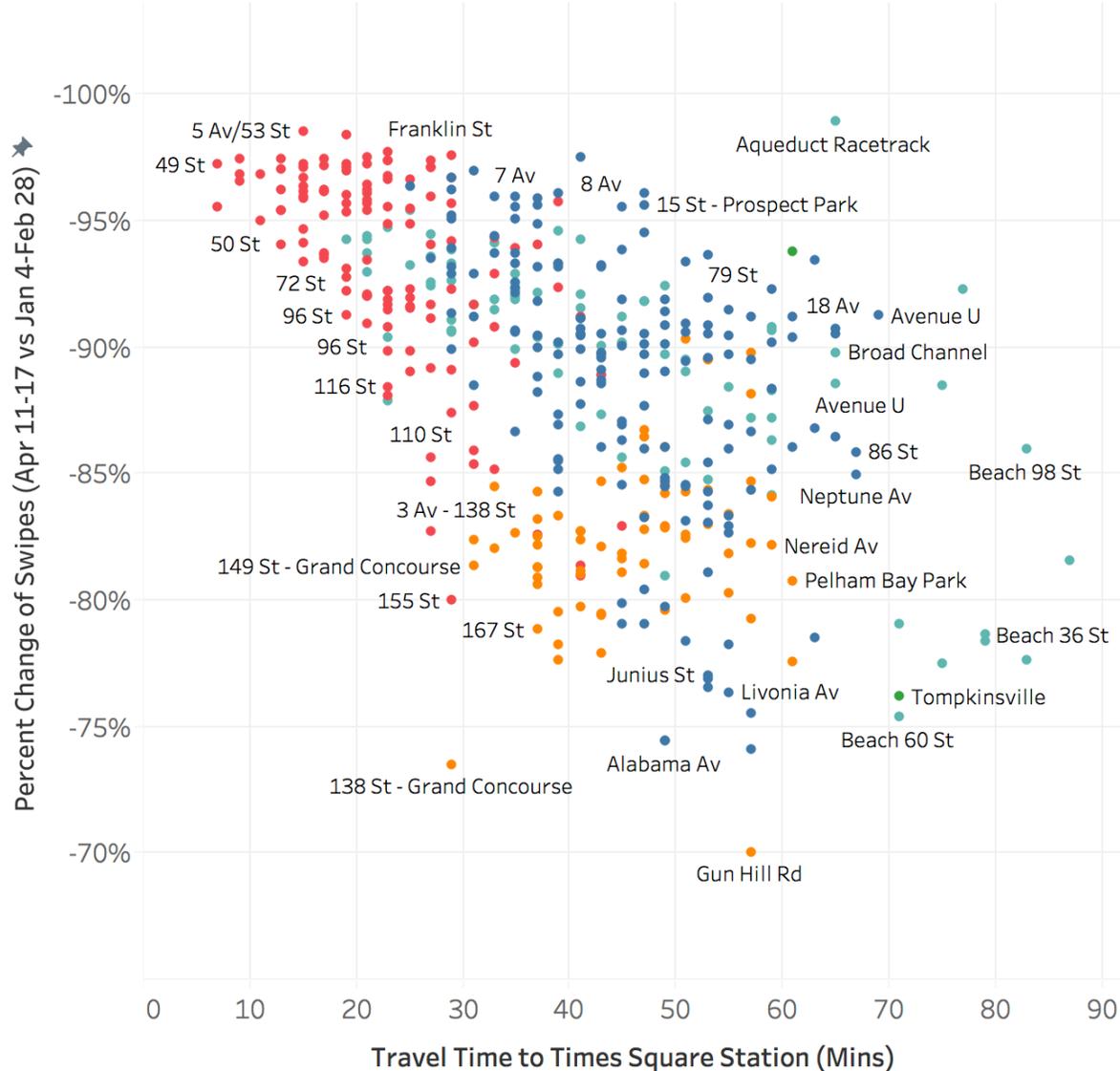
The scatter plot shows the relationship between ridership declines, and distance to the Manhattan Core (travel time to Times Square, under normal AM peak subway schedules)

The stations furthest from the Core have generally seen the least amount of ridership decline.

Change is measured by comparing the weekly average of January 4 – February 28th against the week of April 11-17.

https://public.tableau.com/profile/dcptransportation#!/vizhome/MetroCardSwipes-Distance/Dashboard1

April 28, 2020   29

# MetroCard Swipes by Card Type: TransitChek/ Students/ Senior & Disabled
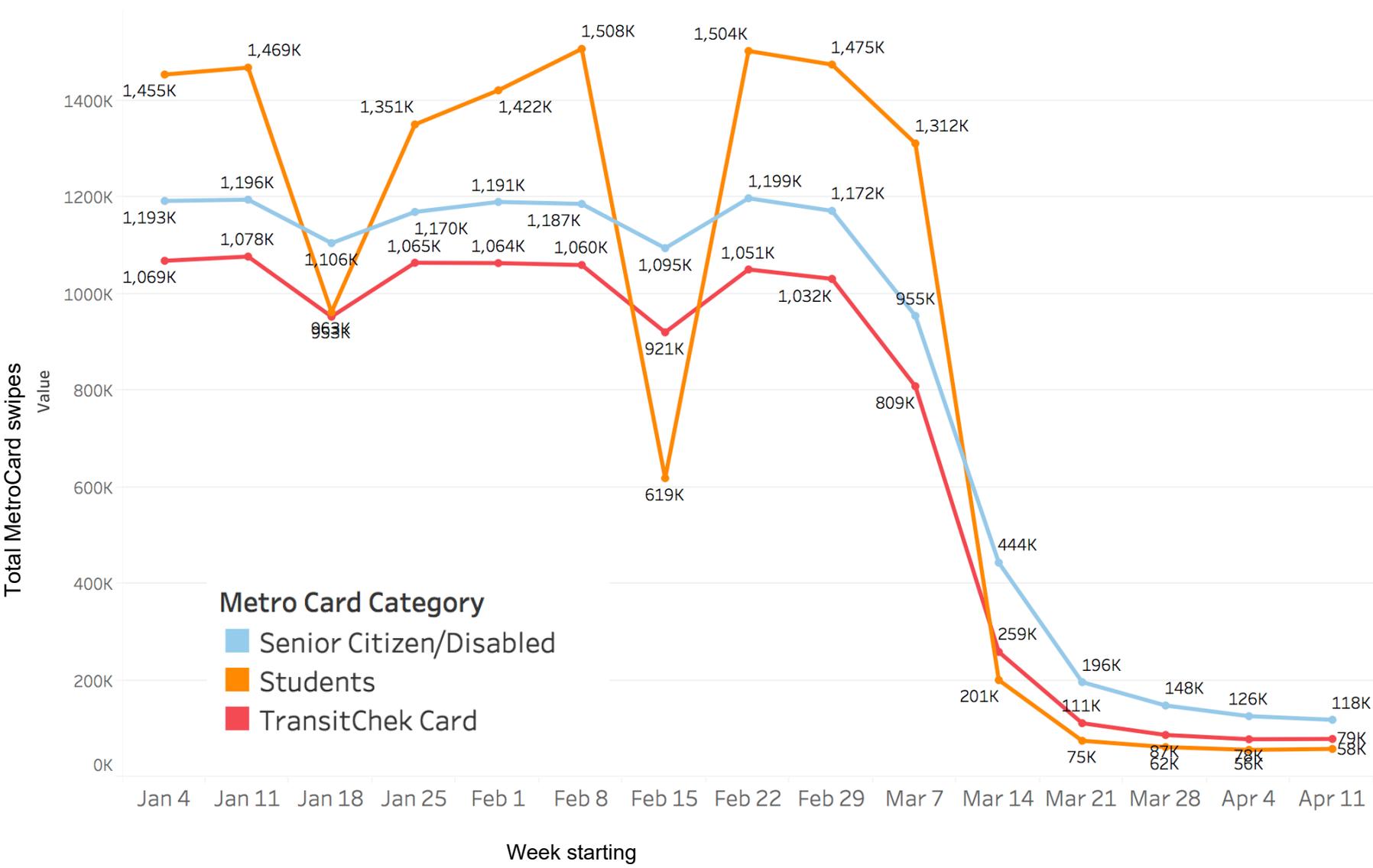
Though drastically reduced over typical time periods, there were still more than 110,000 MetroCard swipes by reduced-fare cards for senior citizens, and people with disabilities, the week of April 11-17.

During this same PAUSE period, there were more than 50,000 MetroCard swipes by student cards.

Interactive dashboard for these and other types of MetroCard swipes:
https://public.tableau.com/profile/dcptransportation#!/vizhome/MetroCardSwipes-CardTypes/CardTypes?publish=yes

Data sources: MTA Fare Data (http://web.mta.info/developers/fare.html)

April 28, 2020   30

04/13-04/23 Weekday AM Peak

PERCENT CHANGE (2019-2020)
- ● >-70%
- ● -70%~-75%
- ● -75%~-80%
- ● -80%~-85%
- ● -85%~-90%
- ● -90%~-95%
- ● <=-95%

ENTRIES (2020)
1.6k
843
451
292
210
146
86.3

AVG: 227

3

AM peak hour trips generally indicate where people are commuting *from*:

- The largest AM peak ridership declines are observed in the Manhattan Core and Inner Ring, and along the B/Q and E train lines.

Turnstile Data:

- MTA turnstile data map compares weekday ridership during the third and fourth weeks of April in 2019 vs those same weeks in 2020. It considers riders only travelling during the AM peak 4-hour travel window*.

- Size is the actual ridership during the third and fourth weeks of April 2020 and the color is the percent change.

- MetroCard Swipe/Fare data is the cleaned weekly ridership data provided by MTA for each station. Although turnstile data is also published by MTA, it is the raw cumulative entry register data for each turnstile recorded every 4 hours. Turnstile data can be affected by broken turnstile, maintenance, register reset, etc. and thus **requires extra caution when using the data.**

*the 4-hour window of aggregated data varies by station but the map reflects whichever window encompassed the typical morning peak.
Data sources: MTA Turnstile data (http://web.mta.info/developers/turnstile.html)

PM Peak Weekday Turnstile Data: Apr 13-Apr 23 2020 vs 2019

04/13-04/23 Weekday PM Peak

PERCENT CHANGE (2019-2020)
- ● >-70%
- ● -70%–-75%
- ● -75%–-80%
- ● -80%–-85%
- ● -85%–-90%
- ● -90%–-95%
- ● <=-95%

ENTRIES (2020)
2.3k
1.3k
703
480
271   AVG: 261
145
132
5.67

PM Peak Entry in CBD

— 2019   — 2020
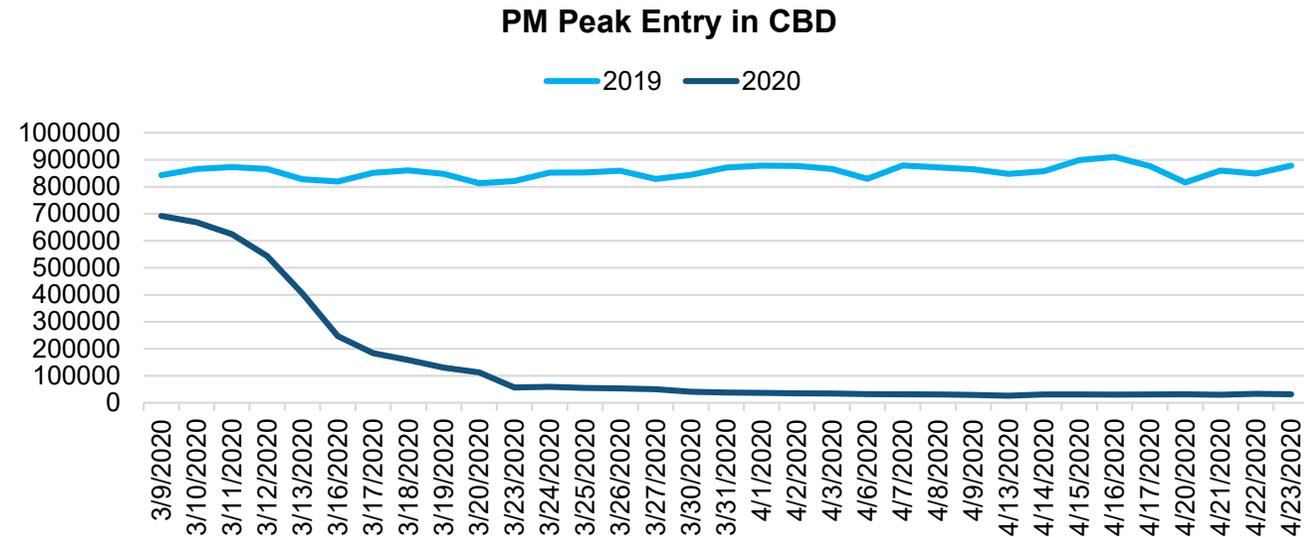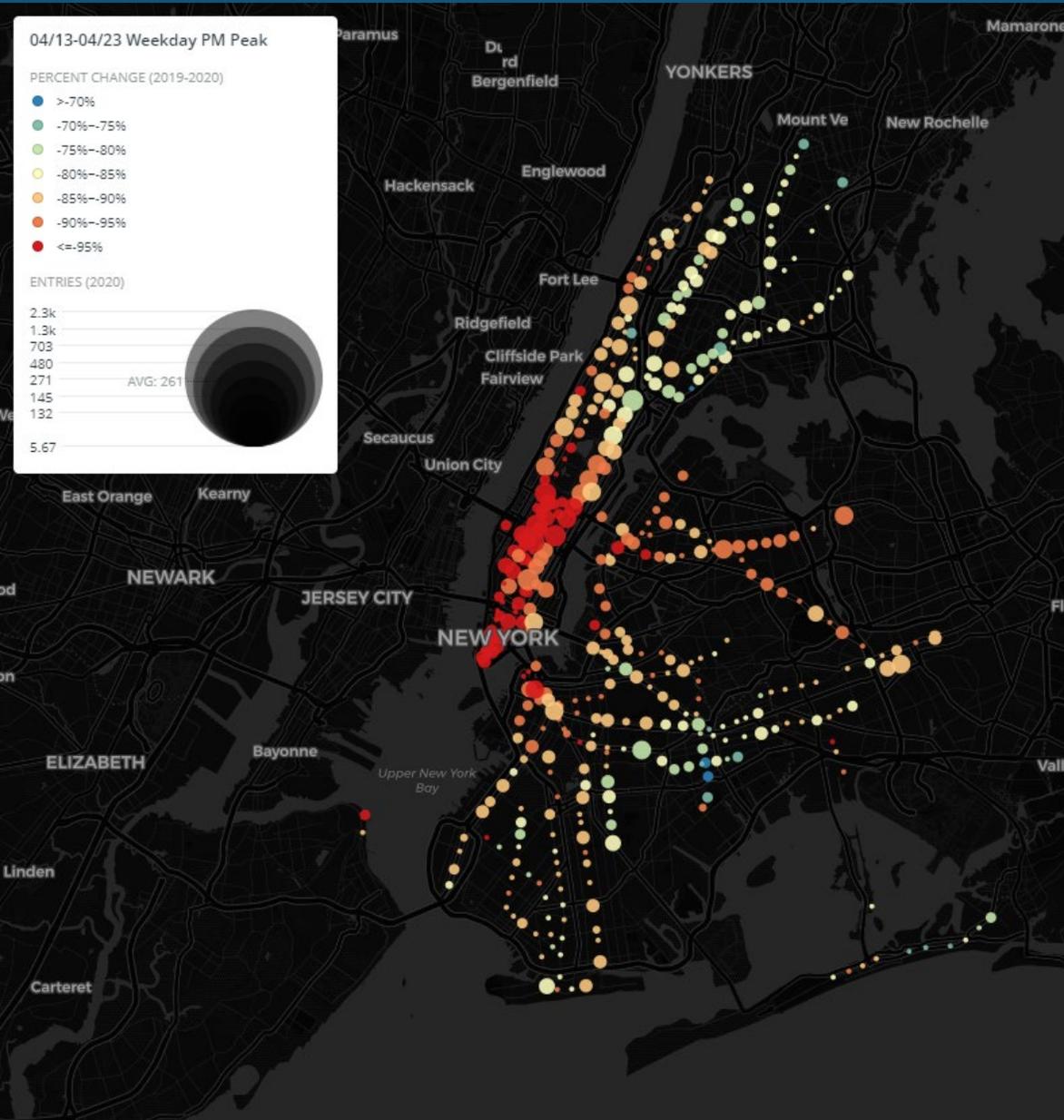
PM peak hour trips generally indicate where people are commuting *to*:

- The CBD area has seen the largest decreases in weekday entries during the PM peak 4-hour window*. The ridership has dropped approximately 96%.

- However, the CBD stations continue to have the highest ridership across the city, with about 30,000 entries per 4 hours in total in the PM peak.

*the 4-hour window of aggregated data varies by station but the map reflects whichever window encompassed the typical morning peak.
Data sources: MTA Turnstile data (http://web.mta.info/developers/turnstile.html)

MetroCard swipes and where food service workers live

% Change of Swipes by Station

APR 11-17 VS WEEKLY AVG OF JAN 4-FEB 28

- -70%~-80%
- -80%~-90%
- <=-90%

Food Service Worker

% OF FOOD SERVICE WORKERS BY NTA

- 0.8%-5.1%
- 5.2%-13.5%
- 13.6%-19.9%
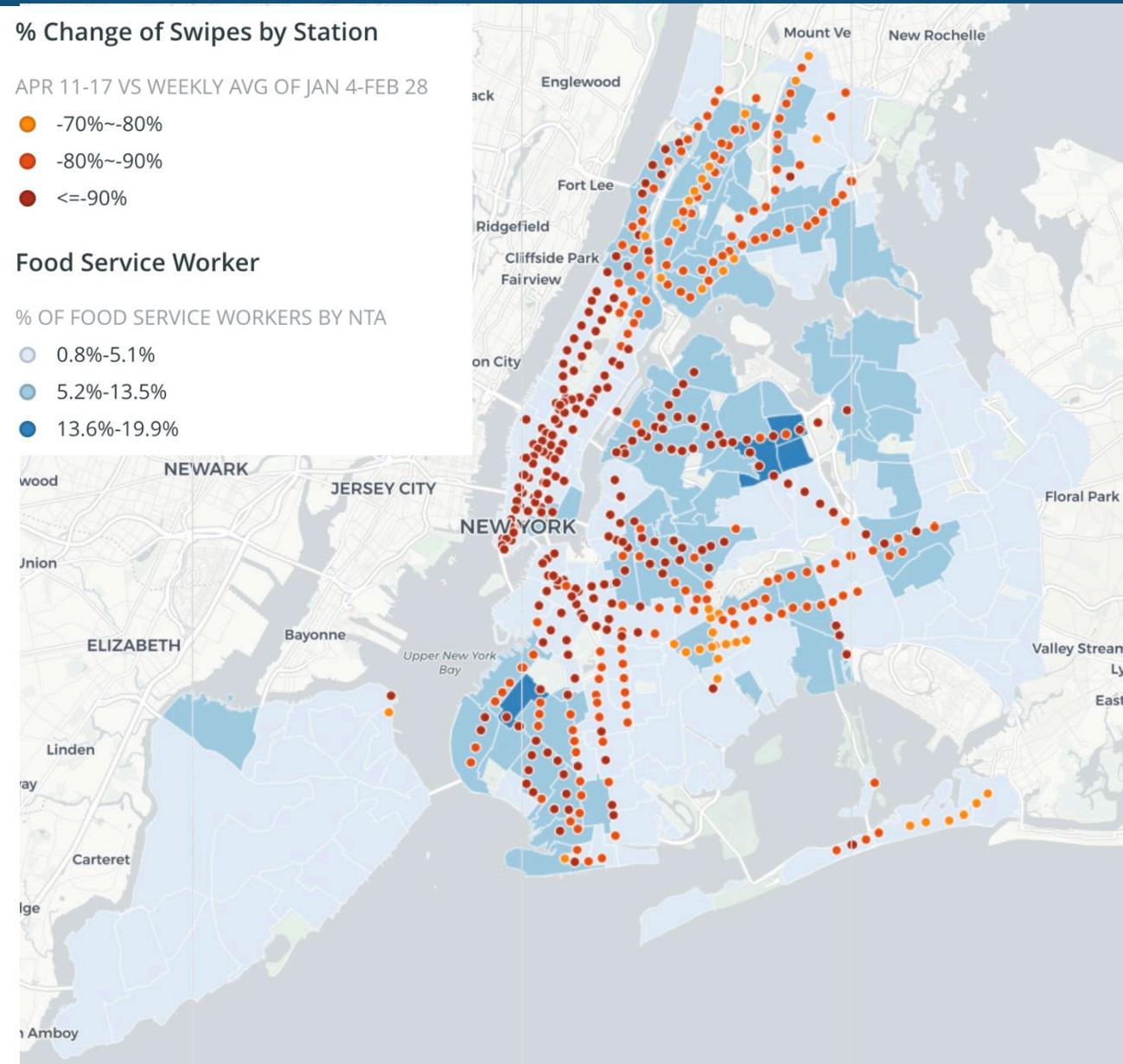
- Areas where concentrations of food workers live do not appear to connected with higher rates of subway ridership under the pandemic.

- Nevertheless, we do see concentrations of food workers in the same neighborhoods as, or adjacent to, concentrations of confirmed positive COVID19 cases.

- Corona, Queens and Borough Park, Brooklyn are particularly notable. More detail is shown in a subsequent slide.

Positive Tests by ZCTA (4/20)

14   2.9k

746 AVG

Data source: 2014-2018 ACS. Table S2401: OCCUPATION BY SEX FOR THE CIVILIAN EMPLOYED POPULATION 16 YEARS AND OVER
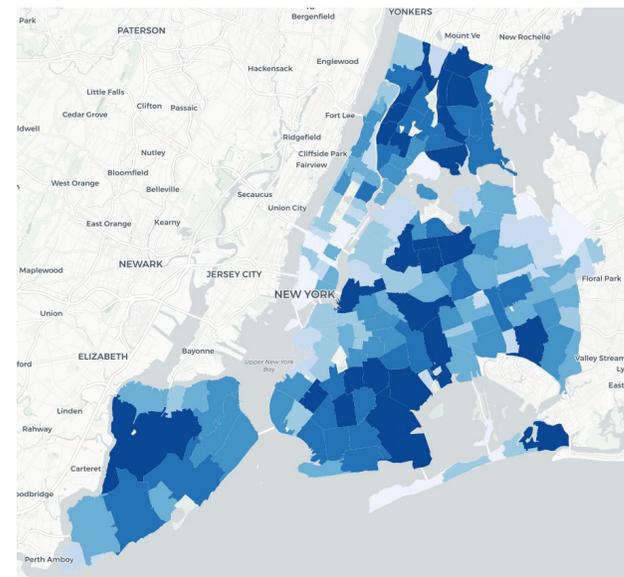
MetroCard swipes and where healthcare workers live

% Change of Swipes by Station

APR 11-17 VS WEEKLY AVG OF JAN 4-FEB 28

- -70%~-80%
- -80%~-90%
- <=-90%

Healthcare Workers

% OF HEALTH CARE WORKERS BY NTA

- 6%-13%
- 14%-23%
- 24%-33%
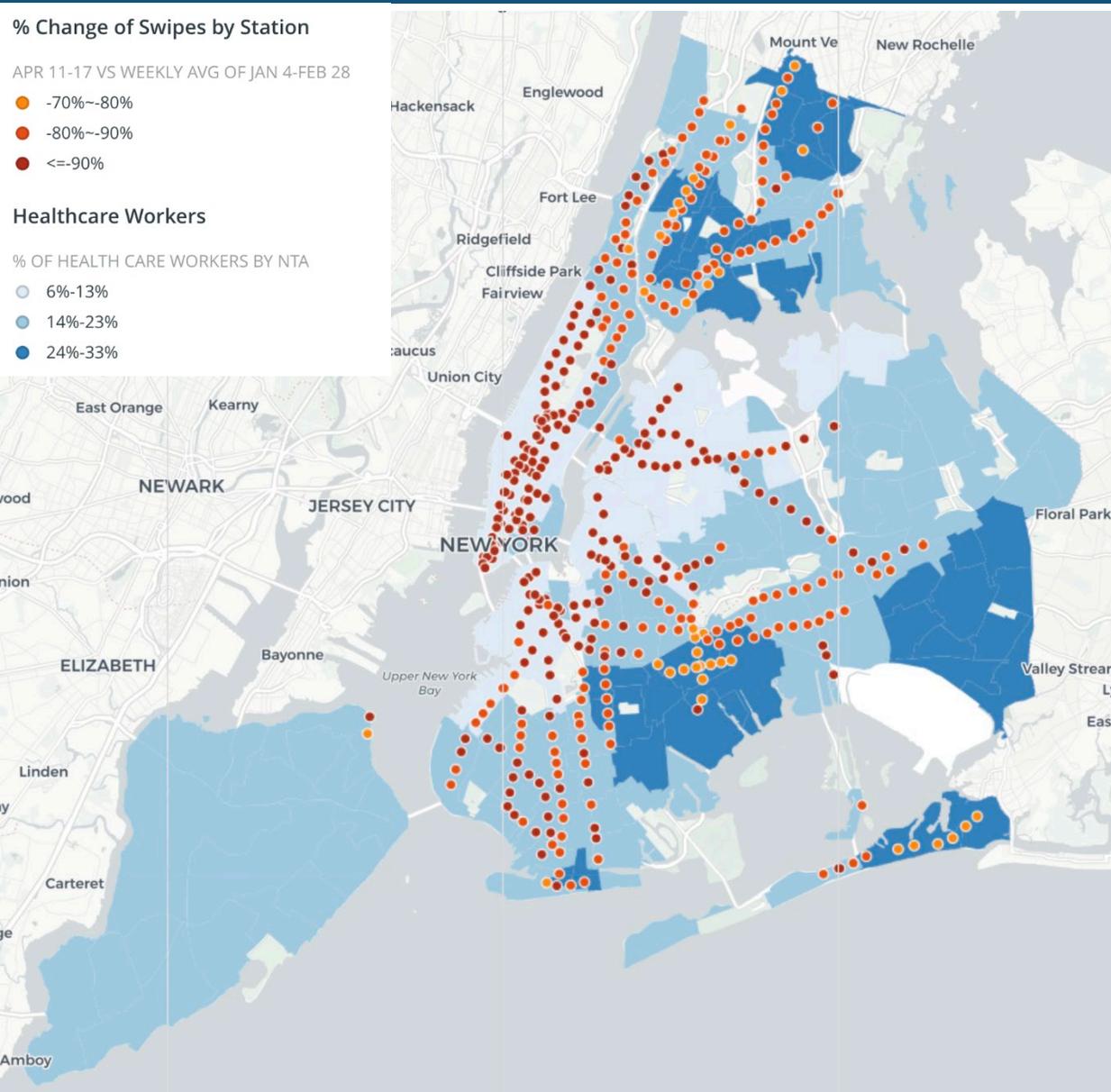
- We're beginning to explore the economic and demographic landscape of where subway ridership is relatively high.

- Certain neighborhoods of the city have particularly high rates of the workforce employed in essential industries.

- Parts of the Bronx, eastern Queens, and eastern Brooklyn have up to a third of all workers employed in healthcare. These areas coincide with areas where subway ridership declines have been less dramatic.

- Healthcare workers may be employed in hospitals, or may be continuing to report to work at nursing homes, as home health aides, or in other medical settings.

Data sources: MTA Fare Data
(http://web.mta.info/developers/fare.html);
2014-2018 ACS, healthcare & social assistance
workers over total employed civilians over 16
years old Table number: S2403INDUSTRY BY
SEX FOR THE CIVILIAN EMPLOYED
POPULATION 16 YEARS AND OVER

MetroCard Swipes and Healthcare Jobs – place of work

**COVID-19 Hospitals**
■

% Change of Swipes by Station
APR 11-17 VS WEEKLY AVG OF JAN 4-FEB 28
● -70%~-80%
● -80%~-90%
● <=-90%

Top Sector by NTA (2016)
50%+ DOMINANCE
● HEALTH CARE AND SOCIAL ASSISTANCE
● TRANSPORTATION AND WAREHOUSING
● EDUCATIONAL SERVICES
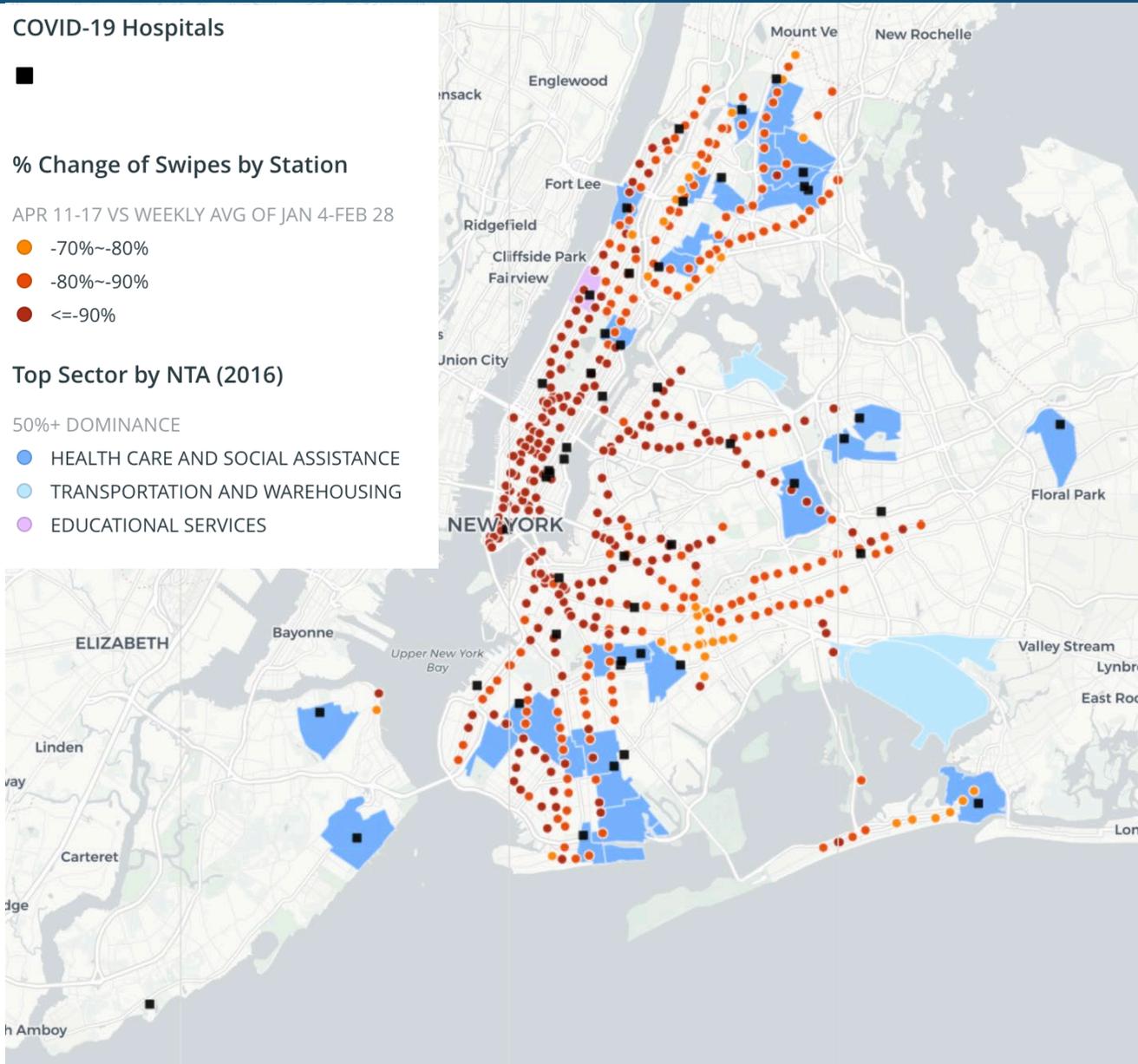
- This map shows neighborhoods where more than half of the jobs within the neighborhood are within a single sector. Most of these are in healthcare or social assistance.

- These neighborhoods contain or are near hospitals that are currently accepting suspected COVID19 patients.

- As essential workers continue to travel to work, subway ridership declines have been extreme, but still less pronounced, in many of these neighborhoods.

% Change of Subway Swipes by Dominant Sectors in NTAs

Sector	% Change
HealthCare and Social Assistance	-83%
Educational Services	-89%
All Sectors	-90%

0% -10% -20% -30% -40% -50% -60% -70% -80% -90% -100%

Data sources: MTA Fare Data (http://web.mta.info/developers/fare.html);
DCP Housing Economic Development division, QCEW 2016 (3rd Quarter),
geocoded private, non-headquartered firms

Transit Ridership and COVID19 Positive Tests

% Change of Swipes by Station
APR 4-10 VS WEEKLY AVG OF JAN 4-FEB 28
- >-70%
- -70%–-80%
- -80%–-90%
- <=-90%

Positive Tests by ZCTA (4/20)
14 — 2.9k
746 AVG
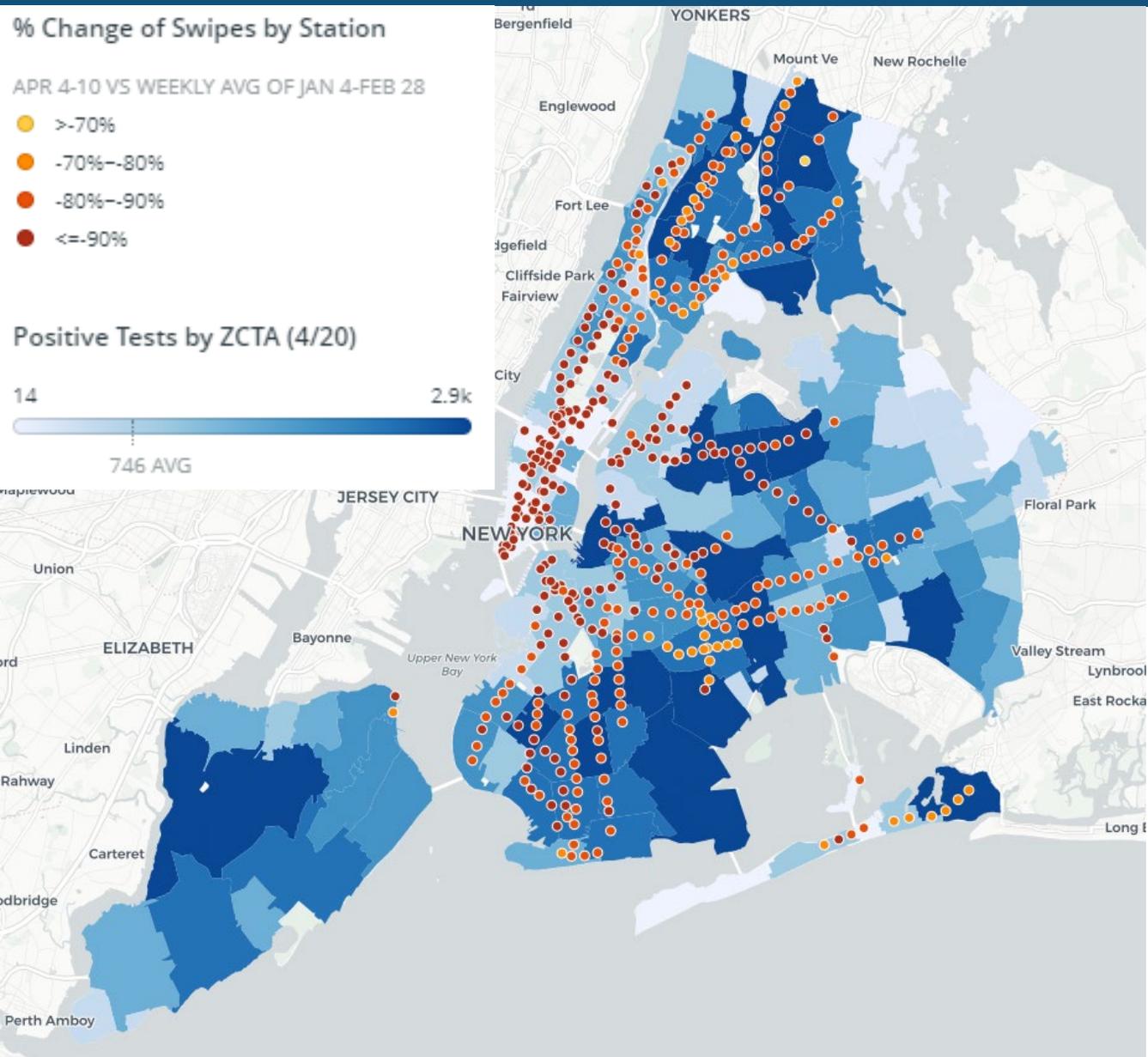
- Some neighborhoods in the city with the lowest decline in subway ridership also show the highest numbers of confirmed positive COVID19 cases.

- Areas with the highest number of confirmed cases (shown in dark blue) and the least change in ridership (shown in lighter orange) include Borough Park and East New York in Brooklyn, and the Morris Heights and Williamsbridge areas in the Bronx.

Journey to Work

Although the percentage of **educational service, health care and social assistance** workers who typically commute by public transportation to work (53%) is slighter lower than total worker average (56%), the actual number in that industry is still larger than any other industries in the City – **more than 500,000 workers (__pre-COVID19__).**

COVID-19 Hospitals

■

Top Sector by NTA (2016)

50%+ DOMINANCE
- HEALTH CARE AND SOCIAL ASSISTANCE
- TRANSPORTATION AND WAREHOUSING
- EDUCATIONAL SERVICES
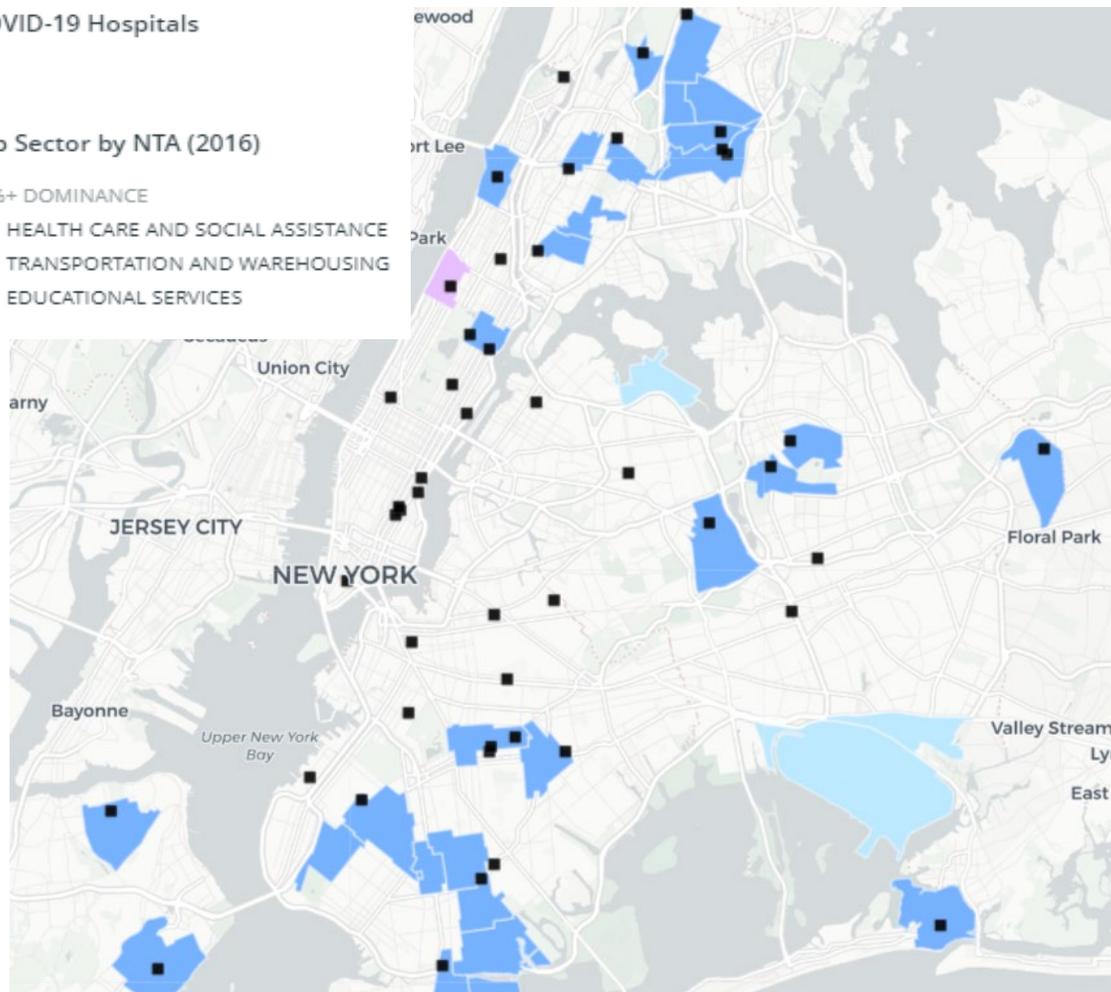
**Means of Transportation to Work by Industry
(Universe: NYC Residents)**

Label: % of Public Transportation

Industry	% of Public Transportation
Public administration	50%
Other services…	55%
Arts, entertainment, and…	65%
Educational services, and…	53%
Professional, scientific,…	63%
Information and finance…	62%
Transportation and…	39%
Retail trade	58%
Wholesale trade	48%
Manufacturing	55%
Construction	53%

■ Drove Alone
■ Carpooled
■ Public Transportation
■ Other*

Number of Workers

Note: Other mode is derived from total workers and workers using the 3 other modes.

NYC PLANNING

April 28, 2020   38

% Workers Commuting by Public Transportation, by place of residence

Legend:
- Food service
- Health service aides
- Medical staff
- Police officers, firefighters, etc
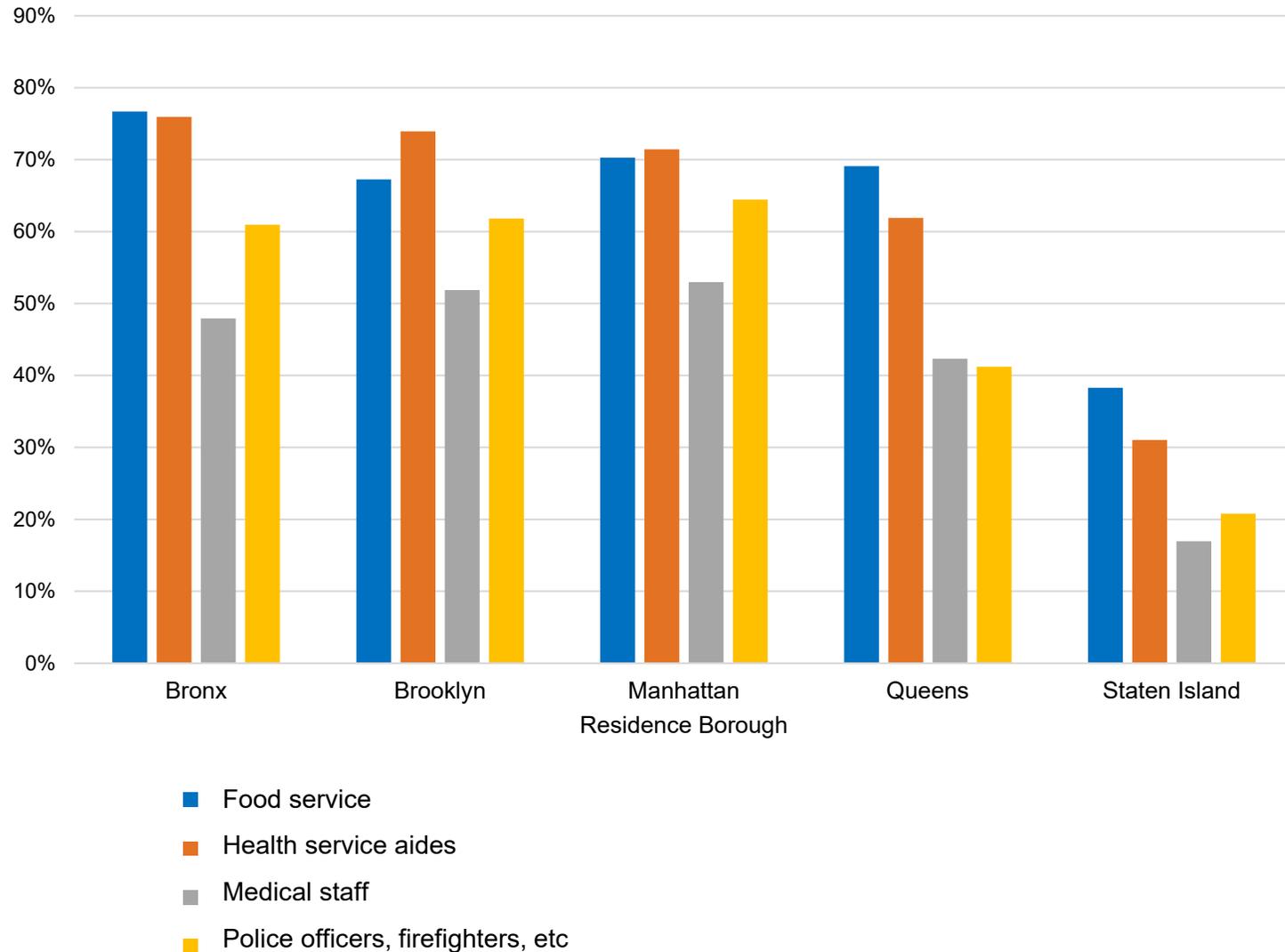
- Pre-COVID19 commuter patterns indicate differing dependence on public transportation across different sectors of the economy.

- Looking only at a subset of the essential workforce, we can see that food service workers and health care aides seem reliant on public transportation for getting to work, while medical staff, police, firefighters, etc. are less reliant on public transportation.

- This subset of workers who live on Staten Island appear least reliant on public transportation

- Expanding this analysis to include other non-essential sectors will help us plan for an economic reopening.

Essential Workers Commuting by Subway *Pre-COVID19*

NYC Resident Essential Workers Commuting to A Non-Home Borough by Subway, by place of work

Legend:
- Food service
- Health service aides
- Medical staff
- Police officers, firefighters, etc

X-axis (Place of Work): Bronx, Brooklyn, Manhattan, Queens, Staten Island

Y-axis: 0 to 90,000
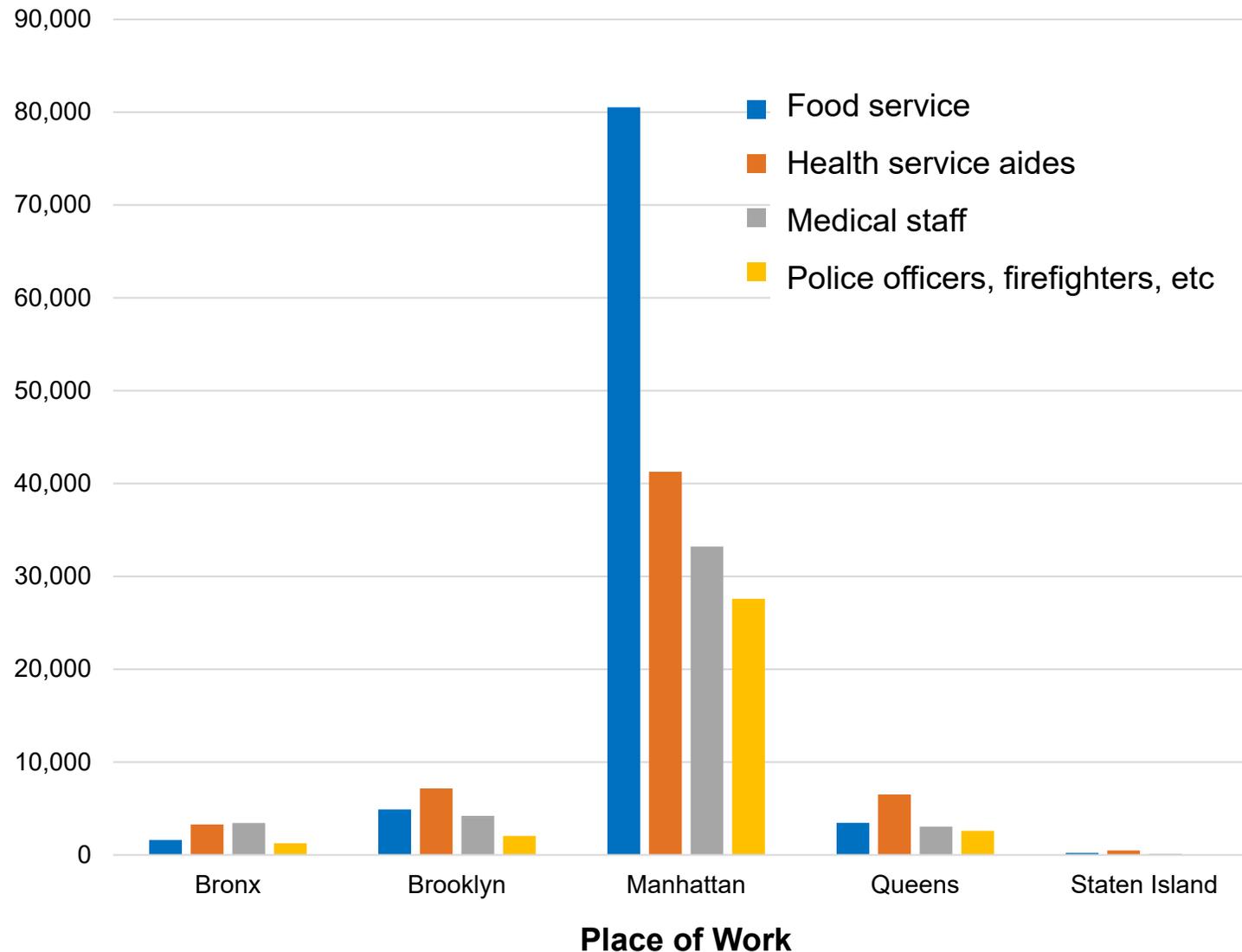
- Pre-COVID19, nearly 200,000 workers in this subset of essential sectors commuted via subway to Manhattan from another borough.

- Among these selected sectors, food service workers constituted the majority of Manhattan-bound subway commuters from other boroughs, while health service aides were the most numerous inter-borough subway commuters with destinations outside of Manhattan.

Data sources: 2014-2018 PUMS

Sidewalks

Sidewalk Width Analysis

Median Sidewalk Width (Feet)
- <=5
- 5-10
- 10-15
- 15-20
- >20

Median sidewalk widths vary significantly across the city

Data sources:
NYC Planimetrics (https://github.com/CityOfNewYork/nyc-planimetrics/blob/master/Capture_Rules.md)

Caveat: No obstacles on the sidewalks are being excluded from the sidewalk widths.

Sidewalk Bottlenecks

WIDTH <10 FT
- ●

This map shows sidewalks where at least a portion along a block is less than 10 feet wide, making it difficult for two people to cross paths while practicing social distancing.

Sidewalk Square Footage and Residential Density

Sidewalk Density

SIDEWALK RADIUS PER PERSON

- 🔴 0 FT - 2.9 FT
- 🟠 3 FT - 3.9 FT
- 🟡 4 FT - 4.9 FT
- 🟢 5 FT - 5.9 FT
- 🔵 >= 6 FT

- If we allow everyone a 3-foot radius "bubble" in order to maintain a 6-foot social distance from one another, we require approximately 28 square feet each.

- Looking at total sidewalk square footage and residential density by Census Tract, we can see where sidewalks have a higher residential pedestrian load.

- Tracts in red are those where there is the least amount of total sidewalk square footage per resident.

  - An analysis that incorporates worker density will highlight areas to focus on as the economy reopens.

Note: this analysis does not consider sidewalk impediments, such as street trees, bus stops, benches, newsstands, etc. Actual sidewalk square footage per person will be lower when these are accounted for.

Roads

MTA Bridge and Tunnel Crossings

MTA Bridge and Tunnel Crossings

Legend: 2019, 2020

Map labels: Henry Hudson Bridge, Whitestone Bridge, Robert F. Kennedy Bridge, Throgs Neck Bridge, Queens Midtown Tunnel, Hugh L. Carey Tunnel, Verrazzano Bridge, Cross Bay Bridge, Marine Pkwy Bridge

PERCENT DECLINE: 52 — 81, 66.3 AVG
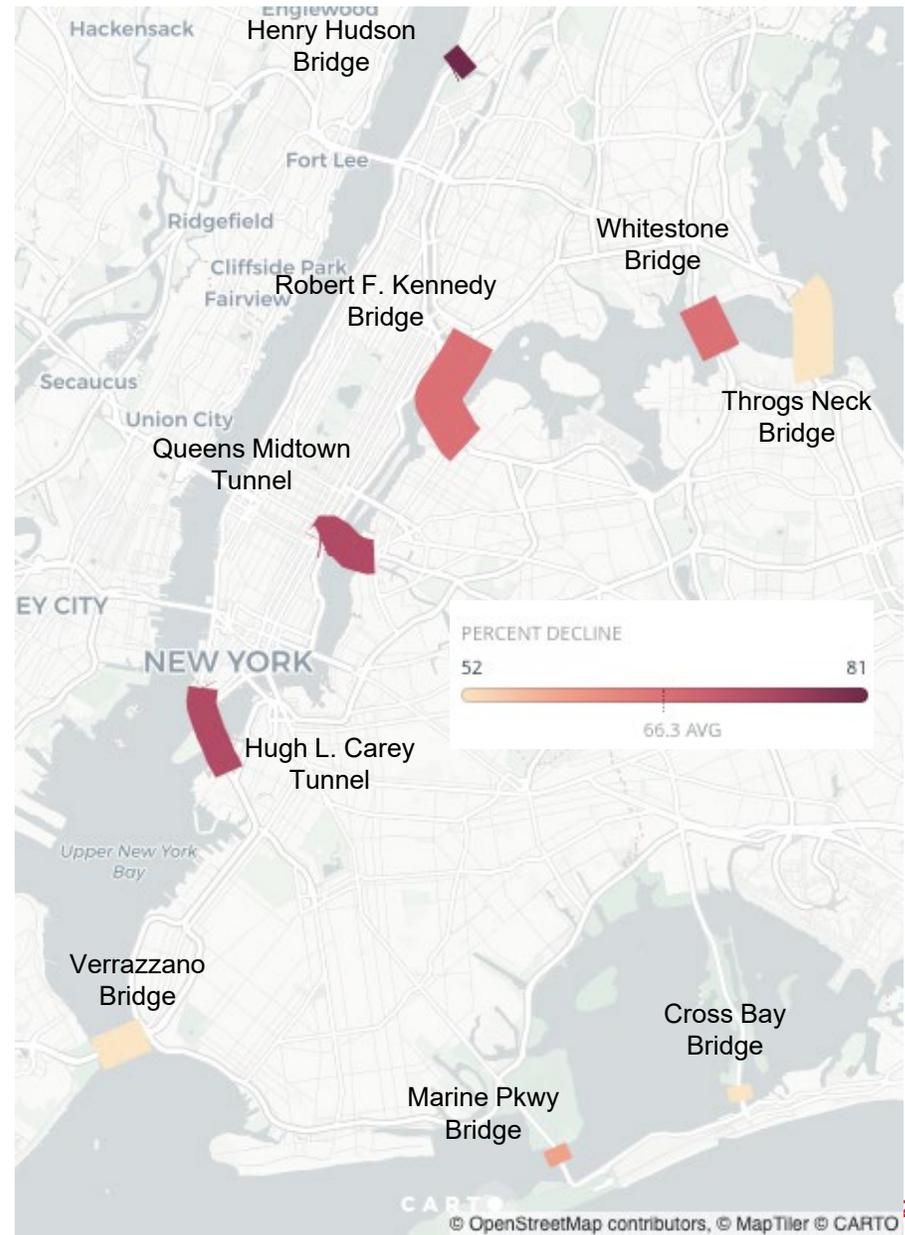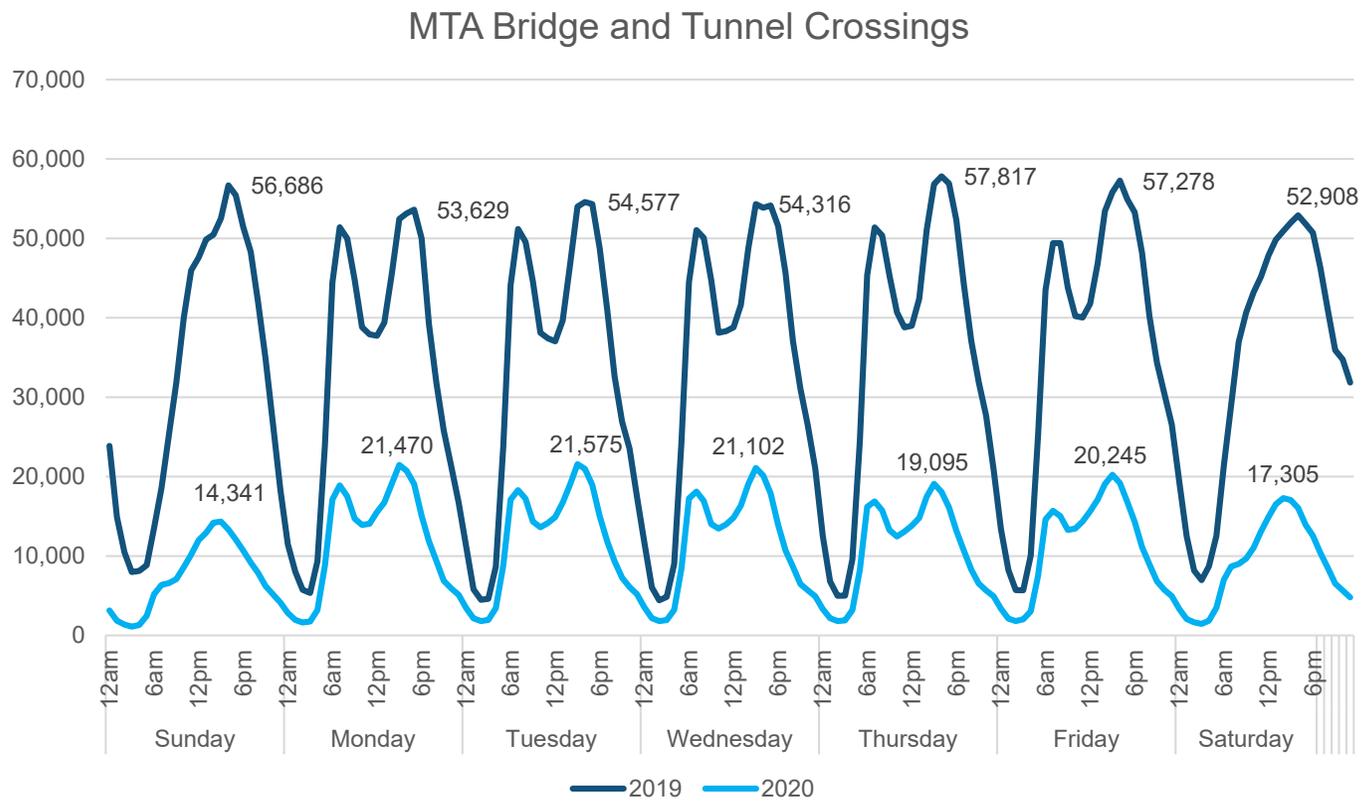
- Traffic volumes at all MTABT crossings during the first full week in April 2020 are down by over 50 percent from what they were the same week in 2019.
- The map at the right shows the percentage decline in volume for each bridge on Wednesday of the corresponding week.

NYC PLANNING

NYC AM Peak Road Speed Change

AM Manhattan Speed Change
February 27 2020 vs March 26 2020

— CHANGE < 10MPH
— INCREASE BY 10 – 25 MPH
— INCREASE BY 25 – 35 MPH
— INCREASE GREATER THAN 35 MPH

© OpenStreetMap contributors, © MapTiler © CARTO

Data Source: NYC DOT

(The date represent that week. For Manhattan data, the baseline is Q1 2019 average speed)
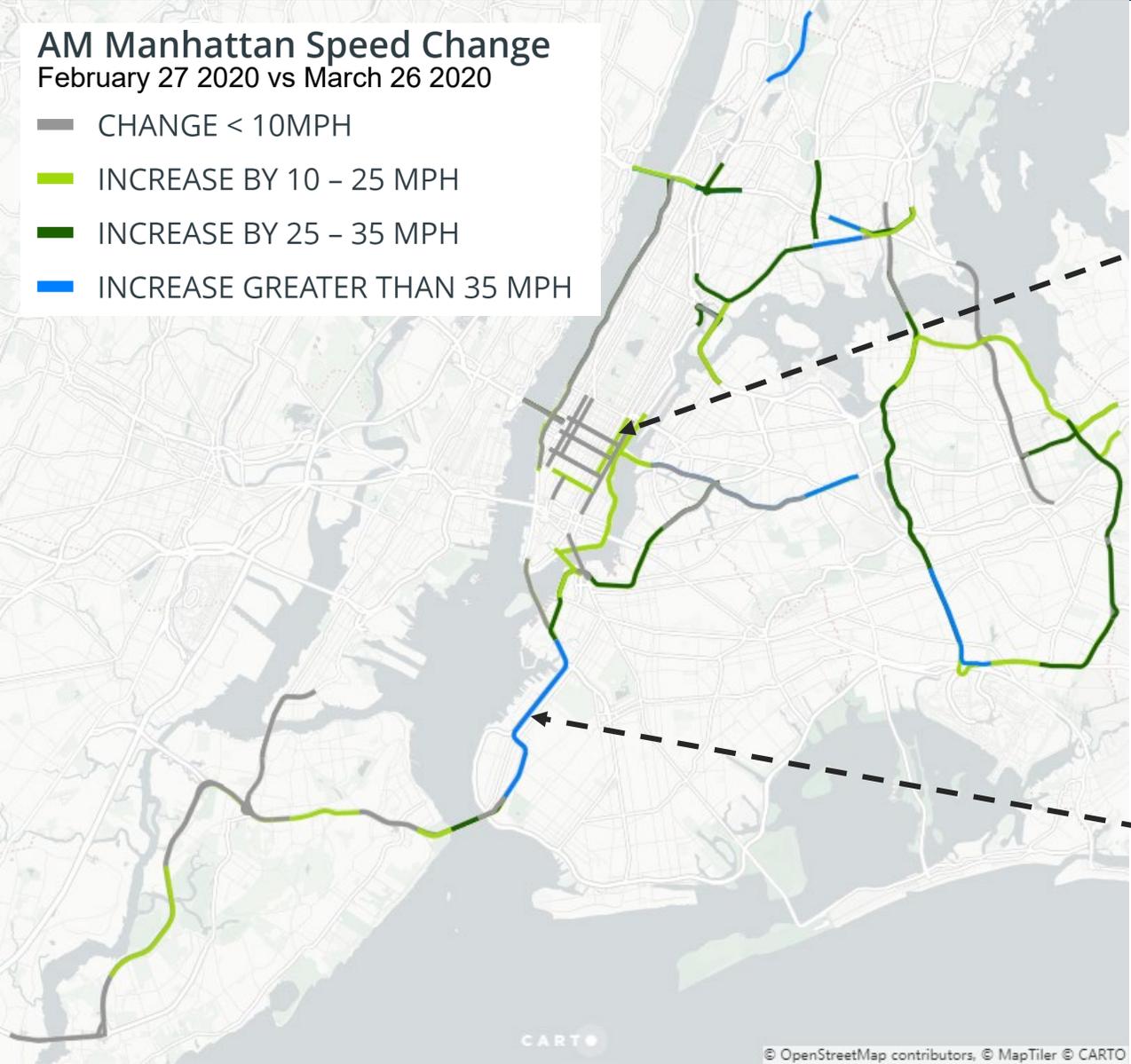
MN 2nd Ave btwn 57th and 23rd streets (SB)

PAUSE

Legend: 2019_speed (red), 2020_speed (teal)

Values: 03-18: 7.73 / 13.4; 03-25: 7.73 / 18.55; 04-01: 8.29 / 19.5; 04-07: 8.27 / 21.4

BK BQE btwn N7th and 9th streets (NB)

PAUSE

Values: 02-05: 10.56; 02-12: 11.18; 02-19: 9.94; 02-26: 11.8; 03-11: 8.69; 03-18: 14.91; 03-25: 48.46; 04-01: 49.7; 04-08: 49.7
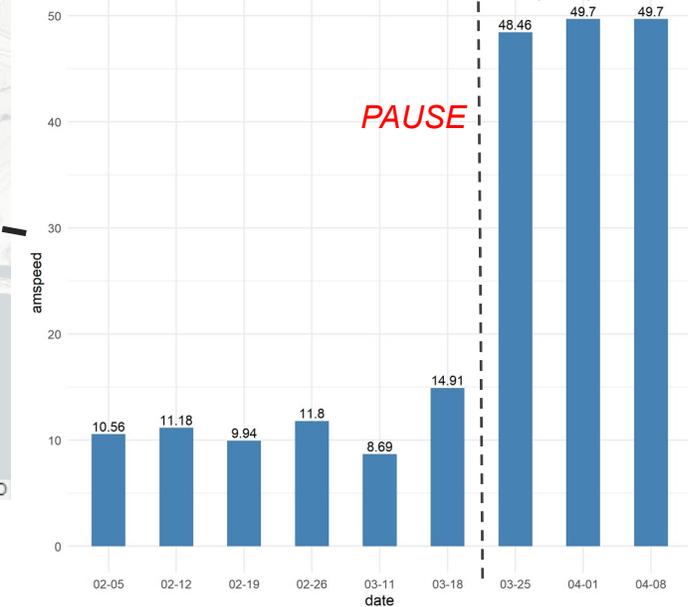
AM Peak (6:30-9:30)

Since the stay at home order was put in place, there has been an average 57% increase in speeds* for the roads shown on the map.

Manhattan's 2nd Avenue speeds averaged more than 21mph on April 7 2020 versus only 8mph one year ago.

Speeds on the BQE jumped from about 15mph to nearly 50mph pre- and post-PAUSE (3/22/2020).

(Weighted speed=Sum (speed 1st length 1st+......+speed nth*length nth)/Sum(length 1+.....+length nth).

Interactive map: NYC Road Speed Change(03.26 v 02-27)

April 28, 2020   46

Motor Vehicle Collisions- March 1st to April 24th 2020

Daily Vehicle Miles Traveled in NYC (VMT)

Legend: Bronx, Brooklyn, Manhattan, Queens, Staten Island

- There were significant declines in vehicle miles travelled (VMT) as the City and State progressively enacted stay-at-home measures.

- The VMT peak after Friday, March 13 may reflect people leaving the city in their cars.

- The number of collisions per VMT has first risen steeply right after PAUSE but started to gradually decline in the past week.

- Although numbers of motor vehicle collisions, injuries and fatalities have plummeted since mid-March, the percentage of crashes, injuries and fatalities related to unsafe speed went up.

Number of Motor Vehicle Collisions Per VMT

Collisions, Injuries, Fatalities (All Collisions vs. Unsafe-Speed-Related Collisions)

Legend:
- Average Daily Crashes
- Average Daily Injuries and Fatalities
- Percentage of Unsafe Speed Related Crashes
- Percentage of Unsafe Speed Related Injuries and Fatalities
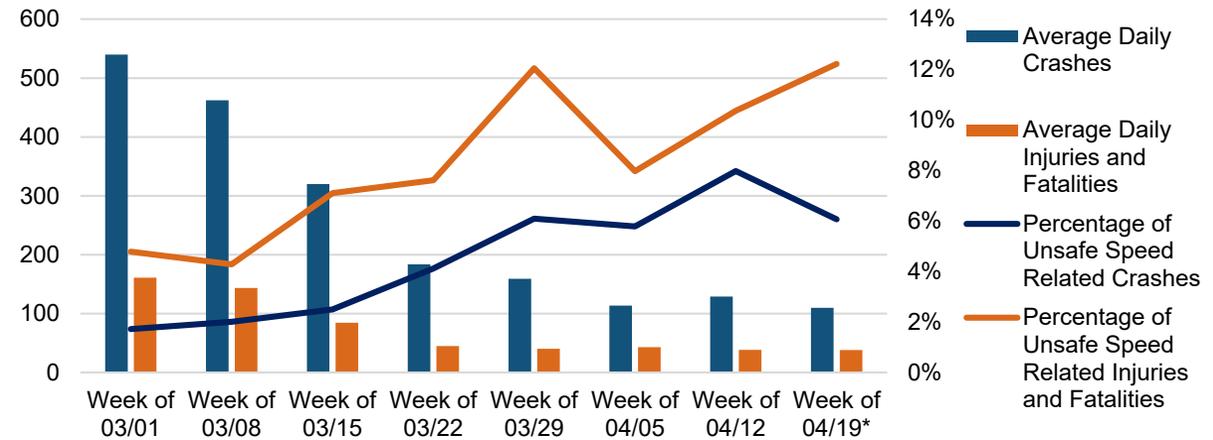
*Week of 04/19 is a 6-day average as the data for 04/25 has not been released.

Data source: NYPD Motor Vehicle Collisions (https://data.cityofnewyork.us/Public-Safety/Motor-Vehicle-Collisions-Crashes/h9gi-nx95)