

# **COVID19 IMPACTS ON TRANSPORTATION**

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

June 2, 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 tenth weekly report.
- This week's report includes the following information:
  1. Executive Summary
  2. Citywide Trend
  3. Subway
  4. Citi Bike – Critical Workers
  5. Phase 1 Reopening: Retail, Construction, Manufacturing & Warehousing
  6. Phase 2 Reopening: Offices & Real Estate, and Retail & Selected Services
  7. Timeline
- We continue to expand 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 an appendix, which is no longer attached to this report.
- 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](mailto:lsmith@planning.nyc.gov)) with questions or comments, or if you would like to see this week's appendix slides.

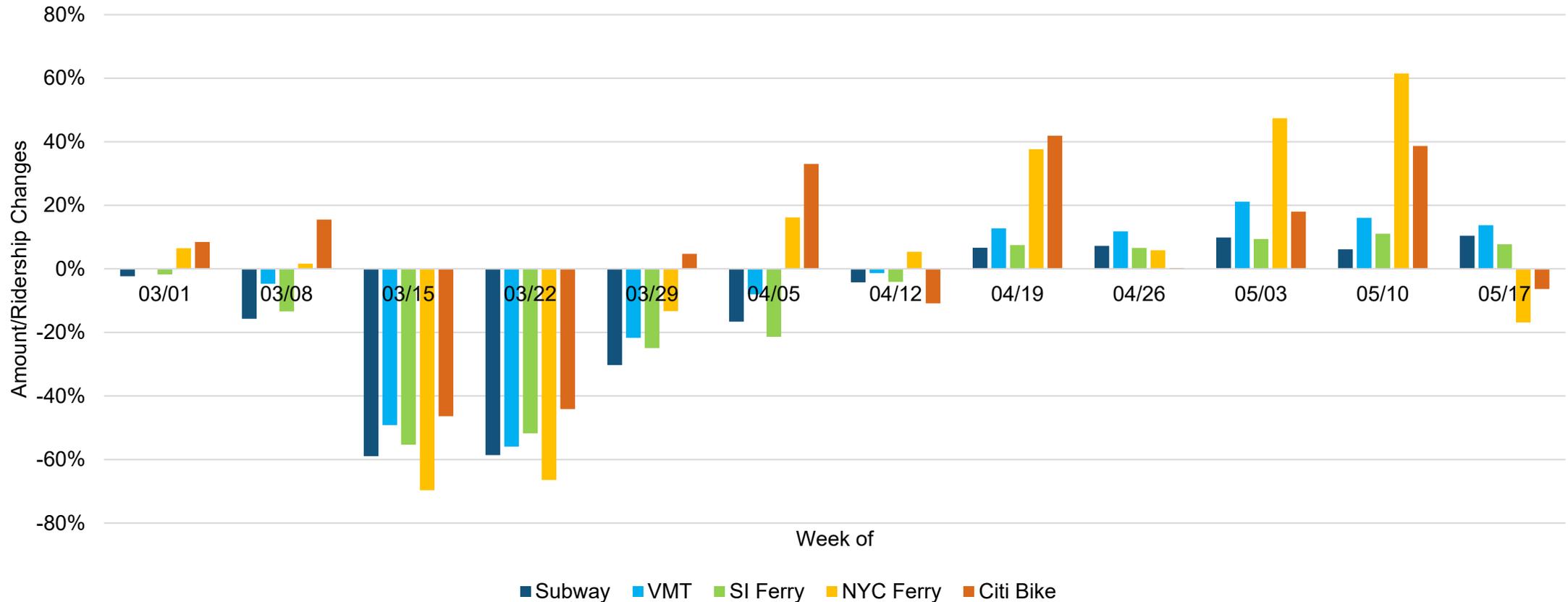
- Subway ridership continues its fifth week of increases, and **total MetroCard swipes during the week of May 16 - 22 were higher than each of the previous seven weeks.**
- On May 4th, Citi Bike began expanding with **100 new stations** in Upper Manhattan and the Bronx, with a focus on uptown hospitals. Throughout April and May, DOT distributed over **20,000 annual memberships to critical workers** and over 146,000 trips were taken by these riders.
- **New York City is preparing for a Phase 1 reopening, scheduled for June 8<sup>th</sup>.** This will allow nonessential workers in retail, construction, and manufacturing & warehousing to return to work.
- **Analysis of Phase 2 sectors** includes retail for in-store shopping, other services including barber shops and hair salons, and office industries.
  - Phase 1 industries, specifically construction and manufacturing & wholesale, are substantially less oriented around a 9-10am peak arrival hour than are the Phase 2 sectors.
  - The Phase 1 industries also represent a much smaller share of the city's overall workforce.
  - The greatest strain on the city's transportation system is expected as a result of Phase 2, and we are continuing to work to anticipate travel demand.

# Citywide Trends

# Citywide Trends

- More than nine weeks into New York City's Stay at Home order we're seeing steady increases in travel. Reduced ridership on NYC Ferry and Citi Bike may be attributed to poor weather on Saturday, May 23.
- With Phase 1 of the city's reopening expected to begin on June 8, we're increasingly focused on anticipating travel demand in the coming weeks and months.

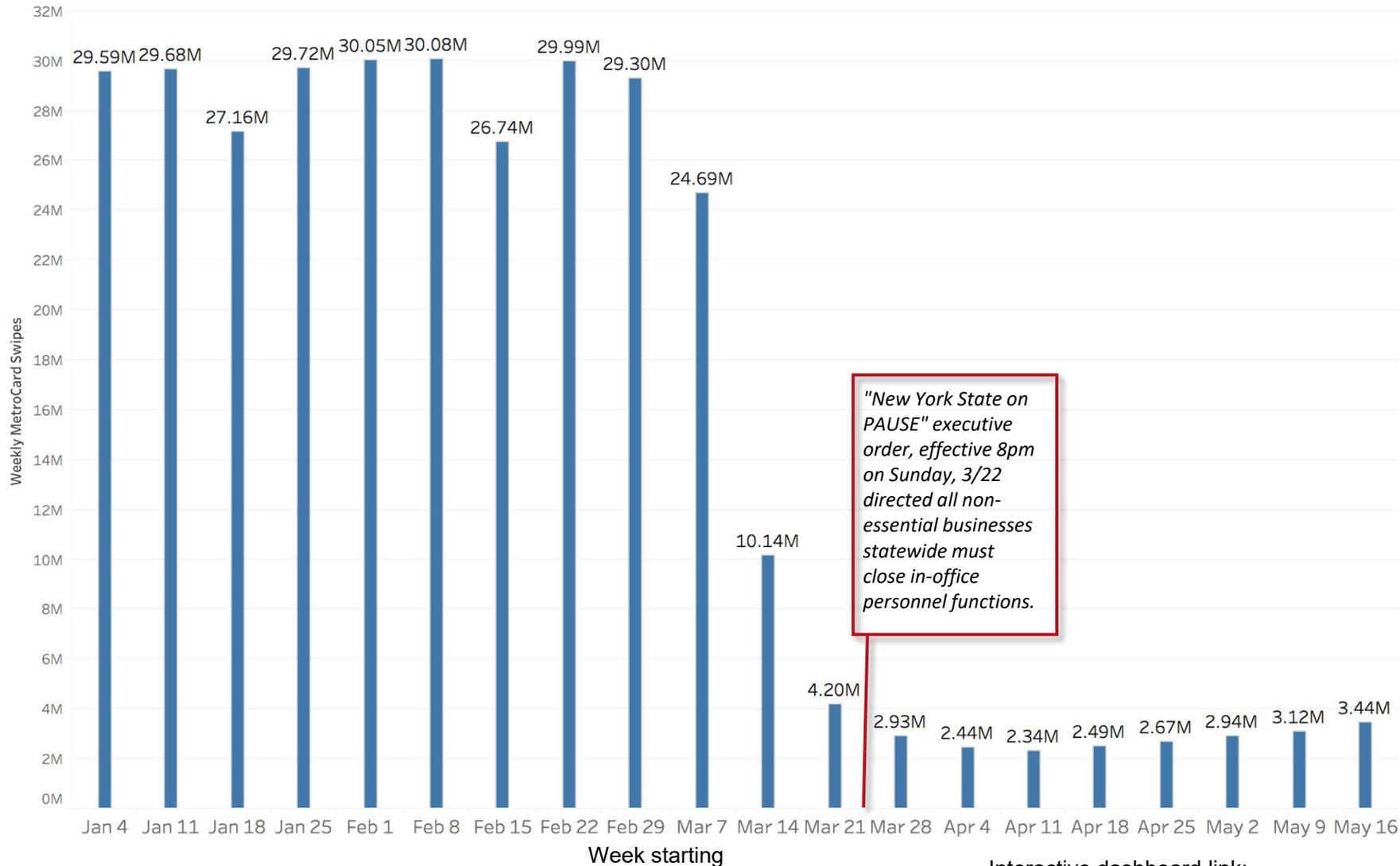
### Week Over Week Changes



# Subway

# Subway System-wide Ridership Changes

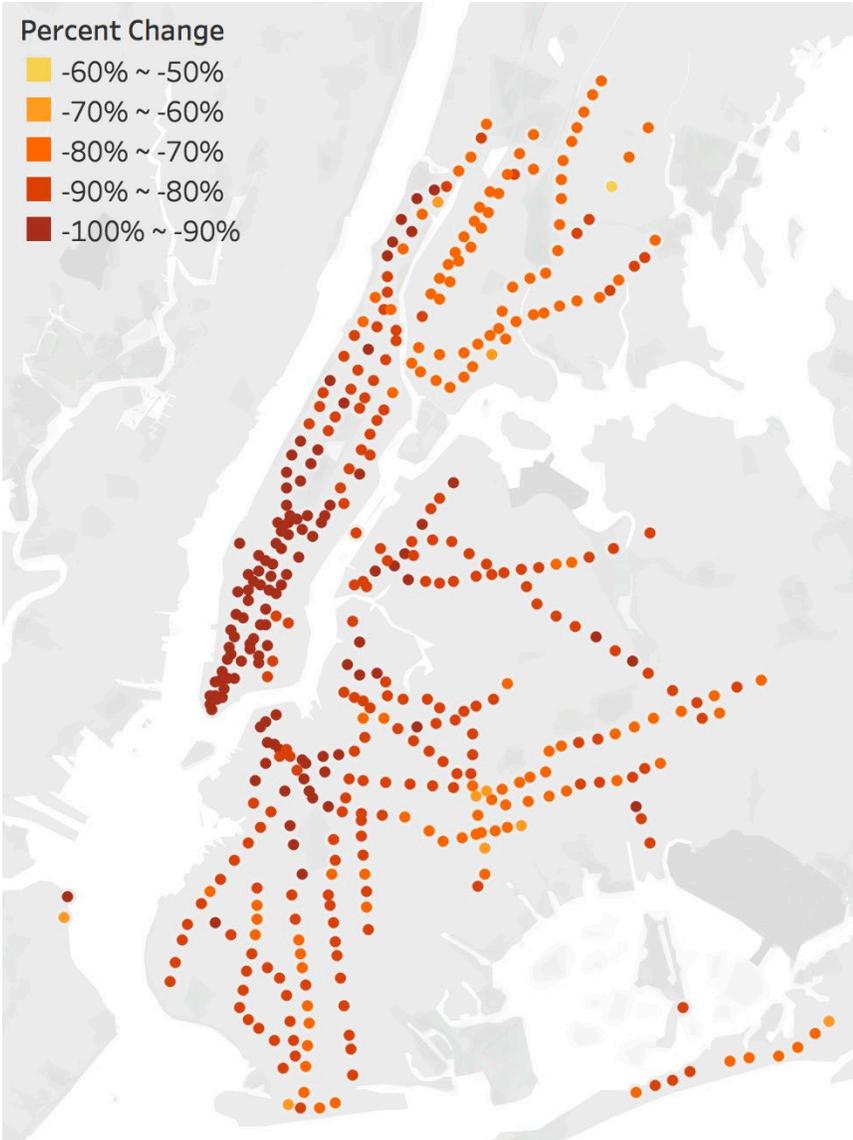
Weekly MetroCard Swipe Trends (Jan 4 - May 22)



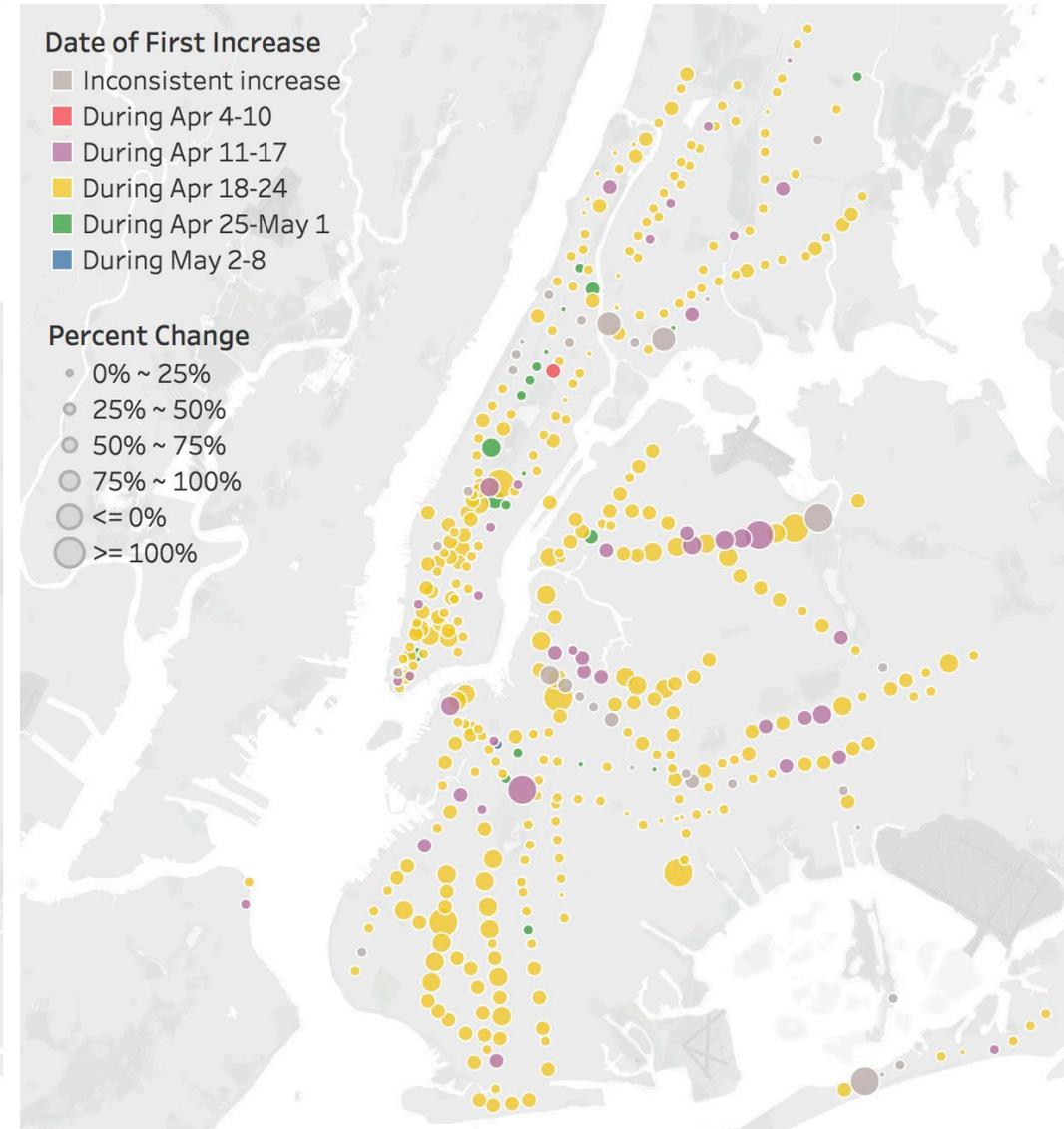
- The citywide percent change of MetroCard swipes during May 16-22 vs weekly average of Jan 4- Feb 28 was - **88.18%**.
- Total MetroCard swipes during the week of May 16-22 was **higher than each of the previous seven weeks.**

# MetroCard Swipe Change May 16-22 vs Apr 11-17 2020

Percent Change of Swipes (May 16-22 2020 vs. Weekly Average of Jan 4 to Feb 28 2020)



Percent Change in MetroCard Swipes (May 16-22 2020 vs April 11-17 2020)



- The first map illustrates how station-level ridership is still dramatically down compared with the pre-pandemic baseline average.
- The second map shows which stations hit their trough point, and when. The system had its lowest ridership during the week of April 11-17, but some stations hit their low the week prior or a few weeks later.
- Stations with the largest circles are those that have doubled their ridership since their lowest week.

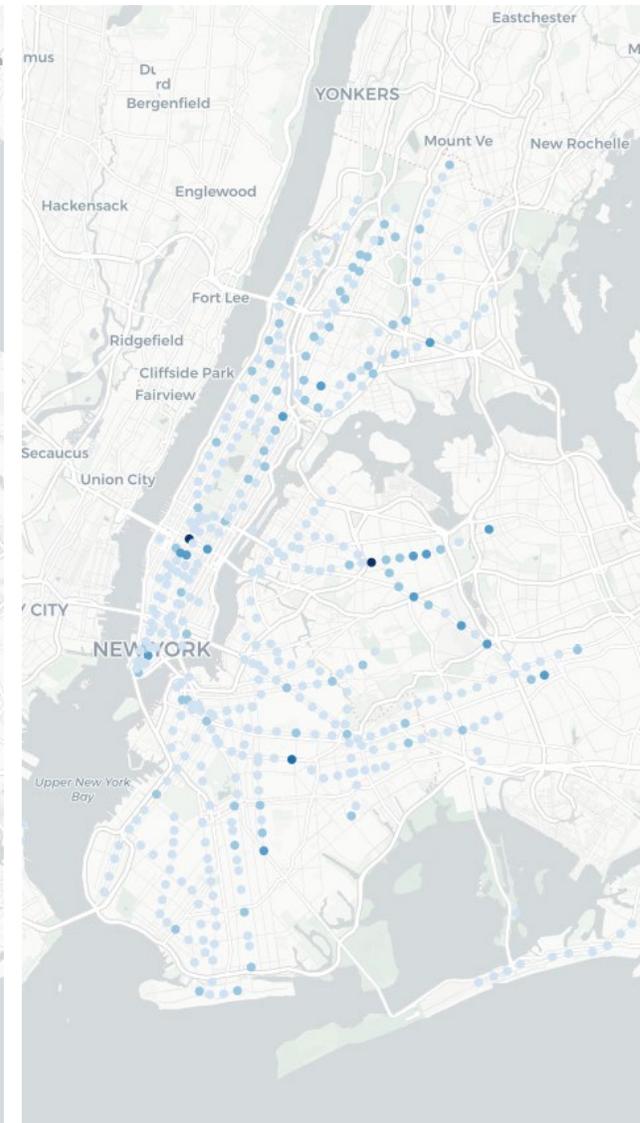
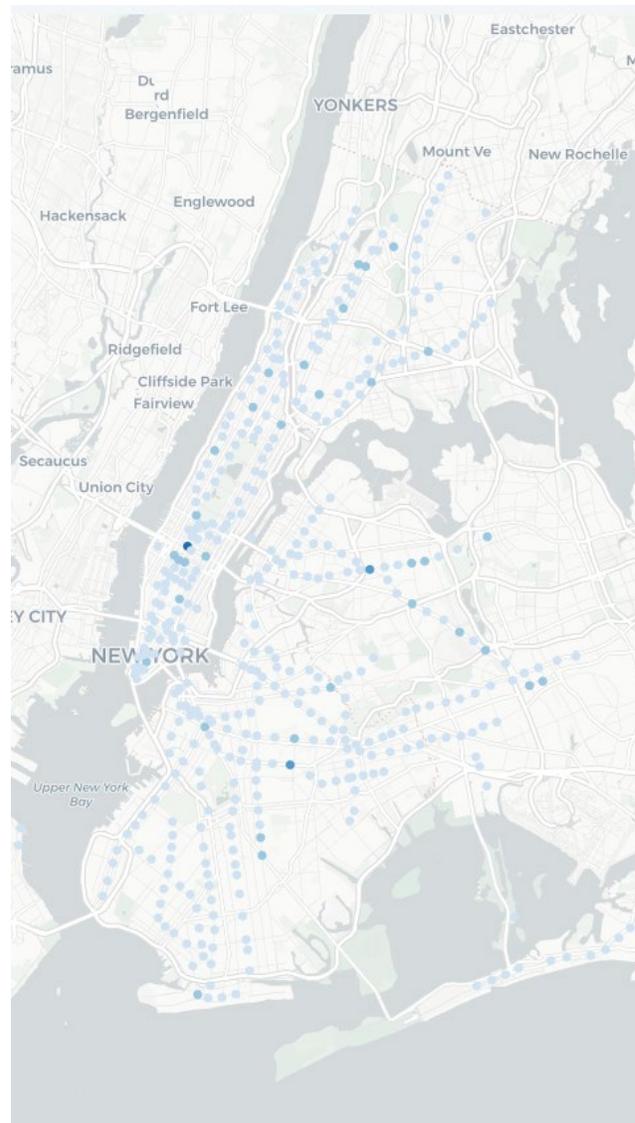
Interactive dashboard link:  
<https://public.tableau.com/profile/dcptrans-transportation#!/vizhome/MetroCardSwipes-IncreasingTrends/IncreaseTrends>

# Weekday AM Peak Turnstile Data

03/11-05/31 2019

04/14-04/17 2020

05/26-05/28 2020



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

- The largest AM peak ridership declines were observed in the Manhattan Core and Inner Ring, and along the B/Q and E train lines.
- The peak low week of April 14<sup>th</sup> shows only a handful of stations with AM peak ridership of more than 1000 people.
- The week of May 26<sup>th</sup>, the most recent data available, shows increases across the city and especially in Queens.

### WEEKDAY AM PEAK AVERAGE

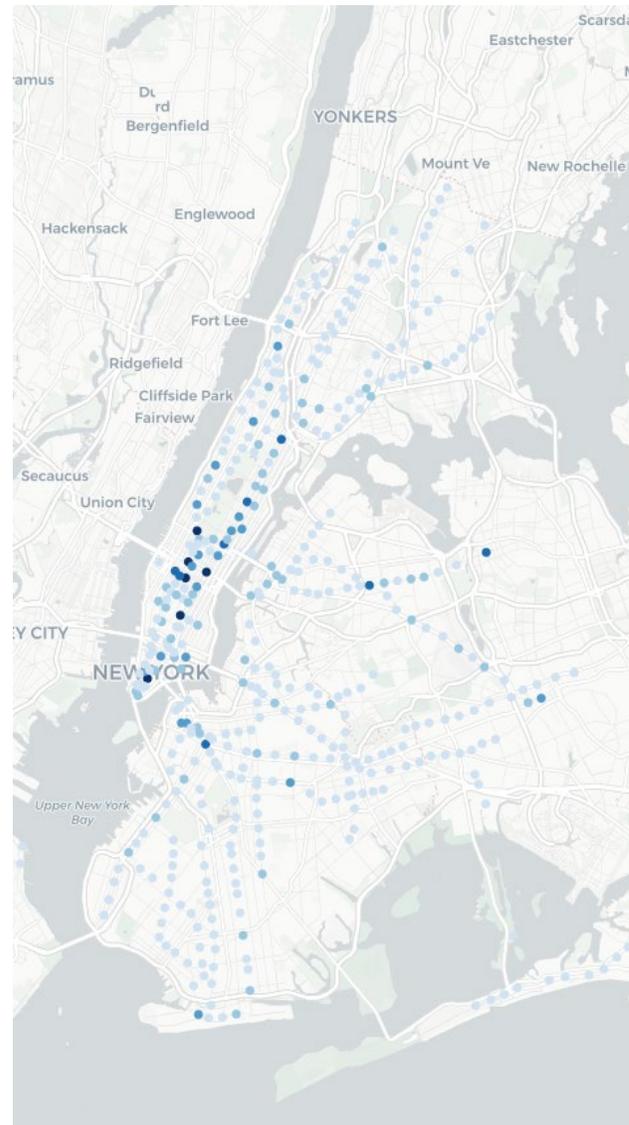
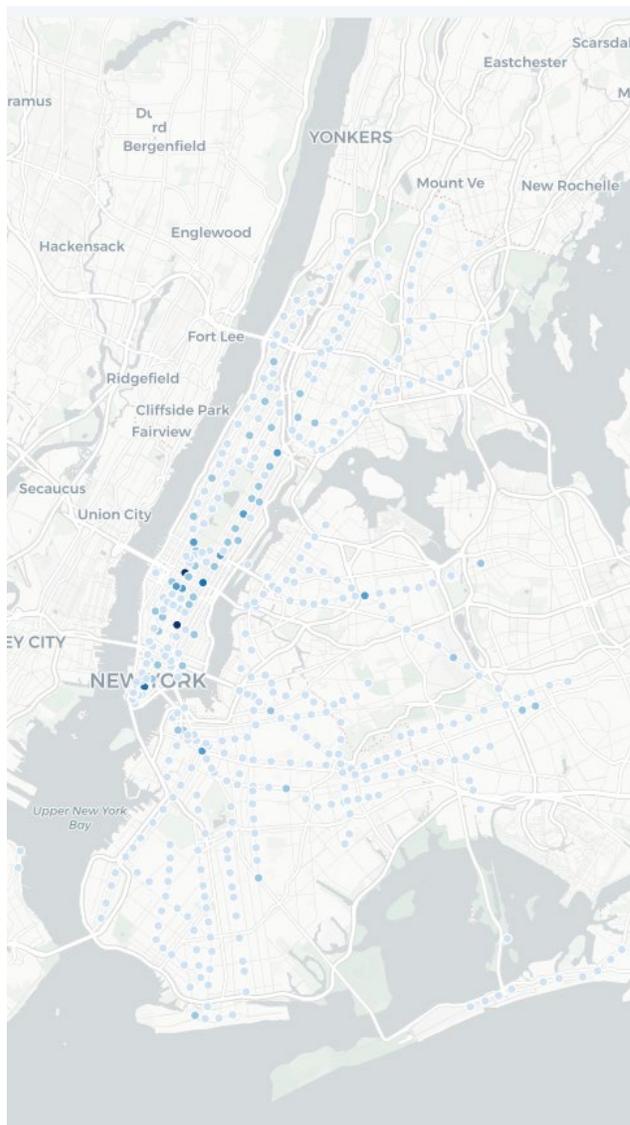
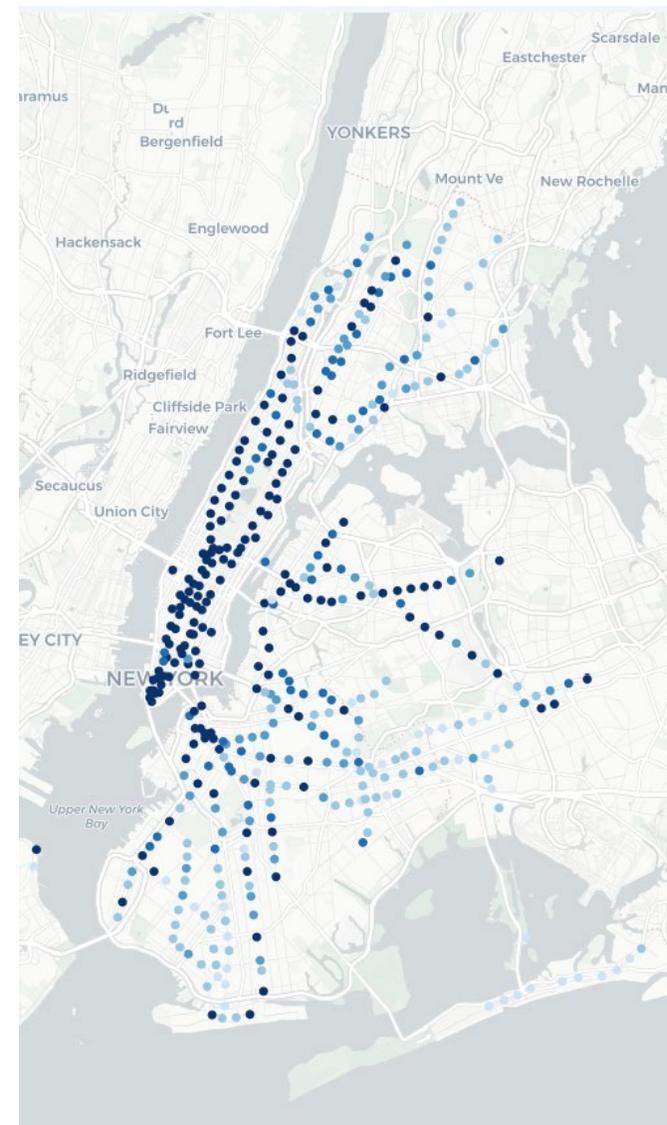
- 0-500
- 501-1000
- 1001-1500
- 1501-2000
- >2000

# Weekday PM Peak Turnstile Data

03/11-05/31 2019

04/14-04/17 2020

05/26-05/28 2020



## PM peak hour trips generally indicate where people are commuting to:

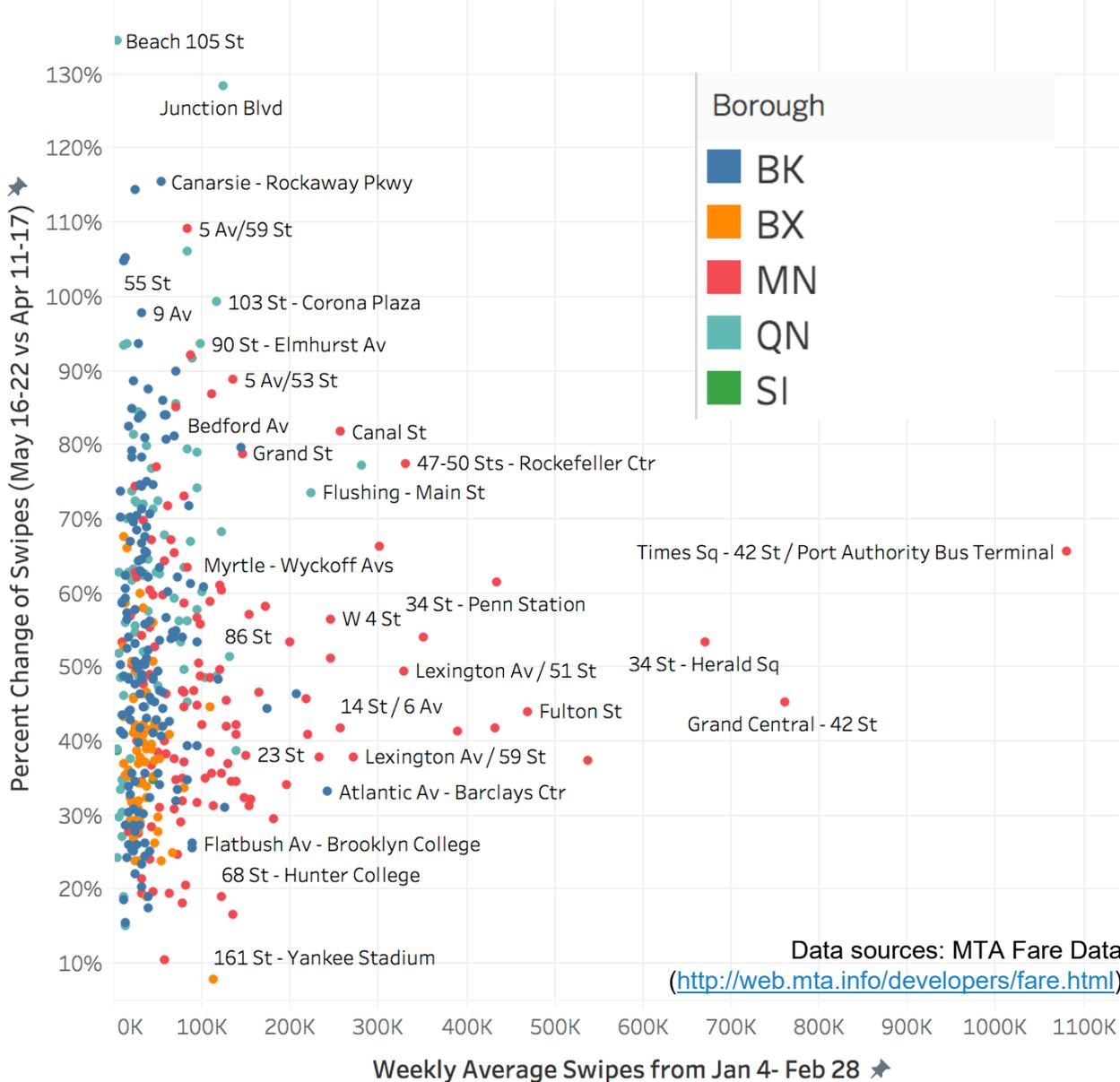
- The largest PM peak ridership declines were observed in the Manhattan Core, where the majority of jobs are located.
- The trough week of April 14<sup>th</sup> shows some Manhattan Core activity, and some larger transit hubs in Brooklyn and Queens.
- The week of May 26<sup>th</sup>, the most recent data available, shows dramatic ridership increases across much of Manhattan, Downtown Brooklyn, Jackson Heights, Flushing, and Jamaica.

### WEEKDAY PM PEAK AVERAGE

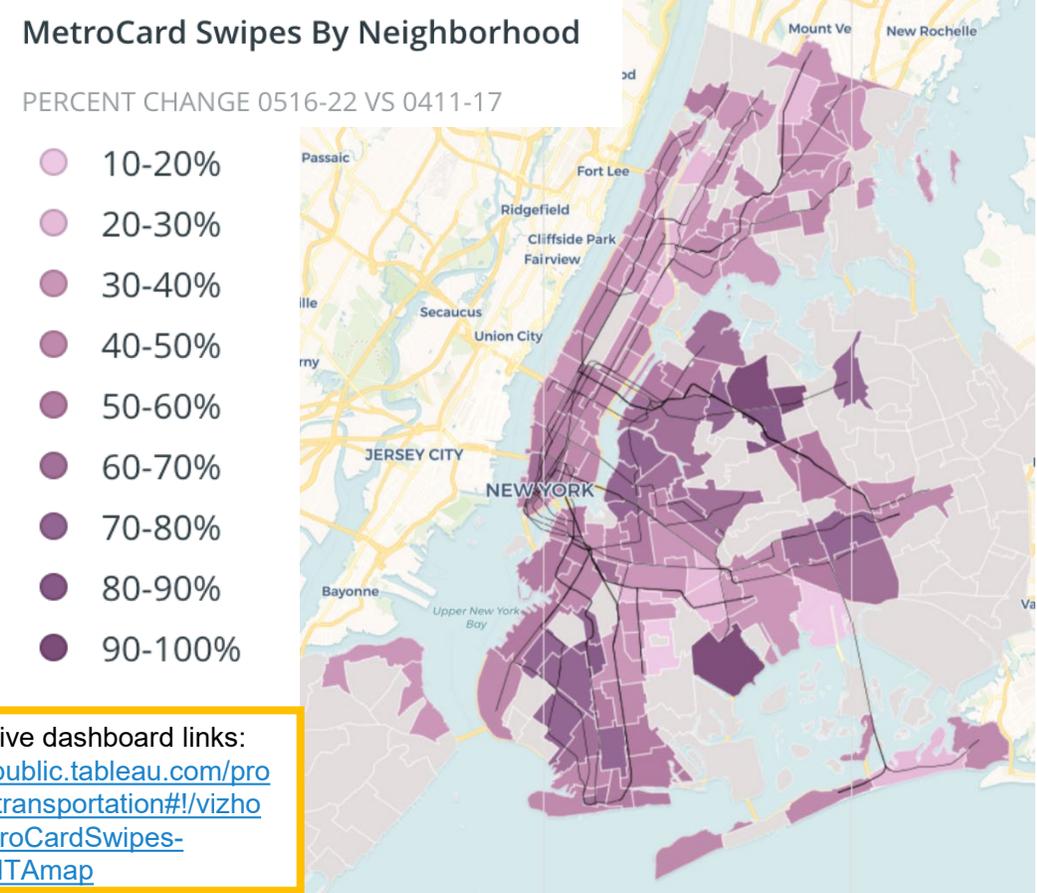
- 0-500
- 501-1000
- 1001-1500
- 1501-2000
- >2000

# MetroCard Swipe Changes since lowest point

Percent Change of MetroCard Swipes by Station (May 16-22 vs. Apr 11-17)



Percent Change of MetroCard Swipes by Neighborhood (May 16-22 vs. Apr 11-17)



Interactive dashboard links:  
<https://public.tableau.com/profile/dcptransportation#!/vizhome/MetroCardSwipes-NTAs/NTAmap>

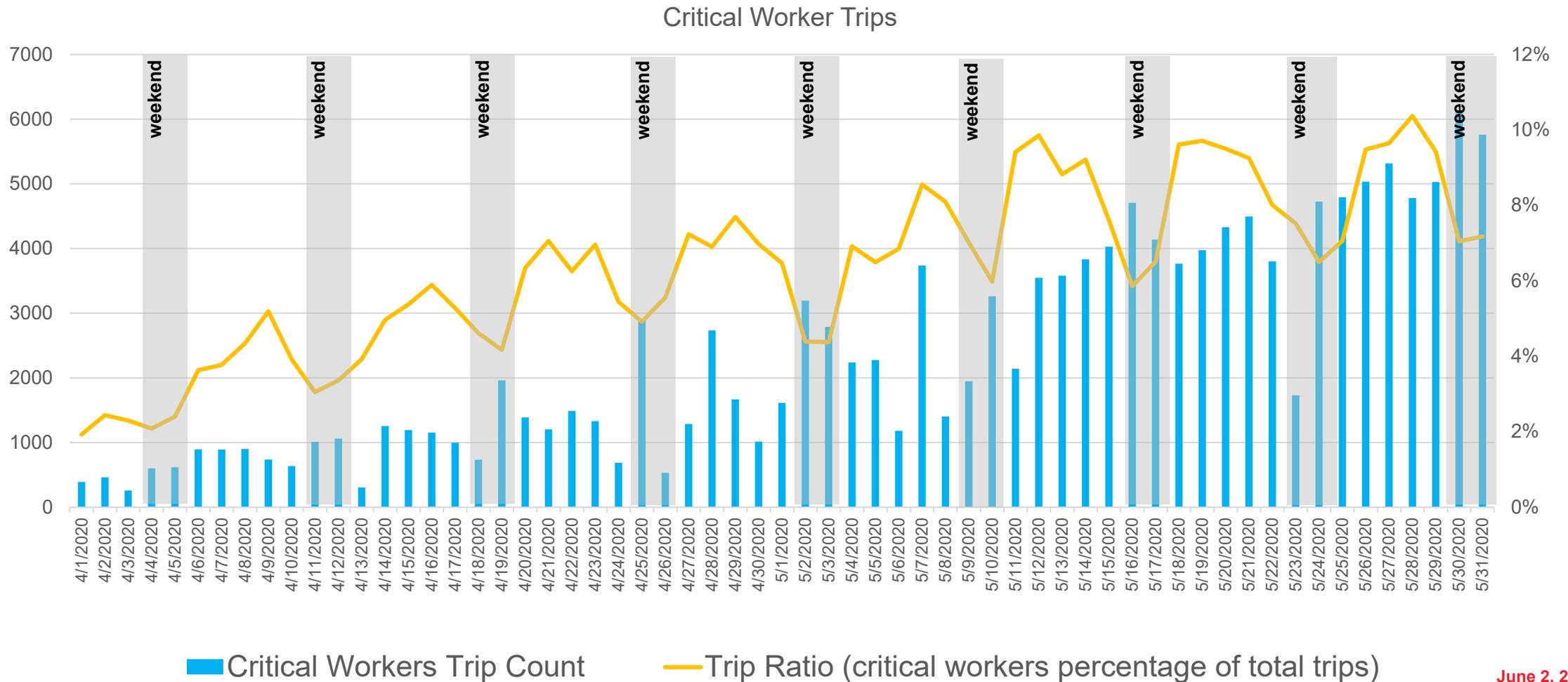
- Stations with fewer total MetroCard swipes during the week of April 11 are generally seeing greater percent increases in ridership, and are mostly in Brooklyn and Queens.
- As seen by aggregating station-level changes to the neighborhood (NTA) level, Queens and South Brooklyn experienced the greatest increases in ridership since the system's lowest ridership week of April 11-17.

# Citi Bike: Critical Workers

- On April 1st, Citi Bike launched an initiative to give free annual memberships to critical workers, including first responders (e.g. NYPD, FDNY, EMS), along with healthcare and transit workers. To further support critical healthcare workers, the program also launched valet resources at Citi Bike stations directly adjacent to hospitals that had seen significant ridership increases during the COVID-19 crisis.
- Throughout April and May, DOT distributed over 20,000 annual memberships to critical workers and over 146,000 trips were taken by these riders.
- On May 4th, Citi Bike began expanding with 100 new stations in Upper Manhattan and the Bronx, with a focus on uptown hospitals.

# Citi Bike Critical Workers Overview

- While the total number of Citi Bike trips by critical workers has been increasing, they represent between 7 and 10 percent all Citi Bike trips.

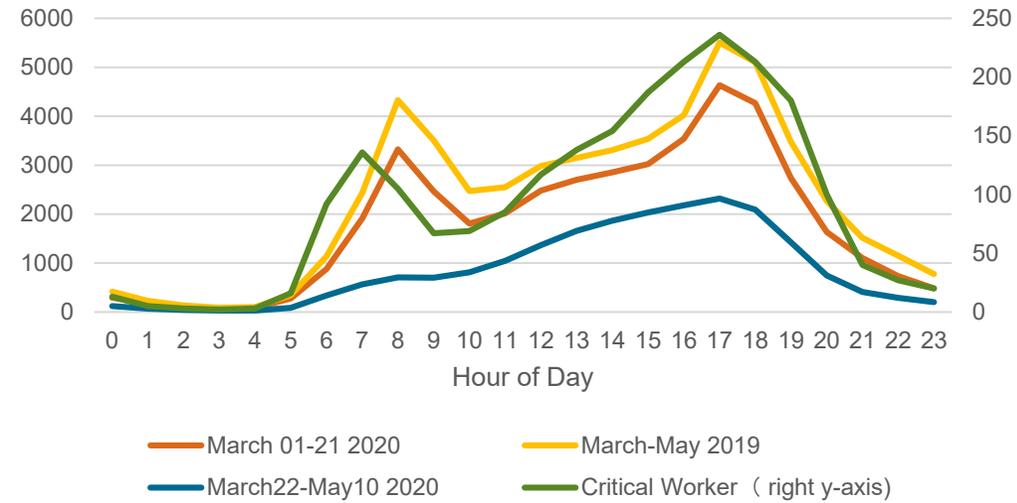


# Citi Bike Station Activity- Critical Worker

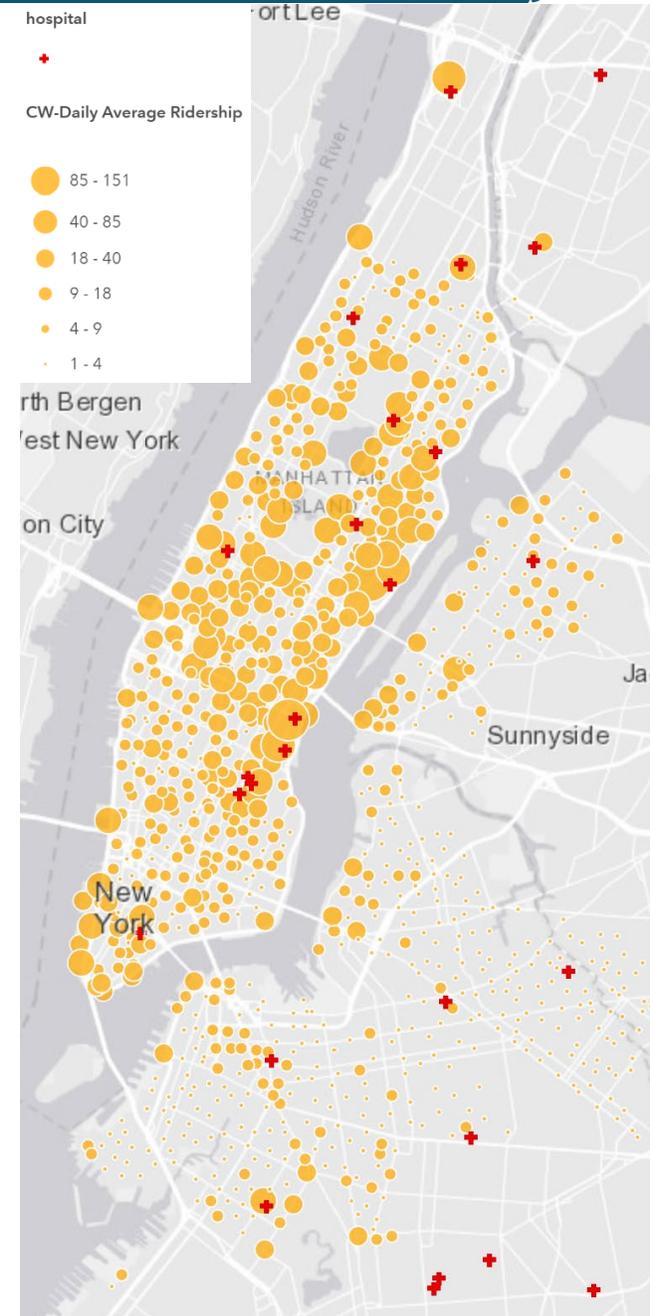
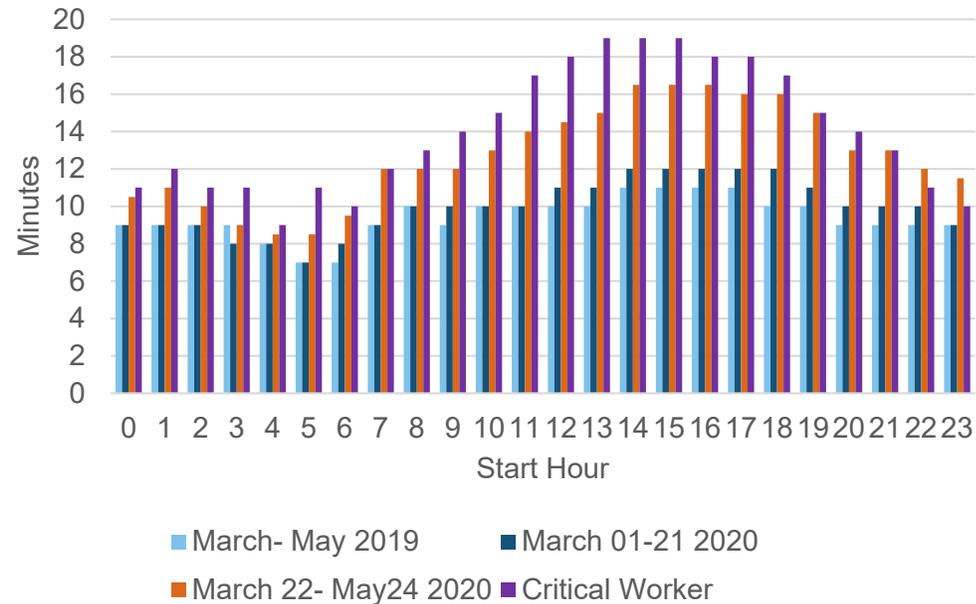
## Station Activity : Pick ups & Drop offs

- Citi Bike trips made by Critical Workers often start or end at a hospital, as shown in the map on the right.
- Critical Worker trip patterns by time of day more closely resemble commute ridership patterns observed a year ago, rather than the smoother non-peak-oriented trip distribution currently observed among all riders.
- Critical Workers typically have longer average trips over other users of the system, particularly midday.

Average Daily Trips by Time of Day



Average Trip Duration By Time of Day



# Common Origin/Destination Pairings

## Origin Destination Average Daily Trips

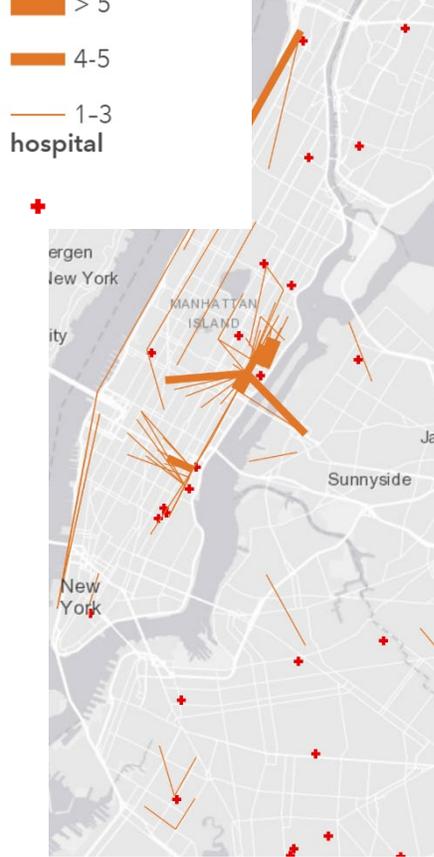
### Weekdays

All Users  
March 23-May 2020

Critical Workers

DAILY TRIP  
 10 < TRIP <= 15  
 15 < TRIP <= 20  
 TRIP > 20

Average Daily Trips  
 > 5  
 4-5  
 1-3  
 hospital



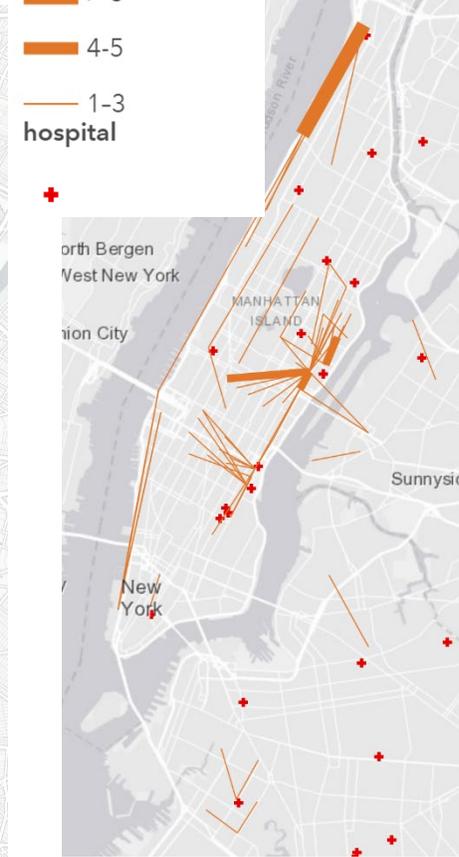
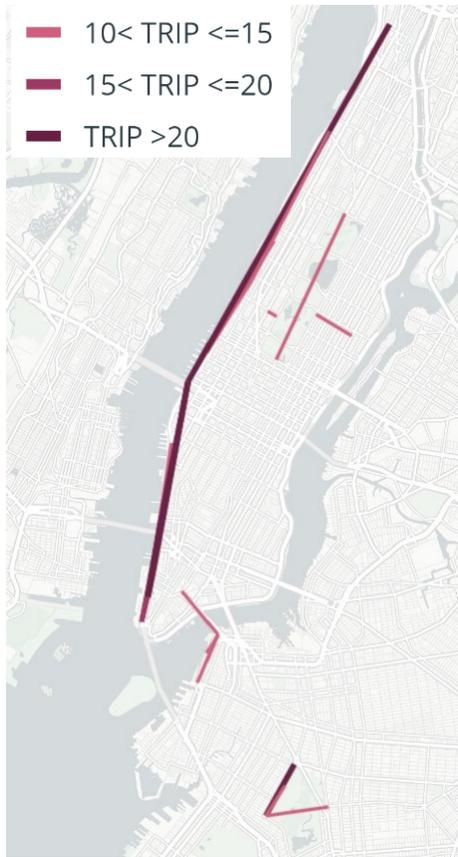
### Weekends

All Users  
March - May 2020

Critical Workers

DAILY TRIP  
 10 < TRIP <= 15  
 15 < TRIP <= 20  
 TRIP > 20

Average Daily Trips  
 > 5  
 4-5  
 1-3  
 hospital



- Common weekday and weekend origin/destination pairings have dropped off substantially under the PAUSE, but weekend pairings remain more prevalent than weekday trips. They are largely oriented around parks and greenways.
- Unlike patterns observed among general riders, critical worker trips don't vary substantially by day of week, and are largely oriented around hospitals.

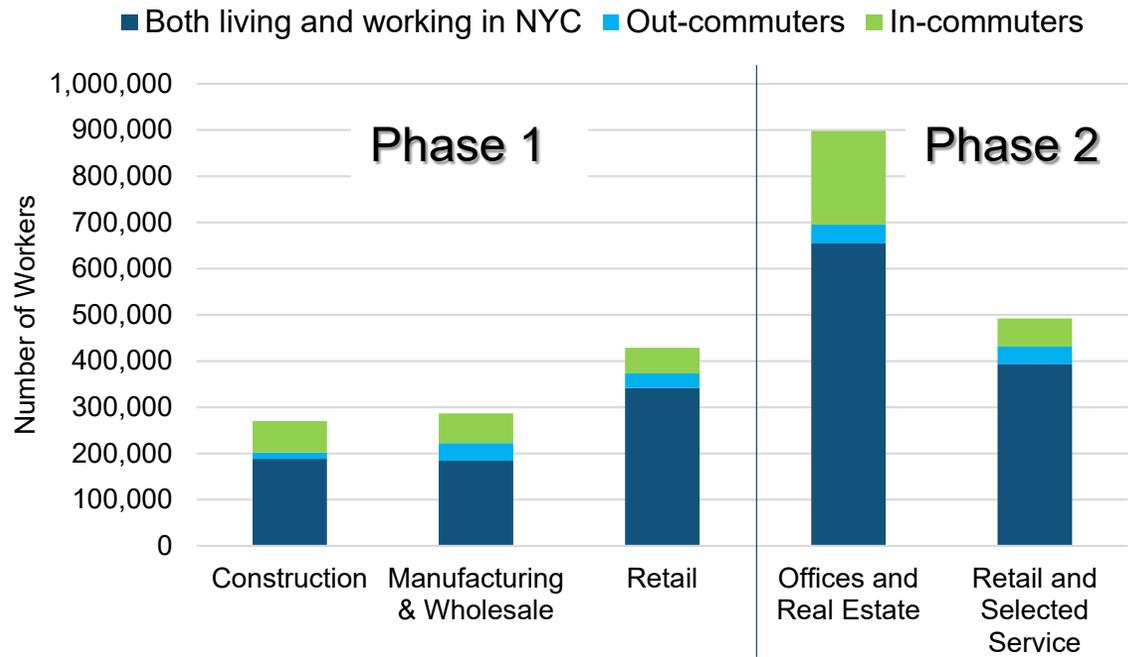
## **Preparing for a Phase 1 Reopening:**

*June 8 was announced as a probable start date for  
Phase 1 in NYC*

*The data on the following slides appeared in the weekly report from May 26, 2020, but has been updated to include regional in-commuters and NYC resident out-commuters to more comprehensively show the demand that the Phase 1 sectors had on our transportation system pre-COVID19.*

# Reopening Analysis Introduction

- The reopening analysis is conducted for industries indicated in New York reopening plan by phase (as listed on the right). Industries with relatively few workers are combined to improve data reliability.
- The universe of this analysis is workers who either live or work in NYC.



## Phase One (Anticipated Date: June 8)

- Construction
- Manufacturing
- Wholesale Trade
- Retail - (Limited to curbside or in-store pickup or drop off)
- Agriculture, Forestry, Fishing and Hunting (n/a in NYC)

## Phase Two

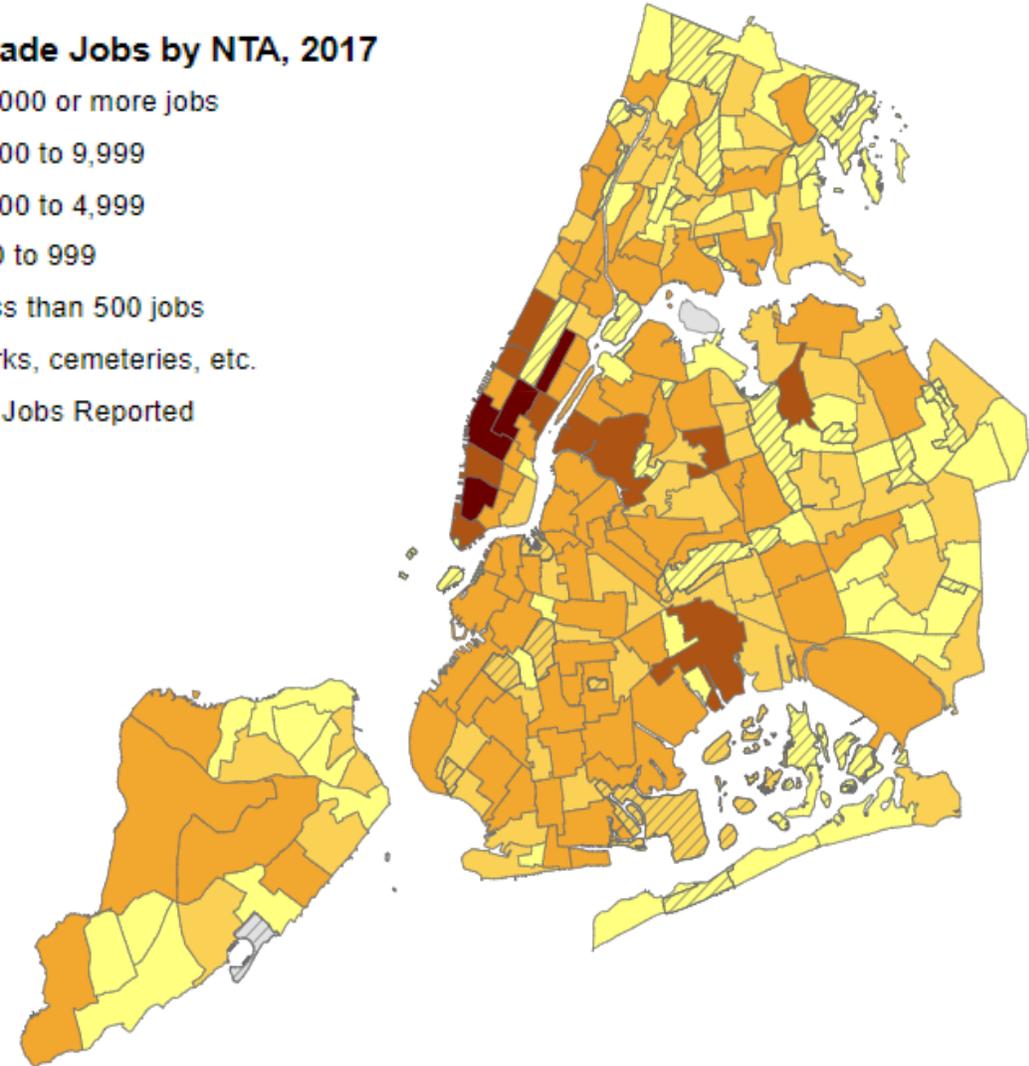
- Offices
- Real Estate
- Commercial Building Management
- Retail (in-store)
- Vehicle Sales, Leases, and Rentals
- Retail Rental, Repair, and Cleaning
- Hair Salons and Barbershops

Source: NY Forward. <https://forward.ny.gov>

**Preparing for a Phase 1 Reopening:  
Retail (curbside and delivery only)  
Construction  
Manufacturing & Warehousing**

- Retail jobs are found citywide, along local retail corridors, at major shopping centers like Gateway in East New York, Brooklyn, and in regional retail destinations like Soho and Flushing.
- Many retail establishments depend on tourists, visitors, and office workers, and are likely to see a slow pace of reopening. This is especially true of businesses in the Manhattan CBD.

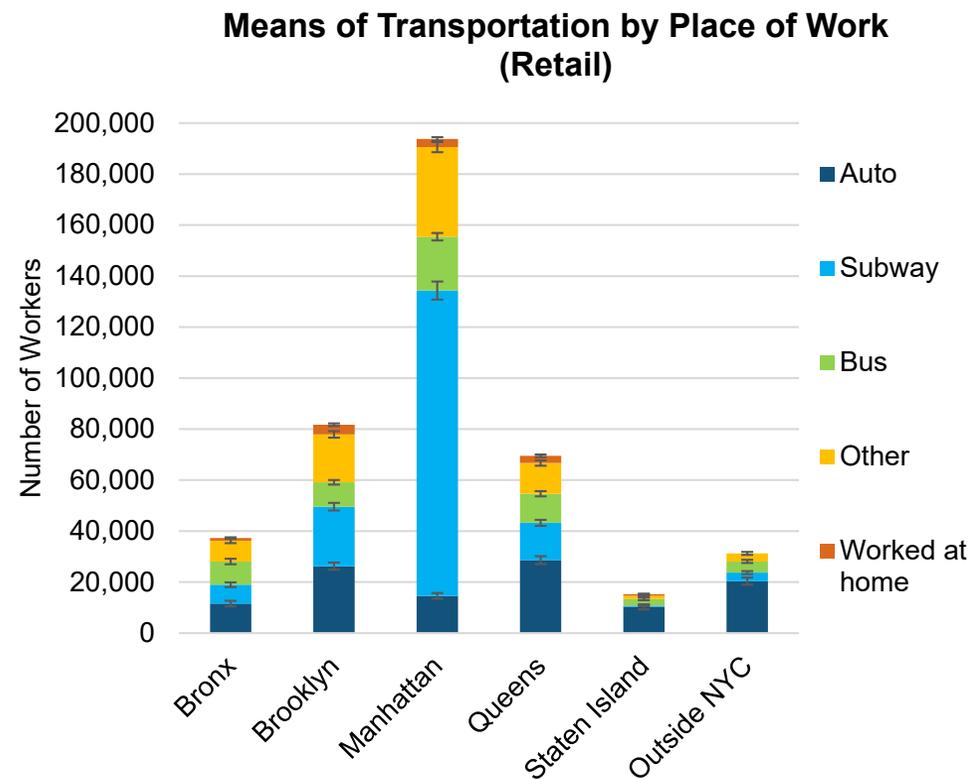
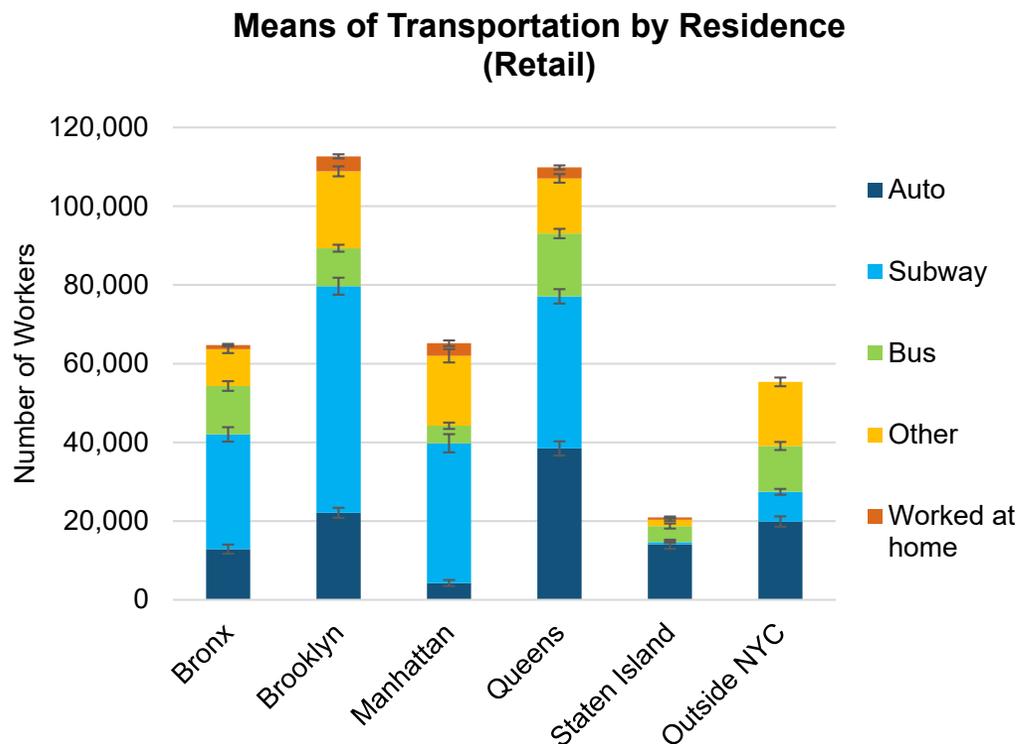
**Retail Trade Jobs by NTA, 2017**



Source: U.S. Census Bureau, Longitudinal Employer-Household Dynamics, All Private Jobs (JT02), 2017

# Means of Transportation to Work: Retail

- Pre-COVID-19 workforce: about 373,000 New Yorkers and 55,000 regional commuters work in the retail sector, with 46 percent of total NYC retail jobs in Manhattan.
- Pre-COVID-19 commuting: 40 percent commute via subway and 14 percent by bus.
- Forty percent of total retail workers are in “essential” categories and have thus been permitted to work during the Stay at Home order. Sixty percent of total retail workers are in "non-essential" categories eligible to return to work under Phase 1.
  - Essential retail businesses include grocery stores, pharmacies, gas stations, food & beverage, convenience stores, farmer’s markets, and hardware stores.



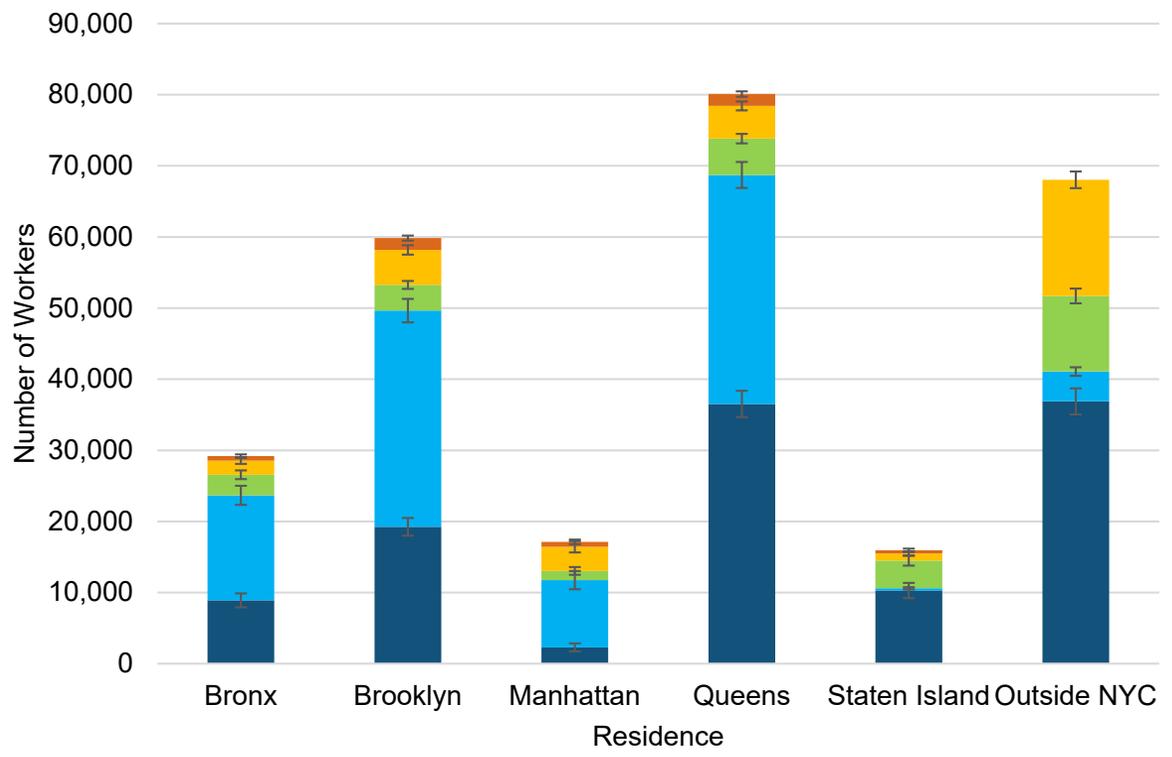
Data source: U.S. Census Bureau, 2014-2018 American Community Survey-- Public Use Microdata Sample. Universe: workers who either live or work in NYC. Other modes include streetcar, rail, ferry, taxi, motorcycle, bicycle, walked and other method.



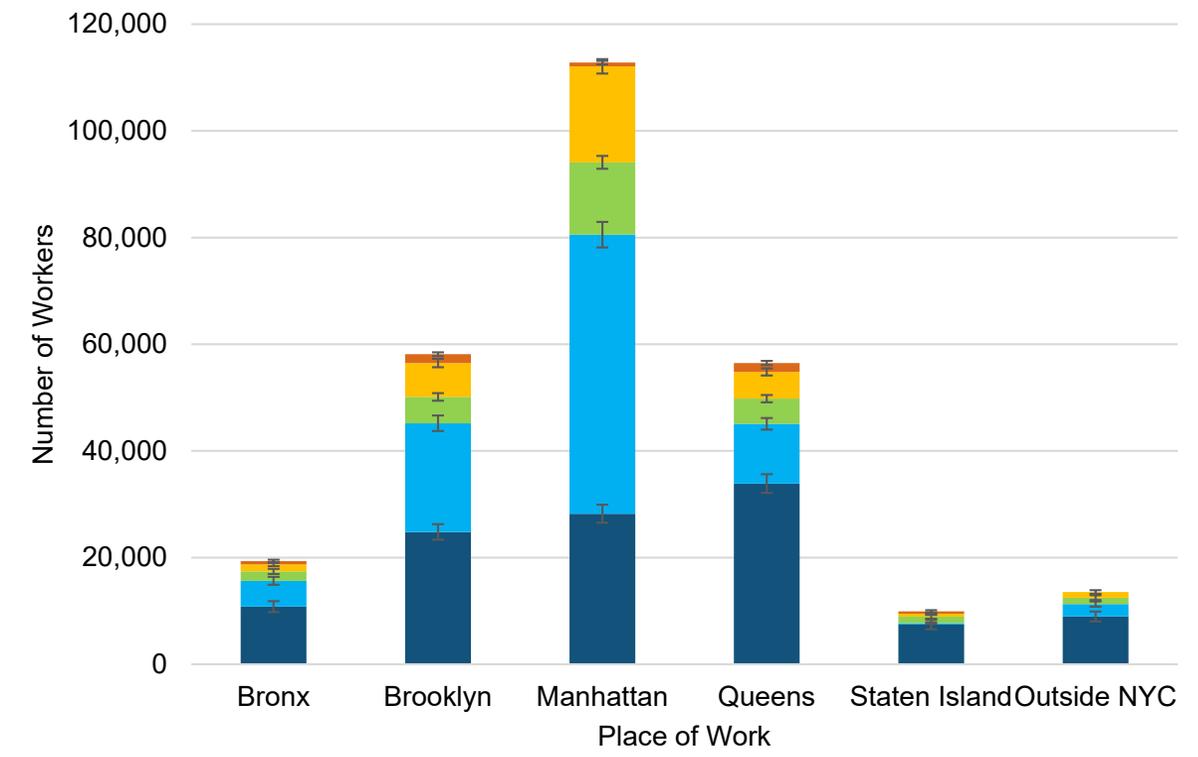
# Means of Transportation to Work: Construction

- Pre-COVID-19 workforce: about 200,000 New Yorkers work in the construction sector, and nearly 70,000 workers commute from elsewhere into the city.
- Pre-COVID-19 commuting: 34 percent commute via subway and 42 percent by car.
- Although Manhattan is a significant cluster, jobs are dispersed across the five boroughs.

### Means of Transportation by Residence (Construction)



### Means of Transportation by Place of Work (Construction)



■ Auto ■ Subway ■ Bus ■ Other ■ Worked at home

■ Auto ■ Subway ■ Bus ■ Other ■ Worked at home

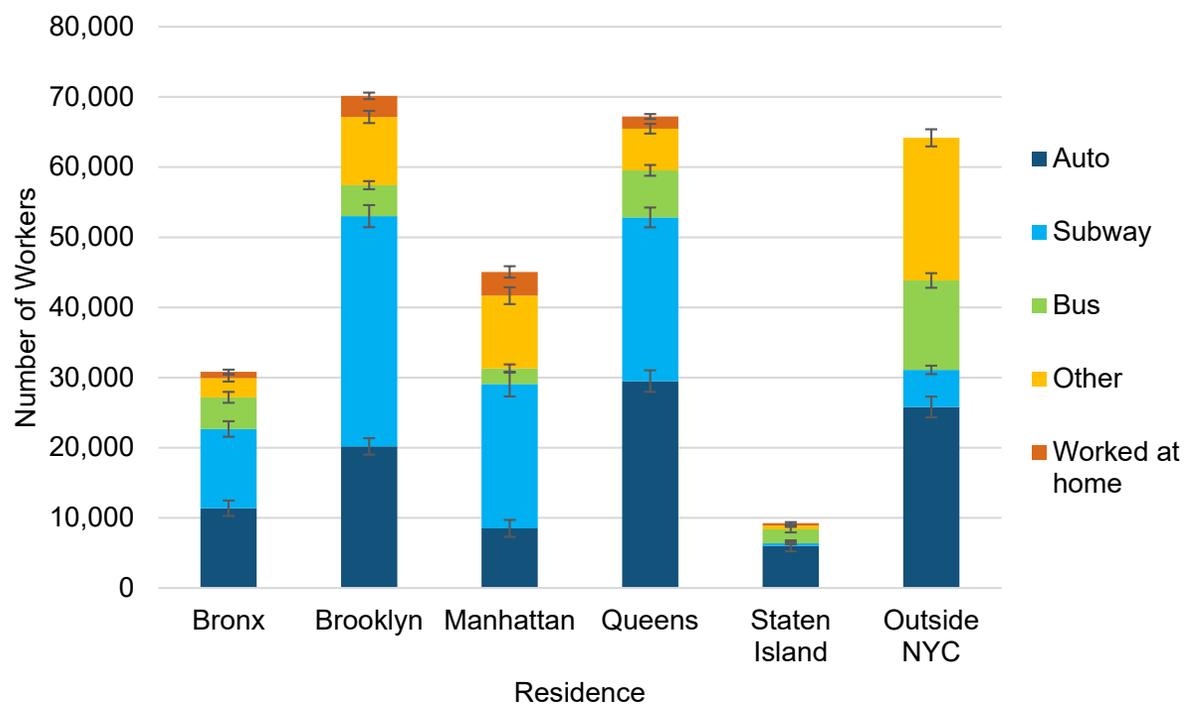
Data source: U.S. Census Bureau, 2014-2018 American Community Survey-- Public Use Microdata Sample. Universe: workers who either live or work in NYC. Other modes include streetcar, rail, ferry, taxi, motorcycle, bicycle, walked and other method.



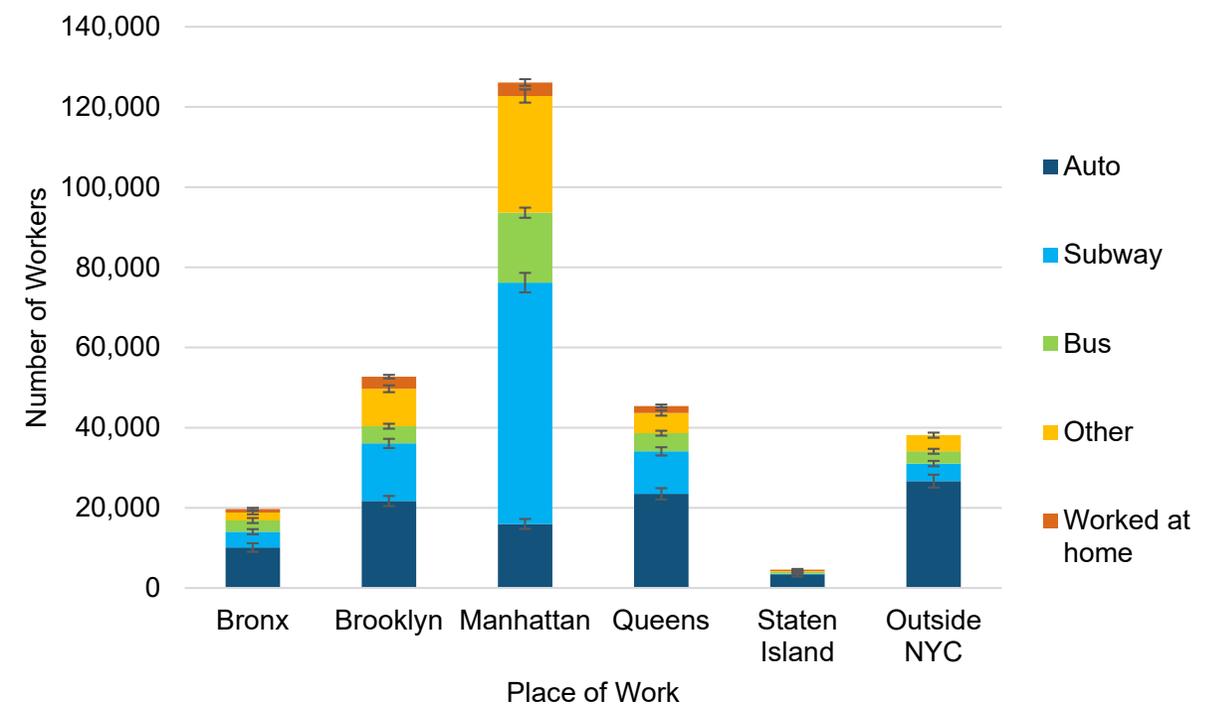
# Means of Transportation to Work: Manufacturing & Warehousing

- Pre-COVID-19 workforce: about 222,000 New Yorkers and 64,000 regional commuters worked in this sector across NYC, with majority in warehouse trade.
- Pre-COVID-19 commuting: approximately 35 percent commute by car, 33 percent by subway and 11 percent by bus.
- The largest proportion of jobs in this industry reported in Manhattan (approximately 44 percent) are primarily headquarters and other office jobs, and are likely to continue telework or remote reporting.
- Among workers in this industry not commuting to Manhattan, 21 percent commute by subway.

### Means of Transportation by Residence (Manufacturing & Warehousing)



### Means of Transportation by Place of Work (Manufacturing & Warehousing)



Data source: U.S. Census Bureau, 2014-2018 American Community Survey-- Public Use Microdata Sample. Universe: workers who either live or work in NYC. Other modes include streetcar, rail, ferry, taxi, motorcycle, bicycle, walked and other method.

# **Preparing for a Phase 2 Reopening:**

## **Offices and Real Estate**

**(Offices include Professional, Scientific, and Technical Services, Administrative and Support Services, Grantmaking and Giving Services, Social Advocacy Organizations, Civic and Social Organizations, Business, Professional, Labor, Political, and Similar Organizations )**

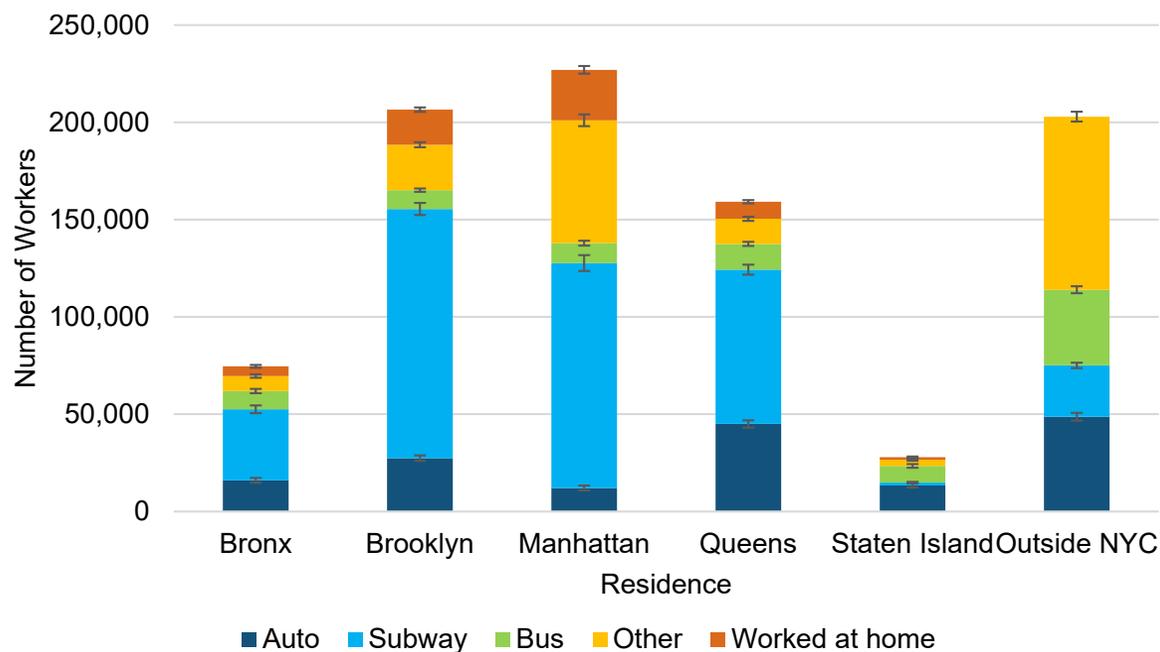
## **Retail (in-store) and Selected Services**

**(including Essential and In-Store Retail, Vehicle Sales, Leases, and Rentals, Retail Rental, Repair, and Cleaning, Hair Salons and Barber Shops)**

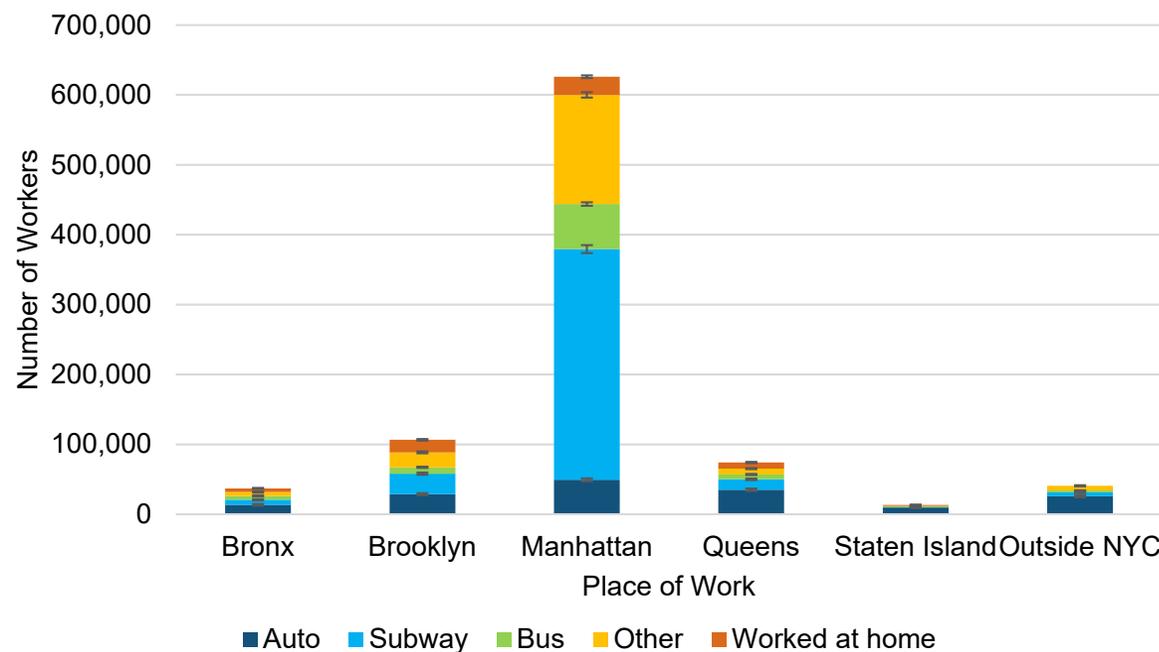
# Means of Transportation to Work: Offices and Real Estate

- Pre-COVID-19 workforce: about 695,000 New Yorkers and 203,000 regional commuters work in the Offices and Real Estate sectors, 70 percent of whom work in Manhattan.
- Pre-COVID-19 commuting: Among NYC workers who commute from in-city or the region, 43 percent commute via subway, 10 percent by bus, and 18 percent by car.

**Means of Transportation by Residence  
(Offices and Real Estate)**



**Means of Transportation by Place of Work  
(Offices and Real Estate)**



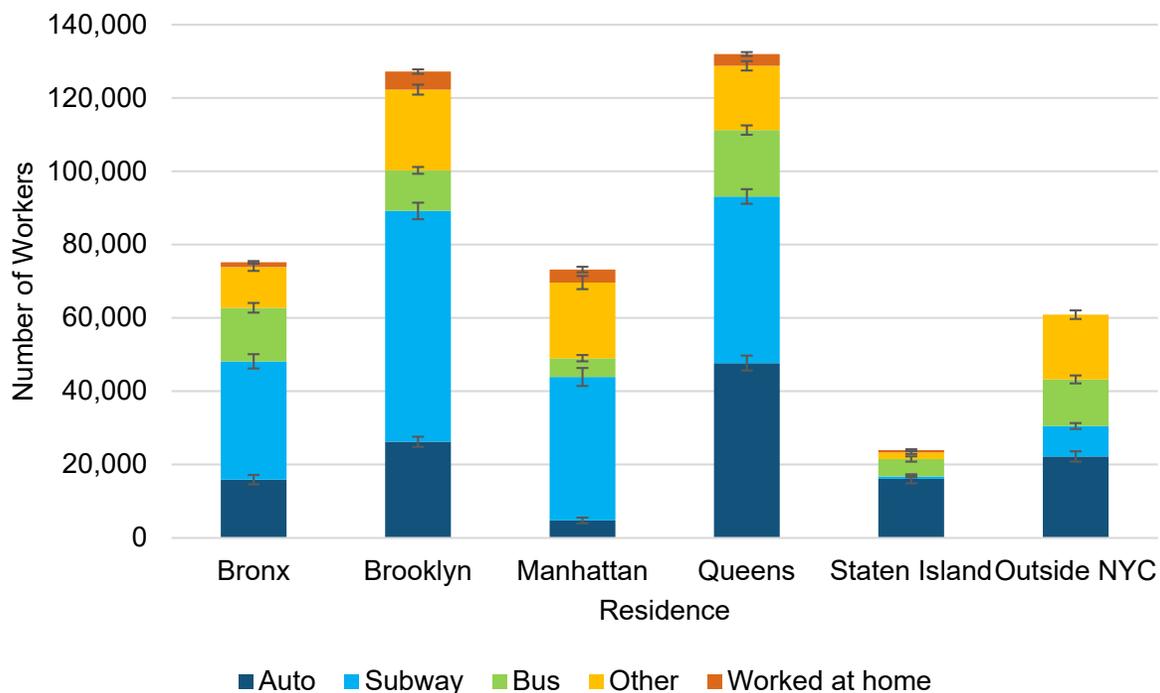
Data source: U.S. Census Bureau, 2014-2018 American Community Survey-- Public Use Microdata Sample. Universe: workers who either live or work in NYC. Other modes include streetcar, rail, ferry, taxi, motorcycle, bicycle, walked and other method.



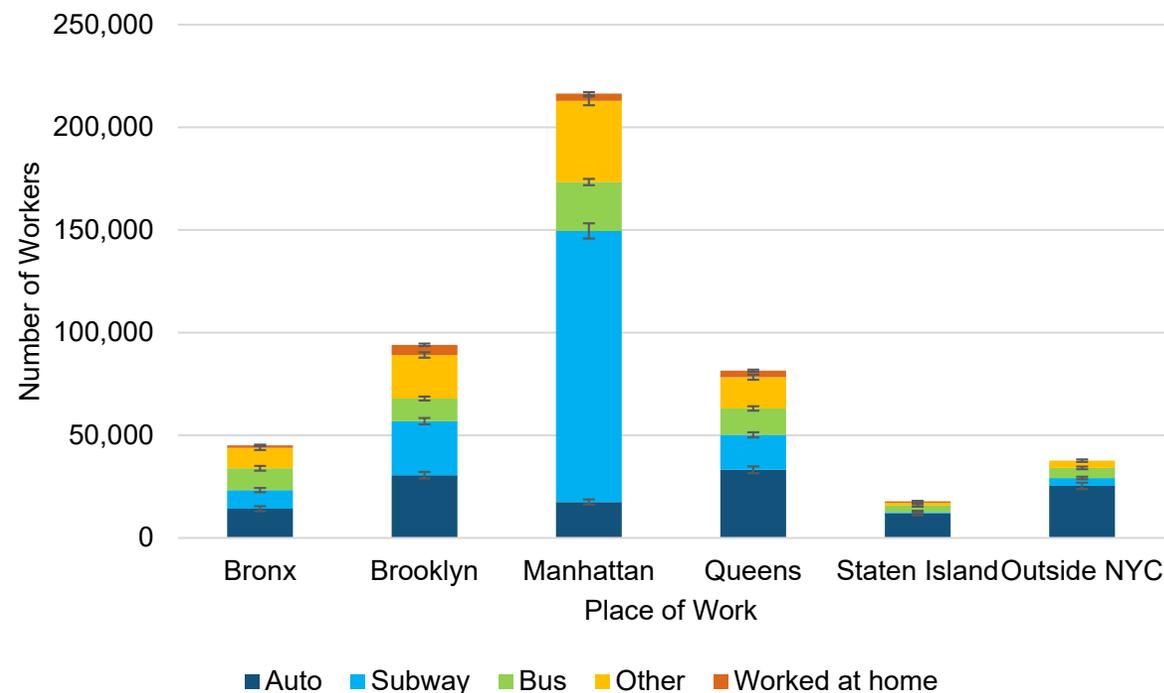
# Means of Transportation to Work: Retail and Selected Services

- Pre-COVID-19 workforce: about 431,000 New Yorkers and 61,000 regional commuters work in the Retail and Selected Services sectors, 44 percent of whom work in Manhattan.
- Pre-COVID-19 commuting: Among NYC workers who commute from in-city or the region, 38 percent commute via subway, 13 percent by bus, and 27 percent commute by car.

### Means of Transportation by Residence (Retail and Selected Services)



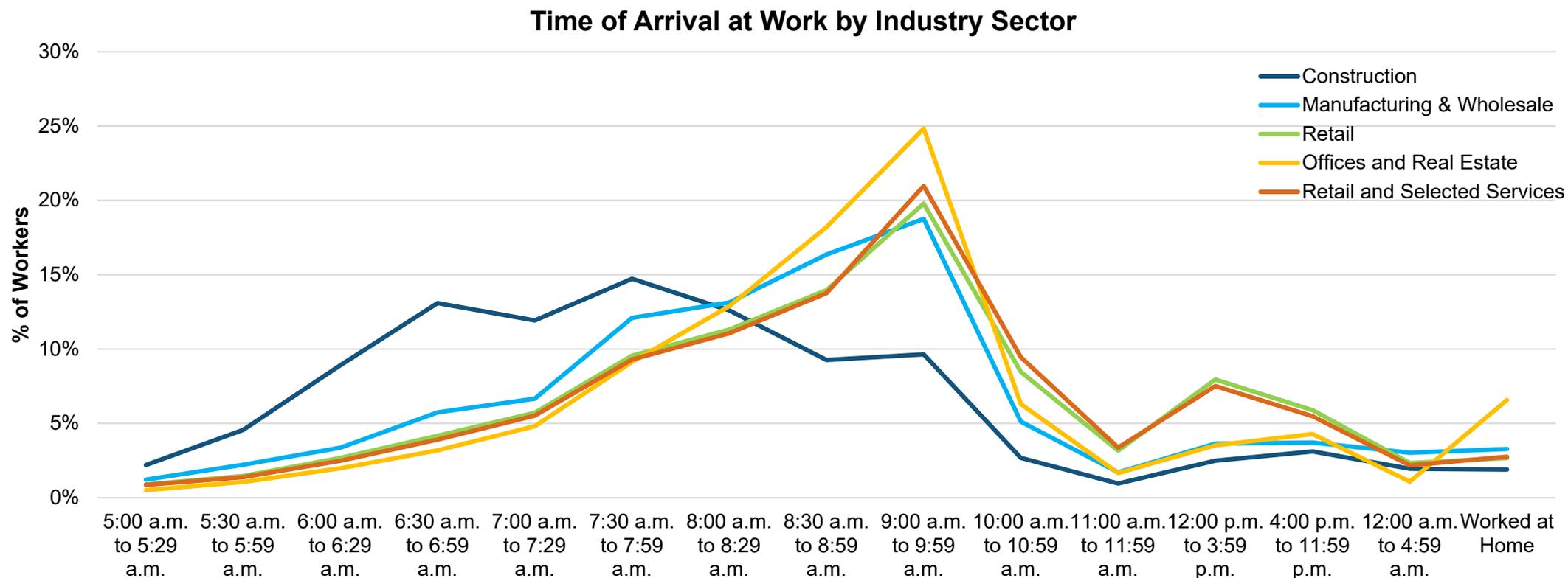
### Means of Transportation by Place of Work (Retail and Selected Services)



Data source: U.S. Census Bureau, 2014-2018 American Community Survey-- Public Use Microdata Sample. Universe: workers who either live or work in NYC. Other modes include streetcar, rail, ferry, taxi, motorcycle, bicycle, walked and other method.

# Time of Arrival at Work by Industry Sector

- Phase 1 industries, specifically construction and manufacturing & wholesale, are substantially less oriented around a 9-10am peak arrival hour than are the Phase 2 sectors.
- The Phase 1 industries also represent a much smaller share of the city's overall workforce.
- The greatest strain on the city's transportation system is expected as a result of Phase 2, and we are continuing to work to anticipate travel demand.



# Timeline



# New York COVID19 Pandemic Timeline

- March 1<sup>st</sup>, 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 7<sup>th</sup>, 2020: Governor Cuomo **declares state of emergency** <https://www.nytimes.com/2020/03/07/nyregion/coronavirus-new-york-queens.html>
- March 8<sup>th</sup>, 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 10<sup>th</sup>, 2020: Governor Cuomo declares **containment zone in New Rochelle** from March 12<sup>th</sup> through 25<sup>th</sup> <https://www.nytimes.com/2020/03/10/nyregion/coronavirus-new-york-update.html>
- March 11<sup>th</sup>, 2020: Governor Cuomo announces **closures of CUNY and SUNY schools** from March 12<sup>th</sup>-19<sup>th</sup>, moving to online classes after that for the rest of the semester
- March 12<sup>th</sup>, 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 15<sup>th</sup>, 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 17<sup>th</sup> <https://www.nytimes.com/2020/03/15/nyregion/new-york-coronavirus.html>
- March 18<sup>th</sup>: Governor Cuomo announces that **50% of non-essential employees** must work from home
- March 19<sup>th</sup>: 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 20<sup>th</sup>: Governor Cuomo announces **statewide stay at home rules**, effective the evening of the 22<sup>nd</sup>. **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 23<sup>rd</sup>: NYC Ferry modifies weekday service
- March 25<sup>th</sup>: MTA announces service reduction to **Essential Service** plan <https://abc7ny.com/6047040/>
- March 27<sup>th</sup>: The Governor halts **non-essential construction** <https://thecity.nyc/2020/03/cuomo-calls-off-non-essential-construction-statewide.html>
- April 30<sup>th</sup>: Governor Cuomo announces **impending overnight subway shutdowns** from 1:00am – 5:00am. <https://www.nytimes.com/2020/04/30/nyregion/subway-close-cuomo-coronavirus.html>
- May 6<sup>th</sup>: Nightly 1am-5am subway shutdown begins
- May 26<sup>th</sup>: New York Stock Exchange reopens trading floor after 2-month closure. <https://www.npr.org/sections/coronavirus-live-updates/2020/05/26/862082828/new-york-stock-exchange-reopens-trading-floor-after-2-month-closure>
- May 29<sup>th</sup>: Governor Cuomo announces that New York City is expected to begin Phase 1 of reopening on Monday, June 8<sup>th</sup>. <https://www.nytimes.com/2020/05/29/nyregion/coronavirus-new-york-live-updates.html>