

Citi Bike Program Analysis Q2 2019



AUGUST 1

GWARL201902DATA03

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Program Background

Launched in 2013, Citi Bike is a privately owned public bicycle sharing system serving the New York City boroughs of Manhattan, Queens, and Brooklyn, as well as Jersey City, New Jersey. It is operated by Motivate (formerly Altia Bicycle Share) and named for its primary sponsor, Citigroup. In 2018, Citi Bike was purchased by rideshare company Lyft.

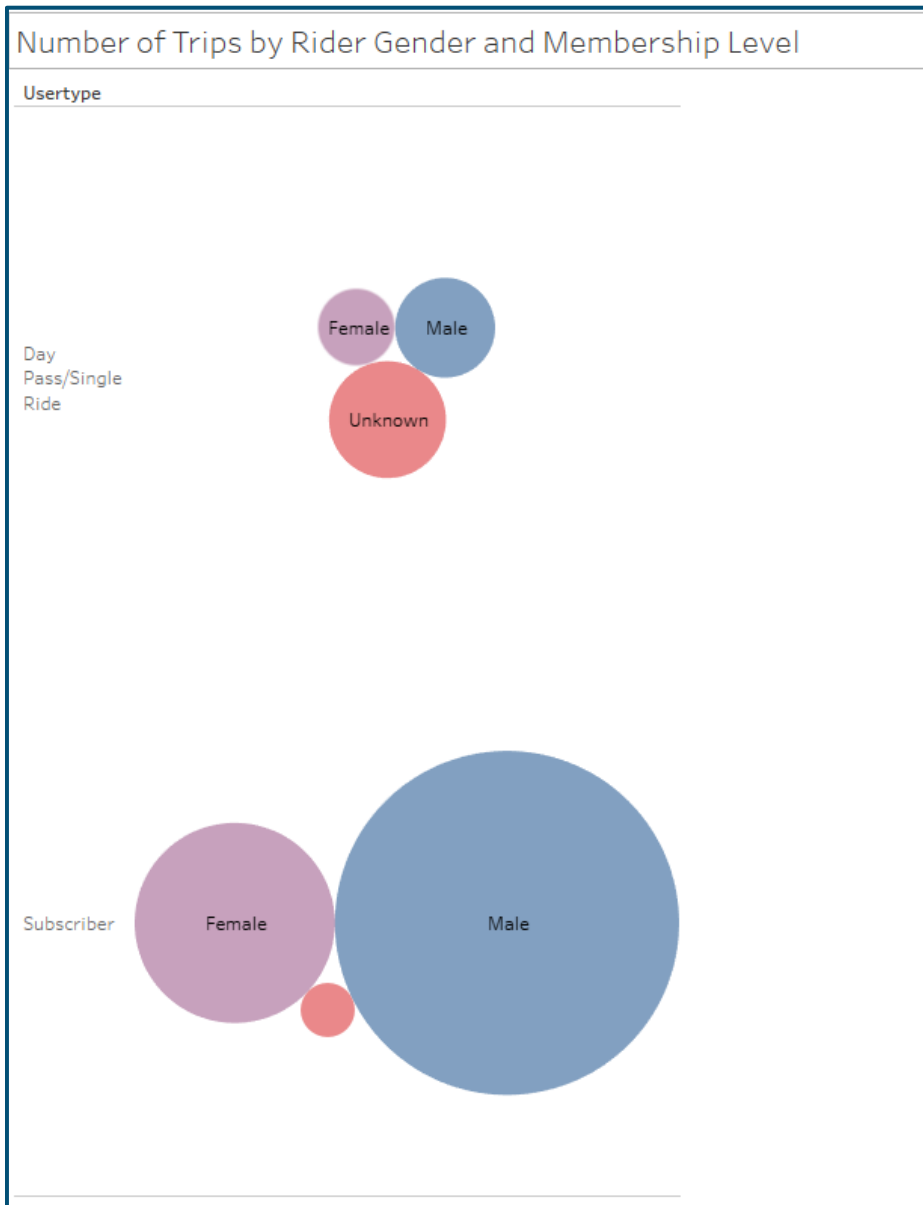
Citi Bike boasts 706 stations and 12,000 bikes (July 2017); it has 130,000 annual subscription members, and its riders take an average of 38,491 rides each day. It is the largest bike sharing service in the country. This document will examine its operations for the period of April-June 2019.

Methodology and Limitations

This report is based on subscription-holder and single-purchase customer data and on trip logs collected between April 1 and June 30, 2019.

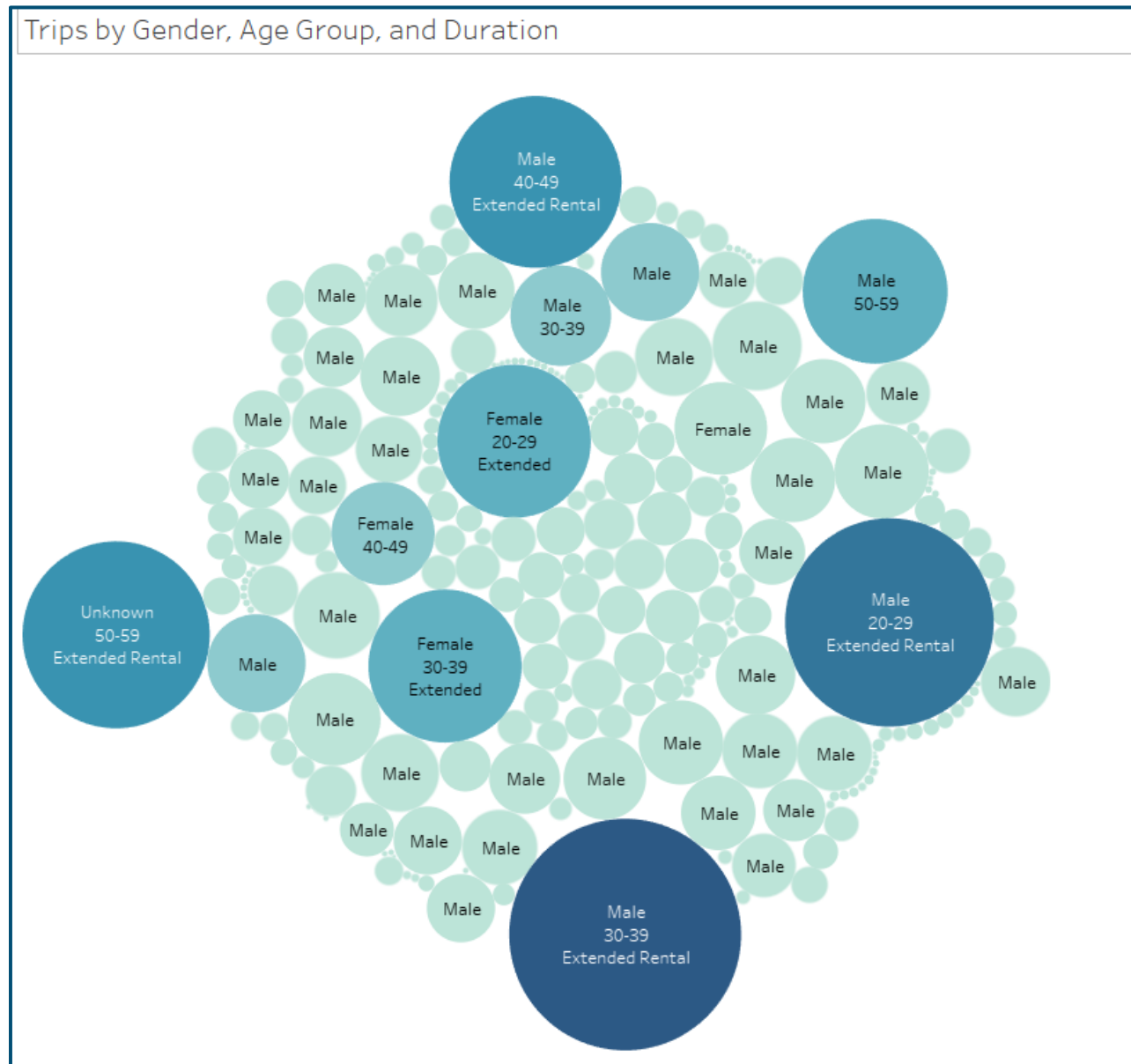
- Riders are asked to self-identify when registering, and in most cases, there is no verification. There isn't any process to detect incorrect entries.
- Single trip and day pass purchases can be made at walk-up kiosks; these self-service transactions are more prone to incomplete or inaccurate rider data.
- This data was cleaned by dropping obvious wrong records, such as those with birth years in the 1800's or rides lasting less than one second.
- The data was further refined to focus on mid- and long-term rentals lasting between 15 and 720 minutes. By discarding the extremely short and extremely long rides, we can focus on the majority, where small changes and trends can have a big impact.

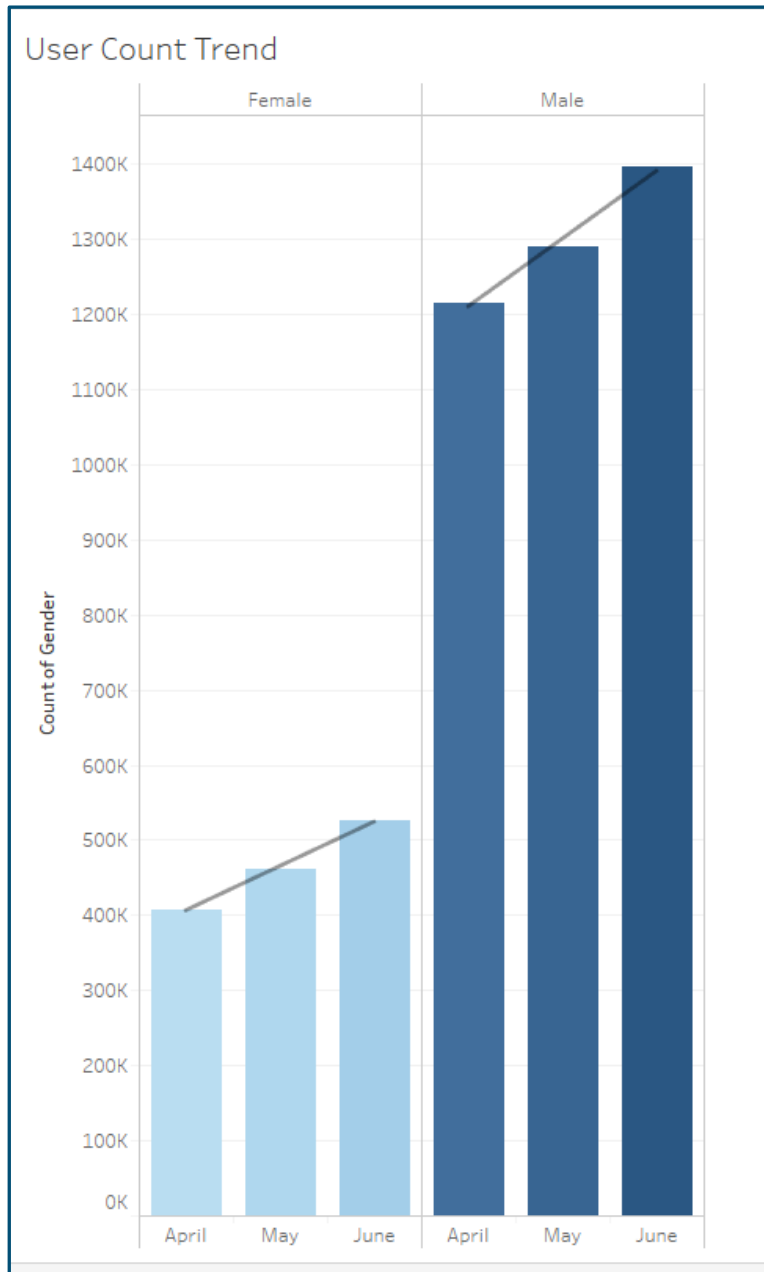
Rider Demographics



There are over 130,000 riders in the Citi Bike system. During the monitoring period, these riders took approximately 3.5 million rides. The majority of rides were taken by subscription-holders.

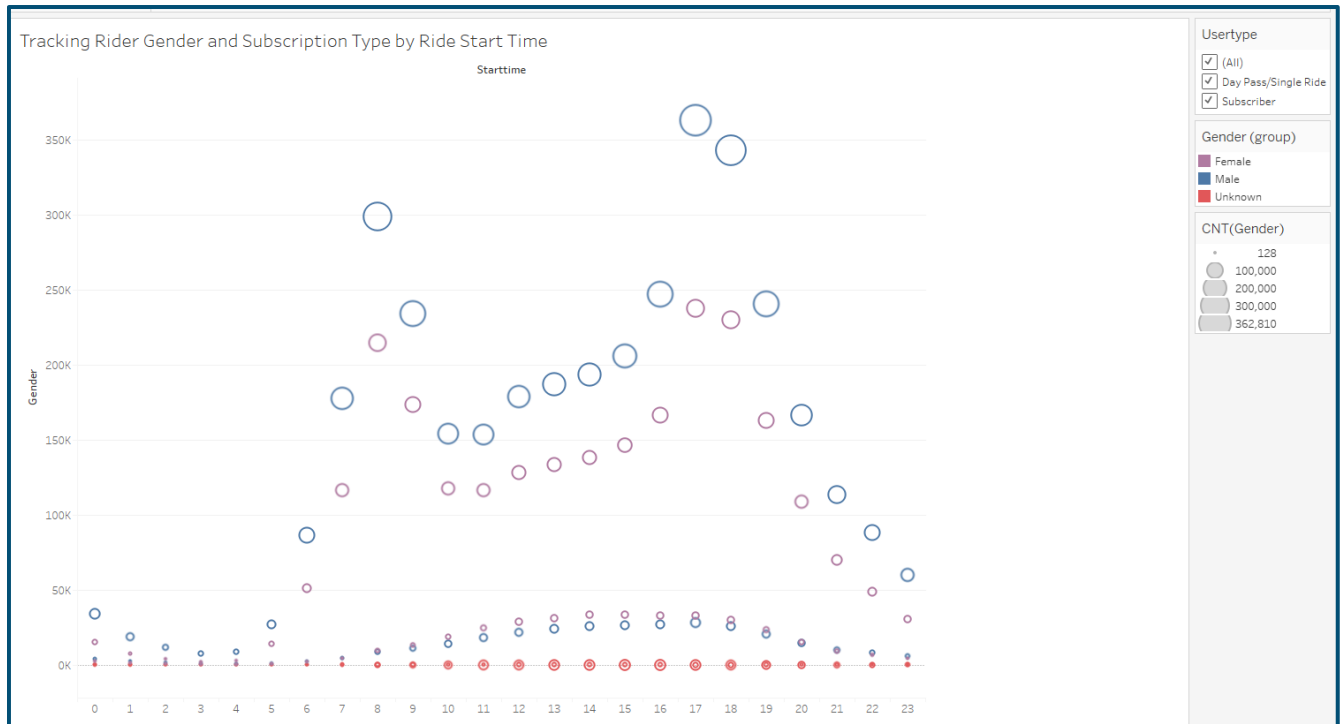
Riders are overwhelmingly males between the ages of 20-49. The “Unknown” gender category applies to riders who did not declare a gender in their account profiles. This is more common among single-ride/day pass riders who create accounts at self-service accounts.





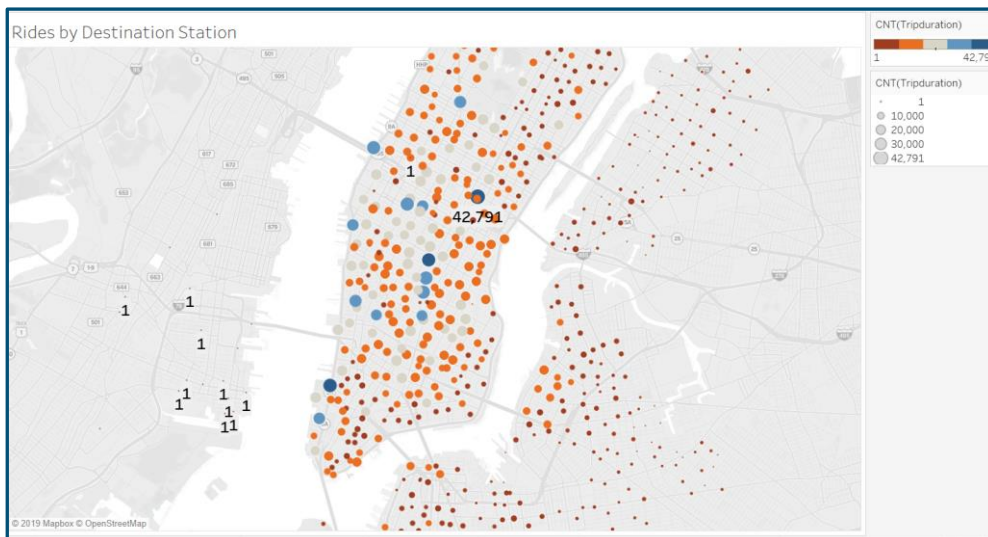
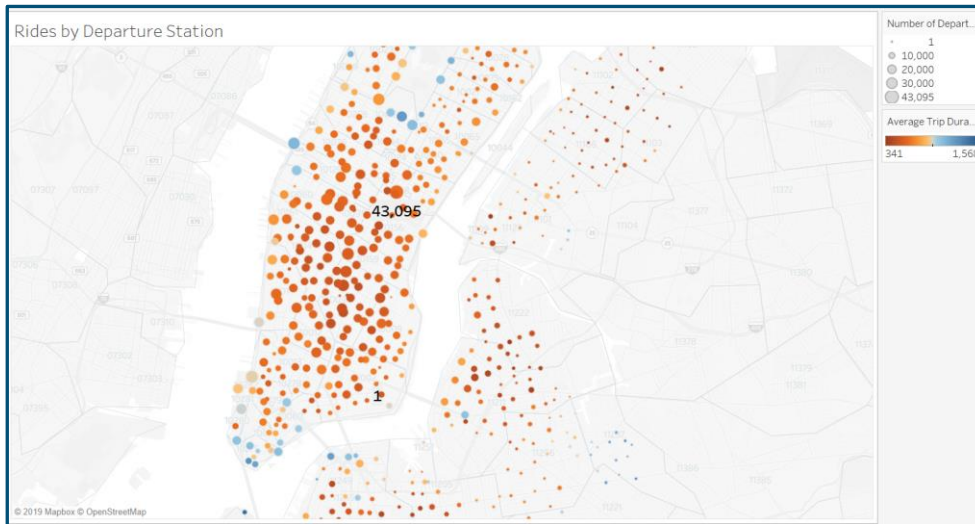
Female ridership is trending up steadily, but at a rate lower than the uptick in male ridership. Campaigns to increase female ridership should be fine tuned to provide maximum benefit.

Usage patterns throughout the day are fairly similar between the user types (subscriber or day-pass) and the gender groups.



Route Metrics

These heatmaps show the concentration of rides that start or end at specific stations. The patterns are similar, but not identical.



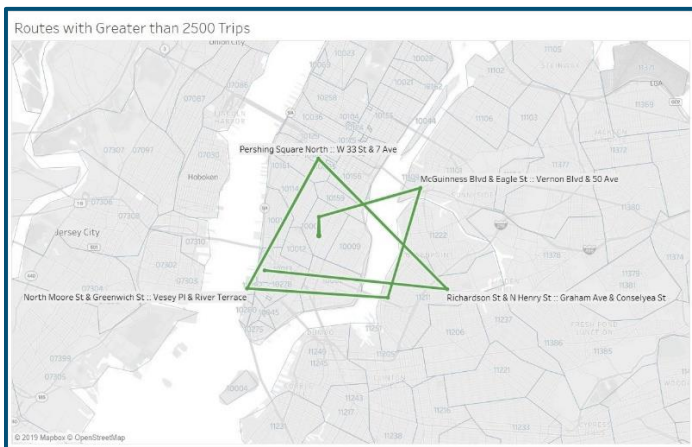
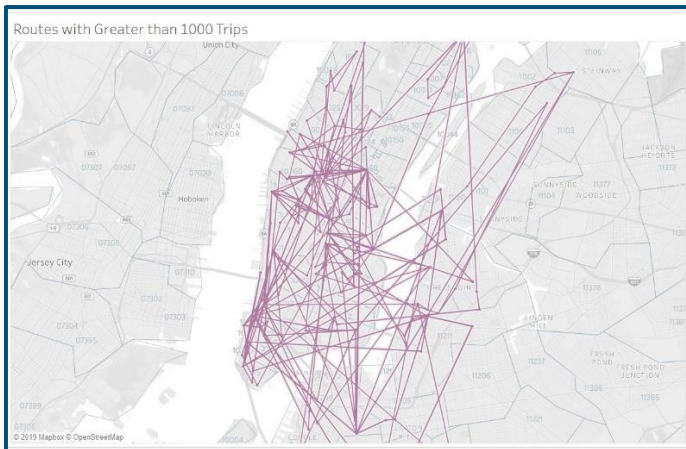
The busiest and slowest stations are as follows:



While there is substantial overlap between the busiest arrival and busiest departure stations, the same can't be said for the stations with the fewest arrivals and departures. Note that the "fewest arrivals" stations each registered only a single arrival during the monitoring period.

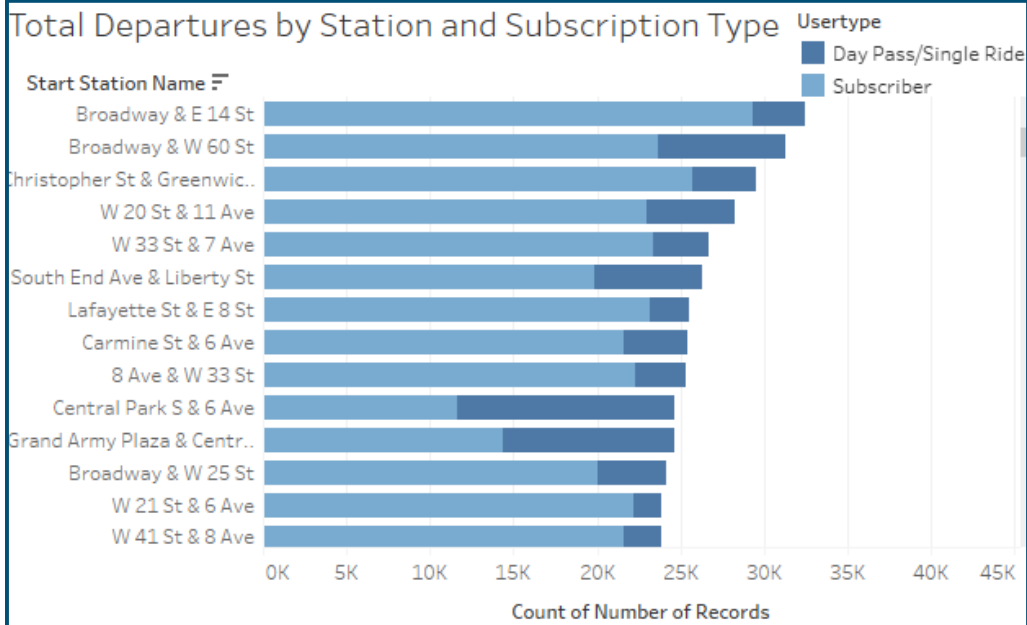
There is a loose similarity between the most popular routes at specific levels--- 1000, 1500, and 2500 trips in the monitoring period. All of the most popular routes have at

least one end point in Midtown Manhattan.

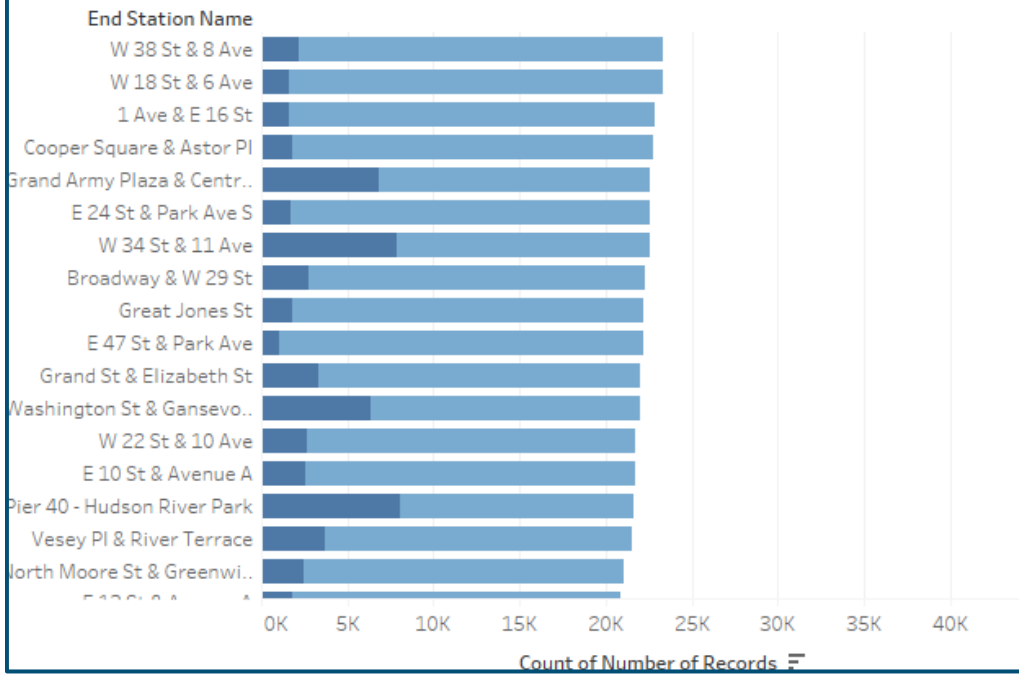


The busiest route is between the Pershing Square North station and W. 33rd Street at 7th Avenue. This is a relatively short route that connects the Grand Central Station neighborhood with the Madison Square Garden/Penn Station area, and bike sharing is a popular choice for commuters along this route.

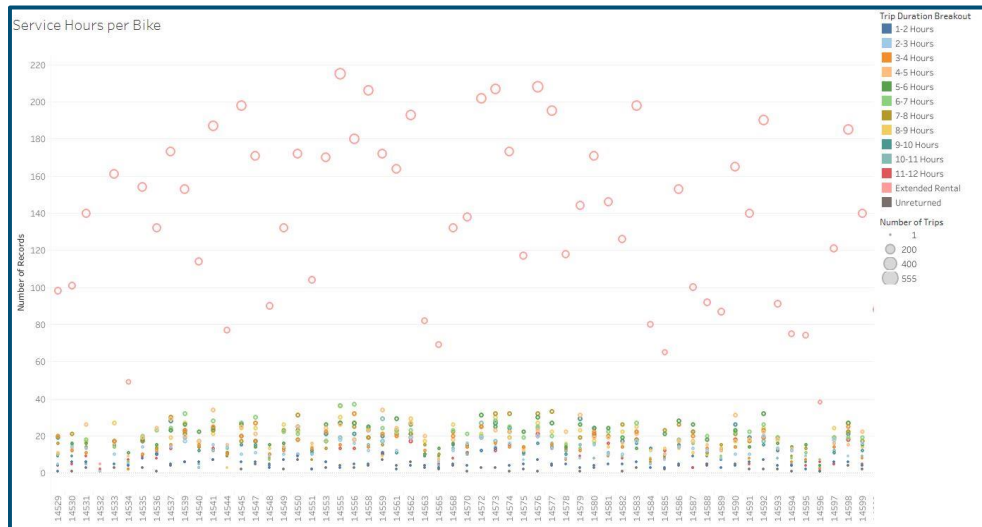
Breakouts of trips by customer type follow the general distribution of account types except in popular tourist locations, where we see a spike in the ratio of day pass/single trip users. These trends may be attributed to a scarcity of traditional transportation (taxis) as well as visitors who are bikeshare subscribers in their home cities.



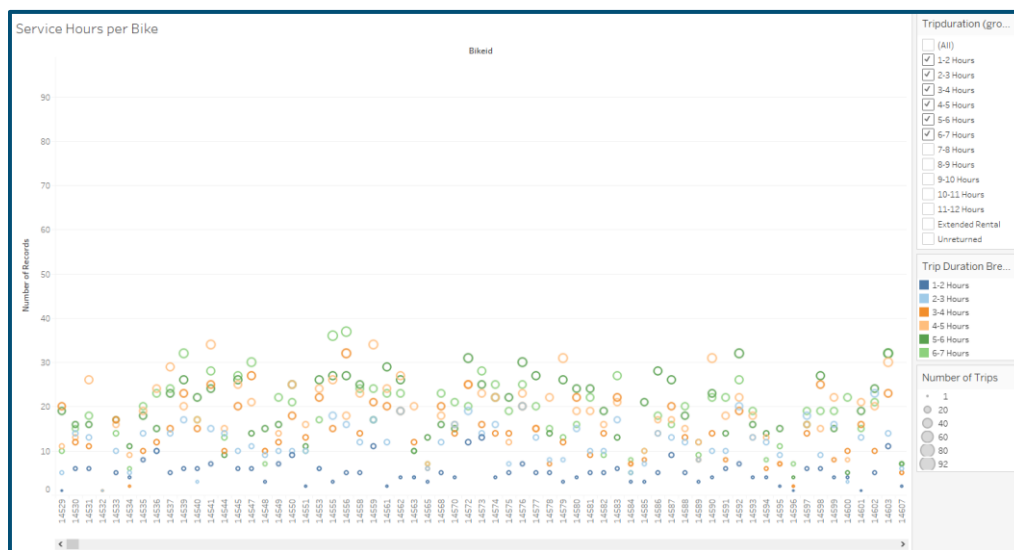
Total Arrivals by Station and Subscription Type



Equipment Information

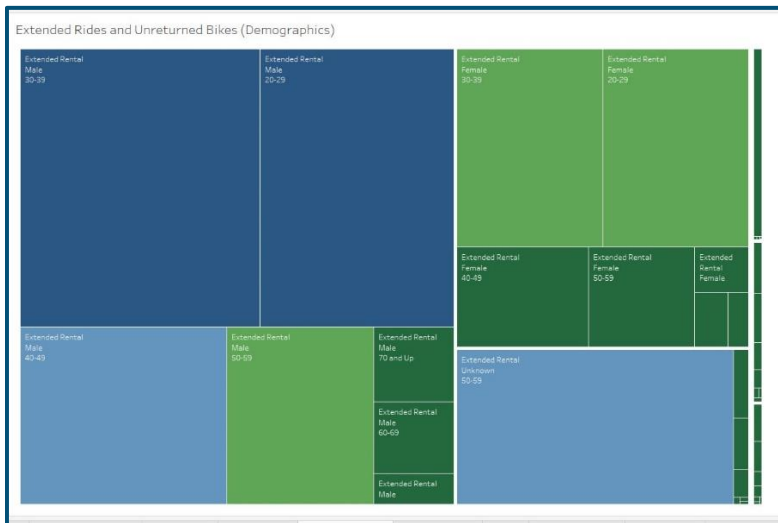


Service time patterns are fairly consistent amongst all the bikes. Most rides are shorter. A small number of very long rides skew the average service time, but it's unlikely that any bike is in use for some of these longer periods, so the wear and tear wouldn't be comparable, and those outliers should be discarded when evaluating actual road times.

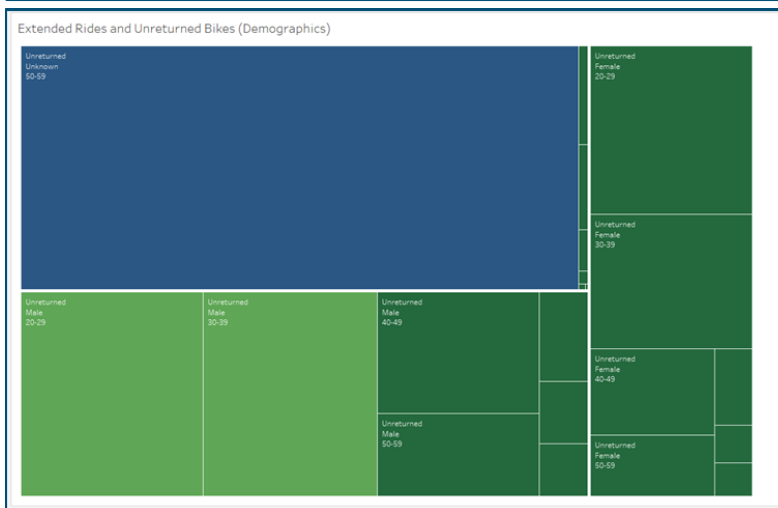


Most bikes accumulate the bulk of their service hours in medium-length rides (more than 2 hours but less than 6 hours). This suggests leisure rides rather than commuting.

Extended rentals (over 12 hours) and unreturned bikes take bikes off the road without giving any benefit to our customers. The majority of extended rentals category are ultimately returned, but still increase operating costs due to repositioning.



Men between ages 30-39 are the most likely to keep a bike for an extended period, followed by 20-29 year old men, then 50-59 year old of Unknown gender.



The 50-59 year old/Unknown gender group is responsible for the largest share of unreturned bikes.

This data suggests that riders with a long-term relationship with the program (i.e. subscribers) are more likely to return their bikes in a timely fashion. Converting more day-pass/single-use riders to subscribers may help lower overall operating costs.

Summary and Recommendations

The Citi Bikes program is very popular and continues to grow, adding almost 40,000 rides (not unique riders) in Q2 2019. The following adjustments could help the program continue to grow and be healthy:

- Partner with bike sharing programs in other cities to make it easier for subscription members to use the Citi Bike service while visiting New York.
- There is a disparity between the most popular departure stations and the most popular destination stations. This could lead to shortages of bikes at busy stations and increased costs to rebalance bike supplies. To ease this, offer incentives such as companion ride passes to attract riders to pick up or drop off bikes at dynamically selected stations.
- The data suggests that day pass/single ride users are more likely to fail to return their bikes in a timely fashion. Limiting late-night service to subscription holders only may help reduce the number of waylaid bikes.
- Converting day pass riders into subscription-holders may help reduce operating costs, as subscription holders appear more likely to return their equipment quickly.
- Add GPS tracking to bikes to better understand the ratio of road time to idle time on extended rentals.
- Consider consolidating some of the low-utilization stations to decrease operating costs.



citi bike