



Data Analytics



Using Tableau: Citi Bike 2020 Data
Feb-Aug



Basic Numbers: Feb-Aug 2020

20,936 Total number of bikes

Citi Bike Analytics Feb-Aug 2020

10,703,531 Total number of bike trips

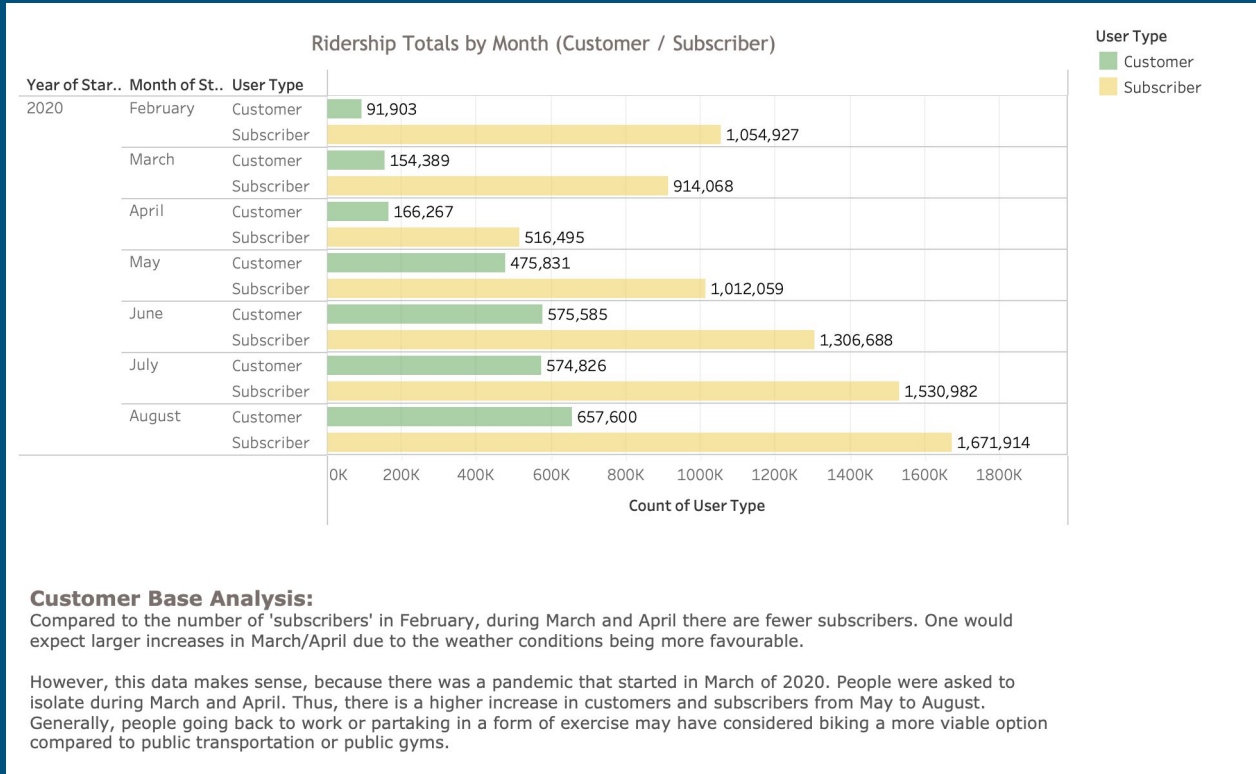
1,069 Number of start stations used

1,101 Number of stop stations used

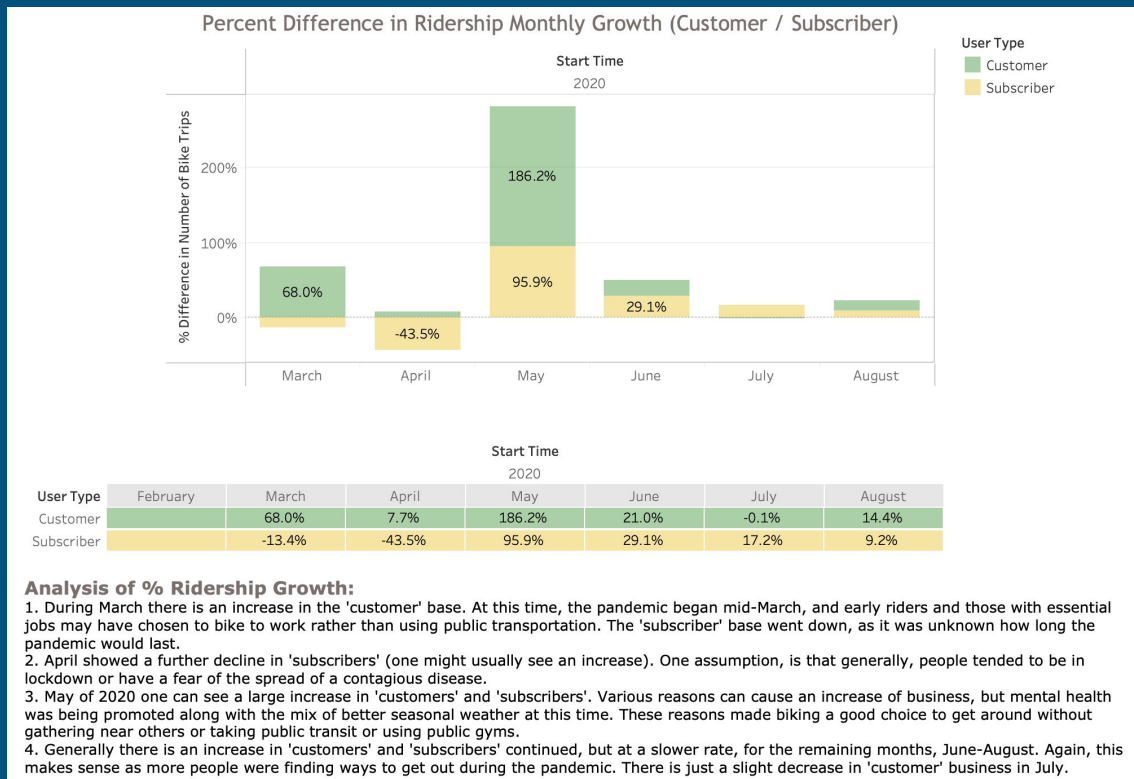
23.91 Average trip duration in minutes

<https://public.tableau.com/authoring/CitiBikeAnalyticsFebToAug2020/CitiBikeAnalyticsFebAug2020#1>

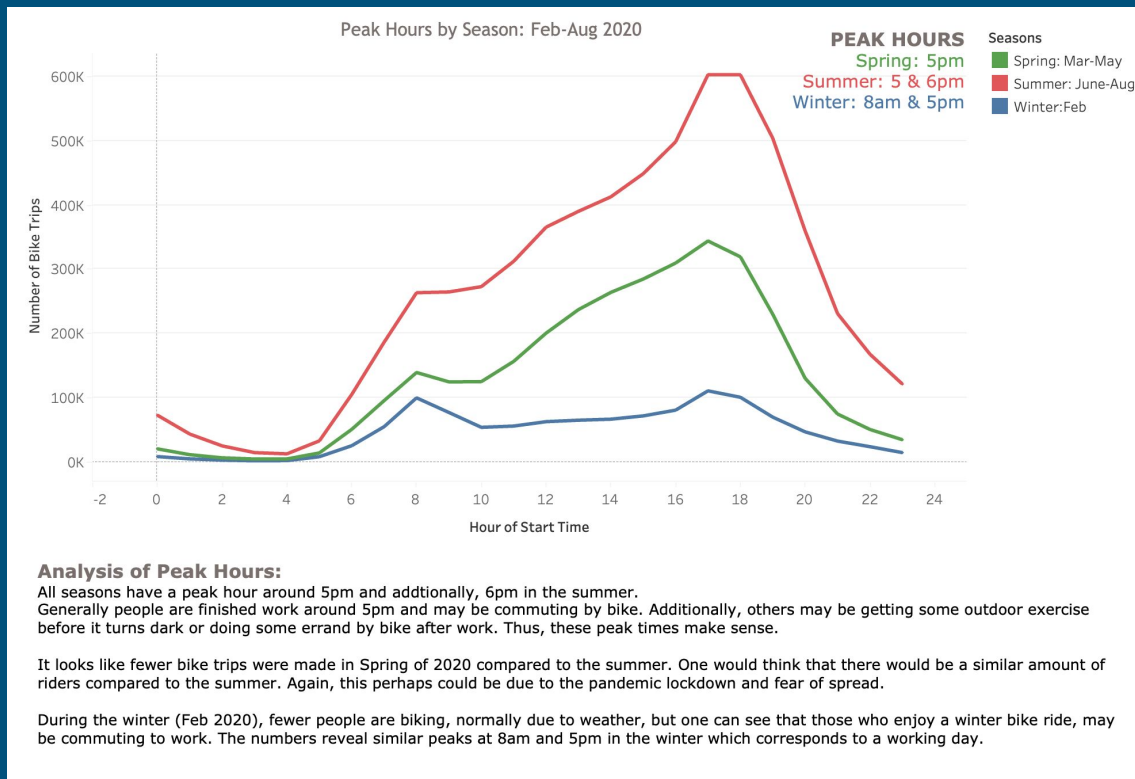
Total Ridership by Month (Customer/Subscriber)



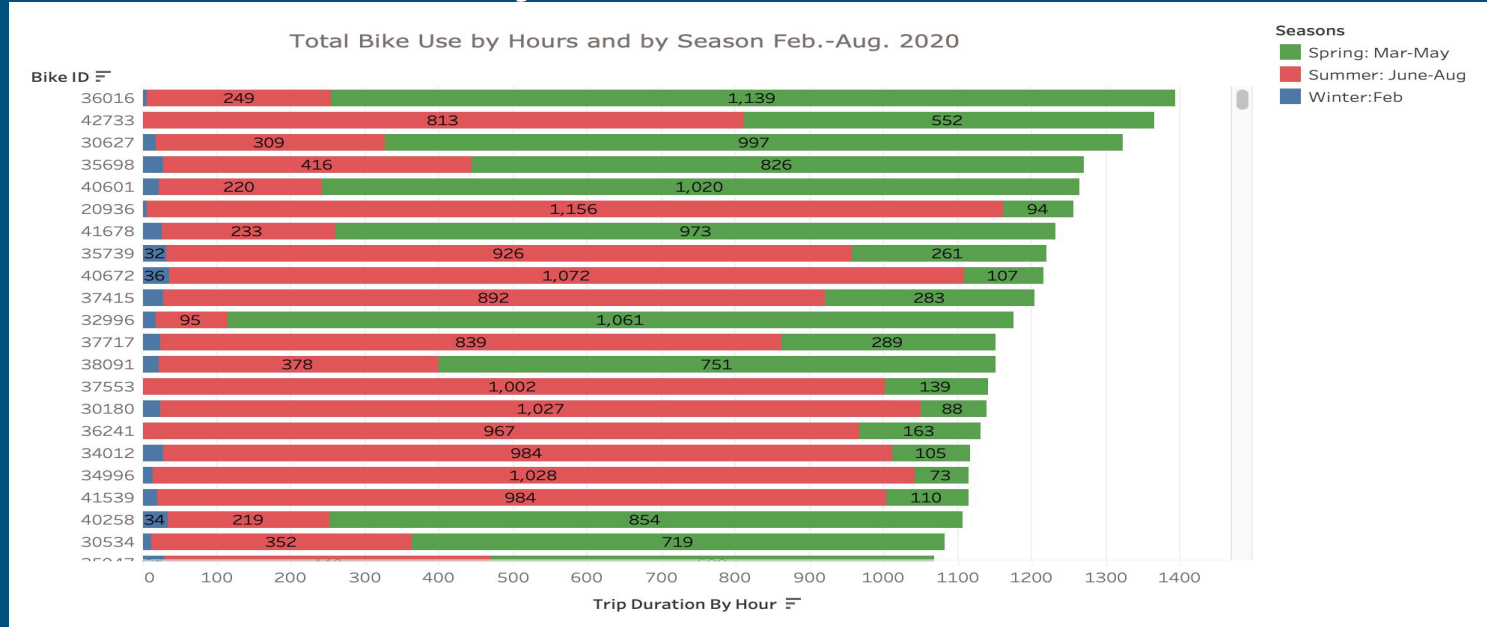
Percent Ridership Monthly Growth (Feb-Aug 2020)



Peak Hours by Season



Most Used Bikes by Hour and Season of Use

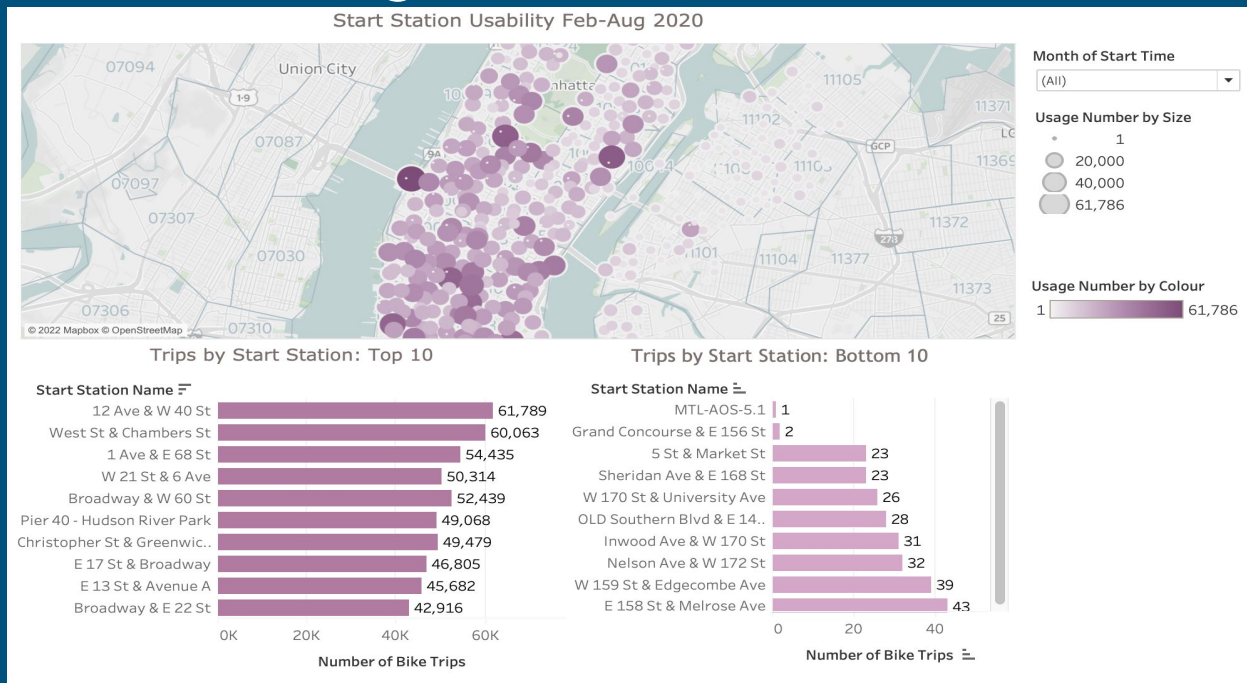


Various types of bike maintenance can be done on a monthly, biyearly and yearly level.

Generally, the bikes with the most hours of use will need tune-ups, and maintenance, more often, or given a higher priority to maintain. This assumes that the trip duration has no long 'user stops' inbetween.

As well, the chart shows that generally winter (Feb 2020) is a better time to do the yearly maintenance because most bikes have fewer hours of use at this time.

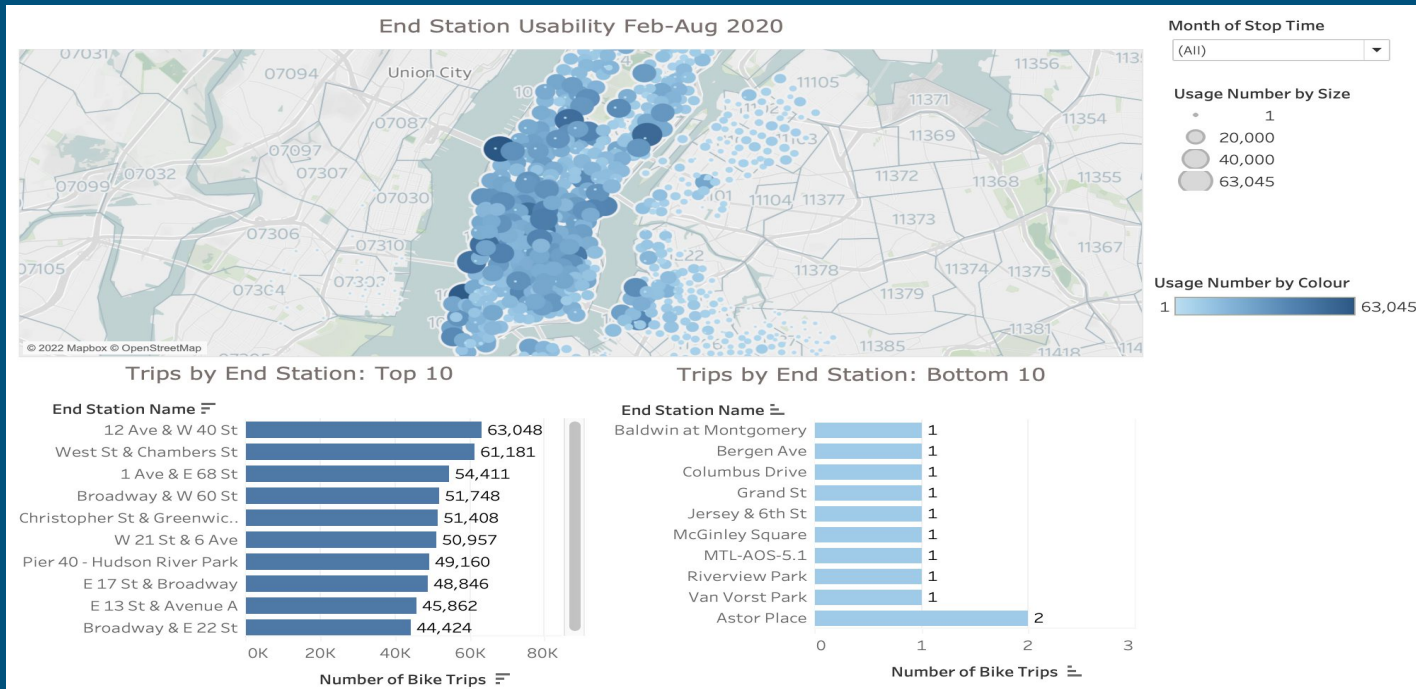
Start Station Usage



Start Station Analysis:

Most bike stations are in the Manhattan area. The highly used start stations are around the outside of Manhattan, by the water, or accesses across the water, and close to area parks. People who regularly commute may be using these stations. As well, people were encouraged not to be around others during the pandemic. Thus, biking the out skirts of Manhattan area or biking in parks may have been a more popular and scenic choice. From Feb-Aug 2020, the 12 Ave & W 40 St station, has the most usage of 61,789. This station is close to the Lincoln Tunnel and Hudson River Park with various Piers. West St & Chambers St.(60,063 starts), is on the out skirts of town by Rockefeller Park and Washington Market Park. Very unpopular start stations may have fewer points of interest, or they are outside of the Manhattan area.

Stop Station Usage



Stop Station Analysis:

Most bike stations are in the Manhattan area. The highly used stop stations are around the outside of Manhattan, by the water, or accesses across the water, and close to area parks. People who regularly commute may be using these stations. As well, people were encouraged not to be around others during the pandemic. Thus, biking the out skirts of Manhattan area or biking in parks may have been a more popular and scenic choice. From Feb-Aug 2020, the 12 Ave & W 40 St as a stop station, has the most usage of 63,048. This station is close to the Lincoln Tunnel and Hudson River Park with various Piers. West St & Chambers St.(61,181 stops), is on the out skirts of town by Rockefeller Park and Washington Market Park. Very unpopular start stations may have fewer points of interest, or they are outside of the Manhattan area.

INTRODUCTION

New York City's Citi Bike is the largest bike-sharing system in the US. It originally opened in 2013 with 6,000 bikes and 332 stations. Today, in this investigation, I explore the bike-sharing data for Feb-Aug 2020.

DATA PREPARATION

Citi Bike provides extensive data on trips, listing start and end times, trip duration, stations, age, gender and user type. I used Jupyter Notebooks to parse, review data, and rename columns for each Monthly csv file.

GENERAL CONCLUSIONS

Basic Counts:

The total number of bikes, now used between Feb-Aug. 2020, are 20,936 with a total of 10,703,531 bike trips. There are at least 1101 stations being used with an average bike trip duration of 23.91 minutes (removing a few long trip outliers).

Customer Base Growth/Decline Feb-Aug 2020:

There were 1,054,927 'subscriber' types in February, and in March this declined to 914,068 and in April a decline to 516,495. One would expect an increase in ridership from winter to spring weather. The pandemic may have had an impact on ridership at this time which started in March of 2020. The percent ridership growth shows the highest increase of customers (+95.9%) and subscribers (+186.2%) in May and an increase mostly continued during the summer months. Generally, people might of started using the bike program as a good alternative to public transportation and/or public gyms.

Bike Hourly Usage/Maintenance:

Peak hours of usage for each season is around 5pm and additionally, 6pm in the summer.

Generally people are finished work around 5pm and may be commuting by bike. Additionally, others may be getting some outdoor exercise before it turns dark or doing some errand by bike after work. It looks like fewer bike trips were made in Spring of 2020. One would think that there would be more. This could be due to the pandemic lockdown or fear of spread.

During the winter (Feb 2020), fewer people are biking due to cooler weather, but one can see that ridership use may be by commuters. The numbers reveal peaks at 8am and 5pm during the winter which is similar to a working day.

A chart with the hourly usage per bike and by season shows that the winter time (Feb 2020) is the best time to do yearly maintenance to the bikes because most bikes have fewer trip hours. As well, one can see that the bikes with the highest trip duration would indicate a higher priority of additional maintenance that can implemented. Note: Not all bikes are used in every season.

Bike Station Usage:

The highest amount of bike stations are in Manhattan. The highly popular stations are around the out skirts of Manhattan by the water or accesses across the water and/or by parks. The top 3 START stations used are the same as the top 3 STOP stations used between Feb-Aug 2020. These stations are all by parks including 12 Ave and W 40 St being near the Lincoln St. Tunnel and a Ferry.

People who regularly commute from outside of the Manhattan area to get to work may be using these stations. As well, people were encouraged not to be around others during the pandemic. Thus, biking the out skirts of Manhattan or in a park may have been a more popular, scenic and open choice.