citi bike analysis

Quarterly report: Q2 - 2020

&

Future expansion ideas

citibike analysis

October, November and December 2020

Content

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Daily use anomalies & observations

While making this analysis I came across some anomalies when viewing the daily use. Some days had a really high use while other days had a really low usage of bicycles. Here are some of those anomalies.

7 November 2020 – Election

This marks a day showing a significant surge in the use of Citybikes with the highest number of uses in a day at 98,252 rides.

As this is the 4-yearly election day, the likely increase of using a bicycle is to avoid crowds and crowded trains. Citybike also had a campaign 'BIKE TO VOTE'. We can conclude that this campaign was very successful, and I recommend using this type of campaign again in the future when crowds are expected.

12 October 2020 – Possible COVID scare

This is a Monday. Mondays are notoriously less busy than other days of the week. However, this day in particular is very quiet when it comes to bicycle rides. There was a COVID-19 scare which can explain why people didn't travel.

29 October 2020 – Hurricane Sandy

This is a very slow day with only 2,801 rides. People decided not to travel due to Hurricane Sandy. Even the subway stations were closed from 28 October. Without the option to go anywhere in a subway, the commuter didn't need the bicycles to go to and from the subway stations either.

17 December 2020 – Snowstorm

This Thursday only subscribers used the Citybikes to make 27 rides. The snowstorm produced widespread heavy snow over twice as heavy as the last two years making travel all but impossible.

25 December 2020 – Christmas day

Christmas day is a day that people all around the world spend with family and friends. In particular Christmas morning is for opening presents around the Christmas tree. Today 2,510 people took the Citybikes out for a ride with slightly more customers then subscribers.

Conclusion

When looking at short term future events, it appears to be possible to predict the use of the Citybikes.

When bad weather is forecasted, it may be possible to bring more bikes to the workshop for maintenance as they will not lose downtime due to the low usage. This is also a safe option for the Citybike workers as they can do maintenance inside in lieu of being out in the weather.

Bigger events combined with a campaign to use Citybikes, can be used to predict the location of an increase in bicycles. In lieu of having downtime for bicycles in other parts of the city, they can be concentrated around the event centre.

Subscriber vs Customer analysis

Increasing the subscriber base is good for the growth of Citybikes. Here we have a look at where the subscriber base can be increased.

Subscriber vs Age

The peak subscriber age is 30. There is a steep incline from age 16 to age 30. Unfortunately, there is also a steep, even though slightly less, decline after the age of 30 with a small incline at the age of 51.

Customer vs Age

A significant peak customer is 51 years of age. Citybikes may be used a lot for 50-year birthday celebrations.
There is only a small incline from the age of 16 to 25 with a peak at the age of 30.

Subscriber/ Customer vs Daily use

In general, the customer contains about 15% of the daily user. This means 85% is a subscriber. Every day in this three month time period has more subscriber users, except for 17 December 2020 when there was a snowstorm with only 27 rides that day. I expect that users that normally use a bicycle stayed home and non-users that normally use a car had no alternative then to use a Citybike as the roads were not safe for driving.

Subscriber/ Customer vs Weekday

Citybikes are used least on Mondays and most on Saturdays with the customer use increasing in percentage during the weekend. On Saturdays the subscriber versus customer is 70% vs 30% and on Sundays 60% vs 40%.

Conclusion

Advertising should be focussed on age groups over 30. Maybe incentives can be offered to start a subscription. Please take into account that it takes 60 days to form a habit. But the customer has to start the habit first.

Weekend users have more customers in lieu of subscribers. Maybe a different subscription can be offered that favours use in the weekend.

Age analysis

Age vs Trip duration

It appears a lot of people do not return their bikes to a Citybike station after their trip as trips take hours. Trip durations are free if under 45 minutes (if you are a subscriber) so I can only guess that people must live further than walking distance from the Citybike stations to keep them overnight. These trips have not been included in this analysis.

Most trips are being made at the age of 51. Citybikes may be used a lot for 50-year birthday celebrations, or there may be an anomaly.

The most trips are between 5 to 10 minutes at the ages of 25 and 32. The use dissipates with a duration of about 5 minutes to the age of 60 and to the duration of 30 minutes at the age of 30.

Age vs Subscriber/ Customer

Please refer to the paragraphs above Subscriber vs Age & Customer vs Age.

Conclusion

Age is a factor when using a bicycle. The Citybikes are being used from the age of 16 and up. As expected, as the population ages, the user base decreases and the trips get shorter with an anomaly at the age of 51.

Future expansion ideas

Bike path consideration

This map shows the current bike paths in New York City and the expansion over time of the Citybike stations. The oldest stations are dark blue, and the newest stations are shown in red.

Expanding to locations that have existing bike paths has the advantages of safe travel options for your customers.

The map shows that there is definitely room for growth in all directions.

Leisure activity growth

General health advice for people is to move a minimum of 30 minutes a day. This is a perfect opportunity to start a different campaign to encourage people to use a Citybike as an option to get that 30 minutes of exercise. In addition, the message can be that it is also a great weekend activity.

Prolonged use of the Citybike

The data shows that a lot of customers use have the bicycle for several days or weeks. This means additional funds per minute. Further analysis is required to determine if this is an error or a customer need. If it is a customer need, you may want to add an additional subscription model for daily or weekly use. This way you

will know which bicycles are not available for maintenance or re-use by other customers.

Analysis

User error

Due to some user input errors, the oldest age cannot be determined. All data has been used with a maximum age of 90.
Another user error is not putting the Citybike back in its station (or not properly). The trip duration has been reduced to a maximum of 1 hour (60 minutes) in the analysis. This is based on the free use depending on the type of customer being 30 or 45 minutes.

Limitations

The City has requested a comparison map of a few years. The reason this has not been presented is that comparing 2020 to 2019 will give skewed results due to Covid-19. Going further back will also not provide an accurate analysis due to the age of the data. The chosen data for the analysis is the last three months.

Using the last three months has its own limitation as December is not necessarily a representative month due to the holidays.