

# Insight into Bixi

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## Introduction

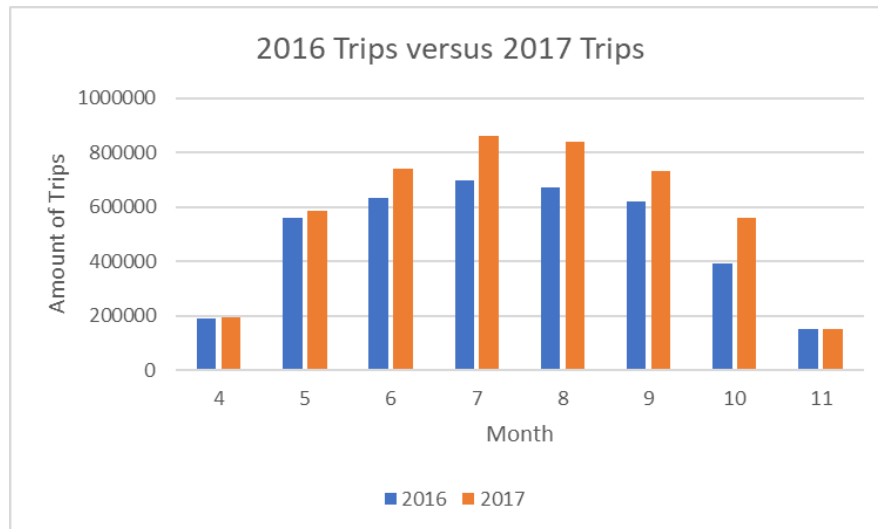
Bixi is a bike-sharing system where people can grab a bike from one of their stations and pay per minute of riding after returning the bike to a station. Bixi also has a membership system where it provides members with 45-minutes free rides. The purpose of this report is to provide a better understanding of business growth, how people are using Bixi, and factors that affects usage, and station popularity. This could in turn be used to find business optimization strategies (i.e., promotions, targeting marketing, etc.) and increase Bixi's overall use in the city.

## Methodology

The data that'll be broken down and analysed will be the data from 2016 and 2017 of each trip. The data provided includes each individual trip information such as the starting and ending station and time of a trip including the date, as well as if the person was a member or not. Since the purpose of this report isn't to look at a specific trip or use case, the data will be aggregated into a consensus to get a better understanding of Bixi in general which will help draw conclusions to the questions presented above.

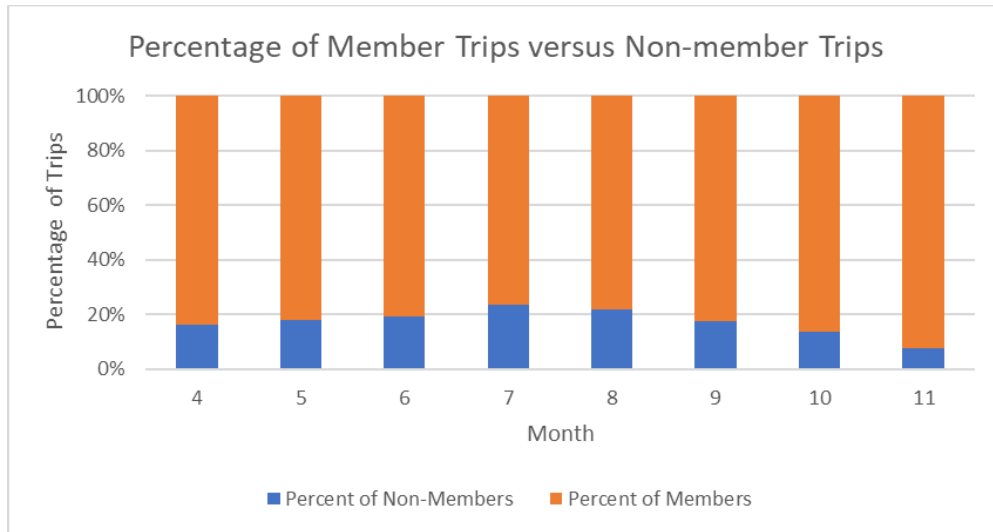
## Data Analysis

From just looking at Bixi's usage from 2016 to 2017, it can be observed that Bixi has increased their total trips by approximately 19% from 3917401 to 4666765 total trips. Examining more closely by comparing months in 2016 to 2017 (as shown in the graph below) will also show that each month has increased trips (with a small exception of November).

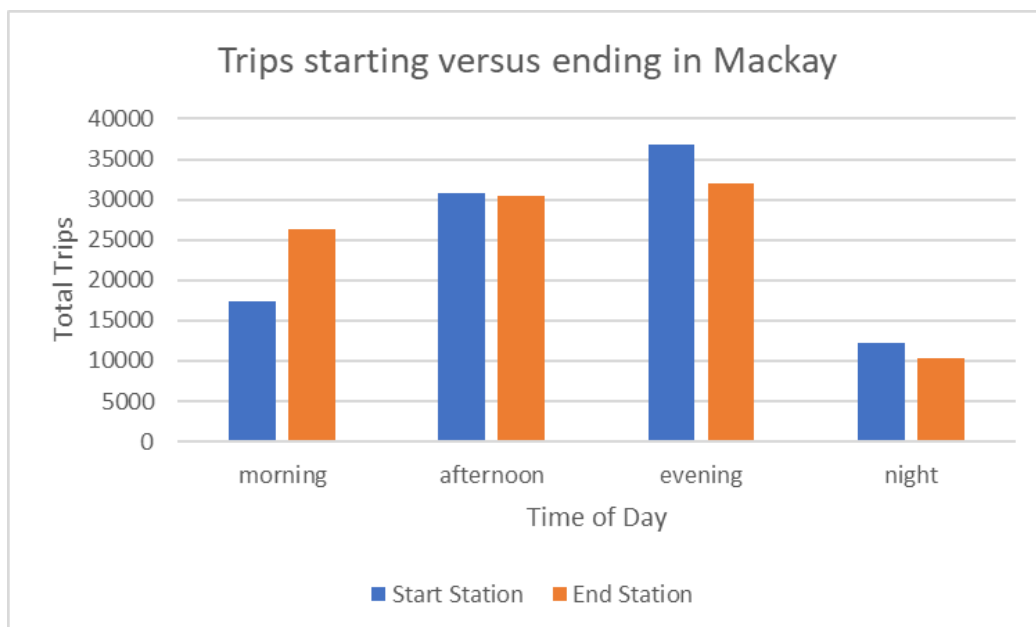


However, instead of comparing 2016 to 2017 and compare month to month, it can be observed that there is a big difference between peak months and off-peak months within a year, where the month of April and November sees very few usages when compared to summer months like July and August. One of those reasons is because Bixi does operate until mid-April and stops services in mid-November. However, even if we were to double the trips to somewhat factor those missing days, it would not see as many trips as peak months.

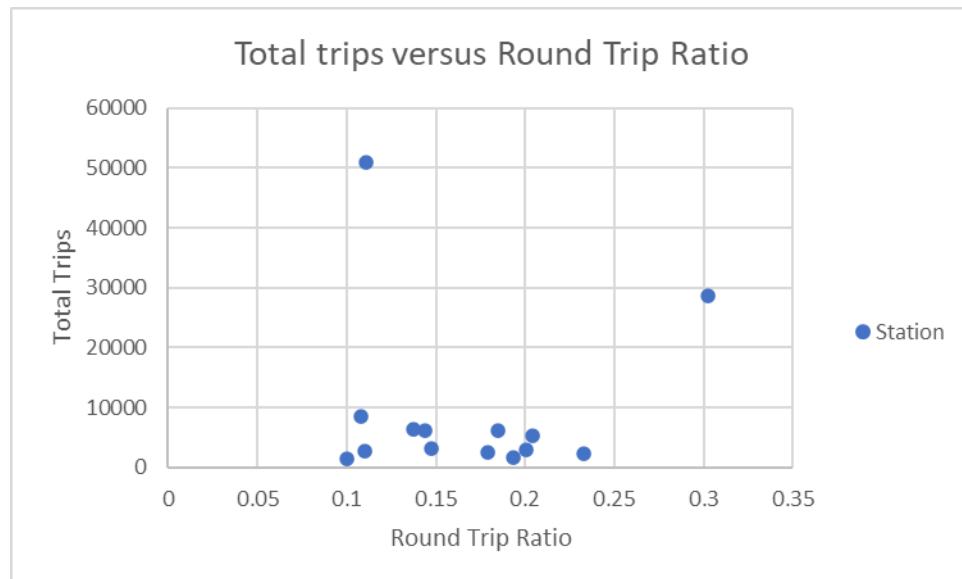
Ignoring that factor and focusing on what can be improved to increase usage in low-usage months, an analysis into membership status was found to be more insightful into this issue. It was discovered that during lower-usage months such as November and April have a higher ratio of member trips than summer months which is probably attributed to more casual riders wanting to leisurely ride during summer. Using this discovery, we can attribute the trips in off-peak months to members taking use of their pass whereas non-members are less likely to ride bikes unless it's a nice day to make using Bixi more worth (shown by the increasing percentage of non-members leading into summer and decreasing percentage leading away from summer). Therefore, to increase usage in off-peak months it is optimal to try and get more non-members (mainly targeting efforts in summer) to sign up as members which would increase trips in off-peak months as well as an increase revenue in membership sales.



The next factor to be examined is the stations that riders are using. More specifically, the most popular station and the reason for it. This turned out to be Mackay / de Maisonneuve with 97150 total trips. When analysing the data for stations and their usage, the time of day were broken down into time of day where 7AM-11AM was classified as morning, 12PM-4PM as afternoon, 5PM-9PM as evening, and anytime after that as night. Looking at total trips to and from Mackay / de Maisonneuve, it can be seen from the graph below that more trips end there versus trips starting there during the mornings. The opposite can be seen for evening and night where more trips start there than end there. A reasoning behind this could be that it's a popular location for commuting as shown by the timing of lots of trips ending there (people getting to work) and then lots of trips starting there in the evening (people leaving work).



Another analysis performed was on round trip stations, where the station was used as a start and end of a trip, and when these stations had more than 10% of their total trips as round trips. These stations weren't as popular as the most popular stations since the most popular round-trip station, 'de la Commune / Place Jacques-Cartier', had 50822 trips, the highest round-trip ratio (30.20% of total trips were round-trips) station, 'Métro Jean-Drapeau', had 28672 trips, and any other round-trip station had under 10,000 trips.



As can be seen from the graph above, the 2 stations mentioned are basically outliers but it is still worth noting since this can be used to get more round-trip stations more usage or more popular stations more round trip. By researching 'de la Commune / Place Jacques-Cartier', it turns out that it is a bike-friendly area along the water. 'Métro Jean-Drapeau' station is in a popular park which explains why it has a high round trip usage since people ride around the park and return it at the end of their joyride rather than using Bixi as a way of transportation from point A to B. However, the data also shows that not many people use Bixi as a round-trip when compared to regular trips of point A to B which could suggest that people don't really use Bixi as a form of joy riding but more for transportation.

## Conclusion

In conclusion, Bixi is a business that is seeing growth as the use and popularity is increasing each year. A reason for Bixi's growth could be because people are using it as casual bike rides, as seen with 'Métro Jean-Drapeau', but the majority of people are in fact using it as a form of transportation, as seen with Mackay station and the low amounts of round trip ratio of stations. Bixi's growth could also be accelerated if there were more investment into converting non-members to members but this isn't a conclusive recommendation until analysis with dollar values are made. This report was to only achieve a high-leveling understanding of the business and the next steps after would be analyses with revenue and costs to develop business recommendations to optimize success.