Bixi Project Deliverable 1

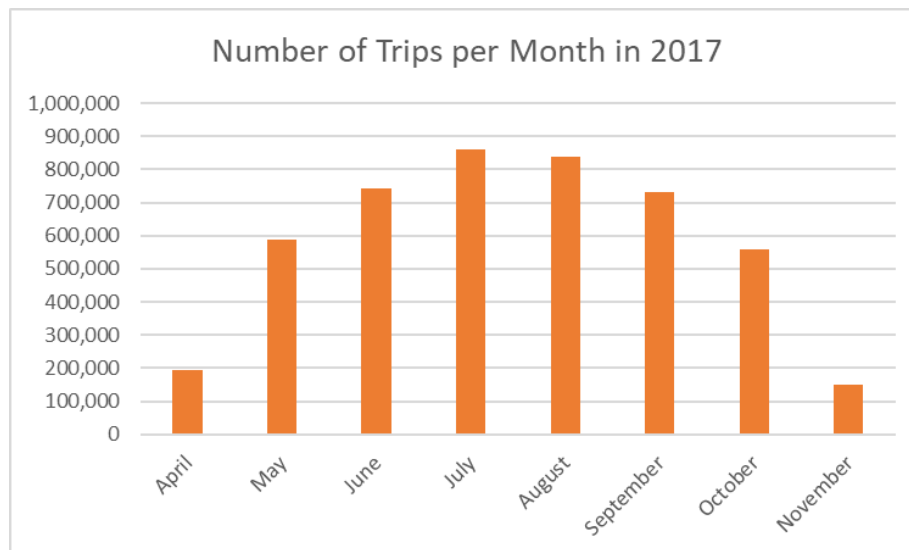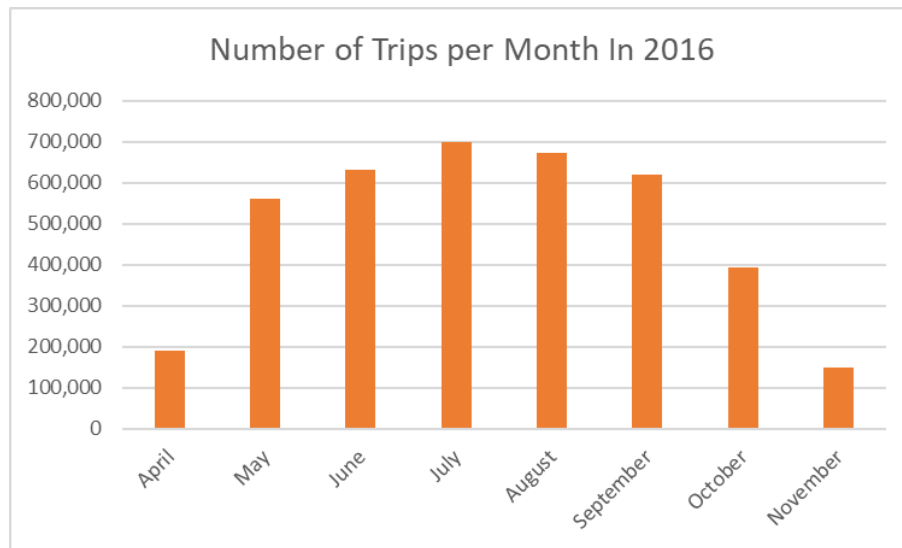Nooshin Mollazadeh_Oct 2022

Introduction

This report aims to provide an assessment on the Bixi Bikes data during 2016 and 2017 for a general business audience.. The data set includes start and end dates, stations and durations of trips done by members or non members.Through data analysis using SQL in this report we assess the different factors such as number of trips during year and months, populare times of the year and we also have a look at stations and membership.

Methods and Findings

First we analyze the total number of bixi bikes usage during the year. I used Mysql and Excel to find the data and visualize it as below:
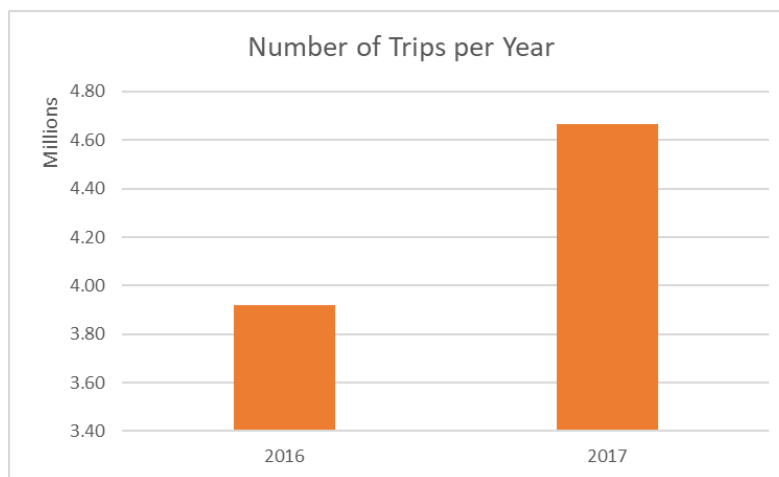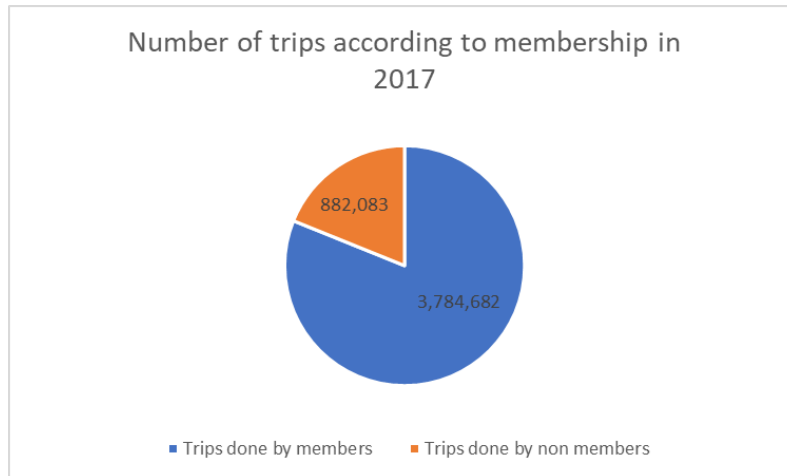

We can see the number of trips increase significantly in 2017 which is more than 4.6 millions.Next we analyze the total number of trips per month for each of these years.

Number of Trips per Month In 2016

Bar chart showing number of trips per month in 2016. The y-axis ranges from 0 to 800,000. Approximate values: April ~190,000; May ~560,000; June ~630,000; July ~700,000; August ~670,000; September ~620,000; October ~390,000; November ~150,000.

Number of Trips per Month in 2017

Bar chart showing number of trips per month in 2017. The y-axis ranges from 0 to 1,000,000. Approximate values: April ~190,000; May ~590,000; June ~740,000; July ~860,000; August ~840,000; September ~730,000; October ~560,000; November ~150,000.
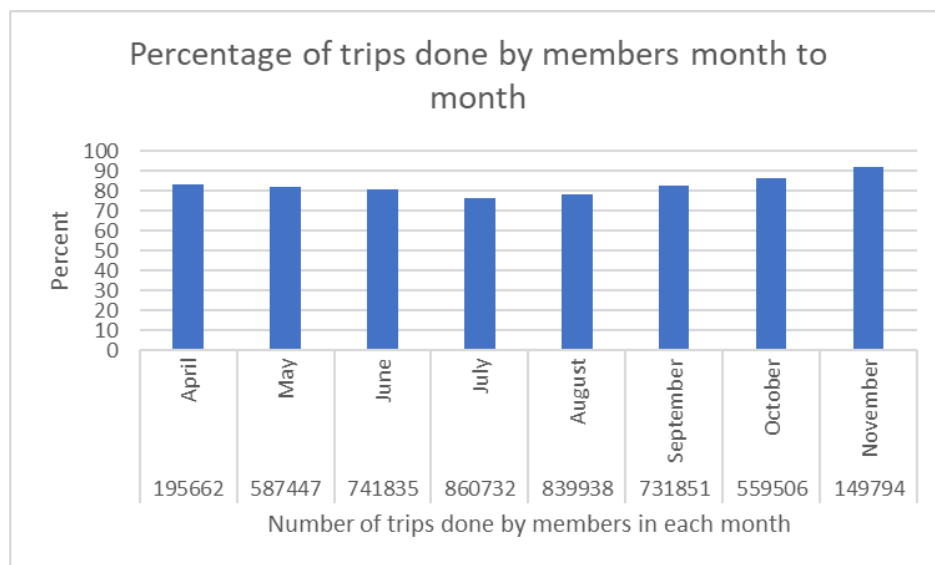
From the help of visualizations above we can figure out peak months in each year and also first an increasing trend until July which is about 850,000 in 2017 and 700,000 in 2016 and then the opposite.

By looking more closely at the data and especially the membership, we notice there's a big difference between members and non members, which is not a surprise.

Number of trips according to membership in 2017

882,083

3,784,682

■ Trips done by members ■ Trips done by non members

Based on the pie chart above, nearly 3.8 millions of trips were done by members and about 882,000 by non members. We can break down these numbers by month and look into each month precisely.

Percentage of trips done by members month to month

|							
April	May	June	July	August	September	October	November
195662	587447	741835	860732	839938	731851	559506	149794

Number of trips done by members in each month

What is evident by this chart is that the percentage of trips done by members is the lowest during July unlike November which has the highest percentage.

For the final investigation we study the Stations and find out which ones are the most popular for the origin of the trip. The top five stations with the most number of starting trips are listed below.

Station Name	Total Number of Starting Trips
Mackay / de Maisonneuve	97150
Metro Mont-Royal (Rivard / du Mont-Royal)	81279
Métro Place-des-Arts (de Maisonneuve / de Bleury)	78848
Metro Laurier (Rivard / Laurier)	76813
Métro Peel (de Maisonneuve / Stanley)	72298

By taking a deep look in Mackay / de Maisonneuve station and checking the number of starttrips and endtrips during the day (Morning, Afternoon, Evening, Night) we get the chart below that helps us to see the trend during the day and also compare start trip and end trip numbers for this station. In the chart group 1 shows the data for start trips which has a growing trend until evening compared to that the group 2 for end trips also has an increasing trend.

Number of Starts and End trips at Mackay / de Maisonneuve station
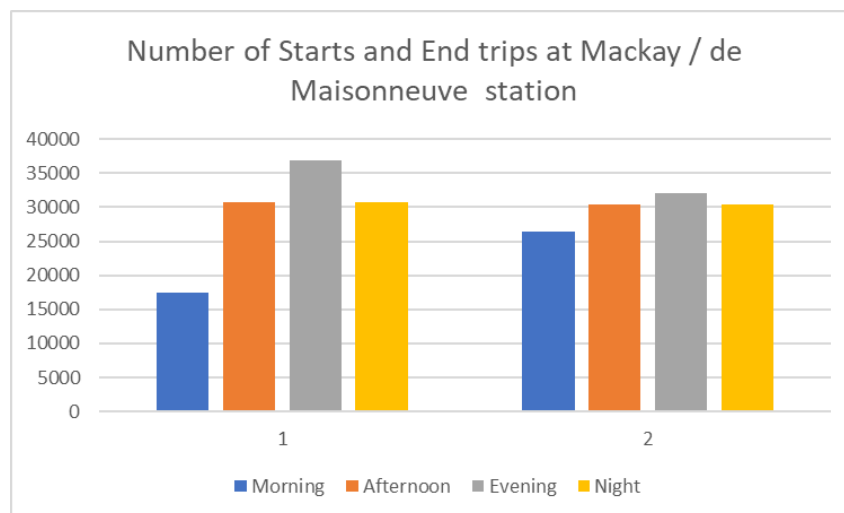
Finally we examine the round trips for stations and list the 10 top of them with the highest percentage of round trips.

Station	Number of Roundtrips	Number of Alltrips	Percentage
Métro Jean-Drapeau	8658	28672	30.1967
Métro Angrignon	559	2398	23.3111
Berlioz / de l'Île des Soeurs	1072	5246	20.4346
LaSalle / 4e avenue	600	2991	20.0602
Basile-Routhier / Gouin	330	1708	19.3208
Parc Plage	1145	6201	18.4648
Gare Canora	437	2439	17.9172
LaSalle / Sénécal	464	3151	14.7255
Casino de Montréal	882	6138	14.3695
Quai de la navette fluviale	883	6417	13.7603
de la Commune / Place Jacques-Cartier	5622	50822	11.0621
Jacques-Le Ber / de la Pointe Nord	300	2719	11.0335
Place du Commerce	927	8569	10.8181
Collège Édouard-Montpetit	144	1439	10.0069

Conclusion

Based on the outcome of the analyzation and visualizations it is recommended to take actions based on these different aspects:

1. Time-period and Seasonal Trends in Bixi Bike Usage

There is an increase in Bixi bikes demand from 2016 to 2017. Apart from that we can see the upward trend during the summer season. The most popular months are from May to September for both years. This analysis also shows the same trend for the average number of trips with July being the top month. Based on the finding I recommend the number of bikes especially in the summer when the demand is higher and Bixi can make more revenue.

2.Membership

Members' trips make the most contribution to the company's success as we see the bigger share of trips during the year. By looking into months we can say that there is a significant drop during cold months for non-member trips. To increase trips during these times (October to April), given that most of the usage comes from members, I recommend that Bixi can offer more promotions to non members to attract more users. The promotion can be a special discount for the fall season. There is no need to offer membership promotions to non-members during peak months because basically non member fees are higher, and there is greater revenue potential from non members per trip.

3. Stations

Checking stations is important in terms of stocking them with an ideal number of bikes in order to meet customer demands. Mackay / de Maisonneuve is the top station in 2017 with 97150 starting trips. By comparing the number of trips that end there. In the morning, there is a difference of 9,006 trips indicating that users come from other stations to arrive at Mackay / de Maisonneuve. It is possible that this station is located downtown and closer to offices and workplaces. This station also has more starting trips than ending ones which clarify the day trend. During workday individuals come from another station in the morning and go back in the evening. The fact that is really important is to transport enough bikes to this station for the evening returns. Additionally It is good to consider the high season too.

In terms of stocking the stations with enough amount of bikes we can examine the round trips.The top 5 stations are Métro Jean-Drapeau (30.20% of trips are round trips), Métro Angrignon (23.31%), Berlioz / de l'Île des Soeurs (20.43%), LaSalle / 4e avenue (20.06) , and

Basile-Routhier / Gouin (19.32%). These top stations do not need as much bike transport as others because of the more round trips.