Analysis of Bixi Trips and Stations

Monthly Trend of Bixi Trips in 2016 and 2017

The Bixi dataset ID, start and end dates, start and end stations, duration and member status of each trip from April to November in 2016 and 2017. There was a 19.1% increase in the total number of trips in 2017 from 2016. The breakdown by months in two years (Figure 1) shows the number of trips was at peak in July and August in both years. A 475% difference between July and November 2017 is accountable for the biggest disparity. The average of trips by day (Figure 2) also highlighted the number of trips increased as summer approached and decreased as winter arrived. [Answers to Q1.1 to Q1.5]

Month	Number of Trips	
	2016	2017
4	189923	195662
5	561077	587447
6	631503	741835
7	699248	860732
8	672778	839938
9	620263	731851
10	392480	559506
11	150129	149794
Total	3917401	4666765

Figure 1

Month	Average Trips Per Day	
	2016	2017
4	6331	6522
5	18099	18950
6	21050	24728
7	22556	27766
8	21703	27095
9	20675	24395
10	12661	18049
11	5004	4993

Figure 2

In 2017, there were 3,784,682 members and 882,083 non-members, accounting for 76.7% differences in membership status. The fraction of trips graph (Figure 3) depicts a lucid picture of the increasing number of trips in the summer months with a peak in July (0.141) and August (0.141) and decreasing till November 2017. If the company plans to offer a special promotion to convert non-members to members, it is recommended to offer it in April, May, October, and November, in which the counts of trips were low, to boost member influx. [Answers to Q2.1-2 and Q3.1-2]
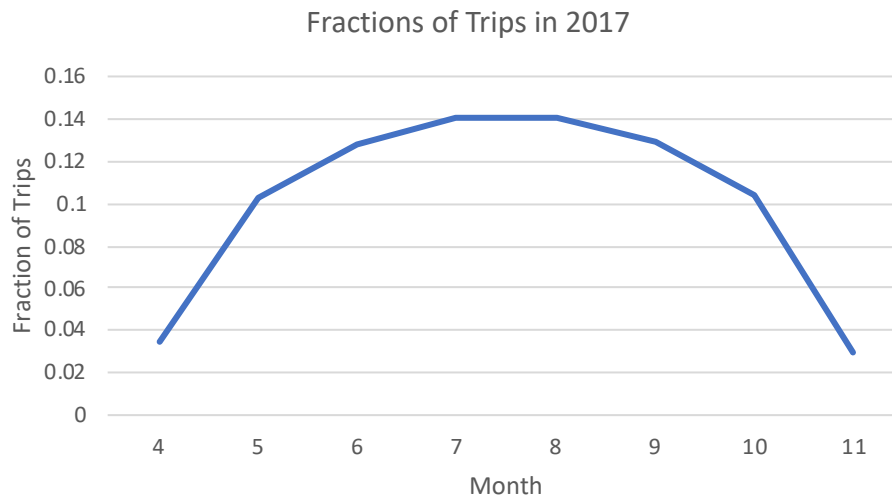
Fractions of Trips in 2017

Figure 3

Top 5 Starting Stations

(Figure 4) Mackay/de Maisonneuve is the most popular starting station. The data suggests that most bikers left this station between 7:00 and 21:00 and returned between 21:00 and 7:00 (Figure 5). The station is likely located in a central area with residential buildings and offices or near residential halls in a university. Students would leave the residential hall after class and return by night. [Answers to Q4.1-2 and Q5.1-2]

Top 5 Most Popular Starting Stations
1. Mackay / de Maisonneuve
2. Métro Mont-Royal (Rivard / du Mont-Royal)
3. Métro Place-des-Arts (de Maisonneuve / de Bleury
4. Métro Laurier (Rivard / Laurier)
5. Métro Peel (de Maisonneuve / Stanley)

Figure 4

Start and End Trips Distribution at Station Mackay/de Maisonneuve in 2016 and 2017
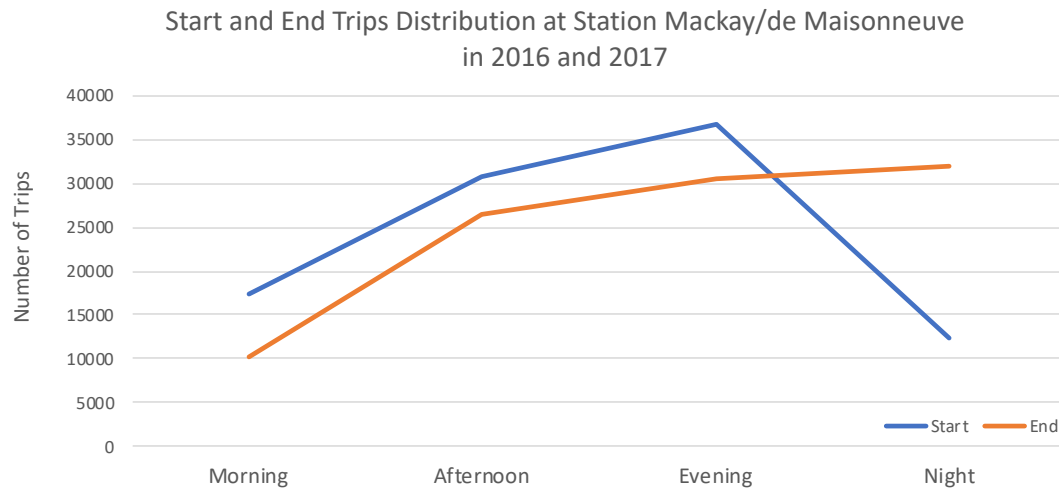

Figure 5

Popular Stations with Round Trips

There are 15 stations (Figure 6) with at least 500 starting trips and of which 10% were round trips. These stations are expected to be near highly populated residential areas or other public transportation stations (e.g. buses, trams, underground railroads, trains). Bikers could ride directly to work or school and return home using Bixi or ride to the closest public transportation stations and transfer. [Q6.4-5]

500+ Starting Trips & 10% Round Trips Stations
Collège Édouard-Montpetit
Jacques-Le Ber / de la Pointe Nord
de la Commune / Place Jacques-Cartier
Quai de la navette fluviale
Parc Plage
Berlioz / de l'Véle des Soeurs
Place du Commerce
Métro Jean-Drapeau
Casino de Montréal
LaSalle / Sénécal
Basile-Routhier / Gouin
Gare Canora
LaSalle / 4e avenue
Métro Angrignon

Figure 6