



# BIXI PROJECT - PART 2

VISUAL ANALYTICS IN TABLEAU

BIXI MONTRÉAL | By: Robby Khoutsaysana



# INTRODUCTION

In this deliverable, we will be exploring data visualizations using Tableau, allowing the user to interactively develop business insights from the BIXI dataset without having to write code.

The insights gathered here can help stakeholders re-allocate resources to key areas, resulting in greater awareness for customers, and more annual memberships.

# BIXI MONTRÉAL



## BUSINESS PRIORITIES

- Increase customer satisfaction by 2%
- Maintain growth



## ADDED PRIORITIES

- Improve social media presence
- Ensure the cost of development stays below budget

## ABOUT THE DATA

Bixi historical trip data can be downloaded in the following link. [Data](#). (Note: The data has been made available by BIXI MONTRÉAL under this [policy](#).) This is public data that anyone can use to explore how different members are using Bixi bikes.

## ABOUT THE COMPANY

BIXI Montréal is a non-profit organization created in 2014 by the city of Montreal to manage its bike-sharing system. The BIXI network has more than 9,500 bikes and 700 stations spread out across the areas of Montreal, Laval, Longueuil, Westmount, Town of Mount Royal and Montreal East. Much more than just a simple mode of transport, BIXI is now a wonderful way to zip around the city whenever you want to go wherever your heart desires.

## HOW DOES BIXI WORK?

1. Purchase a membership or a one-way pass
2. Take a Bike
3. Cycle
4. Return the bike

## KEY BUSINESS TASK

Supply data visualizations using Tableau for stakeholders who have business inquiries and help them collect insights from these visuals.

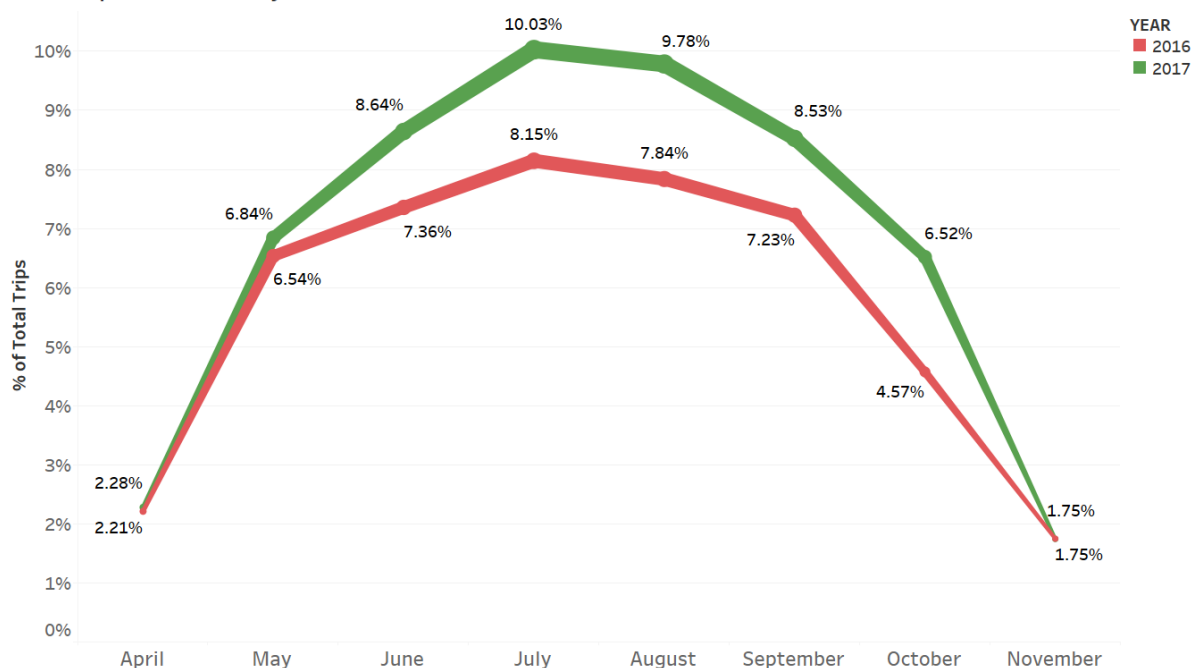


# DESCRIPTIVE ANALYSIS WITH TABLEAU

## BI Manager

The BI manager has specifically asked for a visualization to contrast the total number of monthly trips for the calendar years of 2016 and 2017 by month.

YoY Trips Trend Analysis



## Observations

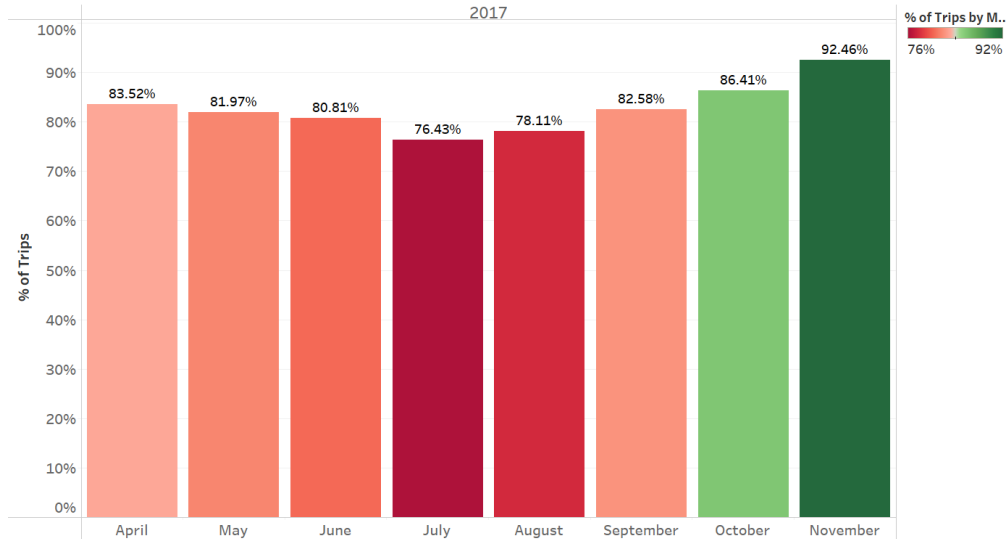
- There is an overall growth in 2017 to 2016 by approximately 19%.
- The peak of approximately 10% is in July for both years.
- The highest percentage increase is seen in October, with a 43% increase over previous year

Unsurprisingly, the number of trips varies greatly through each year, but we can clearly see that both years follow a similar trend, which includes Start months in April, End Months in November, and Peak months are in the summertime of June, July, and August. But what percentage of these trips are from members?





Percentage of Trips by Members

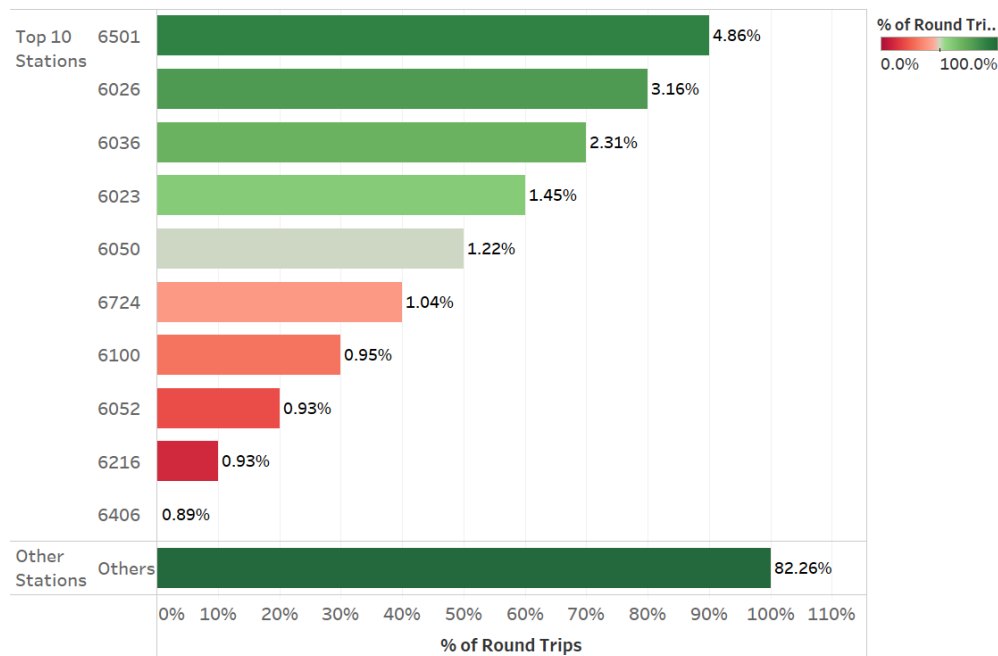


## Observations

- Highest percentage of members in November
- Lowest percentage of members in July

It's surprising to see that the percentage of active members decreases as it reaches the summer months. This presents an area of opportunity to attract non-members in high trip volume months. Let's explore further on how these trips are distributed at each station.

Top 10 Stations by % of Round Trips



## Observations

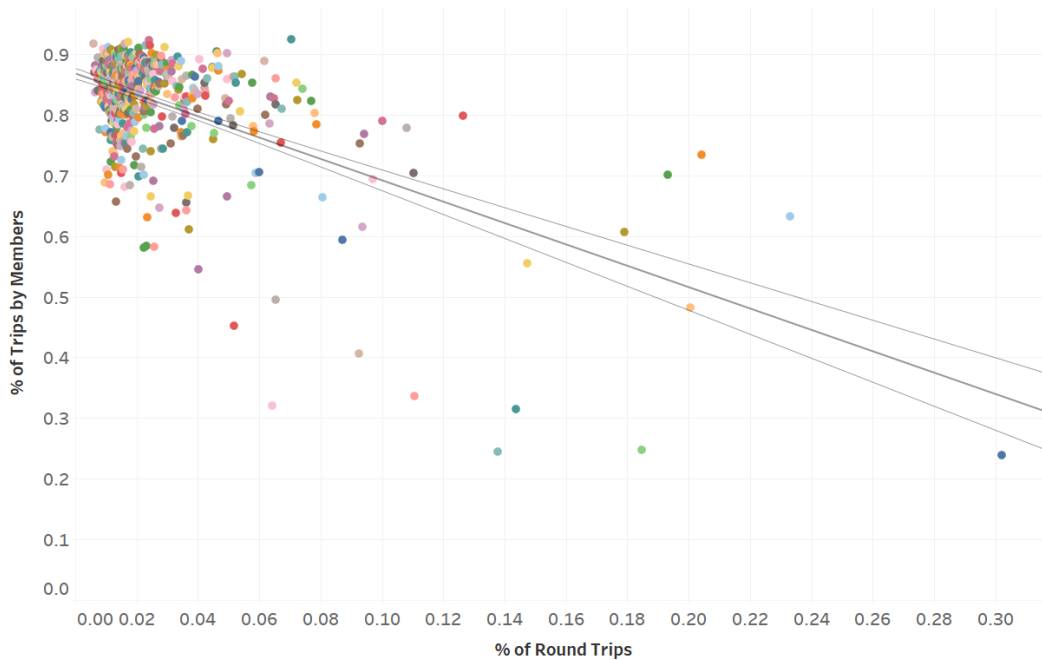
- The top 10 stations account for approximately 18% of all round trips.



## Marketing Team

The marketing team is interested in how people use the Bixi service - specifically, are they mainly taking long trips or short trips? What is the relationship between round trips and member trips at the station level? Do behaviors vary between members and non-members or by station?

Trips by Members vs Round Trips Correlation

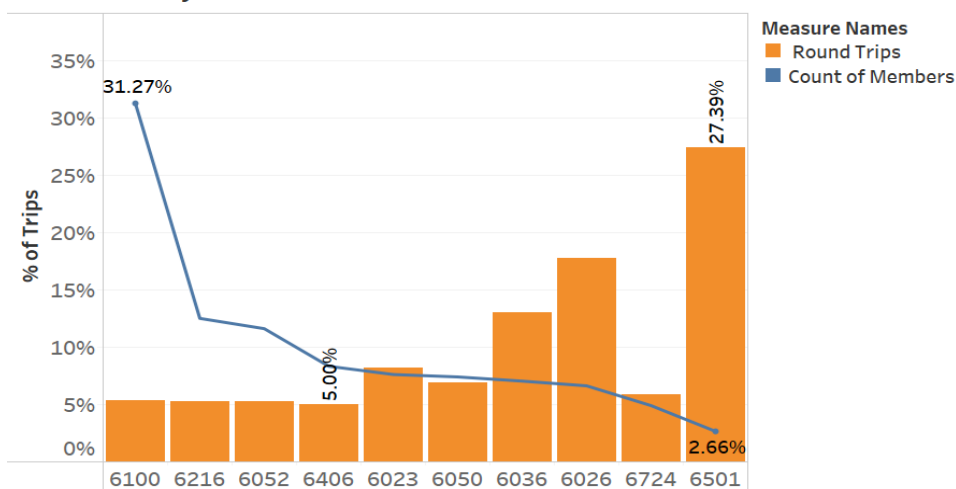


## Observations

- There is a highly negative correlation between round trips and member trips, revealing that when one variable increases the other decreases, and vice-versa.

We can begin to assume that the more Trip volume by Members there is, the less round trips there will be. And the opposite is also true. This is visually apparent in the following graph for the top 10 stations.

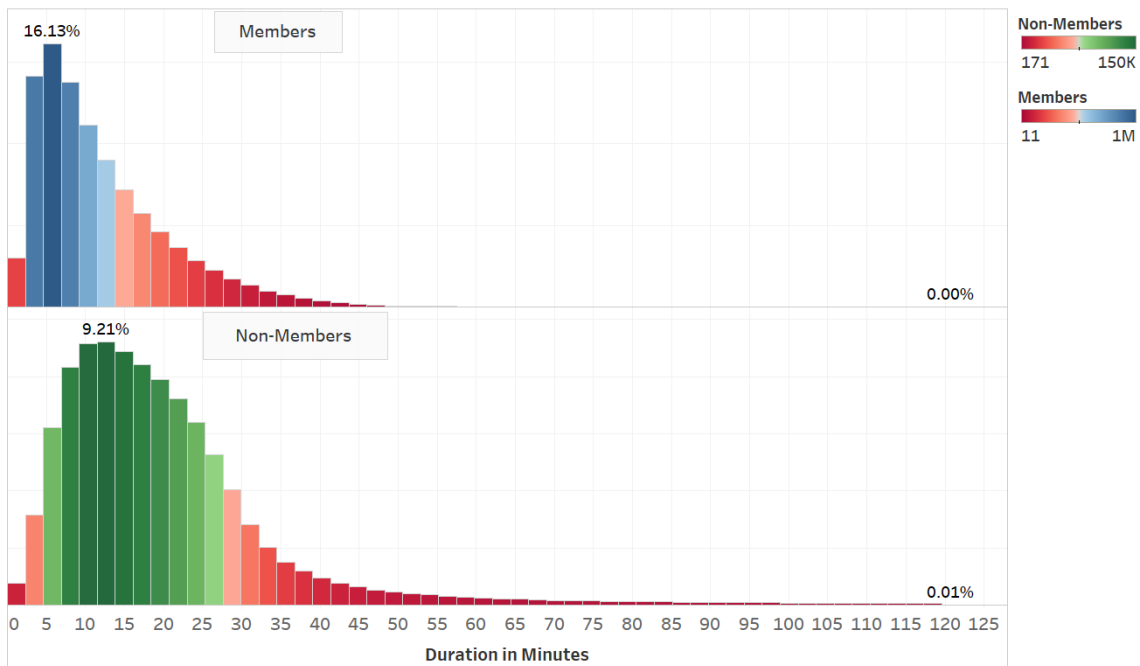
Relationship between Round Trips and Members by Station





Let's visualize the distribution of all trips by duration in minutes, and contrast this between member and non-member trips.

Distribution of Trips in Minutes

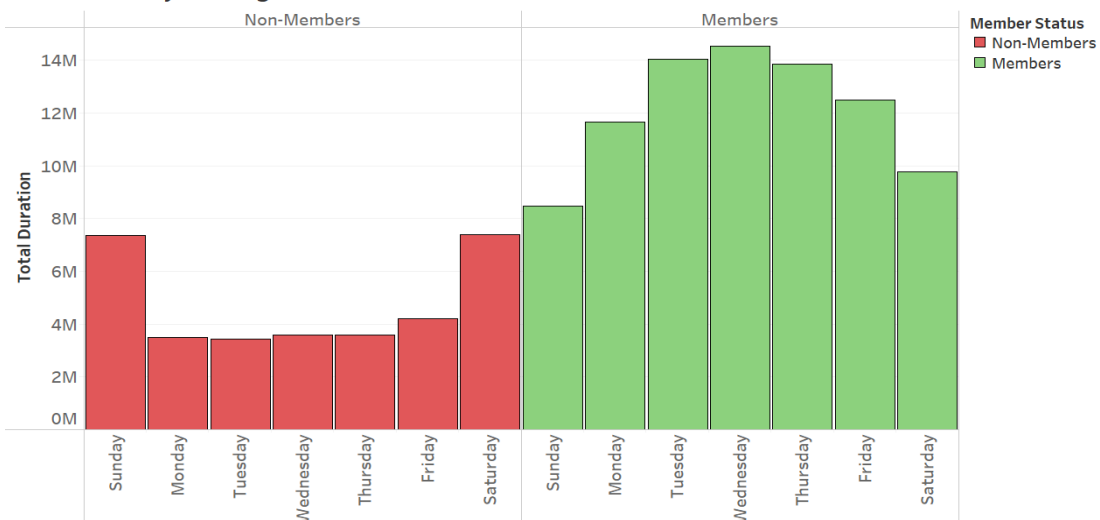


## Observations

- Most Members take 5 minutes trips, whereas non-members take 12 minutes trips.
- Non-members take longer trips overall.

The difference in ride lengths is noticeable and would indicate a more leisure-oriented usage vs a more "public transport", or pragmatic use of the bikes by the Members. This idea is reinforced by the fact that Membership users have a very stable use of the service during the week, but non-members are more of a weekend user.

Rider Activity Throughout the Week



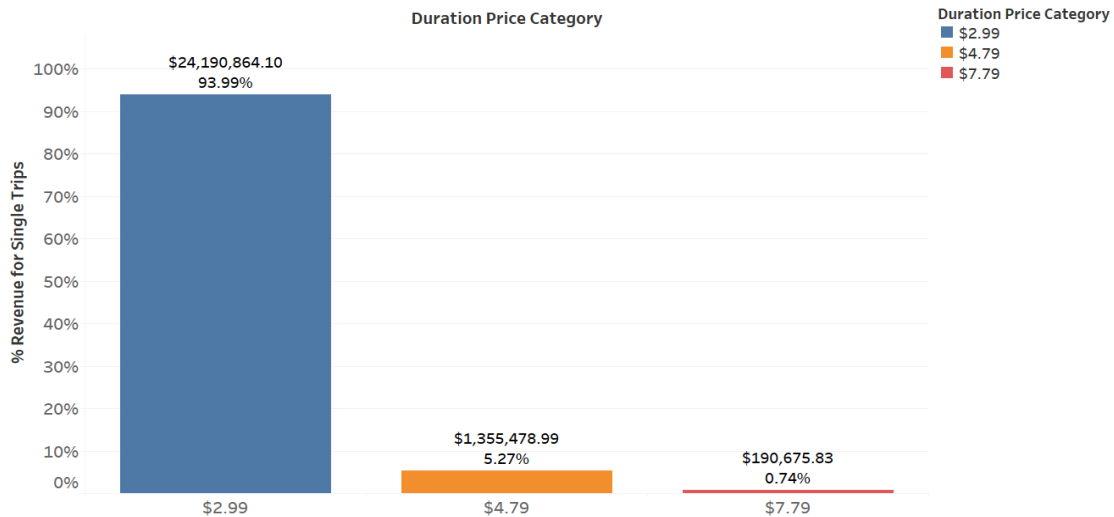


## Revenue

While the revenue Bixi generates from their members, and 1-day and 3-days passes is well understood by the business, they would like to get a better understanding of the revenue generated by infrequent users who make single, shorter trips an hour long or less. The pricing model for single trips is as follows:

- \$2.99 flat rate for each trip that is 30 minutes or less
- \$4.79 (\$2.99 + \$1.80) for trips greater than 30 minutes, up to 45 minutes in length
- \$7.79 (\$2.99 + \$1.80 + \$3) for trips greater than 45 minutes, up to 60 minutes

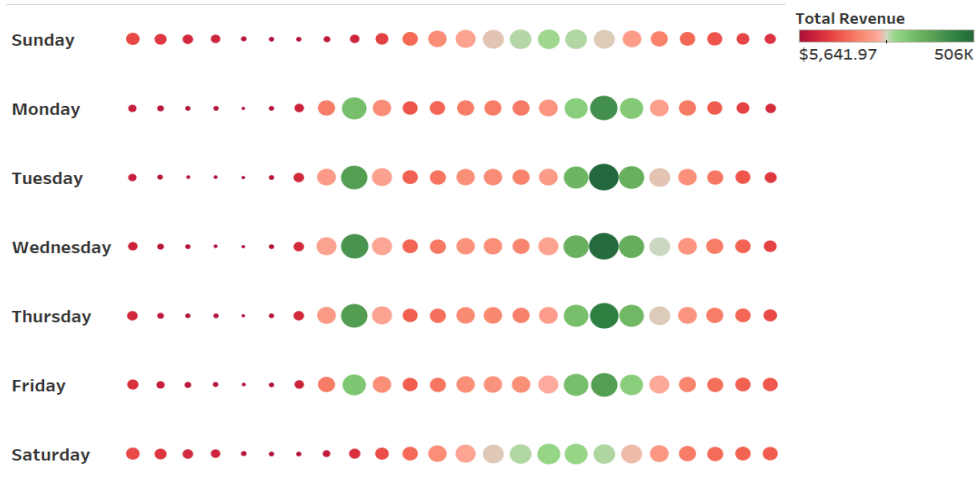
Revenue by Segment



## Observations

- Approximately 94% of revenue is generated from trips that are 30 mins or less.

Revenue by Hour in the Week



- The revenue generated closely matches the trends of Members, and non-members usage.
- The highest activity is apparent during the mornings and evenings during the weekday.





## Summary

By analyzing the trips data, we have seen that:

- both years follow a similar trend pattern where starting month is in April, ending month is in November, and Peak months are in the summertime of June, July, and August.
- The top 10 stations account for approximately 18% of all round trips.
- Round trips have an opposite affect on member trips, revealing that when one variable increases the other decreases, and vice-versa.
- Non-Members prefer a leisure-oriented usage vs Members preference a more "public transport", or pragmatic use of the bikes.
- Approximately 94% of revenue is generated from trips that are 30 mins or less.

## Recommendations

The final recommendations:

- Create more options for memberships that target weekdays in the afternoons, and evenings.
- Considering that non-member riders spend more time for each ride, messages about the comfort of the bikes and the different options that suits every single user may be well received. Even some announced improvement of the bikes on comfort, like improved seats or handlebars, could be considered if there is enough budget.
- Explore combined package offers with other service providers, eg. fitness training with bikes programs, exploring the city with tour guides, family activities with kid's programs, etc...

Some ideas about the advertising:

- Always with references to the recreational use of riding: sports, family days, city tours, etc.
- Digital advertising about leisure on social media platforms like Instagram, Facebook, Twitter, etc...
- Flyers or brochures in the top 10 most active stations.