Bike-Share Project

Company: SuperBikes Inc.

Version: Final Report

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Part 1

About the company

In 2020, SuperBikes Inc. launched a successful bike-share offering in Chicago. Since then, the program has grown to a fleet of 5,824 bicycles that are geotracked and locked into a network of 692 stations across Chicago.
The bikes can be unlocked from one station and returned to any other station in the system anytime. SuperBikes sets itself apart by also offering reclining bikes, hand tricycles, and cargo bikes, making bike-share more inclusive to people with disabilities and riders who can't use a standard two-wheeled bike. Most riders opt for traditional bikes; about 8% of riders use the assistive options. SuperBikes users are more likely to ride for leisure, but about 30% use them to commute to work each day.

Until now, SuperBikes' marketing strategy relied on building general awareness and appealing to broad consumer segments. One approach that helped make these things possible was the flexibility of its pricing plans: single-ride passes, full-day passes, and annual memberships. Customers who purchase single-ride or full-day passes are referred to as casual riders. Customers who purchase annual memberships are SuperBikes members.

Scenario

SuperBikes' finance analysts have concluded that annual members are much more profitable than casual riders. Although the pricing flexibility helps SuperBikes attract more customers, the director of marketing believes that maximizing the number of annual members will be key to future growth. Rather than creating a marketing campaign that targets all-new customers, he believes there is a very good chance of converting casual riders into members. He notes that casual riders are already aware of the SuperBikes program and have chosen SuperBikes for their mobility needs.

Therefore, the marketing analyst team needs to better understand how casual riders and annual members use SuperBikes bikes differently, why casual riders would buy a membership. The team is interested in analyzing the SuperBikes historical bike trip data to identify trends. From these insights, the team will design a new marketing strategy to convert casual riders into annual members, after SuperBikes executives' approval of the recommendations.

Part 2

Team

● Director of marketing: he is responsible for the development of campaigns and initiatives to promote the bike-share program. These may include email, social media, and other channels.

● SuperBikes marketing analytics team: a team of data analysts who are responsible for collecting, analyzing, and reporting data that helps guide SuperBikes marketing strategy.

● SuperBikes executive team: the notoriously detail-oriented executive team will decide whether to approve the recommended marketing program.

Objectives

● Maximizing the number of annual memberships by converting casual riders into annual members.
● Understand how casual riders and annual members use SuperBikes bikes differently.
● Why casual riders would buy a membership?

Part 3

Data analysis process

For this analysis we will use historical bike trip data, and we will follow the data analysis process of ask, prepare, process, analyze, share, and act.

1. Ask

To guide the future marketing program and design our recommendations we will be asking the following questions:

1. How do annual members and casual riders use SuperBikes differently?
2. Why would casual riders buy SuperBikes annual membership?

2. Prepare

We will use SuperBikes historical trip data to analyze and identify trends. The data has been made available by Motivate International Inc. This is public data that can be used to explore how different customer types are using SuperBikes bikes. Data-privacy issues prohibit using riders' personally identifiable information.

The data is organized in comma separate values files (.csv files). We will address any issues with biased data, integrity, licensing, privacy, security, and accessibility of the data in case we encounter any. The data is reliable and reproductible for further analysis. Data privacy is compliance with the company policies in these cases, without exposing any compromised information from our users. Data is maintained and reviewed by our team constantly.

3. Process

For the analysis of the data, we will use different tools and systems. We will start using Microsoft Excel for our analysis, then we will use BigQuery (SQL database management system by Google), Python and R programming languages. We will see the difference between them and why sometimes is more convenient to use one over the other depending on your data.

From Microsoft Excel, data would be converted into excel file for manipulation, transformation, analysis, and visualization. In BigQuery, a database would be created to populate tables from the original data for its analysis. With Python and R programming languages, we will apply the same types of concepts with the data as in Microsoft Excel, manipulation, transformation, analysis, and visualization of the data.

When the data is very large Python or R programming languages are more convenient and faster, avoiding any crash or problems with the analysis that Microsoft Excel could cause.

First, we will start cleaning our dataset, checking for duplicates, errors, data formatting, inconsistencies, and missing values. The dataset is composed of several fields like riders_id, start_day and end_day of the ride, start_station and end_station, station_id, location of the stations, and whether the rider has a membership or is a casual user. From there, we will create a new field called "ride_length" where we will calculate the length of each ride by subtracting the "started_at" from the column "ended_at". Another field to create would be the "day_of_week" to calculate the day of the week that each ride takes.

4. Analyze

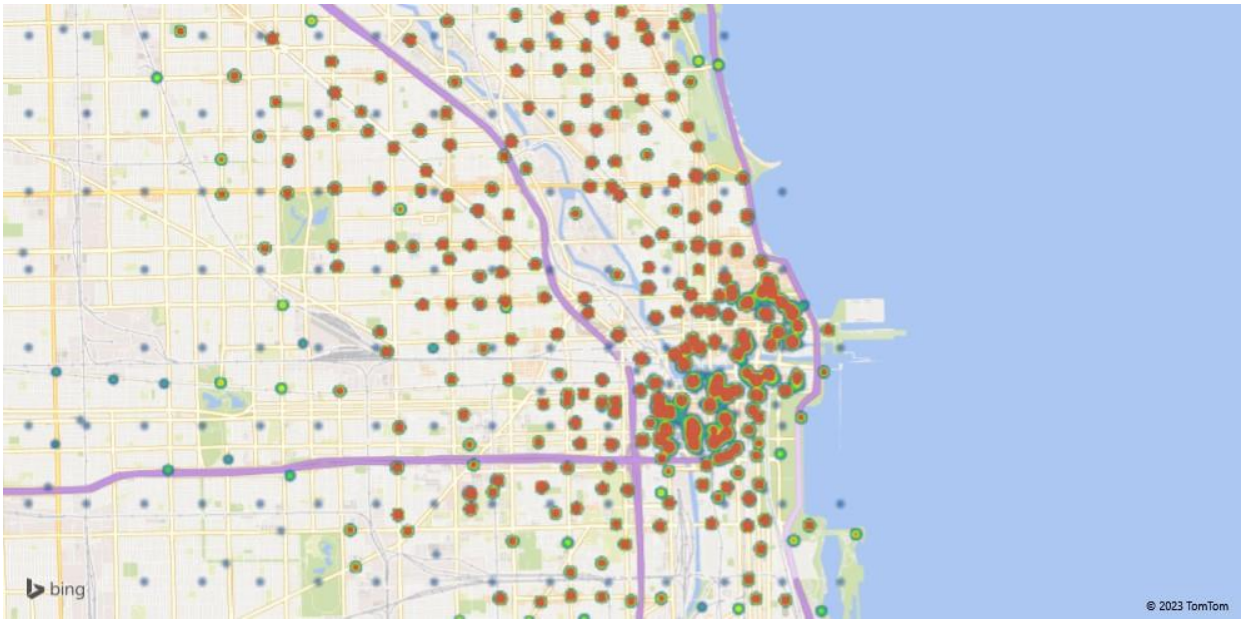
We perform some calculations in the data to identify trends and relationships using formulas, functions, pivot tables and visualizations in Microsoft Excel. With these insights, we will answer our business questions. We use statistics to see the correlation between different attributes of information, and the quality of our data. The r coefficient is 0.94 for our data, which states that there is a great correlation or relationship between the data.

The data was distributed in individual files for every month of the year. After transforming and calculating specific criteria for every month, we merge our results into a full-year view for our last analysis of the historical bike trips for the year of 2022.

5. Share

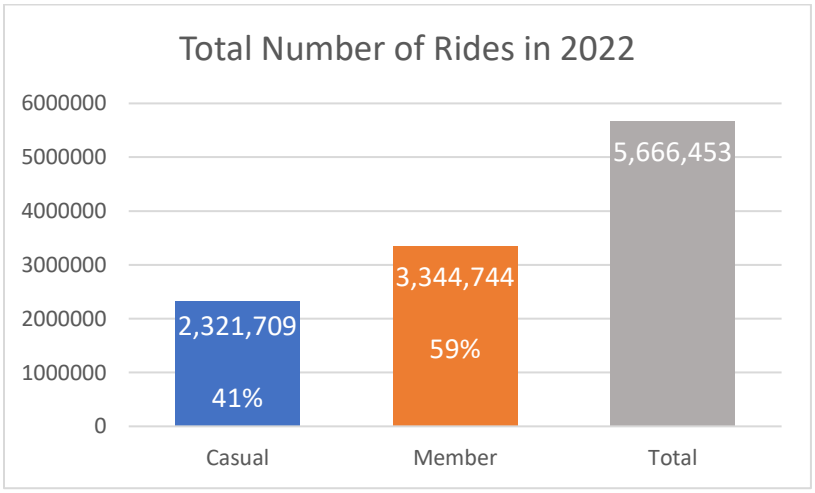
We created some visualizations to share and communicate our findings to the stakeholders. We are trying to understand better how our casual riders and members use SuperBikes differently, and how we can create a specific marketing strategy to convert casual riders into annual members.

From our analysis we found some interesting trends and relationships from our riders. First, we start with the heatmap of the rides in the Chicago area, where we can observe that most of the rides are close to the downtown area.



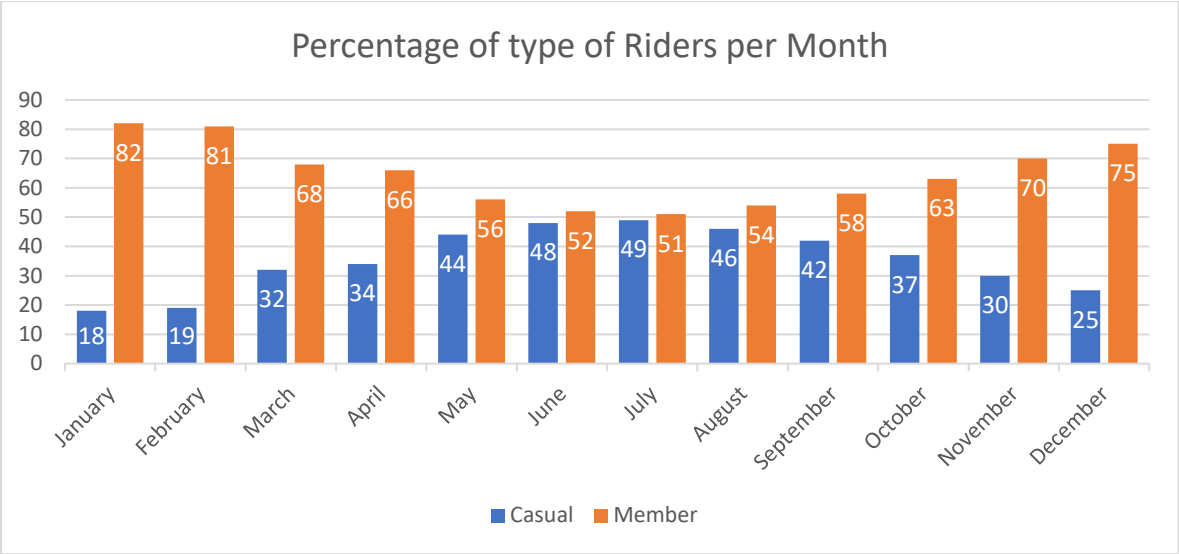
Our focus is to analyze the behavior of the casual and annual member riders throughout the year of 2022, month by month and the whole year as the total.

In our first visualization, we see the total numbers of rides per type of user: member or casual riders, and the overall amount of rides in the whole year.



This graph indicates that 59% of all rides for 2022 were done by annual members, and 41% by casual users. That information indicates that we still have a large margin of riders that can be converted into annual members with the appropriate marketing campaign, promotions, and deals.

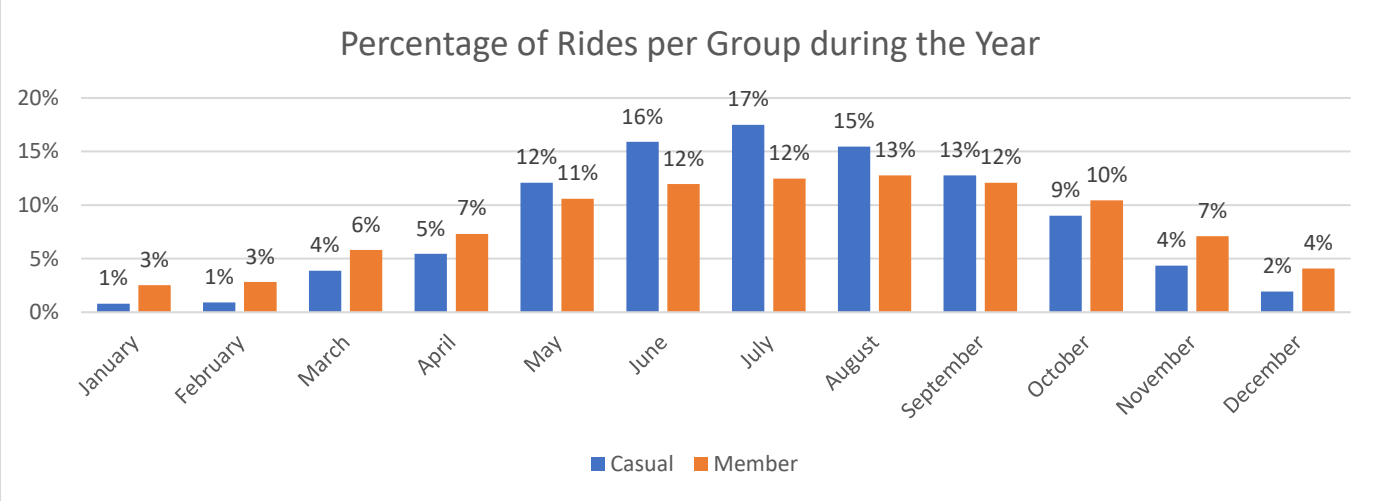
Our next chart evaluates the percentage of riders per month depending on the type of user, with membership or casual.



During the summer months (June, July, and August), both users (members and casuals riders) almost equal the use of our service. This little variation could be caused by the affluence of tourists who would prefer our service to move around the city, and casual riders taking advantage of the good weather.

It is very clear how the weather plays an important role for the casual users. For the colder months, casual riders seem to use different type of transportation or doing less recreational rides. More data and surveys should be conducted to determine if that difference is justified only by weather issues or if there is another trend that we are not aware of.

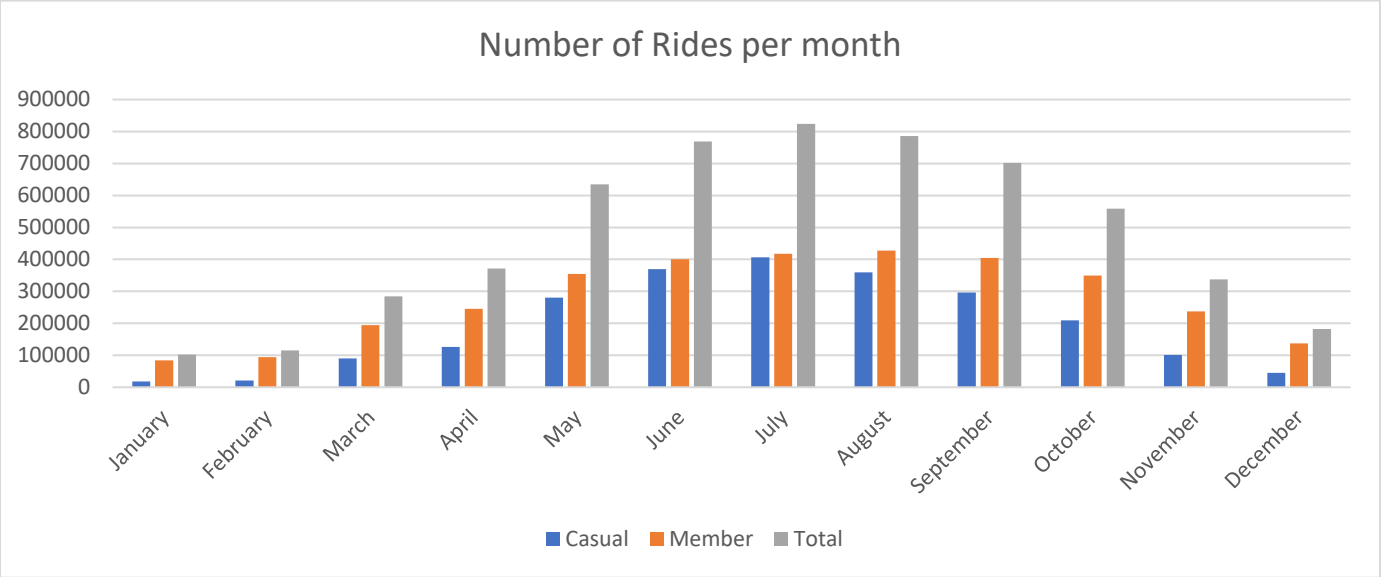
Now, we will evaluate the percentage of each group during the whole year, how they distribute themselves per month.

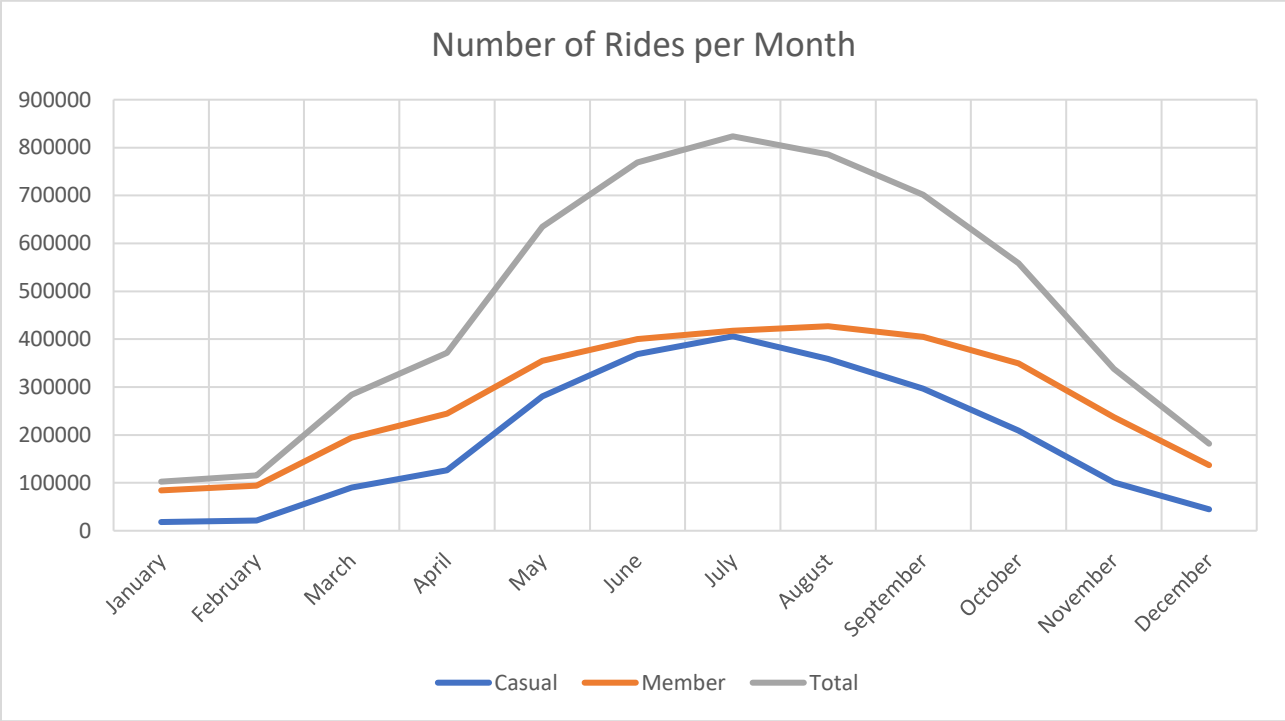


In this chart for the casual users, we have that 82% of the rides occur during the months of May, June, July, August, September, and October. And 48% of the rides for the months of June, July, and August, which confirms our hypothesis that our casual riders are more likely to use our service based on the rise of the temperature from the colder months. Also, the expected affluence of tourists occurs majorly in summer times.

For members, we have 70% of the rides during the months of May, June, July, August, September, and October. And 49% of the rides for the months of June, July, August, and September, which are more consistent during the rise of the temperature, that's why they have an annual membership.

Another interesting graph is the total number of rides per month compared with the members and casual users.



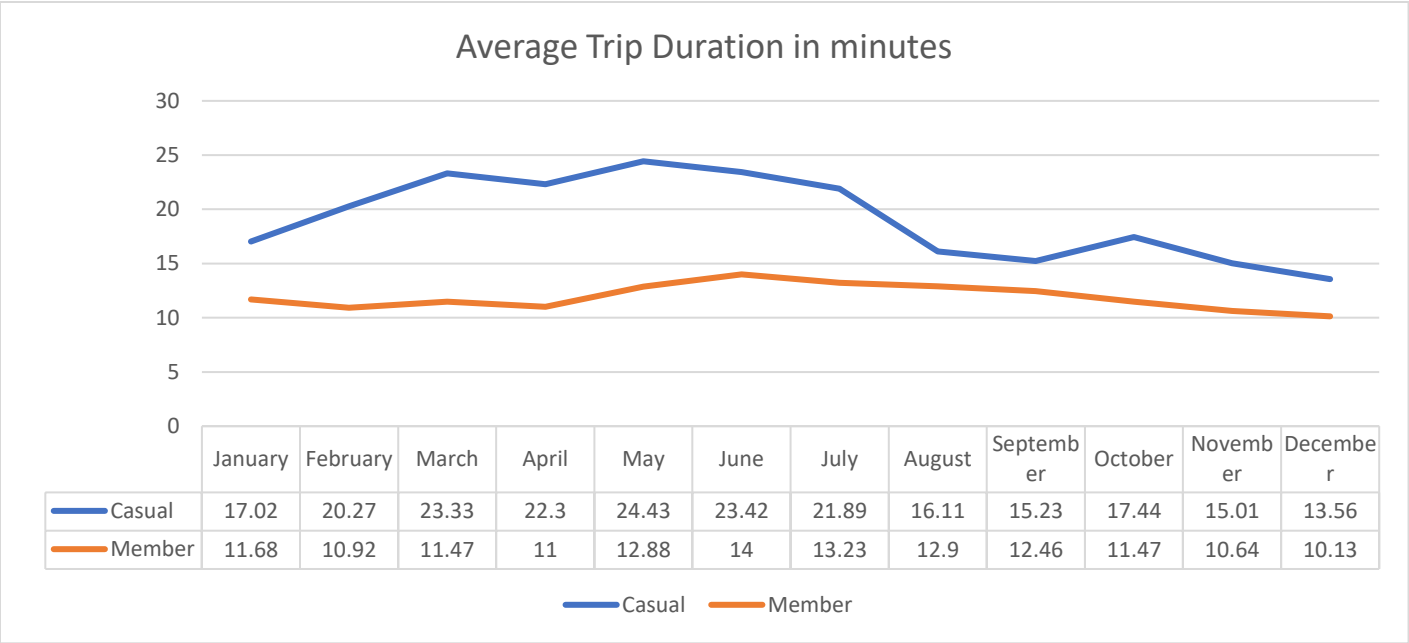


Our riders seem to follow a seasonal trend, where we have most of our rides in summertime (June, July, and August). This seasonal behavior is followed strongly by the casual riders more than the members as it is expected. Chicago experiences harsh winter seasons and very pleasant summers, and our riders adjust their habit based on that as well.

From previous data we are knowledgeable that 30% of our member riders commute to work using our service on average. The rest of the member riders seem to use the SuperBikes service more often and consistently than the casual riders do for the same time of the year. That confirms the reason why members subscription is preferred by those riders.

In the summer period (June, July, and August) we see a clear relationship between members and casual riders. They both groups have almost the same number of rides, which would open a possibility of getting more memberships during those times if we target well our casual customers.

It is interesting to see the average trip duration per month in minutes to draw some conclusions or pattern from there.

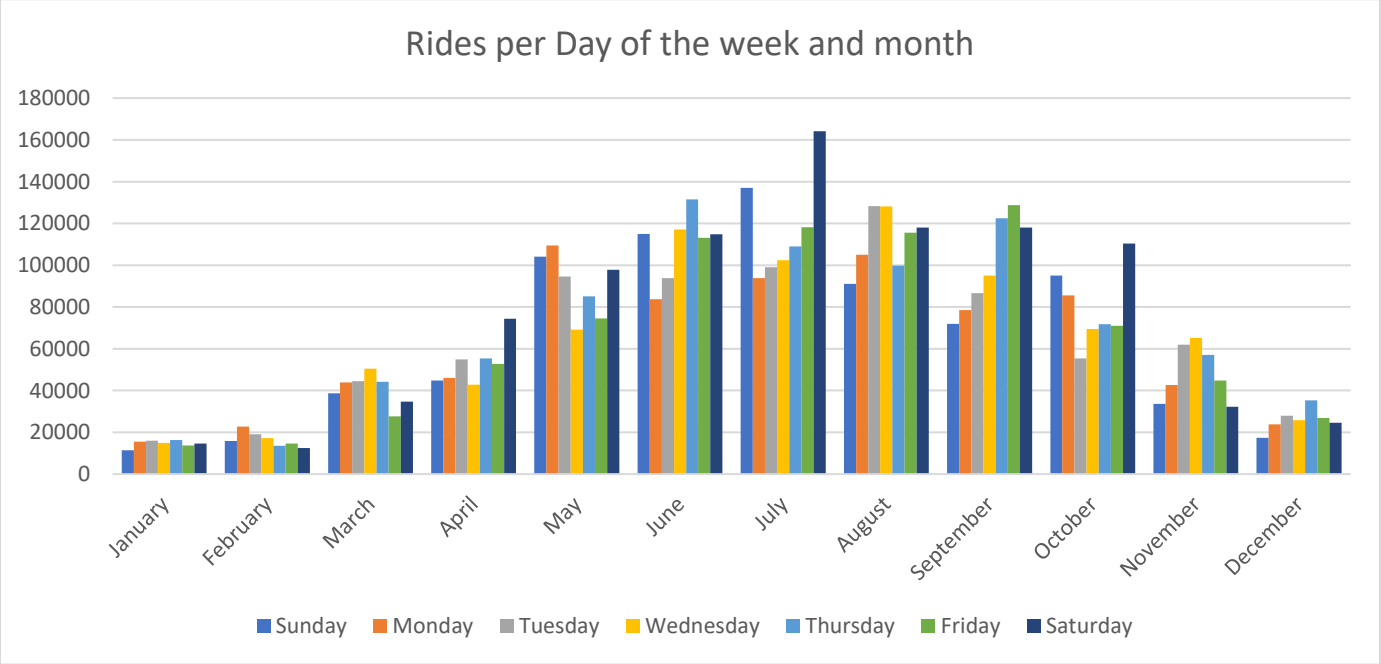


	January	February	March	April	May	June	July	August	September	October	November	December
Casual	17.02	20.27	23.33	22.3	24.43	23.42	21.89	16.11	15.23	17.44	15.01	13.56
Member	11.68	10.92	11.47	11	12.88	14	13.23	12.9	12.46	11.47	10.64	10.13

The casual riders' average trip duration is double that of the member ones for most of the year, which could suggest the more leisurely type of rides compared to the one with memberships. Also, it could point to longer distance, or same distance but at slower pace.

For the annual membership rides the duration maintains a steady pace which could suggest shorter and faster trips. The urgency to be at their locations quicker and less exposed to entertainment while they are riding.

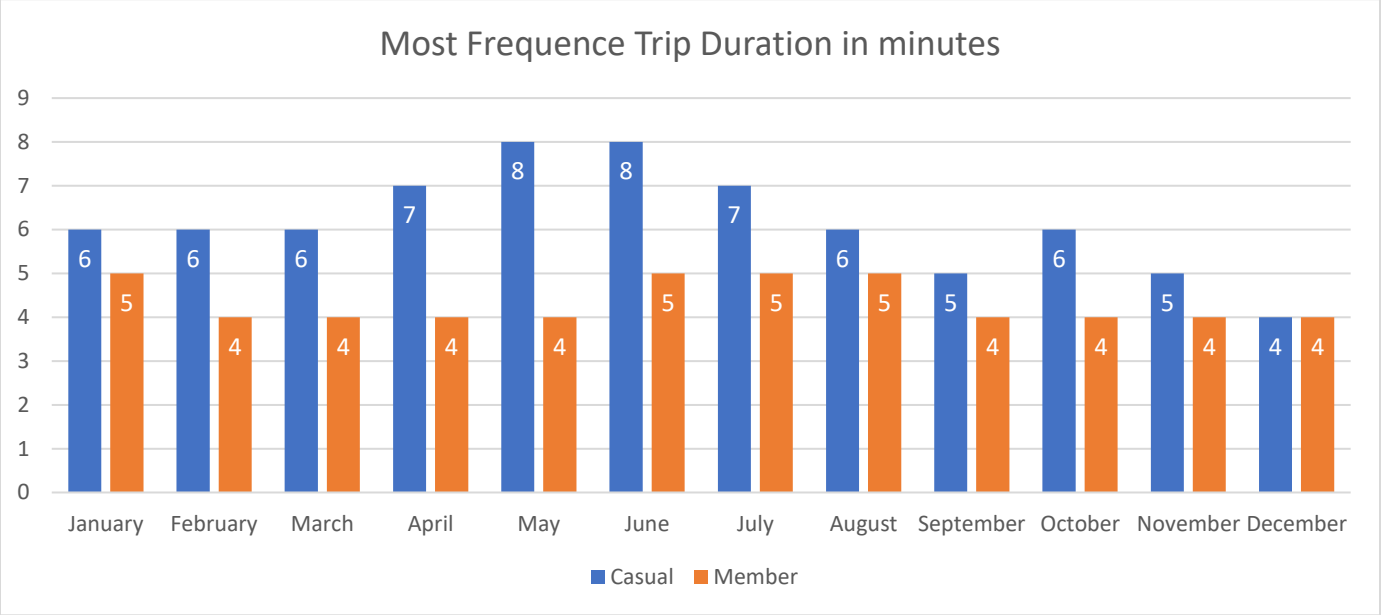
Other visuals to better understand the trend or pattern from our casual and members riders are the comparation between the total rides per day of the week and per month for all our users.



Again, there is a tendency for the rides to increase for warmer months compared to the colder ones. Also, we see an increase in the rides from Thursday to Sunday from April to October. However, for the winter months any day shows a stable and consistent number of rides.

The increase in the rides on weekends in the warmer months could be a reason for the increase in our casual riders, riders that want to enjoy their free time having a nice bicycle ride. However, for the colder months most of the riders are due to our member users who are riders for the whole year.

In the following analysis we observe the most frequent trip duration in minutes per month.



Here we observed the little variation for the most frequent trip duration for the whole year, with the casual riders always spending more time on their rides. The consistency of the member users on the most frequent trip duration could be interpreted as shorter and faster rides than the casual, and with a main purpose behind those rides in contrast with the casual users that they are expected to have a more pleasant and enjoyable rides.

6. Act

Based on our analysis and results we can conclude that there is still a big margin of getting the conversion of casual riders into annual member users. Our target should focus on the trend of having more riders in the months where the temperature is higher for the Chicago climate, so we could introduce seasonal memberships besides the annual membership, with some incentives for going from seasonal members to annual membership.

Maintaining the passes for single-rides or day-passes would still work with our casual riders that only use our services for special events occasions. However, for those who still use our services but not for the whole year we would give them the option and commodity of getting the seasonal passes. Eventually, we would target those from seasonal passes into the annual membership with promotions and more advantages than the previous services. We will treat our annual members as our executive member riders, as our top users. With a great marketing campaign explaining the benefits of being an annual member or otherwise a seasonal member, we can accommodate more users into the membership strategy, and get more revenues for that case.

The next step would be meeting with the financial team to elaborate on the introduction of the seasonal memberships, the benefits, differences with the annual cost, and how we would upgrade our annual membership to make it as an executive level. Project our growth and revenues for the next year and expected transition between seasonal to annual membership users.

A meeting with the marketing department to plan the campaign for the new seasonal membership. Detect the type of user who identifies with the new membership and how the actual annual members would see the new pass and their upgraded membership. We want to bring casual riders from their actual status to a seasonal or annual membership, not downgrade annual members to seasonal ones.

Another recommendation would be to make the annual membership available to be shared with family members, or one more person. This would allow the casual riders to make better use of the whole year's membership without thinking that it is not convenient for them, especially for the winter months.

Finally, another recommendation would be promoting seat and gloves warming for all the annual riders in the colder months. Casual riders' decay with the temperature and climate, helping them to overcome inclement weather could change their minds in using our service even with severe climate.

All these recommendations are subjected to stakeholders' evaluation and approval. Possible changes and modifications are encouraged to properly improve our goals and objectives with this project, increase the turn over of casual riders into annual members.