Cyclistic bike- share analysis case study

Final capstone for the Google Data Analytics Certificate

by Oshrat Weinberger

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Table of Content

About me

Oshrat Weinberger

Data analyst Business analyst

Hi, my name is Oshrat, I am coming from Israel, and I have been living in Denmark for the last 8 years.

I am educated as a classical musician and have been playing the flute since I was 7 years old. I have gained tremendous amount of experience and valuable skills while working with different symphony orchestras both in Israel and in Denmark during the last 16 years.

During corona, I have decided to find a new challenge and concur a new area. I started exploring the data world and was fascinated by the endless possibilities and the huge affect it has, if handling correctly. I was also very surprised realizing how much analysis I have been doing as a musician, and how similar the process is.

I love communicating and connecting with people, learn new skills, super ambitious and positive. You will always see me smile and energetic, asking questions and coming with new ideas and new perspectives to solve problems.

After long months of studying different tools, such as SQL, R, TABLEAU and POWER BI, on different platforms and courses, I am proud to present you one of my case studies.

You are very welcome to reach out for any question, comment or wish to collaborate. Any feedback is highly appreciated.

Thank you for your time and I hope you will enjoy reading,

Oshrat.

For questions or comments owanalyst@gmail.com

Connect or follow me on https://www.linkedin.com/in/owda/

Introduction

In this scenario I am a junior data analyst working in the marketing analyst team at Cyclistic, a bike-share company in Chicago. The director of marketing believes the company's future success depends on maximizing the number of annual memberships. Therefore, my team wants to understand how casual riders and annual members use Cyclistic bikes differently. From these insights, my team will design a new marketing strategy to convert casual riders into annual members.

1. Identify the business task

In the coming up analysis I need to find and understand the difference in user's types- annual riders and casual riders. Based on these insights, the marketing team will design a new marketing strategy targeting casual riders and convert them to annual riders, which will result in higher revenue for the company. For that purpose, I need to analyze the 2021 data and find trends in behavior and usage of each riders' category.

2. Consider key stakeholders

My stakeholders are my direct manager- the marketing director, my team of marketing analytics, and the executive team of Cyclistic.

In order to analyze the data, I need to verify that I understand:

What is the problem I need to solve?

How can my insights help solve this problem?

More specific questions to guide me through my analysis:

1. How do annual members and casual riders use Cyclistic bikes differently?

2. Why would casual riders buy Cyclistic annual memberships?

Preparation

- The data is located in Amazon Web Services.
- The data is organized within CSV files for every month.
- Data credibility:
    - The data appears to be reliable, original (collected by the company itself), cited, current and comprehensive.
- Licensing, privacy, security, and accessibility:
    - The data "Lyft Bikes and Scooters, LLC ("Bikeshare") operates the City of Chicago's ("City") Divvy bicycle sharing service" is owned by the city of Chicago:

      Index of bucket "divvy-tripdata"

      Under this license

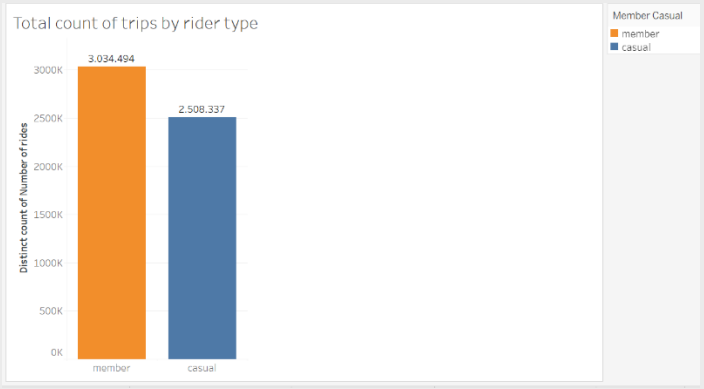
      Data License Agreement | Divvy Bikes
- Data's integrity:
    - The data owned by the company, and therefore is very likely to be reliable.
- Since there is a lot of data available, I chose to focus on the data from 2021 (January 2021-December 2021).
- In order to protect the users' data privacy, using financial data and personal information is prohibited.
- Tools I am going to use for this case: **Excel**, **R** and **Tableau**

Analysis process and visualizations

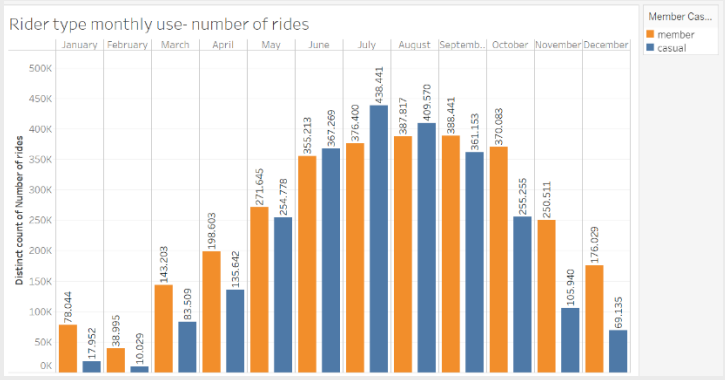
During my analysis I always followed and verified stable facts, such as number of trips, to make sure my insights are correct and reliable.

I used intentionally the same color which represents each customer segment through the whole presentation, to be consistent, and to avoid misunderstandings and confusions.

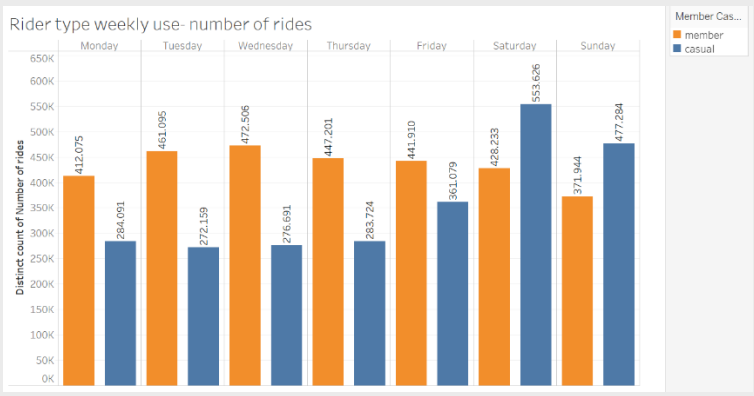
I started by analyzing and comparing the customers' number of trips:



I dived deeper to see how the number of trips changed for every customer segment through the year. I found out that Casual customers use the bikes more than Members during the summer, especially during July and August:



Then, I wanted to see how each customer segment behaves during the week, through the year, and found that Members tend to use the bikes during the weekdays, whereas the Casuals tend to use them during weekends:



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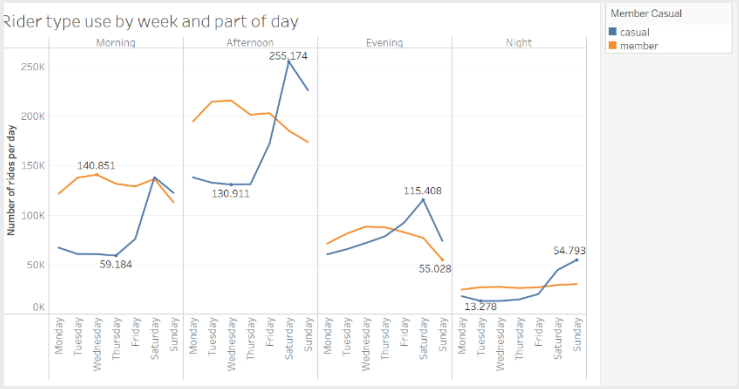
The next step was to drill down even more, to explore what is the exact time period Casuals ride more than Members. I categorized the time given into part of day, referring 06.00-12.00 as morning, 12.00-18.00 as afternoon, 18.00-0.00 as evening, and 00.00-06.00 as night.

On the next graph, you can see the use of every segment (Member, Casual) in each part of the day (morning, afternoon, evening or night) of every day of the week:

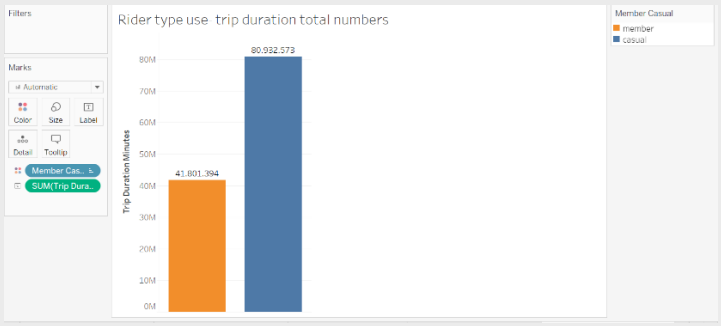


This shows very clearly that Casuals use the bikes on **weekends** afternoon, evening and nights, whereas Members use the bikes mostly during mornings, afternoons during **weekdays**.

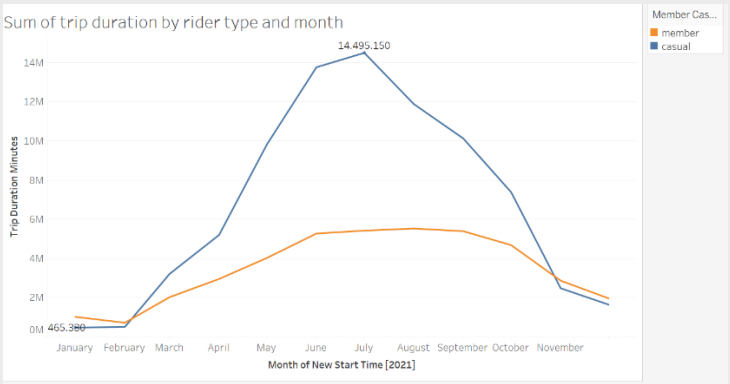
Therefore, my first recommendation is to suggest discounted membership during the weekends, where casuals are more likely to rent the bikes.

My next step on my analysis was to check the length of use for every customer segment.

It is very clear from the graph, that Casuals use bikes for longer trips than Members do:



I continued by analyzing the monthly trip duration of each customer segment:



This shows that Casuals take their longest trips during the summer (June, July, August).

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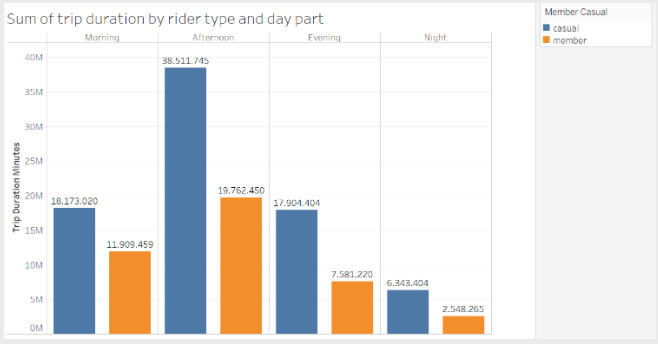
The next step was showing the trip length of each customer segment by part of day:



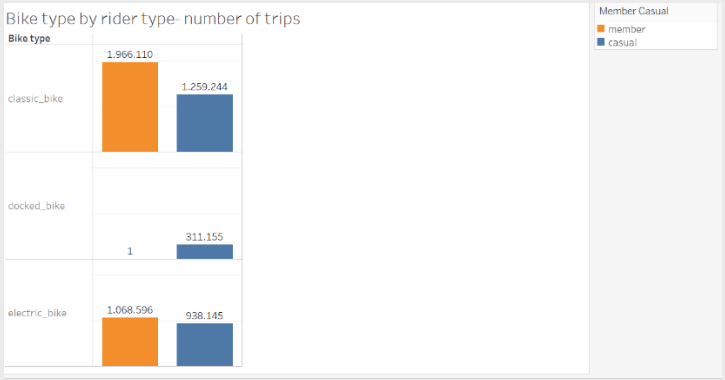
Casuals' trips are **twice-3 times** longer than Members during afternoons, evenings, and nights.

As a result of analyzing the trip duration, my recommendation is to offer discounts on memberships during afternoon, evenings and nights, specifically during weekends on June, July and August.

Another option would be to limit the duration of each rent to everyone who is not a member.

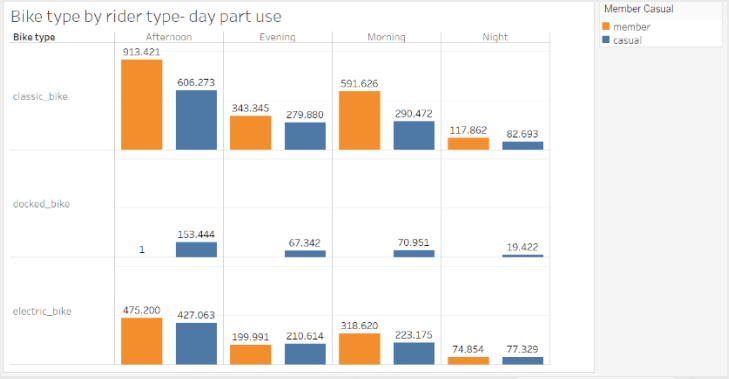
On my next step, I wanted to analyze the customer's bike preference.

Here you can see the number of trips used by each customer segment, for each of the three types of bikes the company offers (classical, docked, and electric):



From this graph you can understand that docked bikes are used only by Casuals.

I wanted to see the use of different types of bikes by the customers, for each part of day:



***Please note that the parts of day (morning, afternoon, evening and nights) are not presented at the expected order**

From this graph we learn that Casuals use electric bikes more than Members during evenings and nights.

Therefore, my last recommendation for this case would be to limit rent of electric bikes to members only, especially during evening and nights.

Recommendations

1. **Suggesting discounted membership during the weekends, where casuals are more likely to rent bikes.**

2. **Offering discounts on memberships during afternoon, evenings and nights, specifically during weekends on June, July and August.**

***Another option would be to limit the duration of each rent to 15 minutes to everyone who is not a member.**

3. **Limiting rent of electric bikes to members only/ offering discounted memberships to customers who are interested in renting electric bikes during evening and nights.**

Further analysis

My next step will be to analyze the start station for each customer segment, to better understand the areas where casuals prefer to rent bikes from and recommend specific stations for advertisements or offers. I will analyze it the exact way I analyzed the other parameters (number of trips, trip length and preferred bike type) using number of trips and trip length, for every month, day of week and part of day.

Thank you for reading.

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