



# **Case Study 1 :**

## **How Does a Bike-Share Navigate Speedy Success**

***Google Data Analytics Capstone - Vignesh Naidu***

# Company Background

In 2016, Cyclistic launched a successful bike-share offering. 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.

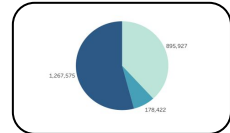
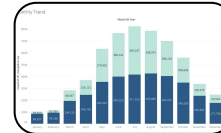
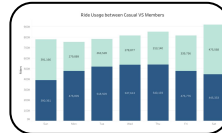
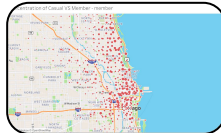
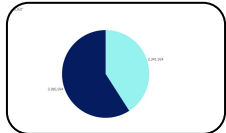


Cyclistic's finance analysts have concluded that ***annual members are much more profitable than casual riders***. Although the pricing flexibility helps Cyclistic attract more customers, Moreno believes that **maximizing the number of annual members will be key to future growth**.

# Problem Statement



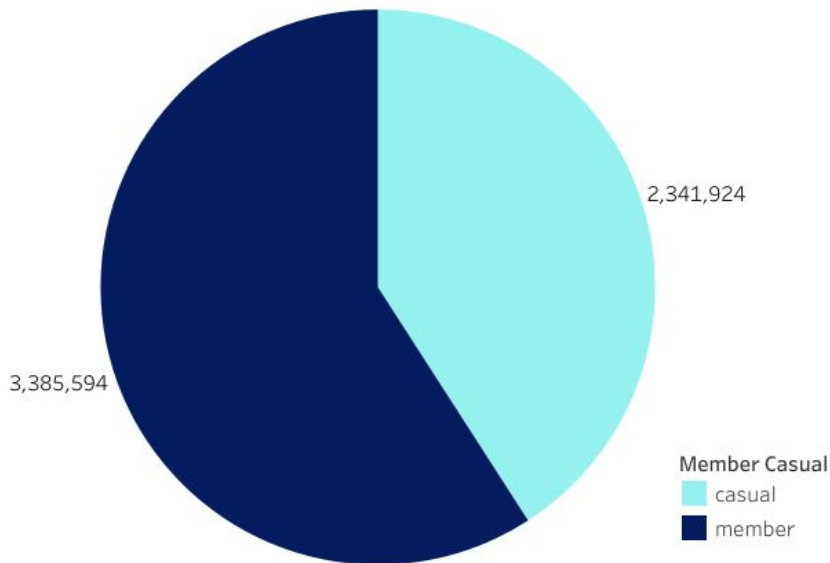
- How do annual members and casual riders use Cyclistic bikes differently?
- Why would casual riders buy Cyclistic annual memberships?
- How can digital media used to influence casual riders to become members?



# Data background

The dataset I used has been made available by **Motivate International Inc.** and is made public :

*Members VS Casual*



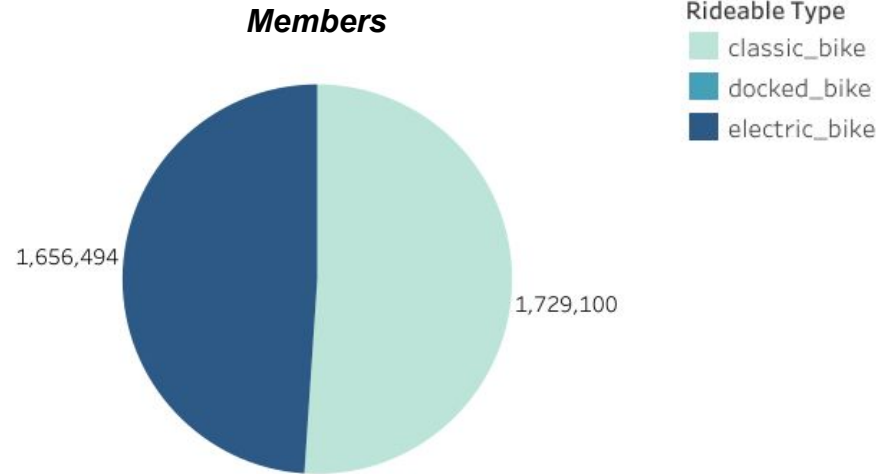
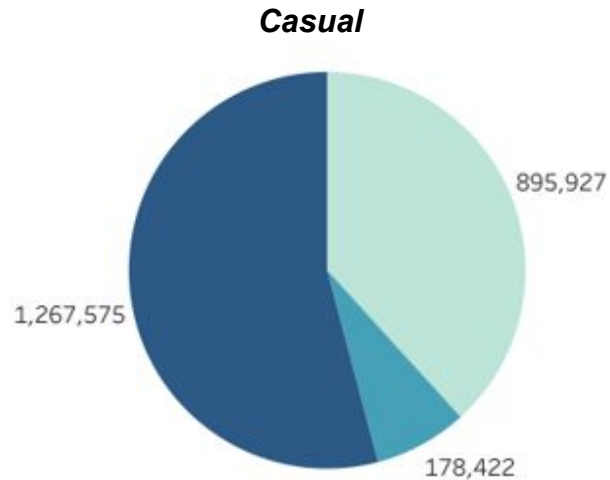
- It consists a series of information on riders for the past 12 months ( Dec 2021 - Nov 2022 )
- The total riders amounted to 5,727,518 and they are divided into two main categories :
  - Annual Members : **~59%** (3,385,594 riders)
  - Casual : **~41%** (2,341,924 riders)
- Longitude, Latitude, Member/Casual, Start Ride Time, End Ride Time, are some of the metrics available



# Difference 1 : Rideable Type

Cyclistic offers three rideable types : *Classic*, *Docked*, *Electric* bikes and here we can see that

**Annual Members only use the Classic & Electric** while **Casual uses ALL**.



Rideable Type

- classic\_bike
- docked\_bike
- electric\_bike



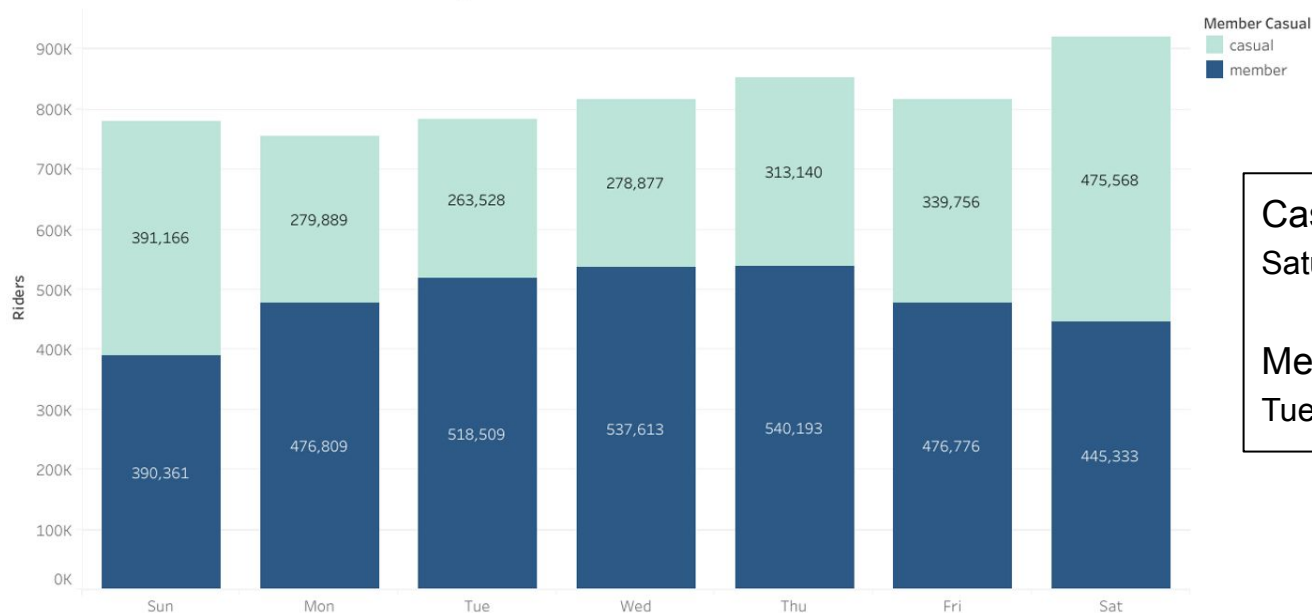
Casual uses **Electric bike** the most (**54%**)

Members uses **Classic bike** the most (**51%**)



# Difference 2 : Daily trend (no. of riders)

Ride Usage between Casual VS Members



Casual peaks on **weekends** :  
Saturday & Sunday

Members peaks on **weekdays** :  
Tuesday, Wednesday, Thursday,

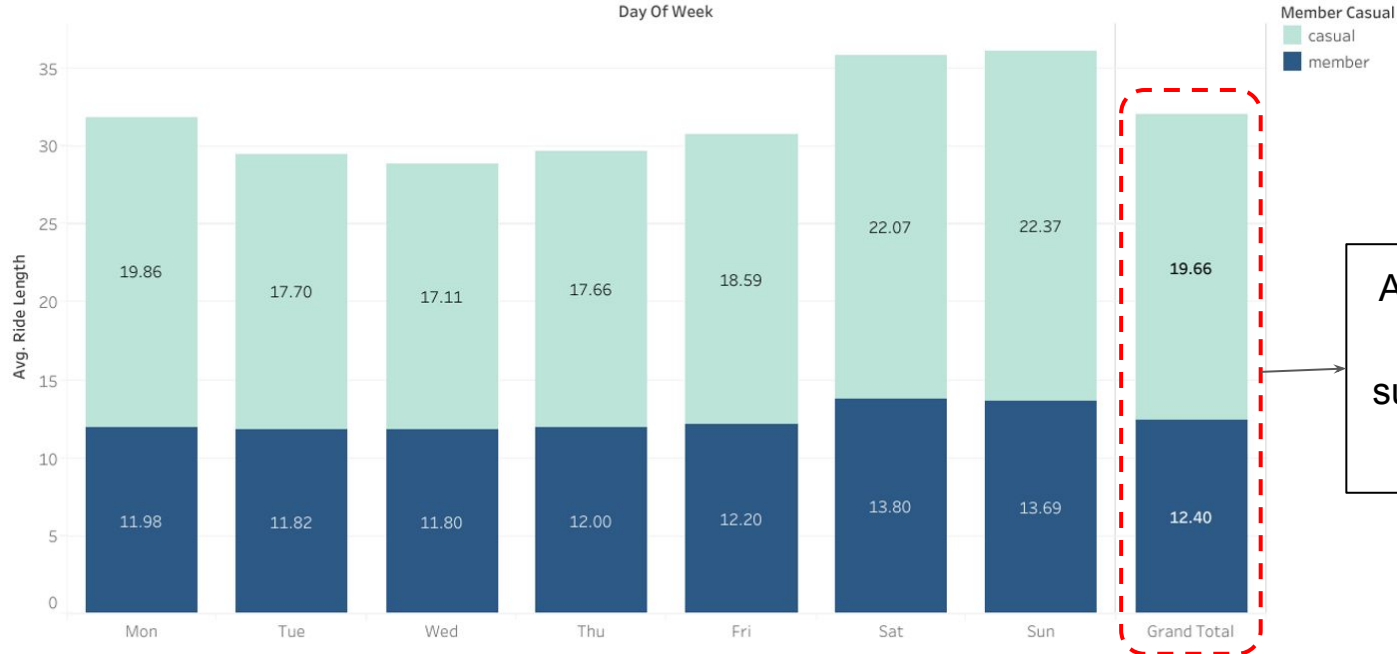


*\*Results are only based on Classic & Electric rideable types to avoid bias*



# Difference 3 : Daily trend (avg ride duration/rider)

Average Ride Length of riders (Daily Trend)



Average ride length  
of casual riders  
surpasses members  
by **58%**



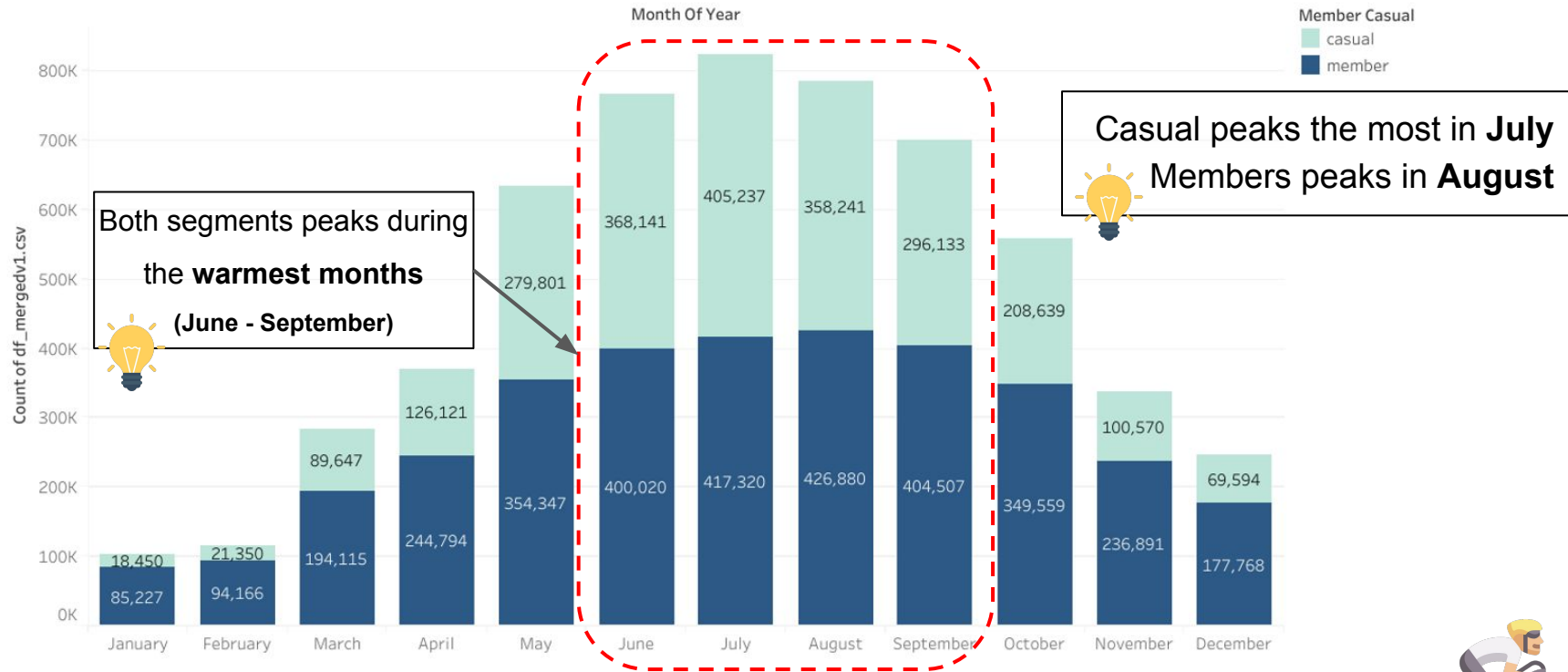
*\*Results are only based on Classic & Electric rideable types to avoid bias*





# Difference 4 :Monthly trend (no. of users)

Monthly Trend



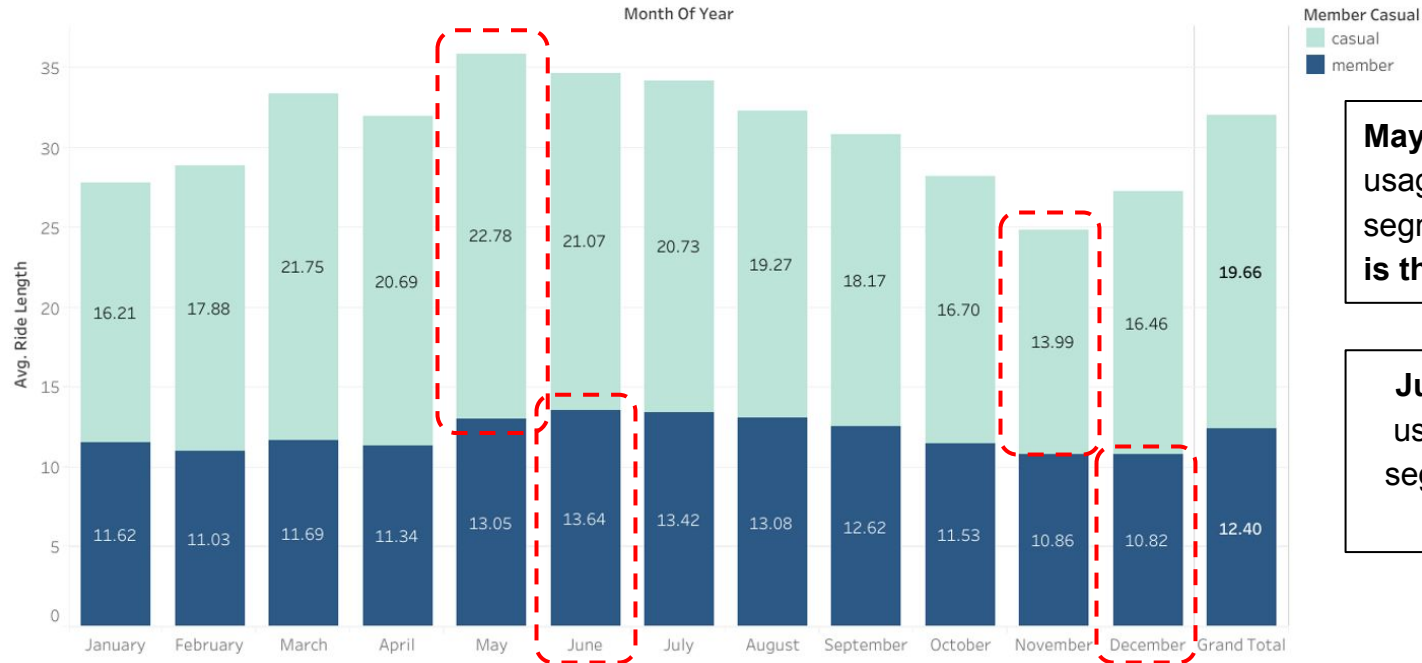
\*Results are only based on Classic & Electric rideable types to avoid bias





# Difference 5 : Monthly trend (avg ride duration/rider)

Average Ride Length of riders (Monthly Trend)



**May marks the longest** usage of bikes for Casual segment while **November is the shortest**



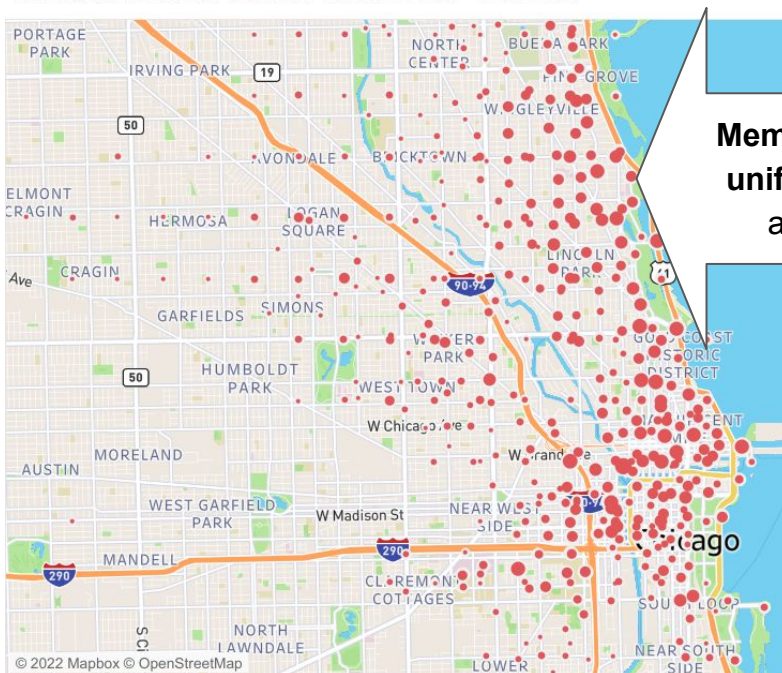
**June marks the longest** usage of bikes for Annual segment while **December is the shortest**

*\*Results are only based on Classic & Electric rideable types to avoid bias*



# Difference 6 : Concentration of Riders (no. of riders)

Concentration of Casual VS Member - member

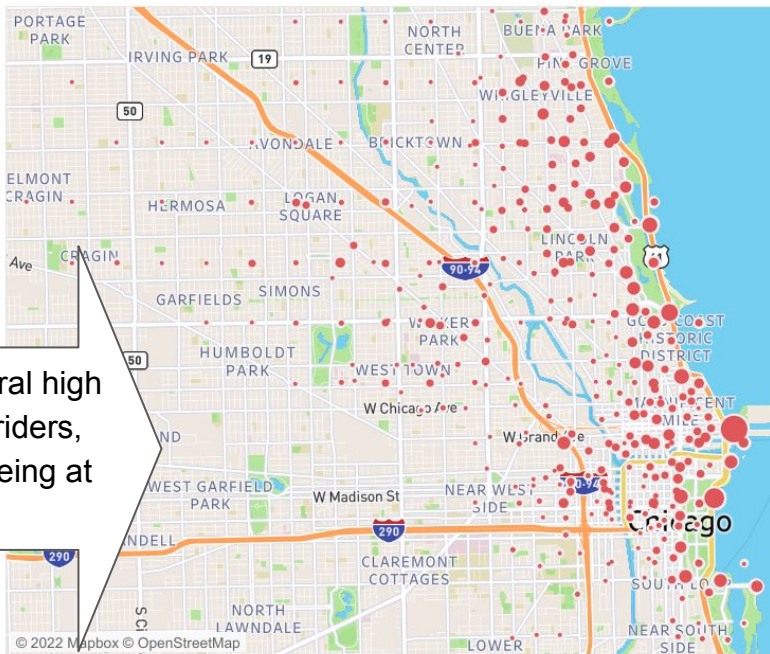


**Members** have quite a  
uniform distribution  
across Chicago



**Casual** have several high  
concentration of riders,  
with the highest being at  
the Pier

Concentration of Casual VS Member - casual



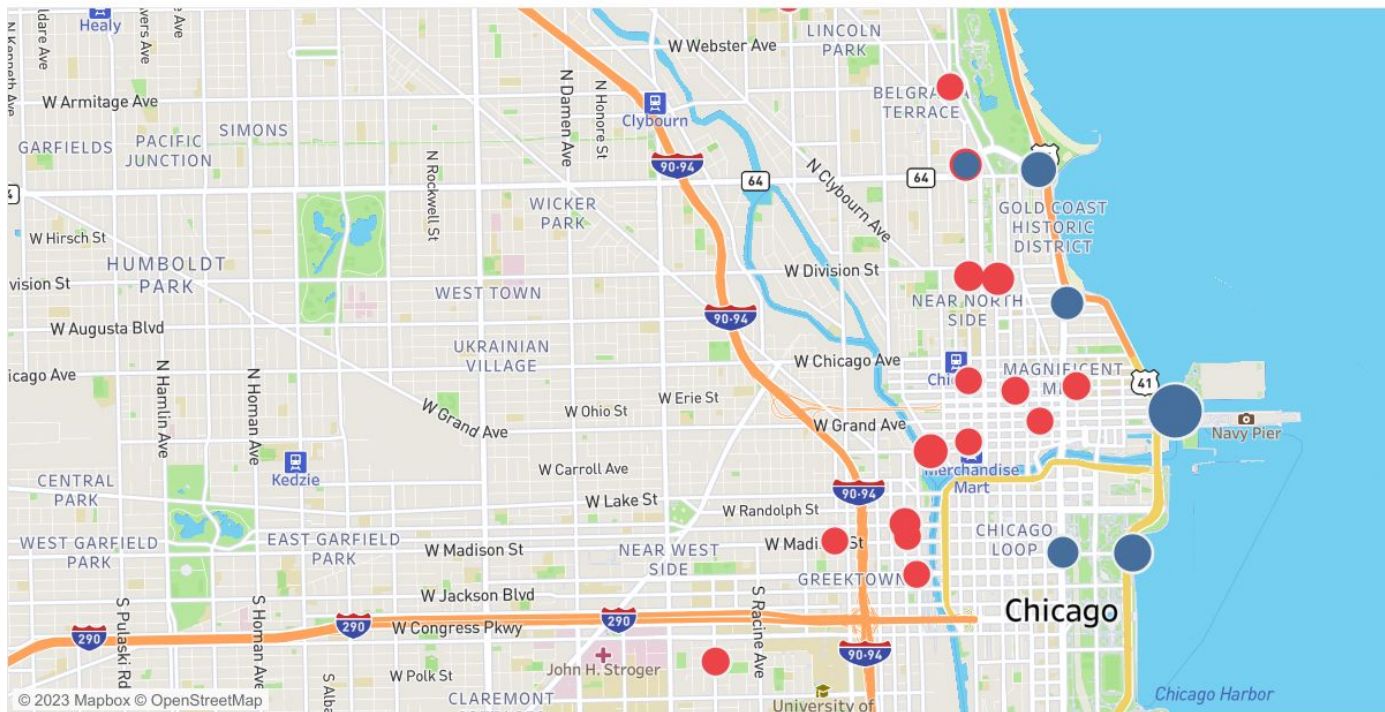
*\*Based on only Rides' Start Locations*

*\*Results are only based on Classic & Electric rideable types to avoid bias*



# Difference 7 : Concentration of Riders (no. of riders)

## Concentration of Casual VS Member (2)



Member Casual  
■ casual  
■ member

Data is filtered for >15k users concentration





There's a clear difference between Casual and Member riders' concentrations in different locations

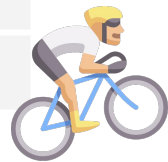


*\*Based on only Rides' End Locations*  
*\*Results are only based on Classic & Electric rideable types to avoid bias*



# Summary of Differences

Categories		Casual Riders	Annual Members
 <b>Rideable Type</b>		Uses ALL (Classic, Docked, Electric)	Only uses the Classic & Electric
		Uses Electric bike the most (54%)	Uses Classic the most (51%)
 <b>Daily Trend</b>		Peaks on weekends : Sat & Sun	Peaks on weekdays :Tue, Wed, Thu
		Average ride length of casual riders surpasses members by 58%	
 <b>Monthly Trend</b>		Both segments peaks during the warmest months (June - September)	
		Peaks in July	Peaks in August
		May marks the longest usage of bikes while November is the shortest	June marks the longest usage of bikes while December is the shortest
 <b>Concentration of Riders</b>		Casual have several high concentration of riders, with the highest being at the Pier	Members have quite a uniform distribution across Chicago
		Clear difference between Casual and Member riders' concentrations in different locations	



# Next Steps

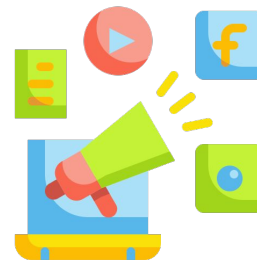


## **Reasons why casual riders would tend to buy annual memberships**

- Their average usage of bike/ride far surpasses the current members

## **How can digital media used to influence casual riders to become members?**

- Can introduce weekend passes
- Can introduce summer passes
- Can promote during the warmest months (June - September)
- Have special curated packages on certain hotspots
- Introduce those passes in a specific location (1 of the hotspots) for a test run



# Next Steps

## 1. Reasons of using bike - Work / Tourist / Others

- Helps us understand why would membership appeal to certain segments. For instance, if the main reason for Casual riders are tour, that would explain the several hotspots, weekends and why membership might not work for them

## 2. Investigate type of locations - Businesses / Offices / Residential / Tourist

- To help us further understand the distribution of the riders between members and casual
- Potential hypothesis could be that members uses the bikes for travelling to work while casual riders uses it for touring purposes

## 3. Identify the frequency of usage / rider

- To help us understand does casual riders opt a one-time use or do they use it repeatedly as well. If there are repeated, this would narrow down our target audience to be converted to members

## 4. Other analysis ideas:

- Rideable types VS locations







# Conclusion

This is a part of Google Data Analytics Professional Certificate and I would like to thank Grow With Google (Malaysia) in providing the financial aid to help me complete this certificate.

View my tableau visualizations here :

- [https://public.tableau.com/app/profile/vignesh3092/viz/Vignesh\\_GDACapstoneProject/Sheet6](https://public.tableau.com/app/profile/vignesh3092/viz/Vignesh_GDACapstoneProject/Sheet6)
- <https://public.tableau.com/app/profile/vignesh3092/viz/GDACapstoneProject-LocationDemographic/Dashboard1>

View my R coding here :

- <https://lnkd.in/gBmRZtCs>

I would like to also thank **Luis Sanzetenea** - as without her Kaggle, I wouldn't be able to complete this project. Thank you for the guidance. Here's her reference : <https://www.kaggle.com/code/luissanzetenea/cycling-a-bike-share-company-of-chicago>

