# Cyclistic Report

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## Business Task

Maximizing the number of annual memberships, by understanding how casual riders and annual members use cyclistic bikes differently. From these insights, we will design a new marketing strategy to convert casual riders into annual members.

## Analysis Process

1. **Prepare**

    - download Cyclistic 2021 data to start analysis from this link

2. **Process**

    - Install packages: Tidyverse, lubridate and scales.

    - Collect data: upload the datasets to RStudio.
      #Importing the datasets
      data1 <- read.csv("cyclistic/202101-divvy-tripdata.csv")
      And the same for the rest of the data.

    - Remove bad data:
      #Remove missing values
      data1 <- data1[!(is.na(data1$ride_id) | data1$ride_id == "" )
      same for all columns and other data.

#Drop useless columns
data1<- data1%>% select(-c(start_lat,start_lng,end_lat,end_lng))
same for the rest of the data.

- Add new columns:
  #Add columns that list the date, month, day, and year of each ride
  data1$date <- as.Date(data1$started_at)
  data1$month <- format(as.Date(data1$date),"%m")
  data1$day <- format(as.Date(data1$date),"%d")
  data1$year <- format(as.Date(data1$date),"%Y")
  data1$day_of_week <- format(as.Date(data1$date),"%A")

  # Add a "ride_length" calculation to all_trips (in seconds) and convert it to numeric so we can run calculations on the data
  data1$ride_length <- difftime(data1$ended_at,data1$started_at)
  data1$ride_length <- as.numeric(as.character(data1$ride_length))

- Combine data:
  #Combine clean data into four quarters and a full year files
  Q1_2021 <- bind_rows(data1,data2,data3)
  Q2_2021 <- bind_rows(data4,data5,data6)
  Q3_2021 <- bind_rows(data7,data8,data9)
  Q4_2021 <- bind_rows(data10,data11,data12)
  All_2021 <- bind_rows(Q1_2021,Q2_2021,Q3_2021,Q4_2021)

3. **Analyze**

- Descriptive analysis:
  mean(All_2021$ride_length) #average (total ride length / rides)
  median(All_2021$ride_length) #midpoint number
  max(All_2021$ride_length) #longest ride
  min(All_2021$ride_length) #shortest ride
  same for quarters.

#Compare members and casual users
aggregate(All_2021$ride_length ~ All_2021$member_casual, FUN = mean)
aggregate(All_2021$ride_length ~ All_2021$member_casual, FUN = median)
aggregate(All_2021$ride_length ~ All_2021$member_casual, FUN = max)
aggregate(All_2021$ride_length ~ All_2021$member_casual, FUN = min)
same for quarters.

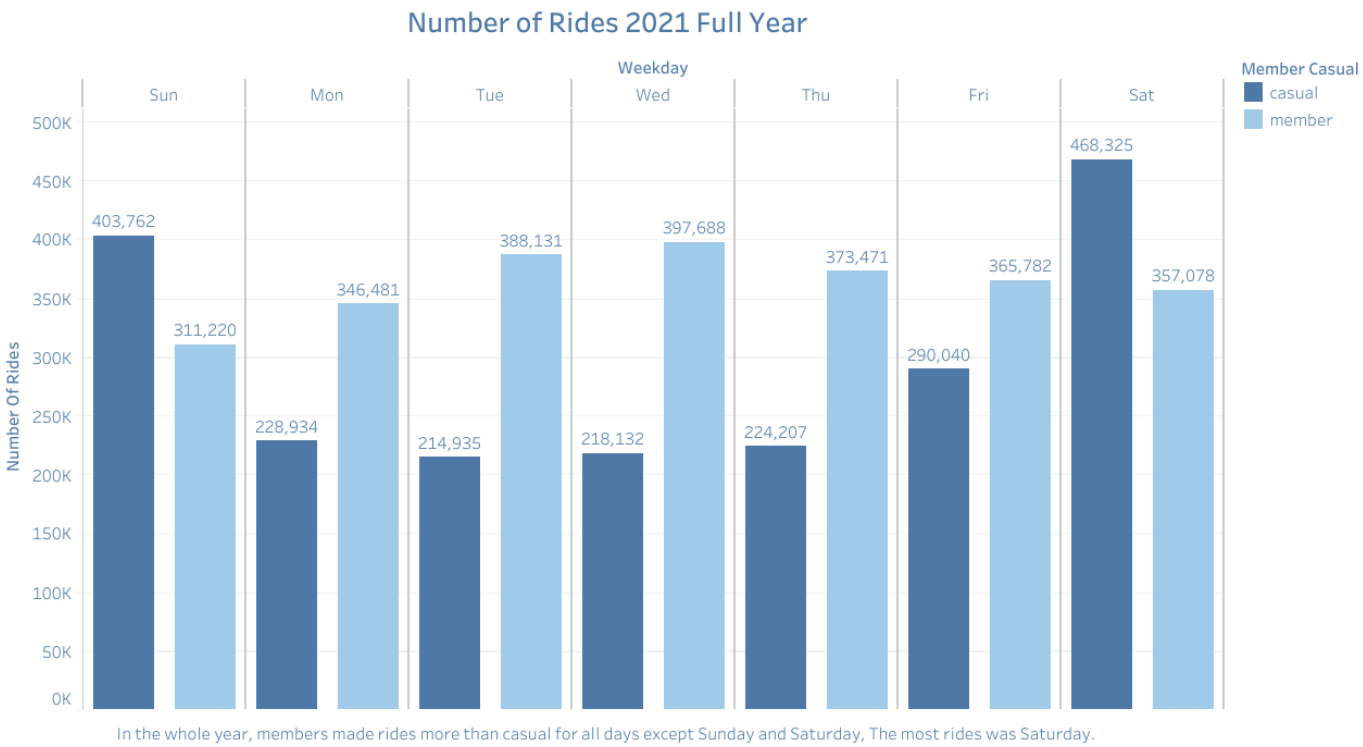
#Create summary file to store number of rides and average time for ride grouped by weekday and member casual
Summary <- All_2021 %>%
mutate(weekday = wday(started_at, label = TRUE)) %>%
group_by(member_casual, weekday) %>%
summarise(number_of_rides = number(n(), big.mark=","),
average_duration = number(mean(ride_length), big.mark=",")) %>%
arrange(weekday, member_casual)
same for quarters.

- Save:
  #Save clean data and summary as csv file
  write.csv(All_2021,file = "cyclistic/All_2021.csv")
  write.csv(Summary,file = "cyclistic/Summary - FullYear.csv")
  same for quarters.

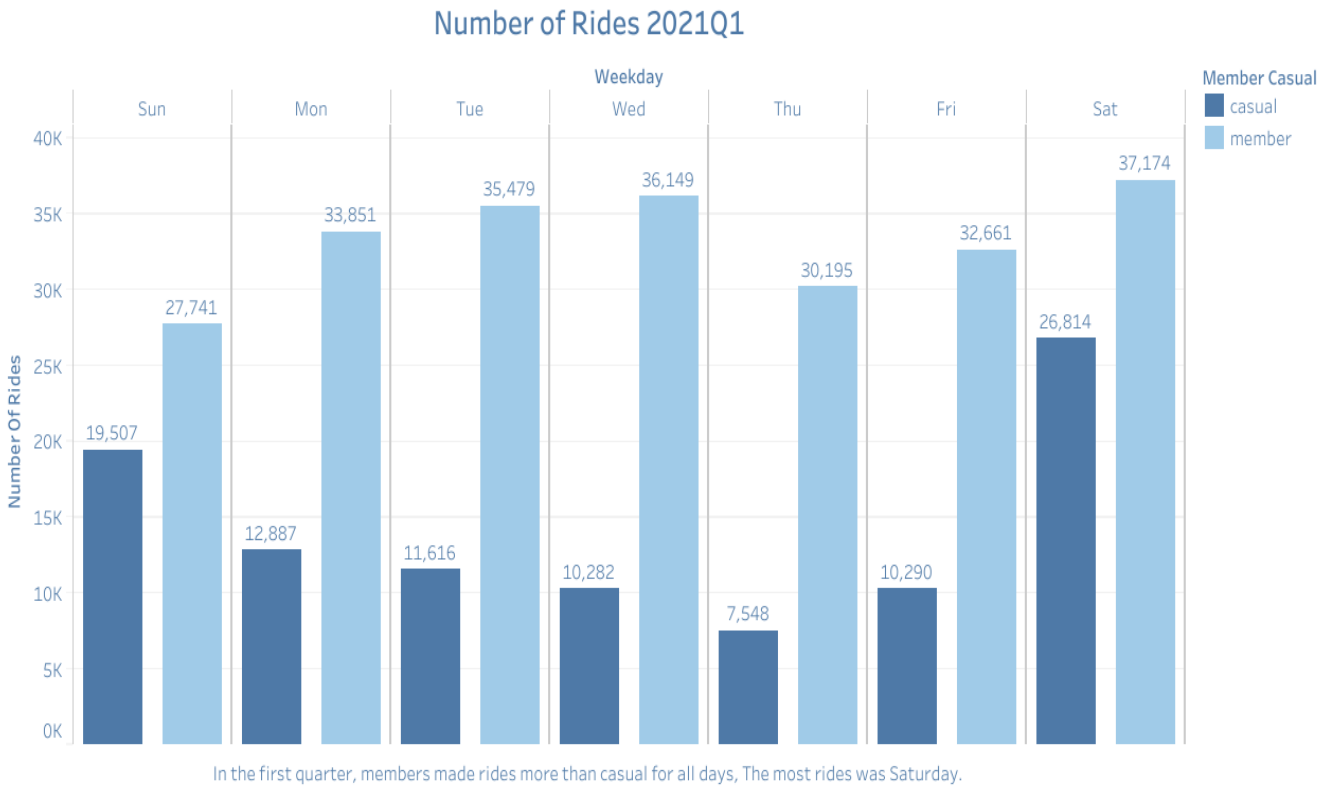
## 4. Visualization

Check this link for a better view.

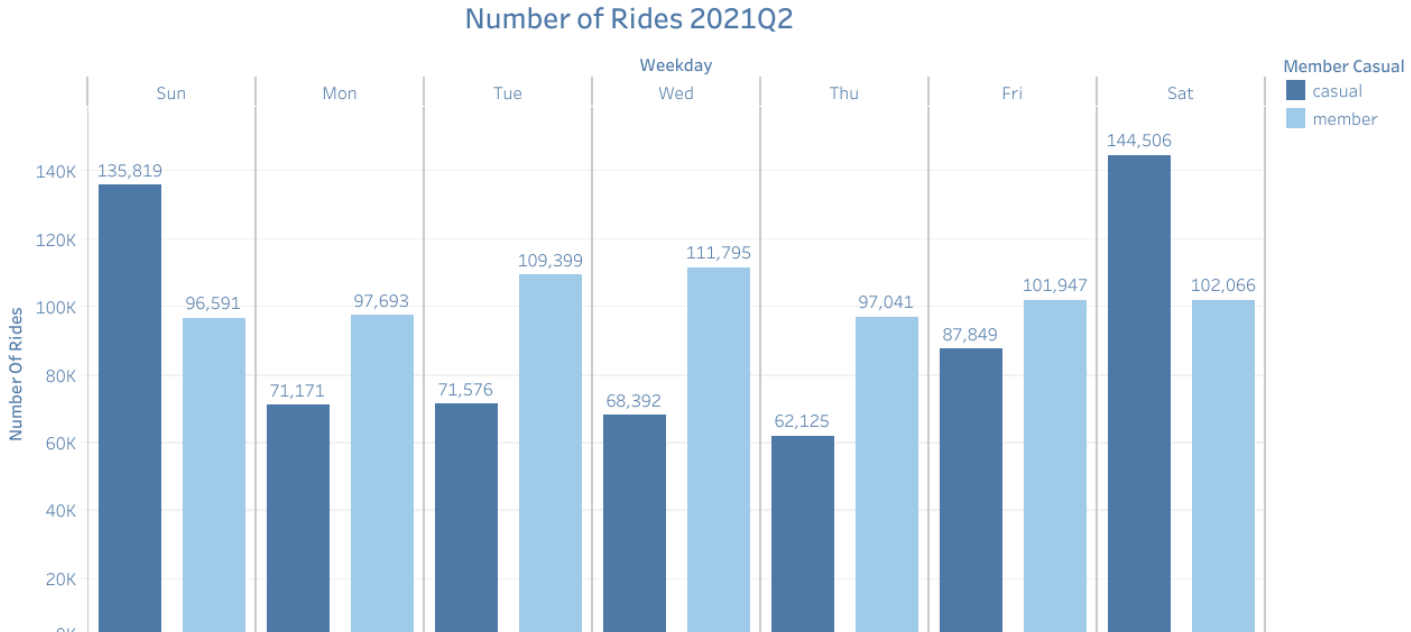
- Number of Rides for the whole year:



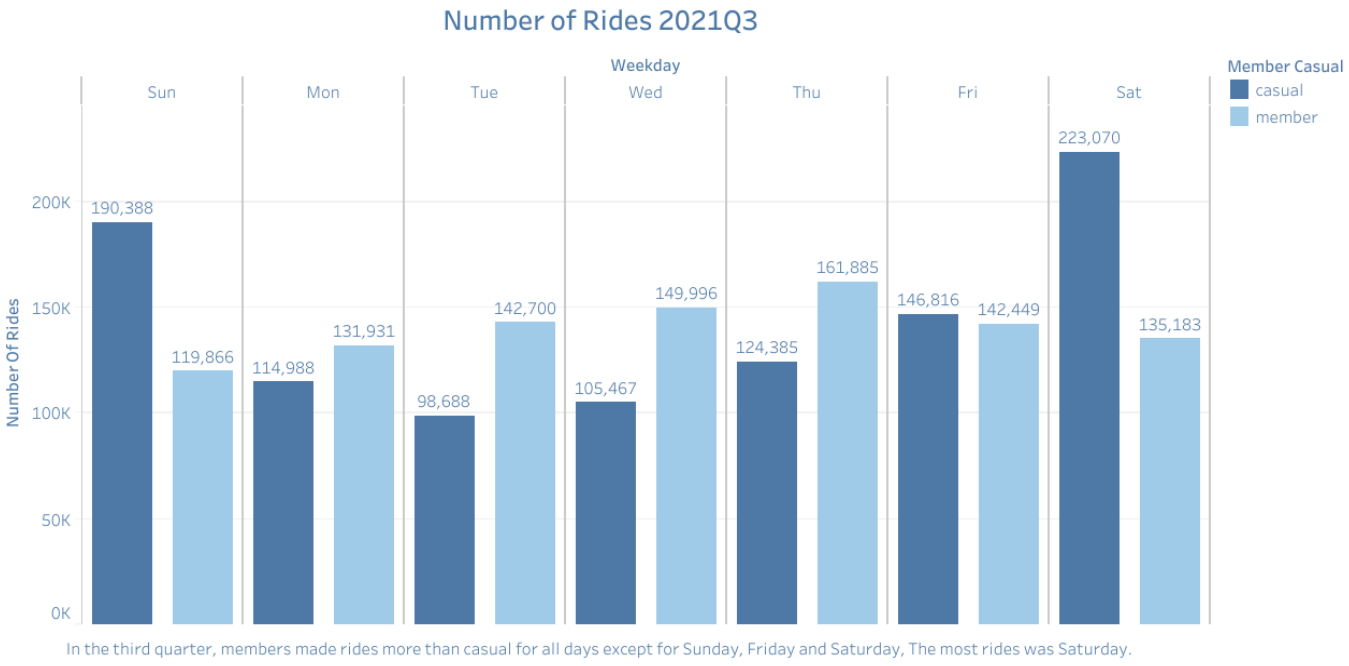
- Number of Rides for the first quarter:



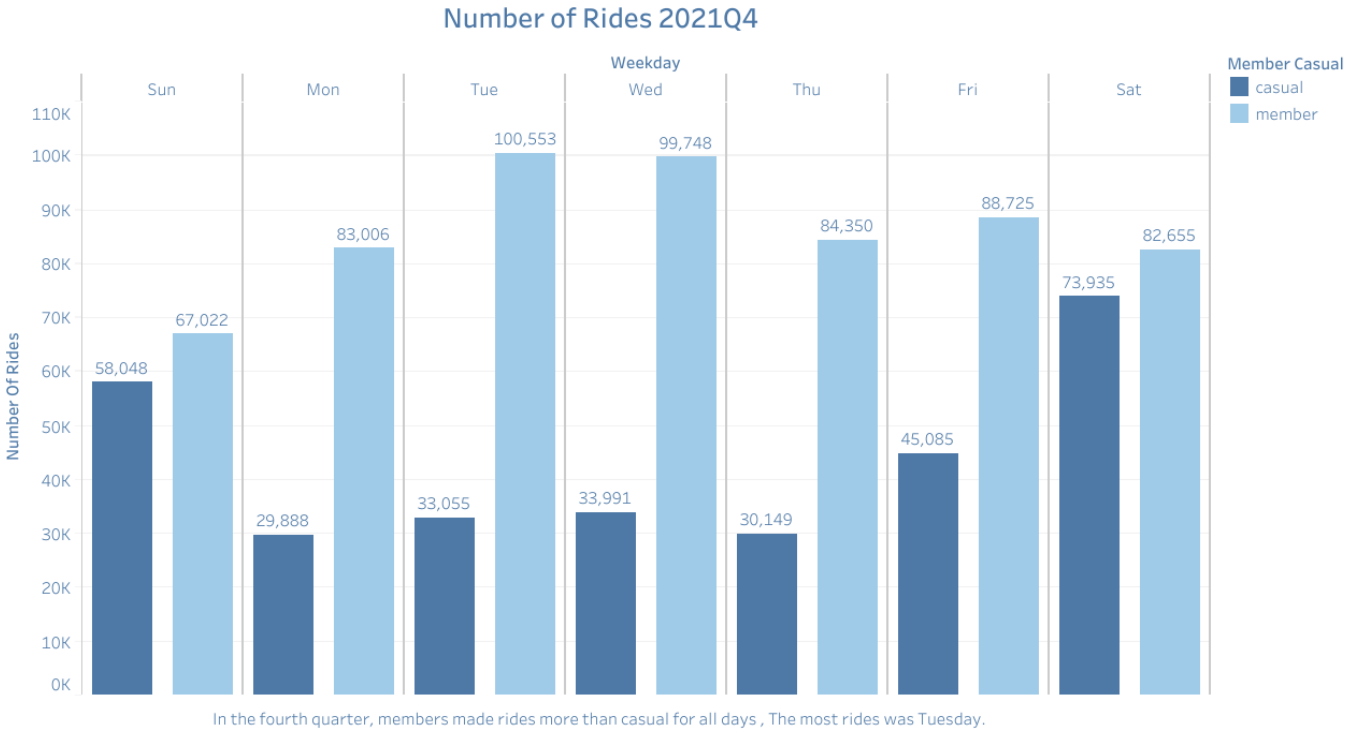

- Number of Rides for the second quarter:



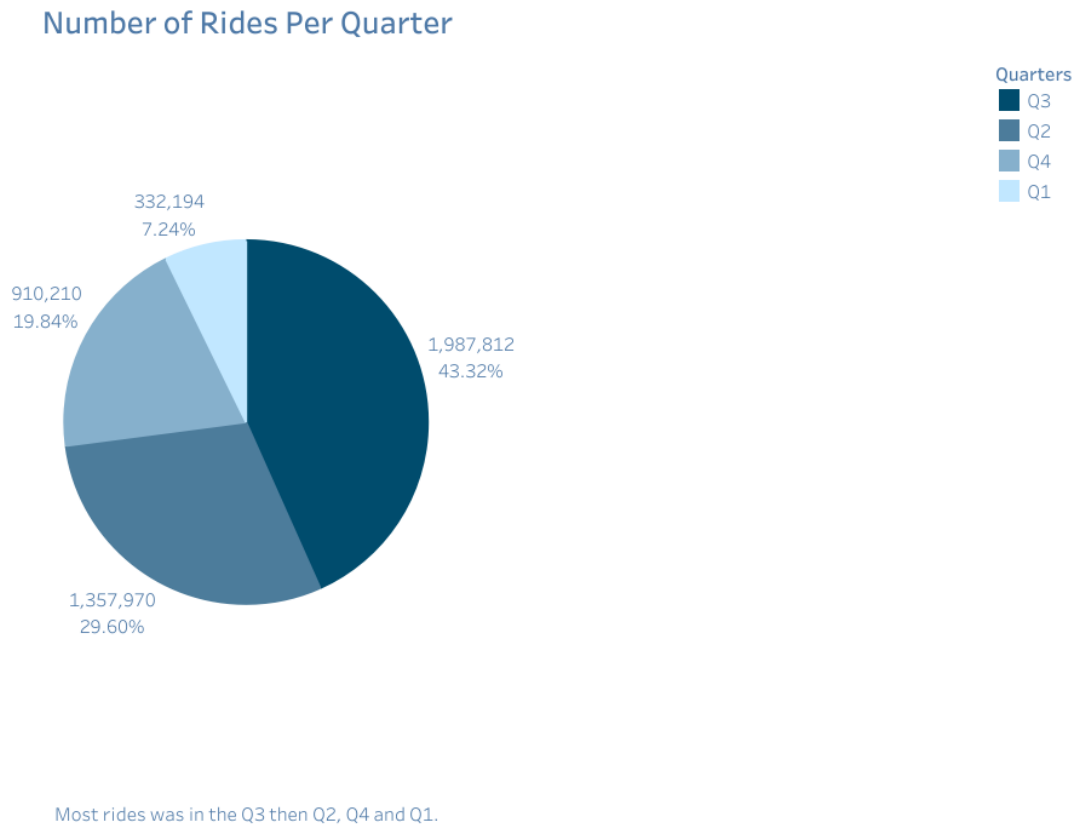
- Number of Rides for the third quarter:



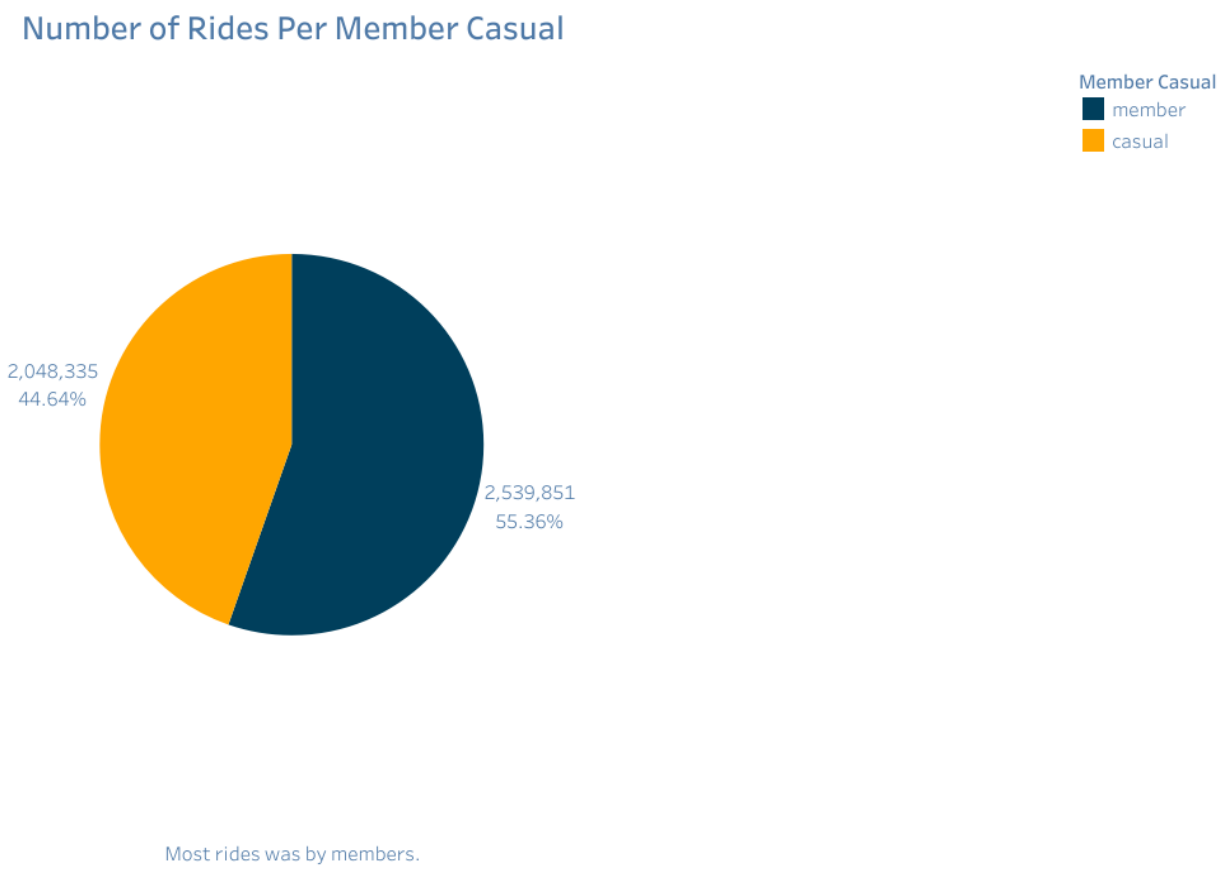

- Number of Rides for the fourth quarter:



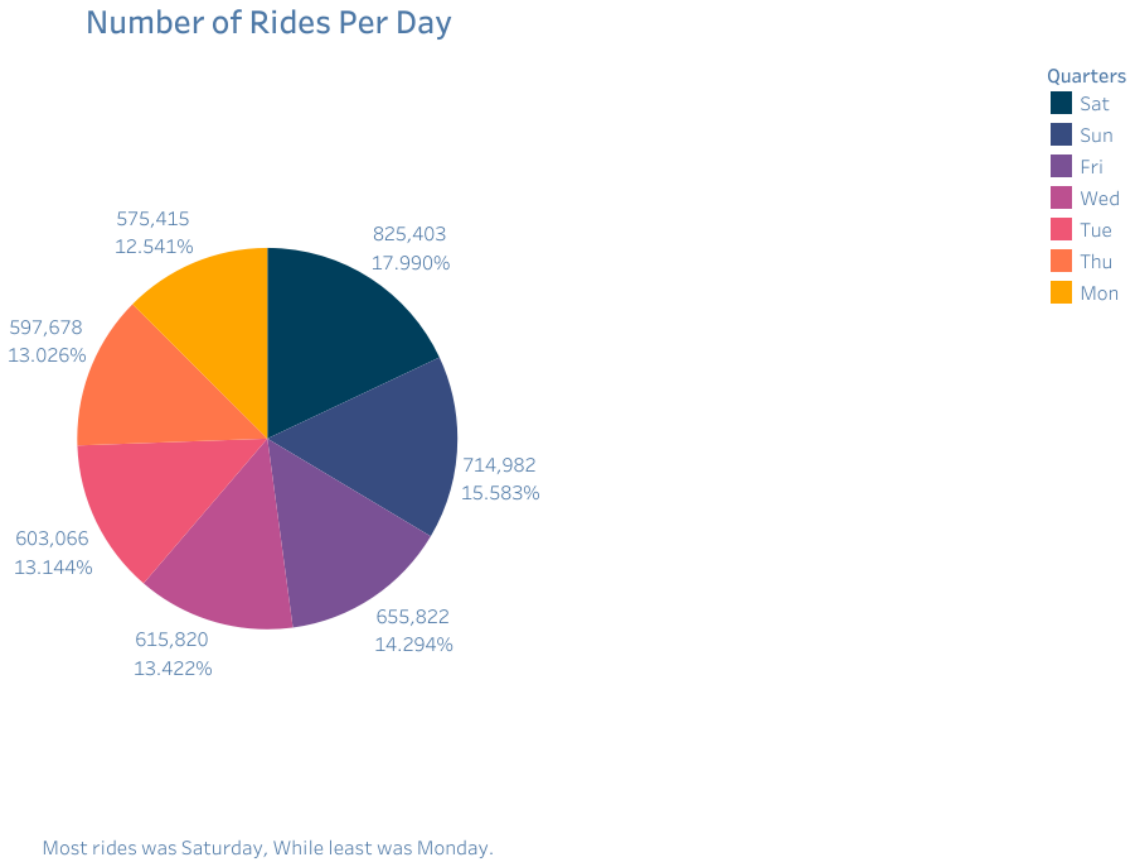
- Number of Rides for year per quarter:



- Number of Rides for year per member or casual:



- Number of Rides for year per day:




Check this link for a better view.

## Key Findings

- ➔ Casual riders and annual memberships both show the **same trend** throughout the year. Peaking between the **second and third quarter (warmer months)**.

- ➔ Members approximately made the **same** number of rides **throughout the week**, while casual riders made rides on the **weekend** more than other days by far.

- ➔ Casual rides made up **45%** of the year rides.

## Recommendation

- ➔ Offering plans for weekend only or half year (q3 & q2) for casual riders to entice them towards the annual membership.