Cyclistic_bike_share_case_study

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Cyclistic case study

Data Analyst: Iuliia Rytck **Client:** Cyclistic **Purpose:** The purpose of this project is to maximize the number of annual members that will be the key to the future growth of Cyclistic.

Introduction

You are looking at the Cyclistic bike-share marketing analysis project! This is my first case study of Google's Data Analytics Professional Certificate program. I will perform real-world tasks as a junior data analyst working in the marketing analyst team for a fictional company Cyclistic, a bike-share company in Chicago. The case study requires to follow the steps of the data analysis process: ask, prepare, process, analyse, share, and act.

Scope of Work

Activity	Description	Deliverable
Define the project	Identify the business task Consider key stakeholders	A clear statement of the business task
Prepare data for analysis	Download data and store it appropriately. Identify how it's organized. Sort and filter the data. Determine the credibility of the data.	A description of all data sources used
Process the data for analysis	Check the data for errors Choose your tools Transform the data for effective work (import data, make it consistent and merge, clean up and add data to prepare for analysis	Documentation of any cleaning or manipulation of data
Perform analysis	Aggregate data Organize and format Perform calculations Identify trends and relationships	A summary file
Share key findings	Create effective data visualisations Present key findings	Presentations with key findings
Act on key findings	Prepare presentation and deliver to the team	Top three recommendations based on insights

Step 1 - Define the project

The main goal of this analysis is to design a new marketing strategies to convert casual riders into annual members. In order to achieve this goal the marketing analyst team needs to answer the following questions: –How do annual members and casual riders use Cyclistic bikes differently? –Why would casual riders buy Cyclistic annual memberships? –How can Cyclistic use digital media to influence casual riders to become members?

As a junior data analyst my job is to provide marketing analyst team with insights on how differ annual members and casual riders in use Cyclistic bikes.

Statement of the business task: Maximise the number of annual members.

How do annual members and casual riders use Cyclistic bikes differently? Stakeholders: Primary stakeholders: Marketing director Primary stakeholders: "Cyclistic" marketing analyst team Secondary stakeholders: "Cyclistic" executive team.

Step 2 - Prepare data for analysis

To analyze and identify trends, historical trip data were used from Lyft Bikes and Scooters, LLC ("Bikeshare") that operates the City of Chicago's Divvy bicycle sharing service. For this analysis I downloaded data from January 2021 to December 2021. csv format files corresponding to12 months of Cyclistiic trip data were downloaded here

(Note: The datasets have a different name because Cyclistic is a fictional company. For the purposes of this case study, the datasets are appropriate and will enable to answer the business questions.

The data has been made available by Motivate International Inc. under this license.)

Step 3 - Process data for the analysis

Given the big-scale of the datasets, I will use R through RStudio with libraries necessary for manipulation and visualisation.

The code you can find here

First I inspected all the data frames, I looked for the inconsistencies, checked all the columns before merging data into one single data frame.

Next step I madesure that data is clean and ready for the analysis:

Removed missing values and duplicates; Checked validity of the data range and consistancy of the categorical values; Removed bad data; Organized and save cleaned data.

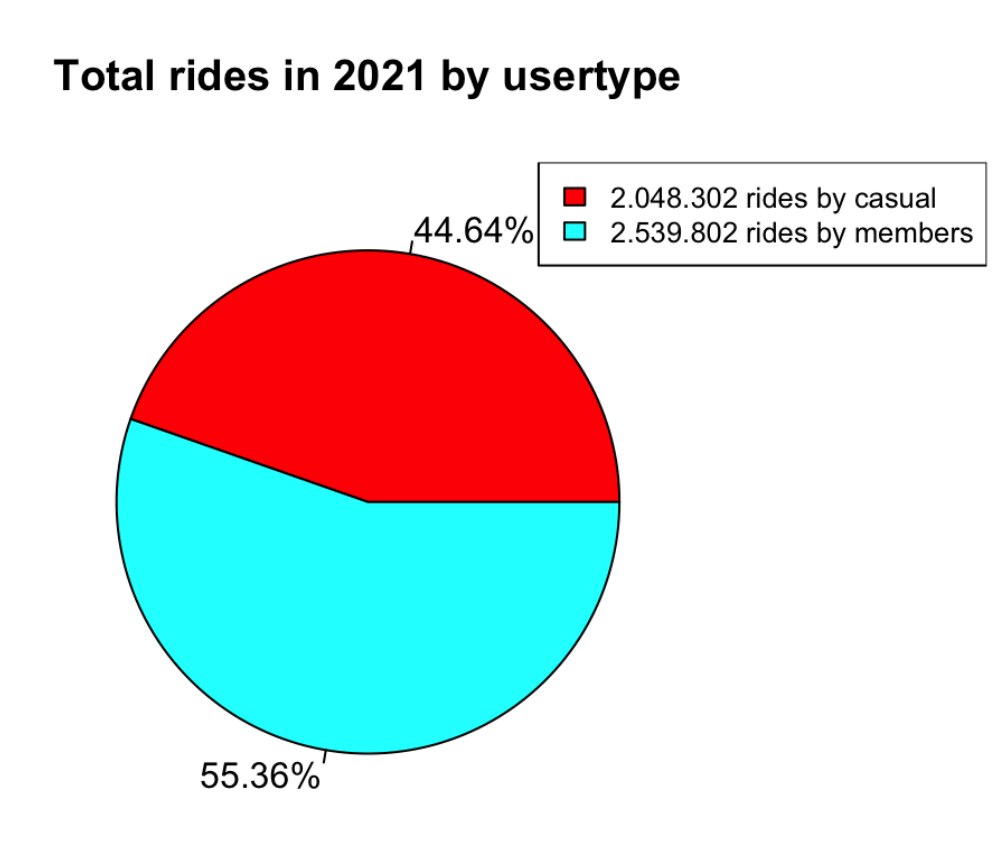
I added new columns for the month, weekday, day hour and ride duration for the further analysis.

I discovered some errors with station naming and ids, so I found the inconsistencies and fixed the errors.

Step 4 - Conduct analysis

Cyclistic users in 2021 made total of 4.588.104 rides. 2.048.302 of them were completed by casual riders and 2.539.802 by annual members, 10,7 % more. We can´t tell how many annual members and casual riders there are because of lack of user data.

Total rides by usertype



Descriptive statistic

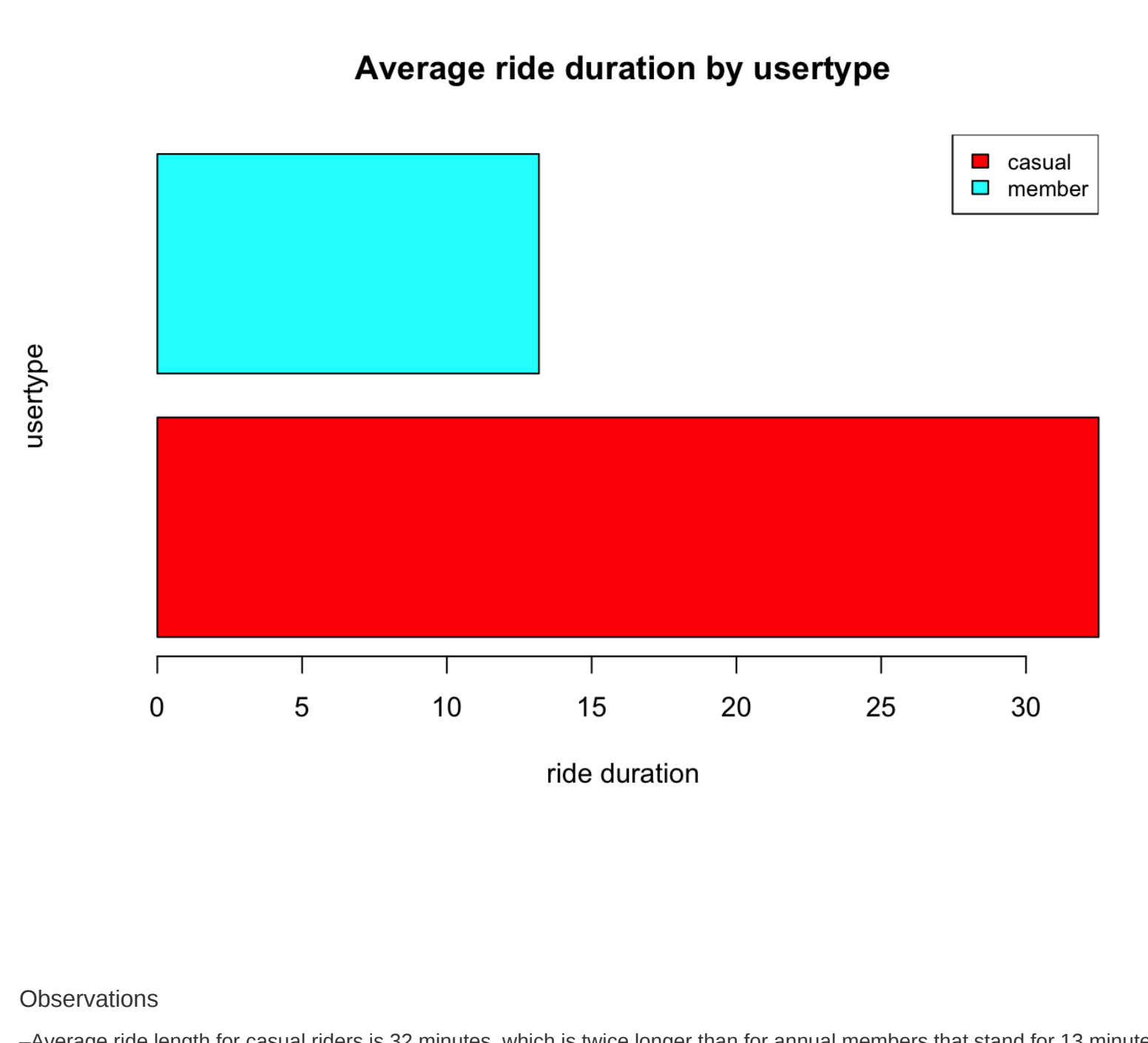
–The average ride duration for both users is around 22 minutes.

–The middle value listed is 12 mins.

–The shortest ride is 0.01 (Probably I should´ve removed too short rides, but I do not have a criteria I can rely on).

–The longest ride is 55944.15 which is around 38 days.(*longest rides are made mostly by casual riders).

Average ride duration by usertype



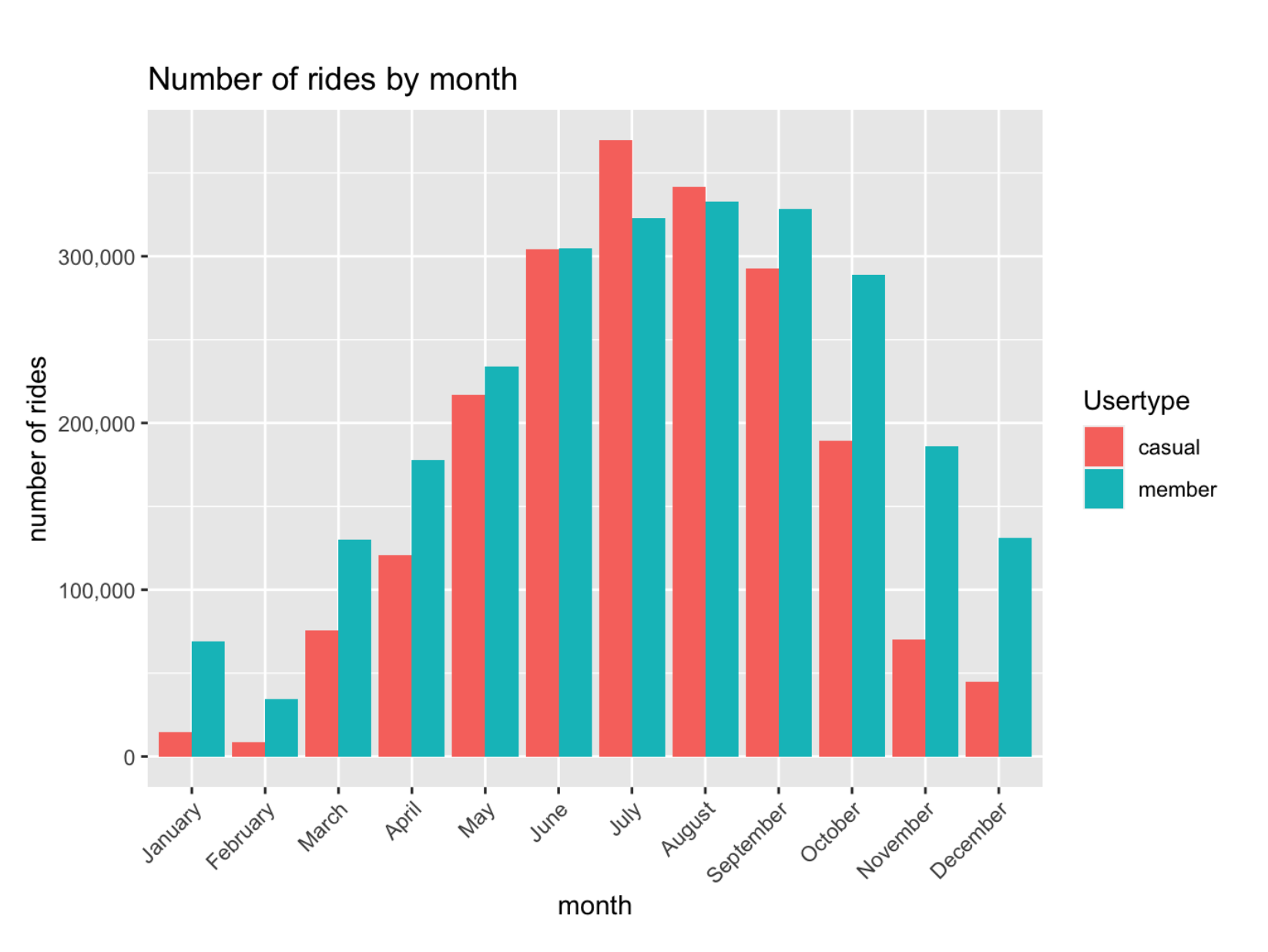
Observations

–Average ride length for casual riders is 32 minutes, which is twice longer than for annual members that stand for 13 minutes.

–The longest rides are made mostly by casual riders (55944.150 mins equals 38 days, 1495.633 equals 1 day).

–The minimum ride duration is 0,016 mins. This value affects statistic, those are not real rides. Criteria needed to exclude the rides that are too short.

Compare total number of rides by month



Observation

–Bike use is growing as summer approaches for both user types.

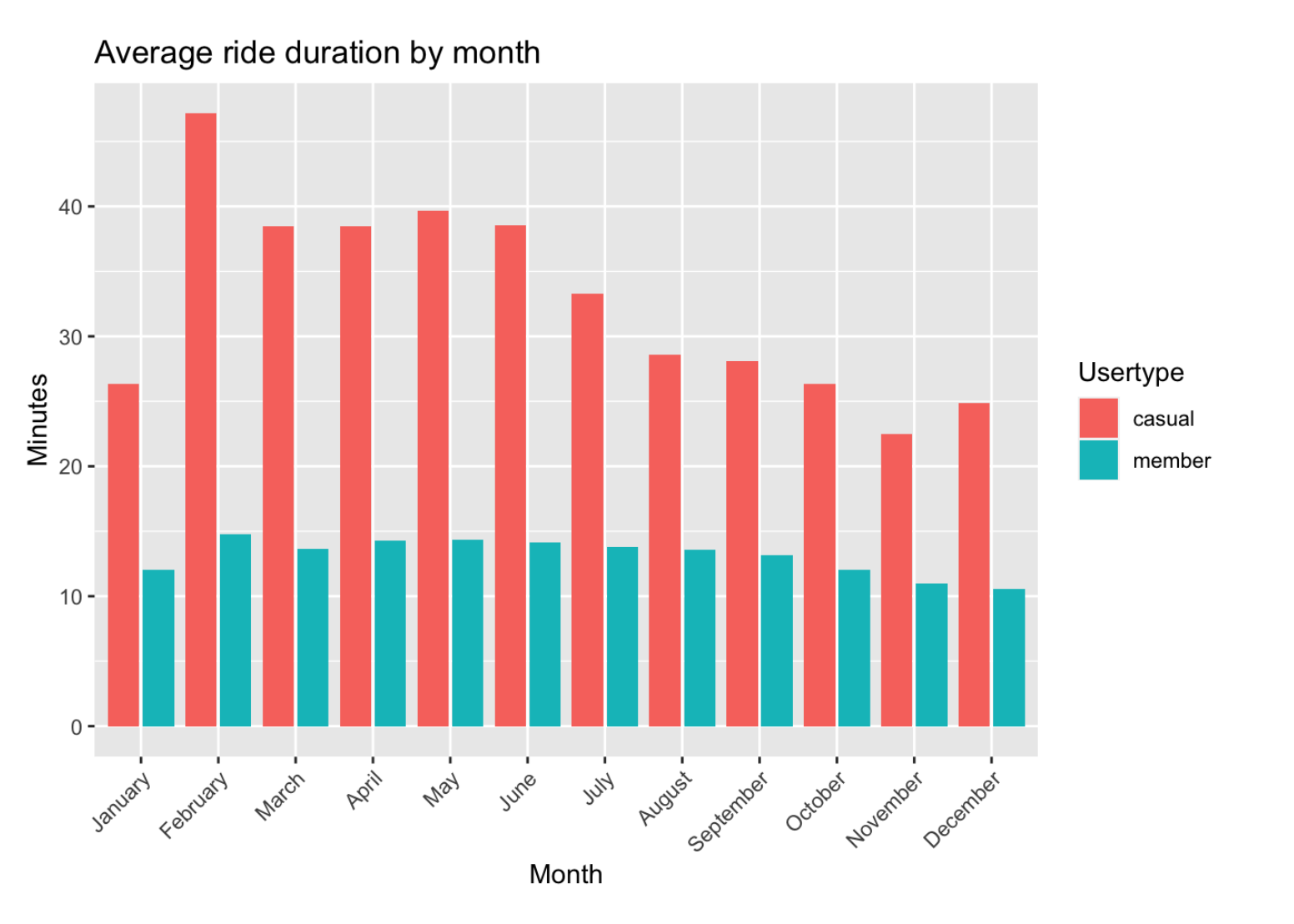
–Annual members use bikes more than casuals except for July and August when casual riders make more trips.

–From October to April the use of bike by casual riders decrease significantly, while for annual members the decline is more gradual.

–January and February -cold months, the bike use is very low.

–From June to September are hot months, when the bike use is very high

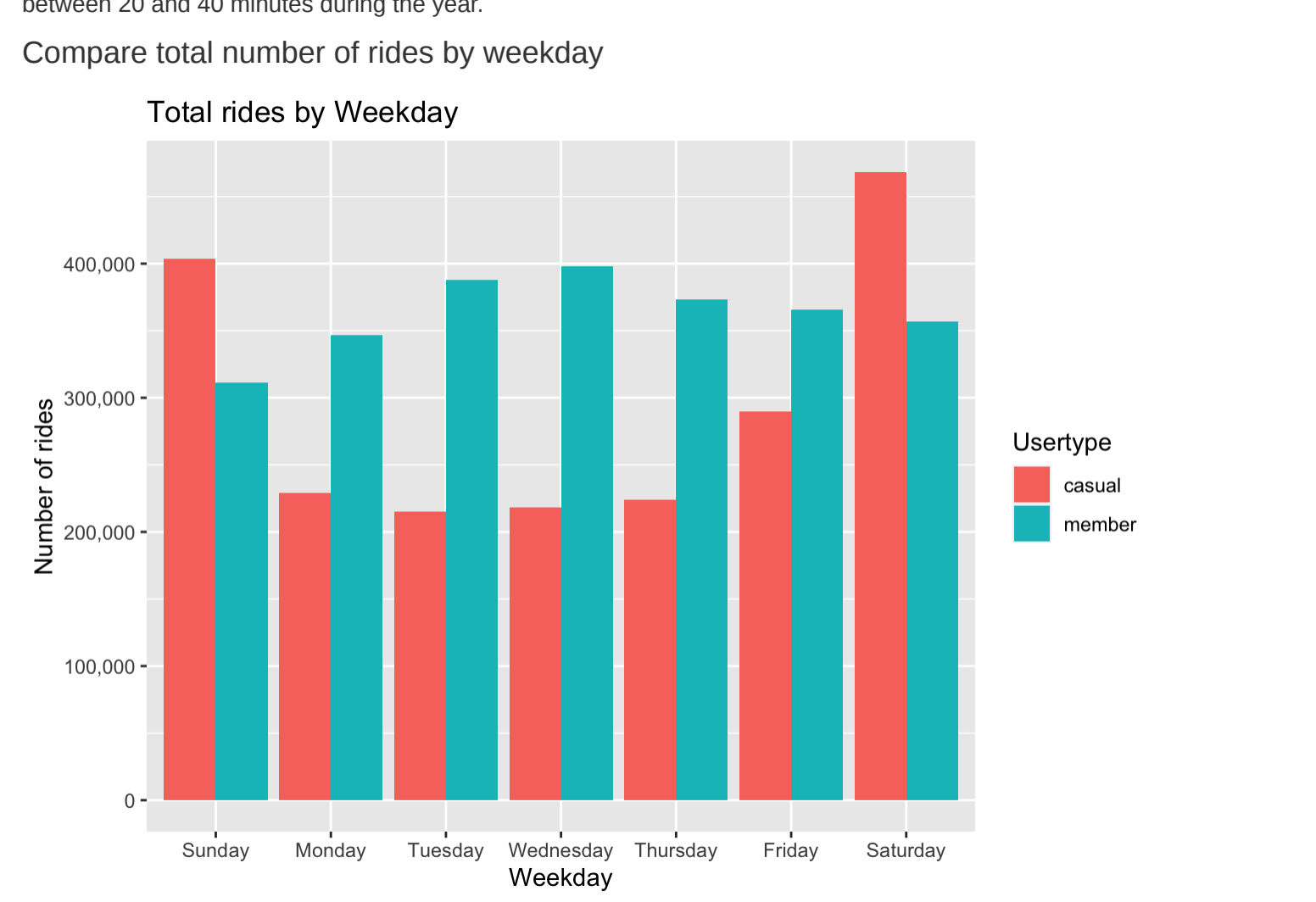
Average ride duration by month



Observations

–The average ride duration for annual members is consistent and round about 15 minutes. For casual riders the average ride duration varies between 20 and 40 minutes during the year.

Compare total number of rides by weekday

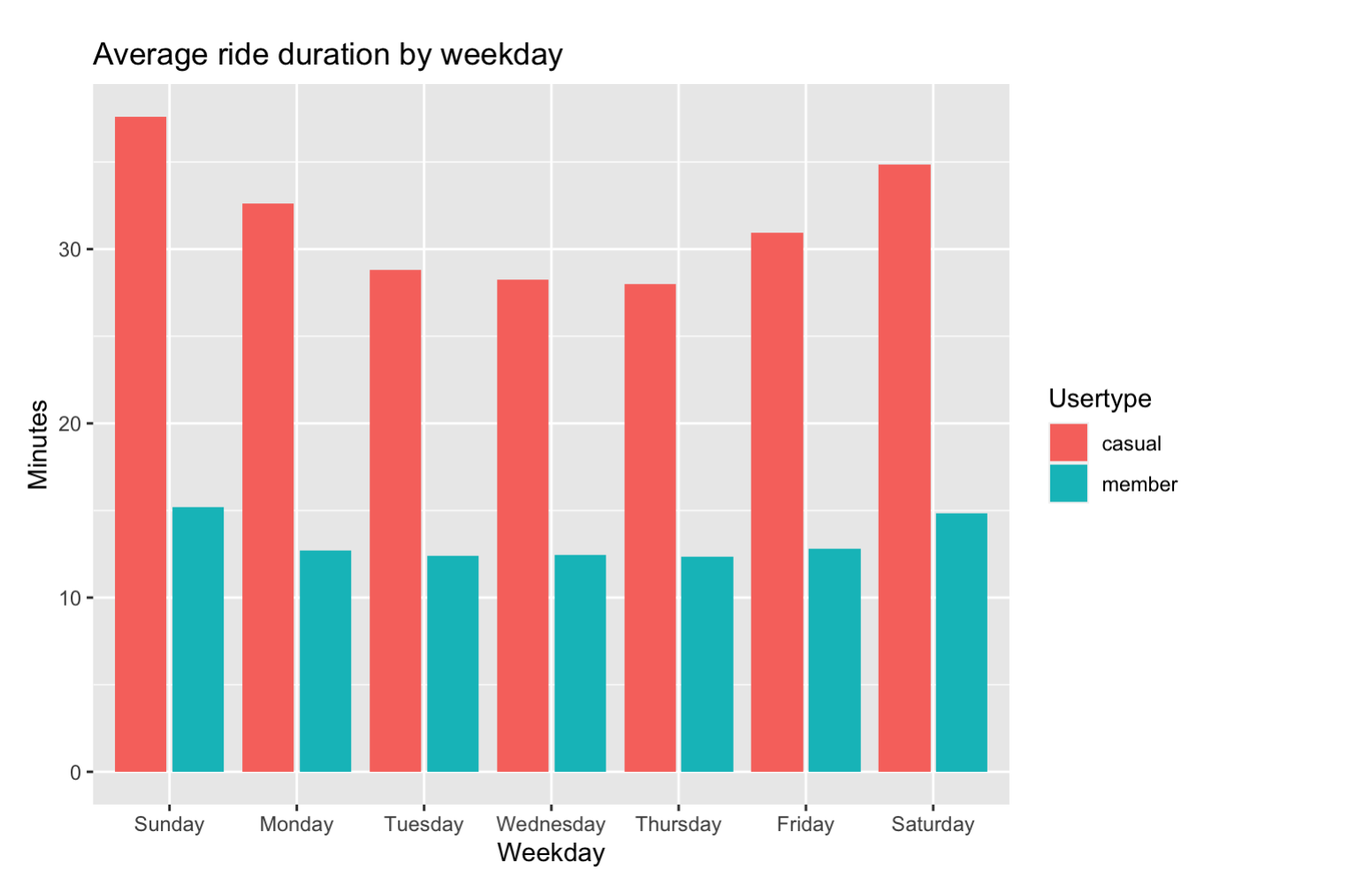


Observations

–From this chart, we can see that annual members are more consistent in bike use during the week with a slight increase during weekdays.

–While for casual riders the bike use grows drastically during weekends. (Twice as many trips on Sat and Sun than on weekdays).

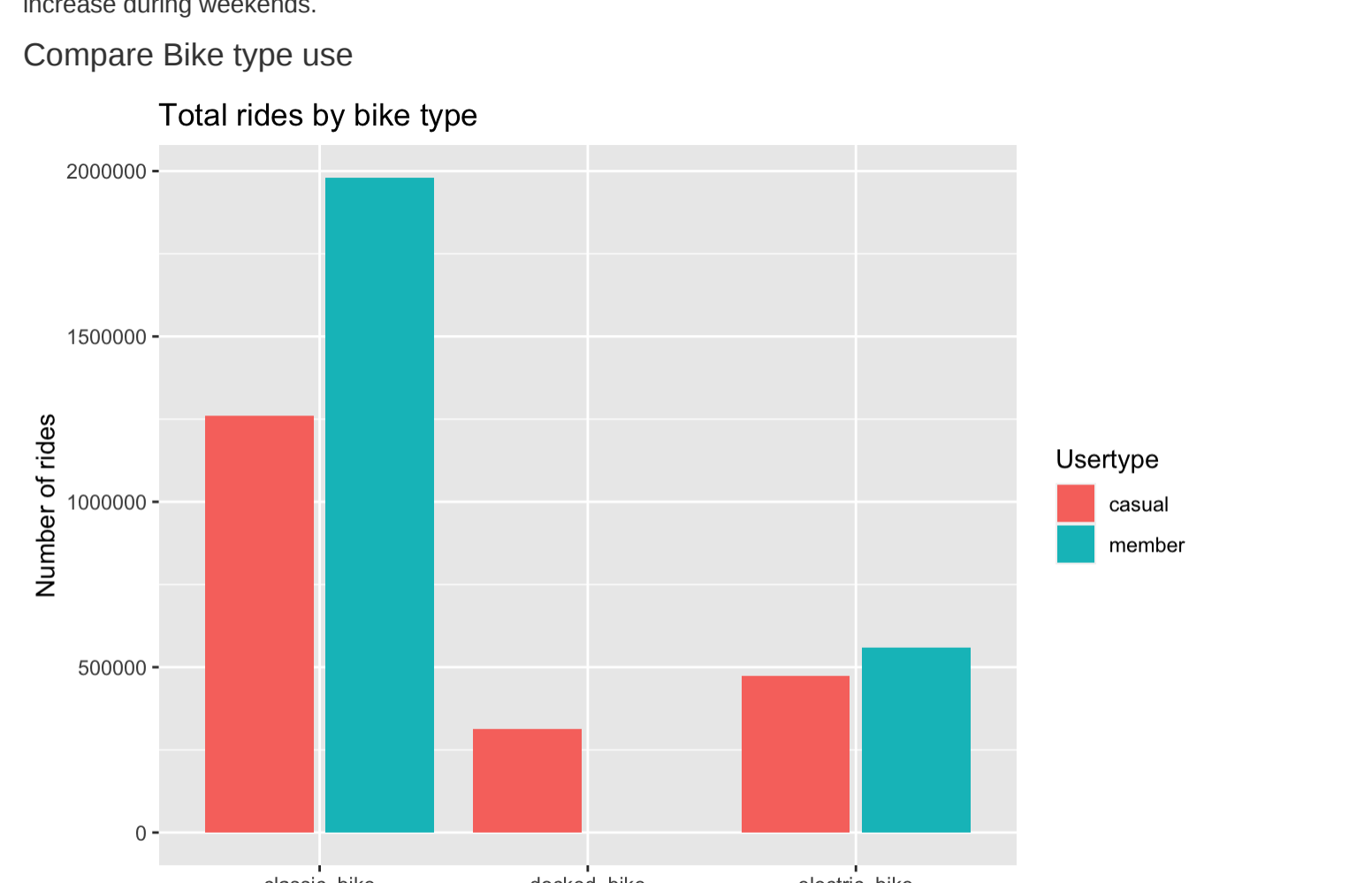
Compare average ride duration by weekday



Observations

–Once again we can see that annual members ride on average 15 mins during the 7 days week, while casual rides are as twice longer with slight increase during weekends.

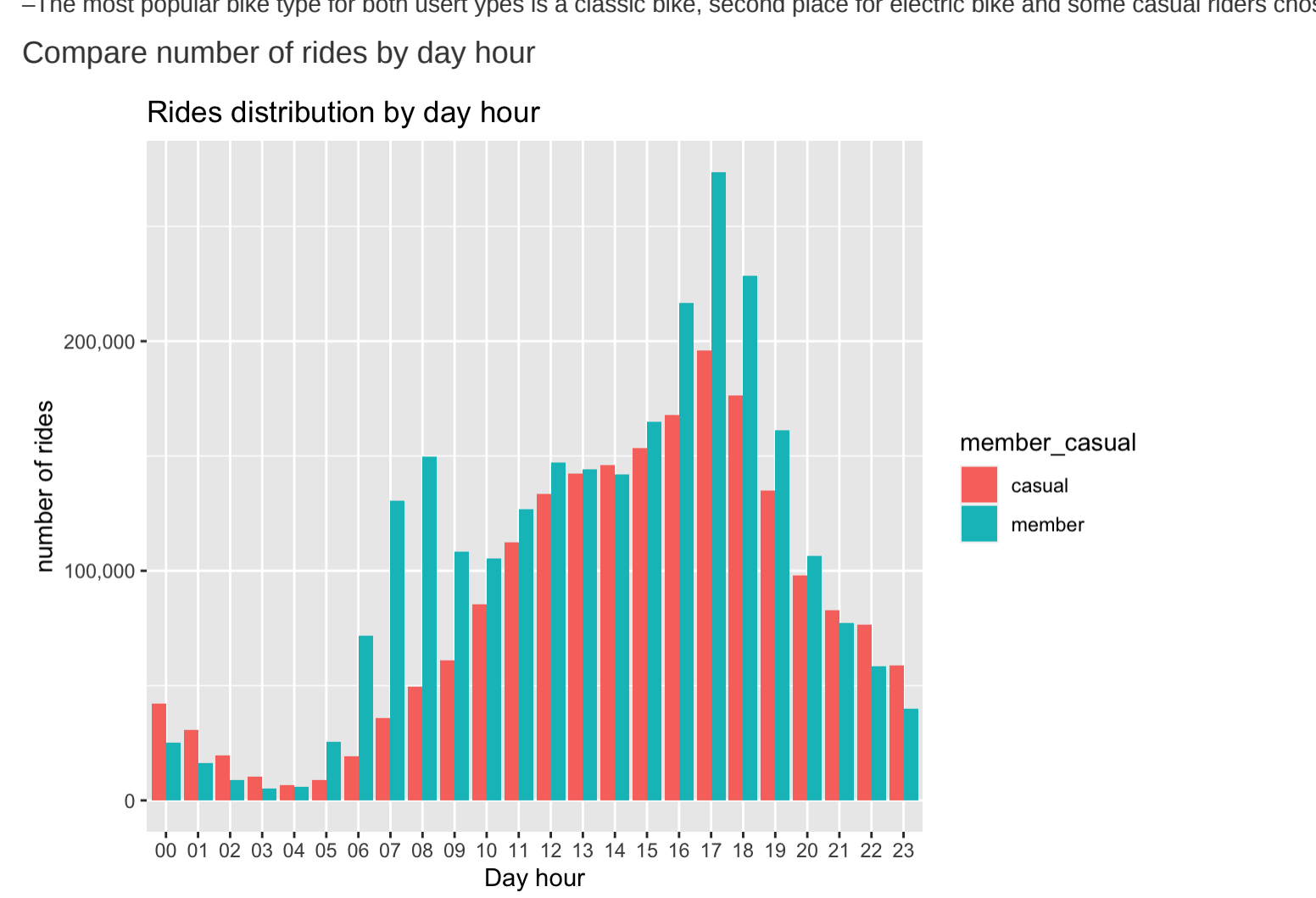
Compare Bike type use



Observations

–The most popular bike type for both usert ypes is a classic bike, second place for electric bike and some casual riders chose docked bike.

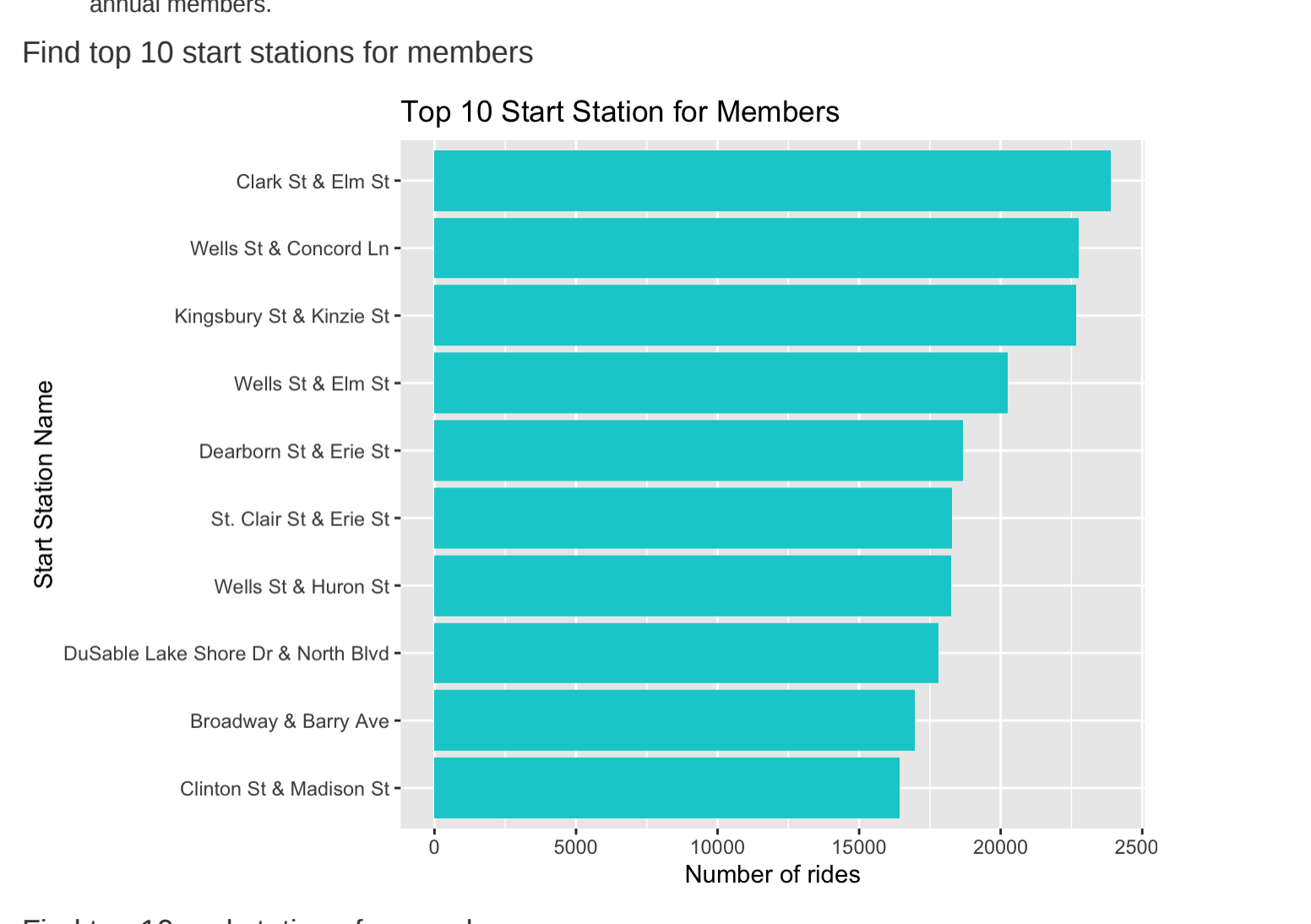
Compare number of rides by day hour



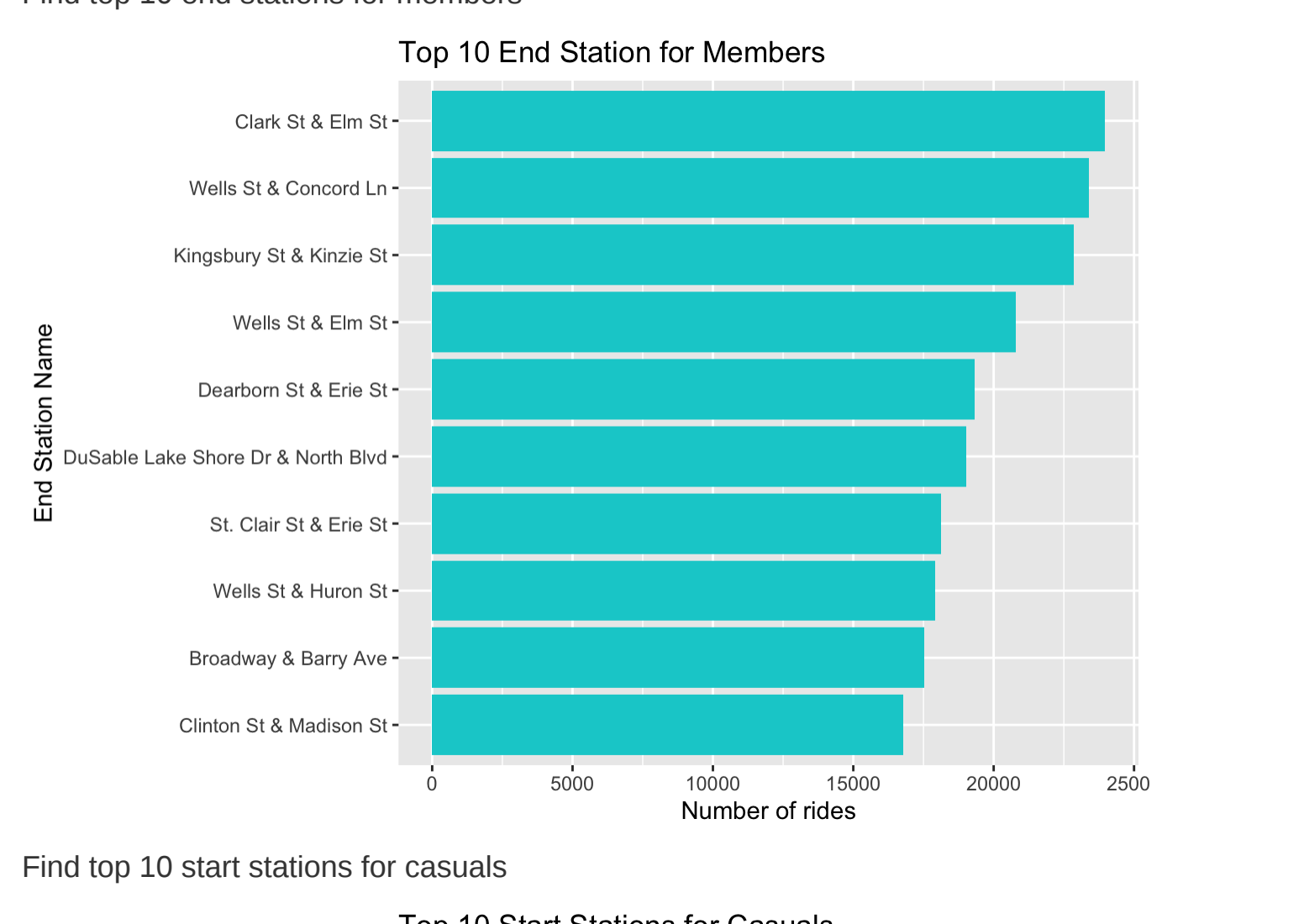
Observations

- These two bar charts show us that the number of rides for casual riders increase gradually during the day with the top between 4PM and 7PM.
- While for annual members we can see the considerable leap in the morning rush hours between 6AM and 9AM, after it varies during the day and another leap between 4PM and 7PM.
- Also, I should point out that generally during the day annual members ride more than casuals , but at night casual rides are higher than for annual members.

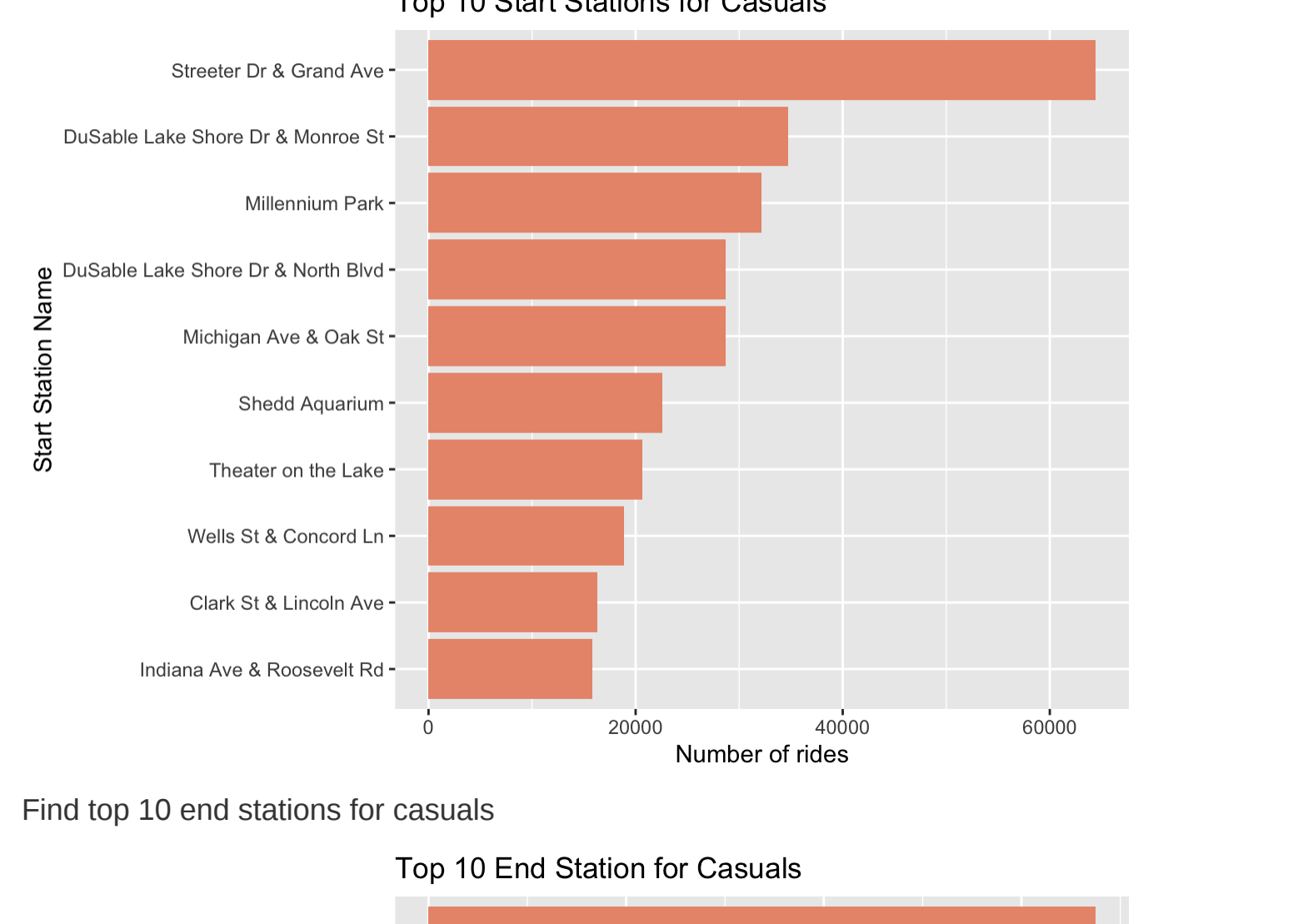
Find top 10 start stations for members



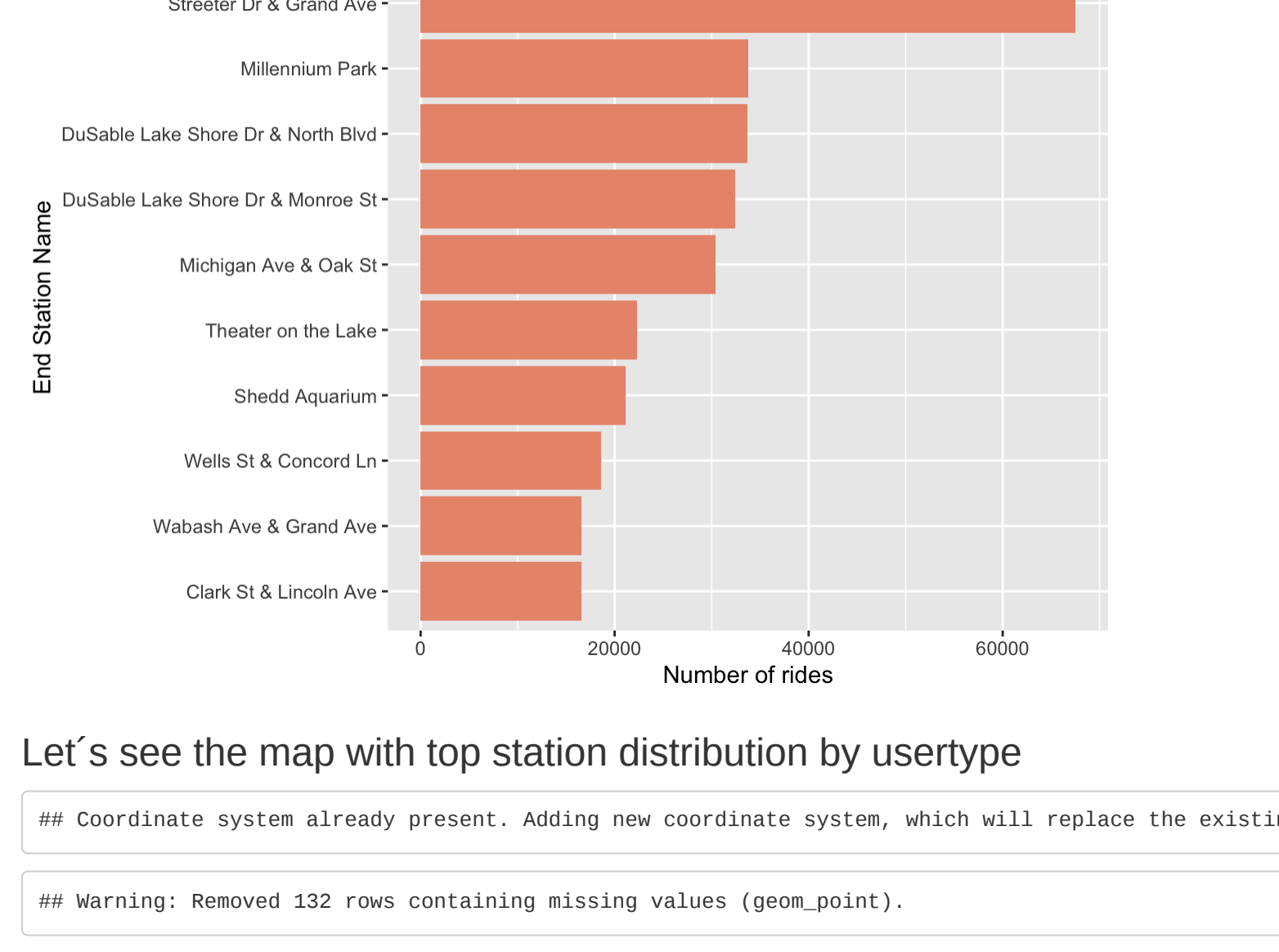
Find top 10 end stations for members



Find top 10 start stations for casuals



Find top 10 end stations for casuals



Let´s see the map with top station distribution by usertype

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## Coordinate system already present. Adding new coordinate system, which will replace the existing one.
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## Warning: Removed 132 rows containing missing values (geom_point).
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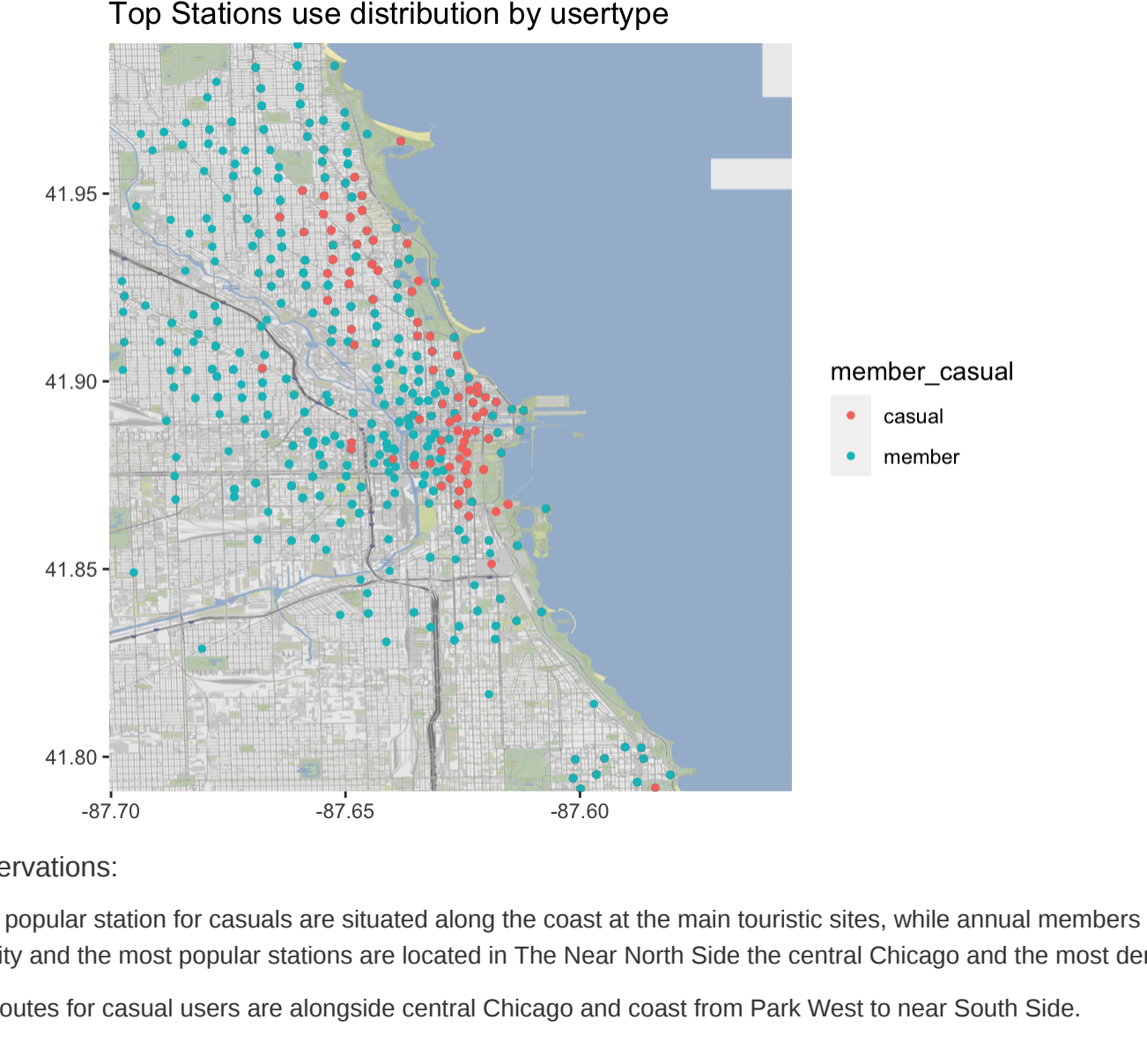

Observations:

Most popular station for casuals are situated along the coast at the main touristic sites, while annual members are evenly distributed throughout the city and the most popular stations are located in The Near North Side the central Chicago and the most densely populated area.

Top routes for casual users are alongside central Chicago and coast from Park West to near South Side.

Step 5 - Export summary file for Visuals

Key Takeaways

– Bike use increases during the warmer months for both user types.

– The most popular bike type is a classic bike for both groups.

Annual members use bike on a regular basis commuting consistently, that motivates them to buy an annual membership.

– Have stable average ride duration during the year. Use bike during rush hours on workdays (6AM-9AM and 4PM-7PM).

– Station use have a larger geographical area, most used stations are evenly spread out throughout the most densely populated area. Top 10 stations are located in The Near North Side the central Chicago.

– They are active during all year and more consistent in bike use throughout a week.

Casual riders use bike occasionally, mostly for leisure and don´t have incentives to buy an annual membership.

– On average conduct significantly longer rides than members.

– They are more active in the afternoon hours, rarely use bikes in the early morning.

– Number of rides grows considerably on weekends and summer.

– Top routes are alongside central Chicago and bay area from park west to near south side. Most used stations are in the center of the city, touristic sites and parks.

– In winter bike use decreases considerably.

Step 6 - Share findings with stakeholders

My presentation you can find [here]

Step 7 - Act on key findings

A successful strategy needs to provide incentives and persuade casual riders to switch into annual members.

TOP 4 Recommendations based on key findings

1. Offer benefits that come with annual membership:

- Collaborative discounts and special offers for annual members (with leisure businesses along the Bay area and downtown: restaurants, museums, etc.).
- Rewards programs for annual members ("complete 100 km in one month and win a dinner for two" this program can incentive casuals long ride behavior).

2. Minimize possible inconvenience for the members. For example, book the bike 15 min before the ride in order to avoid arriving to the station with no bikes available, that happens during the rush hours, peak season and weekends.
3. Marketing campaigns targeting casual riders explaining health benefits of bike rides and savings with annual membership (For this we will need to collect more data on pricing plans. After completing the ride in the app show the popup message "xx km done, xxx calories burned, CO emissions reduced".
4. Create contests for annual members. Create a community for members, so users can feel the privilege of being members.

Since the use increases during Summer months it is convenient perform marketing companies during these months. But in winter it can be useful to offer discounts for annual passes.

Considerations for further analysis

Finding out what motivates users will help us to design more effective marketing strategy. Collect more quantitative data on demographics would provide more information about users´ differences. Also conduct a survey to get qualitative data on behavioral differences and motivation of the users.

Explore more data about casuals rider´s behavior (pass types they use:single or full day), frequency of use for each rider). With these data, we can see how many rides each casual rider does during the month/year and offer a saving plans with membership that will incentive them to switch.