How does a bike-share navigate speedy success?

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Scenario

Cyclistic is 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, we want to understand how casual riders and annual members use Cyclistic bikes differently.

Agenda

1. Business Task
2. Description of data sources used
3. Documentation of cleaning data
4. A summary of the analysis
5. Visualizations and key findings
6. Top three recommendations based on the analysis

1. Business Task

1. How do annual members and casual riders use Cyclistic bikes differently?
2. Why would casual riders buy Cyclistic annual memberships?
3. How can Cyclistic use digital media to influence casual riders to become members?

2. Description of data sources used - Data Preparation

- The data has been made available by Motivate International Inc. under this license.
- Data is restored with a html file.
- Use Cylistic's historical trip data to analyze and identify trends.
  2019_Q1
  2019_Q2
  2019_Q3
  2019_Q4
  2020_Q1

3. Documentation of cleaning data – Process Data

A. Create subfolders which are 'original data' for restore downloaded data and 'new data' for restore edited data
B. Remove duplicates
C. Create a column called "ride_length." Calculate the length of each ride by subtracting the column "started_at" from the column "ended_at" and format as HH:MM:SS
D. Delete the rows with 'ride_length' less than 0 and equal to 0, which means customers did not use bike.
E. Filter data by condition(empty), deleting the rows with empty value
F. Create a column called "day_of_week," and calculate the day of the week(1=Monday, 7=Sunday)

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	A	B	C	D	E	F	G	H
1	trip_id	start_time	end_time	ride_length	day_of_week	bikeid	tripduration	from_station_id
2	21742443	2019/1/1 00:04	2019/1/1 00:11	0:06:30	6	2167	390	199
3	21742444	2019/1/1 00:08	2019/1/1 00:15	0:07:21	6	4386	441	44
4	21742445	2019/1/1 00:13	2019/1/1 00:27	0:13:49	6	1524	829	15
5	21742446	2019/1/1 00:13	2019/1/1 00:43	0:29:43	6	252	1,783.00	123

G. Each csv has different column names, we fix these to be integrated.
H. The 'user_type' column are described as 'Subsriber' and 'Customer' which will be changed to 'member' and 'casual' in R.

4. A summary of the analysis

Create a pivot table to calculate and visualize the data.

A. Average of ride_length for members and casual riders.

usertype	Average of ride_length
casual	0:41:16
member	0:14:16
Total	**0:22:54**

- Casual riders' average of ride length is much longer than that of member riders.

B. Number of riders in a week (1=Monday, 7=Sunday)

COUNTA of ride_length	day_of_week							
usertype	1	2	3	4	5	6	7	Grand Total
casual	35319	31965	35303	42520	48873	79169	61878	335027
member	110323	115785	119255	110907	108493	77610	71175	713548
Grand Total	**145642**	**147750**	**154558**	**153427**	**157366**	**156779**	**133053**	**1048575**

- Number of member riders is relatively higher during weekdays.
- Number of casual riders is relatively higher during weekends.

C. Age distribution of riders

	0-20	21-25	26-30	31-35	36-40	41-45	46-65	66-75	75-80
casual	2,186	26,937	46,300	31,251	14,068	7,955	18,382	735	31
member	1,469	38,345	203,939	177,714	102,996	55,742	120,085	10,474	952

Member

- Age between 26-45 is highest.
- Distributed in a wider age group.

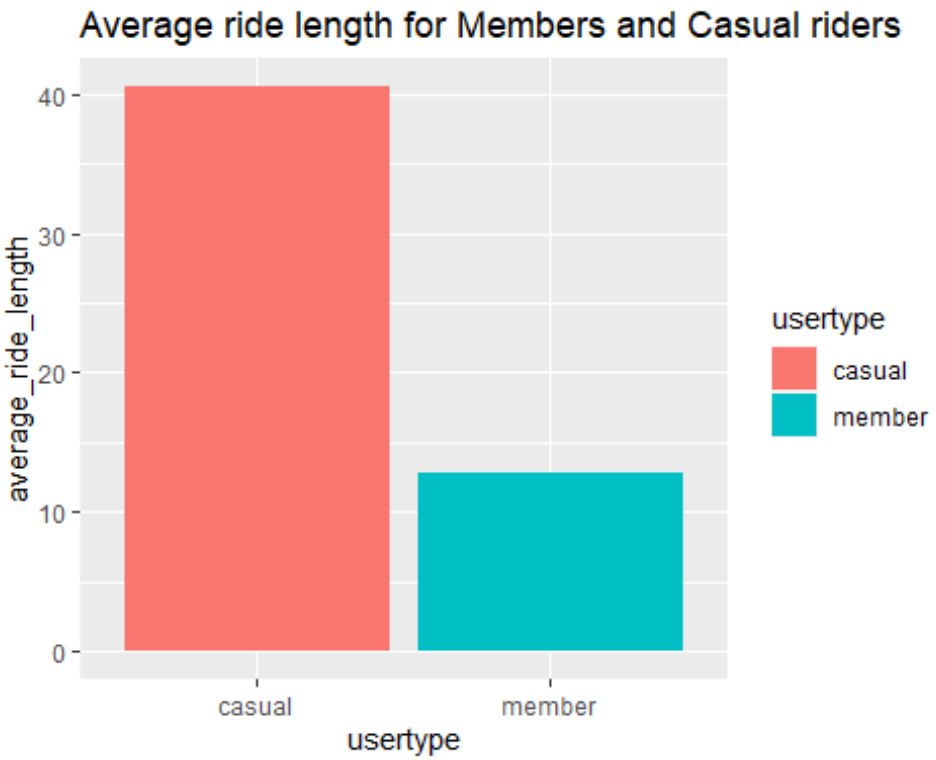
Casual

- Age between 21-35 is highest.
- Casual riders' age are younger than members.

5. Visualizations and key findings

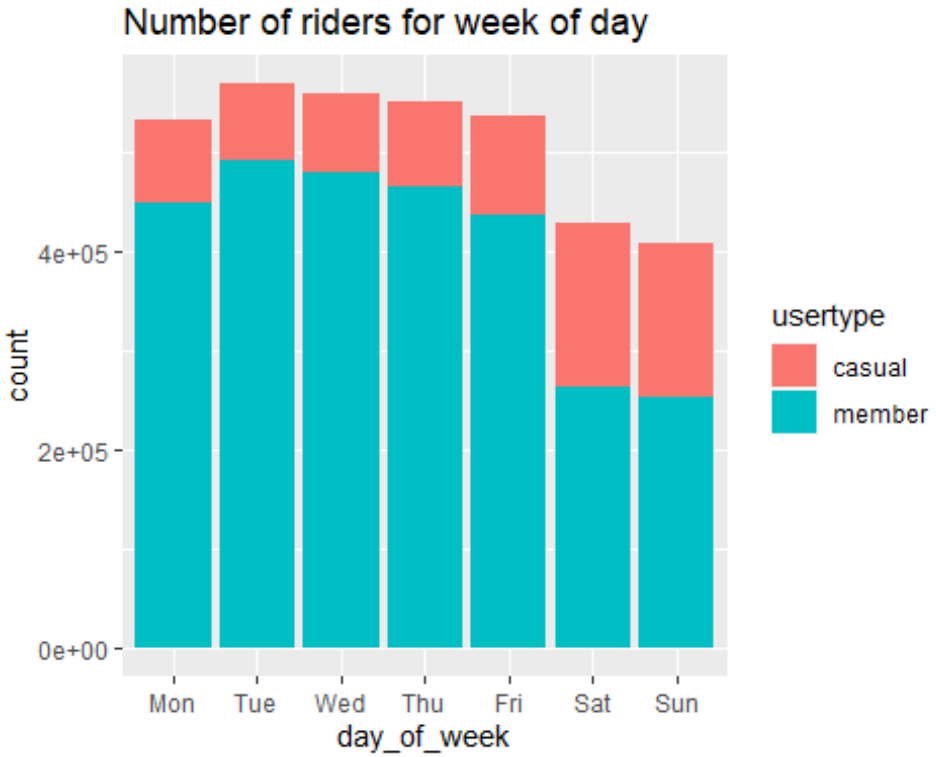
A. Average ride_length for members and casual riders

	usertype	average_ride_length
1	casual	40.56643
2	member	12.76086



- **Casual** riders have much longer ride length than that of members.

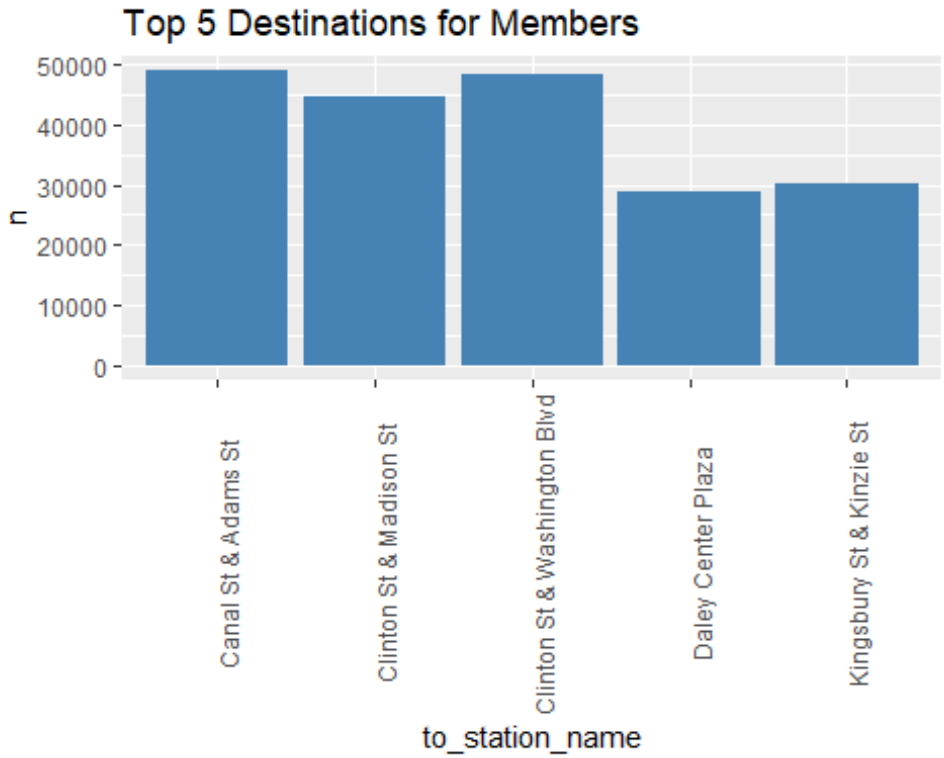
B. Number of riders in a week



- Number of **member riders** is relatively higher during weekdays.
- Number of **casual riders** is relatively higher during weekends.

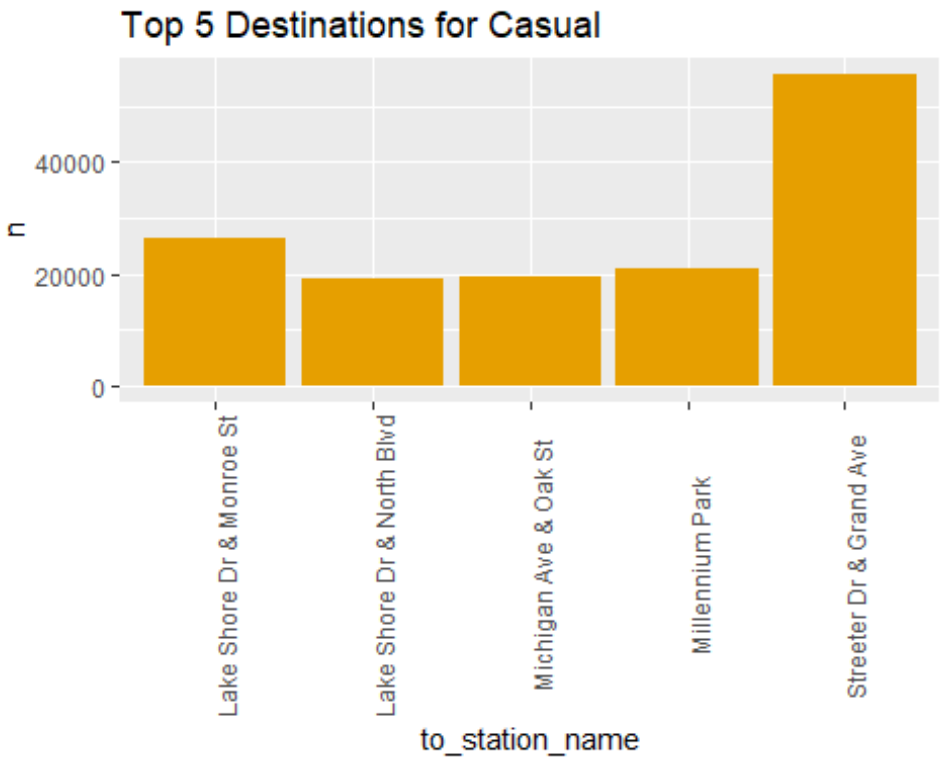
C. Investigate Destinations
Top 5 Destinations for Members

	to_station_name	usertype	n
1	Canal St & Adams St	member	48929
2	Clinton St & Washington Blvd	member	48224
3	Clinton St & Madison St	member	44541
4	Kingsbury St & Kinzie St	member	30238
5	Daley Center Plaza	member	28772



Top 5 Destinations for Casuals

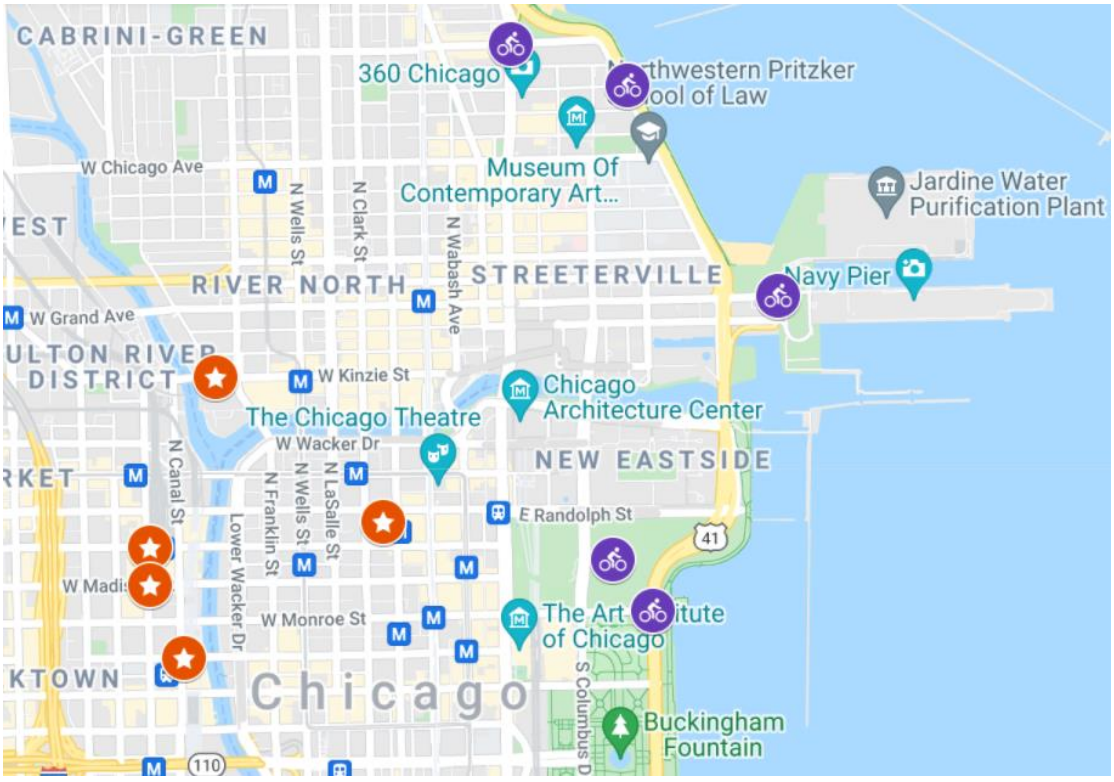
	to_station_name	usertype	n
1	Streeter Dr & Grand Ave	casual	55653
2	Lake Shore Dr & Monroe St	casual	26487
3	Millennium Park	casual	21086
4	Michigan Ave & Oak St	casual	19568
5	Lake Shore Dr & North Blvd	casual	19294



In the map below, the Member's destination and Casual's destination have been marked.

= Member's destination

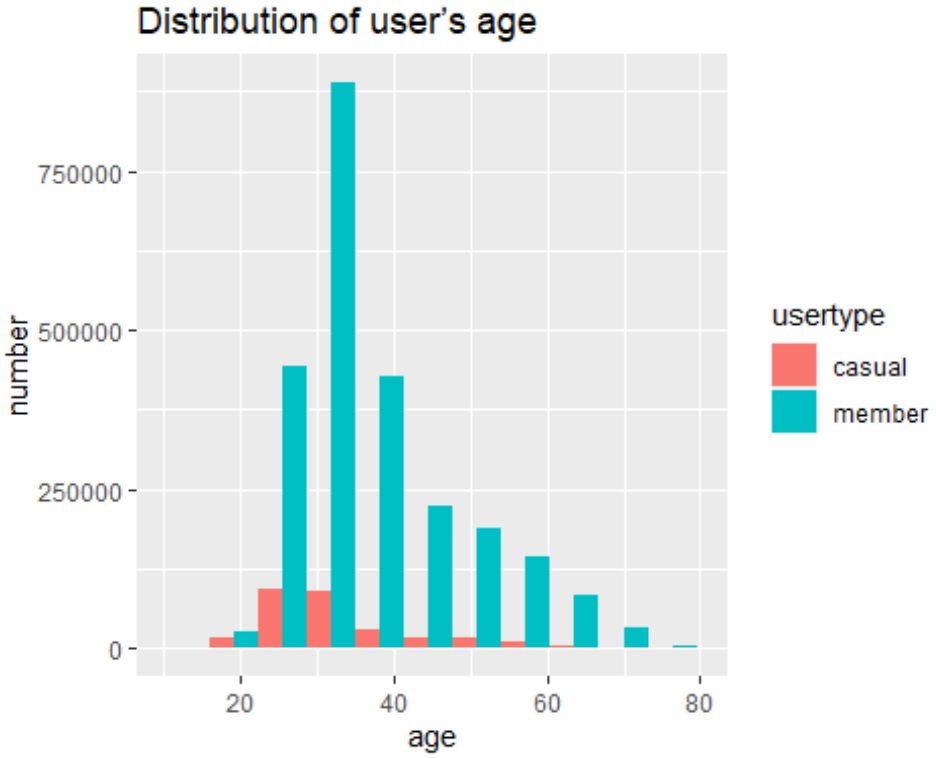
=Casual's destination



Member
- Top 5 destinations are close to office buildings.
- Members use Cyclistic for **commute**.

Casual
- Top 5 destinations are close to leisure spots, such as park, beach, pier and museum.
- Casual use Cylistic for **leisure**.

D. Distribution of riders' ages



Member
- Age between 25-40 is highest.
- Distributed in a wider age group.

Casual
- Age between 25-30 is highest.
- Casual riders' ages are younger than members.

6. Top three recommendations based on the analysis

Summary of analysis

Members and Causals use Cyclistic in very different way.

Member
- Relatively longer ride length during weekdays.
- Destinations are close to office buildings.
- Using Cyclistic for commuting.
- Distributed in a wider age group (25-40).

Casual
- Relatively longer ride length on weekends.
- Use Cylistic for leisure.
- Much longer ride length than that of members.

- Relatively younger age (25-30).

Top three recommendations

- **Use ride length to set the price – for casual riders**
  The member's pricing remains unchanged. Casual rider's pricing is calculated based on the distance of the ride. The goal of this recommendation is to help convert casual riders into annual members.

- **Discount for leisure consumption – for member riders**
  Discounts for tickets, food and beverage are for leisure use members only during Holidays. The goal is to increase public exposure in order to attract more casual riders to join the memberships.

- **Providing different types of bikes to wide range of age groups**
  Bike with child or baby seats for family with child(s).
  Adding the option of electric bikes to target more customers.