Cyclistic Case Study

Teresa Cristina Cohen

Google Data Analytics from Coursera

Cyclistic Overview:

- Offers three Bike-share service plans
  - Single-ride passes
  - Full-day passes
  - Annual membership
- Two types of riders identified in data
  - Casual
    - Use single-ride and full-day passes
  - Members
    - Use their membership for unlimited rides

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Cyclistic Considerations:

- Finance thoughts:
  - Annual members are more profitable than casual riders
  - Converting the maximum number of casual riders to members will be key to future growth of the company according to their financial analysts
- Marketing thoughts:
  - Casual riders are already familiar with Cyclistic
  - Very good chance to convert casual riders into members
- Marketing objectives:
  - Design marketing strategies aimed at converting casual riders into annual members
  - Understand how annual members and casual riders differ
- Marketing 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?

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About the data:

- 12 months of historical data provided from Nov 2020 to Oct 2021
- The tables contain the following headers: ride_id, rideable_type, started_at, ended_at, station_name, statrt_station_id, end_station_name, end_station_id, start_lat, start_lng, end_lat, end_lng, and member_casual type.
- In CSV file format

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Data Limitations:

- No rider identification listed
  - Inability to track number of rides per rider
  - Inability to determine payment preference
  - Inability to do analysis related to where riders live
- Assume there are no check-ins required during the course of a ride
- Inability to differentiate between single-ride and full-day passes

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Data Cleaning:

The data was cleaned to ensure proper analysis could be performed.
The cleaning process consisted of:

- White spaces trimmed from beginning and end of each cell
- Verified the uniqueness of the ride_id column
- The columns rideable_type and member_casual were checked for misspelling
- Rows with negative time duration were removed
- Outliers were removed based on 1.5*IQR of the calculated ride length (ended_at – started_at)

Observations about the cleaning process:

- Rows with missing station information were NOT removed for the analysis related to the ride length
- Rows with missing station information were removed for the analysis of most and least visited stations

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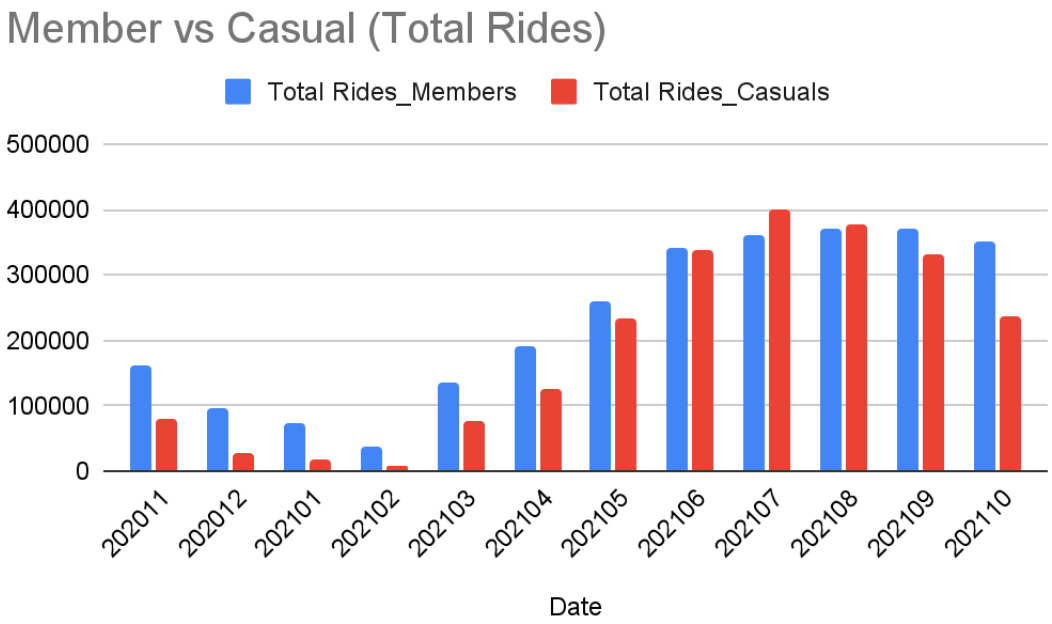
Insights - Ride Quantity:

- The total number of rides varies throughout the year. We can visually see a correlation between the total number of rides and the temperature (i.e. more rides in the hotter summer months)
- The difference between the total rides from casuals and members decreases as the temperatures increases.
    - In July the total number of casual rides is greater than the member rides by 10.3%. (July has slightly more casual than member rides)
    - In October the total number of casual rides is less than the total numbers of rides taken by members 32.7%



Business Question: How do annual members and casual riders use Cyclistic bikes differently?

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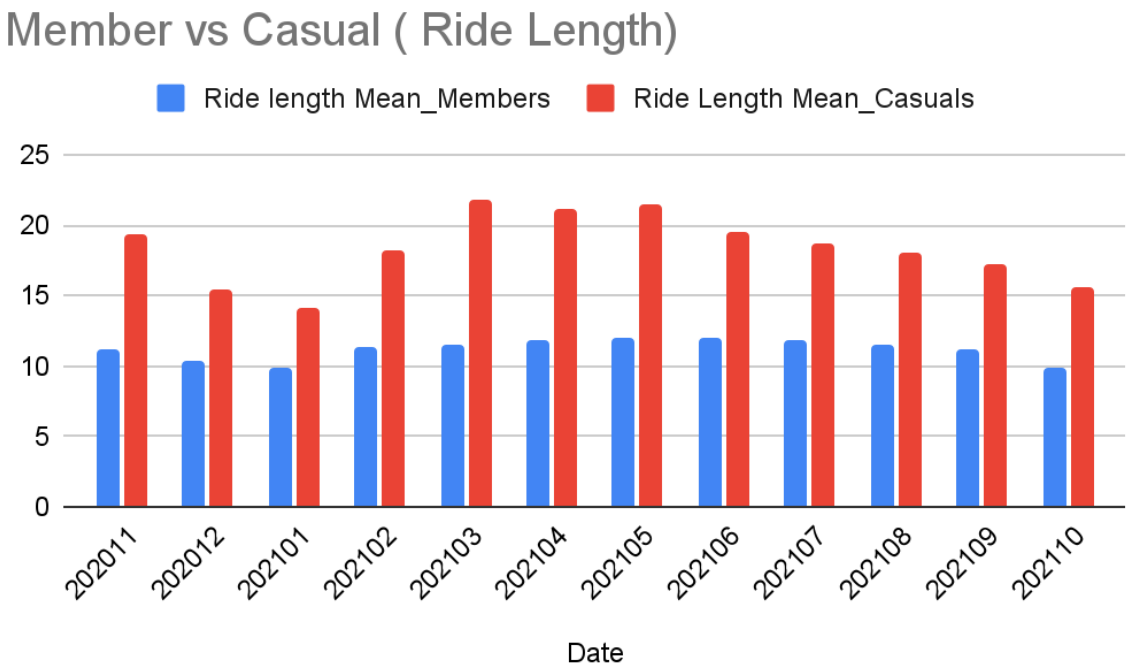
Insights - Ride Length Mean:

- The mean ride length was calculated by filtering for members or casuals, summing up the duration of each ride and dividing by the total number of rides (mean)

- On average, the duration of casual rides is longer than the rides taken by members by 29.5% in January, 47.26% in March
- On average, the duration of the rides from casuals varies between 14:10 and 22:29 minutes, for members the variation is between 10:21 and 12:05



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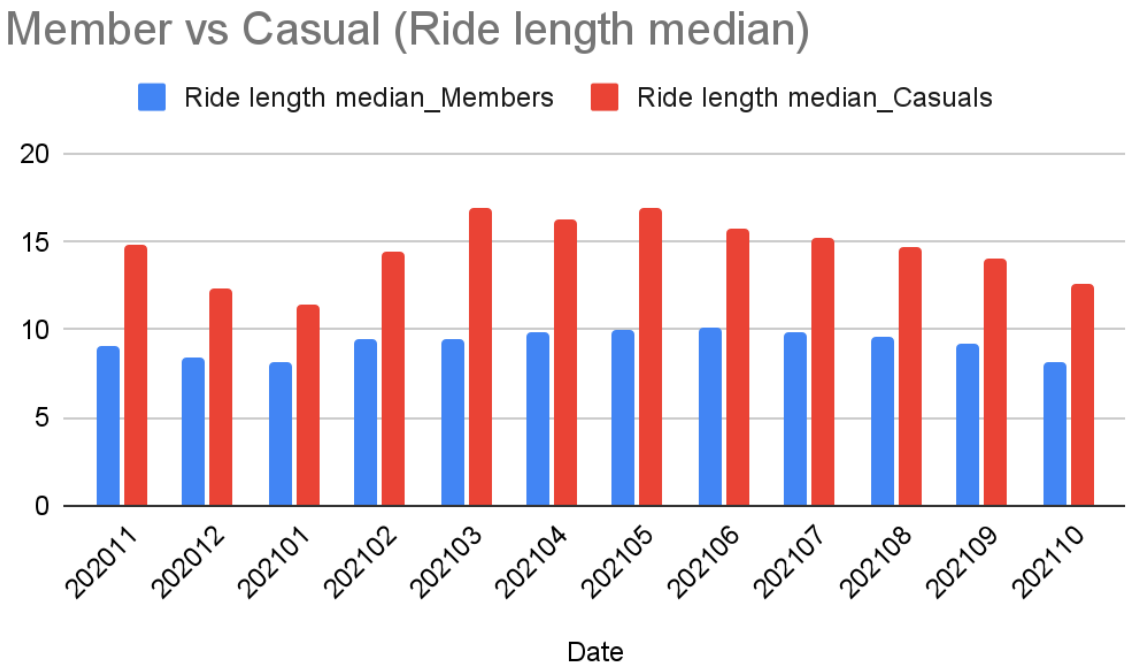
Insights - Ride Length Median:

- The median is the middle number in the ride_length list, the number that separates the set in two halves.

- The median shows a smaller difference between the ride length of member and casual riders when compared to the mean.
- The duration of casual rides is longer than the rides taken by members by 21.7% in January, 44.4% in March
- The median shows that duration of the rides from casuals varies between 11:40 and 17:36 minutes, for members the variation is between 08:18 and 10:10



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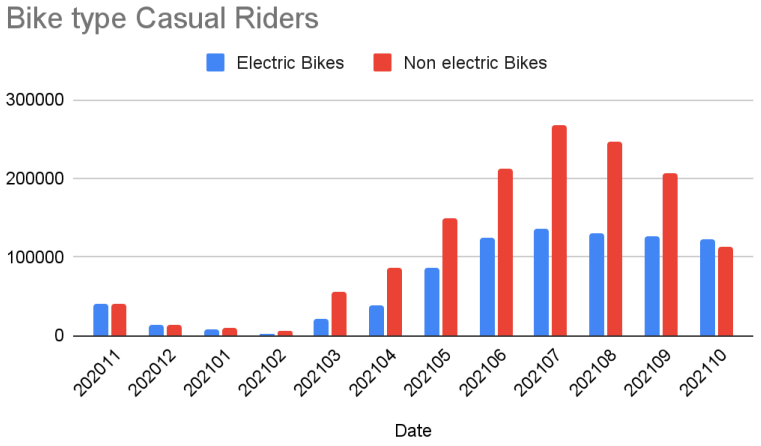
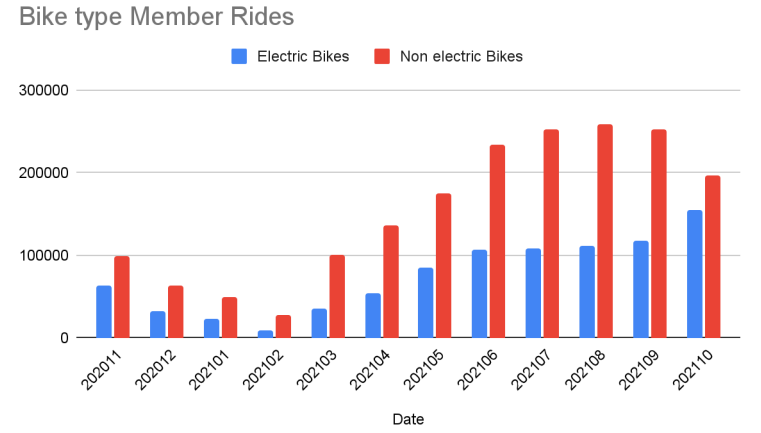
Insights - Bike Type:

- The chart relates the total number of rides with electric and non-electric (classic + docked) bike types for member and casual riders.
- The number of rides using the non-electric type is higher than electric type for member and casual riders
    - In March the usage of non-electric type by casual riders was 151.4% greater than the usage for electric type. For members the usage of non-electric was 186.9% greater than electric type.
    - In October the usage of electric bikes by casuals was greater than the usage for non-electric by 7.95%. For members the usage of non-electric was 27.41% greater than electric type.





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Insights - Stations: Most used start station per month for all members:

202010	202011	202101	202102	202103	202104
1. Clark St & Elm St 2. Lake Shore Dr & Monroe St 3.Theater on the Lake 4.Kingsbury St & Kinzie St 5.Broadway & Barry Ave	1. Clark St & Elm St 2. Dearborn St & Erie St 3. Kingsbury St & Kinzie St 4. Wells St & Huron St 5. Desplaines St & Kinzie St	1. Clark St & Elm St 2. Dearborn St & Erie St 3. Wells St & Huron St 4. Kingsbury St & Kinzie St 5. St. Clair St & Erie St	1.Clark St & Elm St 2. Dearborn St & Erie St 3. St. Clair St & Erie St 4. Columbus Dr & Randolph St 5. Wells St & Elm St	1.Lake Shore Dr & Monroe St 2. Streeter Dr & Grand Ave 3. Clark St & Elm St 4. Millennium Park 5. Wells St & Elm St	1.Lake Shore Dr & Monroe St 2. Streeter Dr & Grand Ave 3. Millennium Park 4. Clark St & Elm St 5. Michigan Ave & Oak St

202105	202106	202107	202108	202109	202110
1. Streeter Dr & Grand Ave 2. Lake Shore Dr & Monroe St 3. Millennium Park 4. Michigan Ave & Oak St 5. Lake Shore Dr & North Blvd	1. Streeter Dr & Grand Ave 2. Lake Shore Dr & North Blvd 3. Michigan Ave & Oak St 4. Lake Shore Dr & Monroe St 5. Millennium Park	1. Streeter Dr & Grand Ave 2. Michigan Ave & Oak St 3. Millennium Park 4. Wells St & Concord Ln 5. Theater on the Lake	1. Streeter Dr & Grand Ave 2. DuSable Lake Shore Dr & North Blvd 3. Michigan Ave & Oak St 4. Theater on the Lake 5. Wells St & Concord Ln	1.Streeter Dr & Grand Ave 2. DuSable Lake Shore Dr & North Blvd 3. Michigan Ave & Oak St 4. Wells St & Concord Ln 5. Millennium Park	1.Streeter Dr & Grand Ave 2. Ellis Ave & 60th St 3. Wells St & Concord Ln 4. Clark St & Elm St 5. Millennium Park

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Insights - Stations: Most used end station per month for all members:

202010	202011	202101	202102	202103	202104
1. Clark St & Elm St 2. St. Clair St & Erie St 3.Theater on the Lake 4.Lake Shore Dr & Monroe St 5.Broadway & Barry Ave	1. Clark St & Elm St 2. Dearborn St & Erie St 3. St. Clair St & Erie St 4. Broadway & Barry Ave 5. Wabash Ave & Grand Ave	1. Dearborn St & Erie St 2. Clark St & Elm St 3. Kingsbury St & Kinzie St 4. St. Clair St & Erie St 5. Wells St & Concord Ln	1. Lake Shore Dr & Monroe St 2. Dearborn St & Erie St 3. St. Clair St & Erie St 4. Wells St & Elm St 5. Broadway & Waveland Ave	1.Lake Shore Dr & Monroe St 2. Streeter Dr & Grand Ave 3. Clark St & Elm St 4. Millennium Park 5. Michigan Ave & Oak St	1.Streeter Dr & Grand Ave 2. Streeter Dr & Grand Ave 3. Millennium Park 4. Clark St & Elm St 5. Michigan Ave & Oak St

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Conclusion:

- The difference between the total number of rides taken by members and casual is higher during the cold season.
- Casual riders have longer ride length than Members throughout the year
- The demand for non-electric bike is higher than Electric bikes type throughout the year with an increase during the hot season
- Most common stations include:

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Conclusion:

Why would casual riders buy Cyclistic annual membership?

- Price
- Location of the bikes stations
- Public health issues
- Daily commitments
- Avoiding traffic on roads and trains

How can Cyclistic use digital media to influence casual riders to become members?

- Advertisements about the importance of exercise
- Benefits of having Cyclistics annual membership (deals to become a member, advantages of being a member)
    - Start the advertisements before summer since the number of casual rides is higher during the summer
    - Focus advertisements on the most used stations. Streeter Dr & Grand Ave is the most used
- Payment convenience

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