Cyclistic Bike-Share

Marketing Analysis

Presentor: Malcomb C. Brown
Date: 12-07-2022

Outline

- **Executive Summary**
- **Introduction**
- **Methodology**
  - *Tools*
  - *Techniques*
- **Results**
  - *Visualizations*
  - *Dashboard*
- **Discussion**
  - *Trends*
  - *Insights*
- **Conclusion**
  - *Recommendations*
- **Appendix**

Executive Summary

- **Convert casual riders into annual members**
- **Identify differences between customer types**
- **Internal trip data from Nov 2021 - Oct 2022**
- **Bike-share program:**
  - *Has 5800+ bikes and 600+ docking stations*
  - *8% of riders use assistive options*
  - *30% use Cyclistic to commute to work*
- **Tools used:**
  - *Notepad++*
  - *Excel*
  - *Python*
  - *Power BI*
- **Marketing strategy recommendations**

Introduction

Business Goal:

- Design a marketing campaign that converts casual riders into annual members.

Business Task:

- Identify the differences between how annual members and casual riders use our bikes

Overview:

- Collected previous 12 months of Cyclistic trip data internally.
- Dataset does not contain any personal identifying attributes.
- Data represents unique ride events.
- Used descriptive statistics, filtering, aggregation, and visualizations to uncover trends and insights.
- Geographical data not used as part of this analysis.
- Maintenance records removed before analysis.

Methodology

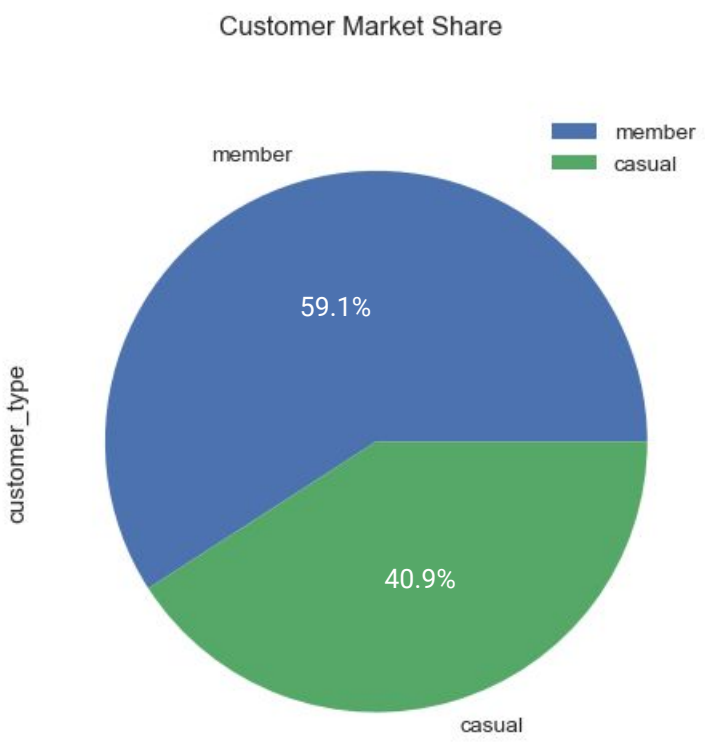
- **Source: Cyclistic internal trip data from Nov. 2021 - Oct. 2022.**
- **Pre inspection and preprocessing performed in Notepad++ & Excel:**
  - Data Exploration
- **Analysis completed using Python in a Jupyter notebook:**
  - ETL
  - Data Wrangling
  - Descriptive statistics
  - Data visualization
- **Dashboard designed with Microsoft Power BI.**
- **Presentation created in Google Slides.**

Analysis Results

- **Market Share**
  - Customer type
  - Bike type
- **Daily Trends**
  - Rides by day of the week
  - Avg. ride time
- **Monthly Trends**
  - Rides by month of the year
  - Avg. ride time
- **Outliers**
  - Which customers ride times affect the average?
  - What bikes are being used?

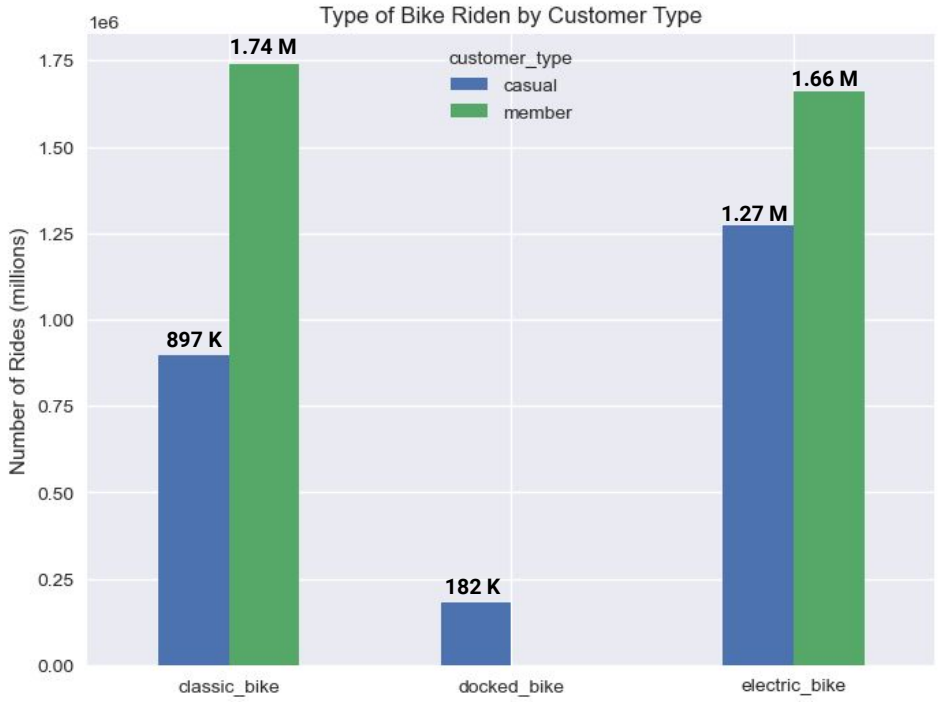
Customer Market Share

- **Annual members comprise 59.1% of riders**
- **Annual members are more profitable**
- **30% of riders use to commute to work**
- **8% of riders use our assistive bike options***



Bike Market Share

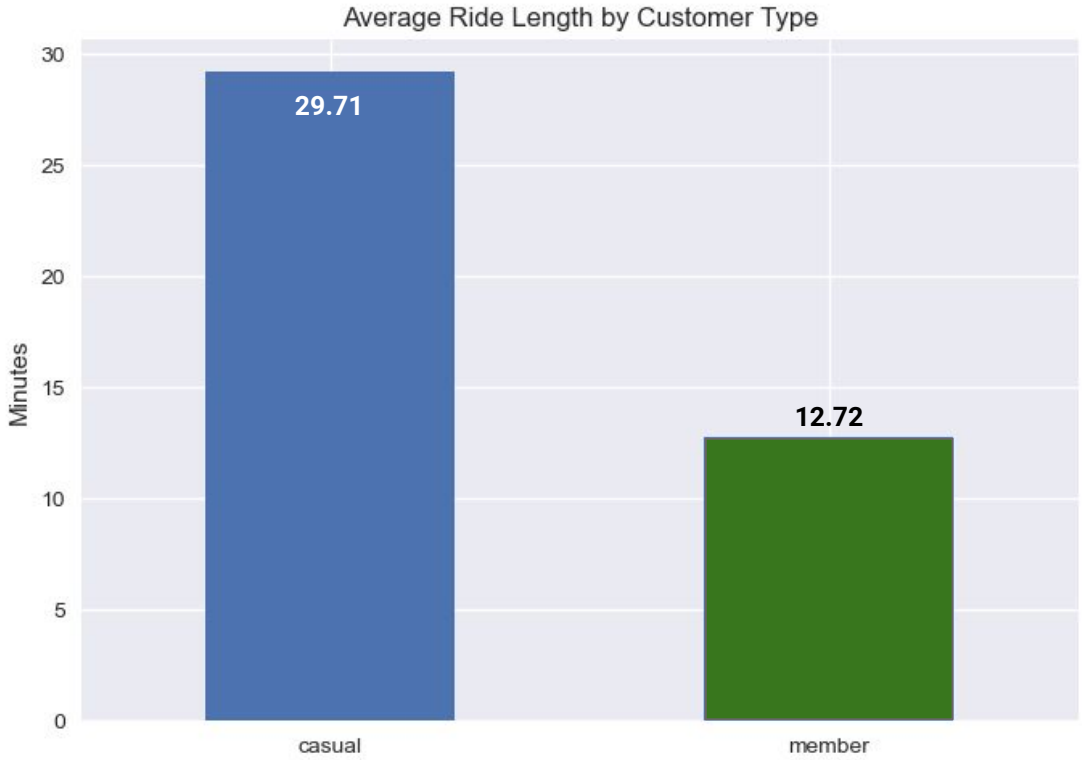
- Only casual riders use ‘docked’ bikes
- Casual riders use electric bikes more than 50% of the time
- Casual riders use every bike type
- Annual members use classic bikes most
- Members use classic bikes twice as much as casual riders
- Electric bikes are the most popular overall



Customer Average Ride Length

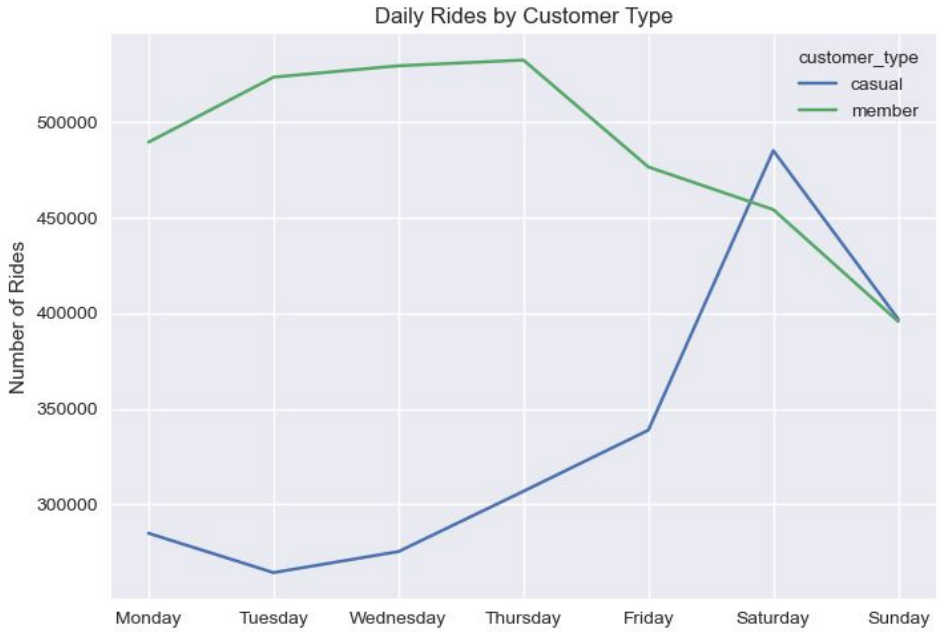
- **Casual riders ride more than twice as long as members**
- **Members average 12.72 mins per ride**
- **Casual riders avg. 29.71 mins per ride**

customer_type	min	max	mean	median
casual	0.02	41387.25	29.174521	13.17
member	0.02	1559.9	12.715554	8.83



Daily Trends
Number of Rides

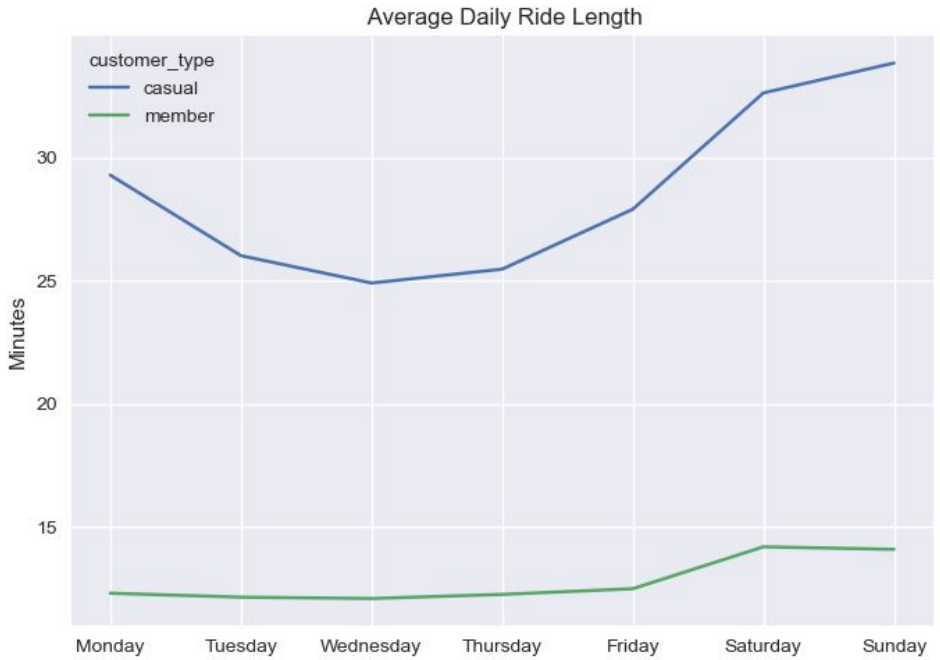
- **Saturday is the busiest day of the week**
- **Members ride most on weekdays**
- **Sun. is the only day members ride count less than 450,000**
- **Casual riders ride mostly on weekends**
- **Casual riders are highest demographic on Sat. and Sun.**
- **Sat. and Sun. are the only days casual riders ride count exceeds 350,000**



Daily Trends

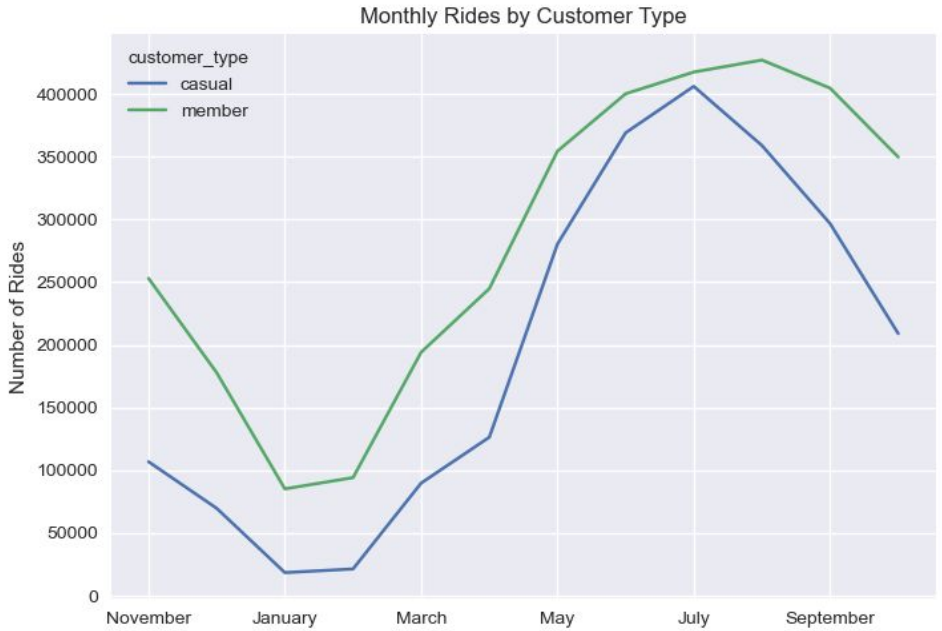
Average Ride Time (minutes)

- **Members and casual riders ride longer on weekends**
- **Casual riders ride longest on Sundays**
- **Casual riders average less than 30 minutes ride time on weekdays**
- **Members on average ride less than 13 minutes a day**



Monthly Trends
Number of Rides

- **Members ride more than casual riders**
- **Summer is the busiest season**
- **July is the busiest month**
- **Winter is the slowest season**
- **January is the slowest month**
- **Rides increase significantly from April to May**
- **June and July difference less than 50,000**



Monthly Trends

Average Ride Time (minutes)

- **Members avg. ride time is less during the winter**
- **Casual riders avg. ride time decreases in the fall**
- **Casual riders ride longer in Jan. and Mar. thru Jun.**
- **Spring has the highest combined average ride lengths**

Trends and Insights

Trends and Insights

- **Summer is the busiest season**
- **Casual riders' avg. ride length is more than double that of annual members**
- **Casual riders ride more than members on the weekend**
- **Annual Members ride more on weekdays**
- **Only casual riders use the 'docked' bike option**

Recommendations

Recommendations

1. **Conduct a survey of casual riders.**
    a. Why do they choose Cyclistic?
    b. How do they utilize our service?
    c. Why do customers choose a bike type?
2. **Target the ‘docked’ bike riders.**
    a. Members do not use ‘docked’ bikes.
    b. Represents 3% of all rides.
    c. 8% of customers choose assistive bike options.
3. **Partnerships.**
    a. Local businesses.
    b. Events.
    c. Festivals.

Survey

Conduct a survey of our casual riders to gather more data to design the marketing strategy around. We can gain an understanding of WHY casual riders choose a specific payment option and type of bike.

While the survey is taking place, further data cleaning and verification of geographical data can be done and added into the analysis. Data architects can explain how data is entered in the system.

Docked Bike Type

Design a campaign focused on converting the ‘docked’ bike riders into annual member. 3% of all rides occur on these bikes and only casual riders use them. 8% of customers use our assistive bike option, providing a service to those with a disability.

Highlight the cost benefits of becoming an annual member as these riders, on average, ride longer. For disabled riders, we should offer a discount or additional service.

Partnerships

Establish partnerships with local businesses and organizations. Casual riders use Cyclistic mainly for leisure. Target the benefit of annual memberships for riders who also do business with partners. This is to include our local sports franchises, museums, and zoo.

Work with a nonprofit focused on assisting disabled citizens to provide services for them.

Appendix

Rides by Customer Type

```
# Total number of customers by type
customer_market_share = trip_data["customer_type"].value_counts().to_frame()
customer_market_share
```

	customer_type
member	3402379
casual	2352749

```
# Percentage of market share by customer type
customer_market_share = trip_data["customer_type"].value_counts(normalize = True).to_frame()
customer_market_share
```

	customer_type
member	0.591191
casual	0.408809

Rides by Customer & Bike Type

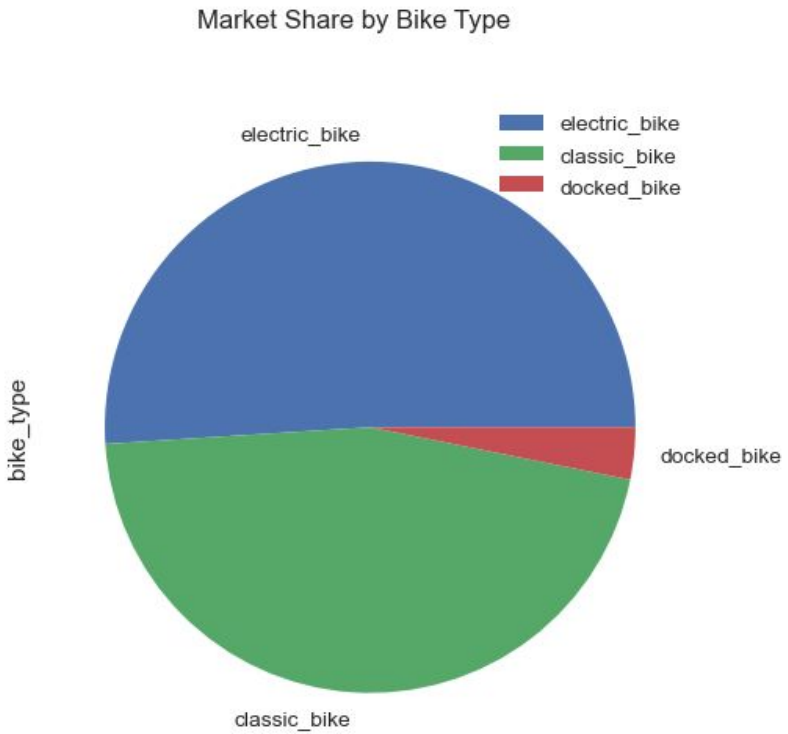
Rides by 'customer_type' and 'bike_type

```
# Total number of rides by 'customer_type' and 'bike_type'
cust_bike_type = trip_data.groupby(["bike_type", "customer_type"])["customer_type"].count().unstack().fillna(value = 0)
cust_bike_type
```

customer_type	casual	member
bike_type		
classic_bike	897376.0	1740432.0
docked_bike	182194.0	0.0
electric_bike	1273179.0	1661947.0

```
cust_bike_type.plot(kind="bar", figsize=(8, 6),
                    title="Type of Bike Riden by Customer Type",
                    ylabel="Number of Rides (millions)",
                    xlabel="", rot=0)
plt.show()
```

Rides by Bike Type




```
# Bike usage totals
bike_usage = trip_data["bike_type"].value_counts().to_frame()
bike_usage
```

	bike_type
electric_bike	2935126
classic_bike	2637808
docked_bike	182194

```
# Bike usage in percent
trip_data["bike_type"].value_counts(normalize=True).to_frame()
```

	bike_type
electric_bike	0.510002
classic_bike	0.45834
docked_bike	0.031658

Rides per day by Customer Type

```
# Calculate the number of rides per day by customer type
customers_per_day = trip_data.groupby(["day_of_week", "customer_type"])["day_of_week"].count().unstack()

# Sort the index
customers_per_day = customers_per_day.reindex(weekdays)
```

```
customers_per_day
```

customer_type	casual	member
day_of_week		
Monday	284944	489653
Tuesday	264360	523669
Wednesday	275374	529625
Thursday	306916	532623
Friday	338918	476662
Saturday	485217	454352
Sunday	397020	395795

Average Rides Length per Day

```
# Calculate the average 'ride_length' per 'day_of_week' by 'customer_type'
avg_day_ride_length = trip_data.groupby(["customer_type", "day_of_week"])["ride_length"].agg("mean").unstack().T
```

```
# Sort the index
avg_day_ride_length = avg_day_ride_length.reindex(weekdays)
```

```
avg_day_ride_length
```

customer_type	casual	member
day_of_week		
Monday	29.295771	12.295921
Tuesday	26.022079	12.135809
Wednesday	24.908162	12.080362
Thursday	25.473353	12.248745
Friday	27.909048	12.478347
Saturday	32.637972	14.183808
Sunday	33.854357	14.0801

Rides per Month by Customer Type

```
# Calculate the number of rides per day by customer type
customers_per_m = trip_data.groupby(["month_of_year", "customer_type"])["month_of_year"].count().unstack()

# Sort the index
customers_per_m = customers_per_m.reindex(months)
customers_per_m
```

customer_type	casual	member
month_of_year		
November	106884	253008
December	69729	177790
January	18517	85248
February	21414	94190
March	89874	194150
April	126398	244820
May	280387	354423
June	369022	400116
July	406013	417403
August	358886	426969
September	296664	404603
October	208961	349659

Average Rides Length per Month

```
# Calculate the average 'ride_length' per 'day_of_week' by 'customer_type'
avg_monthly_ride_length = trip_data.groupby(["customer_type", "month_of_year"])["ride_length"].agg("mean").unstack().T

# Sort the index
avg_monthly_ride_length = avg_monthly_ride_length.reindex(months)
avg_monthly_ride_length
```

customer_type	casual	member
month_of_year		
November	23.135486	11.310125
December	23.497328	11.00568
January	30.382389	11.981801
February	26.710952	11.40588
March	32.625361	11.958948
April	29.536862	11.492964
May	30.872686	13.367429
June	32.10152	14.000385
July	29.281224	13.719402
August	29.313178	13.385418
September	27.988298	12.97699
October	26.390965	11.959913