

How does a bike-share navigate speedy success?

This presentation is designed to support the Share and Act phase of data analysis.

April 2024
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The goal and business task of this analysis:



Goal: Find marketing strategies for increasing the number of annual memberships by convincing casual riders to become Cyclistic members.



Task: Find differences and trends in bike usage between annual members and casual riders.



Discuss any potential areas for further exploration.



Question to be solved:



In what is the distinct diversity in using bike trips between annual members and casual riders?

What marketing strategy will convince casual riders to buy an annual membership?

Discover how digital media can help in marketing tactics.

Will converting casual riders into annual members be more profitable than creating a marketing campaign that targets all-new customers?



Data integrity log

The analysis was conducted using first-party data from the Cyclistic bike-sharing company.

12 months of 2023 data has been used

The data provided by Motivate International Inc. under this [license](#).

- Data is reliable, original, comprehensive, current, and cited

Data is cleaned and analyzed using R Markdown. Complete Project Description link is [here](#)

- [Link](#) – HTML copy of R Markdown document for Data Cleaning

The dataset was revised to exclude docked bikes, as they were not relevant for the analysis.

- [Link](#) – HTML copy of R Markdown document for Data Analysis

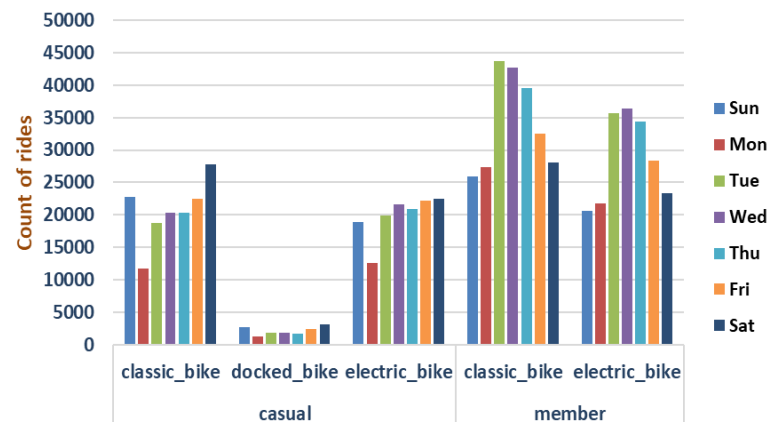
Why were Docked Bikes removed?

- 1st – not in service anymore.
- 2nd – (assumption) docked bikes are reclining, hand tricycles, and cargo bikes.
- 3rd – not present in datasets since 09/2023.
- 4th – Excel charts on the right show very different behavior of a “docked bike” —an extremely small count of rides and a significantly longer average trip duration— which looks like an outlier.

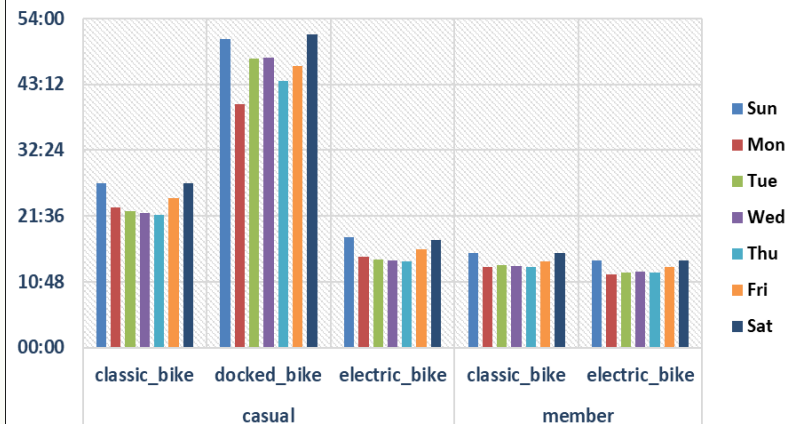
Clean Data Description:

- Number of rows = n_unique for ride_id column - no duplicates;
- Same number of characters (16) in ride_id column;
- Whitespace and empty cells: 0 in each column;
- Completeness: complete_rate = 1 (no missing values in any column);
- Column names: Correct;
- Character length variation in columns 2-4 is normal for this data type;
- Overall, the dataset is clean and ready for analysis.

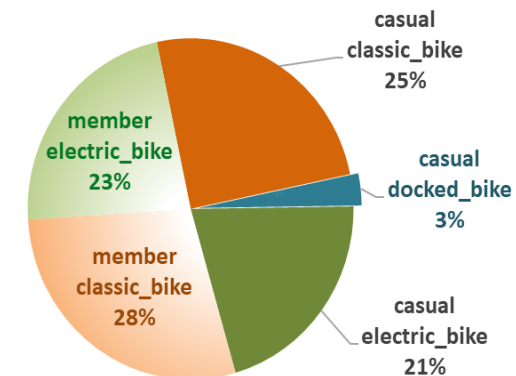
Count of rides for August, 2023



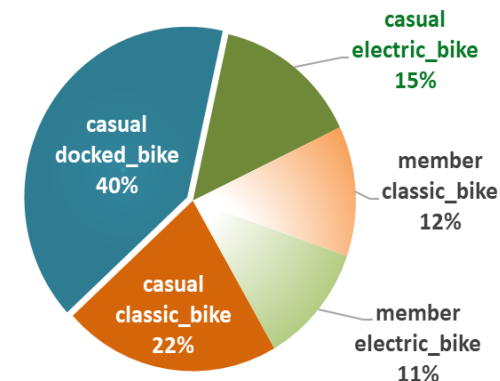
Average trip duration in mm:ss for August, 2023



Count of rides in % for August, 2023



Average trip duration in % for August, 2023

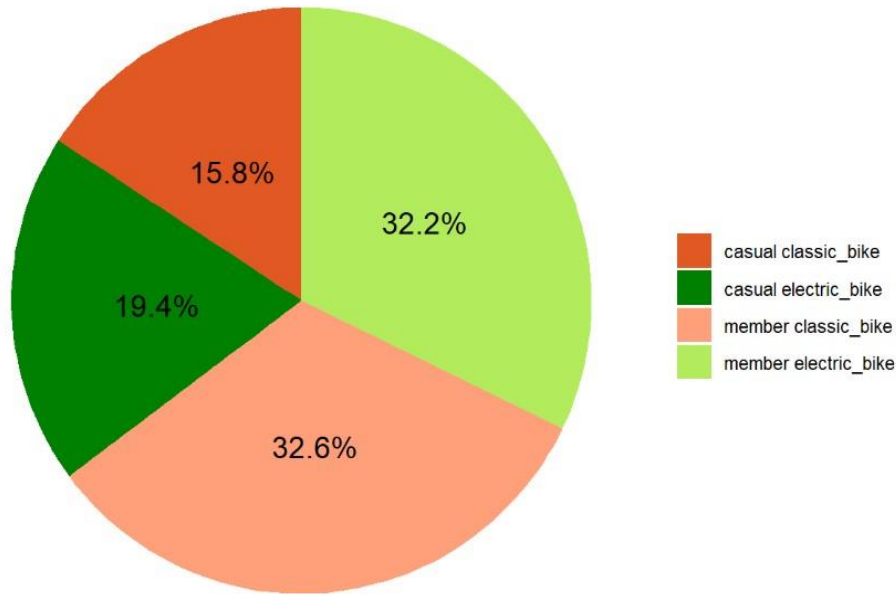


Data Cleaning details are in the Process Phase of the [Project Description](#), page 4.
Evaluation of data cleanliness using the `skim_without_charts()` function in R.



This and the following slides display charts supporting conclusions and recommendations related to the analysis.
Refer to the Analysis Phase of the [Project Description](#), page 13.

Proportion of trips count for all riders



Assumption: trip count proportion approximately reflects the actual quantity ratio between customer categories.

Unweighted Ratios: From the pie chart not shown here:

Casuals/Members: $35.2:64.8 \approx 1:2$ (0.54);

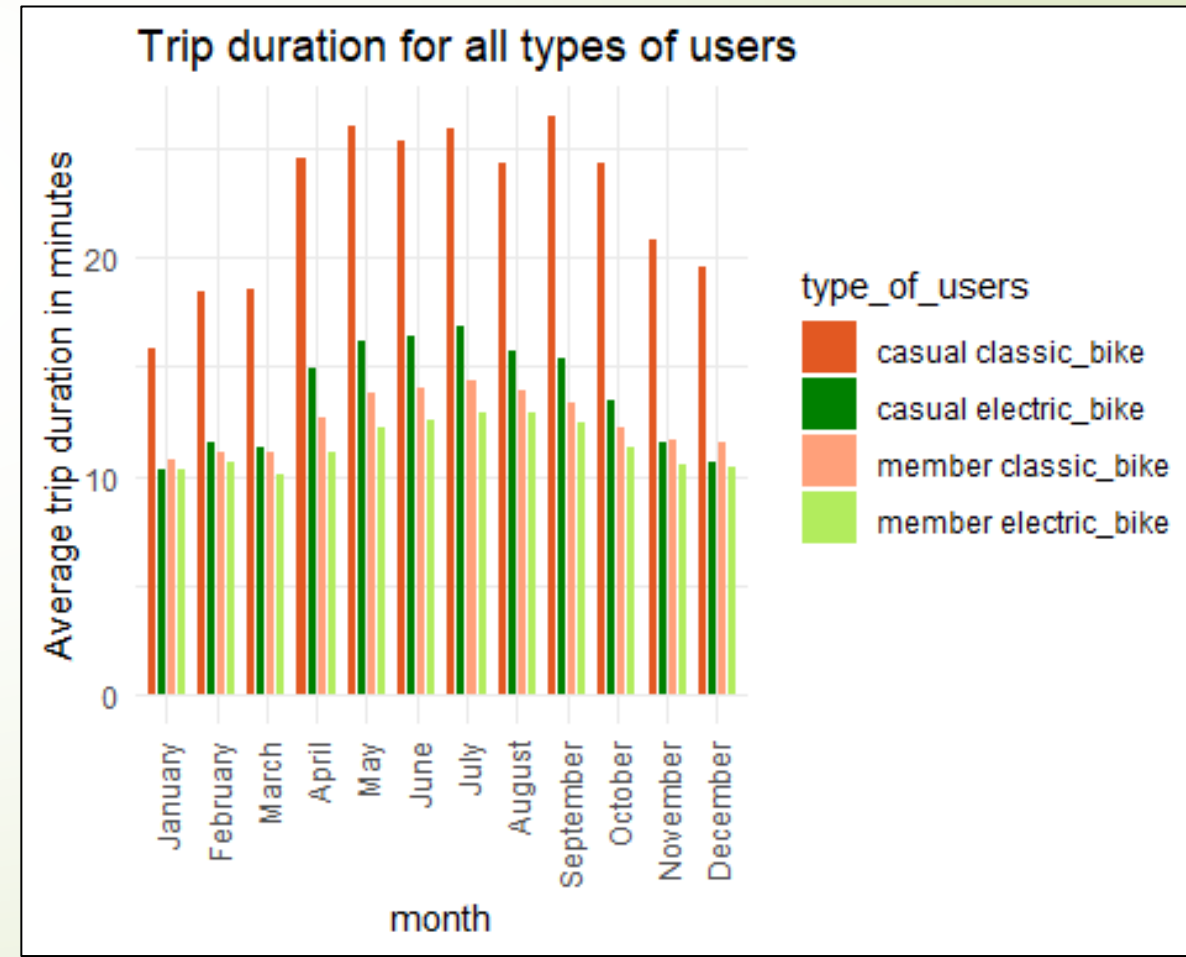
From this chart:

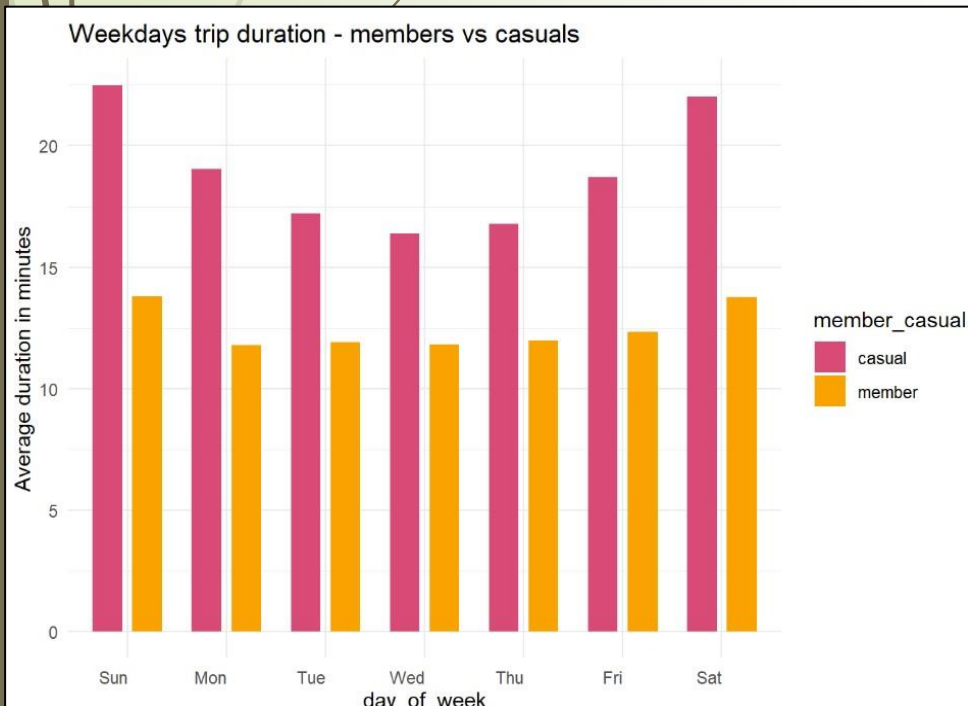
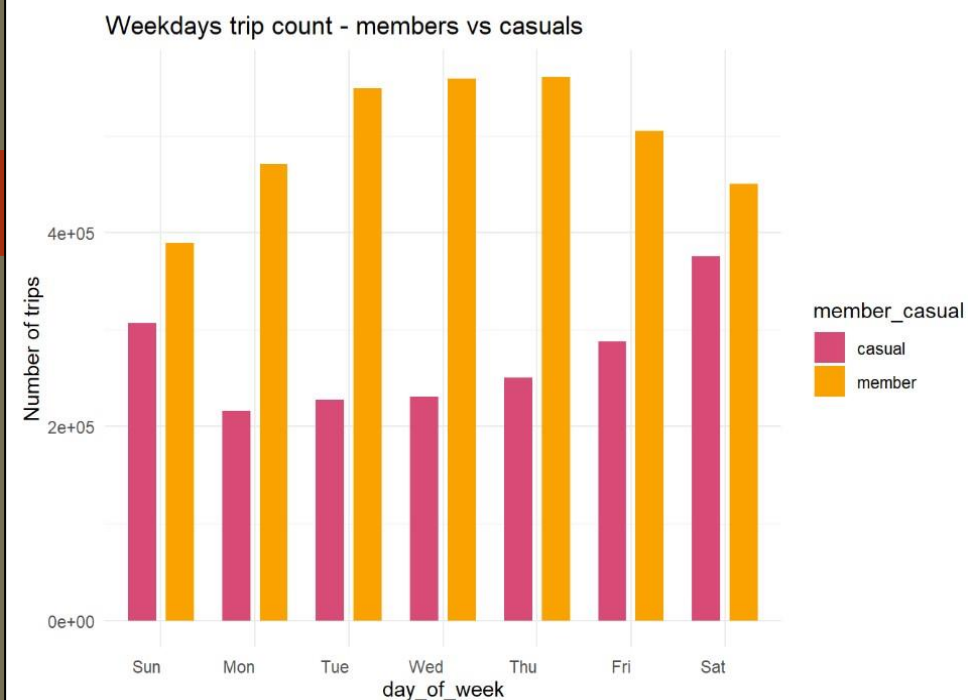
between classic bike users: $15.8:32.6 \approx 1:2$;

between electric bike users: $19.4:32.2 \approx 2:3$.

Further validation will follow with additional data.

The column chart presents an aggregated view of all trip duration charts to see how they appear when all users are separate. It shows that the average trip duration for each month of the year was much longer for Casual riders than for those who bought an annual membership.



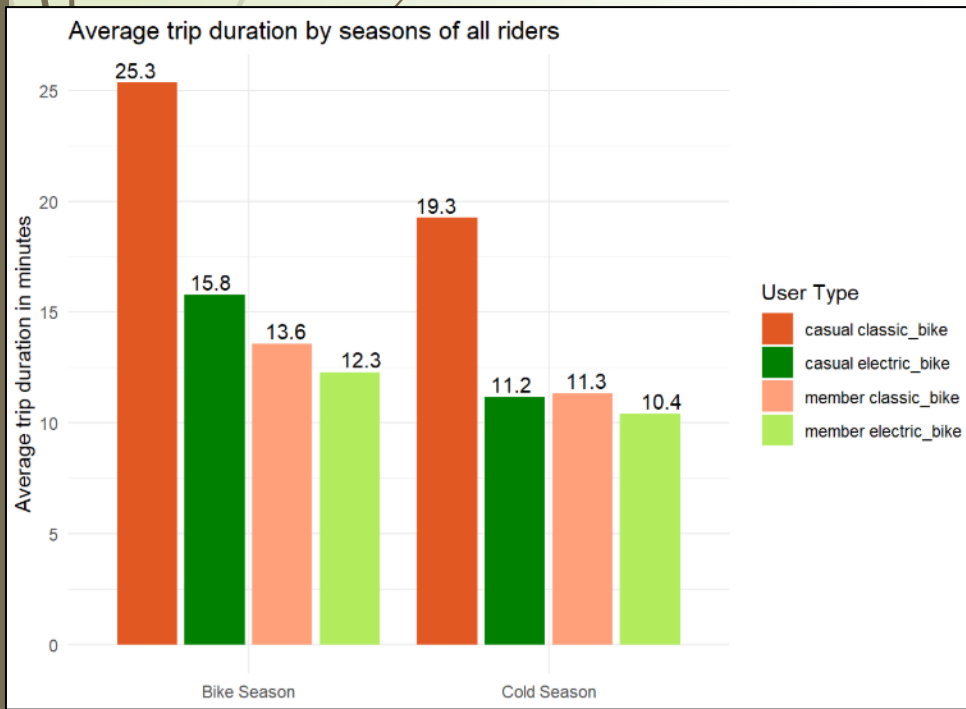
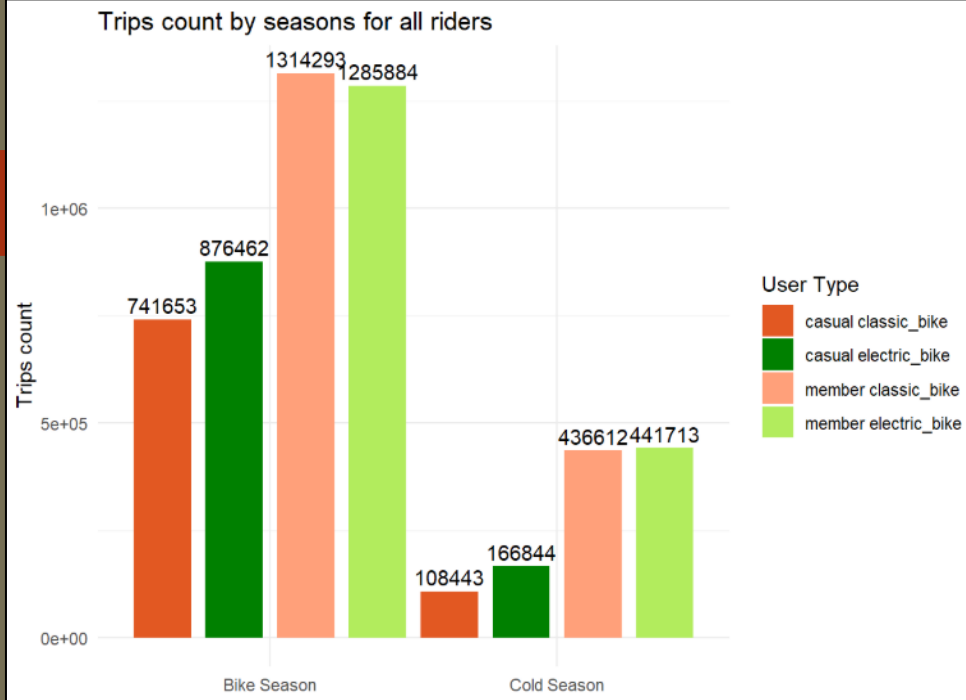


Insights from Weekday Charts:

Evaluation: Casual riders typically have longer trip durations, especially on weekends, reflecting their leisure-oriented nature. These two charts prove that both categories of riders still look very active on any day of the week. Also, the consistency of these chart patterns suggests that casual riders use bikes as a lifestyle, which is a good opportunity to convert them to an annual membership.

Possible Price Adjustment Impact:

If this routine reflects riders' natural habits (commute/leisure), there is no valid reason to change the price between workdays and weekends. People want to choose their preferred day and often cannot ride on workdays. Such marketing risks customer loss, will not convince casual riders to join, and will only disappoint users. We need to pursue win-win marketing strategies that will lead to success.



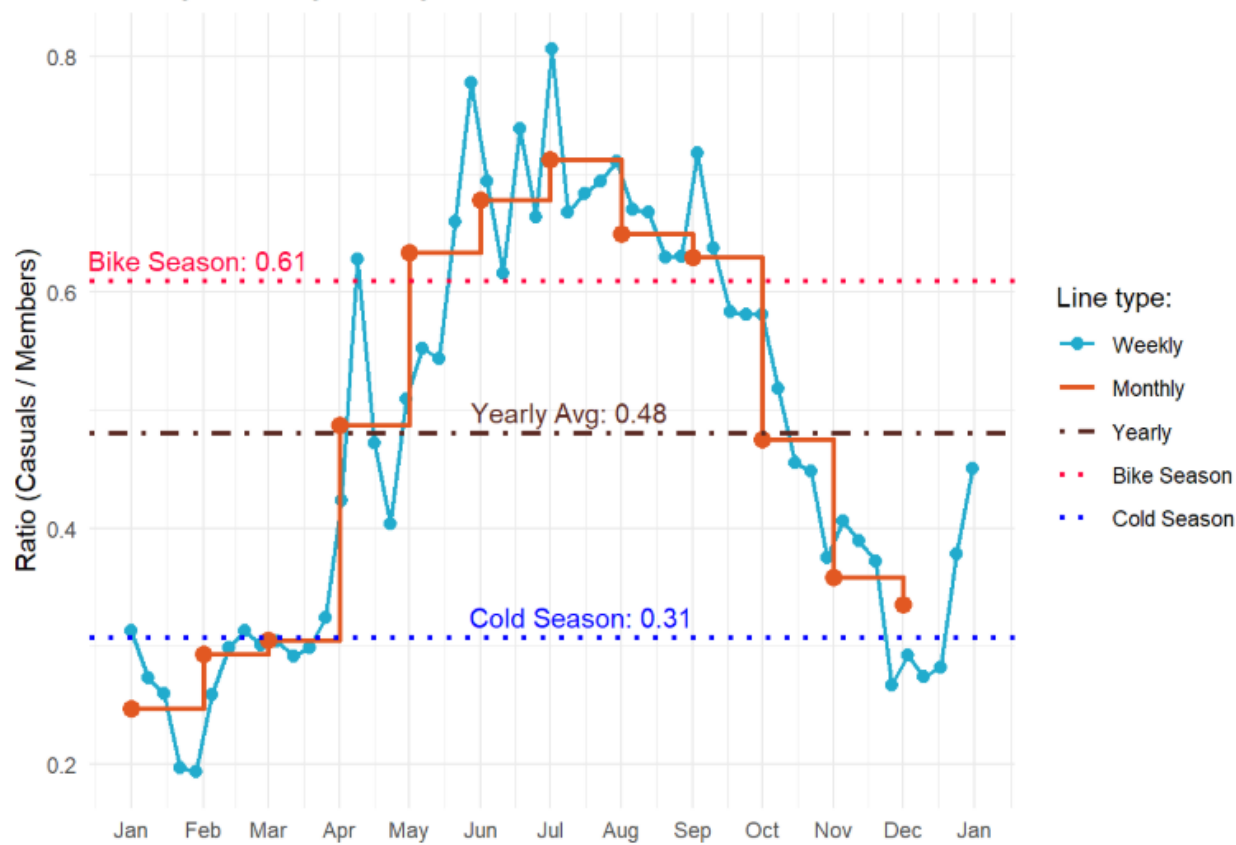
The months are categorized into **Cold Season** - November to March (5 months) and **Bike Season** - April to October (7 months).

Considering the minor count of trips during the Cold Season, it is doubtful that promotions for riders during this period would be effective. However, better prices overall can attract casual riders in any season.

Offering a complimentary month of membership can effectively convert casual riders into members in April and May. People will initially pay attention to the weather, followed by the promotion.

Suggestions: Offering free single rides on electric bikes during certain holidays and better per-minute pricing for classic bikes could attract casual riders to purchase an annual membership. *The Trip count chart indicates that casual riders use electric bikes more frequently than classic bikes, while classic bikes dominate trip duration for both members and casual riders.*

Weekly, Monthly, Yearly and 2 seasons ratios



Casuals-to-Members Trip Count Weighted Average Ratio Chart

The **weighted average ratio** reflects the overall contribution of casual and member riders to the entire dataset, highlighting how trip counts vary weekly and month to month.

Chart description: The dot markers on the light-blue line represent 52 weeks, while the dot markers on the orange line represent the 12 months of the year.

The 30% difference ($0.61 - 0.31 = 0.30$) in the combined trip count ratio between Bike Season and Cold Season reflects the impact of an additional 1,343,773 Casual rider trips in Bike Season, which is 5.88 times more than in Cold Season. *(The trip numbers are calculated using data from the Trips count chart on the previous slide).*

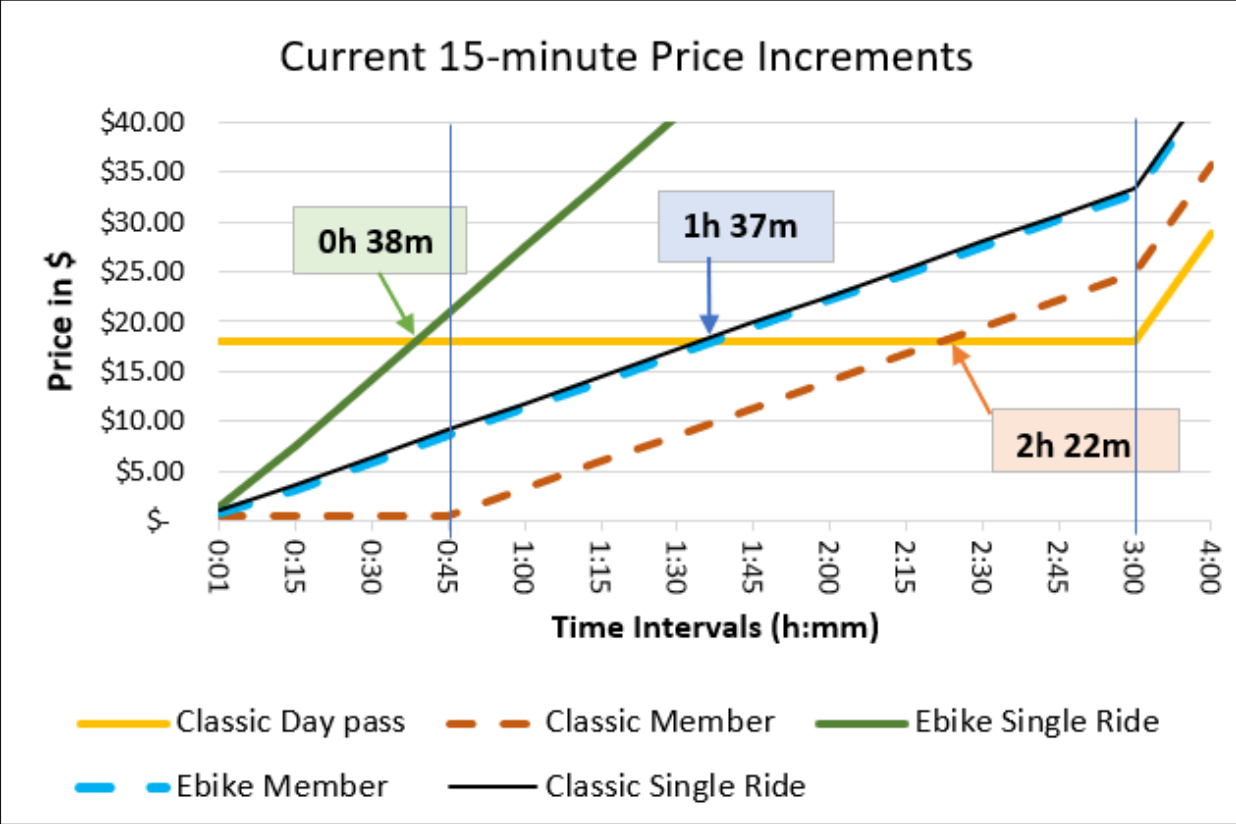
Conclusion: Most marketing strategies should focus on the Bike Season period..

The assumption that trip counts roughly mirror the customer ratio among rider types is correct for Bike Season only because:

- It has a better ratio (0.61) than the Unweighted (0.54) and Weighted (0.48) Average yearly ratios.
- The investigation of trip duration percentiles shows that most users rarely exceed their free ride time.
- The averages of the trip durations (on the previous slide) fall within the 15.8 to 25.3-minute range for electric and classic bikes, representing 60% to 80% of Casual riders' trips during the Bike Season, indicating that few riders take more than one trip per day.

Here is a brief observation. Use links for explanations in details.

- Insight 1:** There is no benefit to being a Member **if the prices** for Classic Single Ride and E-bike Member **are the same**, aside from the ease of riding an e-bike.
- Insight 2:** This is unfair to Members if Casuals are **winners** of lower prices over members with Day Pass **on long trips**.
- Insight 3:** Let's take a quick look at the **current price table** without analyzing it. Everything appears to be priced at 18 cents. Even if this isn't entirely accurate, the identical price (\$0.18) makes it harder to see the benefits.
- Electric bikes with the Day Pass are not cost-efficient:** its "single free ride" costs \$18.10 plus \$0.44 per minute. Riders must unlock the bike 19 times on the same day to make it cost-effective. Divvy customer service confirmed this.

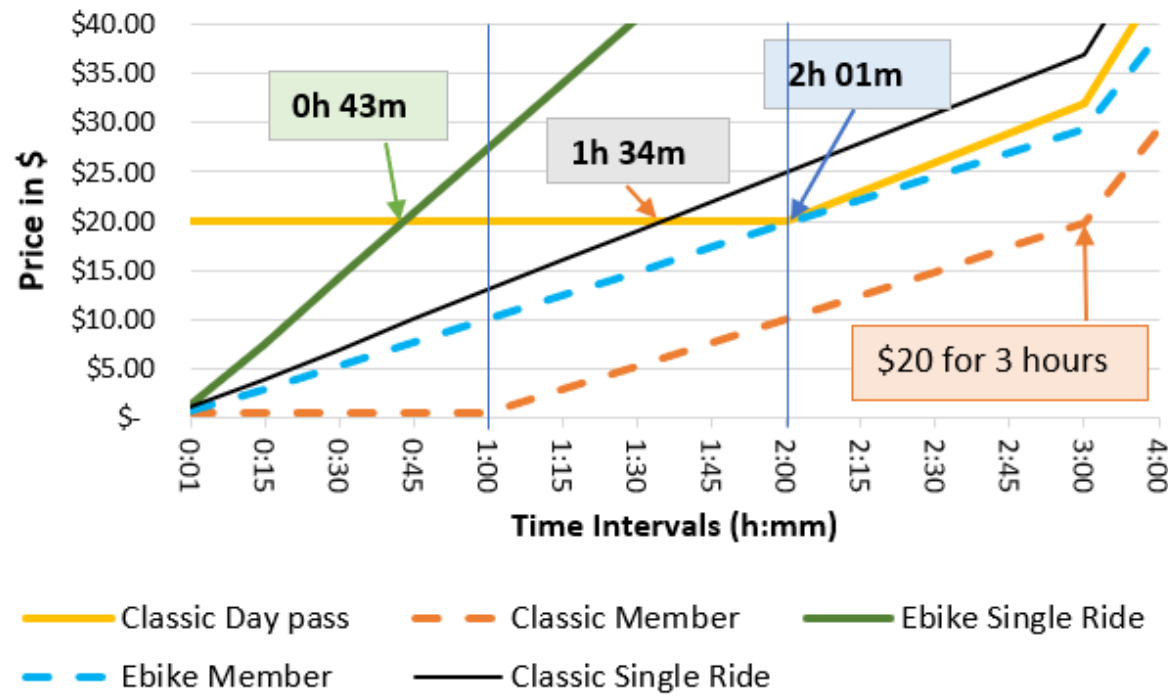


Type of ride	Current	Suggested
Day Pass	\$ 18.10	\$ 20.00
Classic Casual	\$ 0.18	\$ 0.20
Classic Member	\$ 0.18	\$ 0.16
Ebike Single Ride	\$ 0.44	\$ 0.44
Ebike Member	\$ 0.18	\$ 0.16
Single free ride		
Casual	3 hours	2 hours
Member	45 min.	1 hour



Suggestion 1: Adjust per-minute prices for Members and Casuals, keeping the annual membership price at \$143.90.

New prices, 15-Minute Price Increments



Suggestion 2: Reduce the Day Pass free ride duration from 3 hours to 2 hours, as 98% of casual riders' trips are under 90 minutes. To enhance membership benefits, extend the “free single ride” time for members' classic bikes from 45 minutes to 1 hour.

Price Adjustment Impact:

- Being a member is now more cost-effective than purchasing a Day Pass or other options for Casual riders. The blue and dark orange dashed lines for members, indicating lower prices, are below the lines for Casual riders.
- The new price list highlights the benefits of membership and distinguishes members from casual riders. Slight price differences, like \$0.99 vs. \$1.00, have a psychological effect, emphasizing the benefits of membership and encouraging casual riders to evaluate everyday bike rides.





Key findings

Current analysis shows a significant opportunity to convert Casuals to Annual Members. The majority of the marketing strategy should focus on the Bike Season period because:

- a) The consistent patterns in the charts indicate that most casual riders are permanent riders who enjoy much longer rides than members, primarily for leisure, cardio, and a healthy lifestyle;
- b) There are 1,343,773 additional Casual rider trips in Bike Season (April to October) compared to Cold Season (November to March);
- c) 30% higher Casuals/Members trip ratio in Bike than in Cold Season.

The analysis substantiates the opportunity to convert Casuals into Members, which **will be more profitable** than creating a marketing campaign targeting all-new customers.

12-month combined dataset contained 5,380,725 rows representing the number of trips taken in 2023. This number was not necessarily the number of customers, but it is evidence that Cyclistic's bike-sharing service is well-known.

Price Adjustment Strategy: Review and compare current prices with suggested ones based on chart analysis to make a membership a better choice. Maintain the annual membership price at \$143.90 unless new market analysis indicates otherwise.

Price Perception Effect: Slight price differences between Casual riders and Members create a psychological effect, similar to \$0.99 versus \$1.00 pricing. This encourages casual riders to recognize the value of everyday bike rides, which is important. Otherwise, the benefits become obscured by the identical current price (\$0.18 in this case).

<i>Type of ride</i>	<i>Current</i>	<i>Suggested</i>
Day Pass	\$ 18.10	\$ 20.00
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Casual	3 hours	2 hours
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Key findings

Length of “Free Single Ride”:

For Members: For Members: Enhancing the membership benefits by increasing them to 1 hour for classic bikes will attract Casual riders because it aligns with their nature to use bikes for leisure, exercise, entertainment, and a healthy lifestyle.

For a Day Pass: Decrease it to 2 hours instead of the current 3 hours because most (99%) of casual riders only ride much below that amount of time. Again, for 99% of casuals, it will be not overly coercive but a gentle prompt to become a member.



Key findings

Unreasonable prices:

- 1) For the Day Pass on the electric bike.
 - 2) Identical price per minute of use applies to E-bike Members and Classic Single Ride, which makes a membership less beneficial.
-

Complimentary Month: Offering a free month can convert Casuals to Members, especially in April and May, when bike riding is more popular. However, this benefit is less effective in colder months or in March.



Key findings

Membership Perks: Offer free single rides for electric bikes on some holidays or weekends for members in such a way that attracts casuals to buy an annual membership. All members should have customer appreciation days, competitions, and activities that make bike rides fun.

Raising prices on weekends and/or at some hours of the day:

- a) To increase profitability, consider raising prices on certain days based on demand. However, changing prices during the week may discourage casual riders who value flexibility.
 - b) An hourly analysis could identify optimal pricing, but varying prices by the hour might make leisurely riders feel rushed, risking customer loss. We need win-win strategies that encourage annual membership without coercing customers to buy it.
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Key findings

Digital media can help in marketing tactics. The Cyclistic's website and phone app should include advertisement pop-ups, interstitials, and banner ads. The following advertisement messages may be successful in drawing Casuals towards a membership:

- *Annual memberships cost the same as only 8 Day Passes.*
- *With the new prices, members can ride classic bikes for three hours at the same price that Day Pass users pay for just two hours.*
- *New pricing adjustments showing off advantages for members.*
- *Details of the benefits for members, such as the health benefits of riding bikes, spending time outdoors, and staying healthy.*
- *Posters at the docking stations encouraging membership.*

1. What actions should a Cyclistic company perform after seeing these trends?

Review and adjust prices for annual members and casual riders so that buying an annual membership is more beneficial and attractive.

Review and change “free ride” time for annual members up to 1 hour and for casual riders to 2 hours.

Provide members with appreciation days, competitions, and activities for fun, and offer casual riders a complimentary month of membership in April or May.

Offer free single rides for electric bikes on some holidays or weekends for members in such a way that attracts casuals to buy an annual membership.

2. What actions should a Cyclistic company perform after seeing these trends?

Redesign the company's website and phone app to better advertise new Cyclistic membership prices and benefits. Place ads on Instagram, Facebook, or similar platforms.

Suggested areas for further exploration:

Add an encrypted customer ID to datasets, allowing a more profound analysis without access to personal information.

Provide more information about reclining bikes, hand tricycles, and cargo bikes to find a way to continue this service.