

# How does a bike-share navigate speedy success?

This presentation aims to facilitate the Share and Act phase of the data analysis

April 2024  
Igor Vysochanskyy





## 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

To perform analysis, I used first-party data collected by 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

Docked bikes were removed from the dataset as not relevant for analysis

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



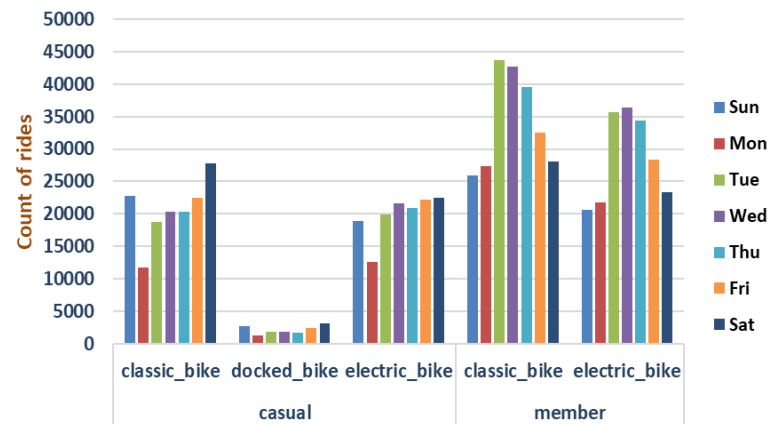
## Why were Docked Bikes removed?

- 1<sup>st</sup> – not in service anymore.
- 2<sup>nd</sup> – (assumption) docked bikes are reclining, hand tricycles, and cargo bikes.
- 3<sup>rd</sup> – not present in datasets since 09/2023.
- 4<sup>th</sup> – 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 – looks like an outlier. →

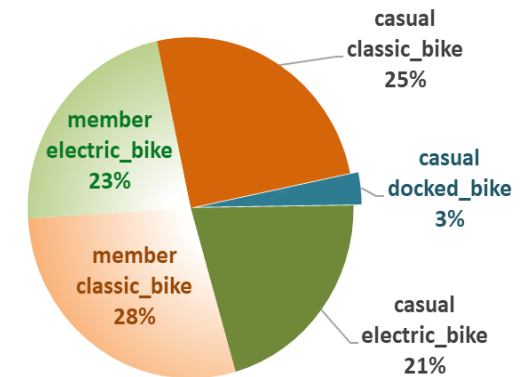
### Clean Data Description:

- 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.

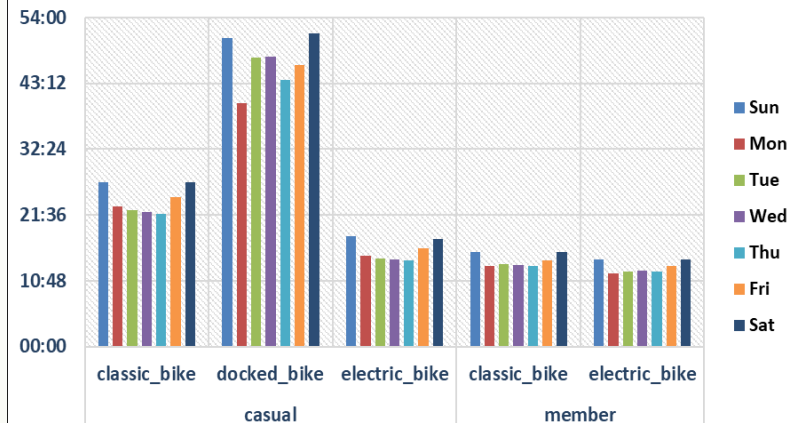
Count of rides for August, 2023



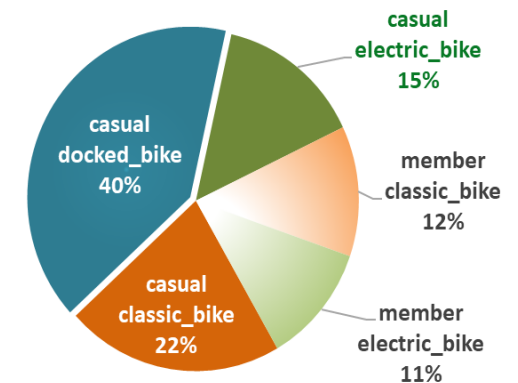
Count of rides in % for August, 2023



Average trip duration in mm:ss for August, 2023



Average trip duration in % for August, 2023



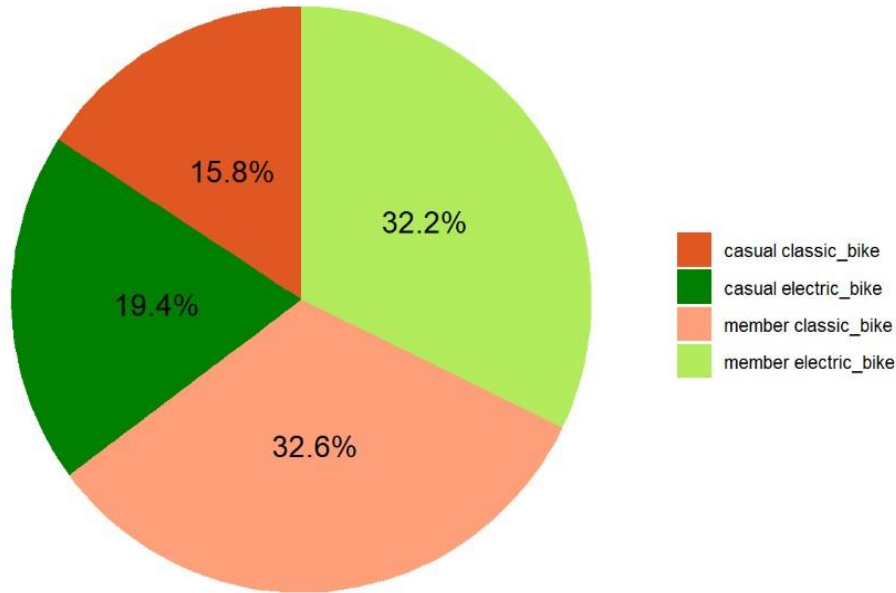
Data Cleaning details are in the Process Phase of the [Project Description](#), page 3.  
Evaluation of data cleanliness using the `skim_without_charts()` function in an R script.



This and the next slides display charts supporting conclusions and recommendations related to the analysis.

Refer to the Analysis Phase of the [Project Description](#), page 12. For R script review use link: [Cyclistic\\_Analysis1.html](#)

Proportion of trips count for all riders



The data doesn't include a personal ID column but a trip ID ("ride\_id" column). As a result, I could not directly compare the actual number of customers and their proportion between categories.

**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);

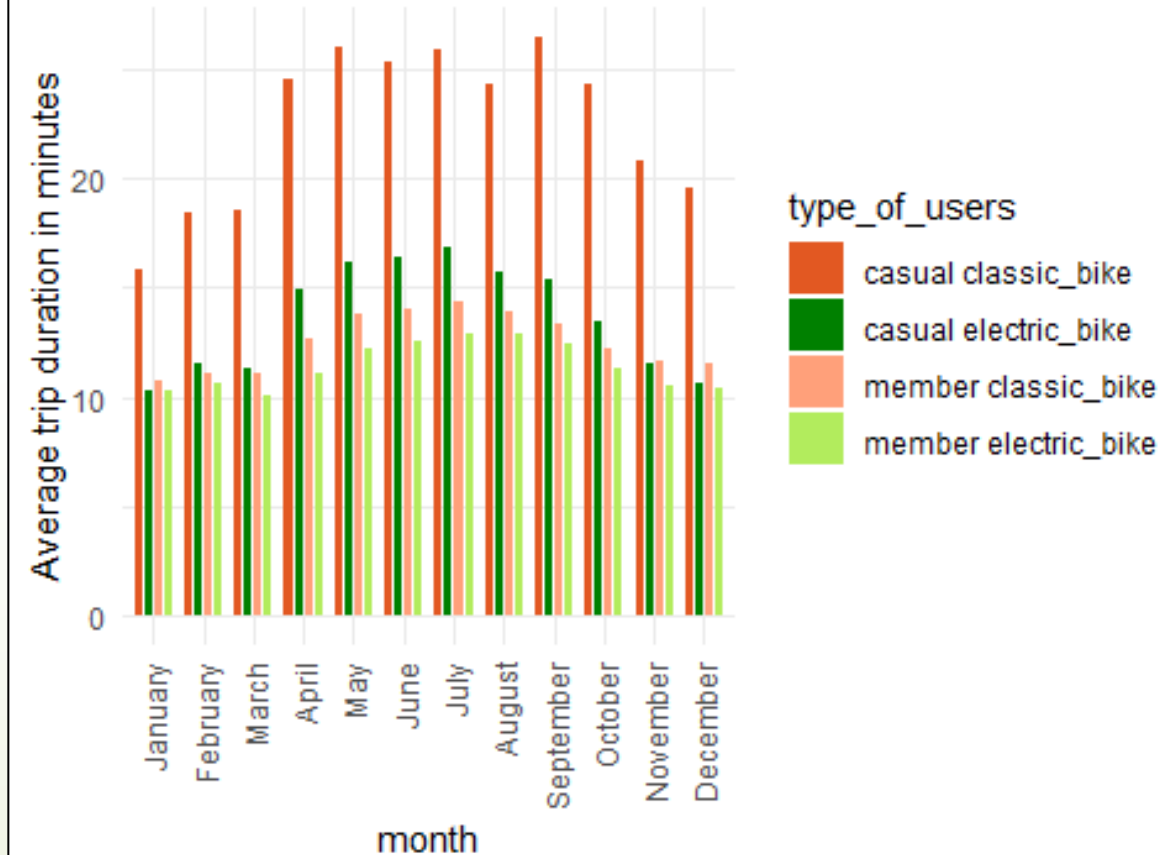
From this chart:

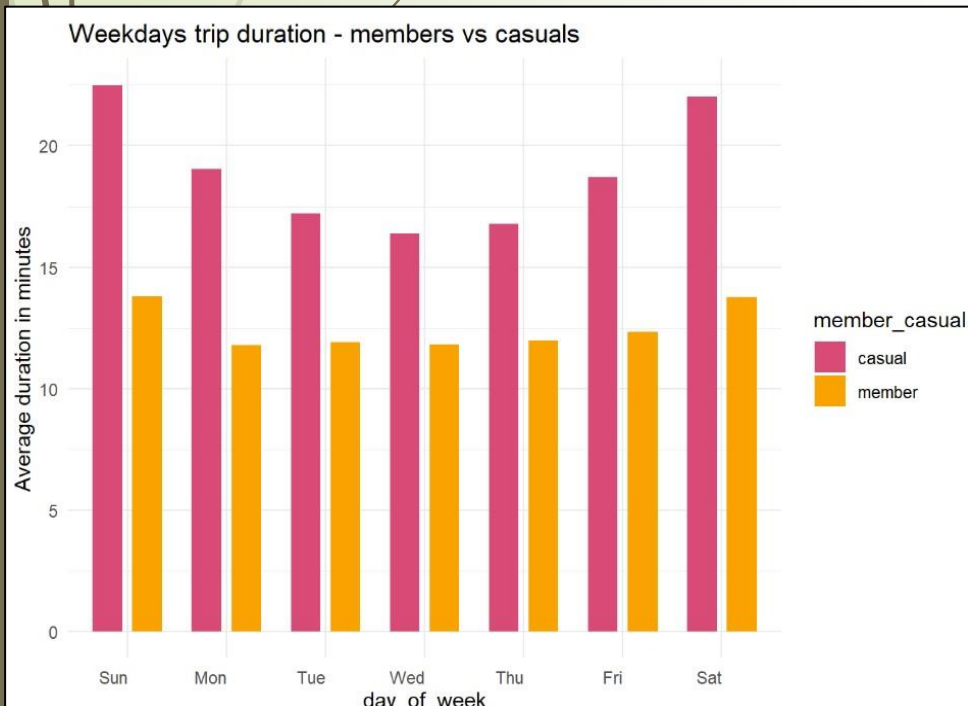
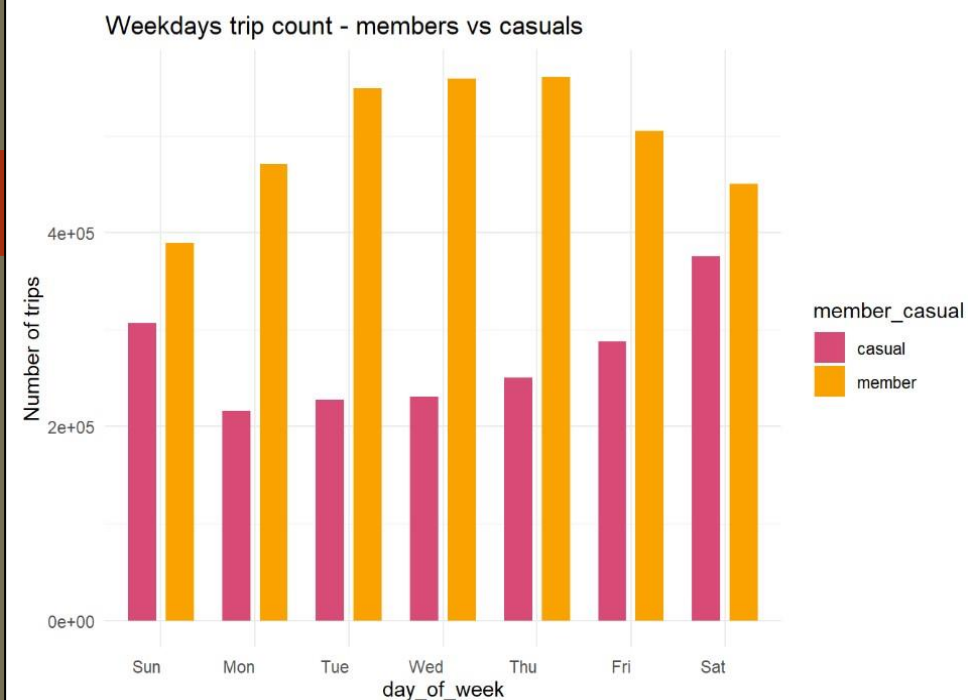
between classic bike users:  $15.8:32.6 \approx 1:2$ ;

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

Further validation will follow with additional data.

Trip duration for all types of users

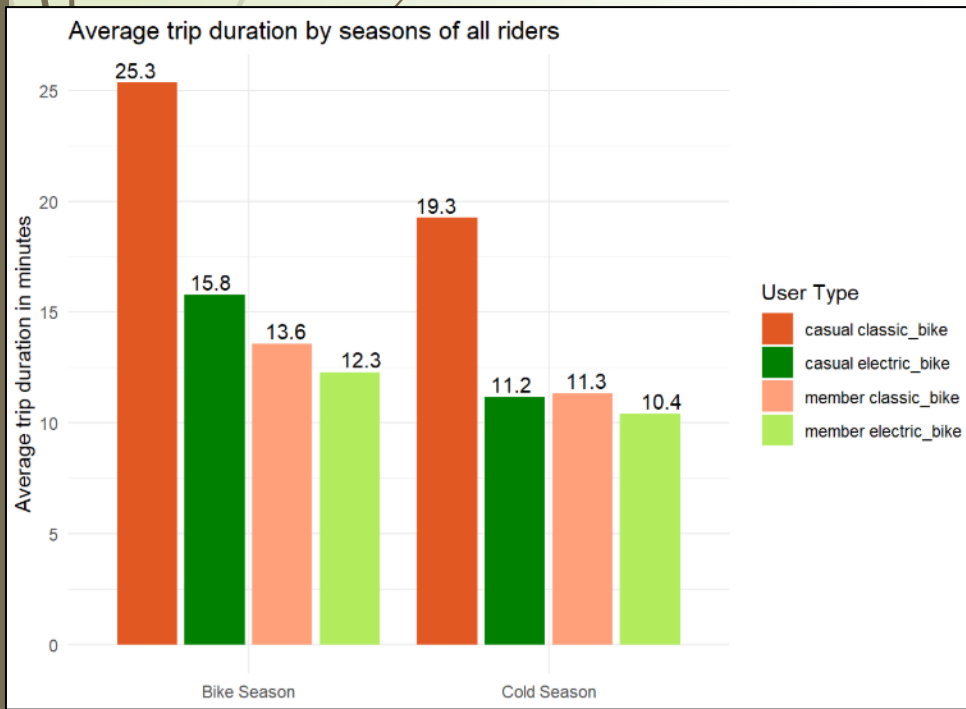
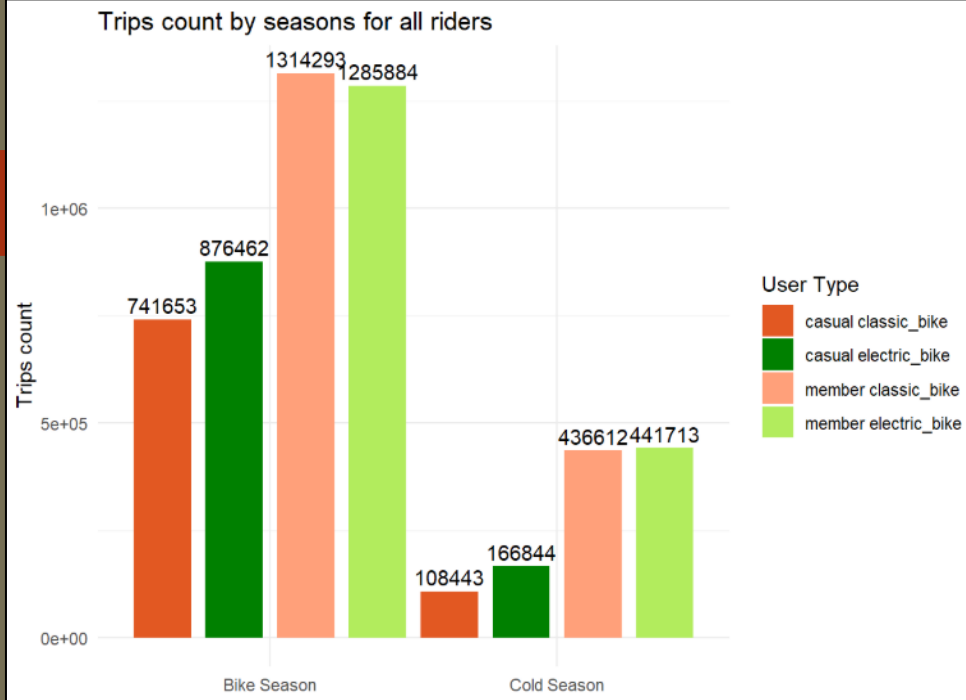




## Insights from Weekdays Charts:

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

**Possible Price Adjustment Impact :** If this routine reflects the natural habits of riders (commute/leisure), there is no valid reason to change the price between workdays and weekends. People want to choose their preferred day and often can't ride on workdays. Such marketing risks customer loss, won't convince casual riders to become members, and will only disappoint users. We need to pursue win-win marketing strategies that will lead to success.



The months are grouped into two categories: **Cold Season** - November to March (5 months), and **Bike Season** - April to October (7 months).

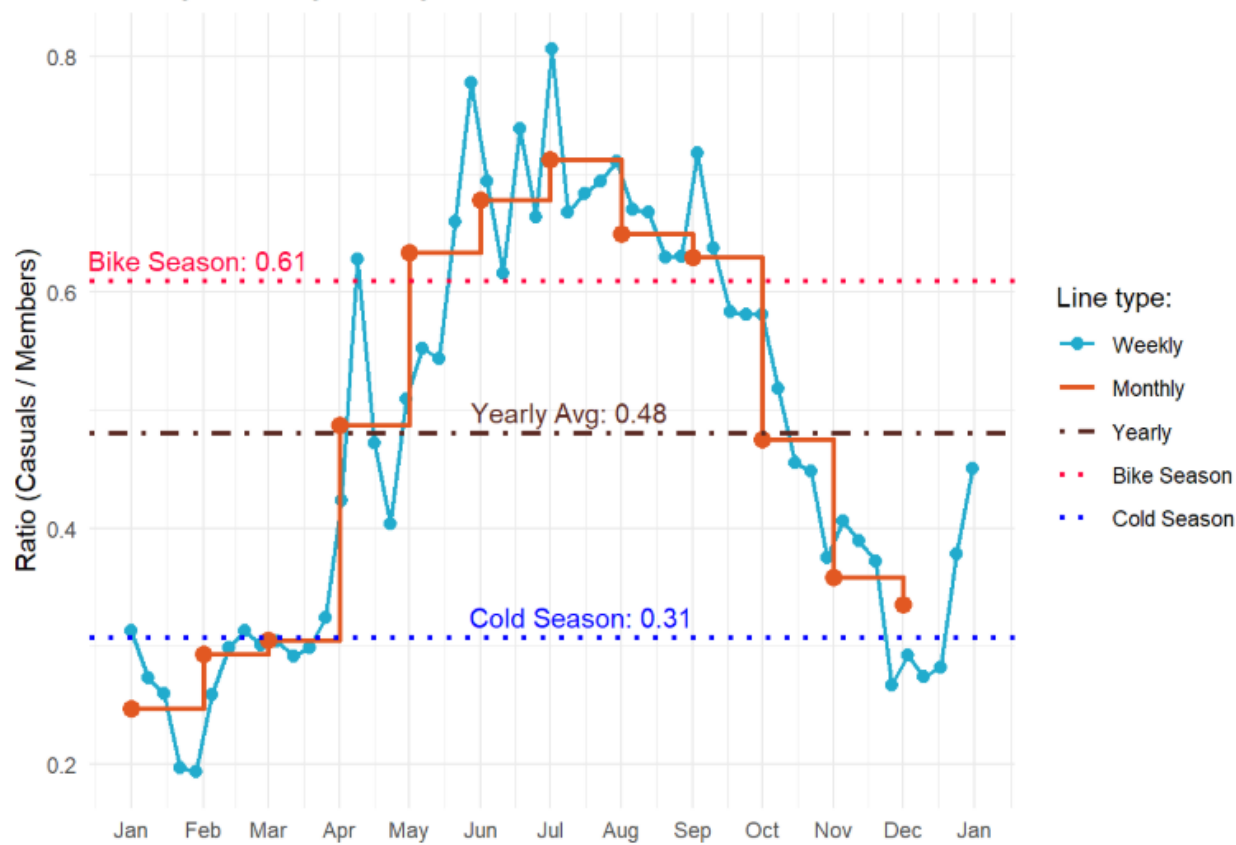
Considering the small count of trips during the Cold Season, it is doubtful that promotions for riders during this period would be effective. However, better prices overall can attract casual riders in any season.

Promotions, such as offering a complimentary month of membership, can effectively convert casual riders into members during April and May. Initially, people will 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. *Since 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 from week to week 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. *(Trip numbers are calculated from the data of the Trip count chart that on previous slide).*

**Conclusion:** The most of the marketing strategy should focus on the Bike Season period.

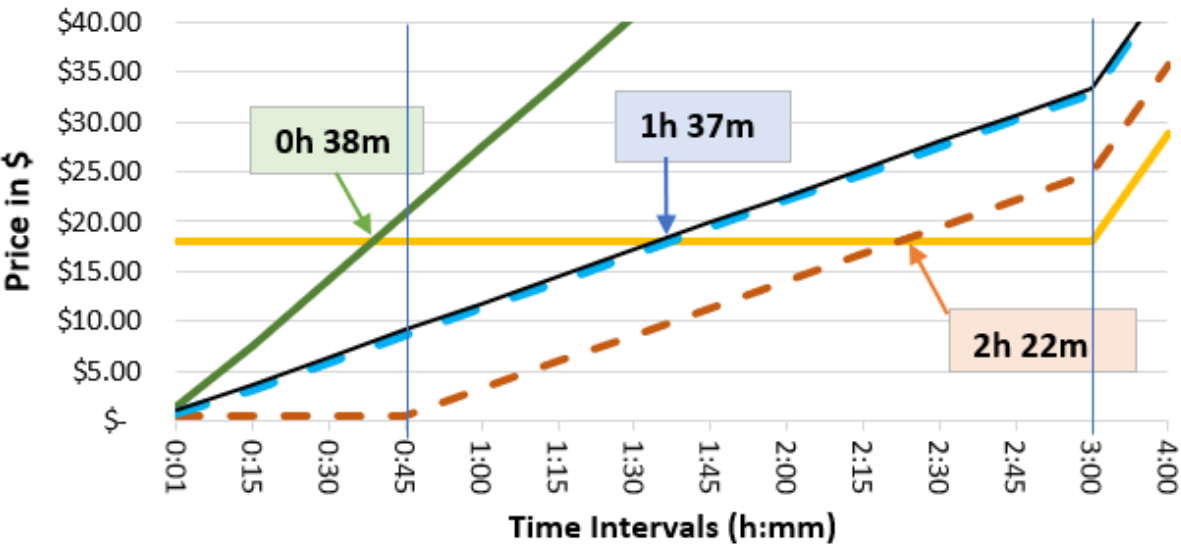
The assumption that trip counts roughly mirror the customer ratio among rider types is correct for Bike Season only because:

- It has a better ratio (0.61) than the Unweighted (0.54) and Weighted (0.48) Average yearly ratios.
- Trip duration percentiles investigation shows that most users rarely exceed their free ride time.
- The averages of the trip durations (on 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 glance at the **current price table** without analyzing it. Seems everything is per 18 cents. Even this is not true, the benefits are obscured by the identical price (\$0.18 in this case).
- No Cost Efficiency for electric bikes with the Day Pass:** its "single free ride" costs \$18.10, plus \$0.44 per minute. Riders need to unlock the bike 19 times in a day to make it cost-effective. Divvy customer service confirmed this.

Current 15-minute Price Increments



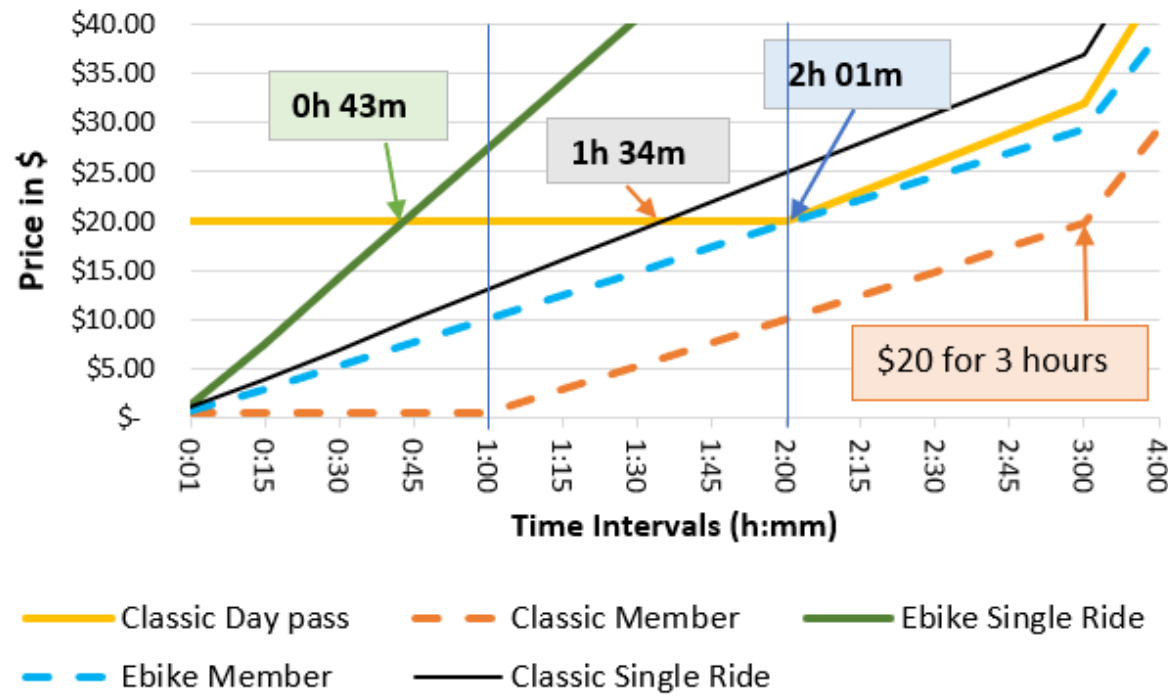
Classic Day pass    Classic Member    Ebike Single Ride  
Ebike Member    Classic Single Ride

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. Increase the “free single ride” time for members' classic bikes from 45 minutes to 1 hour to enhance membership benefits.

### 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, distinguishing members from casual riders. Slight price differences have a psychological effect, like \$0.99 vs. \$1.00, 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 of **converting Casuals into Members will be more profitable** than creating a marketing campaign that targets all-new customers.

12-month combined dataset contained 5,380,725 rows that represent the number of trips taken in 2023. This was not necessarily the number of customers, but it is evidence of the fact that the 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:** Slightly different prices for Casuals and Members have a psychological effect, similar to \$0.99 versus \$1.00 pricing. It encourages evaluation of the freedom of everyday bike rides, which is important for casual riders. Otherwise, these benefits are obscured by the current identical price (\$0.18 in this case).

<i>Type of ride</i>	<i>Current</i>	<i>Suggested</i>
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
<i>Single free ride</i>		
Casual	3 hours	2 hours
Member	45 min.	1 hour



## Key findings

### Length of “Free Single Ride”:

**For Members:** Enhance the membership benefits by increasing it up 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 the vast majority (99%) of casuals 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) The same price per minute of use applies to Classic Single Ride and E-bike Members, which makes a membership not as beneficial.
- 

**Complimentary Month:** Offering a free month can convert Casuals to Members, especially in April and May when bike riding is more popular. 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. Overall, all members should have customer appreciation days, competitions, and activities that make bike rides fun.

---

### **Raising prices on weekends and/or on 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.
-





## 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 have a single ride of classic bikes for 3 hours at the same price that Day Pass users pay for just 2 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 Ciclistic company should perform after seeing these trends?

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

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 Ciclistic company should perform after seeing these trends?

Re-design the company's website and phone app for better advertising of new Ciclistic membership prices and benefits. Make ads on Instagram, Facebook, or similar platforms.

Suggested areas for further exploration:

Add an encrypted customer ID to datasets that allow a deeper 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.