Google-Capstone-Cyclistic-Case-Study

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Company Profile:

In 2016, Cyclistic launched a successful bike-share offering. Since then, the program has grown to a fleet of 5,824 bicycles that are geotracked and locked into a network of 692 stations across Chicago. The bikes can be unlocked from one station and returned to any other station in the system anytime.

Until now, Cyclistic's marketing strategy relied on building general awareness and appealing to broad consumer segments. One approach that helped make these things possible was the flexibility of its pricing plans: single-ride passes, full-day passes, and annual memberships. Customers who purchase single-ride or full-day passes are referred to as casual riders. Customers who purchase annual memberships are Cyclistic members.

Case:

Cyclistic's finance analysts have concluded that annual members are much more profitable than casual riders. Although the pricing flexibility helps Cyclistic attract more customers, Moreno believes that maximizing the number of annual members will be key to future growth. Rather than creating a marketing campaign that targets all-new customers, Moreno believes there is a solid opportunity to convert casual riders into members. She notes that casual riders are already aware of the Cyclistic program and have chosen Cyclistic for their mobility needs.

Moreno wants to know:
1. How do annual members and casual riders use Cyclistic bikes differently?
2. How can we convert casual riders into annual members?

Dataset:

Dataset included the following columns:

1. **ride_id**: A unique ID is generated for each ride.
2. **rideable_type**: Type of ride used. (This particular dataset included only docked_bikes)
3. **started_at**: Date and time that the ride started at.

4. **ended_at**: Date and time that the ride ended at.
5. **start_station_name**: Name of the station where the ride was initiated.
6. **start_station_id**: Unique ID of the station where the ride was initiated.
7. **end_station_name**: Name of the station where the ride ended.
8. **end_station_id**: Unique ID of the station where the ride was initiated.
9. **member_casual**: Type of rider.

ride_id	rideable_type	started_at	ended_at	start_station_name	start_station_id	end_station_name	end_station_id	member_casual
A847FADBBC638E45	docked_bike	4/26/2020 17:45:14	4/26/2020 18:12:03	Eckhart Park	86	Lincoln Ave & Diversey Pkwy	152	member
5405B80E996FF60D	docked_bike	4/17/2020 17:08:54	4/17/2020 17:17:03	Drake Ave & Fullerton Ave	503	Kosciuszko Park	499	member
5DD24A79A4E006F4	docked_bike	4/1/2020 17:54:13	4/1/2020 18:08:36	McClurg Ct & Erie St	142	Indiana Ave & Roosevelt Rd	255	member
2A59BBDF5CDBA725	docked_bike	4/7/2020 12:50:19	4/7/2020 13:02:31	California Ave & Division St	216	Wood St & Augusta Blvd	657	member
27AD306C119C6158	docked_bike	4/18/2020 10:22:59	4/18/2020 11:15:54	Rush St & Hubbard St	125	Sheridan Rd & Lawrence Ave	323	casual
356216E875132F61	docked_bike	4/30/2020 17:55:47	4/30/2020 18:01:11	Mies van der Rohe Way & Chicago Ave	173	Streeter Dr & Grand Ave	35	member
A2759CB06A81F2BC	docked_bike	4/2/2020 14:47:19	4/2/2020 14:52:32	Streeter Dr & Grand Ave	35	Fairbanks St & Superior St	635	member
FC8BC2E2D54F35ED	docked_bike	4/7/2020 12:22:20	4/7/2020 13:38:09	Ogden Ave & Roosevelt Rd	434	Western Ave & Congress Pkwy	382	casual
9EC5648678DE06E6	docked_bike	4/15/2020 10:30:11	4/15/2020 10:35:55	LaSalle Dr & Huron St	627	Larrabee St & Division St	359	casual
A8FFF89140C33017	docked_bike	4/4/2020 15:02:28	4/4/2020 15:19:47	Kedzie Ave & Lake St	377	Central Park Ave & North Ave	508	member
788B1BB8A7491EBD	docked_bike	4/4/2020 15:22:43	4/4/2020 15:46:55	Central Park Ave & North Ave	508	Western Ave & Walton St	374	member
C83C113858BA06DA	docked_bike	4/25/2020 15:43:52	4/25/2020 15:48:45	Western Ave & Walton St	374	Damen Ave & Chicago Ave	128	member
D2038D92195BDD67	docked_bike	4/24/2020 18:09:43	4/24/2020 18:18:01	Western Ave & Walton St	374	Ashland Ave & Division St	210	member
C554B4E072B077F8	docked_bike	4/11/2020 17:15:19	4/11/2020 17:19:53	Western Ave & Walton St	374	Damen Ave & Chicago Ave	128	member
F962D972BC1EF3F0	docked_bike	4/20/2020 17:18:50	4/20/2020 17:42:51	Wabash Ave & 9th St	321	Michigan Ave & 8th St	623	member
1DDBC1F4D208C2B3	docked_bike	4/18/2020 15:49:26	4/18/2020 16:24:57	Wabash Ave & 9th St	321	Sheffield Ave & Kingsbury St	20	member
AA1C8D93190BB6A9	docked_bike	4/19/2020 13:39:57	4/19/2020 14:01:39	Wabash Ave & 9th St	321	Clark St & Lincoln Ave	141	member
B0EEA4FBCF6E26A3	docked_bike	4/18/2020 2:59:09	4/18/2020 3:07:22	Leavitt St & Archer Ave	9	Leavitt St & Archer Ave	9	casual
5F2A5CC2510F0396	docked_bike	4/4/2020 10:52:08	4/4/2020 11:08:03	Clark St & Lincoln Ave	141	Southport Ave & Wrightwood Ave	190	casual
BEF186AA6B3DD4CC	docked_bike	4/25/2020 12:32:30	4/25/2020 12:38:24	900 W Harrison St	109	Aberdeen St & Randolph St	621	member
042511EE70500A4A	docked_bike	4/5/2020 15:39:52	4/5/2020 16:15:51	Museum of Science and Industry	424	Cornell Dr & Hayes Dr	653	casual
0FF35889739F390A	docked_bike	4/10/2020 16:00:32	4/10/2020 16:32:07	Ashland Ave & Grace St	347	Southport Ave & Waveland Ave	227	casual
0ECBACECBACC97A1	docked_bike	4/18/2020 12:07:57	4/18/2020 12:12:49	Green St & Madison St	198	900 W Harrison St	109	member

Analysis:

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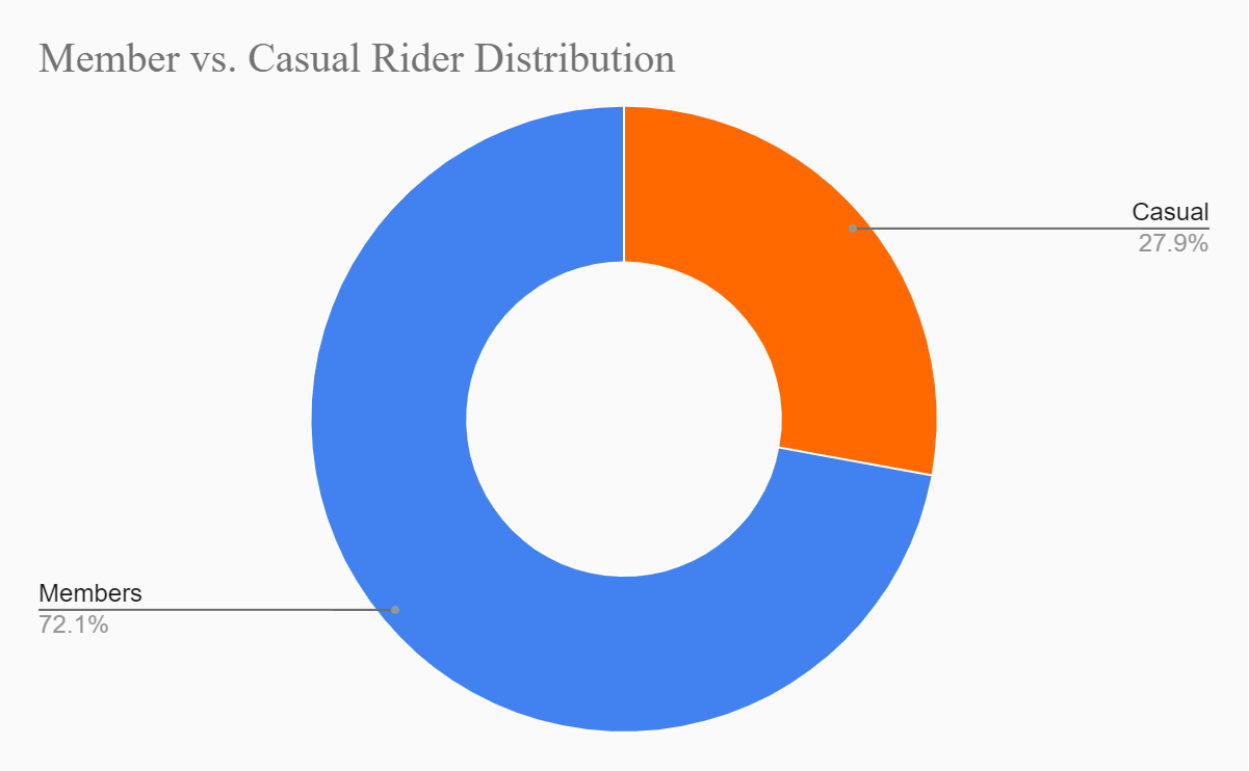
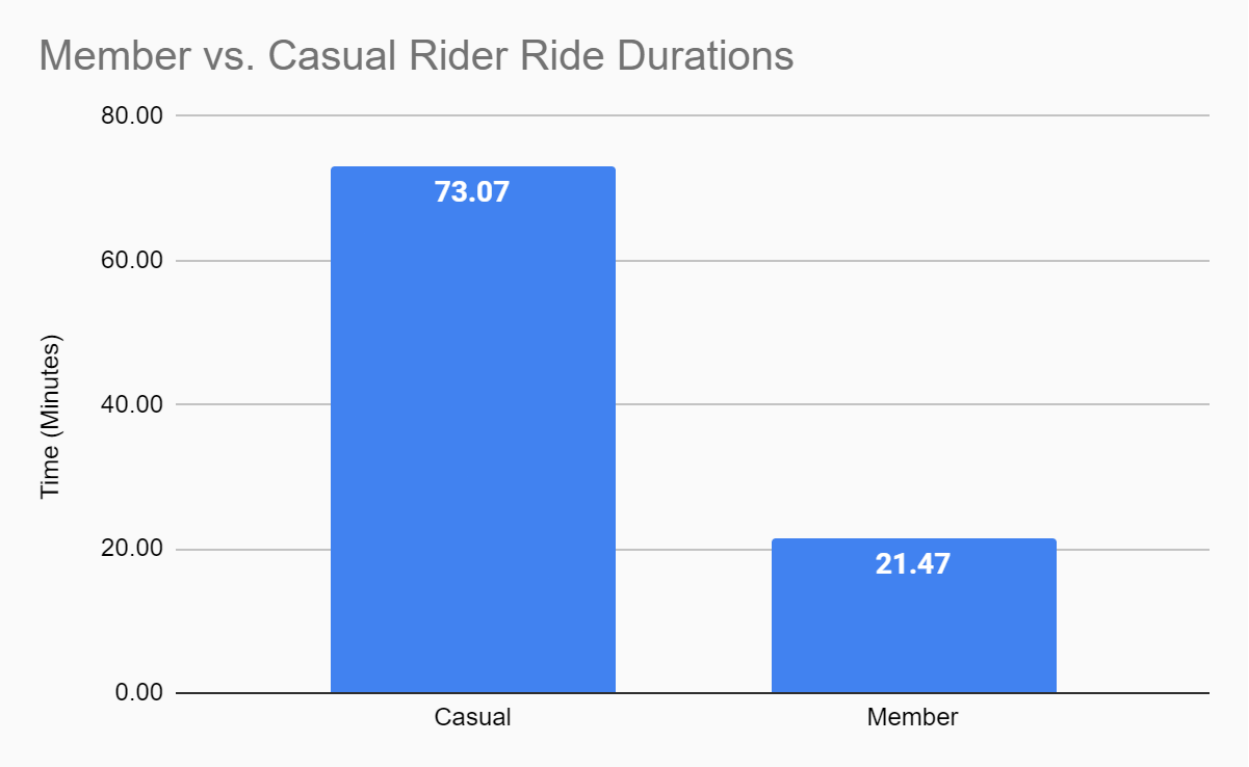
1. Created a new variable, "**duration**," to calculate the duration of each ride by subtracting the start and end times.
2. Created a new variable, "**weekday**," to analyze ride behaviour by day.
3. To understand the distribution of rider types, I calculated the percentage of total rides for members and casual riders. A pie chart was created to visually represent this breakdown.
4.

ride_id	rideable_type	started_at	ended_at	duration	weekday	start_station_name	start_station_id	end_station_name
A847FADBBC638E45	docked_bike	4/26/2020 17:45:14	4/26/2020 18:12:03	26.82	Sunday	Eckhart Park	86	Lincoln Ave & Diversey Pkwy
5405B80E996FF60D	docked_bike	4/17/2020 17:08:54	4/17/2020 17:17:03	8.15	Friday	Drake Ave & Fullerton Ave	503	Kosciuszko Park
5DD24A79A4E006F4	docked_bike	4/1/2020 17:54:13	4/1/2020 18:08:36	14.38	Wednesday	McClurg Ct & Erie St	142	Indiana Ave & Roosevelt Rd
2A59BBDF5CDBA725	docked_bike	4/7/2020 12:50:19	4/7/2020 13:02:31	12.20	Tuesday	California Ave & Division St	216	Wood St & Augusta Blvd
27AD306C119C6158	docked_bike	4/18/2020 10:22:59	4/18/2020 11:15:54	52.92	Saturday	Rush St & Hubbard St	125	Sheridan Rd & Lawrence Ave
356216E875132F61	docked_bike	4/30/2020 17:55:47	4/30/2020 18:01:11	5.40	Thursday	Mies van der Rohe Way & Chicago Ave	173	Streeter Dr & Grand Ave
A2759CB06A81F2BC	docked_bike	4/2/2020 14:47:19	4/2/2020 14:52:32	5.22	Thursday	Streeter Dr & Grand Ave	35	Fairbanks St & Superior St
FC8BC2E2D54F35ED	docked_bike	4/7/2020 12:22:20	4/7/2020 13:38:09	75.82	Tuesday	Ogden Ave & Roosevelt Rd	434	Western Ave & Congress Pkwy
9EC5648678DE06E6	docked_bike	4/15/2020 10:30:11	4/15/2020 10:35:55	5.73	Wednesday	LaSalle Dr & Huron St	627	Larrabee St & Division St
A8FFF89140C33017	docked_bike	4/4/2020 15:02:28	4/4/2020 15:19:47	17.32	Saturday	Kedzie Ave & Lake St	377	Central Park Ave & North Ave
788B1BB8A7491EBD	docked_bike	4/4/2020 15:22:43	4/4/2020 15:46:55	24.20	Saturday	Central Park Ave & North Ave	508	Western Ave & Walton St
C83C113858BA06DA	docked_bike	4/25/2020 15:43:52	4/25/2020 15:48:45	4.88	Saturday	Western Ave & Walton St	374	Damen Ave & Chicago Ave
D2038D92195BDD67	docked_bike	4/24/2020 18:09:43	4/24/2020 18:18:01	8.30	Friday	Western Ave & Walton St	374	Ashland Ave & Division St
C554B4E072B077F8	docked_bike	4/11/2020 17:15:19	4/11/2020 17:19:53	4.57	Saturday	Western Ave & Walton St	374	Damen Ave & Chicago Ave
F962D972BC1EF3F0	docked_bike	4/20/2020 17:18:50	4/20/2020 17:42:51	24.02	Monday	Wabash Ave & 9th St	321	Michigan Ave & 8th St
1DDBC1F4D208C2B3	docked_bike	4/18/2020 15:49:26	4/18/2020 16:24:57	35.52	Saturday	Wabash Ave & 9th St	321	Sheffield Ave & Kingsbury St
AA1C8D93190BB6A9	docked_bike	4/19/2020 13:39:57	4/19/2020 14:01:39	21.70	Sunday	Wabash Ave & 9th St	321	Clark St & Lincoln Ave
B0EEA4FBCF6E26A3	docked_bike	4/18/2020 2:59:09	4/18/2020 3:07:22	8.22	Saturday	Leavitt St & Archer Ave	9	Leavitt St & Archer Ave
5F2A5CC2510F0396	docked_bike	4/4/2020 10:52:08	4/4/2020 11:08:03	15.92	Saturday	Clark St & Lincoln Ave	141	Southport Ave & Wrightwood Ave
BEF186AA6B3DD4CC	docked_bike	4/25/2020 12:32:30	4/25/2020 12:38:24	5.90	Saturday	900 W Harrison St	109	Aberdeen St & Randolph St
042511EE70500A4A	docked_bike	4/5/2020 15:39:52	4/5/2020 16:15:51	35.98	Sunday	Museum of Science and Industry	424	Cornell Dr & Hayes Dr
0FF35889739F390A	docked_bike	4/10/2020 16:00:32	4/10/2020 16:32:07	31.58	Friday	Ashland Ave & Grace St	347	Southport Ave & Waveland Ave
0ECBACECBACC97A1	docked_bike	4/18/2020 12:07:57	4/18/2020 12:12:49	4.87	Saturday	Green St & Madison St	198	900 W Harrison St

5. To compare the ride durations of members and casual riders, I calculated the average duration for each group and visualized the difference using a bar chart.

6. Used a pivot table to:
    a. Analyze ride counts by day of the week and rider type.
    b. Examine average ride durations by day of the week and rider type.
7. 

8. 

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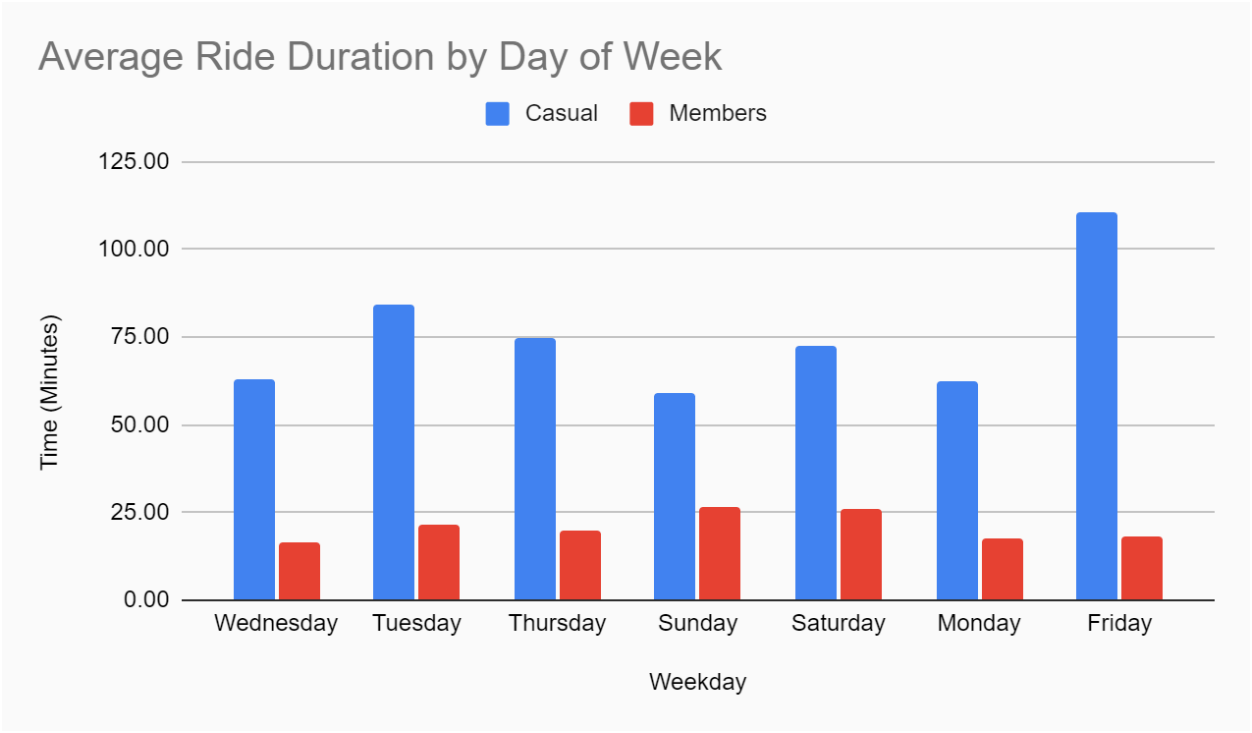
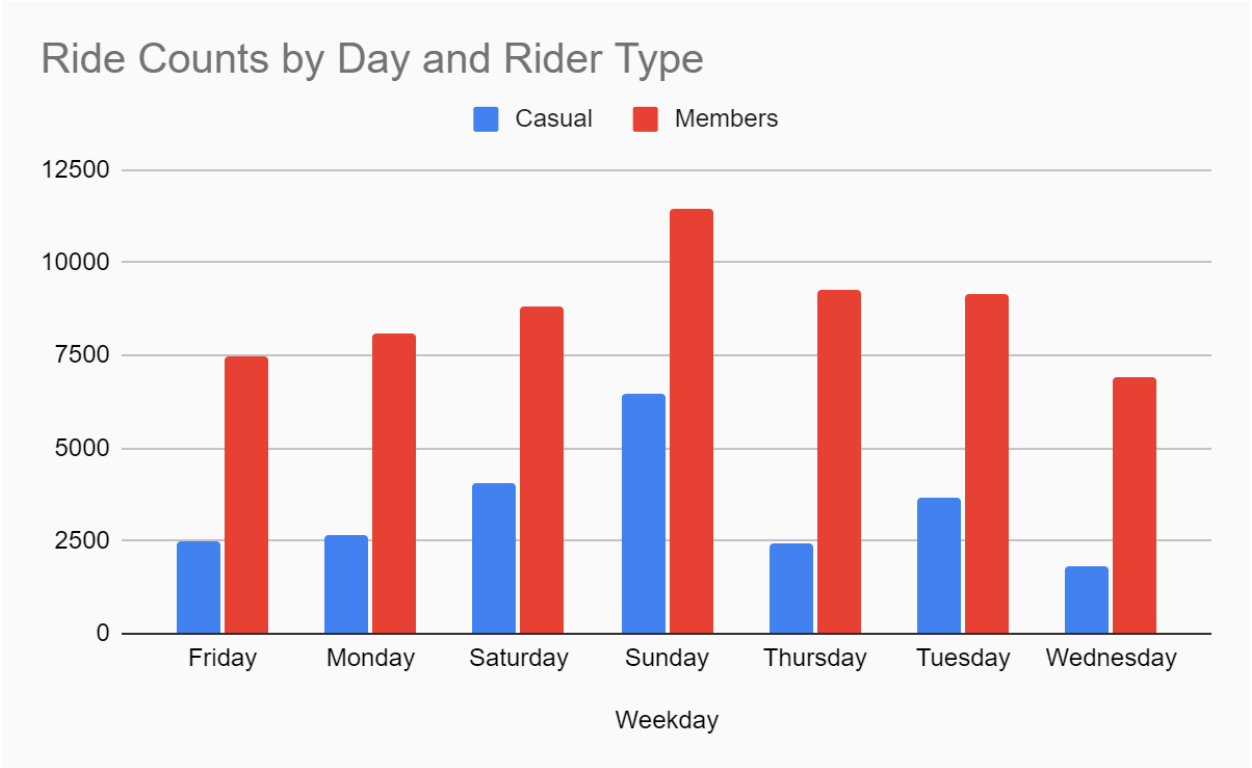

Average Ride Duration by Day of Week
Casual
Members
125.00
100.00
75.00
50.00
25.00
0.00
Time (Minutes)
Wednesday
Tuesday
Thursday
Sunday
Saturday
Monday
Friday
Weekday

10.


Ride Counts by Day and Rider Type
Casual
Members
12500
10000
7500
5000
2500
0
Friday
Monday
Saturday
Sunday
Thursday
Tuesday
Wednesday
Weekday

Findings:

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1. Majority of riders are **members**.
2. **72.1%** riders are annual members
3. While **27.9%** of riders are casual riders who **do not** own an annual subscription.
4. Weekends see a surge in both casual and member riders.
5. Sundays have the highest number of riders.
6. Casual riders have an average ride duration of **73.07 minutes**, while members have an average of **21.47 minutes**.
7. This indicates that casual riders typically use bikes for approximately **3.4 times** longer than members.
8. Casual riders use bikes **longer than members** throughout the week.
9. However, this difference peaks on **Fridays**, which note the **highest average ride duration** of casual rides.

Conclusion:

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1. Although members use bikes **more often** than casual riders, casual riders tend to use it **longer** than the members.
2. Casual riders exhibit the **longest average ride durations** on **Fridays** compared to any other weekday.
3. **Weekends** consistently see the **highest number of rides** for both members and casual riders, with **Sunday** being the **peak day**.
4. **Members** exhibit **consistent bike usage** throughout the workweek, suggesting regular commuting patterns.

Recommendations:

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1. Introducing **day passes** and **monthly subscription plans** can encourage casual riders to use the services without committing to a long-term membership. This could lead to increased familiarity and a higher likelihood of purchasing an annual plan.
2. Provide **exclusive member perks** such as priority access to bikes which will encourage casual riders to buy a subscription plan.
3. Offering **weekday discount plans** which will attract more casual riders to use the service during **off-peak hours**. Since weekends see the highest number of casual riders, targeting them during these times can be particularly effective.

4. Introducing **referral programs** which will encourage members to refer friends and family, providing incentives for both the referrer and the new member.