Here are the first few rows of the data to give an overview of its structure:

| ride\_id | rideable\_type | started\_at | ended\_at | start\_station\_name | start\_station\_id | end\_station\_name | end\_station\_id | start\_lat | start\_lng | end\_lat | end\_lng | member\_casual |

|------------------|----------------|----------------------|----------------------|--------------------------------------|------------------|---------------------------|----------------|-----------|-----------|----------|-----------|---------------|

| 4449097279F8BBE7 | classic\_bike | 2023-10-08 10:36:26 | 2023-10-08 10:49:19 | Orleans St & Chestnut St (NEXT Apts) | 620 | Sheffield Ave & Webster Ave | TA1309000033 | 41.898203 | -87.637536 | 41.921540 | -87.653818 | member |

| 9CF060543CA7B439 | electric\_bike | 2023-10-11 17:23:59 | 2023-10-11 17:36:08 | Desplaines St & Kinzie St | TA1306000003 | Sheffield Ave & Webster Ave | TA1309000033 | 41.888641 | -87.644415 | 41.921540 | -87.653818 | member |

| 667F21F4D6BDE69C | electric\_bike | 2023-10-12 07:02:33 | 2023-10-12 07:06:53 | Orleans St & Chestnut St (NEXT Apts) | 620 | Franklin St & Lake St | TA1307000111 | 41.898073 | -87.637514 | 41.885837 | -87.635500 | member |

| F92714CC6B019B96 | classic\_bike | 2023-10-24 19:13:03 | 2023-10-24 19:18:29 | Desplaines St & Kinzie St | TA1306000003 | Franklin St & Lake St | TA1307000111 | 41.888716 | -87.644448 | 41.885837 | -87.635500 | member |

| 5E34BA5DE945A9CC | classic\_bike | 2023-10-09 18:19:26 | 2023-10-09 18:30:56 | Desplaines St & Kinzie St | TA1306000003 | Franklin St & Lake St | TA1307000111 | 41.888716 | -87.644448 | 41.885837 | -87.635500 | member |

This dataset contains the following columns:

1. `ride\_id`: Unique identifier for each ride.

2. `rideable\_type`: Type of bike used (e.g., classic bike, electric bike).

3. `started\_at`: Start time of the ride.

4. `ended\_at`: End time of the ride.

5. `start\_station\_name`: Name of the station where the ride started.

6. `start\_station\_id`: Identifier for the start station.

7. `end\_station\_name`: Name of the station where the ride ended.

8. `end\_station\_id`: Identifier for the end station.

9. `start\_lat`: Latitude of the start station.

10. `start\_lng`: Longitude of the start station.

11. `end\_lat`: Latitude of the end station.

12. `end\_lng`: Longitude of the end station.

13. `member\_casual`: Indicates whether the rider is a member or a casual user.

Would you like to perform any specific analysis or visualization on this data?

Let's begin with a few basic analyses to understand the dataset better:

1. \*\*Summary Statistics\*\*: Descriptive statistics for numeric columns.

2. \*\*Trends Over Time\*\*: Analysis of ride frequency over different time periods.

3. \*\*Ride Duration\*\*: Calculate and analyze the duration of rides.

4. \*\*Member vs. Casual Users\*\*: Compare usage patterns between members and casual users.

### Summary Statistics

We'll start by generating summary statistics for the numeric columns.

### Trends Over Time

We'll look at the number of rides per day, week, and month.

### Ride Duration

Calculate the duration of each ride and analyze the distribution.

### Member vs. Casual Users

Compare the usage patterns of members vs. casual users.

Let's perform these analyses step by step.

### Summary Statistics

Descriptive statistics for the numeric columns:

| Statistic | `start\_lat` | `start\_lng` | `end\_lat` | `end\_lng` |

|-----------|-------------|-------------|-----------|-----------|

| Count | 536,521 | 536,521 | 536,521 | 536,521 |

| Mean | 41.8992 | -87.6459 | 41.8995 | -87.6462 |

| Std | 0.0475 | 0.0275 | 0.0476 | 0.0277 |

| Min | 41.6400 | -87.8600 | 41.6400 | -87.9900 |

| 25% | 41.8785 | -87.6600 | 41.8793 | -87.6600 |

| 50% | 41.8958 | -87.6434 | 41.8964 | -87.6439 |

| 75% | 41.9295 | -87.6293 | 41.9295 | -87.6295 |

| Max | 42.0700 | -87.5200 | 42.0700 | -87.5200 |

### Trends Over Time

#### Rides per Day

Example of the first few days:

| Date | Rides |

|------------|--------|

| 2023-10-01 | 24,333 |

| 2023-10-02 | 21,807 |

| 2023-10-03 | 24,953 |

| 2023-10-04 | 26,067 |

| 2023-10-05 | 21,474 |

#### Rides per Week

Example of the first few weeks:

| Week | Rides |

|---------------------------|---------|

| 2023-09-25/2023-10-01 | 24,333 |

| 2023-10-02/2023-10-08 | 154,948 |

| 2023-10-09/2023-10-15 | 105,575 |

| 2023-10-16/2023-10-22 | 120,717 |

| 2023-10-23/2023-10-29 | 109,925 |

#### Rides per Month

For October 2023:

| Month | Rides |

|-----------|--------|

| 2023-10 | 536,521|

### Ride Duration

Descriptive statistics for ride duration (in minutes):

| Statistic | `ride\_duration` |

|-----------|-----------------|

| Count | 536,521 |

| Mean | 14.05 |

| Std | 31.70 |

| Min | -8.43 |

| 25% | 5.18 |

| 50% | 8.87 |

| 75% | 15.42 |

| Max | 1499.93 |

### Member vs. Casual Users

#### Usage Patterns

| User Type | Count |

|-----------|--------|

| member | 359,904|

| casual | 176,617|

#### Ride Duration by User Type

| Statistic | Casual | Member |

|-----------|---------------|---------------|

| Count | 176,617 | 359,904 |

| Mean | 19.07 | 11.58 |

| Std | 44.62 | 22.43 |

| Min | -5.87 | -8.43 |

| 25% | 6.03 | 4.83 |

| 50% | 10.57 | 8.20 |

| 75% | 19.60 | 13.83 |

| Max | 1499.93 | 1499.93 |

### Summary

- \*\*Rides are more frequent during certain weeks, indicating possible patterns in usage over time.\*\*

- \*\*Ride durations vary significantly, with casual users typically having longer rides compared to members.\*\*

- \*\*The presence of negative ride durations suggests some data inconsistencies that may need further cleaning.\*\*

Would you like to dive deeper into any specific analysis or visualization based on these insights?

Let's create a few visualizations based on our analysis:

1. \*\*Ride Frequency Over Time\*\*: Line charts for rides per day, week, and month.

2. \*\*Distribution of Ride Durations\*\*: Histogram to show the distribution of ride durations.

3. \*\*Member vs. Casual Users\*\*: Bar chart comparing the number of rides and ride durations.

### Visualizations

1. \*\*Ride Frequency Over Time\*\*: Line charts for daily, weekly, and monthly rides.

2. \*\*Distribution of Ride Durations\*\*: Histogram.

3. \*\*Member vs. Casual Users\*\*: Bar chart.

Let's create these visualizations.

### Visualizations

1. \*\*Ride Frequency Over Time\*\*

- \*\*Rides Per Day\*\*: Shows the fluctuation of rides on a daily basis.

- \*\*Rides Per Week\*\*: Highlights weekly trends, indicating more significant usage patterns.

- \*\*Rides Per Month\*\*: Aggregated monthly data for a broader overview.

2. \*\*Distribution of Ride Durations\*\*

- The histogram shows the frequency of ride durations. The y-axis is on a log scale to better visualize the distribution's long tail, indicating some very long rides.

3. \*\*Member vs. Casual Users\*\*

- \*\*Number of Rides\*\*: Bar chart comparing the total number of rides between members and casual users.

- \*\*Average Ride Duration\*\*: Bar chart comparing the average ride duration between members and casual users. Casual users generally have longer average ride durations.

These visualizations provide insights into usage patterns, ride durations, and differences between member and casual user behavior. If you need any additional analysis or specific visualizations, feel free to ask!