Let's start with some basic data analysis. We will cover the following aspects:

1. \*\*Summary Statistics\*\*: Basic statistics like mean, median, and mode.

2. \*\*Ride Duration\*\*: Calculate and analyze the duration of each ride.

3. \*\*Trends Over Time\*\*: Analyze trends in the number of rides over different time periods (daily, weekly, monthly).

4. \*\*Popular Stations\*\*: Identify the most popular start and end stations.

5. \*\*Ride Types\*\*: Analyze the distribution of rideable types and membership types.

### 1. Summary Statistics

We'll calculate basic statistics for numerical columns.

### 2. Ride Duration

We'll calculate the duration of each ride and analyze the distribution.

### 3. Trends Over Time

We'll analyze trends in the number of rides over different time periods (daily, weekly, monthly).

### 4. Popular Stations

We'll identify the most popular start and end stations based on the number of rides.

### 5. Ride Types

We'll analyze the distribution of rideable types and membership types.

Let's start with these analyses.

Here are the results of the data analysis:

### 1. Summary Statistics

\*\*Latitude and Longitude of Start and End Stations:\*\*

- \*\*Start Latitude:\*\* Mean = 41.90, Std = 0.048, Min = 41.65, Max = 42.07

- \*\*Start Longitude:\*\* Mean = -87.65, Std = 0.028, Min = -87.84, Max = -87.53

- \*\*End Latitude:\*\* Mean = 41.90, Std = 0.048, Min = 41.65, Max = 42.07

- \*\*End Longitude:\*\* Mean = -87.65, Std = 0.028, Min = -87.90, Max = -87.53

### 2. Ride Duration

- \*\*Count:\*\* 190,329 rides

- \*\*Mean:\*\* 11.72 minutes

- \*\*Standard Deviation:\*\* 28.73 minutes

- \*\*Minimum:\*\* -3.27 minutes (may indicate data issues)

- \*\*25th Percentile:\*\* 4.40 minutes

- \*\*Median (50th Percentile):\*\* 7.42 minutes

- \*\*75th Percentile:\*\* 12.87 minutes

- \*\*Maximum:\*\* 1,499.87 minutes

### 3. Trends Over Time

\*\*Daily Trend (First 5 Days):\*\*

- 2023-02-01: 5,294 rides

- 2023-02-02: 6,118 rides

- 2023-02-03: 3,490 rides

- 2023-02-04: 4,902 rides

- 2023-02-05: 5,537 rides

\*\*Weekly Trend (First 5 Weeks):\*\*

- Week 5: 25,341 rides

- Week 6: 51,710 rides

- Week 7: 50,059 rides

- Week 8: 46,405 rides

- Week 9: 16,814 rides

\*\*Monthly Trend:\*\*

- February 2023: 190,329 rides

### 4. Popular Stations

\*\*Top 10 Start Stations:\*\*

- Unknown: 25,473 rides

- University Ave & 57th St: 1,964 rides

- Ellis Ave & 60th St: 1,831 rides

- Clinton St & Washington Blvd: 1,570 rides

- Kingsbury St & Kinzie St: 1,386 rides

- State St & Chicago Ave: 1,249 rides

- Ellis Ave & 55th St: 1,244 rides

- Canal St & Adams St: 1,230 rides

- Clark St & Elm St: 1,213 rides

- Clinton St & Madison St: 1,176 rides

\*\*Top 10 End Stations:\*\*

- Unknown: 26,622 rides

- University Ave & 57th St: 1,969 rides

- Ellis Ave & 60th St: 1,810 rides

- Clinton St & Washington Blvd: 1,625 rides

- Kingsbury St & Kinzie St: 1,381 rides

- State St & Chicago Ave: 1,255 rides

- Ellis Ave & 55th St: 1,253 rides

- Canal St & Adams St: 1,248 rides

- Clinton St & Madison St: 1,216 rides

- Clark St & Elm St: 1,206 rides

### 5. Ride Types

\*\*Rideable Type Distribution:\*\*

- Electric Bike: 98,362 rides

- Classic Bike: 89,816 rides

- Docked Bike: 2,151 rides

\*\*Member vs Casual Distribution:\*\*

- Member: 147,407 rides

- Casual: 42,922 rides

If you need any further analysis or visualizations, please let me know!

Let's create a few visualizations to better understand the data:

1. \*\*Ride Duration Distribution\*\*: Histogram of ride durations.

2. \*\*Daily Ride Trends\*\*: Line chart showing the number of rides per day.

3. \*\*Weekly Ride Trends\*\*: Line chart showing the number of rides per week.

4. \*\*Popular Stations\*\*: Bar charts showing the top 10 start and end stations.

5. \*\*Rideable Type and Member Distribution\*\*: Pie charts showing the distribution of rideable types and member vs. casual users.

I'll create these visualizations for you.

Here are the visualizations based on the data analysis:

1. \*\*Ride Duration Distribution\*\*: This histogram shows the distribution of ride durations, limited to 100 minutes for better visualization.

2. \*\*Daily Ride Trends\*\*: A line chart showing the number of rides per day.

3. \*\*Weekly Ride Trends\*\*: A line chart showing the number of rides per week.

4. \*\*Top 10 Start Stations\*\*: A bar chart showing the most popular start stations based on the number of rides.

5. \*\*Top 10 End Stations\*\*: A bar chart showing the most popular end stations based on the number of rides.

6. \*\*Rideable Type Distribution\*\*: A pie chart showing the distribution of rideable types (electric bike, classic bike, docked bike).

7. \*\*Member vs Casual Distribution\*\*: A pie chart showing the distribution of member vs casual users.

If you need more specific visualizations or further analysis, feel free to let me know!