Citi Bike Analysis: Understanding Ride Patterns by Day and Time

IST 652

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Data:

•Citi Bike NYC data for the months of July, August, and September
•NYC weather data for September from Virtual Crossing

Goals:

Our goal is to uncover trends and provide valuable insights to help New York City optimize its ridesharing system.

Key Factors:

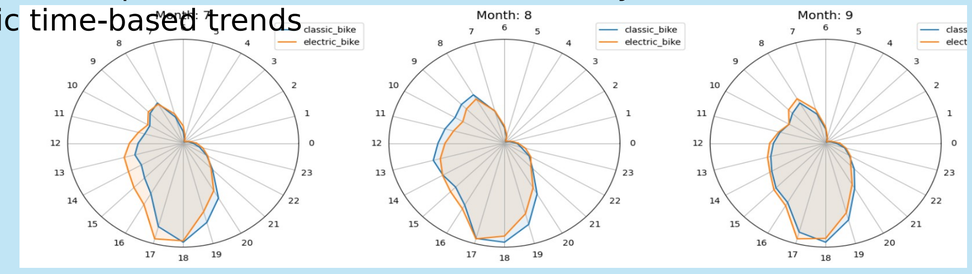
•Ride patterns by time and day
•Station usage
•Electric bike usage trends
•Correlation between temperature and top stations

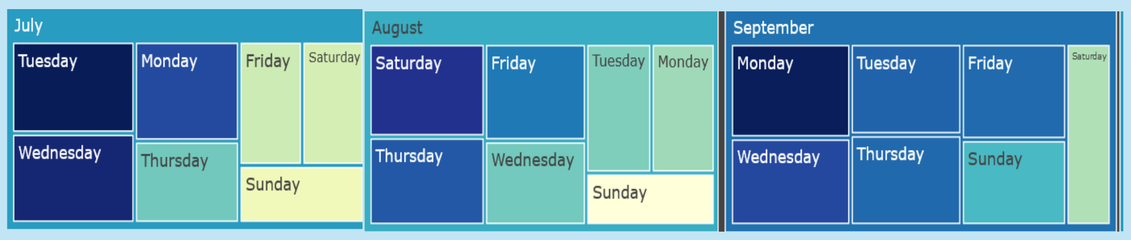
New York City bike vision:

New York City's bike-sharing system is a lifeline for commuters and visitors, offering a sustainable, efficient way to navigate the city. Our analysis highlights key trends for the top 10 most popular stations in 2024, revealing peak usage times, seasonal patterns, and user preferences. By combining temporal and spatial insights, we uncover how cycling shapes daily life in one of the world's busiest urban hubs.

Ride Volume by Day of the Week and Hour of the Day

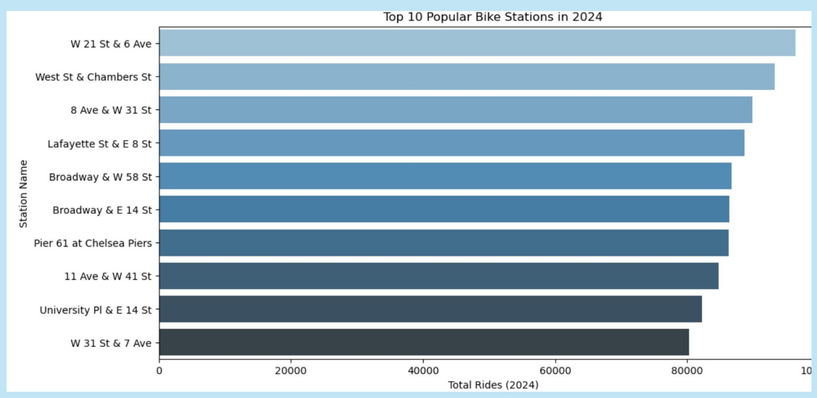
Analyzing the number of rides by day of the week and hour of the day is crucial for understanding detailed usage patterns.
This analysis can:
•Highlight trends such as increased weekday commuting during rush hours or weekend leisure rides at various times of the day.
•Enable better bike distribution, maintenance scheduling, and staffing to meet demand more precisely.
•Support targeted promotional strategies to boost ridership during slower periods.
•Allow for comparisons across months to identify seasonal variations and specific time-based trends

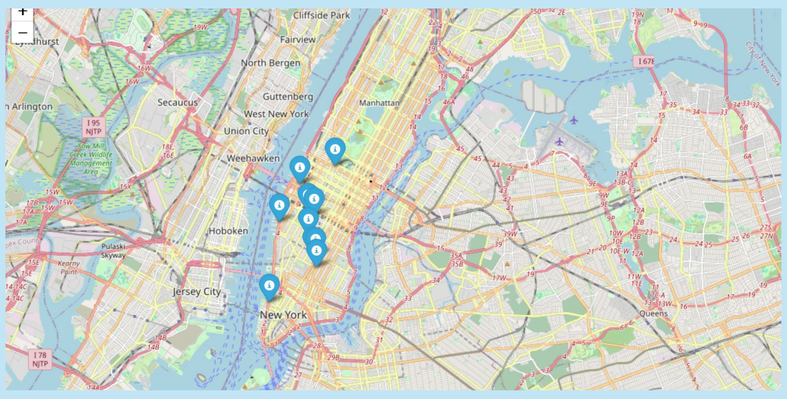




Top 10 Popular Bike Stations

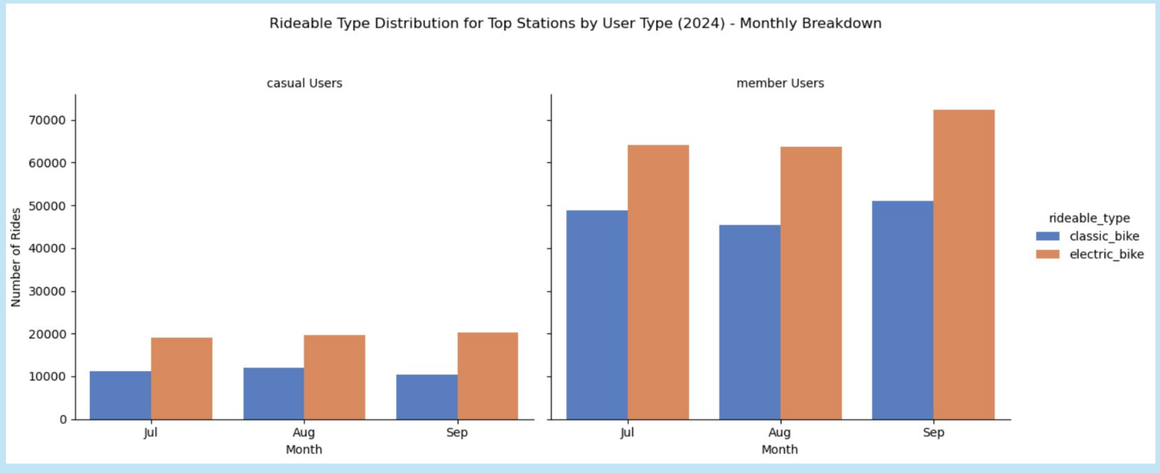
The top 10 most frequently used bike stations by riders in 2024 offer valuable insights into user behavior.
Key observations include:
•Mapping these stations to analyze their geographical distribution.
•Assessing their proximity to one another.
•Identifying nearby points of interest that may contribute to their popularity.

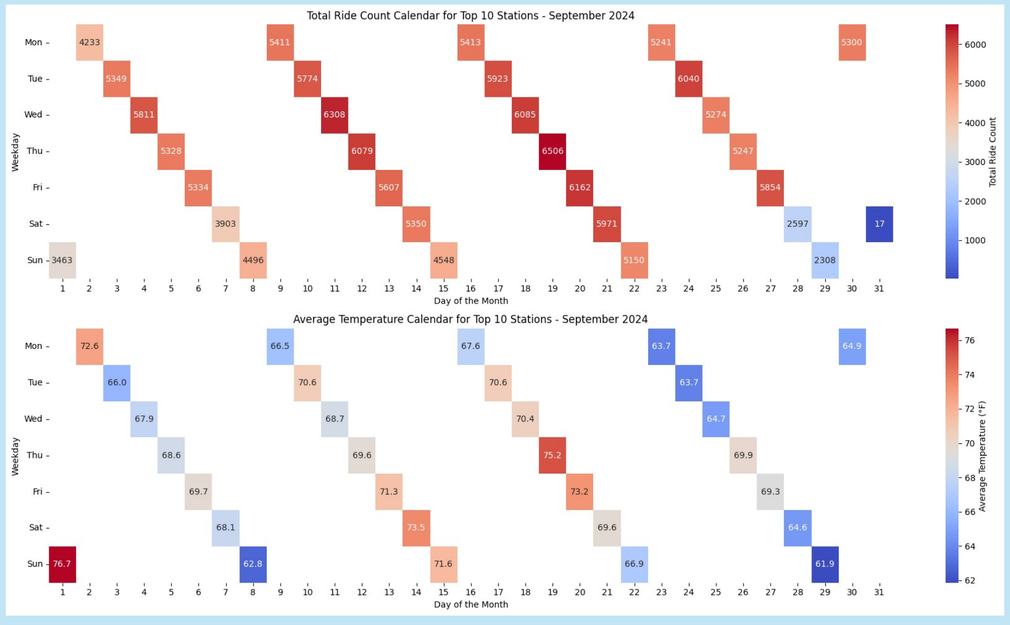




Electric Bike Usage Trends: Casual Riders vs. Members

Analyzing electric bike usage trends helps reveal how casual riders and members interact with this bike type during the peak summer season.
This analysis can:
•Uncover key behavioral differences, such as whether casual riders favor e-bikes for convenience or if members rely on them for daily commutes.
•Optimize bike allocation at stations based on user demand, ensuring a balanced supply of e-bikes.
•Enhance the overall user experience by meeting the needs of both user groups.
•Support better decision-making for infrastructure improvements, such as adding more e-bike docking stations or promoting membership benefits tailored to e-bike users.





Correlation Between Temperature and Ride Volume at Top Stations in September

Analyzing the number of rides at the 10 most popular stations in September alongside the average daily temperature provides insights into how weather impacts ridership.
Key findings:
•A correlation of 0.51 indicates a moderate positive relationship between temperature and ride volume.
•This suggests that while temperature plays a role in influencing bike usage, it is not the only contributing factor.
Understanding these dynamics helps refine strategies for station management and user engagement.

References:
Citi Bike: https://citibikenyc.com/system-data
Weather Data: https://www.visualcrossing.com/weather-history/nyc