



Introduction

Citi Bike is a privately owned public bike sharing system that serves the New York City and surrounding areas and has over 130,000 annual subscribers.

The purpose of this report is to analyze female ridership during the year 2018, summarize trends in usage, and determine if the data reveal opportunities for increasing female ridership.

Visualizations supporting the findings in this report can be found at

https://public.tableau.com/profile/george6433#!/vizhome/Bikes_gb/Story1?publish=yes.



Overview

The total number of trips taken on Citi Bikes in 2018 was 17,548,339. These trips originated from 819 stations spread across the boroughs of Manhattan, Queens and Brooklyn. The most popular stations for riders to start a Citi Bike trip were located southern Manhattan, generally from Midtown/Times Square south to Tribeca. The most popular station, at 52nd and 5th Avenue, had 150, 257 rides started (Figure 1).

Female Ridership

Out of the total number of rides taken, 11,971,322 were taken by men, and 4,092,462 were taken by women (no gender data was available for 1,484,555 trips). In general, ridership for both genders peaked from June through October, with male ridership reaching a maximum of 1,304,230 in October and female ridership reaching a maximum of 475, 485 in August. The lowest total ride counts for both genders came in January with female ridership down to 151, 806 and male ridership at 537,589. Overall, female riders made up approximately 23% of Citi Bike ridership for the year. The share of female riders increased from a low of 22% in January to approximately 25-27% from April through October, with July (27%) and September (27%) being peak months for female ridership (Figure 2).

Trends in Female Citi Bike Use

Although the most popular bike stations by total number of rides were located primarily in central Manhattan, these stations tended to have lower than average female ridership. Many of the stations with the lowest female ridership percentages (approx. 10-15% female riders) were clustered in Midtown Manhattan, an area that included several stations with the highest overall ride counts. In contrast, stations with high female ridership rates tended to be located in areas with lower overall ride counts, such as Red Hook/Carroll Gardens in Brooklyn, Astoria in Queens, upper Manhattan/Harlem, and the Lower East Side (Figure 3).

Ridership patterns for the stations with the lowest female ridership rates generally followed the overall trends in female ridership, with ridership generally increasing through the summer months and peaking in September at approximately 14%. Stations with higher female rider rates did not follow the overall pattern, but instead showed higher female ridership percentages from January through May with another small peak in August (Figure 4).

The average age of female Citi Bike users in 2018 was approximately 38 years old. The average age of female riders peaked in January through March at 40 years of age, while the summer months tended to have a lower age averages (mean of 37 years in July through September). Average female trip duration increased from a low of 13.8 minutes in January to a high of 20.5 minutes in June (Figure 5). Trip duration for female riders was positively correlated with age ($p < 0.0001$) with younger women having longer average Citi Bike trips (Figure 6).

Observations and Conclusions

Citi Bike data for the year 2018 shows that female ridership accounted for under 25% of total rides. The lack of gender parity in ridership indicates that further improvements could be made to the system to address the needs of women riders in New York City. Reduced rates of female ridership in the city's center, where the majority of Citi Bike trips are initiated, as compared to outlying neighborhoods suggests that safety concerns may play a role in whether or not women are choosing to use Citi Bikes. High traffic congestion, the lack of protected bike lanes, or other factors present in central Manhattan may be dissuading female riders from using Citi Bike in that area. Determining specific causes for reduced female rides in these generally high-use areas could result in large increases in overall female ridership. Female ridership as a percentage of total riders also declined sharper than male ridership during the winter months, again suggesting that safety concerns, such as icy roads, may have a greater impact on women's decisions of whether to travel by Citi Bike. However, data from Citi Bike stations with high female usage, which show increased female ride ratios during winter months rather than the declines seen in overall female usage during those months, indicate that seasonal declines in female Citi Bike usage can be mitigated. Additionally, outreach to younger women could increase overall ride ratios. The data suggests that younger female riders opt to use Citi Bikes less often, but for longer trips, whereas older women chose the bikes for more frequent, shorter commutes. This data shows that there are opportunities to increase overall Citi Bike usage by engaging with female subscribers to understand ways to better serve this population. Follow-up studies should seek direct input from female riders through surveys or focus groups to better understand the underlying causes for the patterns in female ridership revealed by this data analysis.