



Supply and Demand Analysis of San Francisco Bike Share

By Atrin Sarmadi

Introduction

With the increasing demand, bike share needs to assure that they are meeting the customer needs with

- Sufficient resources
- Access in the right locations

Now is the right time to increase supplies in order to attract new market due to the pandemic and interest in personalized and on-demand transportation

Recent data reveals that people rode scooters and electric bikes in The City more in the summer of 2021 than they did in 2019. (Kevin N. Hume/S.F. Examiner)

With public transit still struggling, shared bikes and scooters are booming

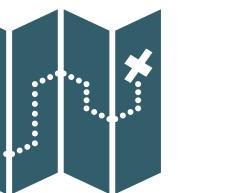
Ridership numbers surging across San Francisco

[BENJAMIN SCHNEIDER](#) / Oct. 4, 2021 3:00 p.m. / [NEWS](#) / [NEWSLETTER](#) / [THE CITY](#)

Problem



35 Stations in SF



Placement of station and bikes are a major factor in attracting customers



On-demand availability and personalization are major factors in competing for future of transportation in urban areas



Data Science Solution

Analysis

Perform an exploratory data analysis on SF bike share data from Kaggle

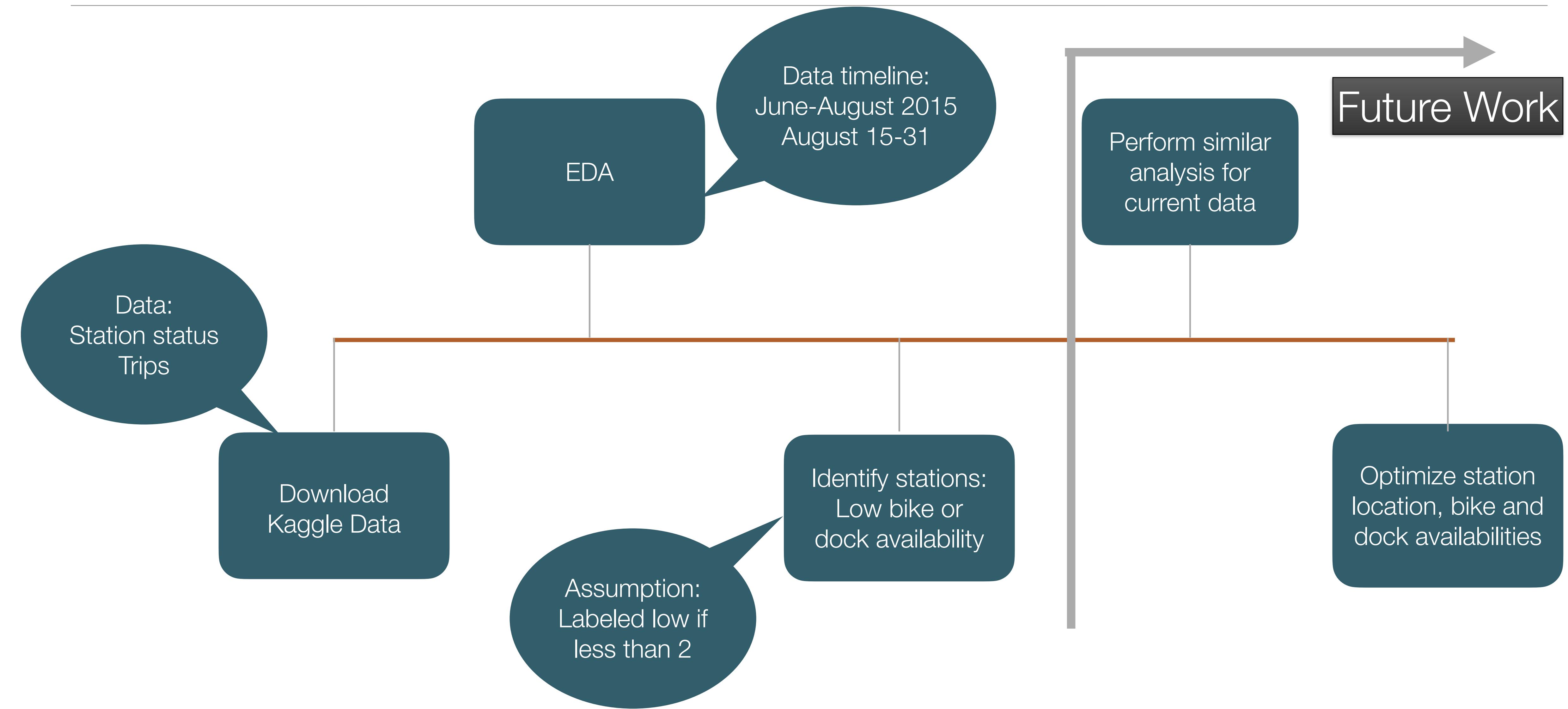
- Bike availability in stations to start a trip
- Dock availability in stations to end a trip

Impact

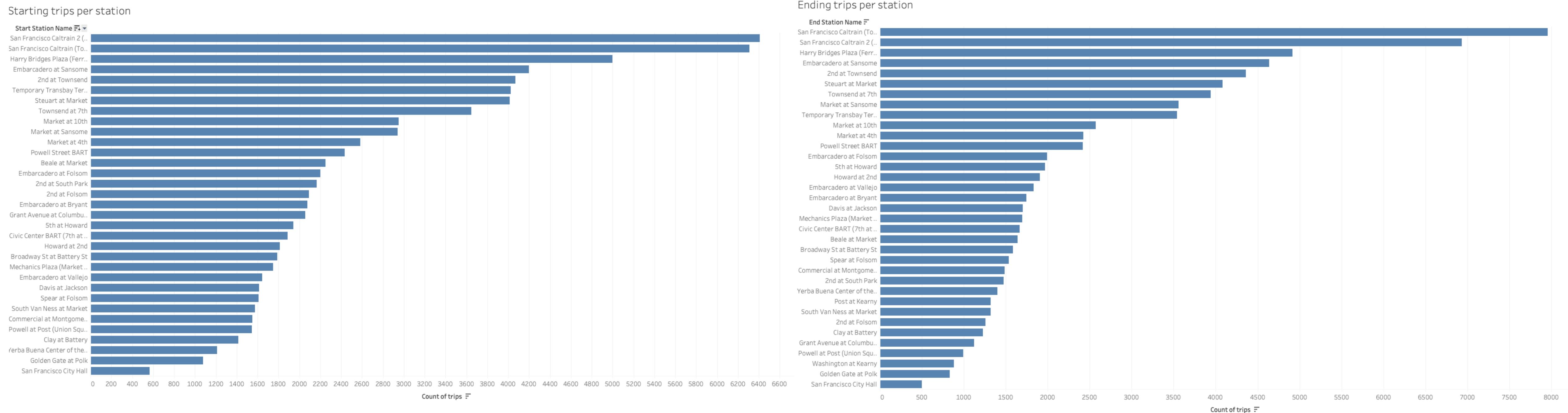
- Utilize results to optimize station bike and dock counts
- Reducing shortage of bikes and docks yields higher profitability in long term



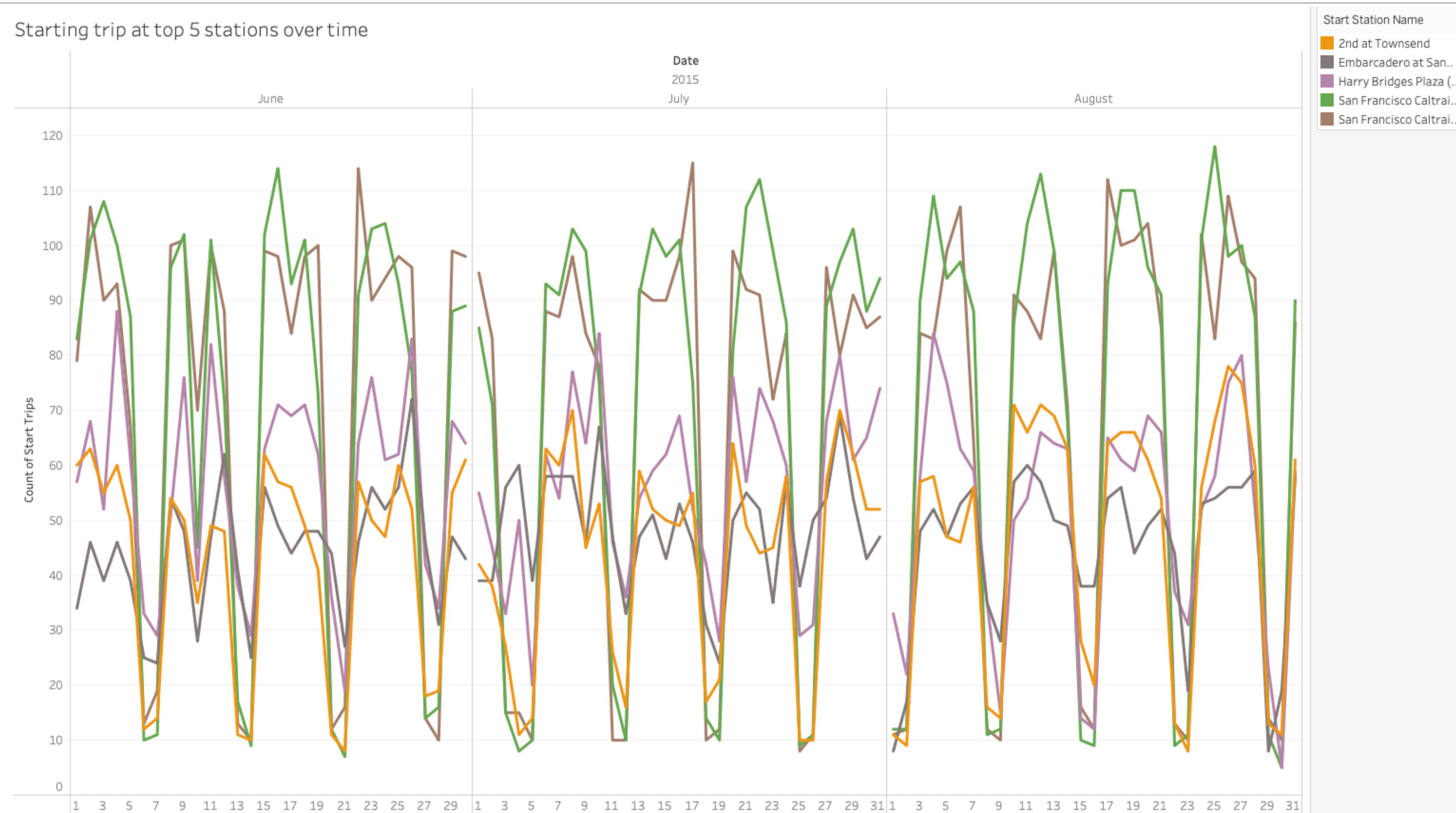
Methodology



Preliminary Results (June - August 2015)



Preliminary Results (June - August 2015)



Preliminary Results (August 15 - 31, 2015)



14280: Total hours of observed time across all stations



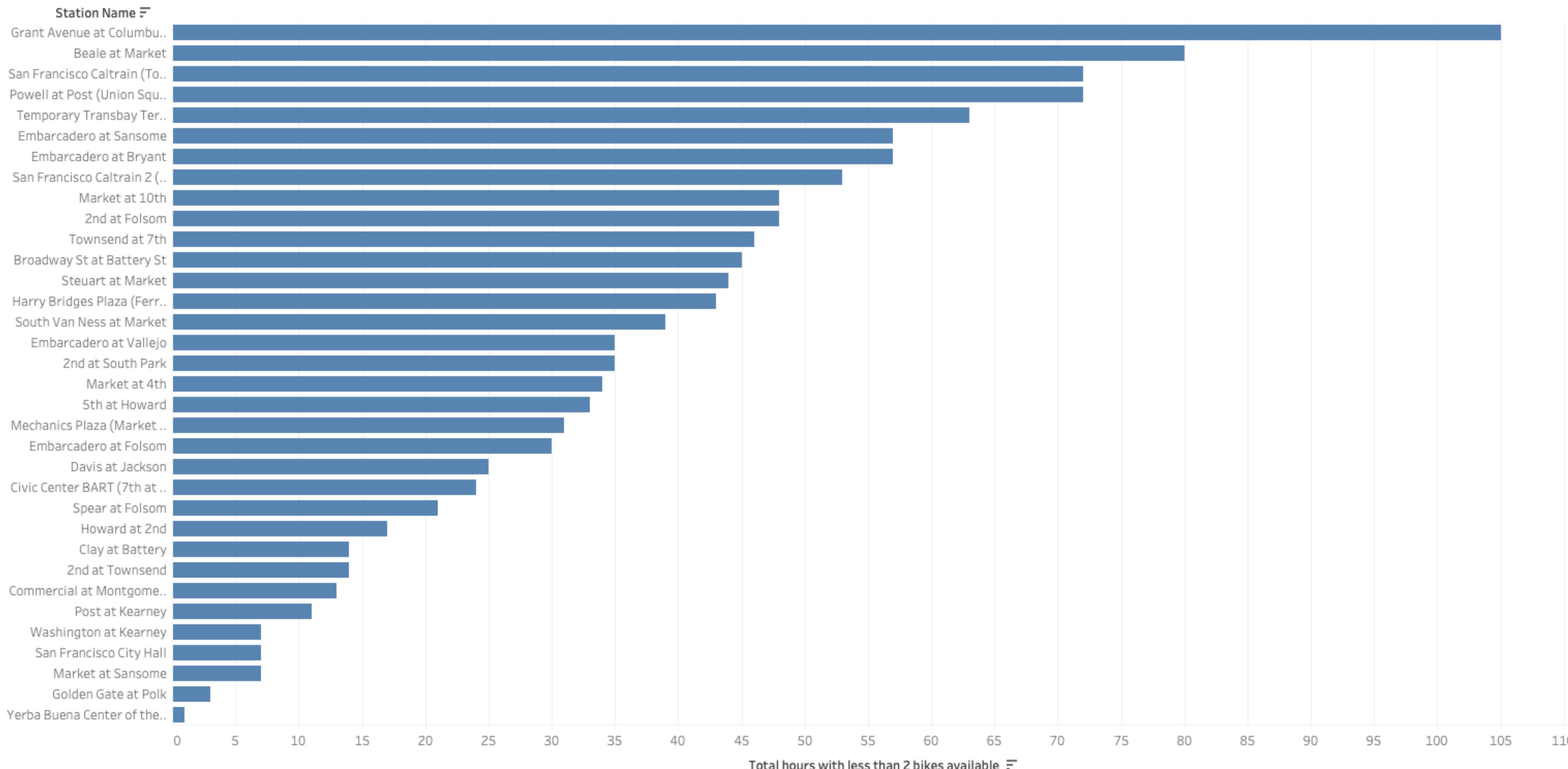
1234 : Total hours with less than 2 bikes available



681: Total hours with less than 2 docks available

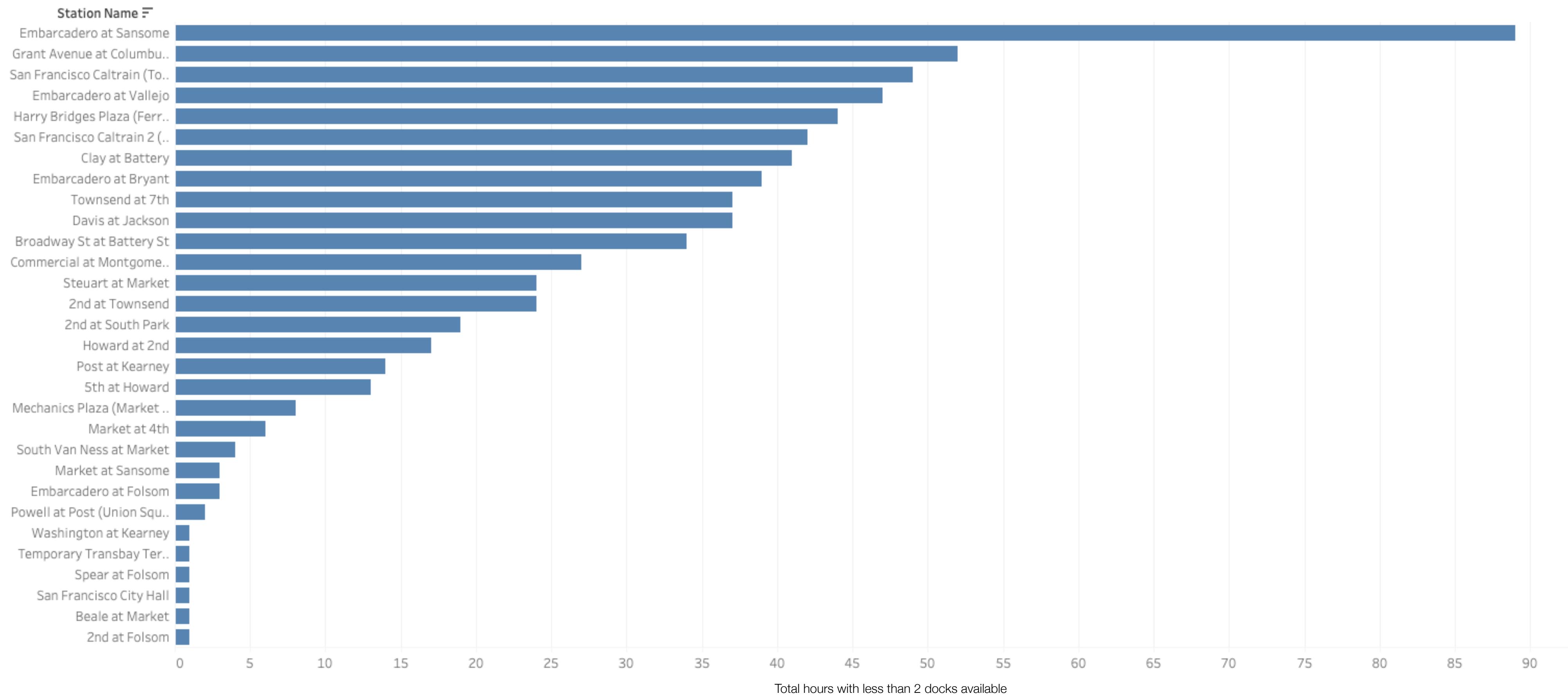
Preliminary Results (August 15 - 31, 2015)

Total hours with less than 2 bikes available per station



Preliminary Results (August 15 - 31, 2015)

Total hours with less than 2 docks available per station



Conclusion

- Similar demand in available bikes and open docks across most stations with more customers ending trips at Cal Train stations
- 1234 hours of low bike availability means loss of profit, top picks for adding bikes:
Cal Train stations, Embarcadero Stations, Temporary Transbay Terminal, Grant Avenue
- 681 hours of low open docks leads to customer dissatisfaction, top picks for adding more docks:
Embarcadero Stations, Cal Train Stations, Harry Bridges Plaza, Grant Avenue

Future Work

- Use current data to run a similar analysis
- Perform a more-in-depth analysis of time of trips and instances of low resources to create a profit metric based on demand forecast that can be used for ranking priorities in optimizing stations
- Analyze competitor data (usually open source) to perform a cross study and find opportunities in creating new stations or expanding current stations

A close-up photograph of a Ford GoBike, a blue bicycle with black tires and handlebars, parked on a paved surface. The bike features the "Ford GoBike" logo on the frame and the number "10087" on the rear wheel. In the background, a large, out-of-focus city skyline is visible under a clear sky.

Thank you!

Appendix

