AN ANALYSIS INTO SAN FRANCISCO BAYWHEELS SYSTEM

*Objective*

San Francisco baywheels has been receiving complains about bike stations being empty. The goal of this analysis is to diagnose how big the problem is and offer recommendations to how this problem can be solved.

*Overview*

San Francisco baywheels is in a total of 6 regions; San Francisco, Oakland, San Jose, Berkeley, Emeryville and 8D. There is a total of 452 stations each having a capacity of 21 bikes, however on average there are 12 bikes per station. The most common renting method is through using operator issued keys as well as credit cards. There are 2 types of users; the subscriber and the customers. Subscribers are generally people who live in the bay area and use the bikes to commute between larger commuting hubs such as the Caltrain station and the BART to their places of work, they generally use the bikes for an average of 10 minutes. The customers are however tourists or non-locals who use the bikes to go to the many parks in San Francisco.

*Findings*

Out of the 452 stations, only 13 were found to be empty. Although this may not seem as such a big problem it is still concerning, and I sought to find why they were empty. Most of the stations that are empty are either next to the parks within San Francisco like the John McLaren Park, Balboa Park, tourist attractions like the Dolores street or muni closest to these parks or tourist attractions. We see therefore that most people use these bikes for recreation purposes, and they use them for an approximate of 49 minutes on average.

*Recommendations*

San Francisco baywheels should see this as an opportunity to diversify their products and attract a whole new clientele. They should increase the number of bikes in these stations and cater them specifically for tourists or those seeking to use the bikes for recreational purposes such as taking a ride in the park. San Francisco baywheels should also consider increasing the time limit for using these specific bikes to probably above 2 hours to attract more customers and give more time to the tourist to explore on bikes.

APPENDIX

SELECT

DISTINCT(name)

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_regions`

LIMIT

1000

Rowname1

San Francisco

2

San Jose

3

Oakland

4

Emeryville

5

Berkeley

6

8D

SELECT

COUNT(NAME)

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_station\_info`

LIMIT

1000

Rowf0\_1

452

SELECT

DISTINCT(rental\_methods)

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_station\_info`

LIMIT

1000

Rowrental\_methods1

KEY,CREDITCARD

SELECT

AVG(capacity)

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_station\_info`

LIMIT

1000

Rowf0\_1

21.8982300884956

SELECT

AVG(num\_bikes\_available)

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_station\_status`

LIMIT

1000

Rowf0\_1

12.907079646017698

SELECT

COUNT(num\_bikes\_available)

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_station\_status`

WHERE

num\_bikes\_available = 0

Rowf0\_1

13

-----

SELECT

station\_id,

num\_bikes\_available

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_station\_status`

WHERE

num\_bikes\_available = 0

-----

SELECT

COUNT(station\_id)

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_station\_status`

Rowf0\_1

452

SELECT

start\_station\_name,

COUNT(start\_date) AS frequency

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_trips`

GROUP BY

start\_station\_name

ORDER BY

COUNT(start\_date) DESC;

|  |  |  |
| --- | --- | --- |
| San Francisco Caltrain (Townsend at 4th) | 72683 |  |
| 2 | San Francisco Caltrain 2 (330 Townsend) | 56100 |  |
| 3 | Harry Bridges Plaza (Ferry Building) | 49062 |  |
| 4 | Embarcadero at Sansome | 41137 |  |
| 5 | 2nd at Townsend | 39936 |  |

SELECT

end\_station\_name,

COUNT( end\_date) AS frequency

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_trips`

GROUP BY

end\_station\_name

ORDER BY

COUNT( end\_date ) DESC

| Row | end\_station\_name | frequency |  |
| --- | --- | --- | --- |
| 1 | San Francisco Caltrain (Townsend at 4th) | 92014 |  |
| 2 | San Francisco Caltrain 2 (330 Townsend) | 58713 |  |
| 3 | Harry Bridges Plaza (Ferry Building) | 50185 |  |

SELECT

end\_station\_name,

COUNT( start\_date ) AS frequency,

EXTRACT(time

FROM

start\_date) AS time

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_trips`

GROUP BY

start\_station\_name,

time

ORDER BY

frequency DESC;

|  |
| --- |
|  |
| Row | start\_station\_name | frequency | time |  |
| 1 | San Francisco Caltrain (Townsend at 4th) | 860 | 07:48:00 |  |
| 2 | San Francisco Caltrain (Townsend at 4th) | 844 | 07:47:00 |  |
| 3 | San Francisco Caltrain (Townsend at 4th) | 787 | 07:49:00 |  |

SELECT

end\_station\_name,

COUNT( end\_date ) AS frequency,

EXTRACT(time

FROM

end\_date) AS time

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_trips`

GROUP BY

end\_station\_name,

time

ORDER BY

frequency DESC;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | San Francisco Caltrain (Townsend at 4th) | 699 | 17:10:00 |  |
| 2 | San Francisco Caltrain (Townsend at 4th) | 689 | 17:07:00 |  |
| 3 | San Francisco Caltrain (Townsend at 4th) | 669 | 17:08:00 |  |

SELECT

start\_station\_name,

end\_station\_name,

COUNT( trip\_id ) AS frequency

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_trips`

GROUP BY

start\_station\_name,

end\_station\_name

ORDER BY

frequency DESC;

|  |
| --- |
|  |
| Row | start\_station\_name | end\_station\_name | frequency |  |
| 1 | Harry Bridges Plaza (Ferry Building) | Embarcadero at Sansome | 9150 |  |
| 2 | San Francisco Caltrain 2 (330 Townsend) | Townsend at 7th | 8508 |  |
| 3 | 2nd at Townsend | Harry Bridges Plaza (Ferry Building) | 7620 |  |

SELECT

subscriber\_type,

AVG(duration\_sec)/60

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_trips`

GROUP BY

subscriber\_type

| Row | subscriber\_type | f0\_ |  |
| --- | --- | --- | --- |
| 1 | Subscriber | 10.470441300079889 |  |
| 2 | Customer | 49.97850868617026 |  |

SELECT

station\_id

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_station\_status`

WHERE

num\_bikes\_available = 0

GROUP BY

station\_id

| Row | station\_id |  |
| --- | --- | --- |
| 1 | 295 |  |
| 2 | 479 |  |
| 3 | 497 |  |
| 4 | 501 |  |
| 5 | 502 |  |
| 6 | 503 |  |
| 7 | 504 |  |
| 8 | 505 |  |
| 9 | 519 |  |
| 10 | 523 |  |
| 11 | 242 |  |
| 12 | 64 |  |
| 13 | 146 |  |

SELECT

s.station\_id AS station\_id,

i.name

FROM

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_station\_info` AS i

LEFT JOIN

`bigquery-public-data.san\_francisco\_bikeshare.bikeshare\_station\_status` AS s

ON

s.station\_id = i.station\_id

WHERE

num\_bikes\_available = 0

GROUP BY

i.name,

s.station\_id

| Row | station\_id | name |  |
| --- | --- | --- | --- |
| 1 | 497 | Alemany Blvd at Silver Ave |  |
| 2 | 501 | Balboa Park (San Jose Ave at Sgt. John V. Young Ln |  |
| 3 | 502 | Delano Ave at Oneida Ave |  |
| 4 | 503 | London St at Geneva Ave |  |
| 5 | 504 | Onondaga Ave at Alemany Blvd |  |
| 6 | 505 | Geneva Ave at Moscow St |  |
| 7 | 519 | Townsend St at 6th St |  |
| 8 | 523 | Lafayette Park (Laguna St at Washington St) |  |
| 9 | 64 | 5th St at Brannan St |  |
| 10 | 479 | Washington St at Van Ness Ave |  |
| 11 | 146 | 30th St at San Jose Ave |  |
| 12 | 295 | William St at 10th St |  |
| 13 | 242 | Milvia St at Derby St |  |