



LONDON BIKE RENTAL ANALYSIS

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Skills:



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DATASET

bigquery-public-data, london_bicycle

2 table: cycle_hire and cycle_station

Scope of analysis is limited to 2016

TOPIC OF ANALYSIS

1. Total bike rental.
2. Average duration of bike rental.
3. Most crowded day and hour.
4. Most common starting station?
5. Most common destination?
6. Most common ride route?
7. Most common station for same station trip and different station trip.

```
SELECT
```

```
  rental_id
```

```
, end_date
```

```
, end_station_id
```

```
, start_date
```

```
, start_station_id
```

```
FROM `bigquery-public-data.london_bicycles.cycle_hire`
```

```
WHERE start_station_id IS NOT NULL
```

```
  AND EXTRACT(YEAR FROM DATE(start_date)) = 2016
```

```
SELECT
```

```
  rental_id
```

```
, duration
```

```
, EXTRACT(DAYOFWEEK FROM DATE(start_date)) AS
```

```
start_date_day
```

```
, IF(
```

```
  EXTRACT(DAYOFWEEK FROM DATE(start_date)) = 1
```

```
  OR
```

```
  EXTRACT(DAYOFWEEK FROM DATE(start_date)) = 7,
```

```
"weekend", "weekday") AS is_weekday
```

```
, EXTRACT(HOUR FROM DATETIME(start_date)) AS start_hour
```

```
, EXTRACT(HOUR FROM DATETIME(end_date)) AS end_hour
```

```
FROM `bigquery-public-data.london_bicycles.cycle_hire`
```

```
WHERE start_station_id IS NOT NULL
```

```
  AND EXTRACT(YEAR FROM DATE(start_date)) = 2016
```



QUERY

```
SELECT
```

```
  id
```

```
, name
```

```
, latitude
```

```
, longitude
```

```
FROM `bigquery-public-data.london_bicycles.cycle_station`
```

There are multiple query because bigquery only able to export data up to 1 GB. Huge dataset!



OVERVIEW

```
1 df_hire2016.head()
```

| | rental_id | end_date | end_station_id | start_date | start_station_id |
|---|-----------|-------------------------|----------------|-------------------------|------------------|
| 0 | 57430452 | 2016-08-19 20:40:00 UTC | 773 | 2016-08-19 20:36:00 UTC | 256 |
| 1 | 58839981 | 2016-09-27 13:30:00 UTC | 264 | 2016-09-27 13:19:00 UTC | 256 |
| 2 | 60348144 | 2016-11-16 17:17:00 UTC | 14 | 2016-11-16 17:04:00 UTC | 256 |
| 3 | 58544252 | 2016-09-19 17:24:00 UTC | 14 | 2016-09-19 17:04:00 UTC | 256 |
| 4 | 60311961 | 2016-11-15 13:10:00 UTC | 272 | 2016-11-15 13:04:00 UTC | 256 |

```
1 df_adddata2016.head()
```

| | rental_id | duration | start_date_day | is_weekday | start_hour | end_hour |
|---|-----------|----------|----------------|------------|------------|----------|
| 0 | 60102749 | 840 | 1 | weekend | 3 | 3 |
| 1 | 60252407 | 300 | 1 | weekend | 3 | 3 |
| 2 | 60357217 | 1080 | 5 | weekday | 4 | 4 |
| 3 | 54653180 | 180 | 4 | weekday | 5 | 5 |
| 4 | 51119360 | 540 | 4 | weekday | 5 | 5 |

```
1 df_station.head()
```

| | id | name | latitude | longitude |
|---|-----|-----------------------------|-----------|-----------|
| 0 | 240 | Colombo Street, Southwark | 51.505459 | -0.105692 |
| 1 | 173 | Waterloo Road, South Bank | 51.504860 | -0.113001 |
| 2 | 377 | Waterloo Bridge, South Bank | 51.505354 | -0.113657 |
| 3 | 261 | Princes Square, Bayswater | 51.513489 | -0.191351 |
| 4 | 37 | Penywern Road, Earl's Court | 51.491594 | -0.192369 |



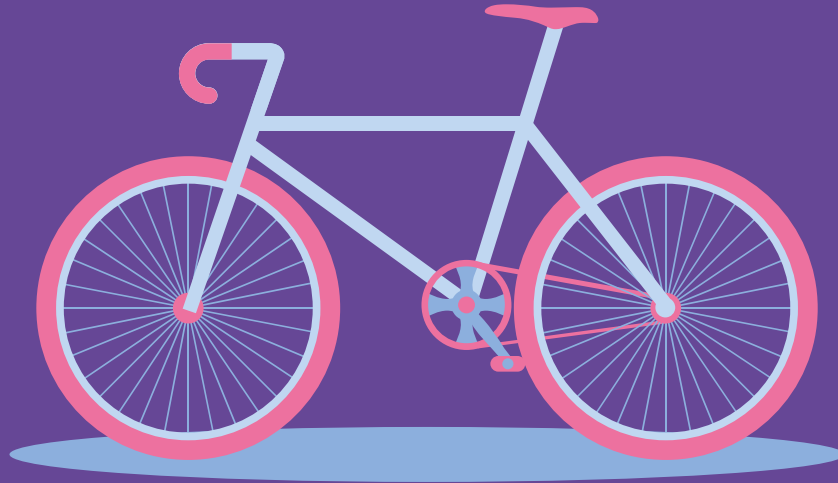
DATA CLEANING

| Steps | Description |
|--------------------|---|
| Merge data | Merge df_hire2016, df_adddata2016 and df_station |
| Check missing data | No missing data |
| Check duplicate | No duplicates on rental_id |
| Check data type | Date data type is not changed since Tableau is smart to detect date |





EXPLORATORY DATA ANALYSIS





9.446.558

Total Rental in 2016

331.443

Same Station Trip

9.115.985

Different Station Trip



20,54 mins

Average Rental Duration

56,15 mins

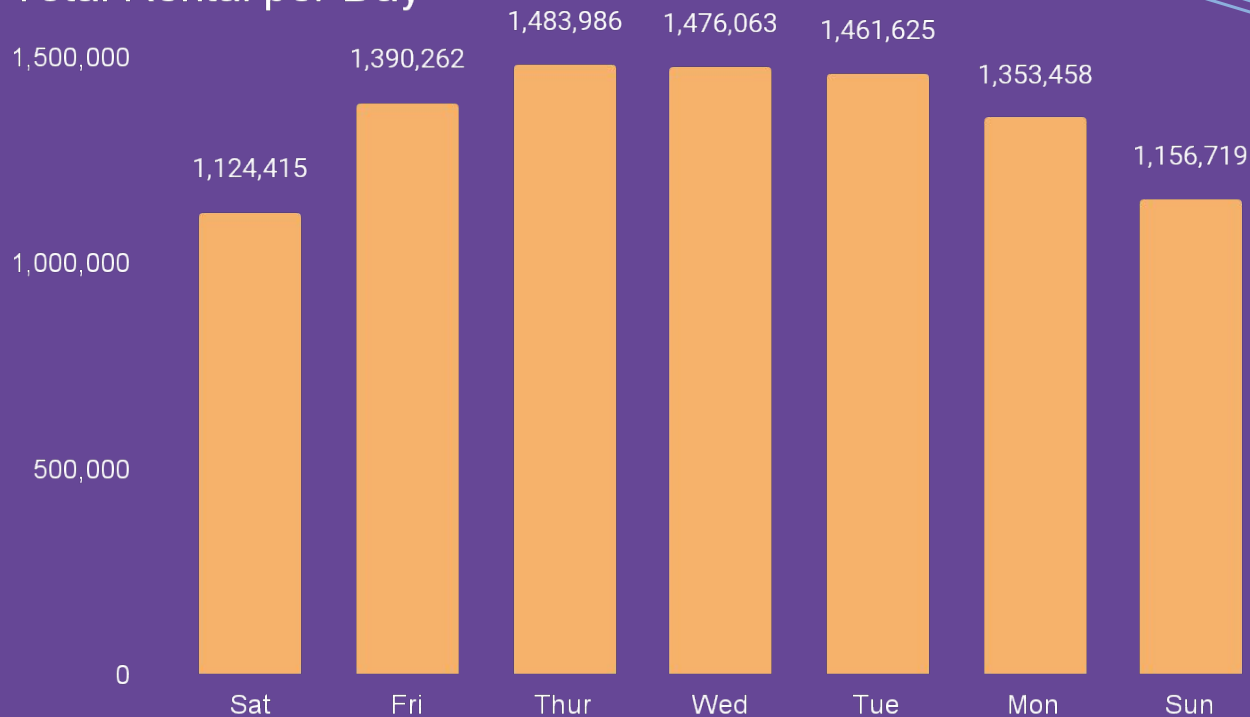
Same Station Trip

19,24 mins

Different Station Trip

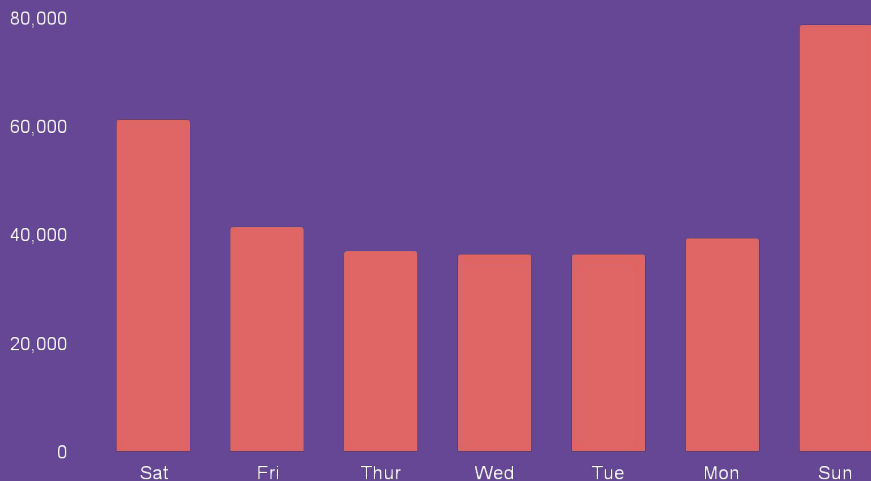
THURSDAY IS THE MOST CROWDED DAY

Total Rental per Day

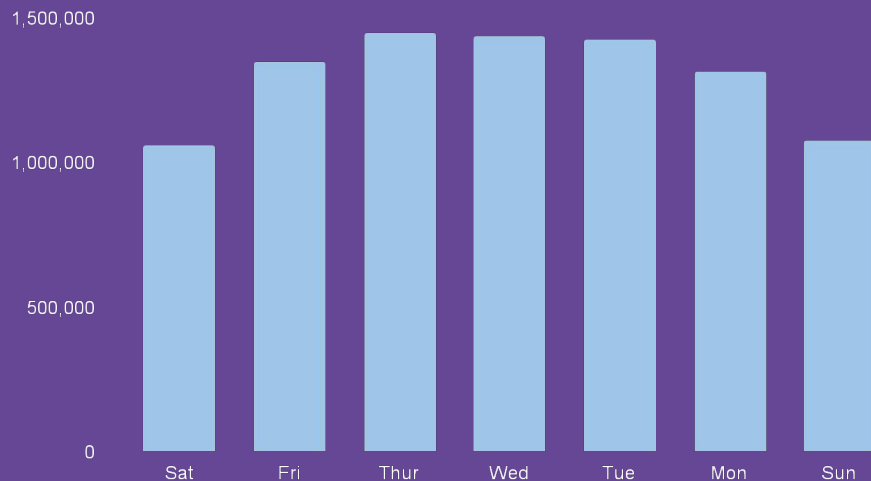


PEOPLE DO SAME STATION TRIP MOSTLY ON **WEEKEND** AND FOR DIFFERENT STATION TRAVEL, MOSTLY ON **WEEKDAY**

Daily Total Rental for Same Station Trip

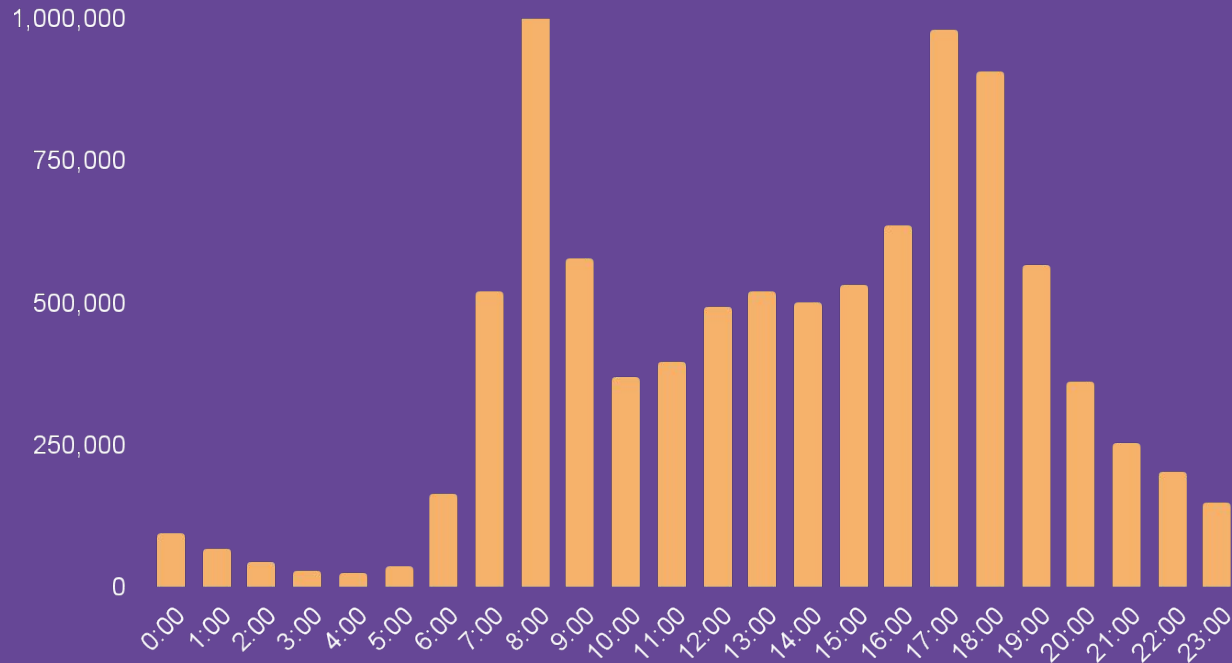


Daily Total Rental for Different Station Trip



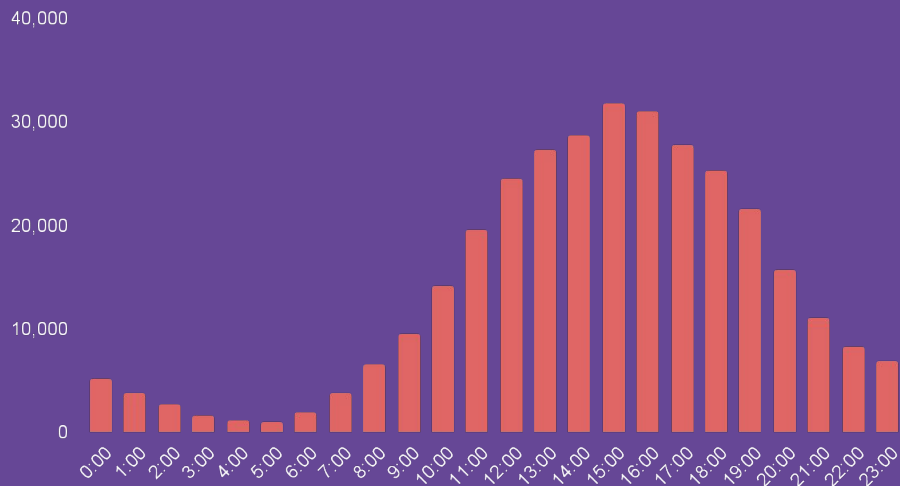
PEOPLE MOSTLY RENTAL BIKE AT **8AM** AND **5PM**

Total Rental per Hour

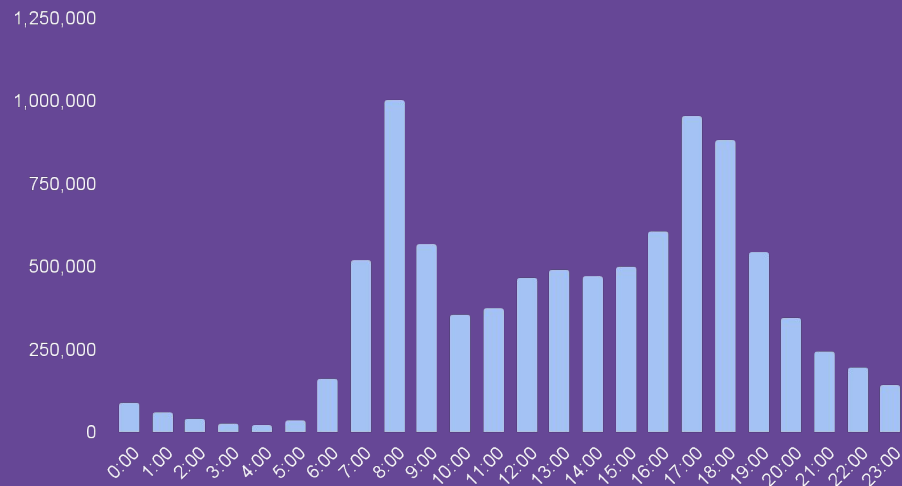


PEOPLE WHO DO SAME STATION TRIP MOSTLY RENTAL BIKE AT 3PM WHILE DIFFERENT STATION TRIP AT 8AM AND 5PM

Same Station Trip Total Rental per Hour

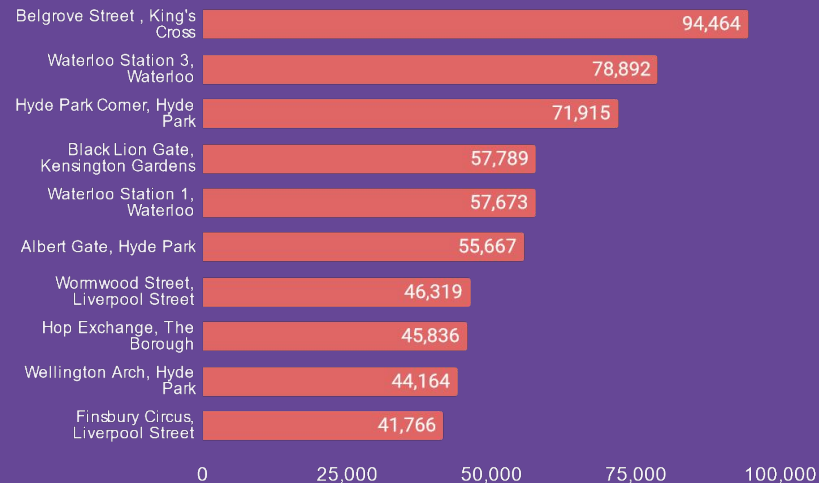


Different Station Trip Total Rental per Hour

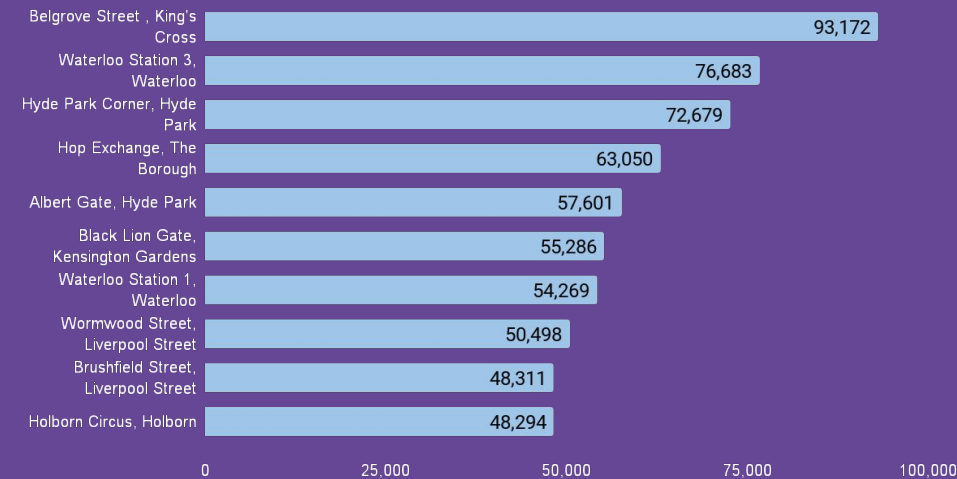


BELGROVE STREET-KING'S CROSS, WATERLOO STATION 3 AND HYDE PARK CORNER ARE THE MOST COMMON STARTING POINT AND DESTINATION

Top 10 Most Common Starting Point

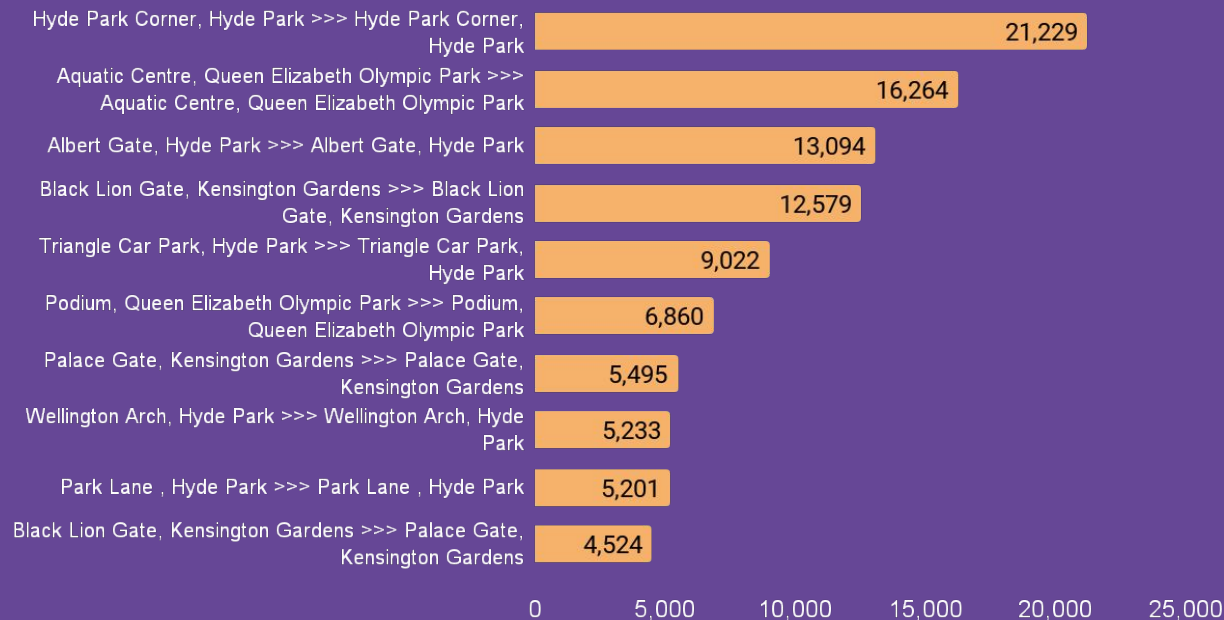


Top 10 Most Common Destination



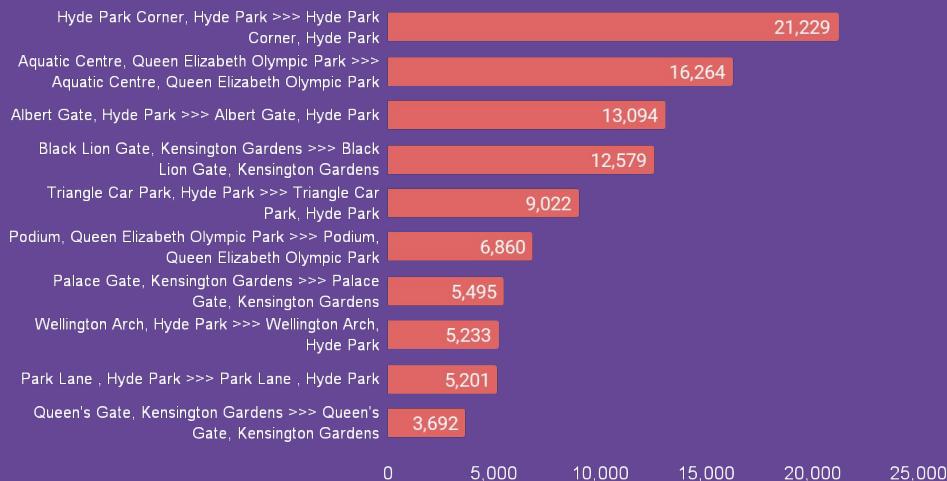
MOST COMMON TRIP IS FROM HYDE PARK CORNER TO HYDE PARK CORNER OR SAME STATION TRIP

Top 10 Most Common Trip

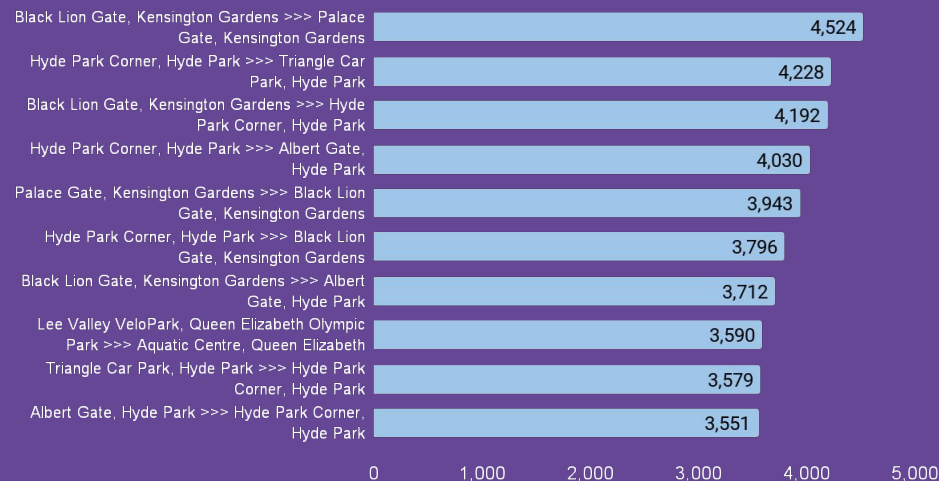


THE MOST POPULAR SAME STATION TRIP IS HYDE PARK CORNER WHILE DIFFERENT STATION TRIP IS FROM BLACK LION GATE KENSINGTON GARDEN TO PALACE GATE KENSINGTON GARDEN

Top 10 Same Station Trip



Top 10 Different Station Trip



London Bike Rental Dashboard

Same Station Trip?

Different Station Trip

Hour

(A11)

Day

(All)

Month

(A11)

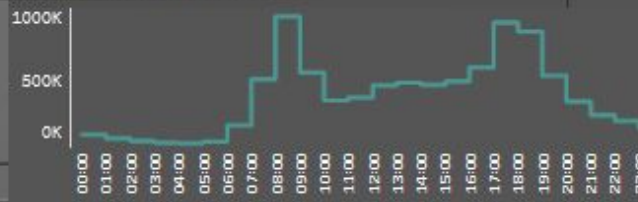
Total Rental

9,115,085

Avg Duration (Minute)

19.24

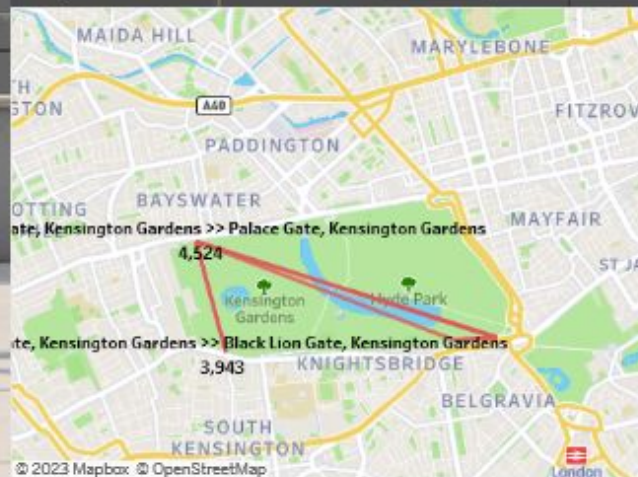
Total Rental per Hour

**Total Rental per Day**

Map

Show

Route



Top 10 Total Rental



DASHBOARD

CONCLUSION

**MOST PEOPLE RENTAL BIKE TO TRAVEL TO
DIFFERENT STATION**

**THE TOP 2 STARTING POINT AND DESTINATION
IS NEAR SUBWAY/TRAIN STATION**

**HOWEVER, MOST COMMON TRIP IS TRAVEL
AROUND THE PARK**

People that start/end at subway/train station travel to/from many different location.

**THE PATTERN OF DAILY AND HOURLY RENTAL
IS DIFFERENT FOR SAME STATION TRIP AND
DIFFERENT STATION TRIP**

This pattern could means different purpose of trip, while different station trip resembles travel for workday activities, same station trip pattern resembles leisure activities.

THANKS



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