Zen City: A Data-Driven Journey

This presentation provides an incisive conclusion about the business of Zen City, a bike rental company in the bustling city of London. Explore the insights gained from data analysis and the journey to enhance their services.

Content for this presentation

- Review of questions to answer / hypotheses / approach
- Discuss technical challenges
- Initial findings and deeper analysis
- Hypotheses results
- Insights and recommendations

About Our Client

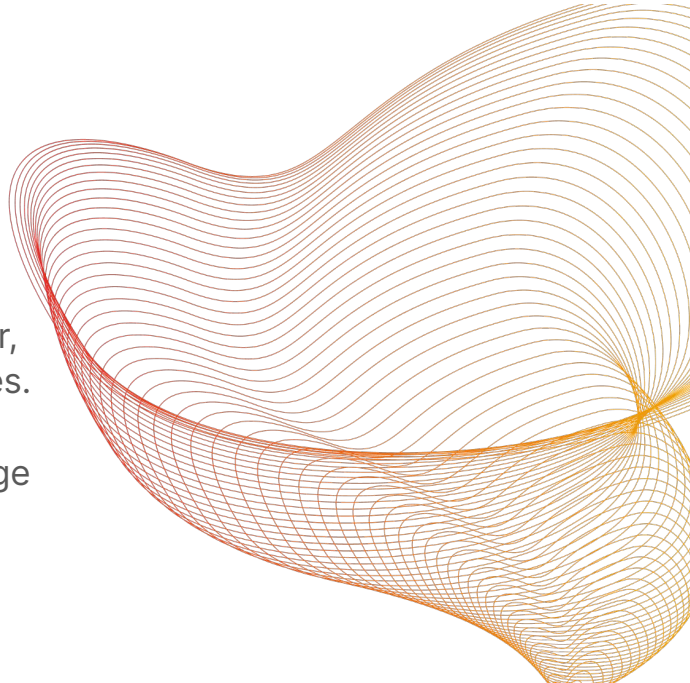
In the vibrant city of London, where sustainable transportation is a priority, "Zen City" bike rental company is on a mission to promote eco-friendly commuting. With a wealth of data about bike rentals and station usage, Zen City is embarking on a data-driven initiative to enhance its services and gain deeper insights into its operations.

The Goal For this analysis -Enhancing Customer Experience

- **Optimize the business for more bike rentals in Q2 2021.**
  - fine-tune station placements
  - analyze rental patterns
  - identify underutilized & overcrowded stations

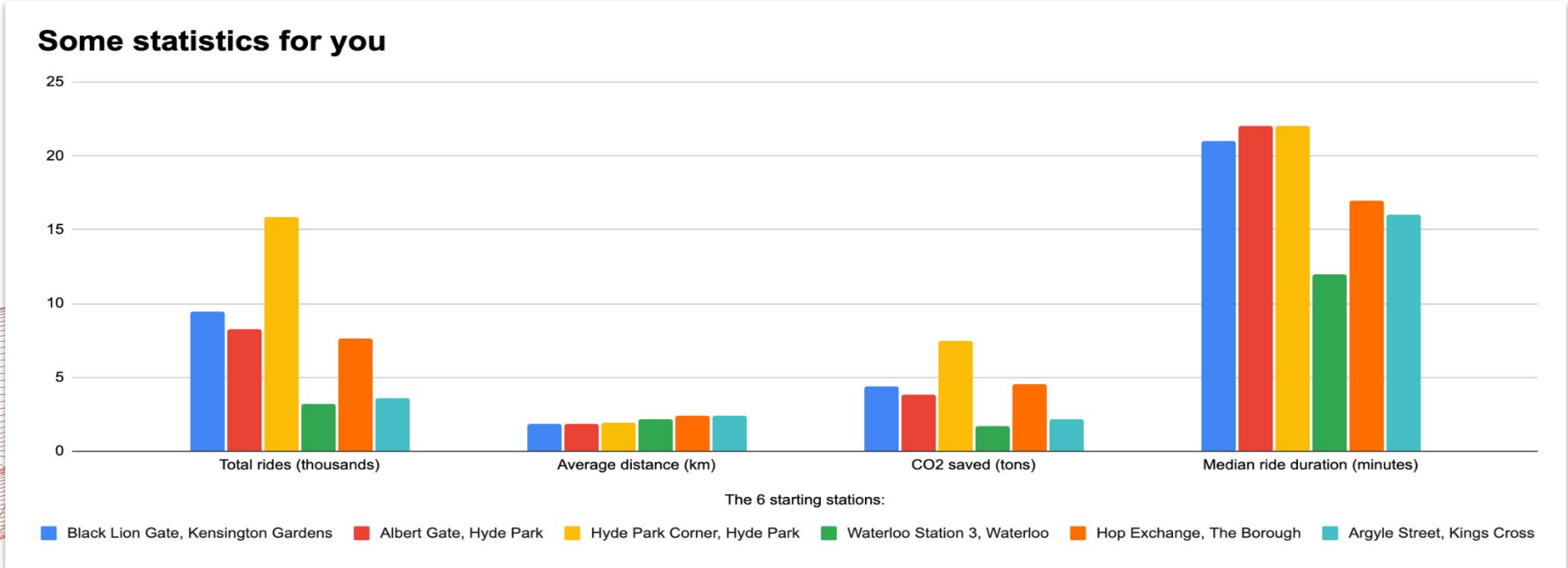
Questions To Answer

- Does **distance from the center of London** have an effect on the utilization of stations?
- **Starting stations utilization** - which stations are the most popular, find overcrowded stations, and which stations lack docking spaces.
- Find the **best days in the week and time of day to maximize revenue**, what are the peak rental hours and days, how does usage differ between the weekend and the work week.



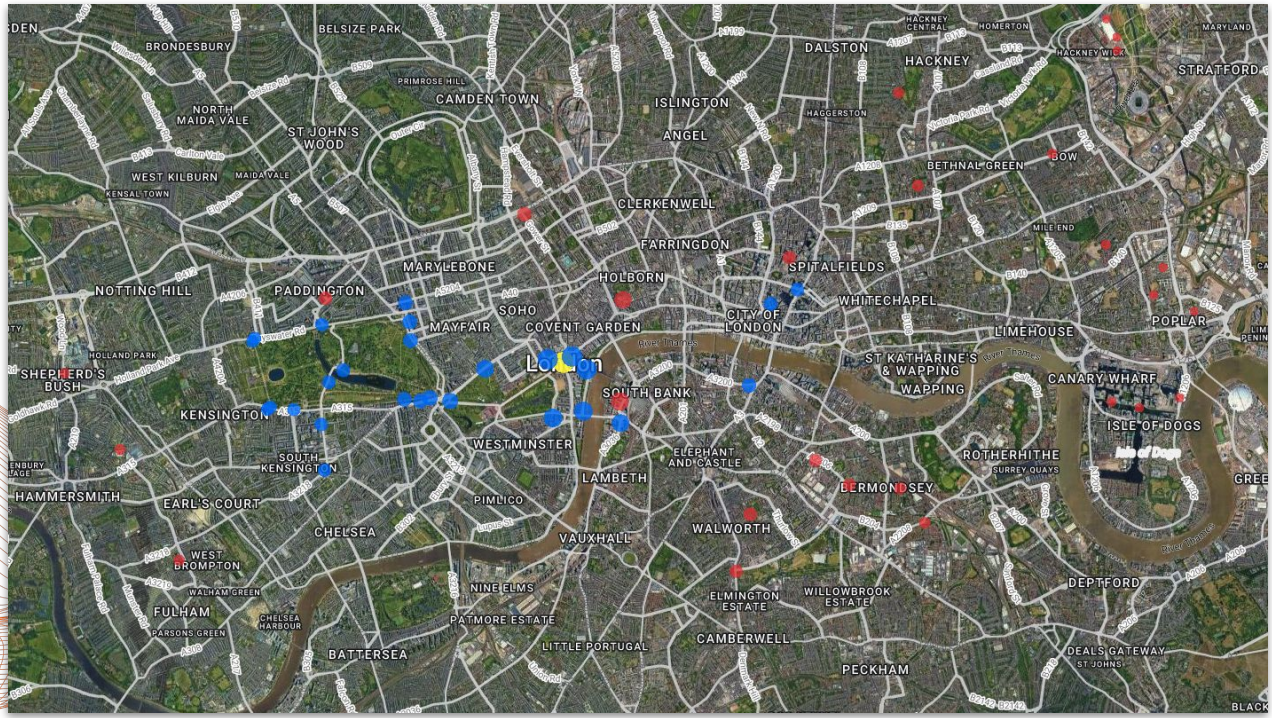
Welcome to the world of Zen City

- Zen City **operates over 790** stations and **11,185 bikes**, ensuring widespread accessibility.
- **Q1 2021 witnessed over 48,000 rides**, setting a remarkable daily average of **4,500 rides,** with an average trip distance of **2 kilometers.**
- The **average** ride duration is **28.79 minutes**, with a **median of 20 minutes.**
- Zen City's bike rentals saved **24,240.9 KG of CO2 by covering 97,353.41 km**, with a CO2 reduction rate of 249g per km traveled.



Conclusion - Distance from London city center

Our analysis reveal a significant positive relationship between the distance from the center of London and the utilization of bike-sharing stations. As the distance from the city center decreases, there is a corresponding increase in the usage of the stations. This finding underscores the influence of location on the popularity and accessibility of bike-sharing services within the city.



Legend:

Red dot - unutilized station

Blue dot - a top station

Yellow dot - London city center

*the smaller the dot the further away the station is from the center of London.

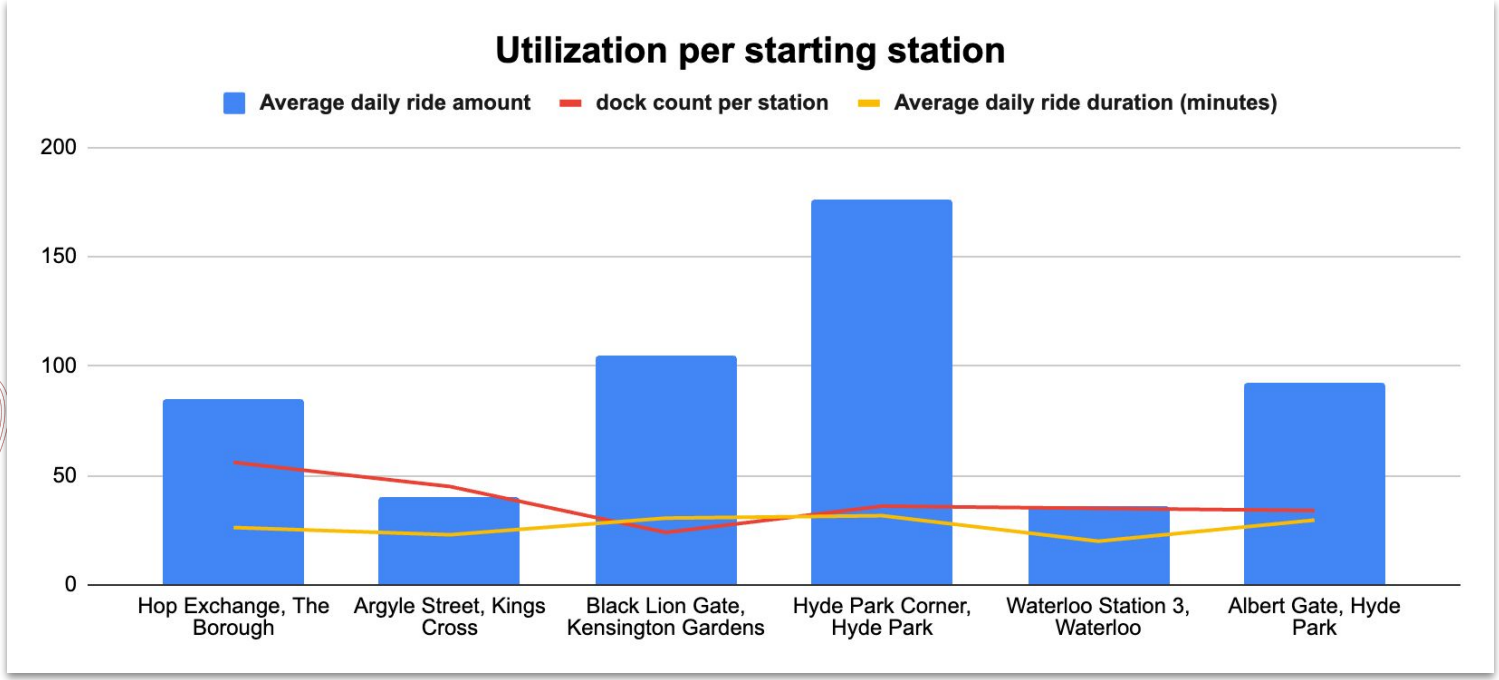
Findings:

Average distance of a **top station** from **London city center - 2.35KM**

Average distance of an **unutilized station** from **London city center - 5.68KM**

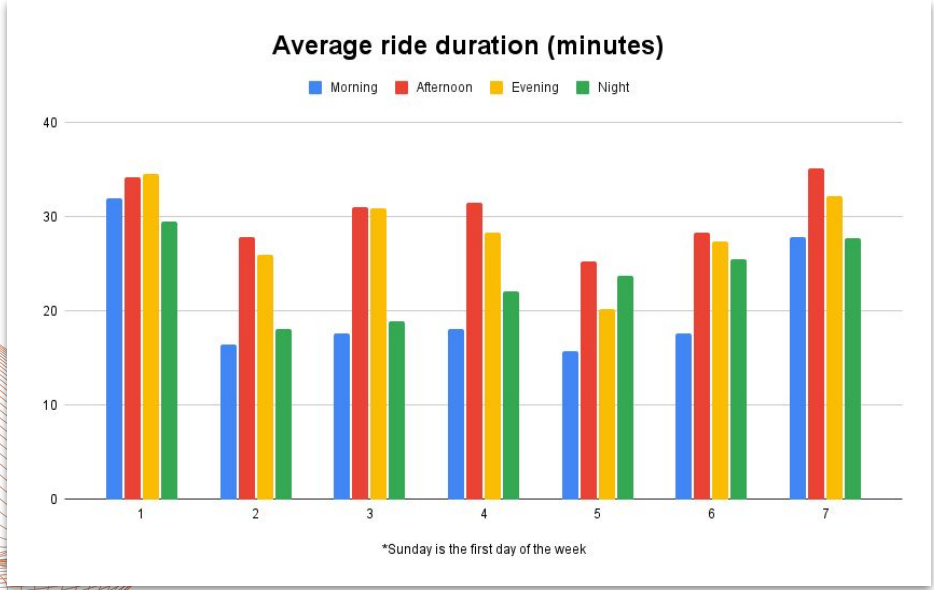
Conclusion - Starting stations utilization

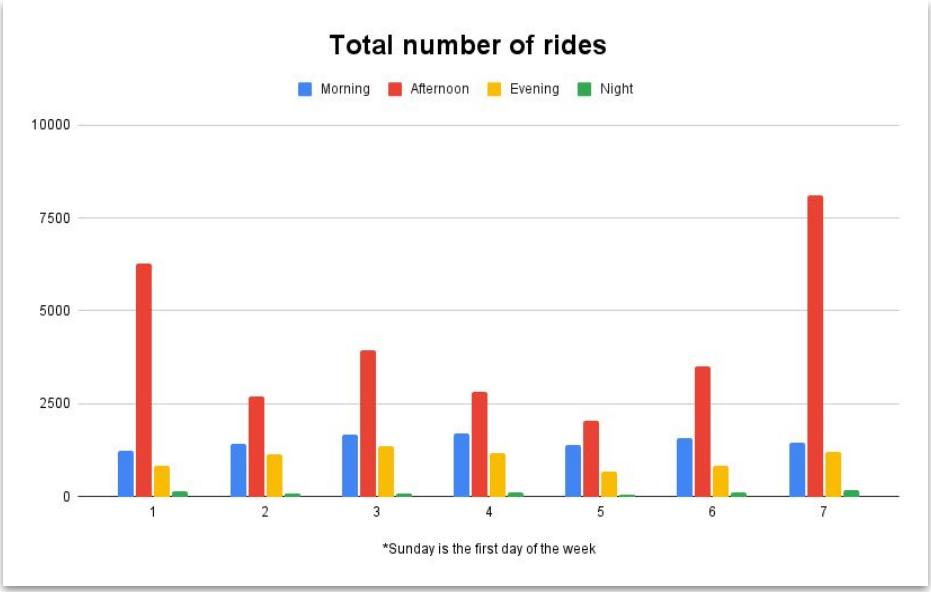
Our analysis reveal an interesting insight, as you can see at Hyde park and black lion gate station the daily ride amount is almost triple the number of docking spaces available, this means if we want to make better utilisation of these stations we will have to add more docking spaces, and where the average daily rides is relatively low, i.e - Waterloo and Argyle street, we are able to remove some docking stations to improve overall station utilization.



Conclusion - Analyze rental patterns (by day and time)

We wanted to divide this chart into 2 chart so you could get a better idea of how things work for each day of the week, daily peak timings patterns are strongly office commuter-oriented, with major peaks in the afternoon according to usual evening rushes (4 – 6 pm). the afternoon is by far where most rides are made, while rides increase during the weekend (day 7+1) and have a drop during the week. regarding the ride duration you can see slight edge for the weekend (day 7+1), with the duration remaining consistent during the week.





- Morning - 6 to 12 am, Afternoon - 1 to 6 pm, Evening - 7 to 10 pm, night - 11 pm to 5 am

Conclusion and Recommendations

Our mission was to find better ways to utilize our current existing bike grid, to analyze rental patterns and identify underutilized & overcrowded stations.

We found why there are empty stations, and how to better utilize the 6 available starting stations and how should we diversify our daily promotion to better drive traffic throughout the day.

- Most of the rentals are for commuting to workplaces and colleges around the bustling core of London, Zen should focus on launching more stations closer to the city center to reach out to their main customers.
- The number of bikes available for rental and the number of empty docks in the station shows an imbalance, there is a higher demand than supply in most cases, Zen should focus on adding more available docking spaces to the 6 starting stations or open nearby starting stations to not miss out on any customers because of overutilization.
- While planning for extra bikes to stations the peak rental hours must be considered, i.e. 1–6 pm, in - addition, maintenance activities for bikes should be done at night due to low usage.
- offer dynamic pricing and promotions depending upon the day and hour to promote bike usage during the work week with a focus on the morning and night times.

Way Forward - Predictions

Zen City has collected data on bike rentals for business Quarter 1 (Jan-March 2021),

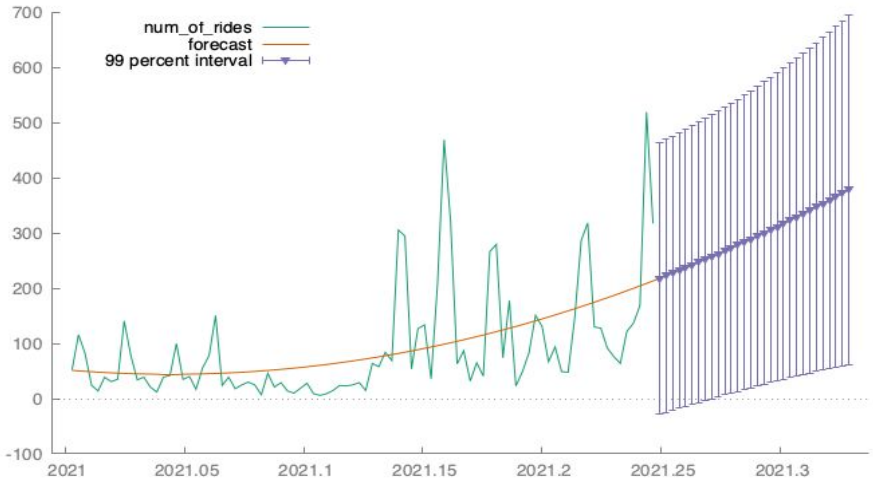
Using this data we are able to predict rental information the next month:

We ran an OLS Linear Regression model that will help you understand our prediction to how many rentals will be made in April 2021 from “Albert Gate, Hyde Park” bike station:

```
^num_of_rides = 52.3 - 0.998*time + 0.0310*sq_time
                (28.8) (1.46)       (0.0156)

T = 90, R-squared = 0.253
(standard errors in parentheses)
```

start_month	num_of_rides
1	1491
2	2502
3	4290
4	**8836**



Thank you for your time and attention 🙂