

Analysis of the influence of Metallica concert on public bike rental service

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Introduction:

For every so called 'Metalheads' in Estonia it was a special day on 18th July 2019, returning to Estonia for the fourth time, Metallica gave a sold-out show to 60,000 at Raadi Airfield, located immediately behind the Estonian National Museum (ERM), in Tartu on Thursday night. A lot of preparations were made for the public on the day of the concert. The Tartu Bike rental dock stations were loaded up with bicycles, even an extra dock station was installed next to the Concert place, just to improve the commuting experience of the local public to get the concert. This was indeed a mega event after all such arrangements were made. So, this calls for analysis of the data of the usage of these bikes on the concert day. The aim of this project was to correlate different aspects of bike usage on the concert day and an overall comparison of the bike usage vs normal days, as well find other descriptive analysis using the bus validation data as well.

What effect did Metallica concert have on Tartu Rental Bikes?

On the day of the concert i.e the 18th there was a special dock station (green pin in fig. 1) for bike next to the usual one (pinned as white in fig. 1) which is the closest to the Concert. The concert started at 4pm and ended at 11.30pm, so we took time-frame for mapping coordinates of bikes running from 2pm of 18th to 2am of the next day. This same timeframe parameter was used for 19th July, 25th July and 26th July in order to compare the effect of metallica concert. And it can be visibly seen in the heatmaps that the presence of the bikes were more on the part of the city where the concert was as compared to every other normal day. So we can say that the Metallica concert had a great impact on the use of bikes. We can predict that the for such events a lot of people will rely on using bike rentals. And we can have use descriptive analysis such as top stations, total rides per day/hour, for the future.

Preprocessing:

- Renaming the columns
- Changing the variable types different column values
- Splicing and removing non relevant columns
- Importing the dataset into a csv to implement it into the online tool for heatmapping.



figure 1 : 18th July
(2pm - 2am)



figure 2 : 19th July
(2pm - 2am)



figure 3 : 25th July
(2pm - 2am)

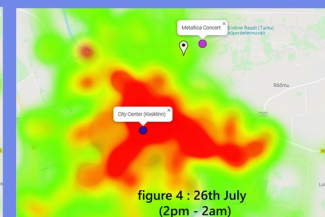


figure 4 : 26th July
(2pm - 2am)

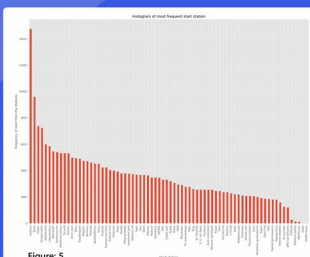


Figure: 5

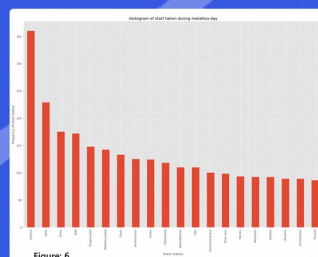


Figure: 6

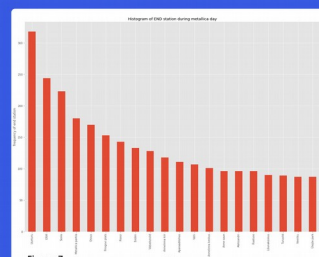


Figure: 7

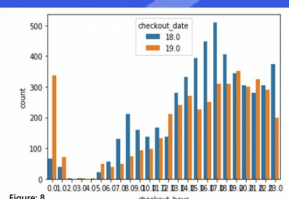


Figure: 8

As it is expected from observations in the data, the trend of bike usage as regards start station and end station, almost all top 10 end stations are towards docks in and around the metallica concert venue, and compared to other days where stations are pretty random. Few interesting facts we noticed is that the most frequent and famous dock station is 'Uueturu', while the least frequent one is 'Spaark demo' dock. The most check out counts (fig. 8) between 18th July and 19th July were during the day and evening time of 18th, The concert was over after 23:30, hence the increase in count during midnight and early hours of 19th.

Online map tool: <https://maps.co/>

