

# An Analysis of the Sprottenflotte in Kiel

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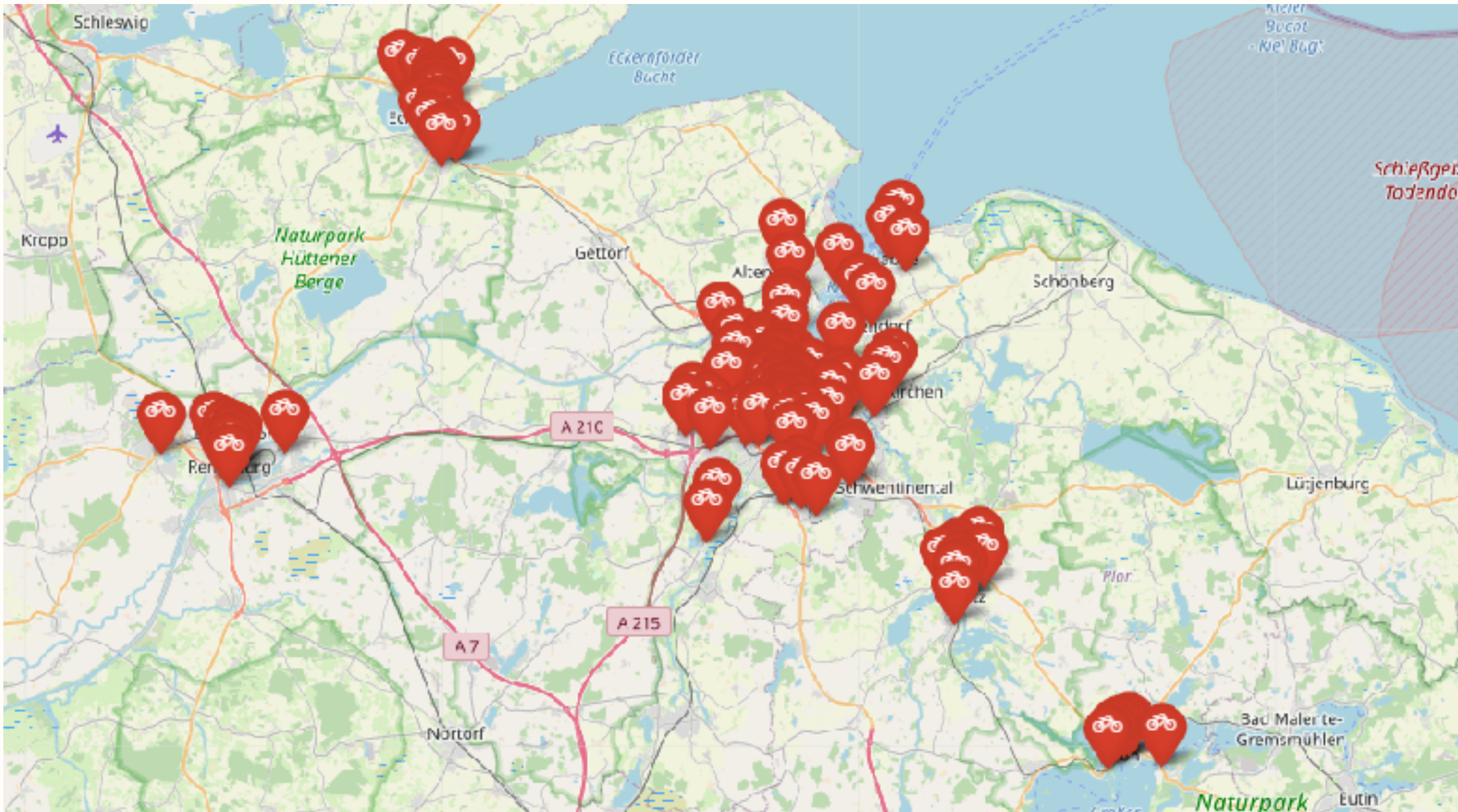


Figure 1: Sprottenflotte stations

## Data we had

- Every Sprottenflotte station
- For every station the number of bikes available at a certain time
- The weather conditions at a certain time

## Data we concluded

- Only Sprottenflotte stations in Kiel
- Calculated the number of rented & returned bikes
- Calculated the frequency of usage of a station

## Which stations are comparable with each other?

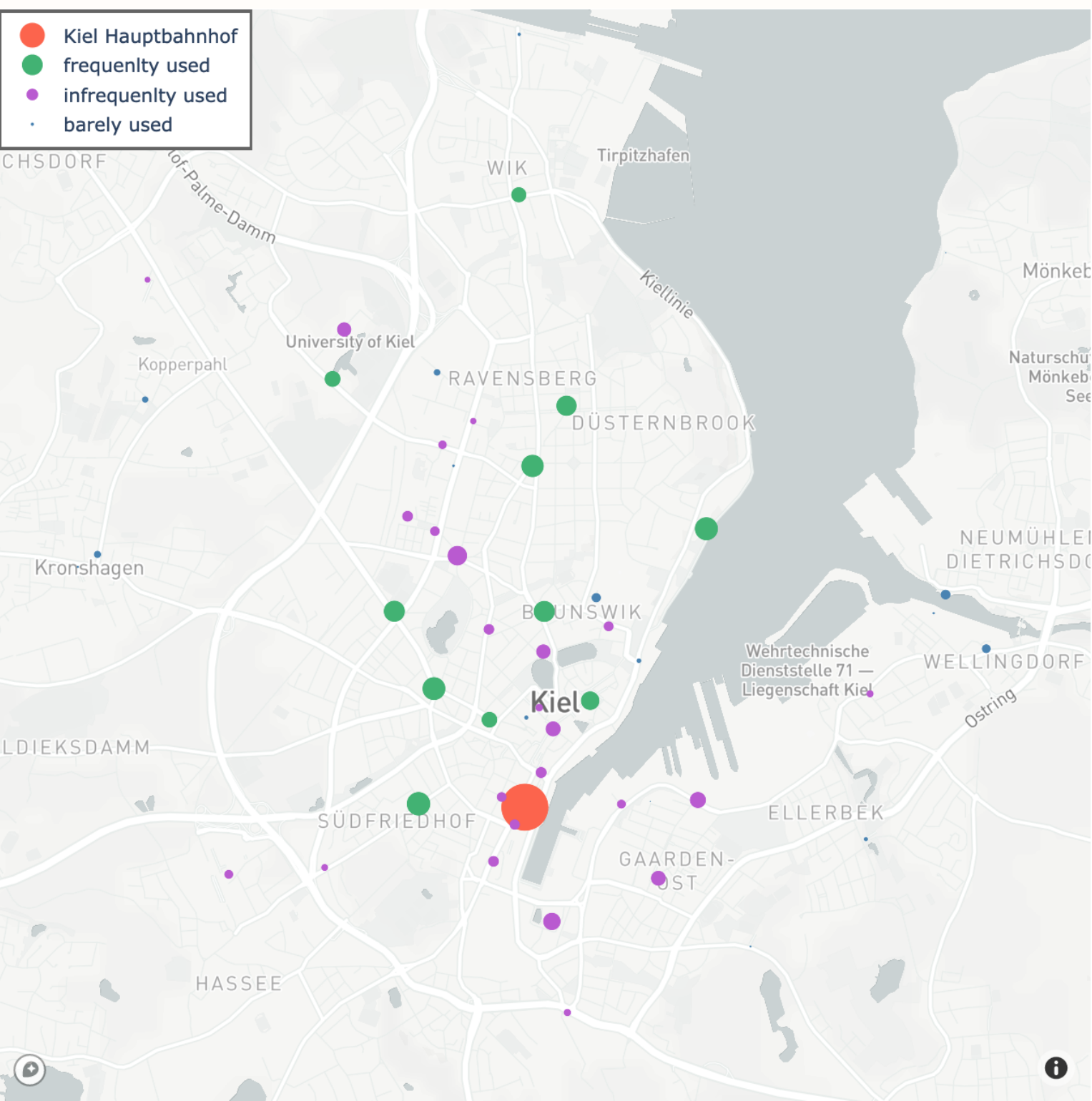


Figure 2: Clustering on Kiel map

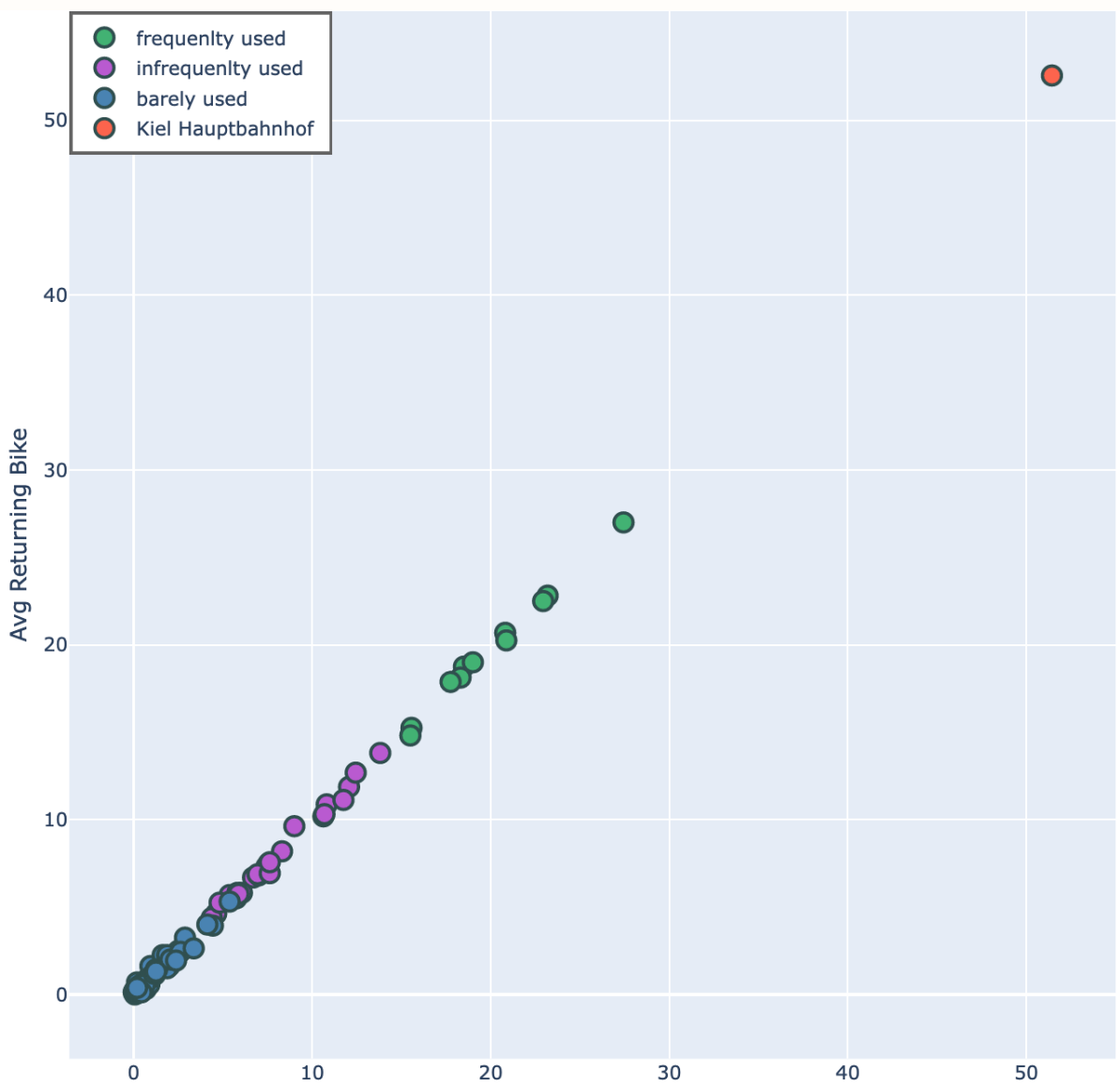


Figure 3: Clustering

- Station Kiel Hauptbahnhof differs to the other stations with its substantially higher usage
- The higher the usage, the closer to Kiel's centre

## What does an average day of a station look like?

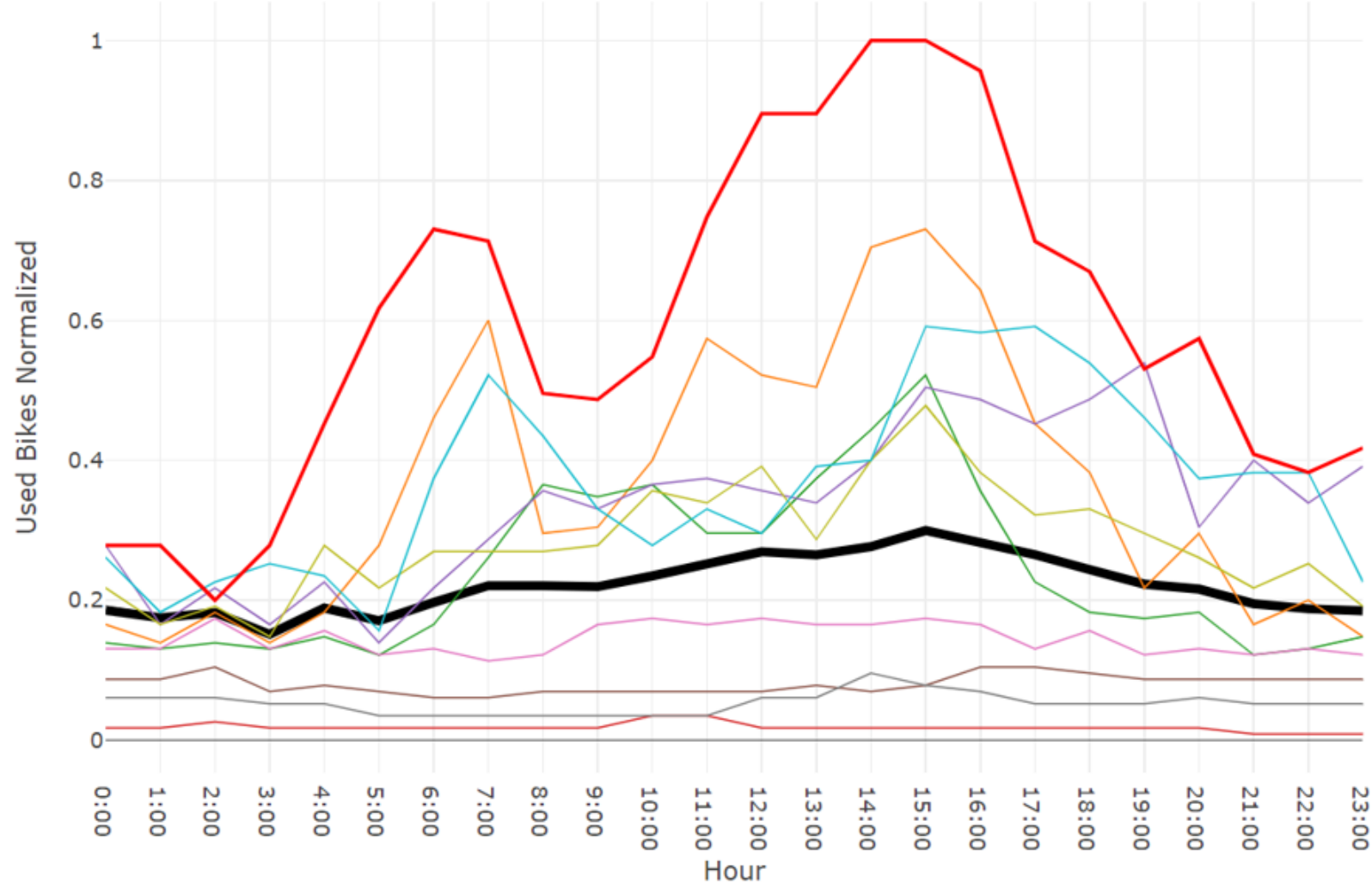


Figure 6: Average day of 10 stations

- Most of the stations have a similar trend
- They have their peak usages in the morning and afternoon and tend to be less used at night

## What are the most common routes?

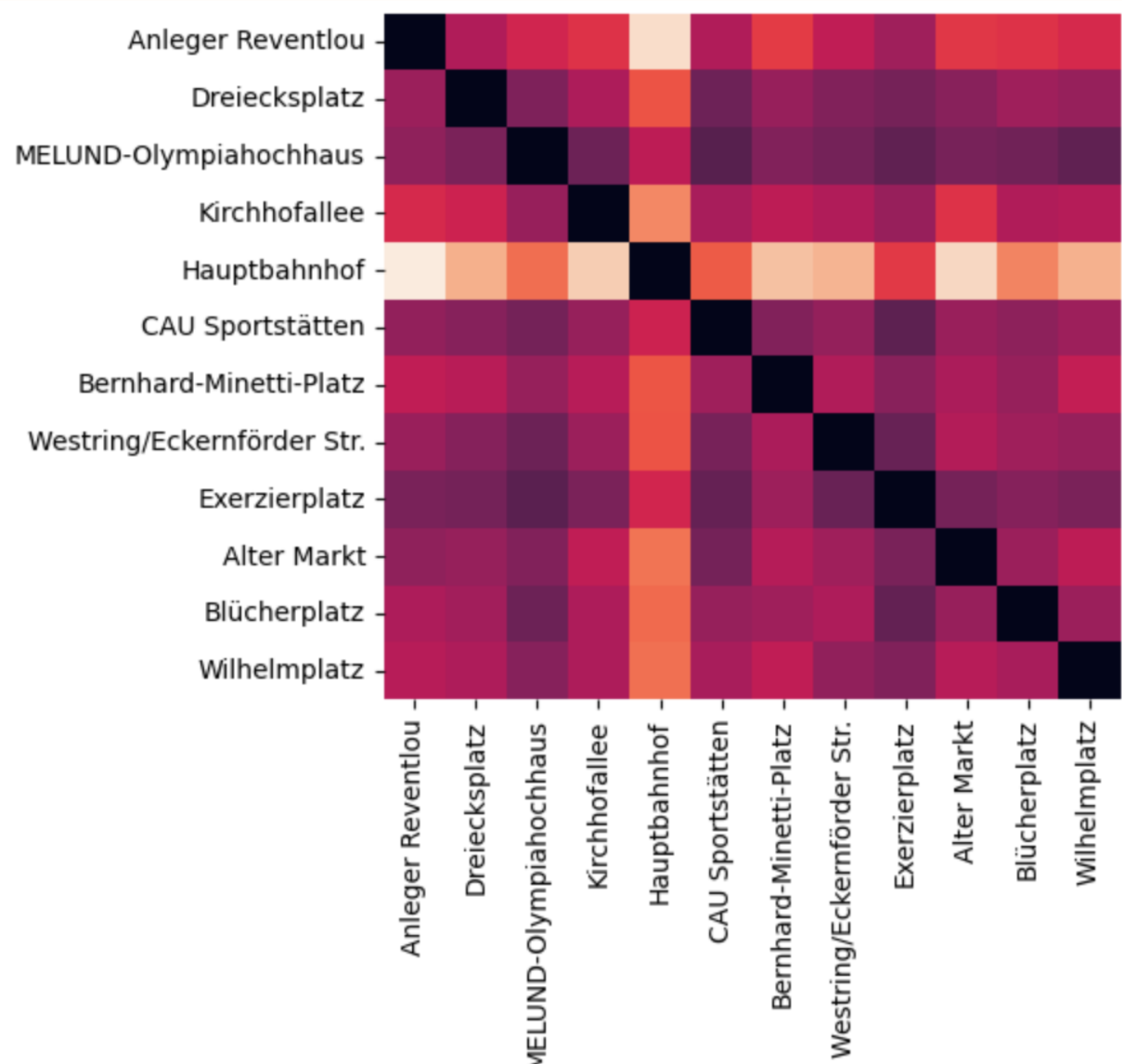


Figure 4: Most common routes between stations with the frequency of a route taken

- The most common route from each station is to the Kiel Hauptbahnhof station
- Shorter routes are more preferred to longer routes

## What stations do not fit in that pattern?

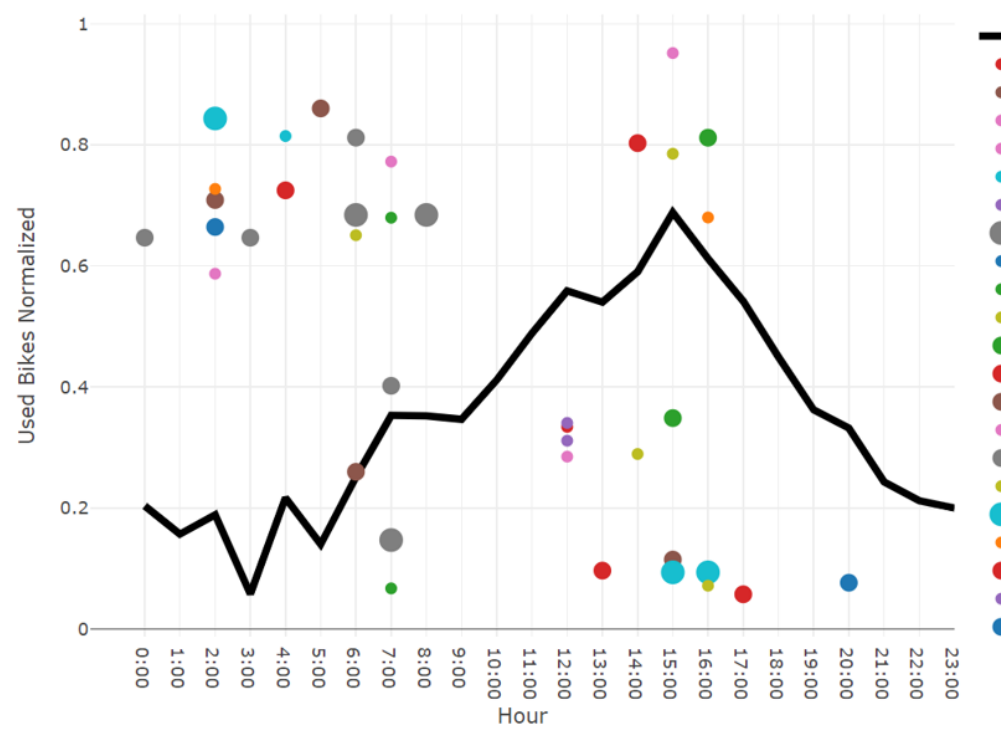


Figure 7: Outliers for each hour

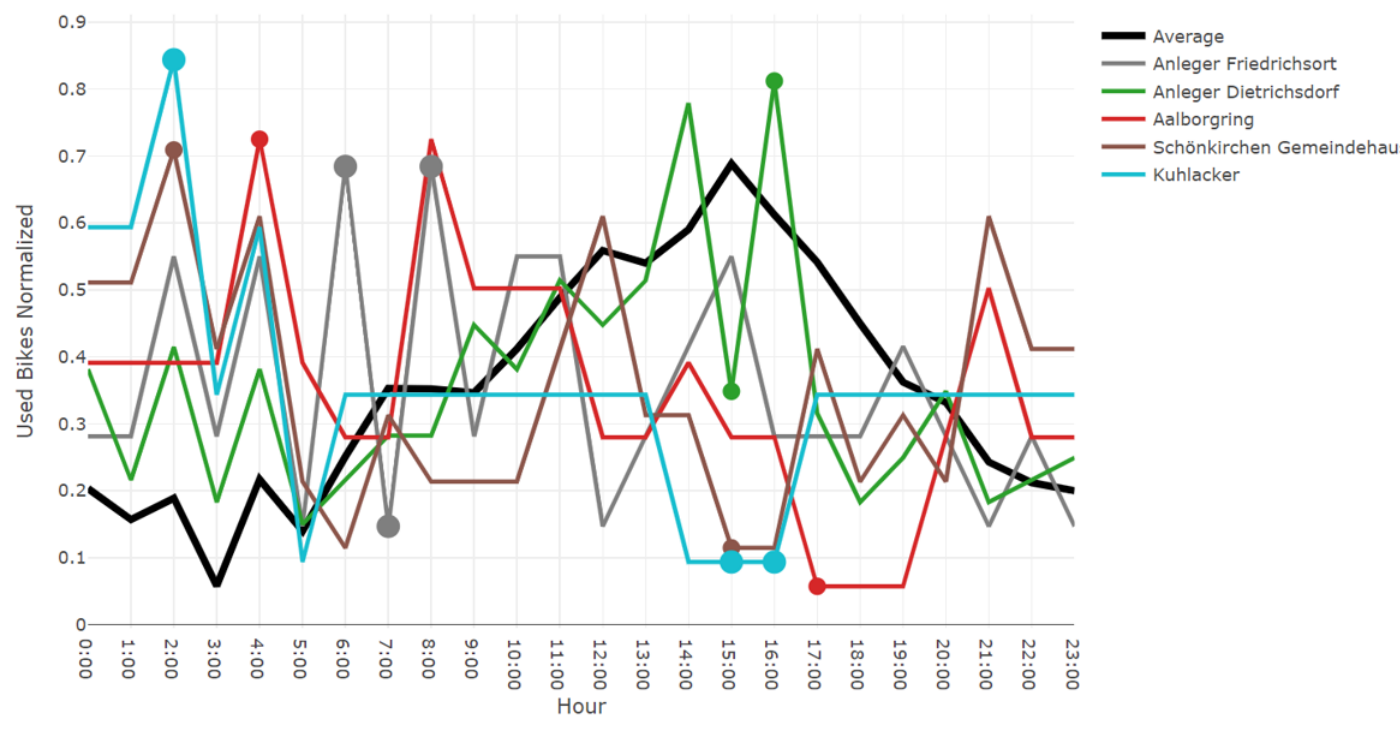


Figure 8: Strongest outliers

## Does weather influence the usage of bikes?

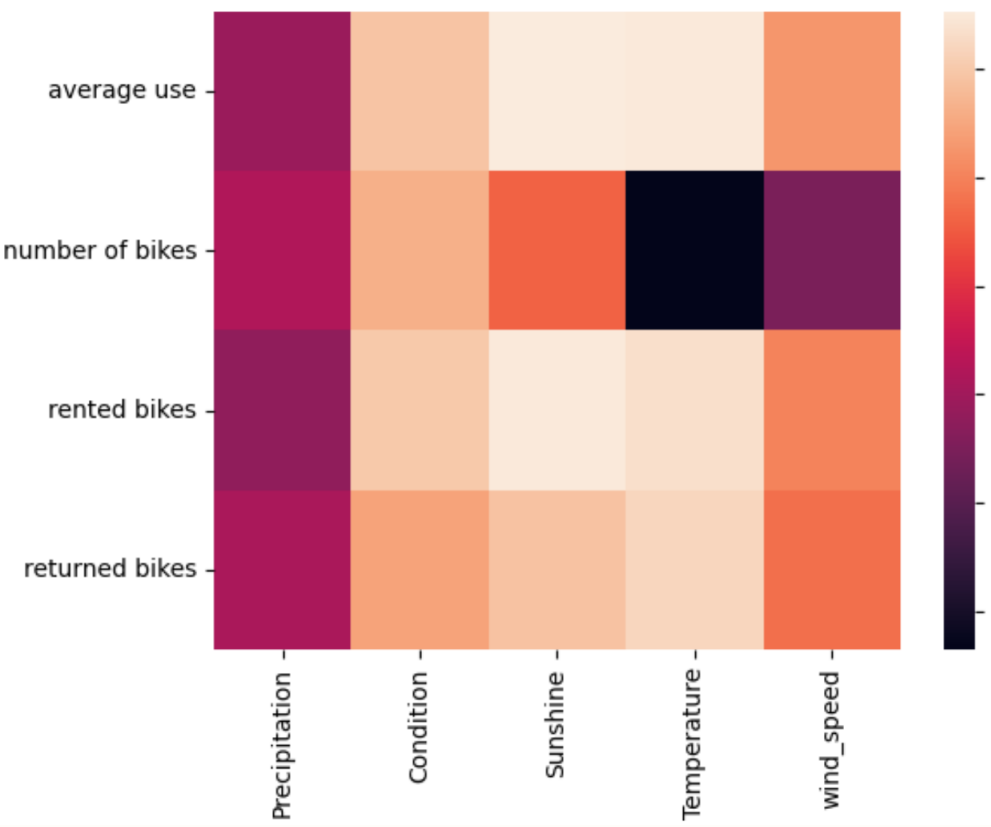


Figure 9: Correlation of weather and used bikes shown with correlation coefficient

- No significant correlation
- Presumption of reason: Too few data
- However: Correlation points in the expected directions  
Example: the higher the precipitation, the lower the usage of bikes

## What are the most important stations for the routes?

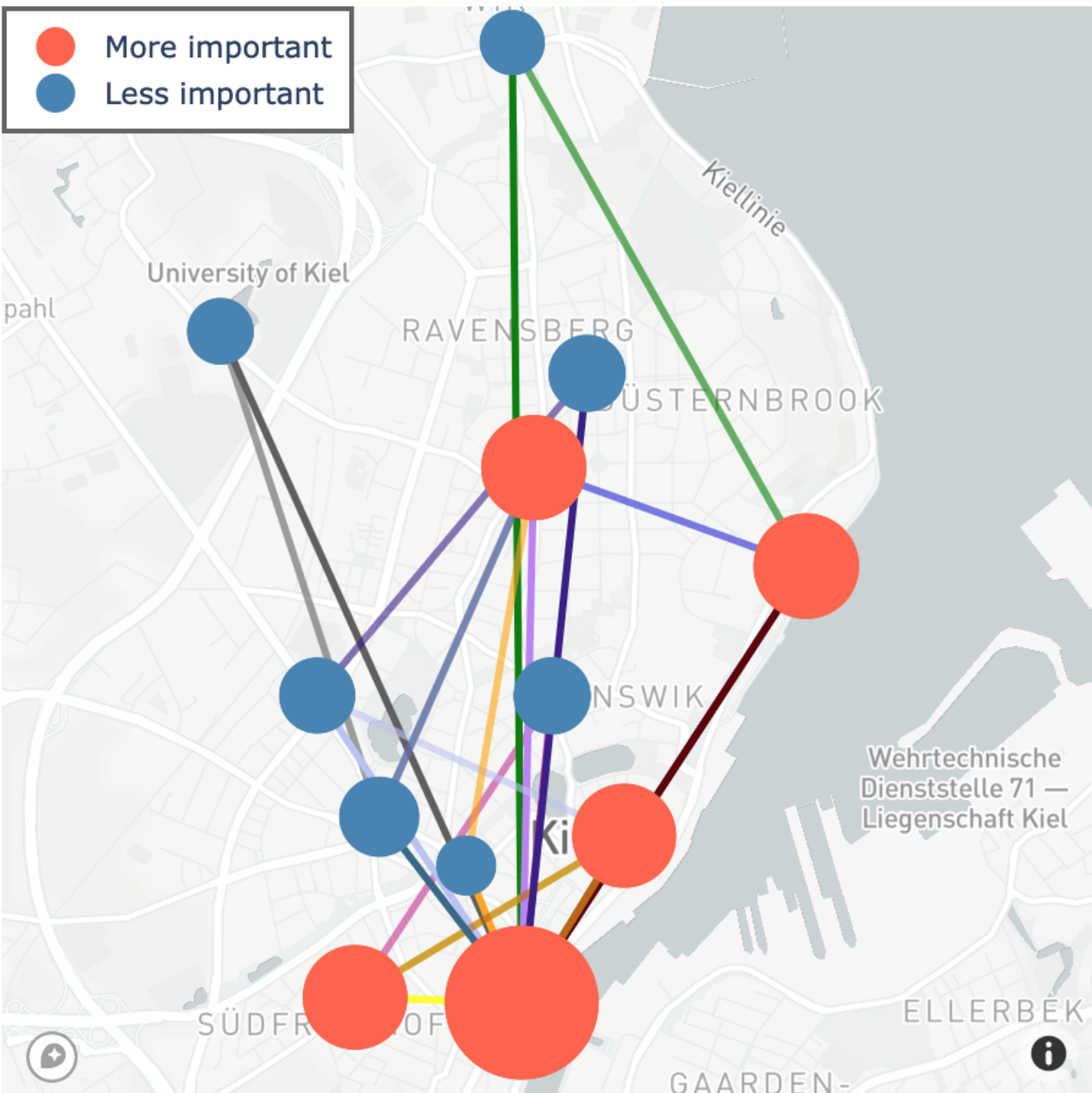


Figure 5: Most important stations in Kiel

- To get the most important stations we used PageRank
- The station Kiel Hauptbahnhof is the most important station, as it plays a part in most of the routes
- Other frequent destinations are: Anleger Reventlou, Kirchhofallee, Alter Markt and Bernhard-Minetti Platz

## Is the usage of bikes predictable based on weather conditions?

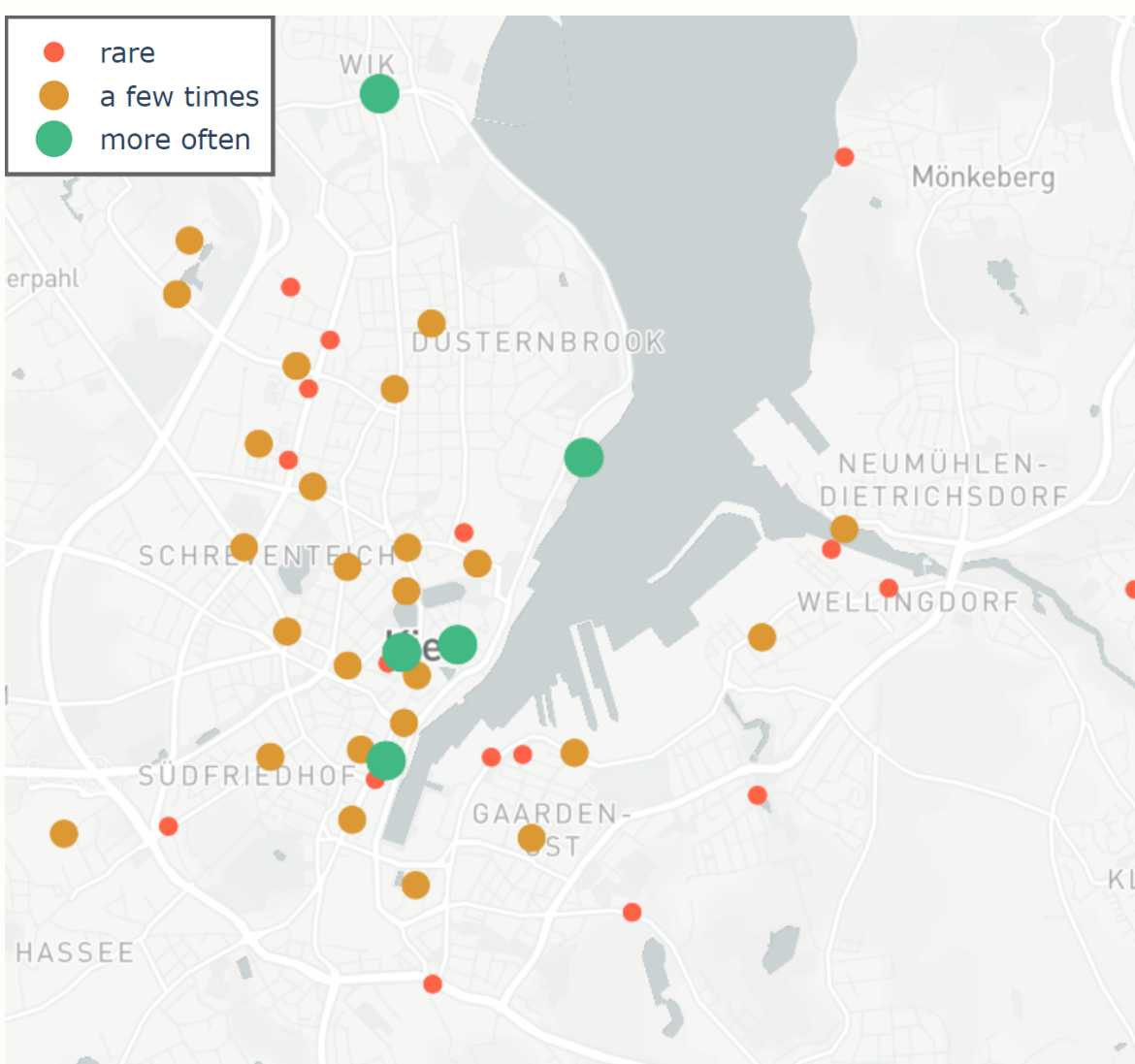


Figure 10: Prediction for good weather(sun, no wind & precipitation) for each station

- Classification model results in better prediction than Regression model (Accuracy: 16 % | 47 %)
- With more data and more input variables (e.g. week, days) the prediction will be more precise