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Bike Pulse
Exploring Shared Bike Mobility in Berlin

Summer School 2019

Dataset

The dataset consists of mobility data from two major bike sharing providers (*LIDL*-Bike and *Nextbike*) in the urban Berlin area. The dataset covers the period from April to Mid-July 2019. It includes stationary as well as free floating bikes. The data points we use are the start/end timestamp and location of each ride. From this, we extrapolated the corresponding duration and distance. This dataset was provided by the *Technologiestiftung Berlin*, namely by Alexandra Kapp and Fabian Dinklage to whom we would like to express our gratitude.

Aim of the Project

The aim of the *Bike Pulse* project is to design a real-time cockpit to monitor the biking behaviour within the city. The final objective is to enable policy makers in charge of the city's infrastructure to make informed decisions driven by adequate data analysis and visualization.

Methodology

After a quick exploratory data analysis (EDA), we aggregated the data along the geolocation and time interval (morning, noon, evening, night). With resulting data, we used the programming language *R* and the *Uber Deck.GL* visualization tool to build a proof-of-concept (POC). Our final product is an interactive dashboard with a user friendly interface to enable decision makers without technical background to use it comfortably and quickly get an insight.

The Interface
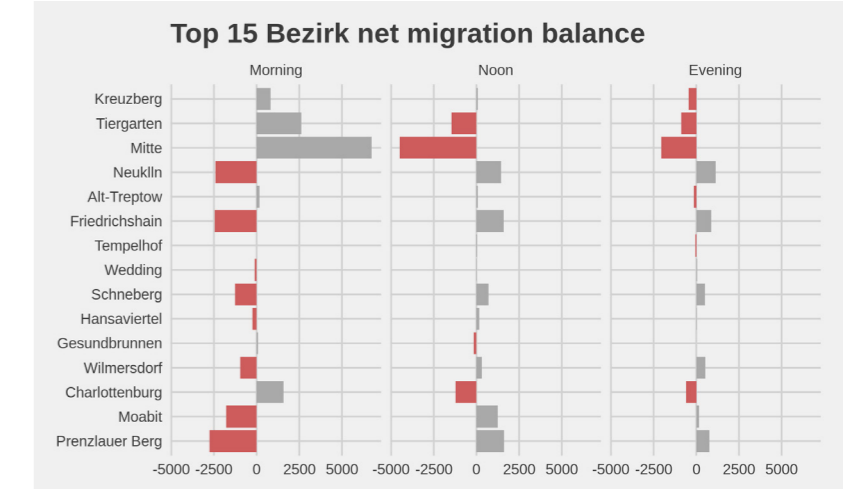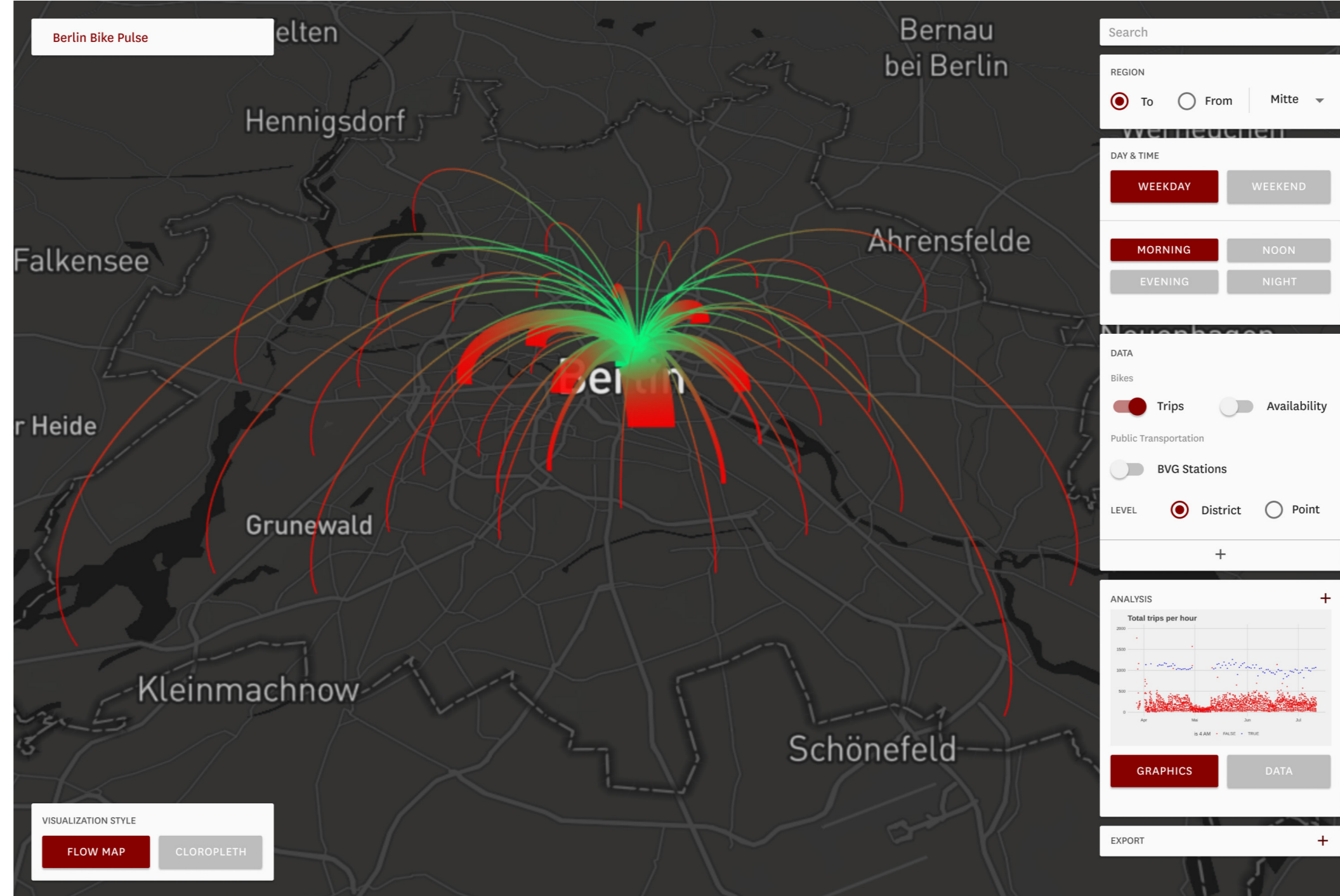
Clusters: dwellers' areas and business / nightlife areas.
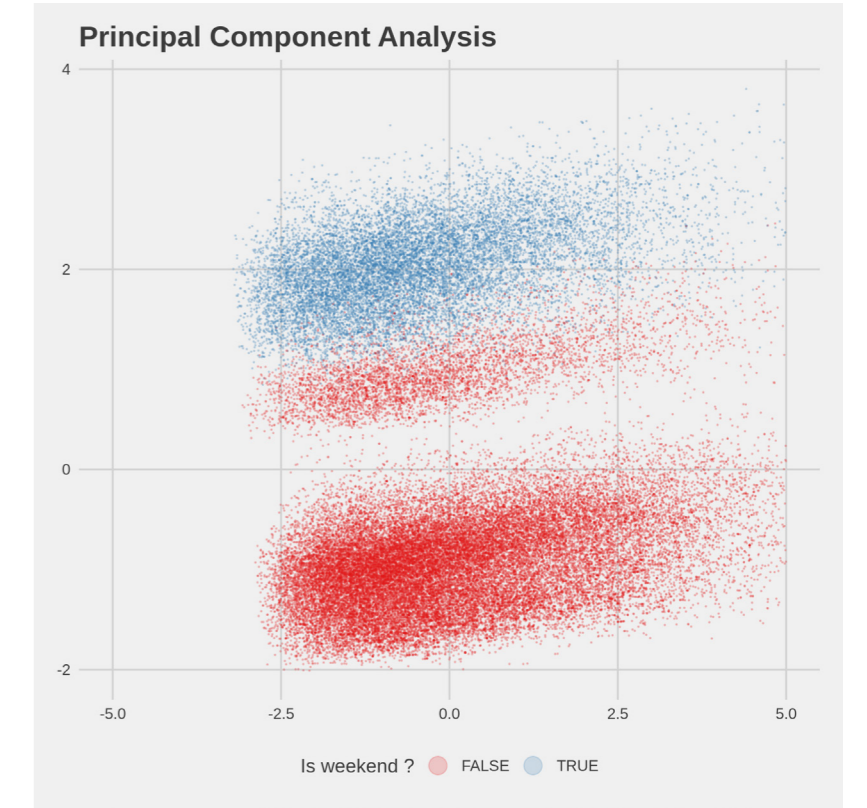
Spatio-temporal Movements

We used the official geospatial units of Berlin (*LOR* and *Bezirk*) to aggregate the data and allow the user to combine those data with external data points (demographics, housing, safety, public services and infrastructure). We explored different solutions to visualize traffic flows and patterns within an area.

INTER-NEIGHBOURHOOD FLOWS
FLOWMAP
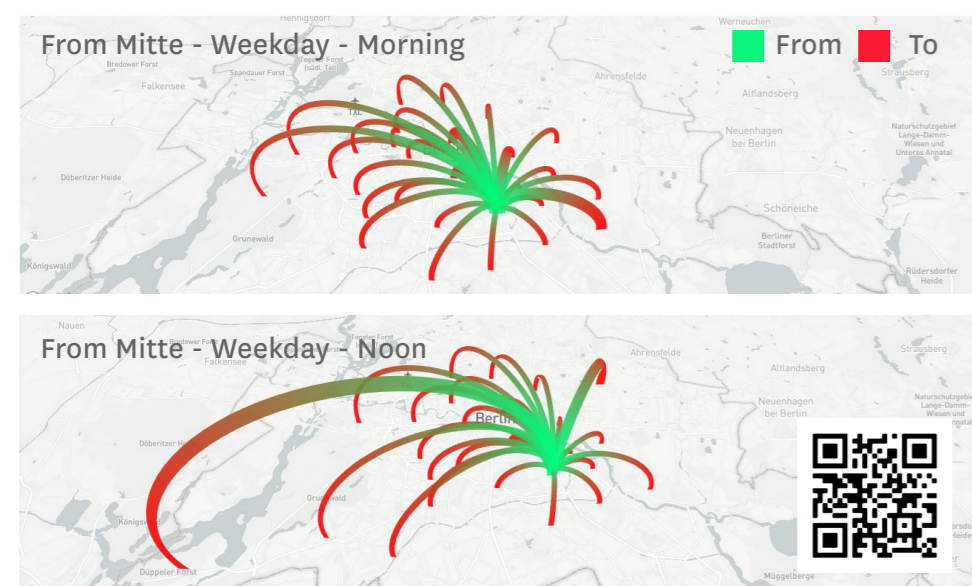
Scan the QR code to see the interactive visualization

CHOROPLETH

WHICH DISTRICTS DO BIKES START FROM AND RETURN TO?

Limitations

The datasets we used as the basis of this project do not provide the itinerary of each trip, thus limiting the possibility of a deeper analysis of the bike mobility pattern. Furthermore, as bike ownership in Berlin is historically higher compared to big cities like London or New York, the present datasets do not necessarily reflect the general biking patterns.
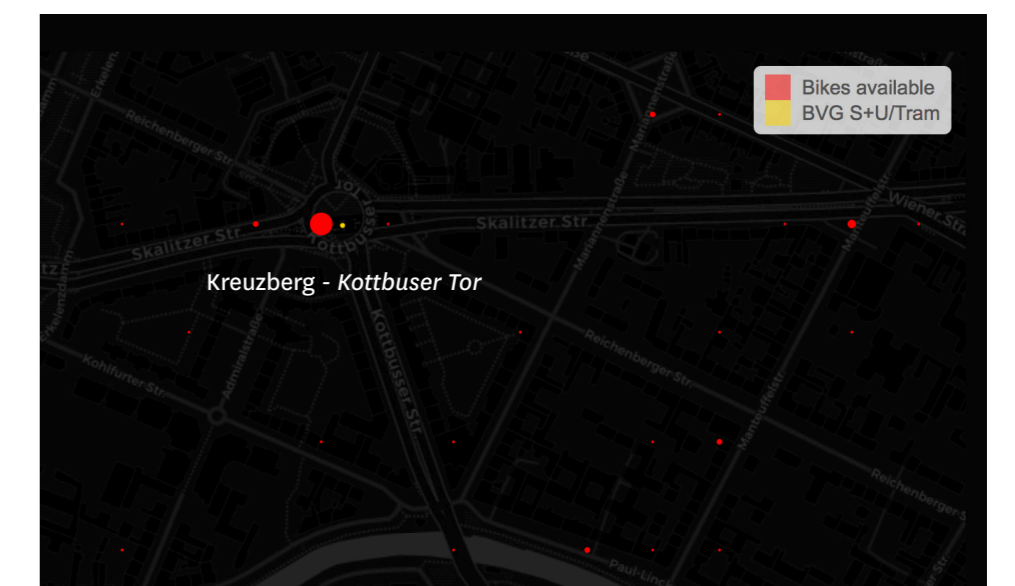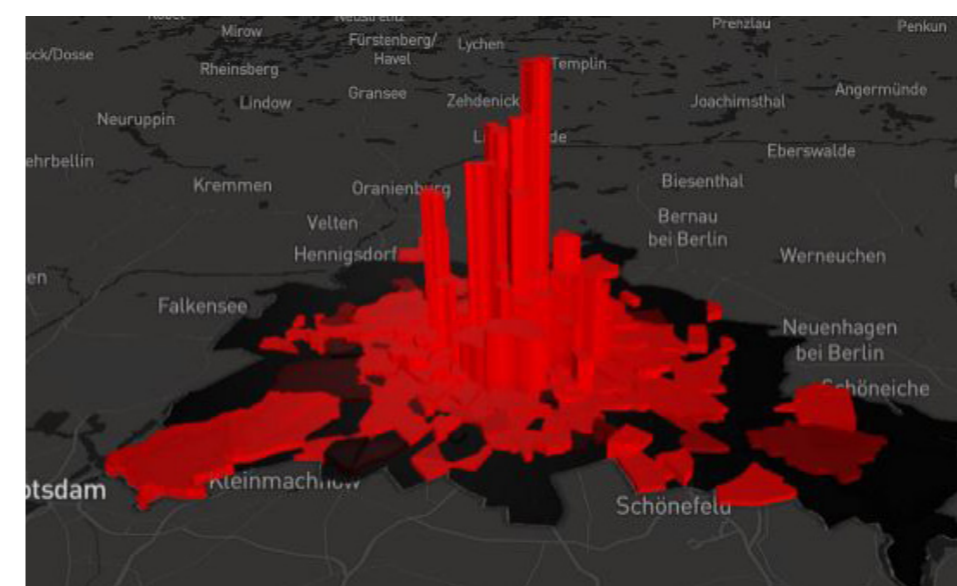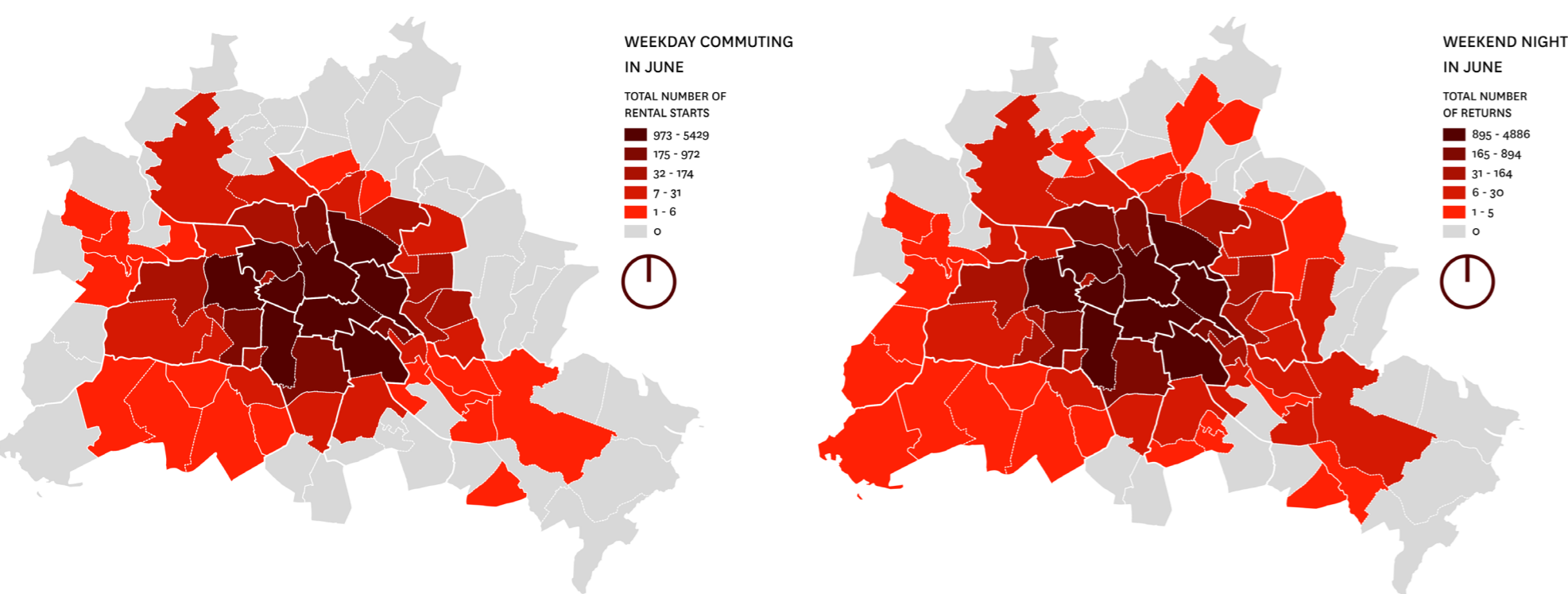
Where are the vacant bikes?

80 percent of the shared bikes are located in four districts, Mitte, Neukölln, Friedrichshein and Kreuzberg.

70 percent of the available bikes are within a 500 m range of BVG railway stations (S-Bahn, U-Bahn, Tramway). The steepness of the streets might have an impact on the availability (Prenzlauerberg).
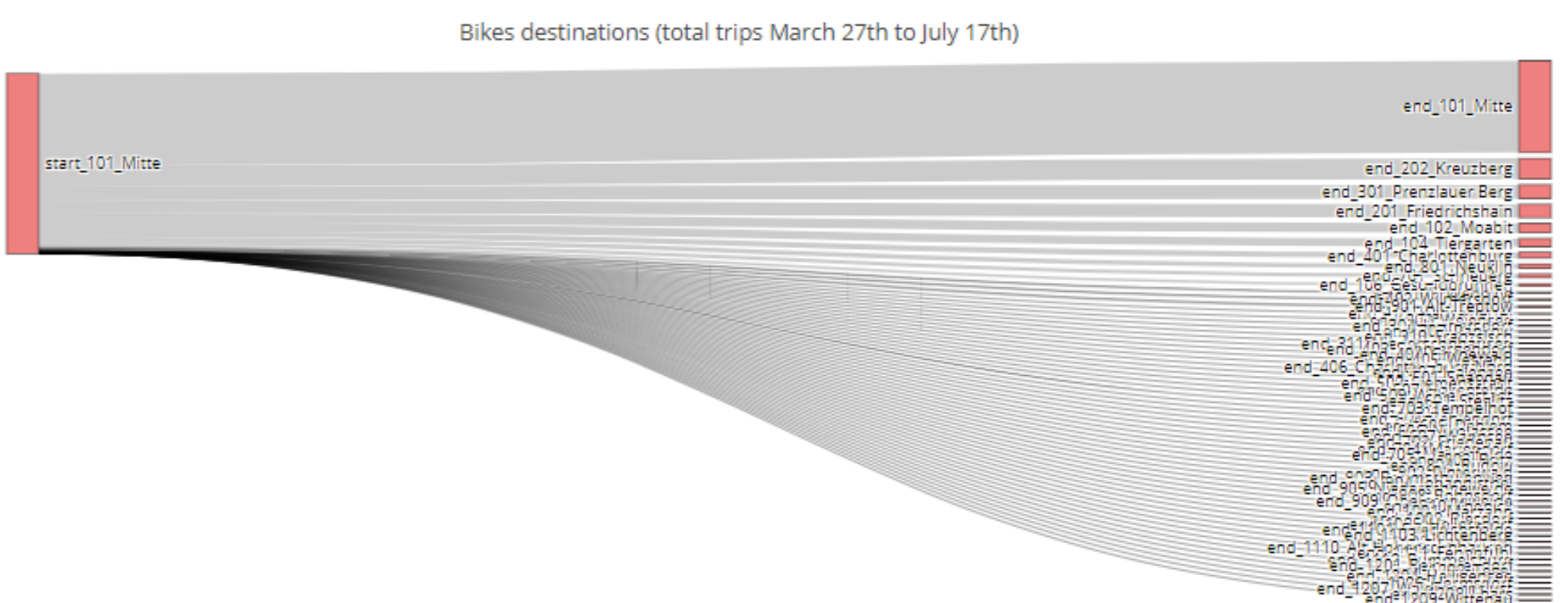

Internal Trips of Districts

The overwhelming part of the trips are intra-area and consist of short trips with direct distance of less than 4 km.