

Problem Statement

Given the data and insights from the Helsinki city bike network, how can the city optimize bike station placements and connectivity to further enhance transportation efficiency, especially for stations with high centrality and betweenness centrality?

Problem Importance

The success of a city bike network largely depends on the connectivity, accessibility, and usability of its stations. Efficient placement and connection of bike stations can lead to increased usage, reduced road traffic, better health outcomes for citizens, and more sustainable urban transportation. Recognizing stations with high centrality and betweenness allows the city to identify crucial transportation hubs and make informed decisions about infrastructure upgrades, station expansions, or maintenance priorities.

Proposed Approach

- **Centrality Analysis:** Delve deeper into the stations with the highest degree of centrality, like Haukilahdenkatu, Paciuksenkaari, and Huopalahdentie, to understand the reasons for their popularity. This could involve studying nearby amenities, public transportation links, and user demographics.
- **Betweenness Centrality Exploration:** Investigate stations with high betweenness centrality, such as Haukilahdenkatu and Lehtisaarentie, to understand their role in the network. These stations often act as bridges or connectors and might require more bike slots or better maintenance to cater to the high flow.
- **Community Detection:** Implement community detection algorithms to identify clusters within the network. This can reveal regions or areas with interconnected usage, helping the city tailor services to different communities more effectively.

Expected Outcome

- **Enhanced Network Design:** Recommendations on improving the bike network design, which could include adding more connections between certain stations, introducing new stations, or expanding existing ones.
- **Infrastructure Recommendations:** Specific suggestions for infrastructure enhancements around the high centrality stations.
- **Community Insights:** A better understanding of how different communities or regions within Helsinki utilize the bike network, leading to more personalized and efficient services.
- **Increased User Engagement:** By focusing on the most crucial stations and optimizing them, it's expected that the bike network will witness increased usage and higher user satisfaction.