

Berlin vs. Amsterdam

Quality versus Quantity: A Race to Bike Friendliness

Introduction

One of the things Europe is widely known for is diversity in forms of transportation. Public transport, walkability, and bike infrastructure is much better than other places in the world. This is important because this flexibility allows people to forgo the need to have cars, which can be quite expensive to own. This project aims to compare one aspect of transportation, biking, between Berlin and Amsterdam. The latter was chosen because some people call it the “Cycling Capital” of Europe (or even the world). How far is Berlin from being the “Cycling Capital”? This project answers this question.

Objective

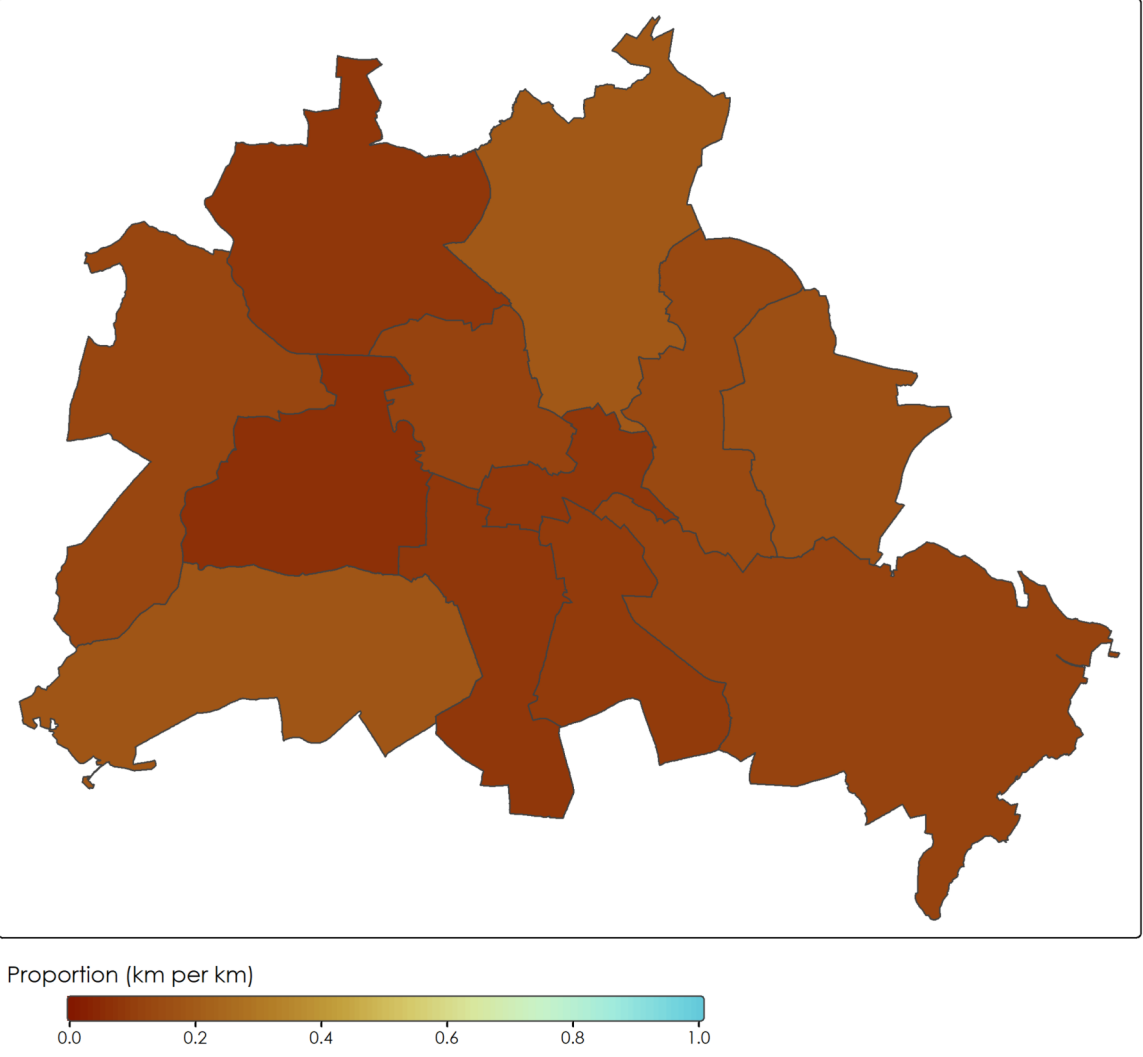
There are two metrics that are calculated to compare Berlin and Amsterdam. The **availability** of cycling infrastructure is determined by the **ratio of kilometers of bike paths to roads**. Availability does not necessarily mean that the city had to go out of their way to create paths only for bikes, it could simply be painting over existing roads to add a bicycle lane. The **quality** of bicycle paths is determined by the **percent of bike lanes that are sequestered from the road**. This aims to address. Cycling paths directly adjacent to the roads can be more risky for cyclists than having a dedicated separated lane.

Methodology

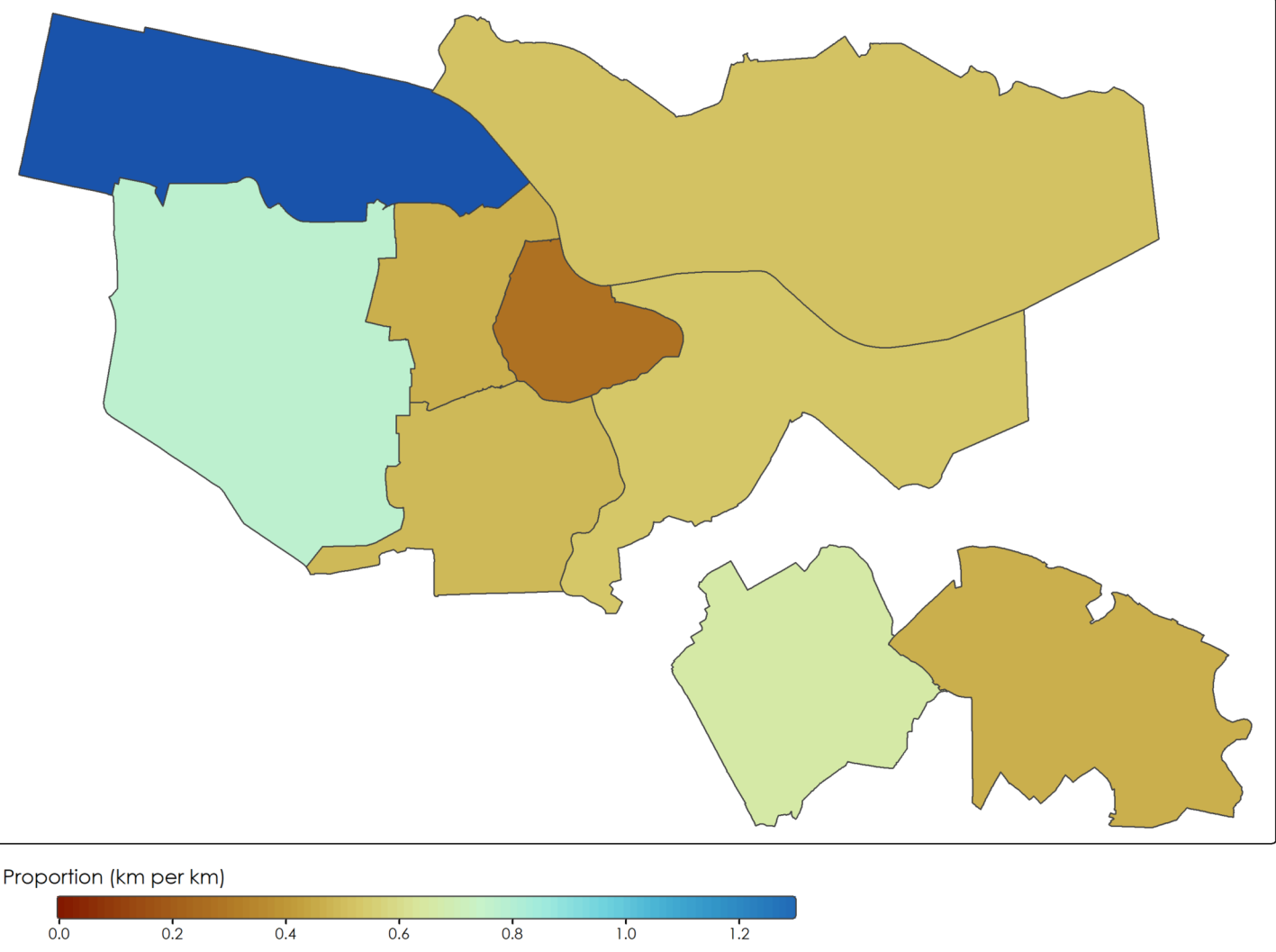
- Data Sources:**
- Open-Street Map (for roads and bike paths)
 - City of Amsterdam (for Borough-level Information)
 - Moodle (for Borough-level map of Berlin)

- Process:**
1. Use the API to access OSM data
 - The following OSM highway categories are determined as **roads**: “Primary”, “Secondary”, “Tertiary”, “Residential”, and “Trunk”. *Note: Although bikes are permitted on many of these roads, it will not be classified as bike paths for this analysis.*
 - The “separated” bike path is officially a highway category according to OSM, however for this analysis it will be a **cycleway** (a sub-category of **bike path**).
 - The “lane” and “shared lane” which are officially a cycleway category according to OSM will be added to the **bike path** category.
 2. Check and transform the files to match the same Coordinated Reference System (WGS1984).
 3. Calculate the total length of all the roads, cycleways, and bicycle paths in each borough.
 4. Convert units to kilometers
 5. Calculate the metrics:
 - **Availability** = (cycleway + bicycle path) / roads
 - **Quality** = cycleway / (cycleway + bicycle path) * 100

Berlin: Kilometers of Bike Paths per Motor Vehicle Roads



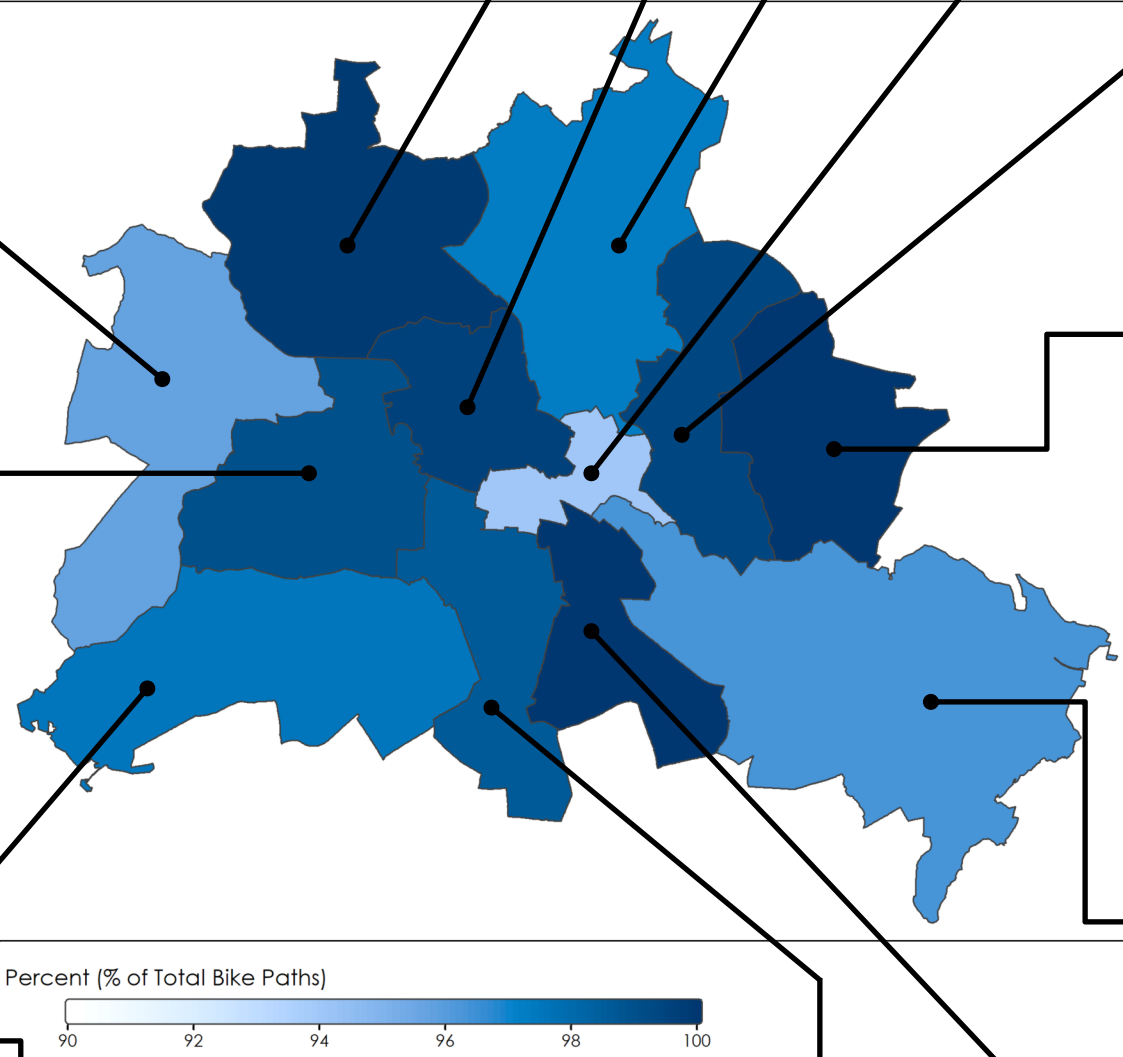
Amsterdam: Kilometers of Bike Paths per Motor Vehicle Roads



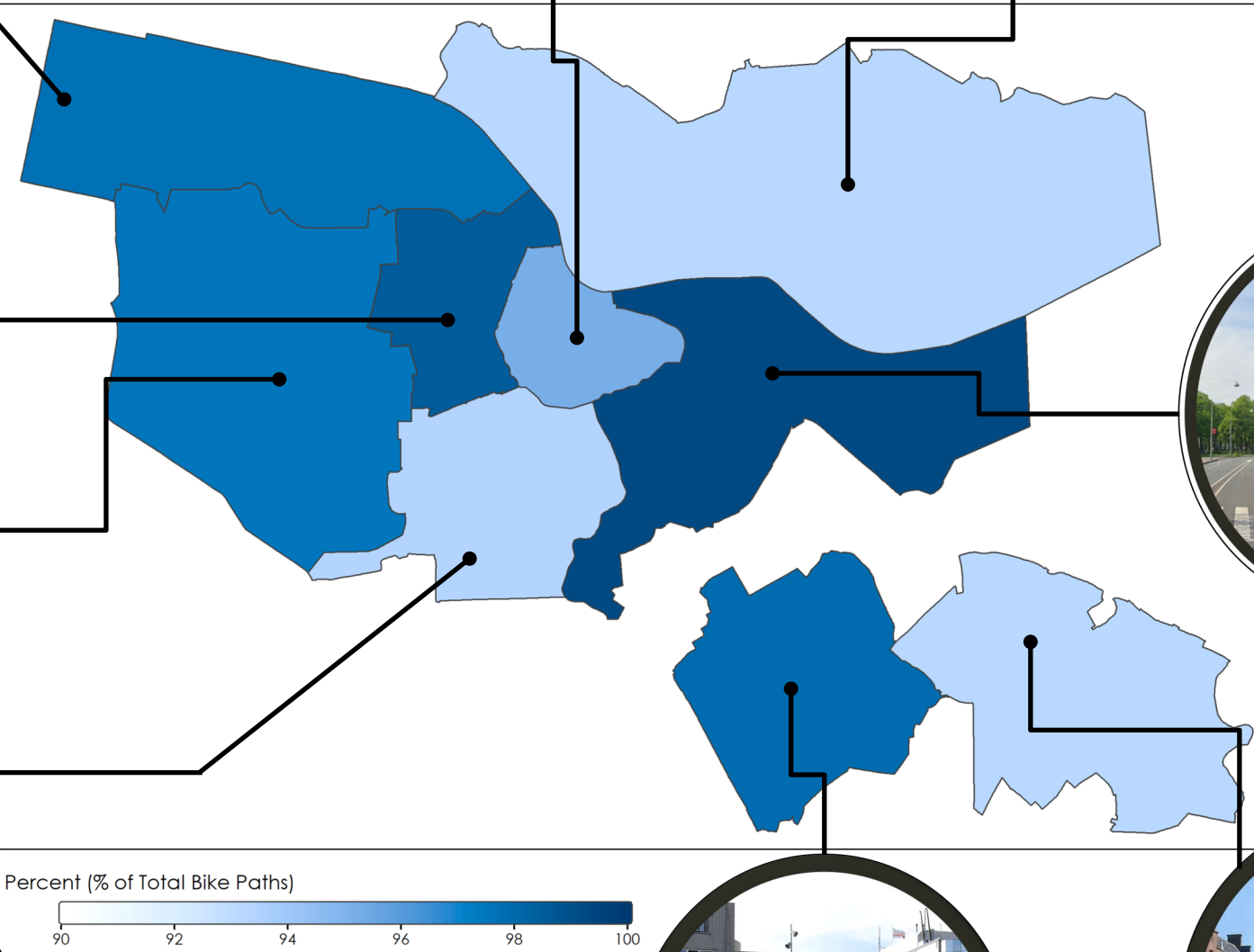
Results

- Berlin has more roads overall (not seen in graphs).
- Berlin’s distribution of bike paths are rather uniform (everywhere is nearly equally as lacking bike paths).
- Amsterdam has higher ratio of bike paths to roads compared to Berlin; some areas have more bike paths than motor vehicle roads!
- Interestingly, the Amsterdam Centrum, which most people think has the best bike lanes, has the lowest proportion of bike lanes to roads.
- Most areas in Amsterdam have less than 0.8 km of bicycle paths per 1km of roads.
- More Berlin boroughs have separate cycle paths, which would normally suggest a higher quality biking experience.
- Both Berlin and Amsterdam have more than 90% of bike lanes as a separate cycle path.
- Suburbs seem to have higher proportion of bike paths compared to roads.

Berlin: Separated Cycle Paths



Amsterdam: Separated Cycle Paths



Conclusion

Amsterdam retains its “Cycling Capital” title for the time-being (at least when competing with Berlin). Berlin still needs to improve the availability of biking infrastructure compared to roads. This is important because Bikes should have their own space when traversing for safety. Berlin is doing a great job at keeping its cycling quality similar to that of Amsterdam.

It is important to note that a major underlying assumption is that roads and bike paths are being properly logged in Open Street Map. Any mistakes of misclassification significantly reduces the accuracy of the assessments. For example, someone might put a quiet pedestrian-priority road which allows car traffic as a tertiary road (i.e. not a bike path). In addition, the path quality may not reflect the actual cycling quality on the ground. For example, a sketchy separated bicycle path at the edge of town would be classified as “high quality” but a quaint cycling path next to a city center road would not.

Despite the limitations, these heuristics can serve as a metric to gauge the availability and quality of cycling infrastructure in a city. These findings can be useful for both policy-makers and regular citizens. The former can use this information to see areas for improvement. More bike paths per kilometer of road improves transport safety and bicycle adoption which can reduce one’s carbon footprint. The latter can use these findings to determine where they would like to live.