VMo4Orte
Vernetzte Mobilität für lebenswerte Orte

GeoDPA'24
23.-25. April 2024
in Oldenburg
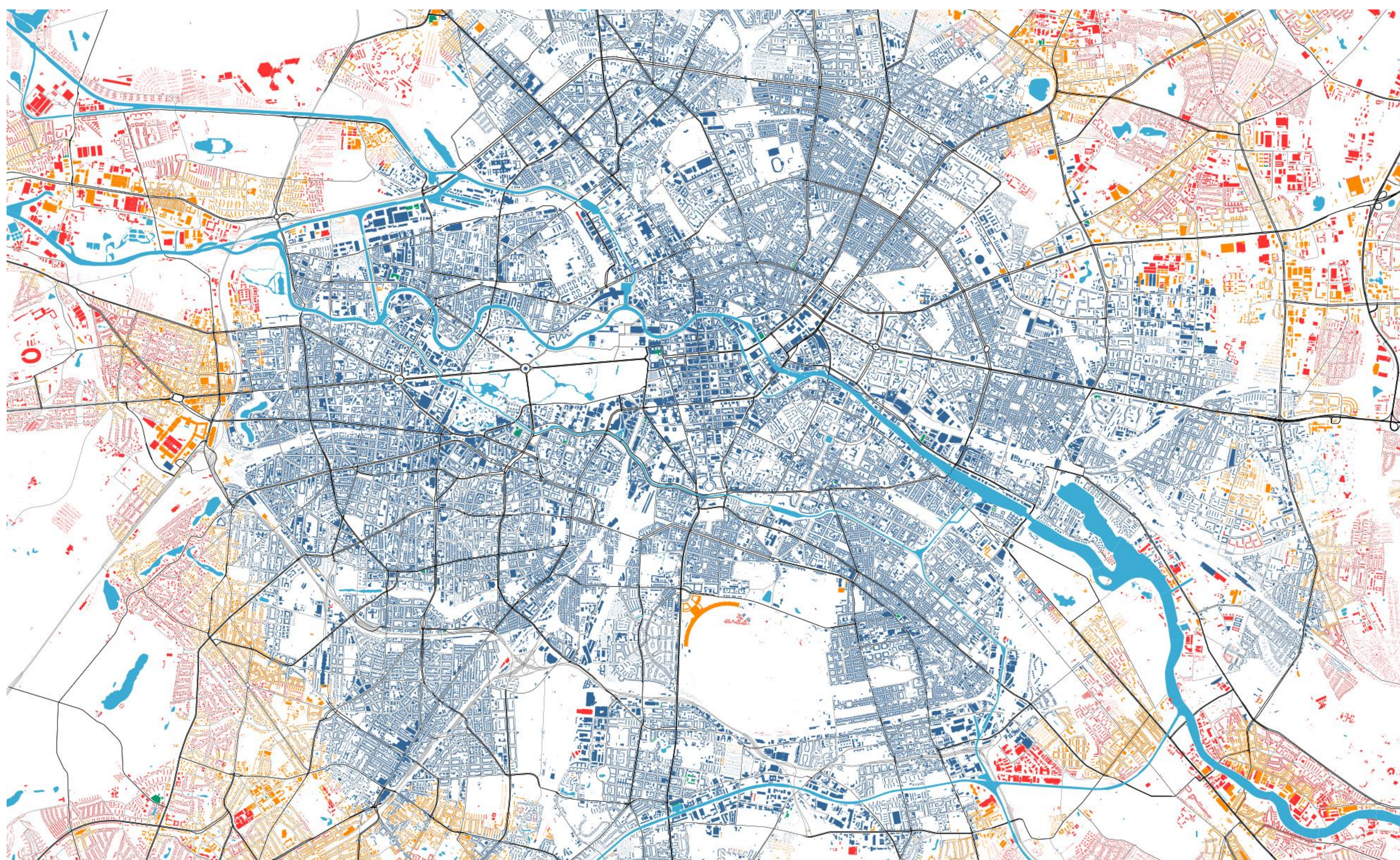International Conference on Geoinformation Data, Processing and Applications

# Using accessibility measures for determining undersupplied areas

Daniel Krajzewicz, Simon Nieland

German Aerospace Center (DLR), Institute of Transport Research, Berlin (Germany)
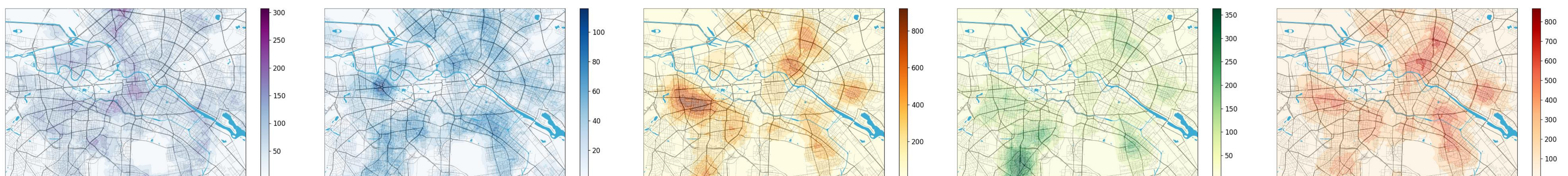
The color of each building indicates which transport mode is required to access all activity locations a six-year-old child needs to visit within a week in a reasonable time.

- Foot
- Bike
- PT
- MIT
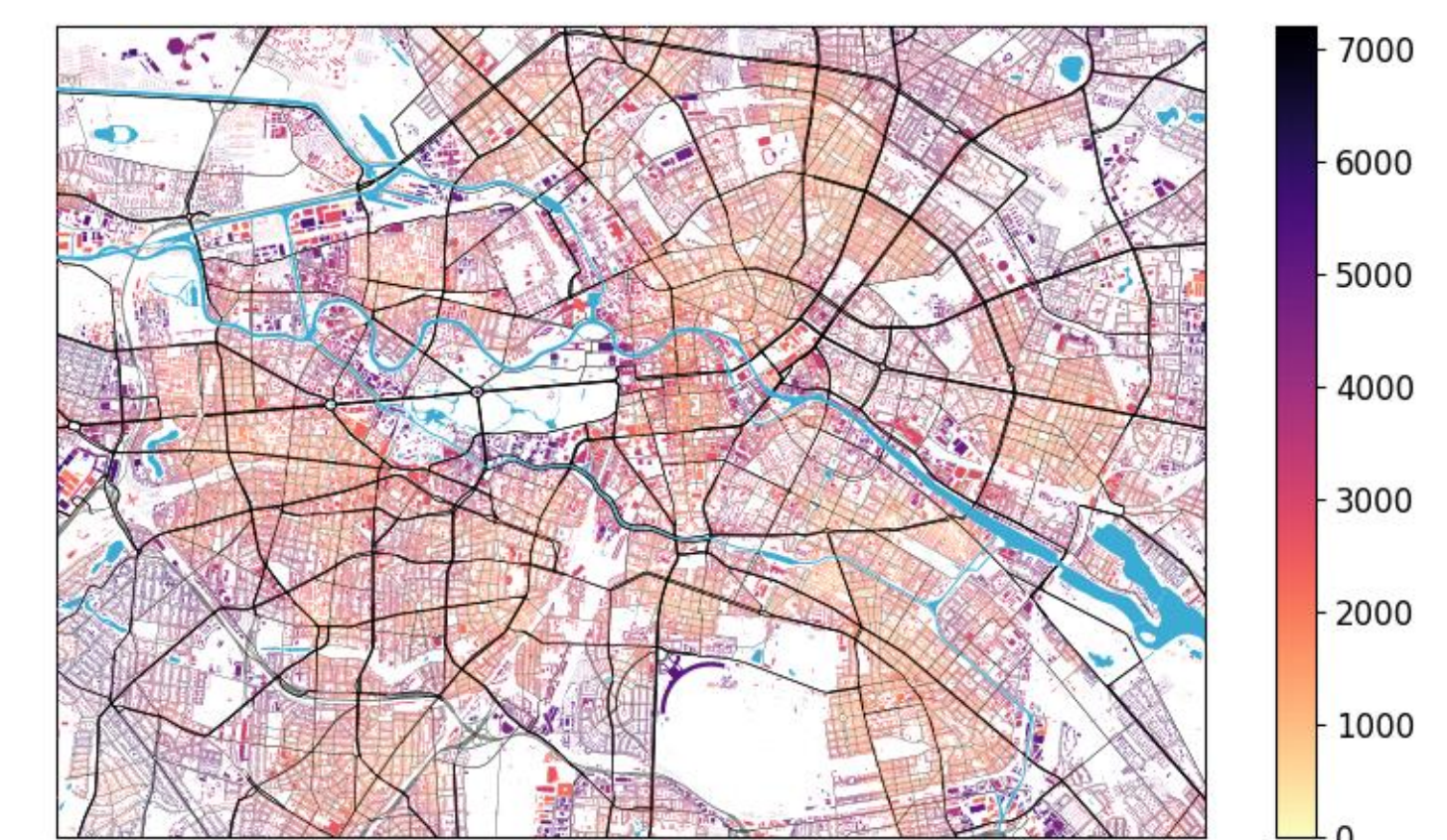
The accumulated travel time for a whole week.

Components: Number of locations within 15 minutes walking distance for (from left to right) work, education, shopping, errands, and leisure.

Task

The concept of 15-minute cities gained interest in recent years as it promises livable neighborhoods that offer local access to all activities needed to be performed.

The aim here is to quantify which areas can be counted as 15-minute areas.

For this purpose, we distinguish five activity types that correspond to the main activity types of the German mobility survey "Mobilität in Deutschland". These activity types are: **work, education, shopping, errands,** and **leisure**.

For each of the activity types, we determine the accessibility of the corresponding facilities. In addition, we weight the access to the activities according to the frequency with which they are visited by different person groups.

Accessibility of activities

Locations where respective activities can be performed at as well as the transport network are extracted from OpenStreetMap. GTFS data is used to represent the public transport supply.

Starting at each building, the accessibility of each activity type is calculated for the transport modes walking, bicycling, public transport, and motorized individual transport. A mode is considered as sufficient as soon as it allows the respective activity's location to be reached within 15 minutes.

Open Source Solutions

The results presented here were generated using the open source accessibility measures calculation tool „UrMoAC". UrMoAC is available at:

https://github.com/DLR-VF/

Weighting with frequencies

Frequencies of performing the different activity types are calculated from the German mobility survey "Mobilität in Deutschland" for different groups of people.

Results

The results show
- which activity locations are missing in which area,
- the mobility demand and required transport modes for different groups of people and areas