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Walkability in the neighborhood of water areas – the case of Krakow

Introduction
Cities as a highly anthropologically transformed environment, due to a number of sustainable development challenges, should be managed in users friendly way, regarding environmental protection. Urban planning requires a significant change in the approach to spatial planning and urban development, which should lead to the use of social and landscape values of green- and waterscapes. The aim of this study is to present how a big city like Krakow (Poland) manages the accessibility of waterfronts for pedestrians.

Material and methods
The analysis is based on the walkability concept and the methodology consists of the analysis of functions density maps and a network of publicly accessible sidewalks. They were conducted using open source data. Identification of walkability values in the city was determined based on point data (object with a specific function) and networks (pedestrian infrastructure) using Kernel Density and Line Density tools in GIS. The created synthetic indicator takes into account access by means of pedestrian infrastructure to public transport stops, parks and recreation areas, various attractions, shops, and services (Fig. 1).

Results
As mentioned before, to study the attractiveness of the urban area for pedestrian movement, it was assumed that important factors are the proximity of public transport stops, different amenities, parks and recreational places, as well as appropriate infrastructure in the form of pavement network. Density estimations are presented in the schematic below.

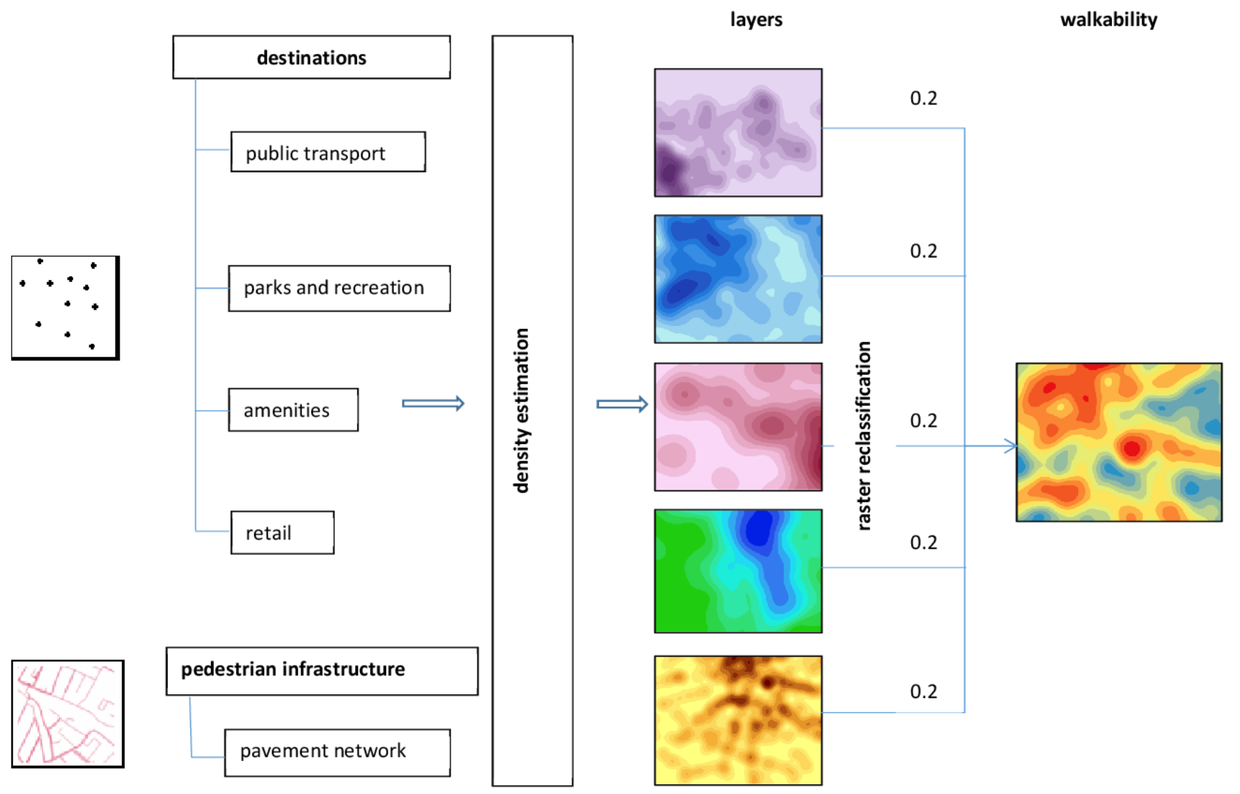
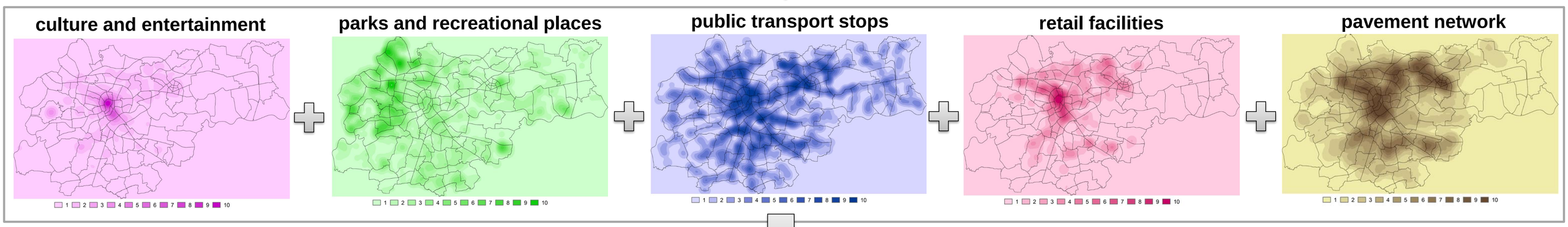
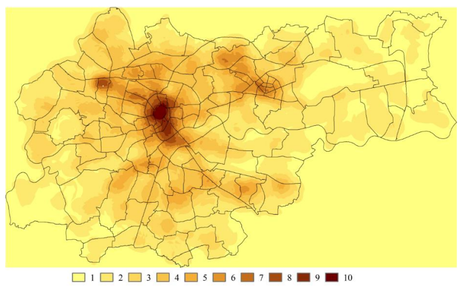


Fig. 1. Steps of walkability estimation.

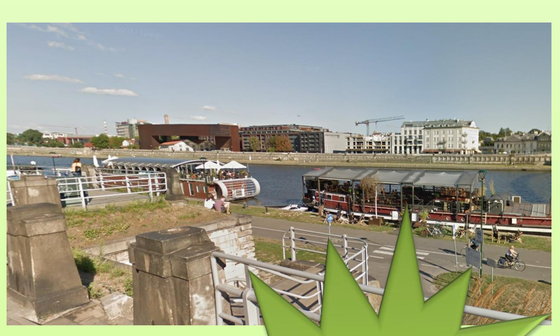


2÷4

Source: Google Street View



Source: https://msip.krakow.pl/



7÷9

Source: Google Street View

Conclusions
The used methodology has a diagnostic function, making it possible to clearly identify the problematic areas in the city or district. The methodology can be also used to forecast different states of land use and to predict the impact of changes in the location of various functions and pedestrian infrastructure on walkability. In this particular case, it helped to demonstrate that the main key factor for walkability near cities' waterscapes is mainly dependent on facilities and amenities accessibility, rather than a pedestrian infrastructure.

Read more about methodology:
Telega, A., Telega, I., Bieda, A. (2021). Measuring Walkability with GIS – Methods Overview and New Approach Proposal. *Sustainability*, 13(4), 1883. https://doi.org/10.3390/su13041883

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