

P 34. A GIS-Based Network Analysis of Urban Green Spaces Accessibility and Greenness: A Case Study in Portugal

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Urban green spaces are an integral part of any urban area, and their benefits and importance are very well known. Usually, urbanization results in a high level of biodiversity loss. Living in an urban environment with easy access to green areas is very important for most people. The aim of this study was evaluating the amount of urban green spaces and the connectivity and accessibility (walking distances) of urban green spaces to the population. Urban green spaces were identified, georeferenced and digitalized using ArcGIS software. Population census data were used to explore its accessibility to the population. The analysis of the existing network of green corridors in the city was performed using the roads network and urban green spaces as nodes by the Network Analyst extension in ArcGIS software. Twelve green areas of the city were recognized as network nodes, and the pedestrian distances between them were measured, as well as different coverage areas that allowed analysing the density of existing green spaces.

The results showed that the index of green areas obtained for the main green structure (urban green spaces 5, 6 10 and 12) has found to be below the recommend (17 m² per inhabitant) while for the secondary green structure (the remaining urban green spaces) the value is in accordance with the recommended (10 m² per inhabitant). The total length of the network is approximately 266 km, and the green corridors occupy approximately 117 km (44%). So, more than half the road network does not have green corridors. The resulting walking route for the shortest path, considering all the selected urban green spaces, has a total length of approximately 11.4 km considering its ends the nodes 9 and 3 (initial and final or vice-versa). Regarding the presence of green corridors in this route only 33% has no vegetation (3.8 km).

This study can serve as a tool to support green areas planning throughout the city. In areas with less green density, restoration actions could be promoted, maintaining the pre-existing vegetation, and improving the index of green areas per inhabitant. The green corridors maintenance and planning can also be a part of the strategy to improve biodiversity in urban areas.