

CITIES IN SHAPE: CHARACTERISING ACCESSIBLE URBAN AREAS

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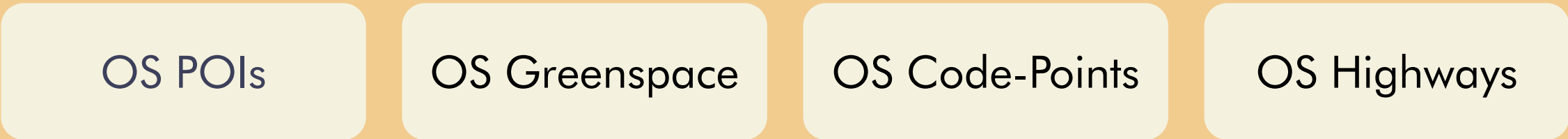


1 BACKGROUND

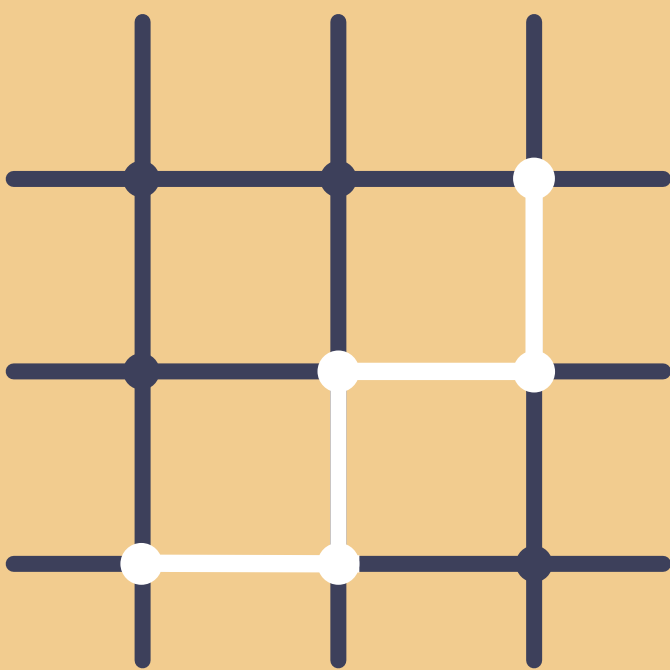
Accessibility is the ease with which opportunities can be reached from an origin. But, **what does accessibility look like for different people?** This project aims at answering this question by exploring how different factors (e.g. urban morphology, socioeconomic factors) affect access to essential activities for different demographic groups.

2 DATA & METHODS

The data used in this project was retrieved from Ordnance Survey. We use Code-Points (postcodes) as origins, and POIs and Greenspaces as destinations. For the street network, we rely on the Highways layer. We process the data using pandana [1].



For this proof of concept, we compute accessibility to amenities within a 15-minute walking distance from each street network node. We then attach the street network node to its corresponding Postcode to obtain accessibility at postcode level.



$$I = f(n, v, d, e)$$

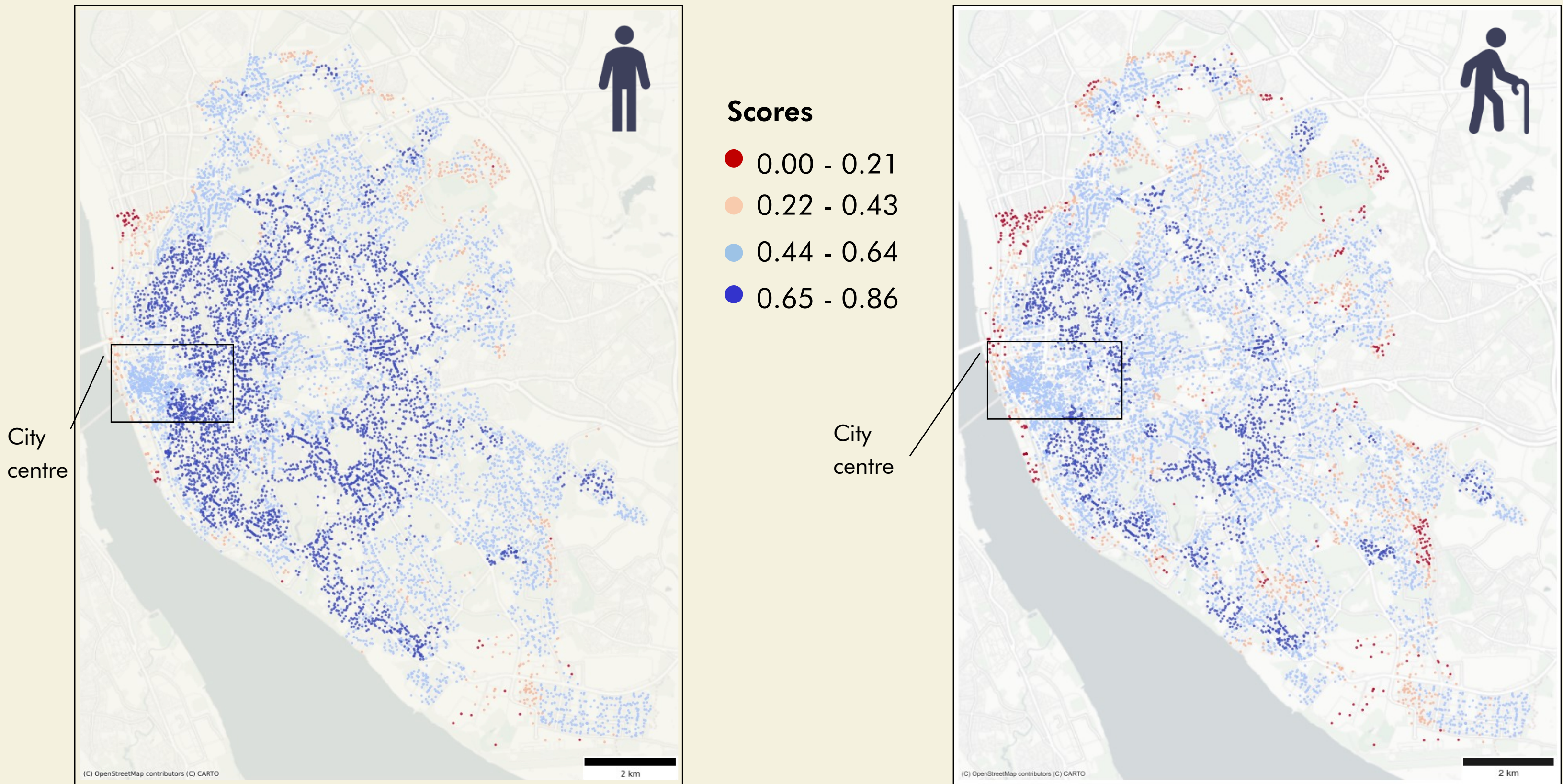
* To be implemented

Finally, we calculate an accessibility score based on the number and variety of accessible amenities, the distance to reach them, and the efficiency* of the routes.

3 PRELIMINARY RESULTS

A preliminary analysis was run for the city of Liverpool. Results show a visible drop in accessibility scores when comparing adults and seniors. These results are in line with other accessibility analyses that have been performed for Liverpool City Region within the 15-minute city context [2].

ACCESSIBILITY SCORES IN LIVERPOOL AT POSTCODE-LEVEL



4 CONCLUSIONS & FUTURE STEPS

Preliminary results show a very different picture of what accessibility looks like for adults and seniors. Future steps will expand to different case studies across the world, additional demographic profiles, and will include further characterisation factors such as morphometric [3] and socio-economic analyses.

[1] Foti, F., Waddell, P., & Luxen, D. (2012). A generalized computational framework for accessibility: From the pedestrian to the metropolitan scale. Proceedings of the 4th TRB Conference on Innovations in Travel Modeling. Transportation Research Board.

[2] Calafiore, A., Dunning, R., Nurse, A., & Singleton, A. (2022). The 20-minute city: An equity analysis of Liverpool City Region. *Transportation Research Part D: Transport and Environment*, 102, 103111. <https://doi.org/10.1016/j.trd.2021.103111>

[3] Fleischmann, (2019). momapy: Urban Morphology Measuring Toolkit. *Journal of Open Source Software*, 4(43), 1807, <https://doi.org/10.21105/joss.01807>

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