

The Impact of Climate Change on Critical Services Accessibility During Flooding: A Neighbourhood-Level Assessment for England

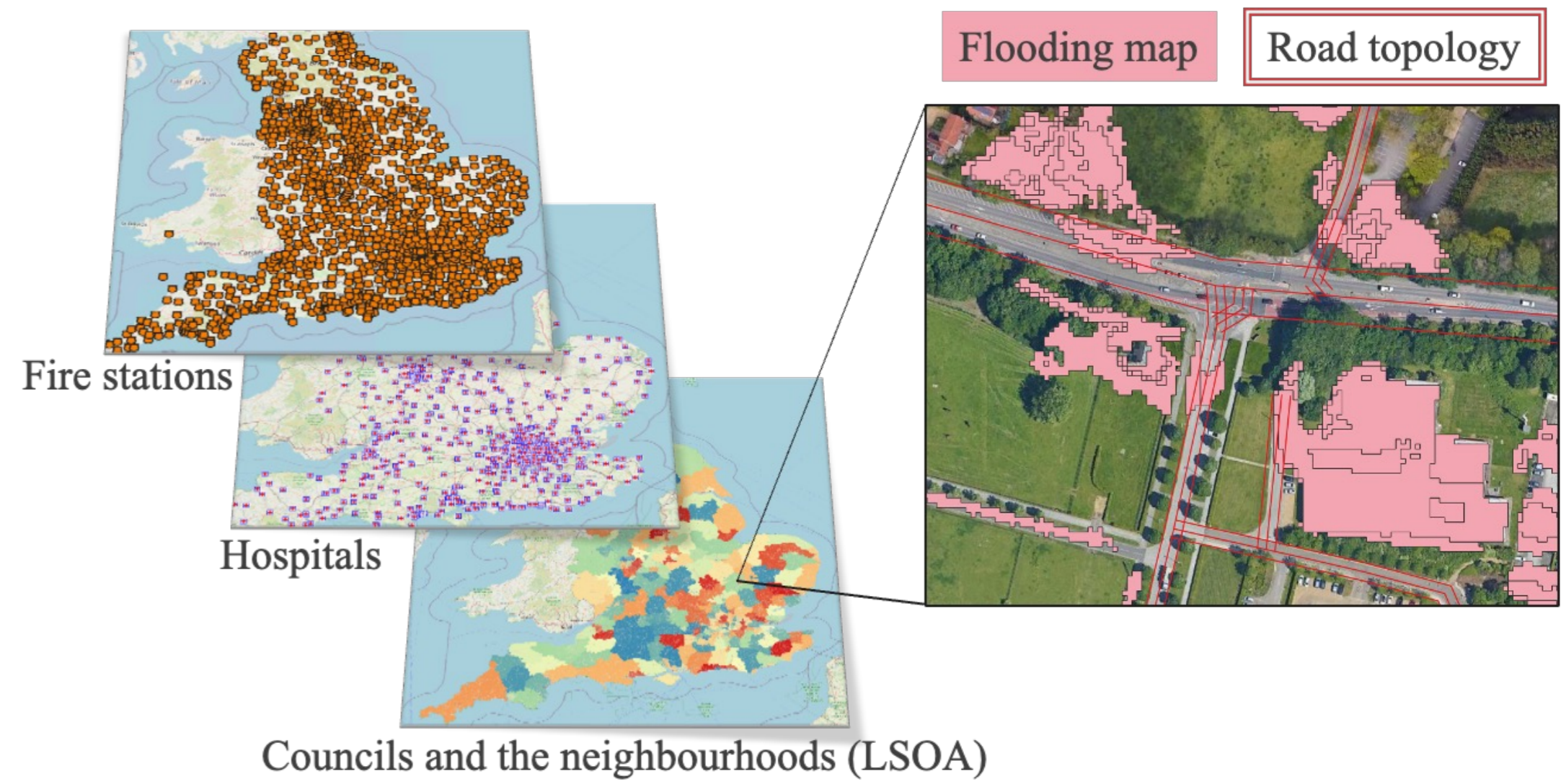
Zizhen Xu¹, Jie Liu^{1*}, Li Wan², Kristen MacSkill¹

¹Department of Engineering ²Department of Land Economy

Abstract

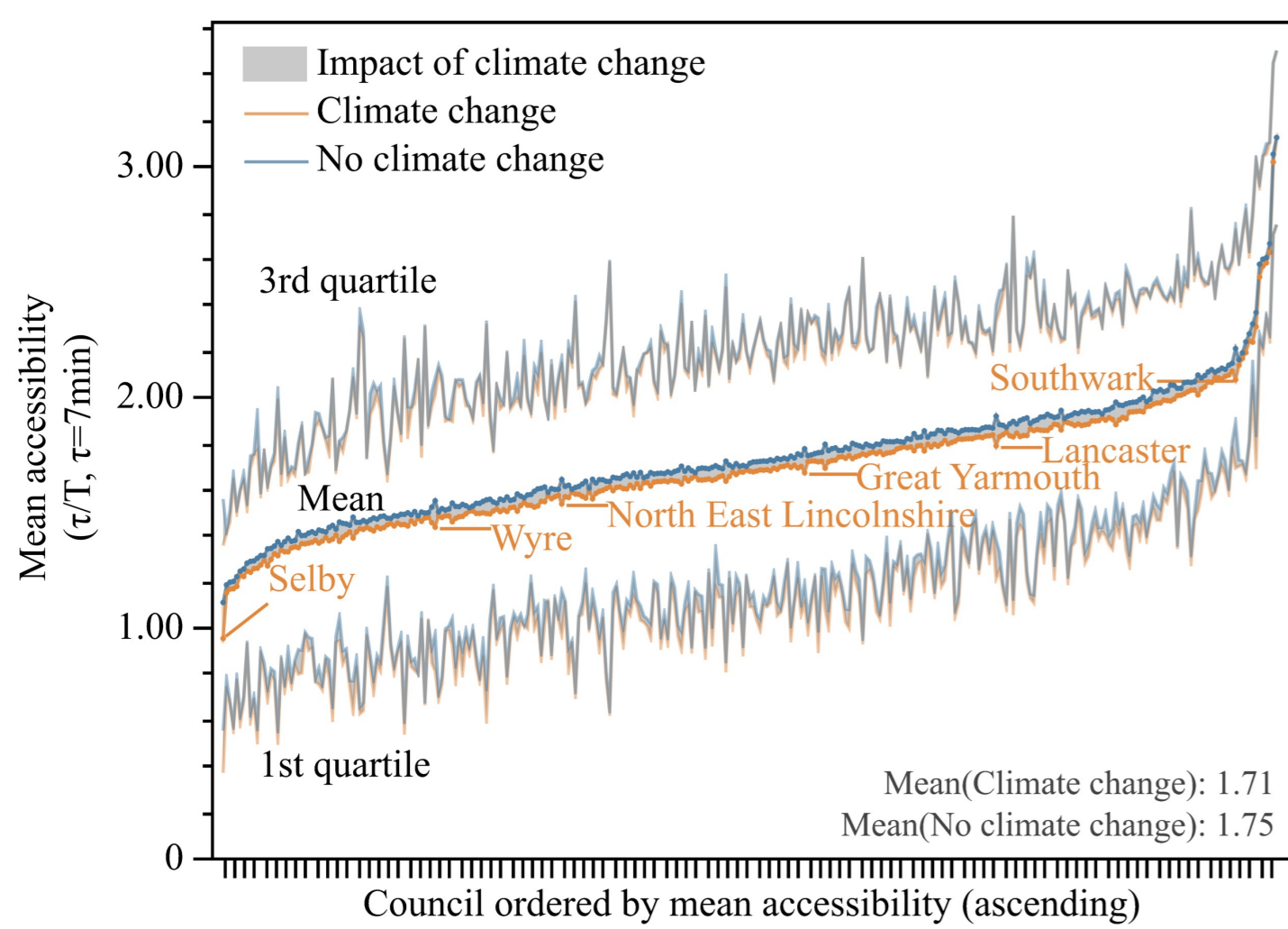
This study offers a nationwide spatial assessment of future flood impacts on neighbourhood-level accessibility to healthcare and fire-rescue services in England.

- Overlaying flood risk maps (different return periods) with national road networks.
- Quantifying the accessibility by estimating transport time between service spots and neighbourhoods.
- Comparing the future scenario (RCP 8.5) with the current.
- Comparing surface flooding with river & sea flooding.
- Comparing two critical services.
- Investigating the spatial inequality of service accessibility.

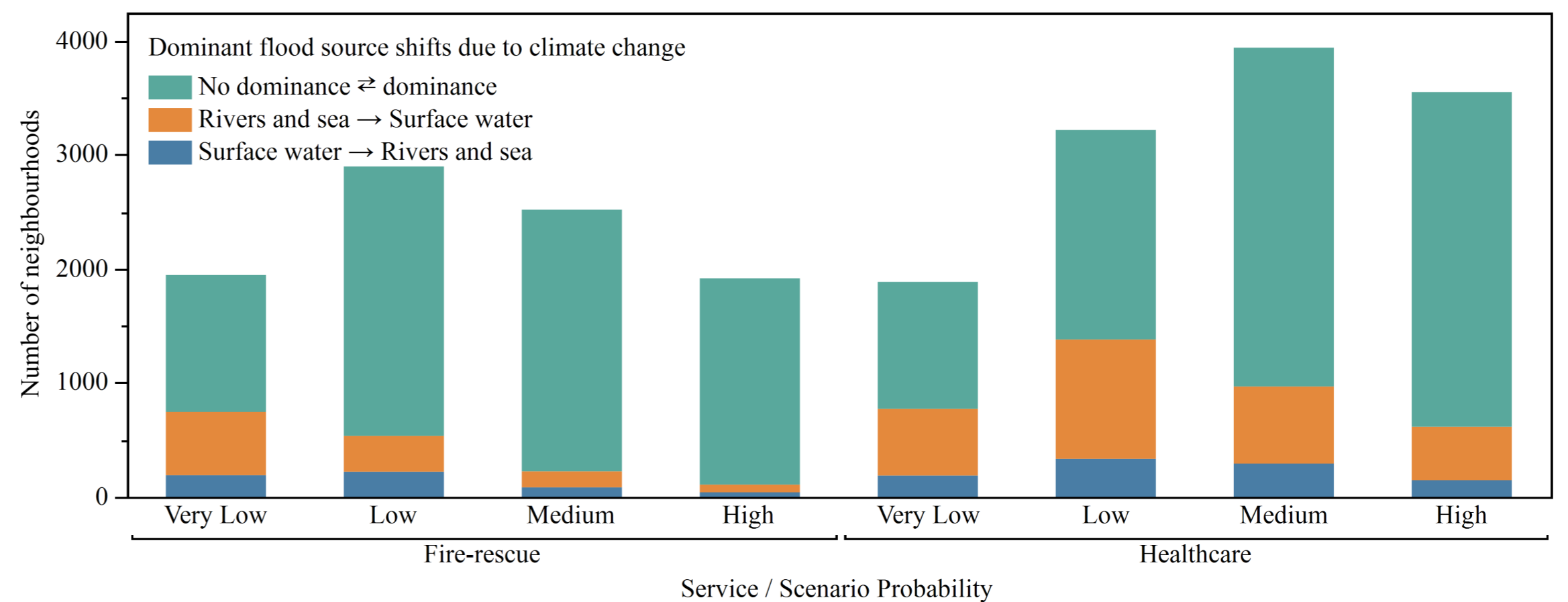


Findings

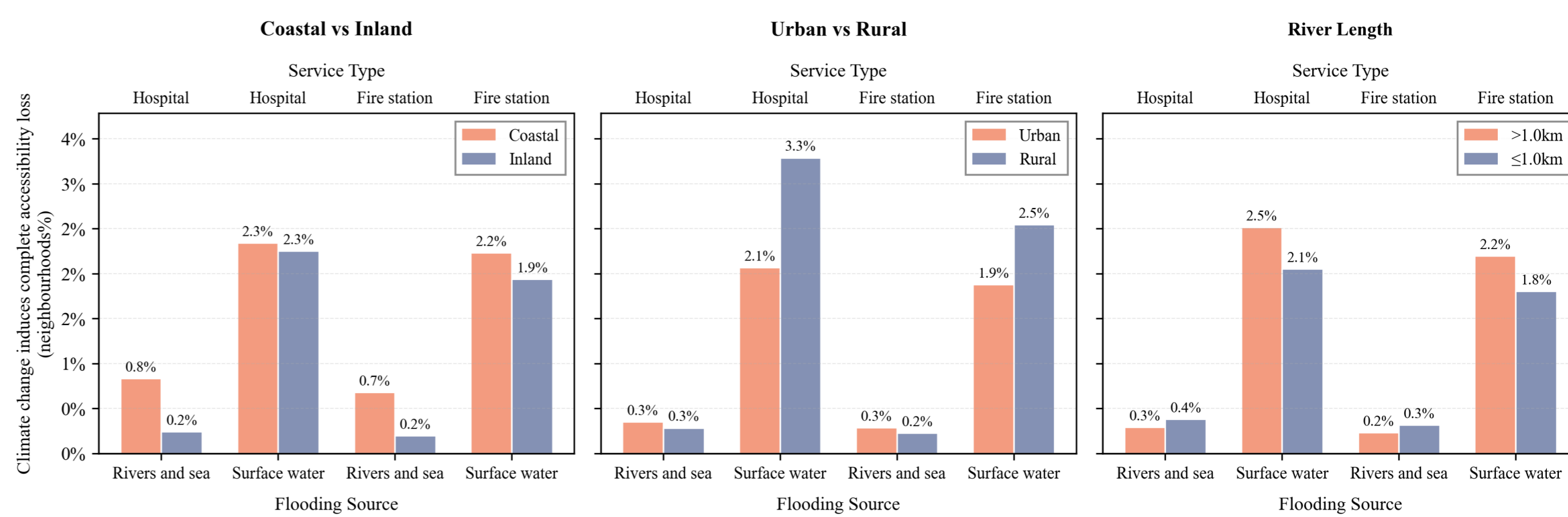
❖ RCP 8.5 scenario suggests a marginal decrease in service accessibility during flooding at the national level but highlights spatial disparity.



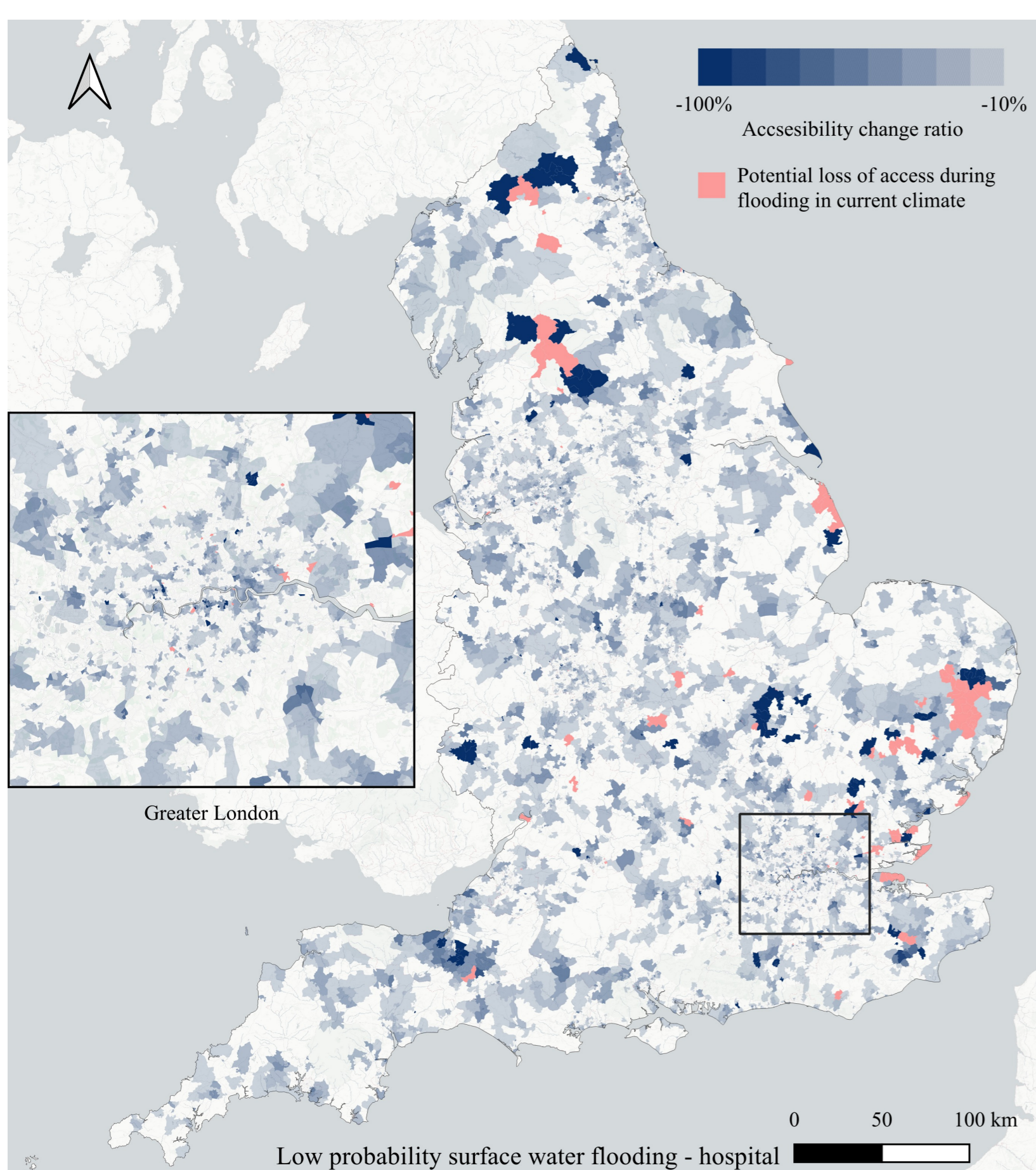
❖ At the neighbourhood level, climate change may drive the change of major source of flood.



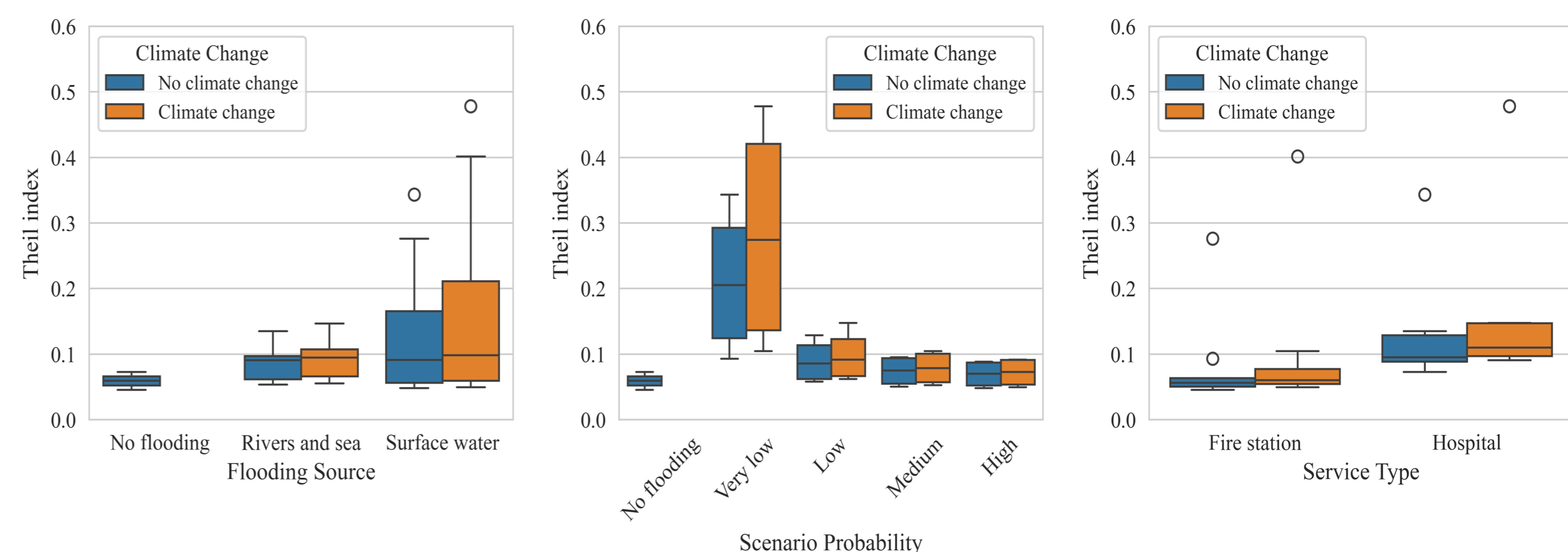
❖ Climate change may cause complete disruption of service access (new hotspots), which is associated with spatial characteristics, flood source, and service type.



❖ Climate change induces accessibility changes.



❖ The spatial inequality of service accessibility may be exacerbated in future climate.



Acknowledgements

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 101034337 and the support of industrial partners