

Mapping urban inequalities through geodemographic classification: A framework for place-based intervention in the Liverpool City Region

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Background and Motivation

Urban inequalities present significant challenges for policymakers globally. If not effectively addressed, these inequalities could contribute to the segmentation of the urban environment and create divisions between neighbourhoods. Liverpool City Region is one of the areas experiencing numerous spatial disparities. The motivation for this project is to help reduce urban inequalities by developing a geodemographic classification that would allow for the most effective targeting for place-based interventions.

Data and Methods

The data for this project comes primarily from the work of Ballantyne and Singleton (2024), who developed a priority index for the LCR. The dataset has been further enhanced with data regarding the Energy Performance Certificate (EPC) rating. The dataset is oriented around four main domains: access to public transport, housing opportunities, socioeconomic and deprivation, and energy efficiency.

The data has been standardised and weighted to guarantee a balanced contribution across all variables. Based on the specified geographic area (LSOA), the neighbourhoods were grouped into distinct clusters with similar characteristics using K-means clustering, a method involving unsupervised learning. By employing this approach, it was feasible to create unique neighbourhoods' classification that was afterwards presented on an interactive dashboard to support urban inequalities analysis across the LCR.

Key Findings

This research found that there are numerous instances of noticeable spatial disparities within the Liverpool City Region. Four distinct neighbourhood types were identified based on geodemographic classification across the region:

- 310 LSOAs were classified as “Energy efficient, deprived neighbourhoods with limited rail access”
- 286 LSOAs as “Well-connected, affluent, energy inefficient communities”
- 116 LSOAs as “Connected, innovative places of great potential”
- 294 LSOAs as “Affluent, transit-disconnected populations”

The analysis also investigated the percentage distribution of each cluster and population percentage living within each defined cluster type for seven priority areas identified by the Liverpool City Region Combined Authority.

Value of the research

This research provides insightful information that could be beneficial when developing place-based policies, particularly concerning access to public transport, economic development, energy performance and housing. The geodemographic classification and interactive dashboard developed in this study have been shared with the LCRCA, providing a practical tool for guiding investment strategies, especially for the City Region Sustainable Transport Settlement (CRSTS). The cluster allocation data and pen portraits can be used by policymakers to more effectively prioritise interventions and make sure that fundings are distributed following local needs.

Figure 1: Geodemographic classification for LCR.

