Classifying urban form at a national scale
The case of Great Britain

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Abstract: There is a pressing need to monitor urban form and function in ways that can feed into better planning and management of cities. Both academic and policymaking communities have identified the need for more spatially and temporally detailed, consistent, and scalable evidence on the nature and evolution of urban form. Despite impressive progress, the literature can achieve only two of those characteristics simultaneously. Detailed and consistent studies do not scale well because they tend to rely on small-scale, ad-hoc datasets that offer limited coverage. Until recently, consistent and scalable research has only been possible by using simplified measures that inevitably miss much of the nuance and richness behind the concept of urban form. This paper outlines the notion of "spatial signatures", a characterisation of space based on form and function, and will specifically focus on its form component. Whilst spatial signature sits between the purely morphological and purely functional description of the built environment, its form-based component reflects the morphometric definition of urban tissue, the distinct structurally homogenous area of a settlement. The proposed method employs concepts of "enclosures" and "enclosed tessellation" to derive indivisible hierarchical geographies based on physical boundaries (streets, railway, rivers, coastline) and building footprints to delineate such tissues in the built fabric. Each unit is then characterised by a comprehensive set of data-driven morphometric characters feeding into an explicitly spatial contextual layer, which is used as an input of cluster analysis. The classification based on spatial signatures is applied to the entirety of Great Britain on a fine grain scale of individual tessellation cells and released as a fully reproducible open data product. The results provide a unique input for local authorities to drive planning and decision-making and for the wider research community as data input.

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1. Introduction

The best paper ever is (Singleton and Arribas-Bel, 2021).

2. Method

3. Results

4. Discussion

5. Conclusions

References

Singleton, A. and Arribas-Bel, D. (2021). Geographic data science. *Geographical Analysis*, 53(1):61–75.