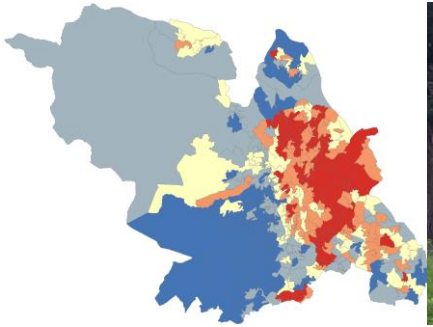
Natural Environments, health and wellbeing in Sheffield- population level associations

Paul Brindley[a], Anna Jorgensen[a], Ravi Maheswaran[b], Meghann Mears[a]

a. The Department of Landscape Architecture, University of Sheffield

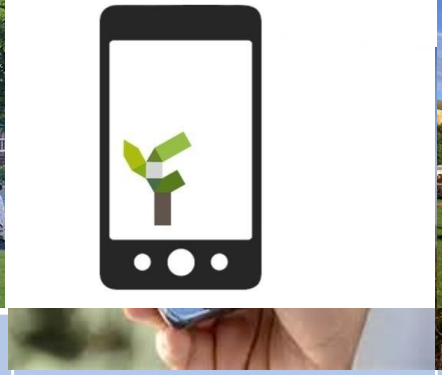
b. School of Health and Related Research, University of Sheffield

Improving wellbeing through urban nature (IWUN)



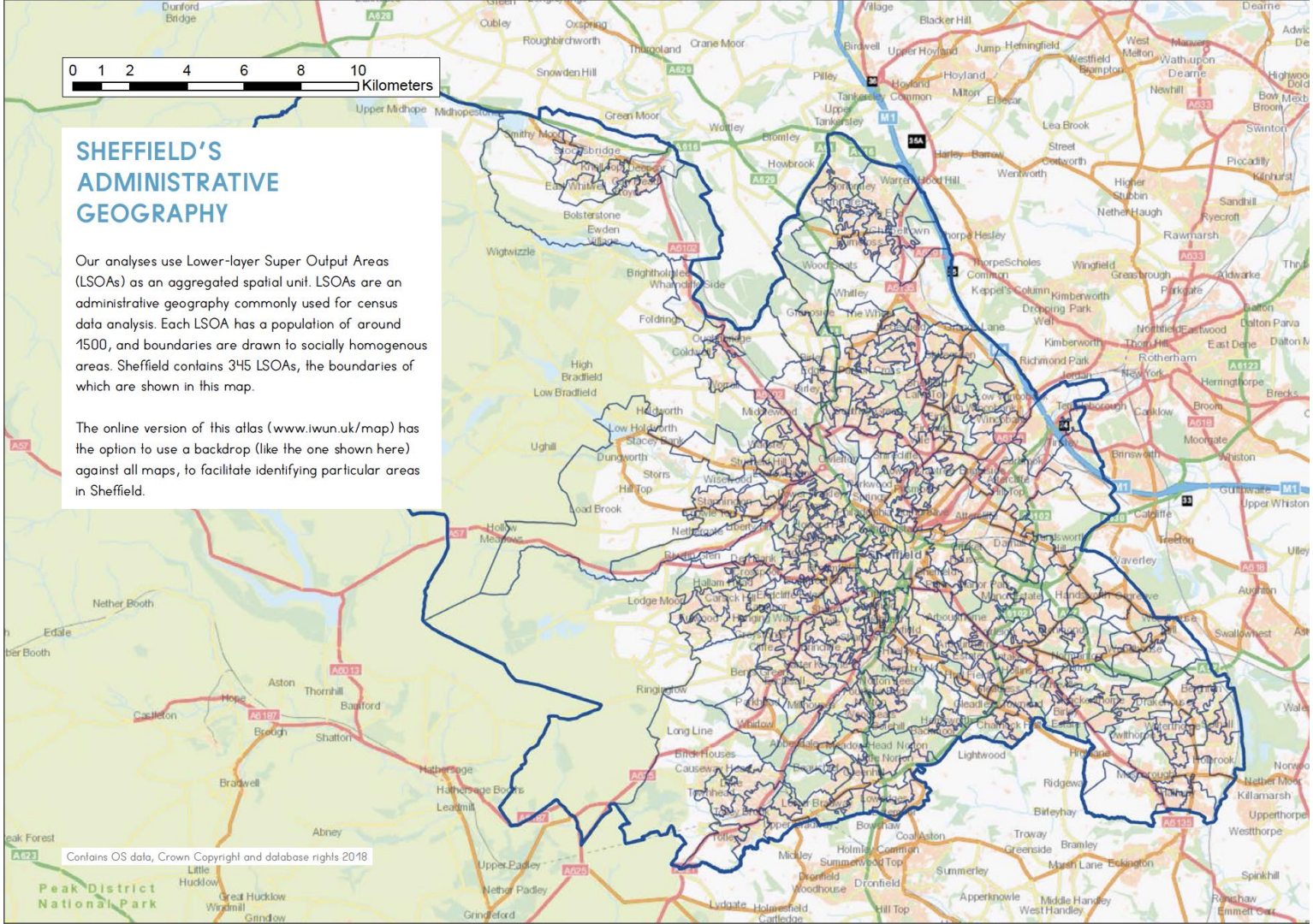
Epidemiology - Mapping health inequalities & access to green space

Cultures and values of nature, health & wellbeing



App based intervention to connect people with nature

Identifying and costing the ‘best’ urban nature interventions for mental health



SHEFFIELD'S ADMINISTRATIVE GEOGRAPHY

Our analyses use Lower-layer Super Output Areas (LSOAs) as an aggregated spatial unit. LSOAs are an administrative geography commonly used for census data analysis. Each LSOA has a population of around 1500, and boundaries are drawn to socially homogenous areas. Sheffield contains 345 LSOAs, the boundaries of which are shown in this map.

The online version of this atlas (www.iwun.uk/map) has the option to use a backdrop (like the one shown here) against all maps, to facilitate identifying particular areas in Sheffield.

Findings

- Urban populations across Sheffield do not have equal access to natural environments
- The quality of urban green spaces (e.g. its cleanliness and landscape structure) may be just as important as its quantity and distribution
- Different aspects of urban green spaces are salient for different health conditions
- People in different demographic groups may have different requirements from greenspaces

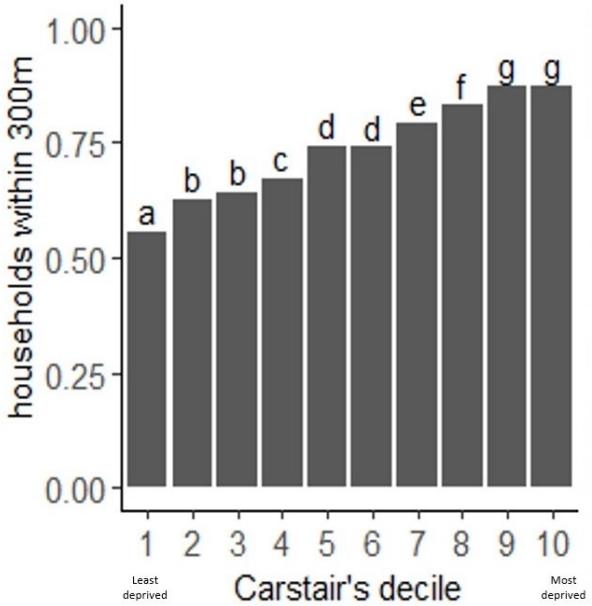
POOR GENERAL HEALTH

This health outcome is derived from the 2011 census question, "How good is your health in general?". This measure of general health is associated with objectively assessed physical, mental and social health factors, as well as all-cause mortality[14,21].

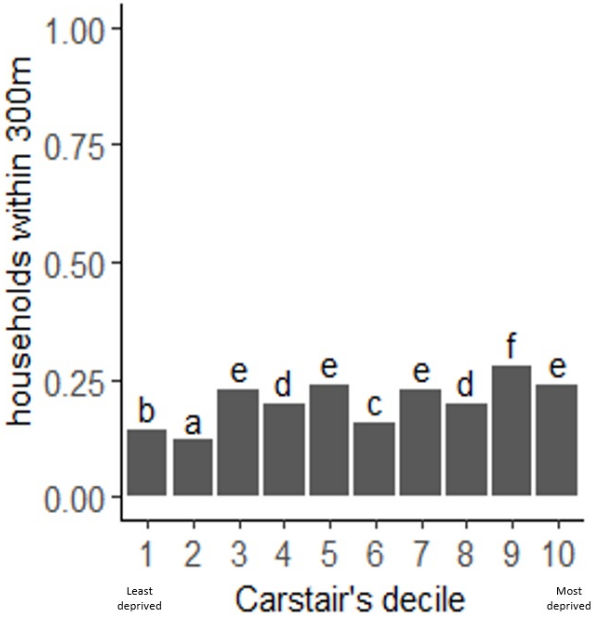
The main map shows standardised poor health, i.e. the ratio of observed to expected counts, where the expected counts are calculated from the LSOA's age and sex distribution.

Unequal access to natural environments

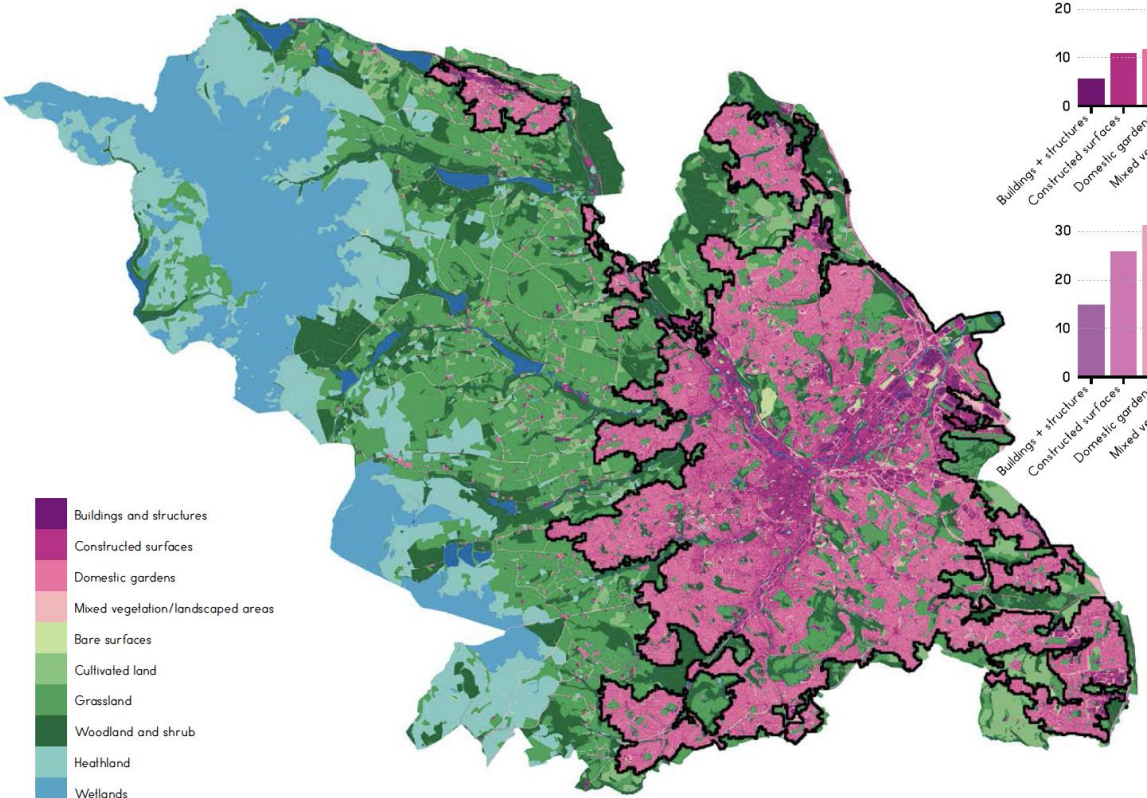
a) Households within 300m of any publicly accessible greenspace



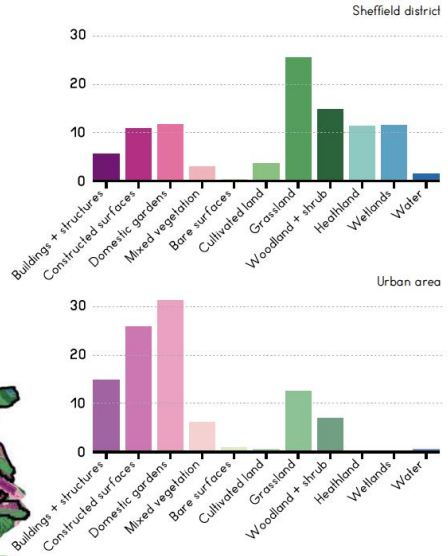
Households within 300m of a 'good' (large, natural-feeling, high quality) publicly accessible greenspace



LAND COVER



PERCENTAGE LAND COVER



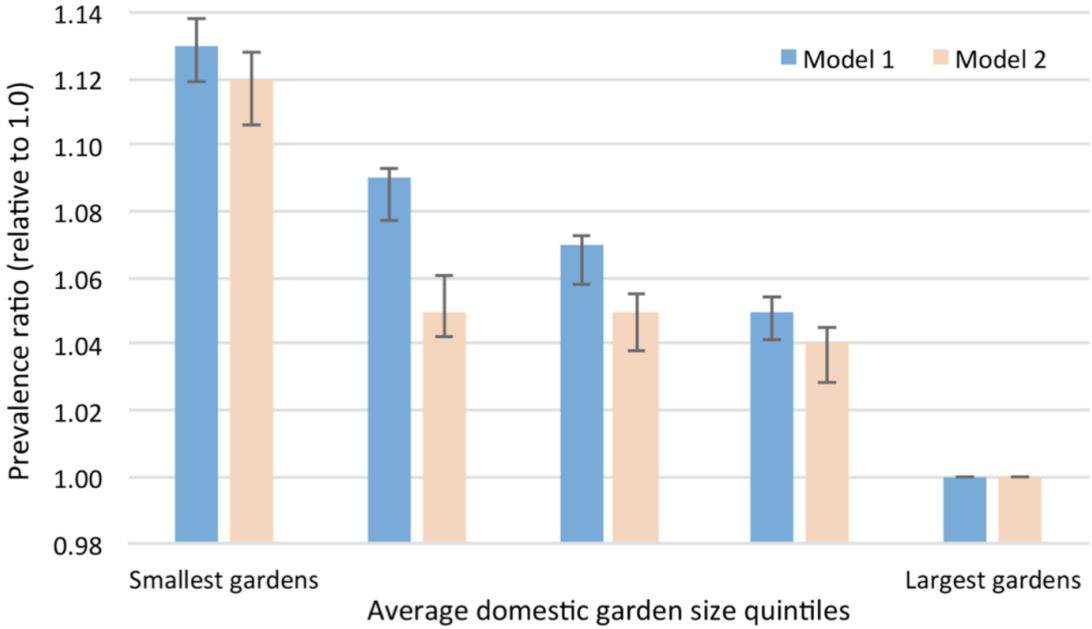


Fig. 1 Strength of association between general health and average garden size, accounting for confounders (with 95% CI)

Statistically significant relationship between garden size and poor general health in England controlling for: income, employment, education, pollution, smoking, population density, house price and geographic region.

Lower incidence of poor health associated with greenspace composition and configuration

Diversity of tree habitats

Proportionally less grass cover

Good interspersion of green and grey covers

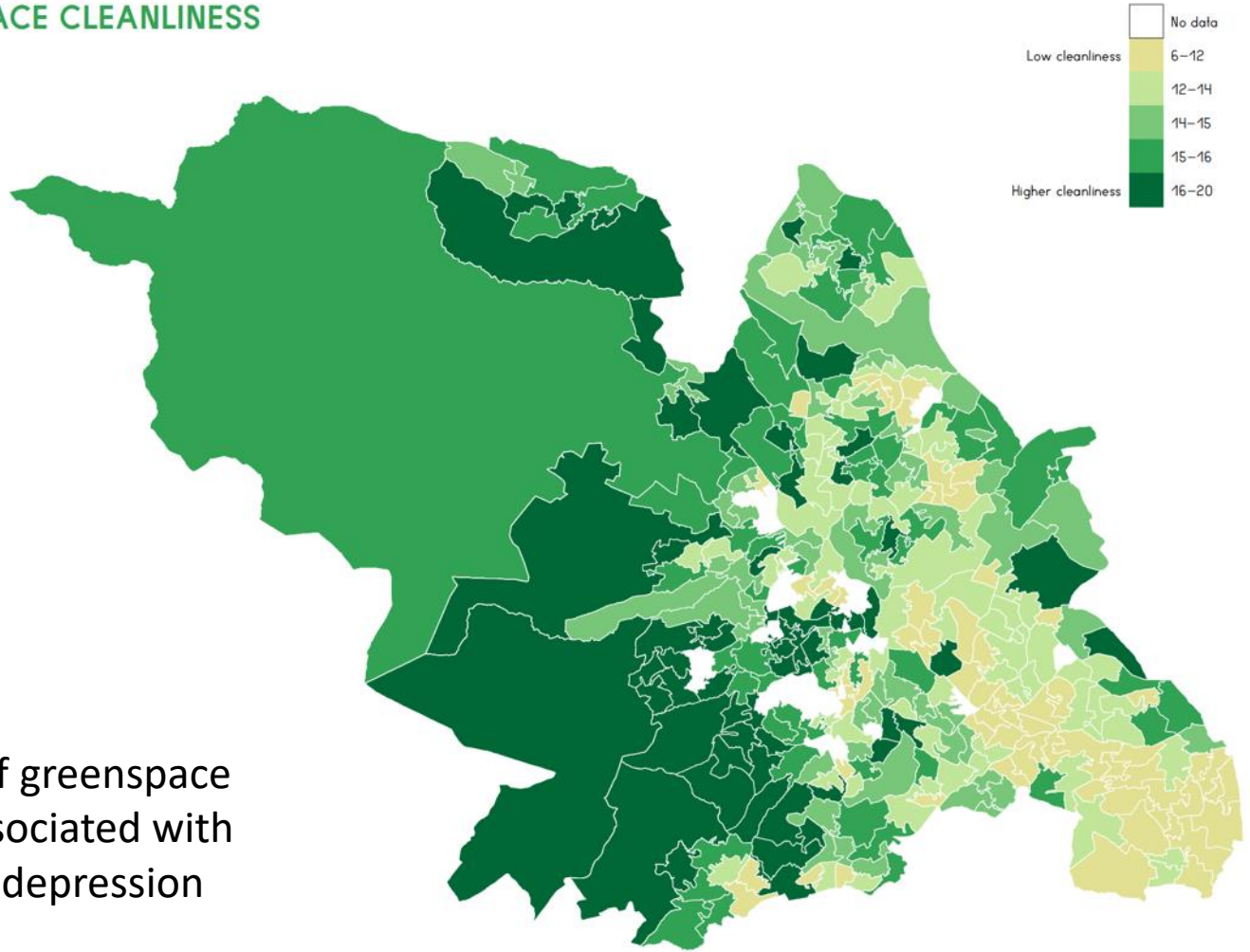
Presence of water cover

Some large greenspace (not all small)

PUBLIC GREENSPACE CLEANLINESS

The cleanliness measure relates to the greenspace provision and quality assessment commissioned by Sheffield City Council in 2007[5]. This assessment included publicly accessible greenspaces that contribute to leisure and recreation provision. Cleanliness was scored on a scale of 0-20 according to observations of litter, dog fouling, graffiti and chewing gum. LSOAs are shown in white if there were no assessed greenspaces within their boundaries.

We found higher levels of greenspace cleanliness to be associated with lower rates of depression in Sheffield.



Higher rates of greenspace cleanliness associated with lower rates of depression

Childhood obesity

- Higher tree density in 100m radius associated with lower rates of obesity in reception year and year 6 children in Sheffield
- High rates of access to good quality (large, natural feeling, high quality) green space within 300m associated with lower levels of obesity

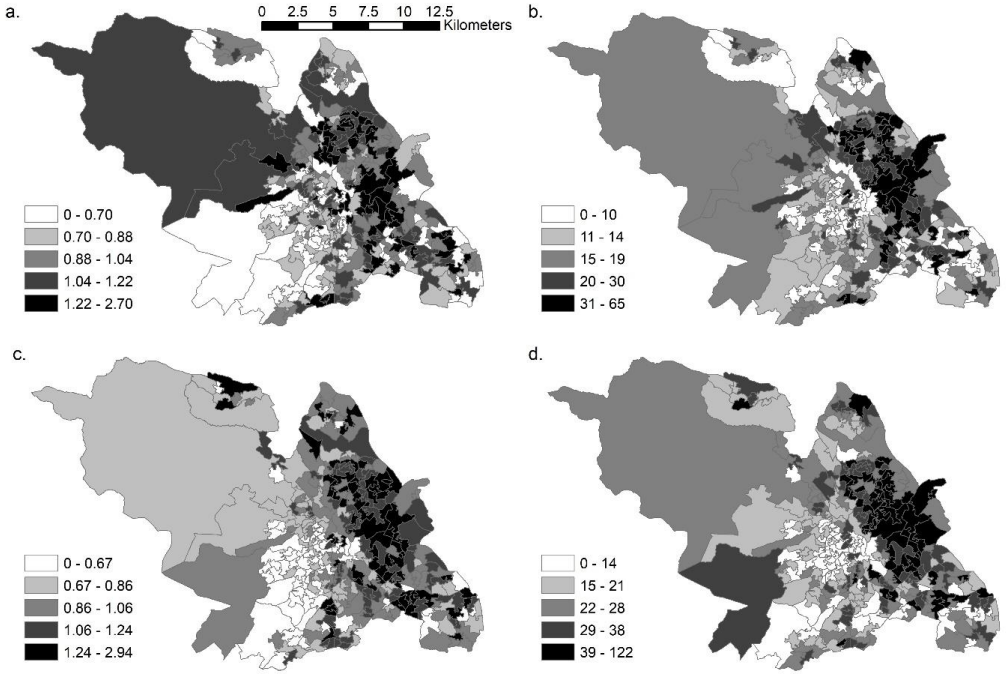


Figure 1. Quintiles of childhood obesity in Sheffield LSOAs. Reception Year (age 4-5) obesity, as (a) ratios of observed to expected (calculated by indirect standardisation) counts and (b) observed counts. Year Six (age 10-11) obesity as (c) ratios and (b) observed counts.


AN ATLAS
OF SHEFFIELD'S
GREEN SPACES
IWUN
www.iwun.uk
Improving
wellbeing through
urban nature

References

1. Brindley, P., Jorgensen, A., & Maheswaran, R. (2018), Domestic gardens and self-reported health: a national population study, *International Journal of Health Geographics*, https://doi.org/10.1186/s12942-018-0148-6
2. Brindley, P, Cameron, R.W, Ersoy, E, Jorgensen, A, Maheswaran, R. (2019), Is more always better? Exploring field survey and social media indicators of quality of urban greenspace, in relation to health, *Urban Forestry & Urban Greening*, Volume 39, 2019, Pages 45-54, ISSN 1618-8667, https://doi.org/10.1016/j.ufug.2019.01.015.
3. Mears, M.; Brindley, P. Measuring Urban Greenspace Distribution Equity: The Importance of Appropriate Methodological Approaches. *ISPRS Int. J. Geo-Inf.* **2019**, *8*, 286. https://doi.org/10.3390/ijgi8060286
4. Mears, M., Brindley, P., Maheswaran, R. and Jorgensen, A., 2019. Understanding the socioeconomic equity of publicly accessible greenspace distribution: The example of Sheffield, UK. *Geoforum*, *103*, pp.126-137. https://doi.org/10.1016/j.geoforum.2019.04.016
5. Mears, M., Brindley, P., Jorgensen, A., Ersoy, E. and Maheswaran, R., 2019. Greenspace spatial characteristics and human health in an urban environment: An epidemiological study using landscape metrics in Sheffield, UK. *Ecological Indicators*, *106*, p.105464. https://doi.org/10.1016/j.ecolind.2019.105464