The role of geospatial data in UK third sector service provision

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Abstract

This paper presents early findings on the use of geospatial data and GIS techniques by third sector organisations in the UK. It seeks to explore the organisational aims which necessitate the use of geospatial data and methods used. Third sector organisations (TSOs) are taken to mean those that are independent of government, are 'value-driven' and reinvest any surplus profits back into their mission. The UK's third sector has faced increasing calls from internal and external voices to be more transparent, better measure and demonstrate impact, operate and allocate resources more efficiently, engage further with service users and increase staff knowledge and learning. One way of achieving this is through data and digital tools.

The focus on third sector data use is set against the proliferation of geospatial data sources and subsequent methods of analysis. Previous studies in this field have been primarily focused on the use of GIS by small scale community organisations in resisting planning procedures (e.g. Craig and Elwood, 1998), or have sought to explore the process of GIS implementation and adoption (e.g. Sieber, 2000). By conducting in-depth semi-structured interviews with key staff from ~40 TSOs, this study aims to outlines use-cases for geospatial data and analysis by different types of third sector organisation as they seek to solve a variety of challenges. The aim of the full paper is to develop a typology that can serve as a model for third sector organisations to invest in GIS software and develop a strategy for stronger geospatial data use.

Table 1 gives details of the 11 cases gathered so far (as of submission) and a brief description of their use of spatial data. Case no. 1 involves a community project which, by making use of Land Registry data on ownership, INSPIRE Index Polygons and OS data, seeks to enable community housebuilding projects on a large scale across a UK city. For the Director of the organisation, geospatial data was "a point to start a conversation" and was fundamental in winning over the support of the regional authority: "Showing them where all the land was and showing them that it was a big enough opportunity, and also the localised supply chain, they were really interested in how that can contribute to more than just housing". In case 8, volunteer-provided crowdsourced data has been fundamental in developing a database of over 160,000 ancient trees across the UK that require special protection. As one of the UK's largest funders of community projects, the organisation in case 10 has made use of Tableau to allow funding officers a spatial perspective on historic grants, measured against a variety of indicators, when assessing applications. To mitigate against the 'HQ location' problem, natural language processing (NLP) is being employed to get more accurate and granular information on the spatial extent of grant-funded projects.

Thoughts would be welcome on the most useful output for the academic GIS community as well as TSOs. Potential options for this include: focusing on the organisational aims that necessitate the use of geospatial data and GIS, a more descriptive look at the tools and datasets used by organisations, or drawing comparison and distinction between private, public and third sector uses.

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Table 1: Third sector use-cases of geospatial data

Case no.	Organisational Aim (ICNPO category)	Size (income band p.a.£)	Data / method	Case Use
1	Development and housing	Under 10k	INSPIRE Index, Land Registry Ownership, OS Zoomstack. QGIS / Mapbox	Highlighting suitable areas for community housebuilding projects and showing potential for scale. Map was instrumental in gaining support for initiative.
2	Community services	100k to 500k	Org member postcodes, 2011 census ethnicity data.	Developing a ward-based approach to social care, as opposed to blanket coverage, based on % of target demographic in ward.
3	Religious Organisation	100k to 500k	Org member postcodes, Google Earth time-slider	Analysing change in congregation dispersion across city over 10 yr period and targeting advertising and event locations accordingly.
4	Healthcare	1m to 10m	Existing service provision, demand side factors. 2SFCA method, QGIS.	Partnering with PhD student to develop a tool to optimally locate mobile cancer treatment units in accordance with current and future supply and demand side factors.
5	Other (Digital Access)	1m to 10m	KML boundary files, postcode data, qualitative concerns, IMD. Google My Maps.	Understanding current project extent (local and national scale), qualitative reporting of concerns from partner projects and recognising areas for future projects based on existing provision.
6	Education and support	10m to 100m	National birth rates and socio-economic data (A,B,C1 etc) at LA and MSOA level. Postcode data on existing practitioner locations.	Identifying underserved geographic areas /communities and developing a metric to predict future demand for educational and volunteer support services by LA and MSOA.
7	Healthcare	10m to 100m	Childhood obesity at ward level, consumer spending habits, qualitative experiences of place. R, Tableau, Mapbox.	Exploring factors behind variations in childhood obesity at ward level and consumer spending habits on contributing factors by ward. Using 'Commonplace' platform, perceptions of place-based processes are mapped.
8	Environmental	10m to 100m	Tree location data, estate boundary data, volunteer location data. MapInfo, QGIS, Cadcorp.	Crowdsourced data by volunteers on ancient tree location across UK. Locations verified by 'expert volunteers'. Other 160,000 trees in database, contributes towards campaigning and protection activities.
9	Development and housing	10m to 100m	Homelessness data by LA, Land Registry property ownership data. SQL, Power BI.	Exploring demand for services against current provision of regional support locations.
10	Environmental	Over 100m	Drone captured imagery (GeoTIFF) 3D mesh modelling (LAS, XYZ)	Used to understand managed habitats in an unobtrusive way. Inc. surveys and counts, land cover analysis, hydrological analysis. Images used for publicity and campaigning.
11	Grantmaker	Over 100m	Grant award data at postcode level. Grant project description. Tableau, Python.	Overview of all applications for grant funding in a particular geographic area. Trialling NLP as a way of making use of unstructured data about more detailed location of project activities.

References

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