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International Journal of Population Data Science (2019) 4:3:126

International Journal of Population Data Science

Journal Website: www.ijpds.org

GRAPHITE: Geographic Information UK Secure E-Research Platform

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Background

The use of Geographic Information Science in administrative and health data research provides researchers and policymakers with powerful modelling capabilities when exploring spatial variations in health and social outcomes. However, there are challenges around using spatial data and associated modelling techniques in terms of computing power, skills, data quality and disclosure controls.

Main Aim

In this case study, we describe our approach to overcoming some of these problems in conjunction with the Secure Anonymised Information Linkage Databank (SAIL).

Approach

The UK Secure E-Research Platform (UKSeRP) is a suite of technologies which can be linked together to provide a secure system to support a particular use case or data resource. We have taken this foundation and built a Geographic Information UKSeRP which is solely focused on the storage, manipulation and generation of spatial data and models to support administrative and health research. The GIS system is built around the Unique Property Reference Number (UPRN) which can be anonymised into a Residential Anonymised Linking Field (RALF) and provides a precise location of households across the UK. This system allows the user to generate high-resolution spatiotemporal models of geographically varying phenomena (e.g. access to services, fast food, alcohol, greenspace and pollution) in a secure managed environment. To support the geographic data stored in the platform there is a range of GIS tools (Python, R, QGIS, PostGIS, OSRM) and standardised methods available to users which sit alongside a data catalogue. Access to the platform is managed via an information governance review process on a project by project basis to ensure best practice in disclosure control and integrity.

Conclusion

Spatial data and GIS techniques are an important resource for academic and policy researchers. The GRAPHITE platform demonstrates best practice for using spatial data when used in conjunction with sensitive data.

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https://doi.org/10.23889/ijpds.v4i3.1290

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