

# Finding the best path to take

Factors affecting health vary with location and over time - Geographical Information Systems (GIS) can help us better develop prevention and intervention solutions

Geographical Information Systems are potentially powerful tools that can improve decision-making at all levels.

But GIS remain vastly under-used in the NHS, found mostly in non-strategic tasks, and employed in a largely fragmented and uncoordinated way.

This is cause for concern given the wide range of applications: assisting in the early detection of a bioterrorist attack; understanding the complex relationships between the environment, socioeconomic factors and health; assessing healthcare needs; and the optimum siting of an appropriate new healthcare facility in a given community; even route optimisation for ambulance vehicles and healthcare professionals doing home visits.

Health managers can find other applications at a strategic level: developing cost-effective programmes and services that address health inequalities; predicting outcomes before making any financial commitments; assisting in ascribing priorities in a climate of finite resources; and continually monitoring and analysing changes and sentinel events.

Not that this should be news to anyone in the industry as a wide range of practical GIS applications in health and healthcare have been described in literature aimed at public health decision makers, practitioners and the public.

However, despite all their potentials, geographical data and GIS are still not mentioned in any main UK health information strategy or policy document, in striking contrast to the corresponding US strategy documents and specifications, which explicitly mention GIS.

Many factors have contributed to the currently poor state of affairs, including lack of guidance or awareness of the value of spatial information in everyday practices and decision-making processes.

There is still a need to unambiguously determine which GIS methods and data specifically should be used for each specific situation/problem, and

whether the proposed solutions yield reasonable conclusions and are cost-effective and scalable in the UK/NHS context.

An NHS-wide initiative is sorely needed to help the NHS understand and harness the importance of spatial information in the health sector in order to better respond to national health plans, priorities and requirements. The NHS should start by carefully defining the purposes of a nationwide, coherent GIS implementation across its organisations, and by developing a clear "GIS business plan". For each health condition amenable to GIS processing within the NHS, the desired information output and ways of using it must be also determined.

Tomlinson's methodology is targeted at people who have been charged with launching or implementing GIS for their organisation, and is thus strongly recommended in this regard [see: Tomlinson R: Thinking About GIS: Geographic Information System Planning for Managers. California: ESRI Press; 2003].

Developing geospatial culture and awareness is about changing people and organisations.

This requires vision and leadership at the highest levels, along with official governmental support.

In terms of processes, there must be a culture of data sharing and joined-up working at all levels that considers spatial information an asset.

It is also important to raise awareness through activities and campaigns; reaching out to policy and strategy makers in the health and other sectors.

Policies and practices actively promoting the exchange and reuse of geo-information, and greater public access to it are also needed. All the above involves education, training, and capacity building.

All UK/NHS health GIS stakeholders and representatives of the public must be represented and must inform the development of an NHS-wide GIS strategy and associated blueprints for successful GIS business and implementation plans addressing various health and healthcare issues within the NHS. It is hoped that NHS organisations adopting such standardised plans will be in a better position to achieve a common understanding of spatial data and processes, which will enable them to efficiently and effectively share, compare, and integrate their data silos and results for more informed, coordinated planning and better outcomes.

The ultimate beneficiaries are the UK citizenry and communities who will be empowered to become more active partners in their healthcare, and will also benefit in the long run from improved health services and outcomes, and reduced health inequalities as a result of the introduction of well-founded geographic information management within the NHS.

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