

Census population data

- The distribution of a population and its estimation are important for providing timely information for urban and land-use planning. In order to allocate resources, understanding of the size and distribution of the population is essential for state and local government.
- Population totals are generally supplied by national census organisations at predefined census output levels. However, demographic data may be required at user-defined spatial units which are different from census output levels.
- A number of population estimation techniques have been developed in order to address these problems. This study seeks to apply a new dasymetric mapping approaches based on building attribute information in order to estimate small area population.

Methods

- The research proposed a new method that utilises high resolution building address data and occupancy information to estimate population total in small areas.
- This estimation method was applied in order to estimate the population of the output areas in Leicester.
- The estimated population totals were compared with actual UK census data for model validation. The address weighed estimation method used for disaggregating population counts.

Results

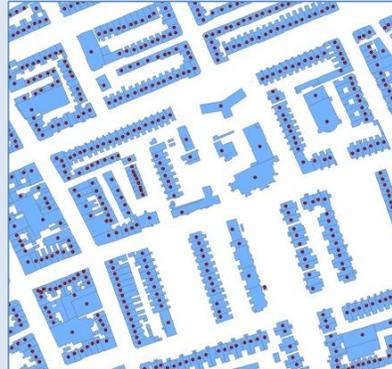


Figure 1. The ancillary data used in estimation model: Building address points from OS MasterMap®. ©Crown Copyright 2013. Ordnance Survey

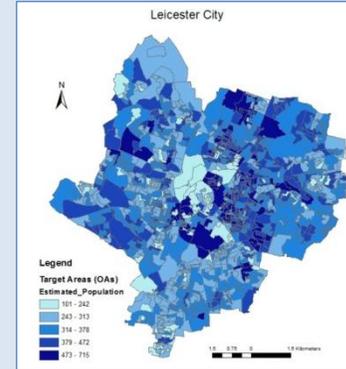


Figure 2. The estimated population by the address weighted dasymetric estimation model. ©Crown Copyright 2013. Ordnance Survey

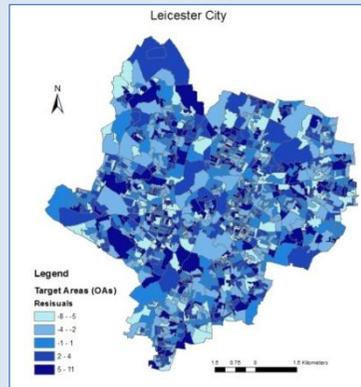


Figure 3. The map of residuals. ©Crown Copyright 2013. Ordnance Survey

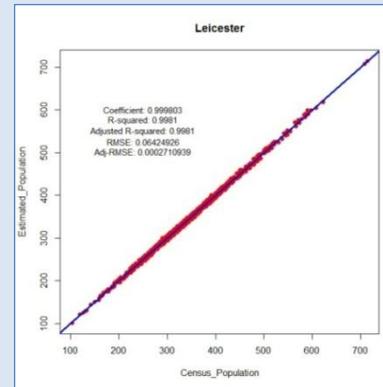


Figure 4. Scatterplot with regression line of Leicester population. Comparison of actual and estimated population figures

Discussion

- The results show that the address weighed dasymetric method that utilises occupancy information performs best.
- The accuracy of population estimates appears to be mainly influenced by the type and quality of the ancillary datasets and also the interpolation method adopted.
- Ordnance Survey acquired building address point datasets have the potential to be used with the proposed method to provide larger scale population estimates.
- A standard notion-wide building attribute dataset which represents residential buildings and non-residential structures, can be used for urban planning applications as well as population counts distribution.

Conclusion

- High-resolution housing unit address points datasets provide accurately the location of individual housing units and every non-residential unit within authority.
- The research demonstrated that the performance of population estimation method can be significantly influenced by the qualities of additional information used to estimate population counts.

Reference

Langford, M., (2013). An evaluation of small area population estimation techniques Using Open access ancillary data. *Geographical Analysis* 45, 324-344.