

Understanding local populations between censuses

Knowing the characteristics of the entire population is key for the development of public policy. The decennial census provides a snap-shot of all people and households in a particular area and has a direct bearing on the government support that councils receive to fund public services.



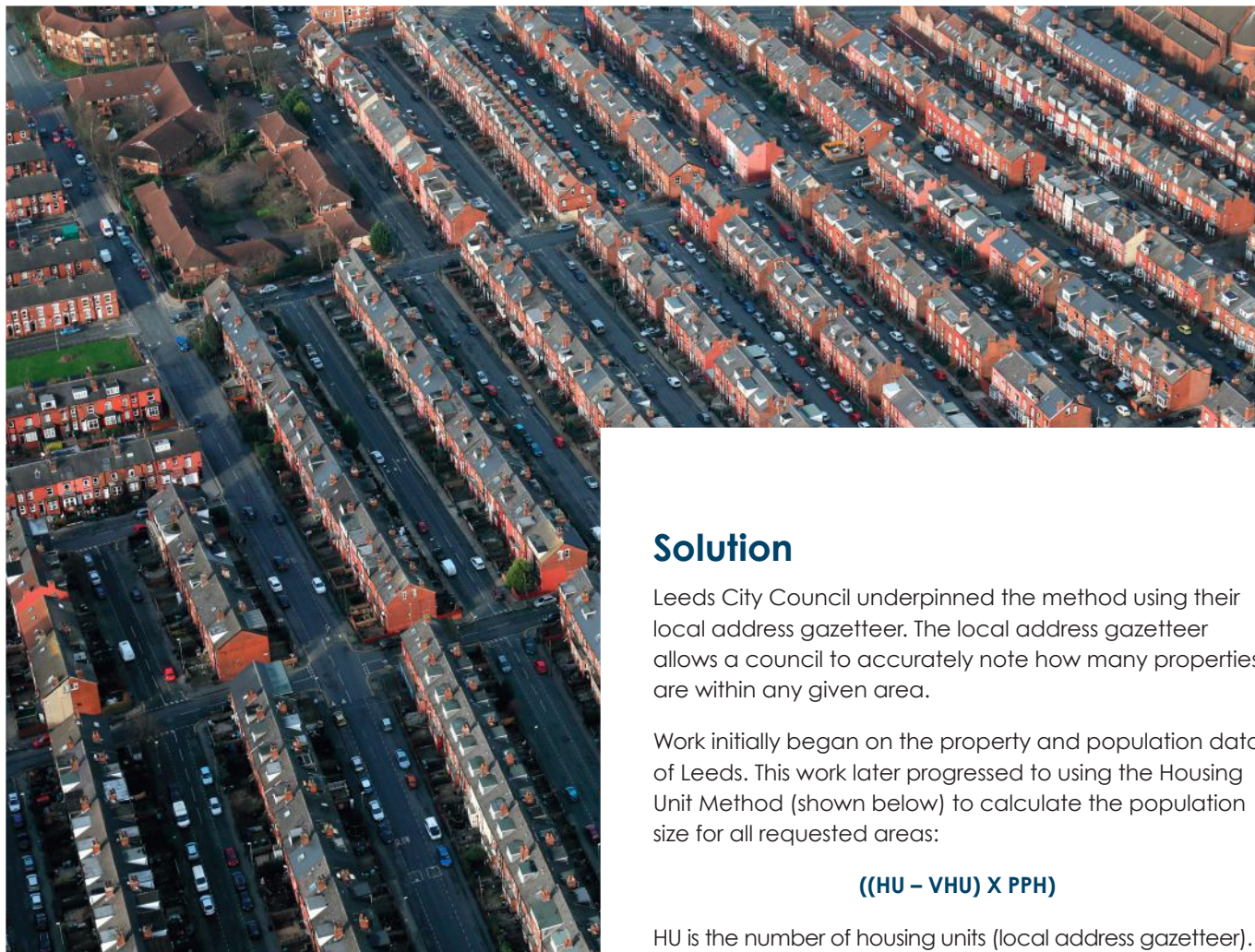


These population statistics provide consistent insights and contextual information for small areas and population groups, and highlight local need for services like schools, roads and hospitals. By knowing how many people live in an area, local authorities can identify the services and facilities communities need and make informed decisions.

Councils such as Leeds City Council believe that these statistics are so important in developing its services that it needed to find a method to understand small area population estimates for bespoke areas and periods of time whenever required, not just every 10 years at fixed aggregated areas.

Most statistics are published at known geographies but these geographies and frequencies don't always match with the data that users want. Faced with the challenge of developing a method which provided the statistics required, when they were needed, the Local Address Custodian at Leeds utilised the local address property data and classifications; together with council tax data on vacant properties; and known 2011 Census average Household Sizes at Output Area to estimate current population sizes, in any size area.

This Housing Unit Method is now used widely within Leeds City Council to provide bespoke population estimates for use in planning applications, service planning and to assist local Neighbourhood Forums gain a better understanding of their locality.



Challenges faced

Leeds City Council faced certain challenges whilst implementing the Housing Unit Method. These included:

- Leeds has a large student population. This results in many Houses with Multiple Occupants (HMO's). When taking the census average, these residential areas can skew results. This method could have a different effect in areas with fewer students
- The method is reliant on the census. The last census for Leeds was 2011. More accurate data could be provided closer to the release of the latest census data
- Leeds have a 100% match to Council Tax. This allows them to proceed with the calculations. This is because the classification must be accurate (council tax team will have a marker – they will know who is liable for the property and why). Detail can be provided by the gazetteer.

Solution

Leeds City Council underpinned the method using their local address gazetteer. The local address gazetteer allows a council to accurately note how many properties are within any given area.

Work initially began on the property and population data of Leeds. This work later progressed to using the Housing Unit Method (shown below) to calculate the population size for all requested areas:

$$((HU - VHU) \times PPH)$$

HU is the number of housing units (local address gazetteer). VHU is the number of vacant housing units (CTAX Data) and PPH is the average Persons per Household (Census data).

Further to the local address gazetteer, the method uses the most recent census average household size data published at Output Area (OA) scale. The method requires information on vacant properties from council tax which is updated monthly.

This formula has given Leeds City Council an accurate estimation of population size, shows where people are living and where they fit in the area boundaries.

Data accuracy can be increased by including properties which are known to be vacant. This can be found from council tax information. This process requires the local address gazetteer to have a full match to council tax.

Alternative options to the Housing Unit Method could include using the electoral roll to estimate adult numbers, whilst the education department can provide accurate records for children. But these are difficult to combine, could include numerous errors and double counting and are difficult to apply when focussing on smaller areas.

Furthermore, currently small area populations are estimated using apportioned census data however census boundaries rarely fit to the areas requested for population estimation.

Outcome

Leeds City Council have experienced several benefits since using the Housing Unit Method. These include:

- Leeds planning services requiring population data are now able to work using accurate information
- Local education and social services are now able to have a more accurate understanding of how many people are in need of their services
- Estimates provided are prompt and efficient which can result in faster projects and decision making
- These forms of estimation are proven to be more accurate than the mid-year estimates provided by the Office for National Statistics, which are restricted to set boundaries and do not go down to output area scale
- The benefits shown in Leeds can be easily replicated within other councils. All councils need are the gazetteer and census data (and council tax vacant data if you want to factor this in)
- In using this method, information can be updated in line with new census data released. It allows for business as usual, with improved data accuracy
- Leeds neighbourhood planning services looking for specific demographic information can use this data for their services
- Mid-year census updates assume uniform growth. Property level data can detail whether areas have seen a decline or increase in properties, and therefore population size

Because of the introduction of these methods, the council is now able to provide prompt, efficient and highly accurate population estimates for any size or shape area, and at any period of time. Due to inherent inaccuracies in the mid-year estimates produced by ONS between decennial census, the research demonstrated that this method will produce a more accurate population estimate for small-areas than using apportioned mid-year census data."

Service directors at Leeds now have access to the most geographically accurate data available reflecting localised changes, to enable them to account more efficiently for current and future service provision and need. This is helping to plan for essential services such as school places, social service provision and housing needs; and could be used more widely in government to predict localised demand for health services such as GPs and dentists.

Leeds City Council won the 2016 GeoPlace Exemplar Award for this project.

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