

1. Purpose

The Office for National Statistics (ONS) will publish some 2011 Census data at ward level. However, users of this data need to be aware that it will not accurately reflect the official administrative boundaries of some wards in South Gloucestershire. This note explains the reasons for these differences and examines the extent to which the wards in South Gloucestershire may be affected.

2. Context

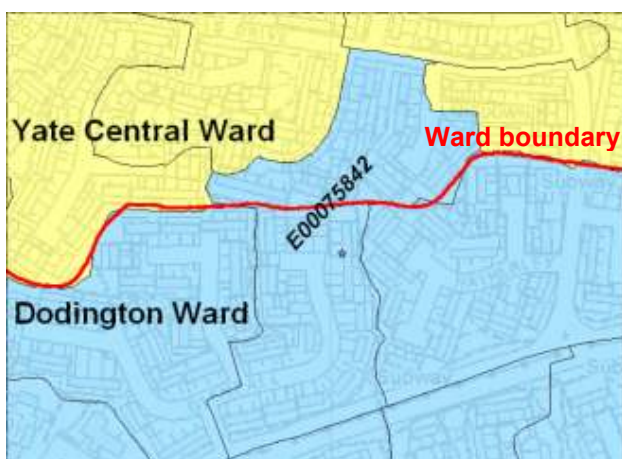
Data from the 2011 Census will be published using the ONS' statistical output area hierarchy:

- Census Output Areas (COA) - The lowest level at which Census data will be published. The minimum COA size is 40 resident households and 100 resident people. There are 834 COAs in South Gloucestershire.
- Lower Super Output Areas (LSOA) – Based on aggregations of COAs. LSOAs have a population of between 1,000- 3,000 resident people and 400-1200 households. There are 165 LSOAs in South Gloucestershire.
- Medium Super Output Areas (MSOA)– Based on aggregations of LSOAs. MSOAs have a population of between 5,000- 15,000 resident people and 2,000-6,000 households.

ONS will also publish some data at parish and ward levels.

ONS will create statistics for wards by aggregating COA level data on a 'best-fit' basis. Where a ward boundary overlaps a COA boundary, the whole COA data is assigned to the ward where the largest proportion of the population resides. Essentially, this means that some households (and their population characteristics) are assigned to the incorrect ward. South Gloucestershire, due to ward boundary changes in May 2007, is particularly affected by this issue.

The following maps illustrate this issue for a single COA in South Gloucestershire (E0075842 which is split between Yate Central and Dodington wards). However, this problem occurs throughout South Gloucestershire to varying degrees.



COA E0075842 is split between Dodington and Yate Central Wards. The majority of the population (measured by the population centroid) reside within Dodington ward - therefore ONS will assign the whole COA (and all associated data) to Dodington Ward.



Analysis using the council's Local Land and Property Gazetteer (LLPG) shows that, at the time of the Census, there were 138 domestic properties in the COA. 73 (53%) were within Dodington and 65 (47%) were in Yate Central. Effectively this means that the ONS 'best-fit' method will assign 65 households and their associated population characteristics to the incorrect ward.

Figure 1 – Illustration of COA 'best-fit' to ward issue

3. Extent of the situation in South Gloucestershire

Using the approach illustrated in figure 1 and the recently published ONS census population estimates for COAs and wards, we are able to estimate the extent to which the ONS ward population estimates may differ from the 'actual' figures - i.e. if the data was to exactly match the official administrative ward boundaries (table 1 and map 1).

Table 1 and Map 1 overleaf shows that 10 wards in South Gloucestershire are unaffected by this issue (because they align exactly with COA boundaries). In 14 wards the ONS official ward estimates may be subject to a (+/-) 2% error, and 8 wards may be subject to a (+/-) 2-5% error. Most significantly, three wards may be subject to a difference of more than (+/-) 5%, these are the wards of; Bradley Stoke North (-9.2% - i.e. the ONS figures may underestimate the total population by 349 persons), Dodington (-5.6% - i.e. the ONS figures may underestimate the total population by 428 persons) and Yate Central (+8.5% - i.e. the ONS figures may overestimate the total population by 695 persons).

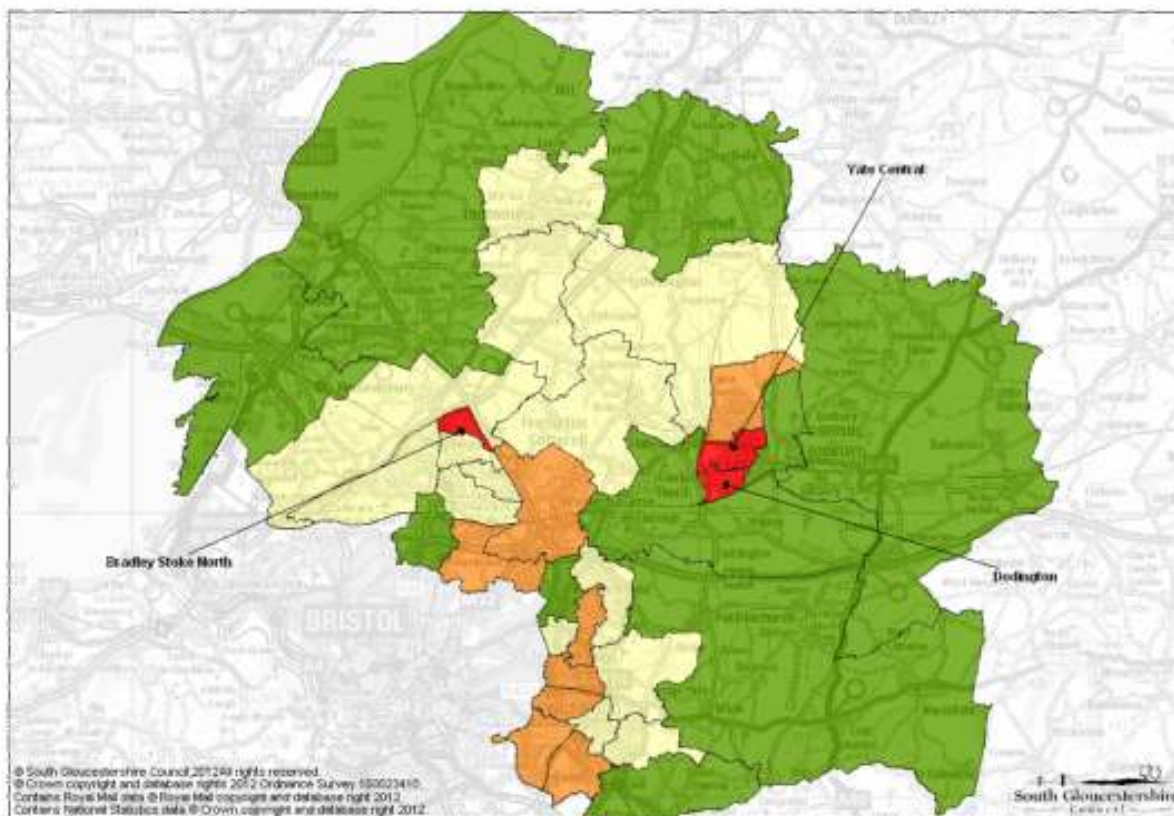
Ward name	A. Published ONS population estimate (total population)	B. Calculated population estimate (based on LLPG distribution)	C. Difference (A-B)	% Difference (C / A *100)
Almondsbury	4,115	4,108	7	0.2%
Bitton	3,509	3,509	0	0.0%
Boyd Valley	7,446	7,446	0	0.0%
Bradley Stoke Central and Stoke Lodge	8,031	7,869	162	2.0%
Bradley Stoke North	3,812	4,161	-349	-9.2%
Bradley Stoke South	9,279	9,138	141	1.5%
Charfield	4,678	4,678	0	0.0%
Chipping Sodbury	6,834	6,834	0	0.0%
Cotswold Edge	3,381	3,381	0	0.0%
Dodington	7,636	8,064	-428	-5.6%
Downend	10,785	10,783	2	0.0%
Emersons Green	12,392	12,430	-38	-0.3%
Filton	10,607	10,607	0	0.0%
Frampton Cotterell	7,327	7,308	19	0.3%
Frenchay and Stoke Park	6,827	6,587	240	3.5%
Hanham	10,311	10,568	-257	-2.5%
Kings Chase	11,348	11,040	308	2.7%
Ladden Brook	3,858	3,879	-21	-0.5%
Longwell Green	6,761	6,931	-170	-2.5%
Oldland Common	7,685	7,593	92	1.2%
Parkwall	8,327	8,249	78	0.9%
Patchway	9,071	9,146	-75	-0.8%
Pilning and Severn Beach	3,647	3,647	0	0.0%
Rodway	10,817	11,069	-252	-2.3%
Severn	3,628	3,628	0	0.0%
Siston	4,809	4,839	-30	-0.6%
Staple Hill	7,338	7,328	10	0.1%
Stoke Gifford	12,145	11,965	180	1.5%
Thornbury North	7,484	7,554	-70	-0.9%
Thornbury South and Alveston	7,532	7,460	72	1.0%
Westerleigh	3,755	3,755	0	0.0%
Winterbourne	6,994	7,301	-307	-4.4%
Woodstock	11,231	10,974	257	2.3%
Yate Central	8,158	7,463	695	8.5%
Yate North	11,209	11,476	-267	-2.4%
South Gloucestershire	262,767	262,767	0	0.0%

Table 1: Comparison ONS population estimate v Council's alternative population estimate based on 'exact' ward boundaries

Key:

Green	Difference: 0%
Yellow	Difference: (+/-) 0.1% to 2%
Orange	Difference: (+/-) 2.1% to 4.9%
Red	Difference: over (+/-) 5%

Map 1: Map illustrating extent of differences



Key:

Green	Difference: 0%
Yellow	Difference: (+/-) 0.1% to 2%
Orange	Difference: (+/-) 2.1% to 4.9%
Red	Difference: over (+/-) 5%

4. Conclusions and recommendations

Due to ONS' policy of creating ward level statistics by aggregating data for whole Census Output Areas on a 'best-fit' basis, the published census data for some wards in South Gloucestershire will not accurately reflect the official administrative ward boundaries. The wards of Bradley Stoke North, Dodington and Yate Central are particularly affected by this issue. Users of ONS data and policy makers should therefore have regard to this issue when using ward level statistics.

Given the level of uncertainty associated with the census data for some wards in South Gloucestershire, officers are discouraged from using ward level data for service planning and policy formulation. Instead, users are encouraged to aggregate ward level data or use alternative and more stable statistical geographies such as Lower Super Output Areas (LSOA), Medium Super Output Areas (MSOAs) or parishes.

Further advice on this issue is available from the Corporate Research and Consultation Team: 01454 863990. email andy.cornelius@southglos.gov.uk