Technical Guidance on production of official statistics for new administrative geographies

(February 2019)

Introduction

1. In 2008, the Northern Ireland Assembly approved the reform of Local Government. The change moved Local Government from 26 Districts (LGD1992) to 11 new Districts (LGD2014), as well as making changes to the powers of Local Government. The new Districts are made up of 80 District Electoral Areas (DEAs), which form the basis for the electoral representation on councils, which in turn can be broken down into 462 new Electoral Wards (Ward2014).

2. Technical guidance on the production of official statistics for the 11 new Districts was published in September 2013. It described how official spatial statistics for Local Government Districts can be produced.

3. The purpose of this paper is to provide further guidance on the production of official statistics for District Electoral Areas (DEAs) and Electoral Wards. In particular, how to take aggregate official spatial statistics and create statistics for these sub-geographies. It is worthwhile to note that some issues associated with producing statistics for the 11 new Local Government Districts become more pertinent when looking at smaller geographies.

4. A map of the 80 District Electoral Areas along with coding and naming scheme are shown in Annex 1.

Official Statistics

5. Currently, producers can create statistics for the new geographies from existing microdata (or unit record data) in a number of ways. These include:
   - recording the grid reference of the household or business and using this to classify records spatially; or
   - using the postcode of the household or business and relating this to the Local Government District without access to address information; or
   - obtaining the geography of the household or business directly without access to the address or postcode.
6. If access to existing microdata is available, statistics should be created in that order to ensure a high level of accuracy. NISRA have published a methodology/quality paper on creating a postcode-based lookup table to different geographies, including some quantification of accuracy levels. In short, postcode-based statistics are within 1.5 per cent of actual figures for Local Government Districts, Parliamentary Constituencies and District Electoral areas. For smaller geographies such as Wards and Super Output Areas, this percentage rises to 3-5 per cent, and even higher for 2011 Census Small Areas.

New Lookup Table

7. One-to-one relationship lookup tables were developed to create statistics for the new 11 Local Government Districts from 2001 Census Output Areas, 2011 Census Small Areas or 2011 Super Output Areas. Table 1 provides some information on the accuracy of these lookup tables in relation to the 2011 Census usual residents.

Table 1: Accuracy of lookup tables for 11 New Local Government Districts

<table>
<thead>
<tr>
<th>LGD2014</th>
<th>Usually Resident Population</th>
<th>Population estimates based on:</th>
<th>Relative difference with actual based on:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Small Areas</td>
<td>Super Output Areas</td>
</tr>
<tr>
<td>Antrim and Newtownabbey</td>
<td>138,700</td>
<td>138,600</td>
<td>138,600</td>
</tr>
<tr>
<td>Armagh City, Banbridge and Craigavon</td>
<td>199,300</td>
<td>199,700</td>
<td>197,900</td>
</tr>
<tr>
<td>Belfast</td>
<td>333,300</td>
<td>333,900</td>
<td>331,100</td>
</tr>
<tr>
<td>Causeway Coast and Glens</td>
<td>140,900</td>
<td>140,900</td>
<td>140,900</td>
</tr>
<tr>
<td>Derry City and Strabane</td>
<td>147,700</td>
<td>147,700</td>
<td>147,700</td>
</tr>
<tr>
<td>Fermanagh and Omagh</td>
<td>113,200</td>
<td>113,200</td>
<td>113,200</td>
</tr>
<tr>
<td>Lisburn and Castlereagh</td>
<td>135,600</td>
<td>134,800</td>
<td>137,300</td>
</tr>
<tr>
<td>Mid and East Antrim</td>
<td>135,200</td>
<td>135,300</td>
<td>135,300</td>
</tr>
<tr>
<td>Mid Ulster</td>
<td>138,700</td>
<td>138,600</td>
<td>139,900</td>
</tr>
<tr>
<td>Newry, Mourne and Down</td>
<td>171,700</td>
<td>171,500</td>
<td>172,000</td>
</tr>
<tr>
<td>Ards and North Down</td>
<td>156,700</td>
<td>156,700</td>
<td>157,000</td>
</tr>
</tbody>
</table>

8. In general, the population estimates resulting from aggregating whole Small Areas or Super Output Areas are within one per cent from the published usual resident population. The proportion of the population allocated to an incorrect LGD is 0.1 and 0.4 per cent for Small Areas and Super Output Areas respectively. As such, both lookup tables were considered fit for purpose for creating official statistics. Accordingly, statistics from the 2011 Census for the new 11 Local Government Districts were created through aggregations of Census Small Areas.

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1 The existing Small Areas, Output Areas and Super Output Areas do not fit neatly within the 11 new district boundaries. One to one relationships are based on a best-fit approach, see https://www.nisra.gov.uk/sites/nisra.gov.uk/files/publications/11DC_Lookup_1_1.xls.

9. Similar one-to-one relationship lookup tables were developed to approximate the 80 new District Electoral Areas with the 4,537 Small Areas or the 890 Super Output Areas. Table 2 shows the distribution of relative differences between the exact and approximate population estimates from the 2011 Census.

<table>
<thead>
<tr>
<th>Difference between exact and approximation of 2011 usual resident population</th>
<th>Statistical geography</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Small Area</td>
<td>Super Output Area</td>
</tr>
<tr>
<td>Less than 1 per cent</td>
<td>41</td>
<td>16</td>
</tr>
<tr>
<td>Between 1 and 2 per cent</td>
<td>28</td>
<td>10</td>
</tr>
<tr>
<td>Between 2 and 3 per cent</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Between 3 and 5 per cent</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Between 5 and 10 per cent</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>More than 10 per cent</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>All DEAs</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>

10. It is clear that the approximation using Small Areas is more accurate than that based on Super Output Areas. The proportion of the 2011 Census usual resident population allocated to the wrong DEA was 1.8 per cent when using the Small Area based lookup. This rises to 4.5 per cent when using Super Output Areas as building blocks. This is evident from looking at the number of building blocks per District Electoral Area; on average, a DEA is made up from 57 Small Areas or 11 Super Output Areas.

11. Based on these measures of accuracy, the lookup from Small Areas to DEA was considered fit for purpose and can be downloaded from the NISRA website, along with supporting information on the quality of this lookup. The lookup using Super Output Areas as building blocks was however not deemed fit for purpose, as an approximation within five per cent of the actual population was only achievable for less than two thirds of DEAs.

12. A final exploration was undertaken to assess the viability of a similar one-to-one lookup table to approximate the 462 new Wards with the 4,537 Small Areas. As is clear from the results in Table 3, this is a very inaccurate approximation. For nearly one in five Wards, the population estimate differs in excess of 10 per cent from published figures. The proportion of the 2011 Census usual resident population allocated to the wrong Ward was 5.9 per cent. The Small Area to Electoral Ward lookup was not deemed fit for purpose and hence will not be released.
Table 3: Accuracy of lookup tables for 462 new Wards

<table>
<thead>
<tr>
<th>Difference between exact and approximation of 2011 usual resident population</th>
<th>Small Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
</tr>
<tr>
<td>Less than 1 per cent</td>
<td>95</td>
</tr>
<tr>
<td>Between 1 and 2 per cent</td>
<td>47</td>
</tr>
<tr>
<td>Between 2 and 3 per cent</td>
<td>33</td>
</tr>
<tr>
<td>Between 3 and 5 per cent</td>
<td>96</td>
</tr>
<tr>
<td>Between 5 and 10 per cent</td>
<td>109</td>
</tr>
<tr>
<td>More than 10 per cent</td>
<td>82</td>
</tr>
<tr>
<td>All Electoral Wards</td>
<td>462</td>
</tr>
</tbody>
</table>

Issues

13. The advice and guidance relates to count data only. The guidance does not apply to percentages, rates or other derived statistics. Users wishing to create such statistics will need to apply this guidance to the baseline count data before creating the derived statistics.

14. It is recommended that any statistics produced for the new geographies should be accompanied by metadata outlining the method of spatial classification. The lookup table to approximate DEA Statistics from Small Area statistics also provides an indication of accuracy using the 2011 Census counts of usual residents and occupied households. However, these indications of accuracy may not be applicable, particularly when reporting on sub-sections of the population or locally concentrated groups (for example, the elderly, ethnic minority groups, etc).

15. Data producers should always assess the risk of disclosing information on individuals, households, or businesses. The protection of the privacy of individual information whilst balancing the need for effective use of the statistics is embedded in the Code of Practice for Official Statistics. If official statistics are produced from original micro data for multiple geographies, this can lead to disclosure risks. Producers should particularly be aware of this in any consideration of requests for statistics across multiple geographies, where information on cross-sections of geographies can be deducted through differencing. A producer may choose a less accurate method to reduce this risk, as it is more preferable than not releasing statistics at all. The main statistical disclosure control techniques are described in [http://www.ninis2.nisra.gov.uk/public/documents/NINIS_Disclosure_Policy.doc](http://www.ninis2.nisra.gov.uk/public/documents/NINIS_Disclosure_Policy.doc).


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17. The **official names and codes** for the 11 new Districts (LGD2014) and the 80 new District Electoral Areas (DEA2014) are given in Annex 1. There are three Districts for which the names were changed slightly on 24 February 2016, which were originally named (a) Armagh, Banbridge and Craigavon; (b) Derry and Strabane; and (c) North Down and Ards.

18. As with the 26 current Districts, there is no official definition of **urban - rural** relating to the 11 new Districts or the 80 District Electoral Areas.

19. **Further guidance** is available from the NISRA Geography website[^4] or by e-mail from info@nisra.gov.uk.

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[^4]: [https://www.nisra.gov.uk/support/geography](https://www.nisra.gov.uk/support/geography)

**Northern Ireland Statistics and Research Agency**

**February 2019**
Annex 1: Figure A.1 Map of 80 District Electoral Areas (DEA2014) in Northern Ireland
See also: [http://www.deac-ni.org/final-maps.htm](http://www.deac-ni.org/final-maps.htm)
<table>
<thead>
<tr>
<th>LGD 2014 Code</th>
<th>LGD 2014 Name</th>
<th>District Electoral Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>N09000001</td>
<td>Antrim and Newtownabbey</td>
<td>N10000101 Airport N10000102 Antrim N10000103 Ballyclare N10000104 Dunsilly N10000105 Glengormley Urban N10000106 Macedon N10000107 Three Mile Water</td>
</tr>
<tr>
<td>N09000002</td>
<td>Armagh City, Banbridge and Craigavon* (Armagh, Banbridge and Craigavon)</td>
<td>N10000201 Armagh N10000202 Banbridge N10000203 Craigavon N10000204 Cusher N10000205 Lagan River N10000206 Lurgan N10000207 Portadown</td>
</tr>
<tr>
<td>N09000003</td>
<td>Belfast</td>
<td>N10000301 Balmoral N10000302 Black Mountain N10000303 Botanic N10000304 Castle N10000305 Collin N10000306 Court N10000307 Linsnashragh N10000308 Oldpark N10000309 Ormiston N10000310 Titanic</td>
</tr>
<tr>
<td>N09000004</td>
<td>Causeway Coast and Glens</td>
<td>N10000401 Ballymoney N10000402 Bann N10000403 Benbradagh N10000404 Causeway N10000405 Coleraine N10000406 Limavady N10000407 The Glens</td>
</tr>
<tr>
<td>N09000005</td>
<td>Derry City and Strabane* (Derry and Strabane)</td>
<td>N10000501 Ballyarnett N10000502 Derg N10000503 Faughan N10000504 Foyside N10000505 Sperrin N10000506 The Moor N10000507 Waterside</td>
</tr>
<tr>
<td>N09000006</td>
<td>Fermanagh and Omagh</td>
<td>N10000601 Enniskillen N10000602 Erne East N10000603 Erne North N10000604 Erne West N10000605 Mid Tyrone N10000606 Omagh N10000607 West Tyrone</td>
</tr>
<tr>
<td>N09000007</td>
<td>Lisburn and Castlereagh</td>
<td>N10000701 Castlereagh East N10000702 Castlereagh South N10000703 Downshire East N10000704 Downshire West N10000705 Killultagh N10000706 Lisburn North N10000707 Lisburn South</td>
</tr>
<tr>
<td>N09000008</td>
<td>Mid and East Antrim</td>
<td>N10000801 Ballymena N10000802 Bannside N10000803 Braid N10000804 Carrick Castle N10000805 Coast Road N10000806 Knockagh N10000807 Larne Lough</td>
</tr>
<tr>
<td>N09000009</td>
<td>Mid Ulster</td>
<td>N10000901 Carntogher N10000902 Clogher Valley N10000903 Cookstown N10000904 Dungannon N10000905 Magherafelt N10000906 Moyola N10000907 Torrent</td>
</tr>
<tr>
<td>N09000010</td>
<td>Newry, Mourne and Down</td>
<td>N10001001 Crotlieve N10001002 Downpatrick N10001003 Newry N10001004 Rowallane N10001005 Slieve Croob N10001006 Slieve Gullion N10001007 The Mournes</td>
</tr>
<tr>
<td>N09000011</td>
<td>Ards and North Down* (North Down and Ards)</td>
<td>N10001101 Ards Peninsula N10001102 Bangor Central N10001103 Bangor East and Donaghadee N10001104 Bangor West N10001105 Comber N10001106 Holywood and Clandeboye N10001107 Newtownards</td>
</tr>
</tbody>
</table>

* Districts where the official name was changed on 24 February 2016, former/original name in brackets.