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Census communication and dissemination, including the use of Geographic Information Systems (GIS)

Disseminating the results of the 2011 Census of Population in Ireland

Note by the Central Statistics Office, Ireland

Summary

This paper presents the plans for disseminating the results of the 2011 census in Ireland. Starting with the dissemination of the results of the 2006 census, the paper then describes the consultation on the 2011 census dissemination, and the final decisions eventually taken. Attention is paid to the challenges to be overcome in order to produce census outputs that are relevant and fit for purpose.

I. Background

1. Censuses have been held at five year intervals in Ireland since 1946 with the five year frequency being disturbed on only two occasions in the intervening period, namely:

(a) The 1976 census which was cancelled because of Government economy measures at that time (a census with six questions was subsequently held in 1979); and

(b) The 2001 census which was postponed to 2002 because of the foot and mouth disease situation prevailing in Ireland in April 2001.

2. The five year frequency presents a greater opportunity to maintain a public profile than is possible for a census held every ten years. The consultation phase, the conduct of the pilot survey, the recruitment of field staff, the public awareness campaign around the census itself, the release of preliminary results within three months of the census and final results within a year of the census and extending over a further 9-12 month period, taken together, all contribute to building and maintaining the census brand. The dissemination phase in particular is “pay back time” for those who fund the census and provide the raw material in the form of completed census questionnaires. It is normally the yardstick used by the public in judging the success or otherwise of the census. The present paper focuses on the plans in place for disseminating the results of the 2011 census in Ireland. But first a look back to what was done in Census 2006.

II. Dissemination of Census 2006 outputs

3. The methodology followed in the 2006 census consisted of personal delivery of blank census forms by enumerators in the field, self completion of the questionnaires by members of the public, collection of completed questionnaires and their transportation back to HQ and a six month processing operation using automated forms processing to capture, code and clean the data. The model had already been successfully deployed in the 2002 census. The collection of the completed census questionnaires by enumerators in the field affords the opportunity of a speedy population count. The preliminary headcount figures were published on 19th July 2006 – within three months of the census held on 23rd April 2006. Given that the census recorded an average annual increase in population of 2 per cent in the 2002-2006 inter-censal period the early availability of headcount population figures at a small area level was particularly important for those engaged in the planning and delivery of services.

4. The principal demographic results were published within 11 months, and the principal socio-economic results within 14 months, of census day. Both reports taken together contained the results of all of the topics on the census form with a commentary on the main findings. A further 13 subject matter reports were published between April and November 2007. Every report was accompanied by a press releases which meant that the census results featured strongly in the media every two to three weeks during this period. Two further reports – one dealing with non-Irish nationals living in Ireland and the other providing a profile of the working population of large towns – were issued in June 2008 and April 2009 respectively. All of the above reports were issued simultaneously in hard copy and on the web. The web tables were interactive tables built using Beyond 20/20 software. The tables were also made available in portable document format (PDF).

5. Small area population statistics (SAPS) were published to cater for users of census data at small area level. The product covered 68 tables organised in 15 themes for 10 different layers of geography. The lowest of these covered 3,409 Electoral Divisions

(LAU2 units) which varied in size from less than 100 persons to over 32,000 persons. The average size covered was 1,244 persons.

6. A 5 per cent sample of anonymised records (SAR) was lodged with the Irish Social Science Data Archive (ISSDA) to cater for specialist users – mainly academics and researchers. A detailed file (POWCAR) containing the demographic and socio-economic characteristics of persons at work, along with information on the origin and destination of their journeys to work, was also made available for analysis. The POWCAR dataset, which covered the entire census file, proved very popular with planners and to date some 87 accredited users have been given access.

III. Consultation on Census 2011 dissemination

7. The CSO invited all users of statistics and other persons with an interest in the census to give their views on the type and range of information they believed should be made available from the 2011 Census. Users were notified that in planning the Census 2011 dissemination programme a number of important changes were being considered compared with the methods used in previous censuses. These changes covered a range of areas such as type of outputs, level of detail, web format, and mapping interface.

8. A public consultation was launched on the CSO website in March 2010. This sought users' views on various policy choices and output options for Census 2011. In addition over four hundred census users, comprising individuals and organisations, were contacted directly. The specific issues on which users' views were sought included:

- (a) The choice between web only and hard copy publications;

which dissemination tool to use for interactive tables i.e. to continue with Beyond 20/20, which was used for the last two censuses, or to conform to the office standard PC-Axis;

- (b) A proposal to release census data by way of Census Releases on the web, organised thematically. Each release would contain about 10 key tables on the theme in question, be prefaced by interpretation and analysis and would contain links to related detailed tables on the web;

- (c) A proposal to publish "Population Profiles" aimed at providing a snap shot demographic report covering all the variables on the census file for specific pre-determined boundary layers; and

- (d) The use of GIS and mapping techniques to assist users to find their geographical area of interest, view the boundary file of that area, and call up the relevant small area statistics. With this in mind a product entitled SAPMAP was developed and a web link to it was included in the consultation documentation.

9. The level of response to the consultation was somewhat disappointing. Only 42 individuals/organisations responded despite a five-week consultation period and a follow-up reminder being issued to the census user community. However, the quality of the feedback received was very informative and helped in refining the proposals.

IV. Major findings of consultation process

10. The following were the major findings of the consultation phase of the Census 2011 dissemination programme:

- (a) While there was a broad welcome for the move away from paper publications, the interpretation of what is meant by web tables varied amongst the user

community. Some users expressed a preference to have the data displayed as PDFs. However, this would be unlikely to result in any major efficiencies from a production perspective and in any case would not be the ideal medium for downloading tables. The more experienced users appeared to be happy to have tables displayed interactively using software solutions such as PC-Axis or Beyond 20/20. Casual users, on the other hand, wanted “one-click” access to tables with a preference to have the relevant tables displayed and then to be able to download or print them.

(b) The reaction from the respondents to the consultation process was not strongly in favour of either of the two tools currently in use on the CSO website (ie. PC-Axis and Beyond 20/20). Both software packages have their strengths and weaknesses. When a user selects a table in PC-Axis he/she has to choose the items to include before the table appears on screen. In Beyond 20/20 when a user selects a table it appears on screen and can then be manipulated. However, as both software packages are well established most users were happy to continue with the software to which they had become accustomed.

(c) There was an enthusiastic welcome from most users to the proposal to present the census results in Census Releases organised on a thematic basis. The strong feedback from users was a requirement for more commentary, interpretation and analysis of census results.

(d) Users were also enthusiastic about the proposal to present population profiles for specific geographical areas (e.g. LAU2 units and towns). However, users wanted the flexibility to be able to determine their own geography as well, say by combining contiguous LAU2 units and to be able to extract the relevant population profile.

(e) The prototype SAPMAP mapping tool which was used to illustrate Census 2006 data was well received by users. However, performance issues were noted with downloading large scale vector files from the mapping base of Ordnance Survey Ireland (OSi) – the national mapping agency.

V. Dissemination strategy for Census 2011

11. The results of the public consultation were considered at a meeting of the Census Advisory Committee (CAG) – a broadly based group set up to advise the Central Statistics Office (CSO) on all aspects of the census. Following agreement with the CAG the refined proposals were then forwarded to the Senior Management Committee of the CSO for final endorsement. The resulting dissemination strategy will contain the following elements:

(a) A complete break will not be made with hard-copy publications. Instead, the number of hard copy publications will be reduced from eighteen in Census 2006 to four in Census 2011, namely: Preliminary Results, Principal Demographic Results, a report on Areas and Principal Socio-economic Results. The Preliminary Report, which is planned for publication within 3 months of census day, will still be possible due to the personal collection of census forms by enumerators. For the first time this report will also contain information on the extent of vacant dwellings – a major concern in Ireland since the collapse of the house building industry and the onset of the financial crisis. The decision to retain the report on Areas (formerly Volume 1) reflected its importance as a statutory input into the work of the Constituency Commission in determining boundaries for elections to the Dáil (the national Parliament). The time schedule for the release of these four reports will be on a par with that achieved for Census 2006 (see earlier paragraphs).

(b) Census Releases organised on a thematic basis will be produced for all the variables on the census file. Each release will contain about 10 key tables and will be

prefaced by interpretation and analysis. The releases will make extensive use of thematic maps and graphs and will also give comparisons with the results of earlier censuses. Each release will contain links to more detailed tables on the web with directions and instructions on how to access these tables. The precise number of Census Releases and their sequencing has yet to be decided. However, the target of delivering all of the planned releases in the period April to December 2012 will be extremely challenging.

(c) The majority of census tables will be presented in web (interactive) table format only. This will free up resources previously devoted to page formatting of reports and will therefore enable a greater number and variety of tables to be produced while bearing in mind the need to reproduce the full set of tables provided for Census 2006 as well. The feedback from users that the complete requested table should appear on screen will be taken into account. Once the requested table appears on screen the user will be offered to choice of either downloading or printing the table or customising it using PC-Axis. In other words the table is built automatically but can be amended by the user if required using the functionality of the software. The needs of naïve users and more expert users will therefore be catered for.

(c) Population profiles will be prepared for selected geographical layers, mainly towns and recognised small areas. These will consist of standard two page reports covering the results of all the questions on the census form for the area in question. Each profile will contain a small map of the relevant area and a number of summary tables and charts. However, the profiles will mainly be discursive in format describing the main characteristics of the area from a census perspective and giving a limited number of comparisons with the picture at national level. The choice of whether to prepare all the profiles beforehand or to compile them “on the fly” is being examined at present.

(d) Ordnance Survey Ireland have devised new small areas with a complete national coverage. They number approximately 19,000 and will typically contain about 70-100 households. They nest into the previous LAU2 units, thereby maintaining comparability with the past, but will be superior to the previous units because of their homogeneity. It is planned to provide small area population statistics (SAPS) for these small units as well as for the geographical layers distinguished as part of the Census 2011 outputs. The SAPMAP product will be refined to enable users to access the SAPS data via a mapping interface. Developments in train in other countries in the use of Google/Bing Maps will also be monitored with a view to using the optimal mapping interface.

(e) A 10 per cent household public use sample of Census 2011 records will be lodged with the University of Minnesota’s Integrated Public Use Microdata Series (IPUMS). Work in providing similar samples for all censuses undertaken between 1971 and 2006 inclusive is now nearing finalisation and will be launched as part of ISI 2011 which is being hosted in Dublin in August 2011. It is planned to once again provide the POWCAR research micro data file along the lines of that provided for Census 2006. This will contain the demographic and socio-economic characteristics of persons travelling to work, school or college along with information on the origin and destination of their journeys.

VI. Challenges to be overcome

12. The successful organisation of a census is clearly a major undertaking. In order to be deemed an overall success all of the constituent parts of the operation have to run smoothly. These include the coverage of the field operation, the quality of the responses provided, the accuracy of the processing phase and finally the speed and accuracy with which the outputs can be produced. Data quality has to permeate all phases of the operation if the final product is to have the confidence of the public.

13. A major challenge for National Statistical Institutes (NSIs) is understanding users' needs and then being able to cater for these needs. It is not immediately obvious how to segment the market to cater for the needs of diverse groups which have been given the titles "touristers", "harvesters" and "miners". Each NSI will have to attempt to cater for all these groups but the weightings to be accorded them will differ depending on the maturity of the user community in the relevant country. Maintaining close liaison with users will have to be prioritised. In this regard, the CSO plans to engage more actively with diverse user groups than has been done heretofore. This will include presentation days for Central Government and Local Authority officials and a road show to educate user groups at a local level in the community on what is available and how to access it. Greater online help will also need to be provided with online tutorials and a dedicated helpline.

14. The range and scope of material to be made available from the Censuses to be carried out in 2011 will most likely exceed what has been achieved in previous censuses. With the greater complexity of outputs to be made available, the navigation of census results through streamlined online search facilities will have to feature highly. Website design will have to be prioritised while realising that many users may not directly visit the NSI website to find the relevant census information but may indirectly find it using Google or Bing.

15. Article 5.2 of Regulation (EC) No 763/2008 of the European Parliament and of the Council stipulates that "Member States shall provide the Commission (Eurostat) with final, validated and aggregated data and with metadata, as required by this Regulation, within 27 months of the end of the reference year". Ireland plans to meet this requirement within 18 months. Eurostat, for its part, faces a number of challenges to optimise the use of the European wide census data from the Census 2011 project. A user friendly front end with excellent online help is an absolute requirement. Good information on what data is available from what members states will also be critical as not all data will be provided simultaneously. The peer pressure involved in being able to provide the data as speedily as possible will also be important as the data will already be close to three years out of date for those member states conducting censuses in the early part of 2011. A further challenge for NSIs will be the extent to which they integrate the planned EU hypercubes into their own dissemination programmes.

16. The use of mapping products to enhance census outputs has rightly been identified as an area for development. Geo-referencing each dwelling, as it is planned to do for Census 2011 in Ireland by using the national address database (GeoDirectory) to drive the field operation, will make the adoption of variable geographies an easier task. In particular it will be possible to meet the requirements of the EU Geostat project which aims at producing data for standard grid squares across the EU. However, close attention will have to be paid to the inadvertent disclosure of individual identifiable data by differencing between administrative boundaries and grid squares.

17. Each NSI rightly emphasises that no individual identifiable information will be made available. This puts a heavy onus on NSIs to ensure that there is no inadvertent disclosure of information. Many different techniques exist to attempt to maintain the confidentiality of the individual information provided by respondents. These include record swapping, perturbing cell values below a pre-determined threshold and combining the results for particularly small area with those of contiguous areas. Whatever method is used it will have to be transparent to users and enjoy their confidence.

VII. Concluding remarks

18. With the advent of Twitter users have become accustomed to having instant up to the minute information at their disposal. This is the environment in which the compilers of official statistics are currently operating. Censuses by their nature are big operations that take time to organise and bring to fruition. While the results of the census may be perceived to be more important than someone's opinionated "tweet", NSIs are nonetheless under greater pressure than ever to deliver their results more quickly and in more accessible language free of officialese. The overriding consideration must therefore be timeliness. However, this should not at the expense of quality and accuracy. Communicating in an era of sound bites without "dumbing down" the results of the census will also be demanding. The ultimate test of the census will be whether the results are relevant and fit for purpose. We will know in the aftermath of Census 2011 whether we have passed this test or not.
