



# 3MOONS

METHODOLOGY DIRECTORATE  
LEADING THE DEVELOPMENT OF STATISTICAL METHODS

## WINTER 2008/09

This is the 14th issue of Methodology Directorate's (MD's) quarterly overview of methodological issues in ONS. The 13th issue covered aspects such as:

- N**ews
- developing a more effective editing strategy
  - the International Association for Official Statistics conference
  - an introduction to ONS Geography

Read on for the latest news from MD.

### Advisory committee meetings

**S** The second meeting of the Government Statistical Service Statistical Policy and Standards Committee (GSS SPSC) took place in London on 26 January 2009. Discussion

topics included, agreement on the terms of reference for the committee; an update on the activities of the UK Statistics Authority; a progress report on the development of guidance for the new Code of Practice for Official Statistics; a paper on identifying, developing and agreeing statistical policies and standards; proposals for allocations from the Quality Improvement Fund; and funding options for the 14th GSS Methodology Conference. Please contact Jan.L.Thomas@ons.gsi.gov.uk for further information.

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## Postcard from New Zealand

In October 2006, I left ONS to travel to the other side of the world to take up a secondment opportunity at Statistics New Zealand.

### What I do at Statistics NZ

I work as the subject matter project manager for Collection Methods. The role of the team is to provide methodological support to survey areas across Statistics NZ in the design and development of collection instruments.

Since starting in Collection Methods I've worked on a great range of economic and social surveys, helped out with cognitive interviews at farms, vineyards, financial sector orientated businesses and households, and been involved with the review and development of self-administered and electronic questionnaires.

Another key part of our role is the development of standards; we are currently developing standards for cognitive interviewing, writing questions and the layout design of self-administered questionnaires.

One of the highlights for me was having the opportunity to present the work of Collection Methods at the 24th International Methodology Symposium and Second International Workshop on Business Data Collection Methodology at Statistics Canada in October last year (photo). This also provided an opportunity to catch up with colleagues from Data Collection Methodology at ONS.

### Living in New Zealand

It's great to have the opportunity to live and work in another part of the world for a few years. Here are just a few of the things that I've enjoyed whilst in NZ: the view from my desk of Wellington Harbour and the Tararua mountains;



sailing and kayaking around Wellington Harbour, Marlborough Sounds, Abel Tasman and Coromandel Peninsular; visiting numerous vineyards; lazing around in natural hot pools and springs; being close enough to travel to Australia for holidays; and living in a city where there is always something going on.

Recently we've had Wellington Cup Day at the local racecourse and the NZ Rugby Sevens tournament. In the next few weeks, there's a race around the Wellington Bays, a Dragon Boat race across Wellington Harbour and I'll be taking part in Taupo relay race with team Statistics NZ.

Like anything there have been a few bumps and challenges along the way, such as being airlifted off a mountain by helicopter, sailing across the Cook Strait in a storm (with waves 9.6 metres high), getting used to buildings that sway and rumble when there is an earth tremor and of course keeping two feet on the ground on a windy Wellington day.

Sarah Williams

# New coding and naming policy for statistical geographies

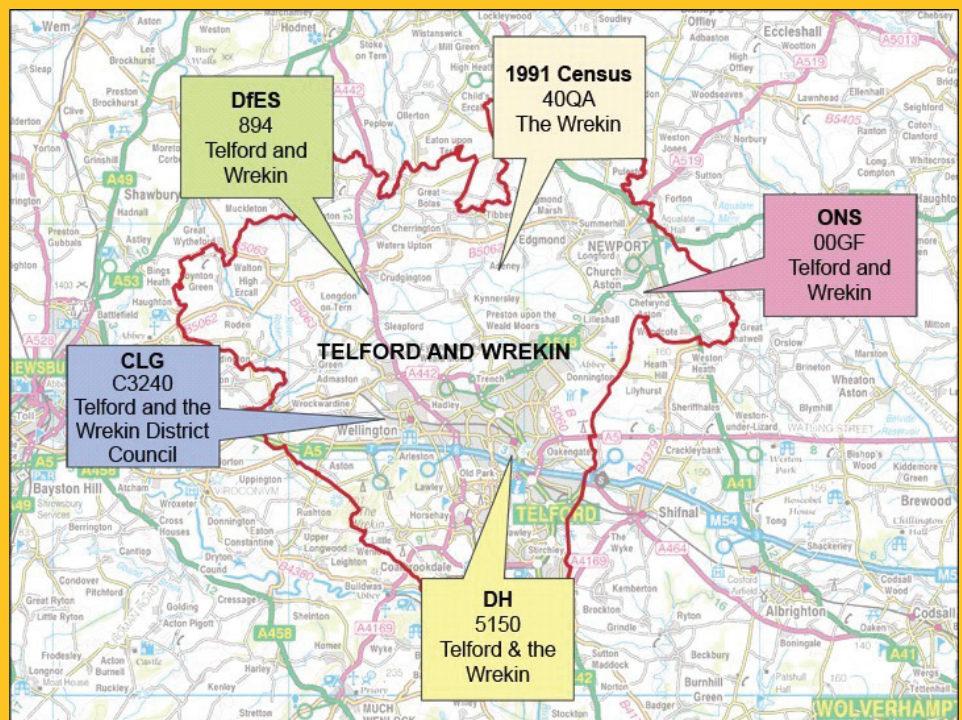
Every picture, or map in this case, tells a story. This one alludes to the fact that standards for coding and naming UK statistical geographies are inconsistent across the National Statistics (NS) community. ONS Geography (ONSG) is therefore proposing a new approach to coding and naming as a GSS standard.

Multiple coding schemes exist with a wide variety of structures and lengths. There is also a variable mix of intelligence built into codes. For example, the electoral ward of Cuckoo Oak has an ONS code 00GFNS, the first four characters of which locate this ward within the Local Authority District of Telford and Wrekin. Often this intelligence works, such as the previous example of parentage, but sometimes it corrupts over time. Either way, it assumes knowledge to read the code correctly. Even for something as apparently simple as a name, there is often significant variability and confusion.

This unnecessarily mixed and confused situation inhibits the exchange and integration of geographical information (GI), particularly at the UK national level. It creates increased risk of error in the statistical processing chain. It probably also partly contributes to the explanation as to why users of GI spend 80 per cent of their time collating and managing information and only 20 per cent analysing it to solve problems and generate benefits.

There are clear, high-level drivers that this situation should be rectified. The recently published UK Statistics Authority's Code of Practice explicitly refers to using 'common geographic referencing and coding standards' when referring to sound methods and assured quality (Principle 4).

Similarly, The UK Location Strategy, newly launched this year, is a national initiative to maximise exploitation and benefit from GI to the public, government and UK industry. It identifies within its strategic actions that '...we use common reference data so we know we are talking about the same places...'. ONSG's statistical geography coding and naming policy fits squarely with these desired outcomes.



The new code uses a simple nine character alpha-numeric structure with a clear set of maintenance and presentation rules. The code in the format ANNNNNNNN is made up of two parts, the entity and the instance. The first three characters (ANN) represent the area entity (that is, an area 'type', for example, county), with the first alpha value designating the country within which the entity lies. The second part of the code comprises six number characters (NNNNNN) and this represents the specific area instance (for example, Hampshire).

The coding system is not hierarchical (other than the first country character) and does not contain any embedded intelligence. The bad practice of re-using codes will be stopped. Codes will not change solely because of a name change. Also, the new code format means they are future-proofed in terms of capacity to cope with new geographies, including cross-border instances. You may already have seen the code in use for over 41,000 instances of lower and middle layer Super Output Areas in England and Wales, and for over 8,000 other instances in Scotland. We should not run out of codes again!

To support the new coding methodology ONS will provide two new products that replace others in existence. First, the Register of Geographic Codes is a

database of all codes meeting the new standards. Second, the Change History Database will record other aspects of geographical intelligence, such as hierarchical relationships.

What now remains is to finalise the draft policy paper and seek its ratification and adoption through the GSS Regional and Geography Committee, and then the GSS Statistical Policy and Standards Committee. With over 80 per cent of all public sector information having a GI element (an address, a postcode, a neighbourhood, a census output area, a co-ordinate or a boundary of some sort), the least we should expect is a robust, future-proofed and harmonised coding methodology for statistical geographies across the GSS. With all the different legacy computing systems and standards in place, along with the sometimes parochial spirit that prevails, this will not necessarily be a straightforward task.

Nick O'Rourke



# Introduction to Census Coverage Assessment and Adjustment

Perfectly completed census form? Everyone counted, and only once? Everyone counted in the right location? Priceless. For everything else (which is actually quite a lot) there is the Sample Design and Estimation (Census) team, based in ONS Titchfield.

The 2001 One Number Census (ONC) project estimated and adjusted for the number of people and households not counted in the census. The aim was to get a population estimate and then produce outputs consistent with it. The amount of undercount (or the people that were missed out) in the 2001 Census was estimated to be 6 per cent in England and Wales, about three million people. But how was this figure calculated?

The key source of information is the Census Coverage Survey (CCS). This happens about 6 weeks after the census for about 1 per cent of the population and provides an independent count of all households and individuals in a sample of postcodes. These records can then be compared and matched to the census records giving an idea of where households and people were missed by the census or the CCS.

As the level of undercount will not be consistent across the country, it needs to be estimated within geographic groups (called Estimation Areas), which are formed of whole local authorities. A technique called Dual System Estimation (DSE) is used within the sample to estimate the population, which takes account of those individuals missed by both the census and the CCS. The DSE can then be applied to areas not covered by the CCS using standard statistical techniques (actually a mix of ratio and small area estimation).

For the 2011 Census we will also be taking a look at overcount. With the introduction of internet completion as well as post-back questionnaires, duplicate forms are something to watch out for.

Now that we have an idea of who was missed out and where, how do we go about correcting the census database? Effectively, households and people are added-in according to the patterns already found within the data, ensuring that the final census database is consistent with the estimates we made of the population. Essential data is 'borrowed' from existing records and imputed into the census database, which can then be used to generate all of the tabulations from the census. This does mean that every census tabulation is really an estimate – not a count!

So, like that bit of plastic in your wallet, we may be small (only six people) but we are rather useful. Our goal is to make sure that the census estimates and tabulations are as accurate as we can make them, even with an imperfect census response. For more information about the work we do please contact [Owen.Abbott@ons.gsi.gov.uk](mailto:Owen.Abbott@ons.gsi.gov.uk).

## Our changing economy: backcasting the new industrial classifications

In the past 15 years, economies across the world have changed as new technologies have developed. For example, the mobile phone industry and industries based around home computing have developed enormously as domestic use has become commonplace. Therefore, in order to efficiently measure and understand our economy, the way we classify its different components has had to change too.

This change, driven by Eurostat requirements, is currently being implemented for National Statistics throughout the European Union. An article in the Spring 2008 edition of 3MOONS outlined the timetable for the change to the new classification system in the UK.

Methodology Directorate (MD) has taken a lead in investigating methods of

converting historical survey estimates based on the old codes (NACE Rev.1.1 standard industrial classification; SIC(2003)) to those based on the new codes (NACE Rev.2; SIC(2007)). We call this process 'backcasting'. We need to backcast so that our customers have consistent series for monitoring and predicting our economy. Understanding economies is clearly a high priority operation across the world in the current economic climate.

Eurostat commissioned a report from MD on the methods of backcasting short-term indicators, which was delivered to them in December 2008. The report is an account of a thorough investigation of different methods of backcasting historical time series on to the new classification. It identifies the challenges associated with this process, and offers

recommendations on how to deal with these. The report includes input from discussion at a Eurostat workshop on backcasting, and also conclusions from a meeting of the Government Statistical Service (GSS) Methodology Advisory Committee. It contains detailed comparisons of different methods of conversion, including the use of conversion matrices and domain estimation. It also has detailed comparisons of conversion of the data at different stages in the production of economic statistics. As such, it represents a public record of a thorough investigation into the challenges of backcasting economic time series.

Further information and copies of the Final Report, Interim Report and Eurostat Workshop Report are available in pdf format from [Louisa.Nolan@ons.gsi.gov.uk](mailto:Louisa.Nolan@ons.gsi.gov.uk)

The GSS Methodology Advisory Committee (MAC) provides advice on methods used to produce Official and National Statistics. It consists of distinguished academics and statistics professionals, and it is chaired by the Methodology Directorate at the Office for National Statistics. Meetings are held twice a year. The most recent was on 11 November 2008, where discussion topics included the impact of technology on the visualisation and dissemination of statistics, smoothing techniques, the challenges faced in the change to the 2007 Standard Industrial Classification, and uncertainties associated with population estimates.

The 16th GSS MAC is to be held in London on 19 May 2009 and expressions of interest for papers from members of the GSS should be sent to GSS MAC secretary Louisa Nolan. The deadline for abstract submission for GSS MAC 16 was 5 February 2009, but expressions of interest are always welcome, and abstracts received after the agenda is finalised will be considered for the following meeting in November. An agenda will be circulated nearer the time.

Typical topics for papers are preliminary methodologies or ideas, or more advanced work prior to finalisation. The topics should be related to the production or presentation of government statistics, and can range from statistically technical issues to general ideas. Please see [www.statistics.gov.uk/methods\\_quality/nsmac.asp](http://www.statistics.gov.uk/methods_quality/nsmac.asp) for previous papers or

contact [Louisa.Nolan@ons.gsi.gov.uk](mailto:Louisa.Nolan@ons.gsi.gov.uk) for more information.

The UK Census Design and Methodology Advisory Committee (UK CDMAC) met on 22 October 2008. Topics discussed included developments in the 2011 Census questionnaire, internet questionnaire, and address register; strategies for editing and imputation, quality assurance, and statistical disclosure control for 2011 Census tabular outputs; an update on dissemination and Census rehearsal. The next meeting of the UK CDMAC is planned for 24 March 2009. Please contact [Garnett.Compton@ons.gsi.gov.uk](mailto:Garnett.Compton@ons.gsi.gov.uk) for further information.

### Fourteenth GSS Methodology Conference

The 14th Government Statistical Service (GSS) conference will be held on 30 June 2009 at a new venue, Church House and Conference Centre in Westminster, London. Unlike previous years there will be a delegate charge for the conference in the range of £200, with a potential reduction for early registration. More details to follow. As always the conference is a one day event with a mixture of plenary and parallel sessions covering a wide range of topics related to the work of the GSS. Karen Dunnell, the National Statistician has already agreed to give the opening address.

The call has recently gone out for abstracts; we are seeking speakers to share their completed work, work in progress and

plans for future work. Presentations are welcome from across the GSS and other national statistical institutes, with others considered if relevant.

This is a good opportunity to meet people, promote your work, share experiences and findings with others and receive feedback from peers.

To get a flavour of the event and its content, take a look at the homepage for last year's conference which includes presentations and papers and can be found by following the links from [www.ons.gov.uk/about/newsroom/events/index.html](http://www.ons.gov.uk/about/newsroom/events/index.html)

The submission deadline for abstracts was 6 March 2009. Accepted abstracts for the conference will be announced on 31 March 2009. Registration will open from 6 April 2009. For more details on this year's conference please follow the links from [www.ons.gov.uk/about/newsroom/events/index.html](http://www.ons.gov.uk/about/newsroom/events/index.html)

### Secondments

MD welcomes applicants from UK government departments and other national statistics institutes for short- and long-term secondments. Both organisations benefit from the knowledge-sharing and training elements these arrangements offer. Please contact [Julie.Brown@ons.gsi.gov.uk](mailto:Julie.Brown@ons.gsi.gov.uk) for more information. Please visit [www.statistics.gov.uk/recruitment](http://www.statistics.gov.uk/recruitment) to see all current job vacancies in ONS.

## Recent MD conference presentations

### 2nd International Business Data Collection Methodology Workshop (20–24 October 2008)

Changing the habit of a lifetime: Designing a Telephone Data Entry 'questionnaire'  
Evaluation of 2nd International Business Data Collection Methodology Workshop

Elspeth Maclean  
Jacqui Jones

### 24th International Methodology Symposium (28–31 October 2008)

Achievements and Challenges: An Overview of Data Collection Methodology at the UK Office for National Statistics  
Making Telephone Data Entry (TDE) the Primary Mode of Response in Short Term Business Surveys at the UK Office for National Statistics  
Measuring Respondent Burden in the UK Office for National Statistics

Jacqui Jones, Elspeth Maclean,  
Amanda Wilmot and Ruth Wallis  
Elspeth Maclean, Mark Peck  
and Ann Lewis  
Jacqui Jones and Denise Williams

### GSS AS/StO Conference 2008 (8–9 December 2008)

Quality  
Data Visualisation

Bronwen Coyle and Sarah Green  
Steven Rogers

### Your questions answered

Thank you to everyone who responded to the question posed in the last issue of 3MOONS: What do you see as the most pressing methodological issue facing official statistics today?

The most pressing methodological issue stated by you the readers concerned the use of administrative data in official statistics.

Please send any questions or comments you have to [3moons@ons.gsi.gov.uk](mailto:3moons@ons.gsi.gov.uk). Thanks again for all your queries, from home and abroad.