



3MOONS

METHODOLOGY DIRECTORATE
LEADING THE DEVELOPMENT OF STATISTICAL METHODS

What colour am I?

This is the second quarterly overview of Methodology Directorate's (MD's) current work in the Office for National Statistics (ONS). The first issue covered aspects of quality reporting, public confidence in official statistics, and quality assurance.

The green colour used in the Autumn issue provoked as much discussion as the newsletter's title, 3MOONS. In fact, the colour had no name (it's 390C from the Pantone catalogue). The competition this time is to come up with a name for this Winter's orange colour – just for fun, and a small prize. The closing date is 31 March 2006 and the winning entry will be announced in the next issue.

Please reply to: 3moons@ons.gov.uk

News

Advisory committee meetings

As reported in the last issue, MD hosted the ninth meeting of the National Statistics Methodology Advisory Committee on 6 October 2005 in London. The tenth meeting will be held on 4 May 2006 – topics for discussion are yet to be decided. www.statistics.gov.uk/methods_quality/nsmac

The second meeting of the UK Census Design and Methodology Advisory Committee (13 October 2005) began by revising the organisation and scope of the committee and its sub-groups. Methodological issues discussed were:

- success measures for the 2011 census
- the design of the 2006 census test in Scotland and the 2007 census test in England and Wales
- the development of information to support more flexible enumeration procedures

The next meeting is planned for April 2006.

GSS forum meeting

Topics from the December 2005 meeting of the National Statistics Quality and Methodology Programme Board (Q&MPB), hosted by MD, were:

- characteristics of a peer-review process, to consider compliance with the ES code of practice
- Statistics Commission report on managing the quality of official statistics – reactions and the way forward
- update on the Quality Improvement Programme (formerly Quality Review Programme)
- published errors at ONS and their management
- National Statistics' self-assessment tool – progress report

The next Q&MPB meeting will be held in London following the European Conference on Quality in Survey Statistics (Q2006), 24 – 26 April 2006 in Cardiff.



Cardiff City Hall

News continued on page 4...

in this issue:

DCM – social capital

Data Collection Methodology (DCM) are working on a joint project with the National Centre for Social Research to convert the ONS core set of harmonised questions...

Protecting confidentiality: the new Tau Argus software

The Office for National Statistics (ONS) provides official statistics based on high professional standards, openness and trust...

Who's who in MD?

Experimental Statistics to National Statistic criteria

'By definition, experimental statistics are being evaluated. Some are new outputs; some are changes to existing outputs...

Inside MD

Processing, Editing and Imputation

Future conferences

But... why '3MOONS'?

This was the question on everyone's lips, and we received a great many creative suggestions. Most people guessed that, as the newsletter is quarterly, it appears once every three moons. Only one person grasped the acronym, **Methodology Overview of ONS** – Mark Pont, of ONS. (The full expansion of 3MOONS is Quarterly Methodology Overview of ONS.)

But no-one guessed the other reason for the name – that there were three moon photographs included! The plaudits go to Mark, but as no-one got all three reasons, the prize will be retained and awarded to the winner of the competition at the top of this page.

2

2

3

3

4

4

DCM – social capital

Data Collection Methodology (DCM) are working on a joint project with the National Centre for Social Research to convert the ONS core set of harmonised questions on social capital from Computer Assisted Personal Interviewing (CAPI) to a self-completion paper questionnaire format.

This project, commissioned by Socio-Economic Inequalities Branch, began with a literature review. Quantitative analyses of Health Survey for England (HSE) data on social capital were also used to help examine possible mode effects (differences due to the way that data are collected) between face-to-face and self-completion questionnaires. Based on the information gathered so far, the harmonised social capital questions (core set) were converted into a self-administered format, and the paper questionnaire tested at our cognitive laboratory in the London office.

A report on the cognitive phase, focusing on the importance of paralanguage (the non-verbal, visual channel of administering self-completion questionnaires) was presented at the American Association of Public Opinion Research (AAPOR) conference, 2005. This paper can be found at:

www.statistics.gov.uk/about/services/dcm

In order to field test the social capital questions and measure the effect of using different modes, the paper questionnaire was included in a postal survey which was run at the same time and in the same postcode sectors as the National Statistics Omnibus CAPI-based Survey, during the first quarter of 2005.

As a further strand to this work, we have been evaluating an alternative population sampling frame for UK postal surveys. In the past, we would have used the Electoral Register (ER) to find names and addresses for postal surveys. But since October 2002, individuals have been given the option of preventing their ER details from being passed to a third party. There are now two versions of

the ER, full and edited, the latter comprising those who have opted out.

We only have access to the edited ER, but using this would introduce severe coverage errors (about 26 per cent of those on the full ER have opted out). Furthermore, an unknown proportion of the eligible population are not registered on either the full or edited ER (the 1991 Electoral Register Check showed that for Great Britain as a whole, 7.1 per cent of eligible people recorded in the 1991 Census were not included on the register).

As a consequence, we estimate that about one in three adults aged 18 or over are not included on the edited ER. These individuals are likely to be systematically different from the UK's adult population. The use of the edited ER would therefore result in survey results becoming seriously biased.

These conclusions were presented at a Royal Statistical Society (RSS) seminar in December 2005.

Protecting confidentiality: the new Tau Argus software

The Office for National Statistics (ONS) provides official statistics based on high professional standards, openness and trust. Every day, we ask individuals and institutions to provide information that is private to them and not otherwise available to government. To ensure the data we receive are honest and useful, we must sustain the confidence of providers. To achieve that, we must protect confidentiality. The National Statistics Code of Practice sets the standard for confidentiality protection and states that 'Where data are collected or used for statistical purposes, we guarantee to protect confidentiality.'

Maximising access to data and safeguarding confidentiality are both vital to maintaining trust in official statistics. MD's Statistical Disclosure Control (SDC) branch is leading the development of statistical methods and expert advice, allowing statistical outputs to be published while maintaining confidentiality. A major achievement is the release of a new software tool, Tau Argus 3.1.0, for the Neighbourhood Statistics Service.

Tau Argus is designed to implement the statistical disclosure control of tabular data, to manage the risk that published tabular values might disclose confidential information. This involves modifying or protecting the values of cells in a table that are potentially disclosive or unsafe. The user may create a table, specify a disclosure rule to identify unsafe cells in

the table (for example, cell counts of 1 or 2 in a frequency table) and then select the best method to protect the table (table redesign, cell suppression or controlled rounding).

Suppression involves replacing the value in unsafe cells with a missing indicator, then carrying out additional suppressions to ensure that the value in the unsafe cell can not be calculated by subtraction from row or column totals. Rounding involves adjusting all values in the table to a specified base, 3 or 5 for example. In controlled rounding the values are rounded in such a way as to preserve additivity to sub totals and table totals.

Tau Argus is an innovative software tool that allows the confidentiality of large tables to be protected in a way that would otherwise be very time-consuming, if not impossible, to perform. It also uses linear programming methods to find the best solutions, maximising the information content of the table while protecting confidentiality.

In Autumn 2005 a new version was launched – Tau Argus 3.1.0. This was developed by Statistics Netherlands in conjunction with British and other European statistical organisations. MD's SDC branch was directly involved in developing the new controlled rounding functionality, as well as testing the software and improving the documentation.

The software has been enhanced in the following ways:

- the program is faster and can read-in larger data sets
- tables entered without marginal totals and subtotals can be completed and protected
- improved controlled rounding routines include:
 - new partitioning feature (allows larger tables to be rounded)
 - new rounding options (enable more tables to be rounded)
 - controlled rounding to unit tables which contain decimal places
- improved suppression routines

The new Tau Argus has already received positive feedback. A user from the Office of the Deputy Prime Minister commented that in terms of speed, 'The performance was far superior to the previous version of Tau'. He added that, 'The optimal suppression function worked particularly well'. Many Neighbourhood Statistics data suppliers now use the new Tau Argus software to produce safe tables, meaning more information can be made accessible on the ONS Neighbourhood Statistics website:

www.neighbourhood.statistics.gov.uk

Training and support in Tau Argus 3.1.0 is provided by the SDC branch. For more information, contact Vanessa Fearn (73 2608 vanessa.fearn@ons.gov.uk).

Experimental Statistics to National Statistic criteria

The National Statistics Protocol on Data Presentation, Dissemination and Pricing states that:

'By definition, experimental statistics are being evaluated. Some are new outputs; some are changes to existing outputs. They are published to help involve users and other interested parties in their development, as a means to build in quality at the earliest stages... Managers of experimental statistics should work to a published timetable showing when they expect to submit their statistics for approval to become National Statistics.'

The Quality Centre in the ONS Methodology Directorate (MD) has developed a template to ensure that experimental statistical outputs reach a standard to be published as National Statistics. This was agreed as ONS policy by the Statistical Policy Committee on 2 September 2005.

The template includes the following criteria:

- defined development phase has ended
- statistical methods have proved sufficiently robust to suit the variety of circumstances material to their use
- coverage has reached a sufficient level
- user feedback indicates that the statistics are useful and credible
- it is judged that the statistics meet the quality standards of National Statistics

Using the criteria, a MD quality assessment team will provide methodological advice for developing an experimental statistic; and advise if the output is ready to become a National Statistic. In ONS, this process will be managed through the Quality Assurance Database (see the Autumn 2005 edition of 3MOONS).

If more work is needed, MD will provide consultancy advice on further development to meet the criteria. The team may include an external consultant to provide specialist expertise if the subject matter makes this necessary. The Divisional Director for the output will agree when the output is ready for referral to the Statistical Policy Committee for final approval as a National Statistic.

'The Quality Centre in the ONS Methodology Directorate (MD) has developed a template to ensure that experimental statistical outputs reach a standard to be published as National Statistics'

Who's who in MD?

Methodology Directorate
Cynthia Clark - 75 6151

Survey Methods Division
Mike Hidiroglou - 72 5656

Data Unit
Jacqui Jones - 72 5643

Data Collection Methodology (Business)
Ceri Underwood - 72 5616

Data Collection Methodology (Census)
Elspeth Maclean - 73 3165

Data Collection Methodology (Social)
Amanda Wilmot - 75 5321

Processing, Editing & Imputation (Business)
Alaa Al-Hamad - 72 5648

Processing, Editing & Imputation (Social & Census)
Heather Wagstaff - 73 3584

Sample Design & Estimation (Business)
Mark Pont - 72 5642
Pete Brodie - 72 5639
Gareth James - 72 5630

Sample Design & Estimation (Social & Census)
Paul Smith - 72 5640
Owen Abbott - 73 3599
Dave Elliot - 75 5323
Charles Lound - 75 5325

Analytical Methodology & Research Division
Marta Haworth - 75 6232

Analysis Unit
Simon Compton - 72 6234

Analysis Methods
Steve Bond - 73 3054

Index Numbers, Prices & Inflation Measurement
John Wood - 72 5623

Spatial Analysis:
Martin Ralphs - 75 6383

Time Series Analysis & Seasonal Adjustment
Nigel Stuttard - 75 6324

Regional & Local Statistics Unit
Marie Cruddas - 73 3512

Demographic Methods
Alison Whitworth - 73 3107

Small Area Estimation
Philip Clarke - 75 6241

Statistical Disclosure Control
Paul Vickers - 73 5644
Jane Longhurst - 73 3976

Quality and Corporate Management Division
Frank Nolan - 75 6248

Business Support
Dave Bassett - 72 5619

Quality Centre
Bronwen Coyle - 72 5604

Statistical Training
Heather Gregory - 72 5607



Inside MD

Processing, Editing and Imputation

PE&I aims to provide methodological support to ONS business areas at the 'front end' of data processing by advising on, developing and implementing internationally recognized best practice in all aspects of processing, editing and imputation. We seek to understand customer requirements, search for and share best practice, build links with other National Statistical Institutes, and develop transferable skills.

Typically, issues that PE&I deal with involve:

- data capture
- data processing
- validation
- editing
- response chasing
- imputation and related software issues for all ONS surveys

The centre of expertise recently split into two branches: Newport (business surveys), and Titchfield (social surveys and the census). Current major initiatives for Newport involves developing a validation engine, as part of the ONS modernisation programme, and researching a more efficient response-chasing strategy. For Titchfield, implementing Canadian Census Editing and Imputation System (CANCEIS) software across social surveys as part of modernisation, and evaluating CANCEIS for the 2011 census.

Our main customers are:

- Survey Processing Centre (Newport)
- Business Data Division (Newport)
- Reporting Analysis and Production branches (Newport)
- Social Data Collection and Administrative Sources Division (Titchfield)
- Social and Vital Statistics Division (Titchfield)
- Census Division (Titchfield)

Staff in Newport are: Alaa Al-Hamad, Gary Brown, Hilary Martin (until March 2006, based in Titchfield), Rob Bucknall, Andy Fallows and Begoña Martin. In Titchfield: Heather Wagstaff, Neil Jackson, Steve Rogers, and Christine Sexton.

Please contact us with any data capture, cleaning or imputation issues - we will be glad to help.

NEWS

Future conferences

Abstracts and papers are sought for:

The International Conference of the Royal Statistical Society (RSS 2006) Belfast, 10 –14 September 2006 (closing date, 31 March 2006).

CORRECTION: The closing date for the Third International Conference on Establishment Surveys (ICES-III) Montreal (Canada) 18 – 21 June 2007 should have been 5 December 2005, not 1 December, and this was for invited session proposals, not abstracts. Contributed paper abstracts will be sought later in 2006 (probably April – June).

Your questions answered

What would you like to ask Methodology Directorate? Questions can be on methodology, organisation, plans, or any other topic we can (briefly!) answer.

Please send your questions to 3moons@ons.gov.uk. We will choose one or more to answer in the next issue.

In this issue we have been asked to provide national and international dialling codes for our internal numbers. National codes are:

- 01633 65 in place of 72
- 01329 81 in place of 73
- 02075 33 in place of 75.

For international calls, replace the leading 0 of the national code by 44.