SUMMER 2007

3MOONS

METHODOLOGY DIRECTORATE
LEADING THE DEVELOPMENT OF STATISTICAL METHODS

Summer 2007

This is the eighth issue of Methodology Directorate's (MD's) quarterly overview of methodological issues in the ONS. The seventh issue covered aspects such as: three key MD publications, an interview with Martin Brand – one year on; New Zealand's experience with Internet Collection; statistical training courses in MD; and an introduction to Sample Design and Estimation (Social and Census).

Read on for the latest news from MD.

NEWS

JSM award

Hukum Chandra of MD won the student paper award at the 2007 Joint Statistical Meetings with his paper 'Small-Area Estimation in Multivariate Surveys'.

MD runners-up in Excellence Awards

Their innovative work in developing the business editing tool SNOWDON won Alaa Al-Hamad, Gary Brown and Begoña Martín of MD the runners-up award in the 'Strategic Analysis and Use of Evidence' category in the inaugural ONS Excellence Awards.

Advisory committee meetings

MD will host the thirteenth meeting of the National Statistics Methodology Advisory Committee on 27 November 2007. Topics are welcome – please email suggestions to: **denise.e.williams@ons.gov.uk**.

See **www.statistics.gov.uk/ methods_quality/nsmac.asp** for past meetings and further details.

The Census Design and Methodology Advisory Committee will meet again in the Autumn. It's coverage sub-group recently completed its first review, covering two papers. The first was about the formation of estimation areas and the second about the options for applying dual-system estimation. There were a number of useful comments and discussion points, which will be addressed in follow-up work. The second review is scheduled to take place in September 2007.

MD – Government Statistical Service (GSS) forum meeting

The next meeting of the National Statistics Quality and Methodology Programme Board will be hosted by MD in London on 4 October 2007. Please email comments and

suggestions for agenda items to: **david.matthewson@ons.gov.uk**

Three into two: New structure for MD

On 14 June, the Methodology Directorate completed its restructure from three divisions into two in response to recommendations in the Wroe/Steele review of Innovation, Development and Methodology.

The two new divisions will ensure that methodology support is provided to all business areas of the office.

- Survey Methodology and Quality Division, headquartered in Newport and led by Martin Brand, primarily supports methodology for business survey methods and analysis.

- Census and Social Methodology Division, headquartered in Titchfield and led by Frank Nolan, primarily supports methodology for social surveys and the census.

Both divisions have staff still located at London, and the divisions will evolve as these posts relocate to Newport and Titchfield. On 5 September Cynthia Clark, Executive Director for Methodology, will retire. Martin Brand will replace her on temporary promotion. Paul Smith will replace Martin, also on temporary promotion. It is expected the permanent Executive Director for Methodology post will be advertised within the next six months.

Twelfth GSS Methodology Conference

The Twelfth GSS Methodology Conference, organised by an ONS team lead by Simon Compton, was held on Monday 25 June. I became involved at the beginning of the year, the plan being for me to shadow Simon and take over for 2008

Jane Longhurst

The conference is designed to bring together people working on methodological projects from around the GSS, to share experiences and provide a forum for learning. Another key aim for the conference is to provide junior staff with an experience of attending and presenting at a technical conference. My impression was that all of these objectives were met during the course of this very productive and well-organised event.

The day began with a plenary session chaired by Cynthia Clark, which included a welcome address from Karen Dunnell, followed by a presentation from Professor Ian Diamond the Chief Executive of the Economic and Social Research Council. Ian really set the scene for the conference by emphasising the importance of methodological work and official statistics in addressing some of the key research areas that we are facing as a society.

The rest of the morning was given over to parallel gatherings. I attended and contributed to the Statistical Disclosure Control session, which was a good opportunity to share ONS's work on this topic, and to hear the experiences of the Scottish Executive. Over lunch I caught up with some colleagues, had a quick look at the exhibition stands and then attended the launch of the National Data Strategy which linked with Ian's talk from earlier in the day.

In the afternoon I took the opportunity to learn about methodological work across the GSS in the session on the Use of Administrative Data. The day finished with a really interesting talk from Professor Pedro Luis do Nascimento Silva covering a brief history of official statistics and looking forward to new challenges and developments in the field of survey methodology.

So what now? The presentations and papers will be posted on the web over the next month or so and we will be looking at the feedback received from delegates via the evaluation forms to start planning for next year! With such a successful conference the pressure is on, but with the experienced team from MD Business Support and ONS Communications I know that I will have all the help I need.

If you have any comments on the conference or thoughts about next year then please feel free to contact us by emailing **methodology@ons.gov.uk**. Watch out for details of the thirteenth conference in June 2008 and remember to register early – this year the conference was very popular with places being filled in early May!

ICES-III Conference report

The third International Conference on Establishment Surveys (ICES-III) took place from 18-21 June 2007 in Montréal, Canada, with over 400 participants. ONS, and MD in particular, were well represented. Gary Brown interviews Paul Smith (MD), who was on the programme committee

Of what relevance is ICES to ONS?

'ICES brings together statisticians working in surveys of businesses, farms, educational and government establishments and other institutions to discuss developments in approaches. ICES-I, in Buffalo, USA in 1993, was a milestone and produced a book that first captured the methods specific to establishment surveys, which are usually founded on a register, and which typically have to cope with far more skewed populations than other types of surveys.'

How has the conference changed over the years?

'There were some notable developments in the topics covered this year, with quite a number of sessions on business-survey questionnaire design, and on obtaining information from business respondents. This has clearly been a big growth area since ICES-II (Buffalo again, in 2000) and MD were well-represented with two invited papers and joint organisation of one invited session.'

Which sessions were of most interest?

'There was a series of sessions on non-response issues, particularly on targeting non-response follow-up and estimating non-response bias (MD presented an invited paper).The use of administrative data is a further topic of interest to National Statistical Institutes, and a range of experiences was covered and discussed in several sessions and in the panel session that closed the conference. Australia and Canada seem to be reasonably well ahead in having access to tax data, but it is the Scandinavian countries, with systems based on registers for many years, who have the most integrated systems. Comparatively, ONS has a long road to travel, but the possibility of greater access to administrative data through the Statistics Bill should give us greater scope. Of course there were plenty of technical sampling and estimation sessions to keep me amused too.'

Is networking an important part of these conferences?

'Many contacts were made and renewed at ICES, including some people familiar from recent work with ONS – Mike Hidiroglou – now back at Statistics Canada – and Ray Chambers (who moved to Australia from the University of Southampton) and also, for those with long memories, some people who worked with ONS in the early days of the contract with Southampton University: Ken Brewer and Phil Kokic. As well as sharing ideas and practices from the presentations, it is this network of contacts which is so valuable for the future, as the experience available is far wider than inside ONS, and many interesting ideas have already been explored and evaluated.'

Overall, was it worthwhile?

'ONS made a very successful contribution to ICES-III in papers presented, and I was fortunate enough to be able to contribute to the organisation of the programme. It provided an excellent opportunity for professional development for us all.'

> (i) A full list of MD presenters is shown on the fourth page of this issue of 3MOONS.

An update on the SVC

The Statistical Value Chain (SVC) was developed in 2001 to provide a standardised framework for modernising ONS methods and tools. The SVC breaks down the survey process into 15 distinct stages or 'groups'. Within these, a number of component activities describe the range and type of activity carried out. ONS has recently developed a framework for statistical policies, aggregating the 15 groups of the SVC into 4 categories: Design (1–4), Implementation (5–8), Analysis (9–12), Dissemination/Preservation (13–16).

Across ONS the SVC is supporting current and future statistical activity, as well as playing a key role in sharing best practice across all statistical output areas.

This article describes the first significant change to the SVC since its inception. In group 10: Index Number Construction, the number of component activities has been increased from one, 'Index construction (including deflation, chain linking)', to eight. These changes were agreed by the Methodology Programme Board, the guardians of the SVC, in June 2007.

These changes have already been incorporated into the Statistical Guidance (STaG) database, where a new information page dedicated to the SVC will soon appear. For more detail on the SVC, and/or to discuss the benefits it can deliver to ONS business areas, please email: statistical.guidance@ons.gov.uk

The full SVC is now as follows.

1. **Decision to undertake a collection or analysis**
   - Analysis of user needs
   - Formulate research hypothesis
   - Research or related studies (UK and international)

2. **Collection design**
   - Clarify objectives
   - Research past and related work
   - Develop measurement instruments, including testing
   - Develop field procedures, including testing
   - Develop edit/imputation strategies
   - Develop data management strategies
   - Develop dissemination strategies
   - Document

3. **Accessing administrative data**
   - Clarify objectives
   - Arrange access (including any legal issues)
   - Document data that are accessed

4. **Sample design**
   - Clarify objectives
   - Research past and related work
   - Determine target population, frame, selection and estimation methods
   - Design and allocate sample
   - Document

5. **Implementing design**
   - Frame creation/cleaning
   - Sample selection
   - Sample cleaning
   - Allocation of sample to interviewers for interview based surveys and despatch of workloads
   - Allocation of sample to validators (self completion forms) and identification of workloads on corporate database

6. **Implementing collection**
   - Despatch of mail based or electronic questionnaires to respondents
   - Interviewing for interview based surveys
   - Management of respondent relations and feedback to frame information
   - Resolution of queries relating to selected units
   - Management of collection, including quality assurance of processes
   - Follow up procedures, including re-issue of sample to interviewers and reminders to mail based respondents
   - Document procedures and outcome of processes

7. **Editing and validation, derivation and coding**
   - Unit level editing and validation
   - Imputation and construction
   - Derivation of variables
   - Quality assurance of processes
   - Document procedures and outcome of processes

8. **Weighting and estimation**
   - Estimation (weighting and grossing)
   - Outliers
   - Sampling errors
   - Special adjustments
   - Quality assurance
   - Document procedures and outcome of processes

9. **Analysis of primary outputs**
   - Macro editing and drill down to unit data
   - Tabulation
   - Exception reporting
   - Assessment of results against related information
   - Document including quality report

10. **Index number construction**
    - Determination of Index Hierarchy
    - Determination and Calculation of Weights
    - Quality Adjustment of Price or Direct Volume Data
    - Deflation
    - Calculation of Price or Volume Relatives
    - Index Aggregation
    - Linking Rebasing and Re-referencing
    - Quality Measurement

11. **Time series analysis**
    - Interpolation
    - Seasonal adjustment
    - Trend analysis and extrapolation
    - Document including quality report

12. **Further analysis**
    - Identify and access relevant time series
    - Identify available methods
    - Develop and evaluate new methods and extensions of existing methods
    - Statistical analysis including tabulation, exploratory data analysis and longitudinal analysis
    - Adjusting data series for further analysis
    - Validate results
    - Document including quality report

13. **Confidentiality and disclosure**
    - Identify user requirements for outputs and priorities
    - Identify potentially disclosive information
    - Apply solutions to avoid disclosure
    - Evaluate results
    - Document

14. **Dissemination (data and metadata)**
    - Dissemination of standard aggregated outputs including text, diagrams, numbers etc
    - Dissemination of non standard aggregated outputs
    - Dissemination of micro data externally or within ONS under controlled conditions
    - Dissemination of metadata
    - Customer inquiries and complaints
    - Content management
    - Document processes and report on quality

15. **Data archiving and ongoing management**
    - Identify and maintain contact information, particularly data custodian
    - Implement archiving policy

Introduction to Statistical Quality

The Statistical Quality (SQ) team is part of the Quality Centre in the Methodology Directorate based in Newport. Quality is one of the key principles of the National Statistics Code of Practice. The Code states that 'Knowledge of National Statistics will be sustained by quality measures, regularly published.' Comprehensive quality measurement and reporting is needed to monitor improvement and to support continuous improvement.

The SQ team are: Rachel Skentelbery, Rachael Viles and Sarah Green

The team's main project is the Quality Measurement and Reporting (QM&R) project, which aims to ensure that a comprehensive and consistent approach to quality measurement and reporting is implemented throughout ONS. The QM&R project is made up of several strands of work, as described below.

Quality reports for ONS outputs

The SQ team have developed standard quality reports based on the Eurostat framework, currently being rolled out across ONS.

Two types of quality report are currently in development: Basic Quality Information (BQI) and Summary Quality Reports (SQRs). BQI is published in the first release for key outputs. This information is specific to the release, and details any quality issues along with dynamic, quantitative quality measures such as response rates and standard errors.

SQRs are overview notes not specific to releases. They pull together qualitative information on the six Eurostat quality dimensions: relevance, accuracy, timeliness and punctuality, accessibility and clarity, comparability and coherence. They also provide a summary of methods used and how these impact on the quality of the estimates produced.

Both quality reports are being rolled out over two years with completion planned for 2008. SQRs are published as they become available on the National Statistics website: www.statistics.gov.uk/qualityreports

Guidelines for Measuring Statistical Quality Version 3.1

The Guidelines for Measuring Statistical Quality help producers of government statistics to report on data quality. The guidelines aim to outline best practice for measuring and reporting on the statistical quality of Government Statistical Service (GSS) outputs. They contain a wide range of output quality measures and indicators, grouped together into stages of the statistical production process. The Guidelines also record the dimension of quality being measured in each case. Version 3.1 will be available from August 2007, replacing the current version (V3) and will contain new information loss measures for disclosure control. Eleven Key Quality Measures have been identified including items such as unit and item response rates, editing rates, standard errors for key estimates, mean absolute revisions, and time lags from provisional to final results.

The Guidelines are available on the National Statistics website: www.statistics.gov.uk/qualitymeasures

Process Quality Project

The Process Quality Project was developed to provide a Continuous Quality Improvement (CQI) framework for the statistical production process. Comprehensive quality measurement within the statistical process aims to provide support for performance monitoring and continual improvement. The project will cover the following.

- A defined set of process quality measures and indicators, grouped together into stages of the statistical production process. This is currently in development with publication scheduled at the end of 2007.

- An ONS handbook on improving process quality. This handbook is based on the *Handbook on improving quality by analysis of process variables* on the Eurostat website (http://ec.europa.eu/eurostat) and will provide guidance on improving quality for each step in the statistical process.

- Provide support to the office on process quality and continuous improvement. SQ are currently providing advice and guidance to several projects such as Census 2011 and the restructure of the Business Data Division. E-learning courses are also being developed with the Learning and Development team which will provide self-administered desktop courses to ONS staff.

Any queries regarding these or other QM&R projects please email: quality.measurement @ons.gov.uk

Recent MD conference presentations

Second Baltic-Nordic Conference on Survey Sampling (2–7 June)

'Difficulties in the Estimation and Quality Assessment of Service Producer Price Indices' – Markus Šova

Third International Conference on Establishment Surveys (18–21 June)

'Better information for regional government' – Martin Brand

'Improvements in stratification in the UK's Office for National Statistics' – Pete Brodie

'Improving Quality in ONS's Annual Earnings Statistics' – Pete Brodie

'A Strategy for Prioritising Non-Respondent Follow-Up' – Gareth James

'Improved questionnaire design yields better data: Experiences from the UK's Annual Survey of Hours and Earnings' – Jacqui Jones

'Paper and Web Questionnaires seen from the Business Respondent's Perspective' – Jacqui Jones

'Winsorisation for estimates of change' – Daniel Lewis

'Evaluating the effects of updates to business registers on monthly survey estimates' – Daniel Lewis

'Quality Improvement in the Office of National Statistics' – Frank Nolan

'100 years of the UK Census of Production' – Paul Smith

'Assessing the quality of SPPIs' – John Wood

27th International Symposium on Forecasting Conference (24–27 June)

'The Use of Seasonal Adjustment and Forecasting at the Office for National Statistics' – Fida Hussain

Second conference of the European Social Research Association (25–29 June)

'A quality-driven approach to reducing data editing costs' – Gary Brown

Your questions answered

In this issue, we have again been asked for information on 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 peter.gittins@ons.gsi.gov.uk for more information. To see all current jobs in ONS, please visit www.statistics.gov.uk/recruitment