



SPRING 2007

3MOONS

METHODOLOGY DIRECTORATE
LEADING THE DEVELOPMENT OF STATISTICAL METHODS

Twelfth GSS methodology conference

The Twelfth GSS Methodology Conference will take place at Victoria Park Plaza Hotel, London, on Monday 25 June 2007. The conference is designed to bring together people working on methodological developments and applications from around the GSS, to share experiences and provide a forum for learning about different methods and techniques.

The welcoming address this year will be given by the National Statistician, Karen Durnell. Keynote speakers will be Professor Ian Diamond (Chief Executive, ESRC) and Professor Pedro Luis do Nascimento Silva (Southampton University). Parallel sessions will be hosted on: data linking; statistical disclosure control; data collection methods; 2011 Census; survey precision; and administrative data sources.

The conference is open to GSS staff, and statisticians and other professionals with a special interest in official statistics, and is free of charge (lunch and light refreshments included). Further details, including a provisional programme, are available from www.statistics.gov.uk (follow links from 'About ONS' then 'Events'), or by emailing methodology@ons.gov.uk

Spring 2007

This is the seventh issue of Methodology Directorate's (MD's) quarterly overview of methodological topics in the Office for National Statistics (ONS). The sixth issue covered aspects such as: the handover of the Statistical Guidance (STaG) database to business areas; changes in MD due to the Wroe review (of Innovation, Development and Methodology in ONS); an overview of the consultancy contract between ONS and Southampton University; 100 years of the Census of Production (now the Annual Business Inquiry, Part 2), and an introduction to Census Enumeration Intelligence. Read on for the latest news from MD.

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NEWS Advisory committee meetings

MD hosted the twelfth meeting of the National Statistics Methodology Advisory Committee on Friday 11 May in London. Topics were:

- combining survey and administrative data
- demographic methods for quality measurement of population estimates
- designing the business register and employment survey
- sexual identity
- savings in economic surveys

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

The fifth meeting of the UK Census Design and Methodology Advisory Committee (UKCDMAC), jointly hosted by MD and Census, will take place in October 2007 (due to the 2007 Census test). The coverage assessment and adjustment subgroup has been established and is about to review its first set of papers. The disclosure control subgroup will be established shortly.

MD Government Statistical Service (GSS) forum meeting

The latest meeting of the National Statistics Quality and Methodology Programme Board (hosted by MD) was held in London on 26 April 2007. Topics were:

- quality improvement under independence
- methodology consultancy service
- business statistics efficiencies
- assessment in the new Statistical legislation
- piloting GSSAC as a self-assessment tool under independence

Please email comments and suggestions for topics at future meetings, to david.matthewson@ons.gov.uk



MD Publications – read on

Communicating our work is a high priority for MD. It helps to stimulate discussion on methods, to share best practice, and – by demonstrating the quality of our research and methods – to firmly place MD on the international stage.

To supplement personal communication and conference presentations/journal papers, MD issues three very different publications: 3MOONS, the *Survey Methodology Bulletin* (SMB), and the *GSS Methodology Series* (GSSM). We have recently reviewed the terms of reference, editorial boards and dissemination of these publications, and would like to take this opportunity to update you.



3MOONS

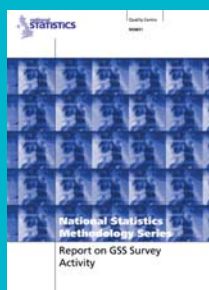
Published quarterly since Autumn 2005 (seven issues), 3MOONS publicises MD and its work through short articles based on papers and interviews with staff. Currently issued externally as a pdf attachment in an email, and internally via the Intranet, our future aim is that 3MOONS should also be available on the Internet. If you would like more information, to be added to the circulation list, or sent previous issues, please email 3moons@ons.gov.uk



Survey Methodology Bulletin

SMB has been around rather longer than 3MOONS, having appeared bi-annually since 1977 (60 issues). It publicises ONS (or joint ONS-GSS/academic) survey methodology development work through short technical papers, including work in progress. It is currently issued as a paper copy, which we plan to continue, but recent issues can also be found on the National Statistics website at: www.statistics.gov.uk/onlineproducts.default.asp

If you would like to know more, to be added to the circulation list, or to be sent previous issues, please email dcm.business.surveys@ons.gov.uk



GSS Methodology Series

GSSM (occasional publications since August 1997, 34 issues) publishes GSS monographs, or GSS-commissioned collaborative work of substantial survey/analytical methodological interest, or topics on data quality, through long technical papers (generally finished work).

GSSM can be viewed or downloaded on the internet at: www.statistics.gov.uk/methods_quality/publications.asp

Contact alison.whitworth@ons.gov.uk for more information.

Not Brand new

Martin Brand joined MD one year ago as head of Survey Methods Division (SMD). Since then he has been getting to grips with management issues and SMD methodologies (Data Collection Methodology, Processing Editing and Imputation, and Sample Design and Estimation). 3MOONS editor Gary Brown interviewed him recently.

What does he think of MD now? Has his perception changed?

'Not really. As a customer I always had a very high opinion of Methodology, and am pleased to see all our clients showing this very high regard. This in turn causes a sky-high demand for our services, so excellent business planning and prioritisation is crucial. But what really impresses me about MD is the quality of the staff – we have first-rate methodologists and develop first-rate methods, and I'm glad to see these strengths are recognized internationally.'

But what about weaknesses, or development areas? Is there anything MD could be doing better?

'I wouldn't call them weaknesses – but we definitely have challenges. The foremost of these is staffing levels. Relocation hits us in two ways: losing talented staff in London, and seeing staff move out of MD on other sites due to promotion opportunities. Recruitment of good quality methodologists has always been difficult, but we are making steady progress, with new faces appearing in Newport and Titchfield. We also augment our recruitment with staff seconded from overseas to fill key gaps. Hopefully, the ONS recruitment drive (including the new 'micro site') will really speed things up.'

What about the wider picture – how do you see MD fitting into ONS plans?

'Our focus over the last 12 months has been strongly on short-term work supporting the savings needed by ONS business areas. But this pressure hasn't prevented us developing and implementing innovative solutions to these problems. Both the SNOWDON tool, for optimising editing, and important work in sample re-allocation have proved worthwhile investments, and are already saving the ONS money.'

'Now that ONS funding has been agreed for the next five years, ONS plans can be drawn up and the requirements for MD's support can be mapped out. This will enable us to develop medium and long term strategies and research plans for delivering this support. This will benefit both us and ONS.'

On a personal level, how has MD fitted into your career development?

'Since studying at Southampton University, where I became addicted to the Saints (Southampton FC), my career has been varied but always enjoyable. I've been at ONS for 13 years now, and always fancied a management job in MD. I'm very glad I came, I'm enjoying my work, and I like being connected with Southampton again (through the consultancy contract)!

'There is certainly one area of development I'm not happy about – my waistline! MD are a very sociable bunch, and there are always cakes, biscuits, and chocolates on offer to mark overseas trips, birthdays, public holidays or any day in-between!'

Methodology Directorate's Statistical Training Unit (STU) does more than you might think. Apart from organising training for methodologists, STU organises wider statistical training for the rest of ONS and even the Government Statistical Service (GSS). Heather Gregory is Branch Head.

Heather says, 'We have been organising statistical training at different levels across ONS and GSS for a number of years now with a very high pass rate on our examined courses. There is always great demand for training by methodology experts at all levels. We would like to let 3MOONS readers know about the more popular courses we are running in 2007/08. For more information or to register a place, please contact us at statistical.training.enquiries@ons.gov.uk'

STU has been mapping statistical training courses onto the new ONS job families to ensure staff are able to follow a sequence of training that goes from more basic statistical training, such as the RSS Ordinary, through to 'expert' level training provided by the ONS Methodology Workshops. Below is information on these two particular courses, which form part of a wider Statistical Training Programme.

ONS Methodology workshops

The 2007/08 ONS Methodology Workshop Programme is available for all ONS and GSS staff. Following extensive evaluation of the 2006 Programme, the 2007 Programme has been re-developed. There are now two distinct levels, the Intermediate and Higher level. ONS staff who enrol for all six Intermediate level modules have the option of completing assignments for each module to gain the title of Statistical Analyst. The Intermediate level is also offered on a modular basis for those looking for knowledge and training in a specific area without the need for a qualification. The Intermediate level will take place in Newport and requires a pre-requisite of a GCSE in Maths/RSS Ordinary Certificate or equivalent. The Higher level, which will take place in London, requires a pre-requisite of a degree in Maths or Statistics or equivalent and a good working knowledge of the subject.

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Internet collection – the New Zealand experience

Lyn Potaka joined ONS in July 2006 on secondment from Statistics New Zealand (SNZ). She heads the Data Collection Methodology branch, working on 2011 census development. At SNZ Lyn and her team designed and developed questionnaires in English and Maori for the 2006 NZ Census. This work included developing an Internet-based questionnaire. This article reports on the challenges they faced and the solutions they developed.

Internet collection offers potential efficiencies where response rates are dropping, and although many National Statistics Institutes use the Internet for business data collection, few do this for social data. However, in their 2006 Census, Statistics New Zealand included an Internet option to encourage compliance by providing greater flexibility and convenience for respondents.

The New Zealand census is run every five years, and collects key information on the size, composition, distribution, economic activities and state of well-being of the population. Two questionnaires are used – one for individuals and one for dwellings. Developing Internet versions was expected to be challenging as even minor changes to layout and formatting can cause a difference in results through mode effects. Usability testing of the Internet site was also important to ensure that the application would be simple and easy to use.

To undertake the design work, a prototype system was developed in-house. This approach meant that design choices could be fully assessed and improvements made through an iterative process of usability testing and revision.

Design features

The key features of the design are described here:

1. A secure login screen where respondents entered two identification (ID) numbers, one 11-digit, one 12-digit. ID numbers were split into groups of three to four characters on screen, and were presented in an identical format to the paper source documents. To help respondents locate the

ID numbers on those source documents, a graphic was displayed on screen showing exactly where they could be found.

2. Colours, fonts, formats, visual guides and question numbers were all designed to replicate the paper version.
3. A single scrolling page was used for the questionnaire. This approach did have some drawbacks, including a tendency for respondents to occasionally scroll past questions inadvertently. However, it also provided a context that was most like that of a paper questionnaire in allowing users to easily move backward and forward between questions. Respondents also commented, in usability testing, that they liked being able to print and retain their questionnaire.
4. Help buttons were placed on the right, next to questions, where extra information was available to assist respondents in completing the questionnaire.
5. Automated routing took respondents to the next appropriate question. This prevented routing errors and reduced the level of item non-response. Initially, inapplicable questions were designed to vanish from the screen, but respondents found this disconcerting in usability testing. An alternative approach was developed where inapplicable questions were 'greyed out' on screen and statements appeared telling respondents they did not need to answer those questions. These statements gave respondents some control over the routing process and allowed them to detect and correct any errors in navigation.
6. Respondents completing the Maori version could 'hover over' a button with their mouse to see an English translation of each question. This allowed respondents to check their comprehension of difficult items. It also replicated the bilingual nature of the equivalent paper questionnaires.
7. Edit checks were included for critical routing points and key items (name, sex, date of birth, ethnicity). Manual checking was also encouraged by including a summary table of key answers at the end of the questionnaire.

The experience of SNZ re-affirmed the challenges of designing an online questionnaire, and also convinced us of the crucial importance of usability testing.

Inside MD

Sample Design & Estimation Centre (Social & Census)

The core of the work of Sample Design & Estimation Centre (Social and Census) is in sampling and weighting, covering the range of ONS's social surveys (mainly household surveys but a few others too), and involving methods for estimating and correcting for undercoverage in the Census.

This includes quite a range of methods:

- sample design and allocation
 - frame construction and maintenance
 - sample selection, sample maintenance, sample rotation
 - allocation of samples to stints (interviewer workpackages)
 - weighting, including to population totals
 - dual system estimation for undercoverage in the Census
 - outlier detection and treatment
 - variance estimation
- experimental design and analysis embedded in surveys

The aims of the centre are:

- to optimise the quality of statistical outputs, taking account of resources, through research into, and application of, effective sampling and estimation methods
- to be open about the methods in use and to provide evidence on which to base decisions about how to conduct surveys
- to promote integration, harmonisation and improvements in consistency of ONS outputs through the use of, for example, common methods.

We are often in demand for anything from major design and redesign projects to assisting with implementation of small changes. Everyone wants to know what the impact of this or that sample change will be on the accuracy of the estimates, and there are often hidden methodological implications for what look like quite

innocuous changes to procedures. The coverage work on the Census is basically a large household survey, which fits with the rest of the work of the Centre, although the way in which the information is used is different from the way in which household survey results are produced. We are also currently managing the enumeration intelligence work (see previous 3MOONS).

The Centre currently consists of Dave Elliot, Charles Lound, Claudia Annoni, Juwaria Rahman and Katherine Merrett, all based in London and dealing with social surveys, and Owen Abbott, Miguel Marques dos Santos and Christine Sexton dealing with Census coverage in Titchfield and London, while Paul Smith manages the distributed network from a distance in Newport (and racks up a lot of train miles!)

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RSS Ordinary Certificate

The RSS Ordinary Certificate is a popular course which runs from September 2007 to May 2008. It aims to provide a sound understanding in the principles and practice of statistics, with emphasis on practical data collection, presentation and interpretation. Holders of the RSS Ordinary Certificate should be able to carry out supervised routine statistical work or be able to apply statistical methods at an elementary level within work of a more general kind. The course is delivered on all ONS sites, with distance learning also an option.

The pre-requisite is a GCSE or O-level in maths. The course is pitched between GCSE and A-level standard, but the nature of the syllabus is very different because of the emphasis on practical statistical work. Candidates should note that they will be assessed on their numeracy skills prior to full acceptance on the course.

The course covers the following:

- Data Collection
- Sampling Methods, Frames and Errors
- Condensing and Summarising Data
- Probability
- Time Series and Index Numbers
- Regression and Correlation

Closing date for applications is **1 August 2007**.

Full details of the ONS Methodology workshops and the RSS Ordinary Certificate, charges for GSS staff, and an application form, are on the National Statistics Website. ONS staff should enrol via the Atlas HR system.

A-level Maths with Statistics

Following the success of the A-level Maths course at Newport, STU, in conjunction with Coleg Gwent, are again offering the course in September 2007. St Vincent's College in Gosport will also be piloting an A-level Maths course in Titchfield in September 2007.

Secondment Opportunities in MD

Methodology Directorate 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 of these arrangements, and MD has been previously, and is currently, fortunate in the number and quality of secondees in our midst. Applicants will be required to have UK employment rights. Please contact cynthia.clark@ons.gov.uk for more information.

Your questions answered: secondments

In this issue, we answer a question on MD recruitment, prompted by our front page story last issue on secondments (above). Thanks again for all your queries, from home and abroad. Please send all your questions to 3moons@ons.gov.uk

To discuss a career in MD, please contact samantha.gowans@ons.gov.uk on 01633 813330.

To see all current jobs in ONS, please visit www.statistics.gov.uk/recruitment/