

METHODOLOGICAL NEWS

**A QUARTERLY INFORMATION BULLETIN FROM THE METHODOLOGY
AND DATA MANAGEMENT DIVISION**

September 2008

ABS Analytical Community Sets Focus for 2008-09

The ABS Analytical Community was established in mid-2007, through the creation and collaboration of the three analysis branches in the Bureau: Analytical Services Branch, Economic Analysis and Reporting Branch, and Social Analysis and Reporting Branch. The aim of the Community is to undertake methodological and applied policy-relevant analysis in order to enhance the value-add of ABS data and products.

The 2008-09 work program for the Analytical Community has been developed and reflects a number of emerging issues in Australian government and the community. Key areas of focus for the work program include the following:

- 1) Methodological analysis and research
 - expanding the use of hedonic regression methodology to cover laptop computers and other consumer durables;
 - investigating the methodological issues in R&D capitalisation in the National Accounts;
 - examining the feasibility of pooling and analysing data from different surveys;
 - developing and validating measures of social capital; and
 - maintaining and developing the small area estimation program.
- 2) Economic analysis and research
 - exploring the links between IT, innovation and productivity;
 - analysing business lifecycles using administrative data;
 - analysing the characteristics of younger, smaller Australian businesses; and
 - disaggregating human capital stocks and flows estimates by industry and by occupation.
- 3) Social analysis and research
 - analysing prisons data to explore trends in serious crime;
 - investigating and analysing housing affordability; and
 - investigating voluntary work data collected by the 2006 Census.

The 2008-09 analysis forward work program was compiled through a process of internal and external user consultation, including the establishment of an external analysis reference group which is comprised of senior representatives from a range of Government agencies, as well representation from the academic sector.

The ABS remains committed to undertaking relevant and high quality analysis to better inform Government and community decision-making.

For more information, please contact Jill Charker on (02) 6252 7290.

New Survey Collects Information on both Agricultural Production and Resource Management Activities of Farms

The Agriculture Commodity Survey is an annual survey which collects detailed information about agriculture commodities and water usage to measure agriculture activity throughout Australia and provide information regarding its contribution to national production. The user funded Resource Management Survey was to be a sub-sample of the 2007-08 Agriculture Commodity Survey with the aim of collecting information on the resource management practices of farms and linking them with key information such as commodities and farm characteristics.

As part of the ABS budget savings announced earlier in 2008, significant funds were required to be saved from the Agriculture program for the 2008-09 financial year (2007-08 survey period). A number of options for the Agriculture Survey were considered to save the required funds, but the requirements of the users of the Agriculture survey data and the fact that the user funded Resource Management Survey was required to be linked with the Agriculture Survey determined the final outcome. By reducing the content of the Agriculture commodities collected to only essential or signpost commodities and then combining this with the Resource Management Survey to form the Agricultural Resource Management Survey (ARMS), the objectives of both original collections could still be met.

Combining these two collections into one presented a number of challenges in regards to the sample design. There was a large amount of commodity information available for design purposes but very little historical information for the resource management questions of the ARMS. The final sample design resulted in a slight reduction in sample size to collect the signpost

commodities when compared to past Agriculture surveys (35,000 down to 30,000) with the same level of accuracy for these commodities as past Agriculture Surveys. It also resulted in an increased sample size for the Resource Management Survey which was originally planned to be a sub-sample of 20,000 farms.

Not only did this new survey design meet the overall budget savings required and maintain the time series of the major agricultural commodities, but it also increased the expected accuracy of the Resource Management estimates and provided a larger linking population due to its larger sample size. By removing the need for a sub-sample for the Resource Management Survey, the overall load placed on respondents was also reduced significantly.

For more information, please contact Alan Herning on (02) 6252 5350.

Retail Survey Redesigned to Reduce Sample; Time Series Implications Considered

The Retail Trade Survey collects data on a monthly basis from Australian businesses and estimates the total amount of retail sales at the Australia, state and industry levels. As part of the ABS budget savings announced earlier this year, it was decided that the sample size for the monthly Retail Survey be cut.

The initial proposal was to move to a quarterly survey. However, after consultation with key users, it was determined that a monthly indicator series was essential, although more detailed estimates were not required on a monthly basis. The goal of the new design is therefore to produce quarterly estimates at the industry group by state level, and monthly estimates at a broader level. There has also been a change in the scope of the survey: data will no longer be collected for the hotels and licensed clubs industry or the selected services (hairdressing and video hire) industry. Data for these industries are either not required by users or are available from other sources.

The new survey, introduced in July 2008, includes about 3,200 retail and selected service businesses each quarter. Of these, 500 are completely enumerated businesses that are contacted every month. The remaining sample of 2,700 businesses is split into three groups of 900 businesses, with each group being selected in a different month of the quarter. This is a 'one-in-two-out' strategy for collecting data from sampled units. Each business is required to provide a monthly estimate of turnover for the month of the quarter to which they have been allocated. They will then not be required to report data for the next two months.

Estimation for the new design is done in two phases. In the first phase, historical information that is known for the entire quarterly sample is used to estimate the proportion of the population benchmark that represents live in-scope units. In the second phase, the weights of units that have been contacted this month are calibrated to match this population benchmark.

The redesigning of the Retail survey has implications for time series continuity. The Time Series Analysis section (TSA) has been looking into this, and the section's assessment reveals that the 'one-in-two-out' sample rotation has a significant impact on the seasonal pattern of low level time series, such as state by stratification industries, and induces a different seasonal pattern under the new sample design.

Following TSA analysis and internal and external consultations, the ABS has decided to publish a monthly retail indicator at broad industry level, and at a state level where the sample design impact to seasonal pattern is less significant. Because of the changes in the scope, the publication groups for Retail Trade were also realigned to the remaining fifteen stratification industries. Australian, State and Total publication group are all to be directly seasonally adjusted. The increase in volatility that is expected due to the sampled units not overlapping between months has also led to Retail Trade adopting an end weight parameter of 3.5 for the asymmetric filters for all monthly trends.

Seasonal breaks were identified in a couple of series (NSW and Victorian Total), and evidence suggests that inclusion of a seasonal break would lead to improved revision properties for these series. There was also evidence of significant impacts on level, and backcasting of all series was required. Backcasting of the Retail Trade was done at the lowest level (State by Stratification industry) so that outputs could be produced on a quarterly basis. With an increased focus on ABS Trends, the trend revision analysis in the publication was updated.

The TSA is currently working through possible options for producing an independent, but consistent, quarterly adjusted Retail Trade series.

For more information about the sample redesign, please contact Amanda Norton on (02) 6252 5705, and about the time series analysis, contact Kirk Hampel on (02) 6252 5659.

DCM Introduces Usability Testing Guidelines for ABS Survey Instruments

The Data Collection Methodology (DCM) section in MDMD is currently revising the Forms Development and Evaluation Manual, which provides documentation on how to conduct a range of different form evaluations. The most recent addition to the manual is a chapter on usability testing, which refers to a range of techniques designed to test how "user friendly" an electronic interface is.

Usability testing can be used to test the design and functionality of any electronic interface, and is used to find aspects of the design that can be simplified or improved to make use of the interface easier and more satisfying. While it is commonly used to test the effectiveness of website design, the focus of the chapter is the evaluation of electronic survey instruments (e.g. Excel forms, Computer Assisted Telephone Interviewing (CATI) interfaces, web forms, etc.).

In addition, usability testing can compare the functionality and visual design of two or more similar instruments, or to evaluate the design of a single instrument at various stages of development. In both cases, usability testing aims to evaluate both the visual design of the interface, and the ease with which the instrument is accessed and navigated by the user (either the respondent or, in the case of interviewer-administered instruments, the interviewer).

Two distinct methods can be referred to as usability testing: inspection methods and end-user evaluation methods. Inspection methods are similar to an expert review and are best used early in the design process to evaluate a paper mock up or prototype instrument. End-user testing encompasses a wide range of testing methods, including observational methods, cognitive interview techniques, the collection of empirical performance data, and questioning respondents directly. For the best results, inspection method testing of a prototype instrument should be followed by end-user testing. Conducting iterative usability testing in this way will ensure that the final instrument is free of errors and easy for the user to complete.

The chapter describes both methods in detail and explains how to plan for and conduct iterative usability testing. For more information, please contact Jennifer Mitchell on (02) 6252 7783.

ABS Decommissions the ANZSPC as a Statistical Standard for Products

The ABS recently decommissioned the Australian and New Zealand Standard Product Classification (ANZSPC) as the Australian statistical standard for products. The ANZSPC was produced in 2001 as a collaboration between the ABS and Statistics New Zealand. The ANZSPC was intended to become the statistical standard for the collection and presentation of product statistics in both countries. However, recent reviews of product classifications, focusing on the use of ANZSPC within the ABS, found that:

ANZSPC has not been adopted widely within the ABS, rather a range of collection-specific classifications have been developed;

a range of product classifications are required to account for different conceptual bases such as industry of origin, end use and material composition; and

ANZSPC is no longer internationally comparable given the impending release of Central Product Classification (CPC) V2.0.

Furthermore, consultation with Statistics New Zealand revealed that the adoption of ANZSPC throughout New Zealand has also been nominal, therefore decommissioning the ANZSPC is seen as a logical and practical approach by Statistics New Zealand.

The ABS plans to adopt the international CPC V2.0 as the overarching framework for product classifications, that is, product classifications used within the ABS will concord with CPC V2.0 to at least 3 digit level. The

CPC is a multipurpose classification covering all goods and services and recent developments to increase the level of detail and comparability with other international standards have positioned it to fulfil the function of an overarching reference product classification for Australia and New Zealand.

For more information, please contact economic.classifications@abs.gov.au.

ASB Staff Members Report on Recently Attended Seminars and Courses

COPPS Awardees give seminars in UoW

In July, MDMD staff were invited to attend seminars presented by two past winners of the Committee of Presidents of Statistical Societies (COPSS) Award. The seminars were hosted by the University of Wollongong's Centre for Statistical and Survey Methodology.

Raymond J. Carroll, Professor of Statistics, Nutrition and Toxicology at Texas A&M University, spoke on "Score Tests in Semi-Parametric Models". He explained that, when working with semi-parametric models, performing score tests using the kernel method presents some problems. He explained how these problems can be overcome, and demonstrated, using an example involving the relationships between incidence of cancer, several genes and smoker status, that the use of his method increases the power of significance tests when there is an interaction between the effect of interest and the nuisance effect.

Xiao-Li Meng, Professor and Chairman of the Department of Statistics at Harvard University, spoke on "Statistics Can Lie But Can Also Correct for Lies: Reducing Response Bias in NLAAS via Bayesian Imputation". He presented his recent work, which was aimed at correcting for the effect of a form design hypothesised to encourage respondents to lie. The seminar was followed by a lively discussion, which revolved around the questions "why would you do this, when we have always known, and accepted, that people lie on surveys?" and "is user demand a 'good enough' reason to do methodologically questionable things?".

For more information, please contact Charity Liaw on (02) 62525578.

AMSI delivers course on Statistics for Resource Management and Environmental Science

The Australian Mathematical Sciences Institute (AMSI) ran this year's Australian Graduate Theme Program in Mathematical Sciences at the St Lucia campus of the University of Queensland. Held for two weeks last July, the program offered two advance courses on the theme of 'Statistics for Resource Management and Environmental Science'.

There were two streams of lectures in the course, both presented by distinguished international researchers.

The first stream, "Statistical Tools for Environmental Problems" was presented by Peter Guttorp, Professor of Statistics and director of the Northwest Research Center for Statistics and the Environment, University of Washington. The lectures focussed on the use of spatial analysis techniques. Professor Guttorp supplemented the theory with plenty of examples using data on rainfall, carbon dioxide concentrations and ocean wave heights.

The second stream, "Modelling and Analysis of Event History Data and Applications" was presented by Vijay Nair, who is the Donald A. Darling Professor of Statistics and Professor of Industrial and Operations Engineering in University of Michigan. His lectures explained the parametric and non-parametric methods of event history analysis. Professor Nair used many examples from engineering to supplement his talks and demonstrated the applicability to many other sources of data.

Steve Lane, a staff member from the Analytical Services Branch, attended the course and reports that there are many research problems in ASB to which these types of analyses may be applied.

For more information, please contact Steve Lane on (02) 62527833.

Recent External Visitors to MDMD

MDMD has attracted several external visitors over the past few months. The visitors gave seminars and met with ABS staff to discuss a range of topics. The recent visitors include:

Prof. Dominique Haughton, Professor of Mathematical Sciences, Bentley College, on June 16. Dominique's interests include applied statistics, analysis of living standard surveys, data mining and model selection. Dominique visited the ABS to discuss housing affordability and financial stress, small area estimation and living conditions. She has a special interest in the analyses of health, wealth and living standards in Vietnam. She presented a seminar on 'Multilevel Models and Small Area Estimation in the Context of Vietnam's Living Standards Surveys'.

Paul Cowie from Statistics New Zealand, on July 7-8. Paul presented a seminar on 'Assessing the Feasibility of Automatic Matching between the New Zealand Census and Post Enumeration Survey'. Paul also met with ABS staff to discuss data linking methods, the post enumeration survey and microdata access.

Barbara Clendon from Statistics New Zealand, on July 7-10. Barbara has worked in the Statistical Methods Division for the past five years, with most of her work being on time series analysis. During her visit, Barbara discussed the ANZSIC06 implementation, moving holiday corrections, use of administration data, data integration and data linkage software.

Dr Fiona Steele from the Centre for Multilevel Modelling, University of Bristol, on July 7- 9. Fiona's research interests include multilevel modelling, event history analysis, structural equation modelling and their

application to social science problems particularly in demography. Fiona presented a seminar on 'Multilevel Models for Longitudinal Data'. Fiona also met with ABS staff to discuss a range of methodological and subject matter topics including family patterns and community relationships, population and fertility issues, data linking and mortality studies and event history analysis.

Dr Jerry Reiter, Assistant Professor of Statistical Science at the Department of Statistical Science, Duke University, on July 29. Jerry's research interests include data confidentiality, imputation, survey methodology, causal inference and their applications to social science and public policy. During his visit, Jerry gave a presentation on 'Protecting Confidentiality in Public Use Data Via Multiple Imputation' at the monthly meeting of the Canberra Branch of the Statistics Society (SSAI). Jerry also presented a seminar in ABS on multiple imputation and met with staff to discuss microdata access, synthetic microdata and imputation.

Dr Nick Longford from Universitat Pompeu Fabra, Spain, on August 26. Nick's research interests include small area estimation, imputation, house price indexes, survey design and outlier correction. During his visit, Nick gave a presentation on 'Small Area Estimation with Spatial Similarity' at the monthly meeting of the Canberra Branch of the SSAI. He also met with ABS staff to discuss model versus design-based small area estimation, house price indexes and outlier correction.

Making a Difference - ABS Staff and the Foster Parents Plan

A group of MDMD staff, ex-MD staff and now other ABS staff is actively supporting the Foster Parents Plan, a program of PLAN International which is a community development network operating in over 60 countries. The group collectively donates money to sponsor children overseas and currently supports three children: Margaret (12 year old girl in Uganda), Boussiratou (11 year old girl in Mali) and Rajeet (6 year old boy in India). Simon Ow, an ex-MD staff member, has recently travelled to Tororo, Uganda, to visit Margaret. He reports below:

The PLAN sponsorship money goes into a pool of funds that support community projects such as schools and health centres. For example, in Tororo, two health centres were built. Here, patients are encouraged to test for HIV every 3 months, one-on-one counseling is provided to those who are tested HIV-positive and appropriate treatment is provided. The Prevention of Parent-to-child Transmission of HIV initiative provides free antiretroviral drugs to pregnant mothers before and after delivery. This has a high success rate of 90% and has reduced the number of children infected by HIV dramatically.

A PLAN youth centre was built near the Tororo town centre. Many young people come to the centre to learn about drama, music, karate, and other skills. It also has facilities such as a pool table, table tennis table, basketball court and soccer field. This was built next to one of the health centres. Most young people do not like

to be seen by their family when they are going to a health centre (e.g. to test whether they are HIV positive) so they come to the youth centre for activities and then sneak into the health centre afterwards. PLAN has also increased access to potable water by drilling many bore holes. I am convinced that Margaret and her community are being transformed through the help of PLAN.

When I met Margaret, she walked quietly towards me and greeted me by kneeling down and shaking my hand (that's the culture in Uganda). Like most African children, she was very shy! Children in Africa are often seen but not heard. PLAN is changing this culture by encouraging input from the children.

Margaret's home is just a small mud hut, a typical house in rural Uganda. She lives with her three siblings, her parents and her grandfather. There is no electricity in her home. Margaret's family harvest crops (millet, maize and cassava) to eat and tend their cattle daily. I presented Margaret's father gifts which I brought on behalf of the ABS - maize flour, soap, cooking oil, colouring pencils, stationery, tennis ball, koala toy etc. The family was very excited to receive these gifts! Margaret's family then surprised me by putting a live chicken in my hands! Giving me their chicken meant that they would have one less egg the next day. They were so generous to me even though they don't have much at all. Margaret and her family send their greetings to all of you and thank you very much for your generous support!

For more information, please contact Maree Size on (02) 6252 6055 or Tamie Anakotta on (02) 6252 7360.

NatStats08 Conference

The inaugural NatStats08 Conference will be held at the Crown Promenade Hotel in Melbourne on the 19-21 November 2008. The Conference will focus on the measurement issues surrounding key government policy areas.

NatStats08 is a key event for the National Statistical Service which is being led by the Australian Bureau of Statistics as part of its mission to increase the use and understanding of statistical information. The ABS recognises that it is just one of many providers of statistics to the Australian community; through the National Statistical Service it aims to provide a unified source of statistical information that can be used to inform debate, policy making and evaluation.

The NatStats08 conference will cover the following themes: Informing the Nation, Measuring the Progress of Society and Environmental Information for Informed Decisions.

NatStats08 is the first national conference to bring together an array of high profile researchers and policy makers from all levels of business, academia, government and the community to discuss strategies for improving future statistics for the nation.

Speakers include: Mr Enrico Giovannini- Chief Statistician of the OECD; Dr Ken Henry AC- Secretary to the Treasury; Mr Greg Bourne- CEO of the World

Wildlife Fund, Australia; Tim Costello- CEO World Vision Australia; and Professor Fiona Stanely- Director, Telethon Institute for Child Health Research.

For a full list of confirmed speakers, program information and to registers online visit <http://www.nss.gov.au/natstats>. The early bird registration for the conference ends on 26th September.

How to Contact Us and Subscriber Emailing List

The Methodological Newsletter features articles and developments in relation to work done within the ABS Methodology and Data Management Division. By its nature, the work of the Division brings it into contact with virtually every other area of the ABS. Because of this, the newsletter is a way of letting all areas of the ABS know of some of the issues we are working on and help information flow. We hope the Methodological Newsletter is useful and we welcome comments.

If you would like to be placed on our electronic mailing list, please contact:

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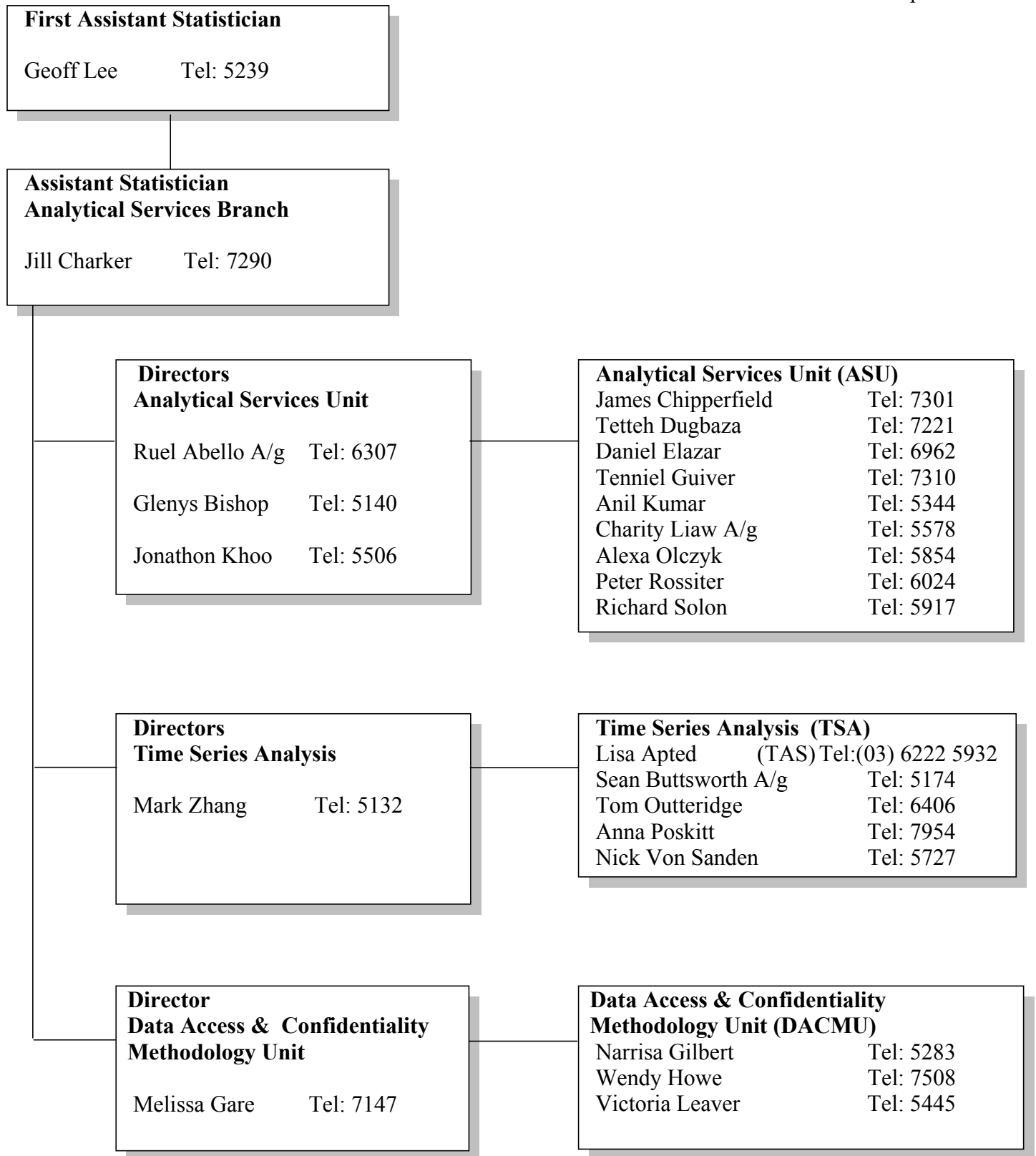
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Management Structure

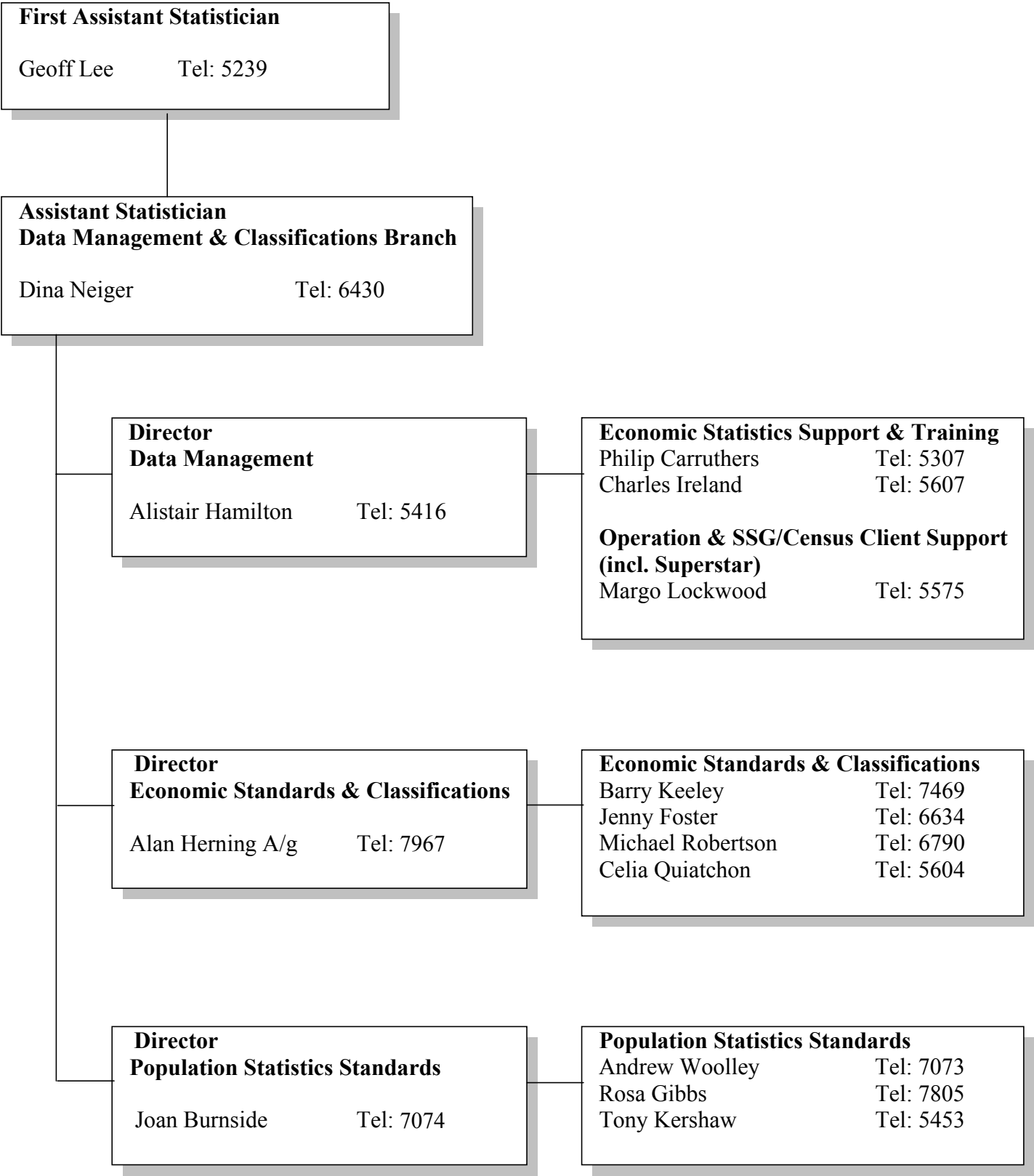
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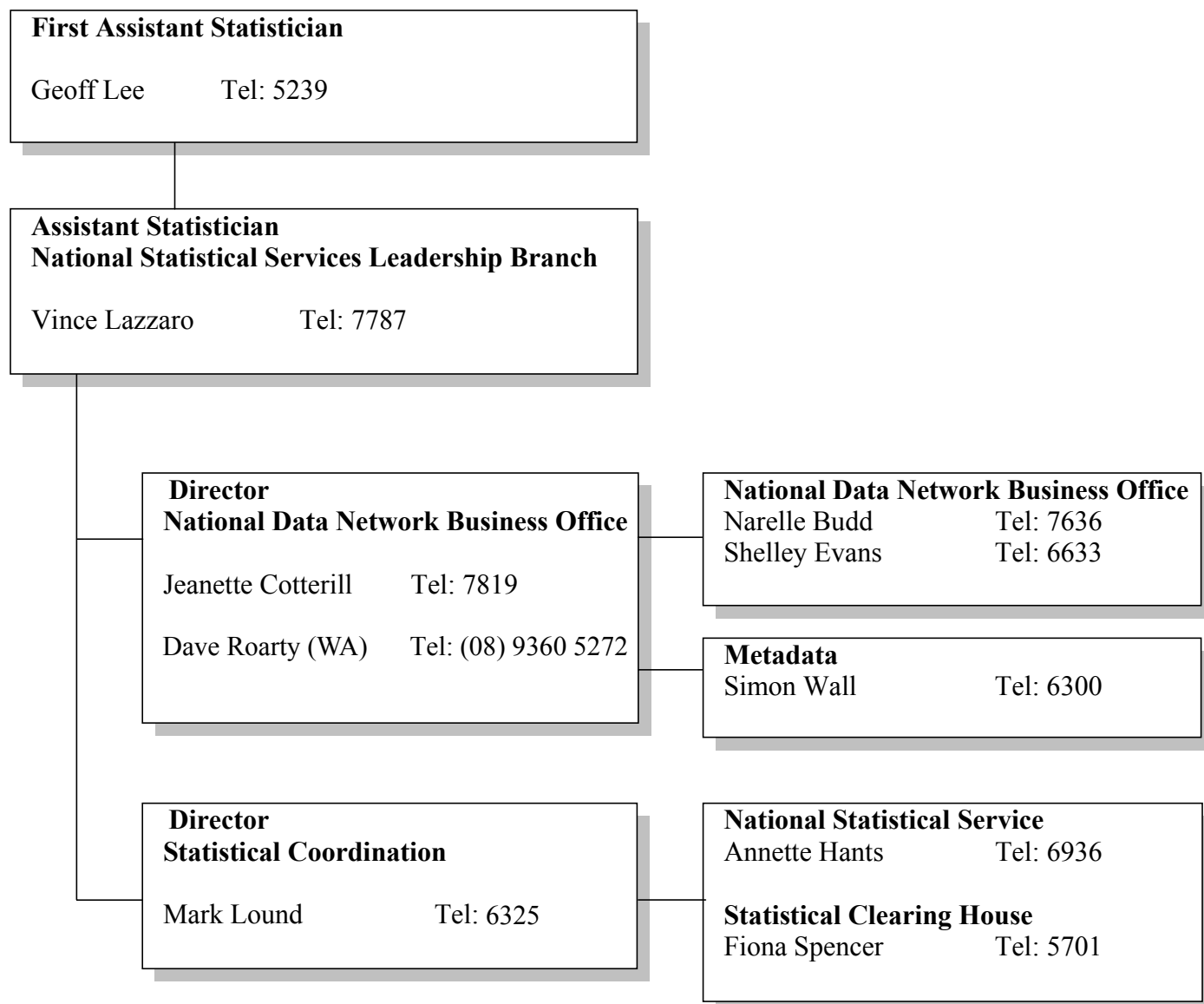
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