Australian Bureau of Statistics

METHODOLOGICAL NEWS

A QUARTERLY INFORMATION BULLETIN FROM THE METHODOLOGY AND DATA MANAGEMENT DIVISION

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Review of Unit Status Indicator and Processing Status Codes in the E2E Environment

In April 2009, a review was initiated by the Victorian Methodology Unit (VIC MU) regarding the use of Unit Status Indicators (USI) and Processing Status Codes (PSC) by business collections in the End-to-End (E2E) environment. A key objective of this project was to identify any inefficiencies in the E2E process due to an insufficient set of USI and/or PSC codes, given that a comprehensive review of these codes has not been conducted for some time.

USI codes are used to summarise the status of a unit which has been selected in a business collection and to outline its treatment in regards to estimation, future despatch and feedback to the ABS's Business Register. PSC codes were introduced to indicate the status of the unit in relation to the various stages of the survey processing cycle from initialisation and despatch through to editing and estimation. Over time, the usage of PSC codes has evolved to cover other aspects such as the area responsible for the selected unit at a certain stage in the survey processing cycle, the "cleanliness" of the selected unit and the production of management information. Having a strong link between USI and PSC codes is a critical factor in minimising statistical risk for business collections.

Conducting assessments of the standard practices of using USI and PSC codes for a particular E2E phase has assisted in identifying any apparent deficiencies up front. It has also highlighted gaps in some standard practices as well as the absence of clear procedural documentation in other cases. This has lead to additional side projects such as creating business process maps for provider contact processes where VIC MU are taking a leading role.

Consulting with business statistic centres (BSCs) regarding their current practices and any digressions from the standard practices has been a critical stage in the project. The project has been well received by survey areas that see the project as a valuable opportunity to address any perceived inefficiencies in their current practices that can potentially affect the data quality of their estimates.

At the conclusion of the project, one of the key outputs will be a revised set of USI and PSC codes which could be utilised by the various corporate tools in the E2E environment and would move towards the standardisation of USI and PSC coding practices across BSCs. A standardised framework for USI and PSC codes will lead to improvements in the data confrontation of estimates across the various business collections. This in turn will provide users with high quality and comparable ABS statistical products for decision making purposes.

From a systems perspective, improved linkages need to be established between the various E2E systems components as there have been situations where PSC and/or USI codes can differ across these components. Consistency in the USI and PSC code values between each system component will be taken into account when implementing a revised set of USI and PSC codes.

Currently, the project is at the stage of finalising the analysis undertaken for the processes up to the editing phase. Recommendations are currently being considered as well as any proposed changes, together with plans for implementation. Initial analysis for phases covering editing (i.e. process inputs), winsorisation, imputation and estimation (i.e. transform inputs into statistics) has commenced with recommendations and any proposed changes to be finalised over the coming months.

If you require any further information about this project, please contact Irina Pribil on (03) 9615 7566 or irina.pribil@abs.gov.au, or Elise Pierson on (03) 9615 7643 or elise.pierson@abs.gov.au.

Assessment of Self-Reported BMI Data in Health Surveys

Rising obesity in the Australian population is becoming of growing health concern. Overweight or obesity is regarded as a key indicator of possible risk for conditions such as heart disease, high blood pressure and diabetes, particularly when linked with other lifestyle factors such as lack of exercise and smoking. It is important that reliable and accurate data on obesity are available to authorities not only to monitor the magnitude of the problem but also to signal emerging trends and assess the effectiveness of interventions. Self-reported height and weight data are commonly collected in population surveys to determine BMI rather than measured data which are more complex and costly to collect. However, Australian and overseas studies based on a comparison between reported and measured height, weight and the derived BMI suggest there can be discrepancies between the two different measures. It has been found that there is a tendency for people to over-report their height (men especially) and under-report their weight (women especially) leading to an underestimation of the derived BMI.

The Analytical Services Branch has begun a study to investigate self-reported data and compare with measured data. Broadly, this project will investigate the relationship between reported and measured height and weight to provide a better understanding of the relationship between self-reported and measured BMI using unit record data from two NHS (1995 and 2007-08) that have both reported and measured data. It will examine the extent of the divergence between the two measures, whether it has changed over time and how the accuracy varies according to demographic, socioeconomic and physical characteristics. The implications of under-reporting and misclassification of obesity and people's perceptions of their health status based on self-reported data will also be examined. Possible adjustments to self-reported data to get a more reliable measure of the incidence of obesity in the population would also be explored. The report will initially use semi-parametric regression to investigate relationships between mis-reporting and personal characteristics. Due to the differences in reporting between weight and height, separate equations will be investigated for adjustment purposes using a seemingly unrelated regression framework.

For more information, please contact Steve Lane on (03) 9615 7413 or steve.lane@abs.gov.au.

Review of the Tradable and Non-tradable Items of the CPI

A concern of policy makers and analysts is the extent to which price change is attributable to domestic market factors or international factors. Price change arising from domestic factors, such as changes in labour costs, productivity or profits, calls for a different policy response and assessment of market conditions than changes arising from exchange rate movements or changes in demand and supply in overseas markets.

In September 1999, the Australian Bureau of Statistics released the tradables and non-tradables price indices, based on the methodology by Knight and Johnson (1997). The tradables component comprises all items whose prices are largely determined on the world market. An item is said to be tradable if imports represent at least ten per cent of total supply of the item; or exports represent at least ten per cent of the total supply of the item. The threshold of 10 percent was chosen on the basis of theoretical considerations, prior expectations and sensitivity analysis. The ABS uses the 10 per cent threshold to classify each CPI expenditure class as either tradable or non-tradable. Total supply of an item is defined as domestic production plus imports. Data on imports, exports and total supply are sourced from input-output tables. For each input-output commodity, the ratio of imports to supply and the ratio of exports to supply were calculated. In converting from input-output commodities (at the eight digit level) to CPI expenditure classes, these ratios were weighted together using household final consumption expenditures as weights.

Following discussions held in April 2010, members of the 16th series CPI Advisory Group requested that the tradable and non-tradable series be reviewed. The Analytical Services Branch (ASB), in support of

Prices Research and Development, was tasked with the review of the methodology used to ensure that it remains relevant in the current economic climate.

The review consists of two phases: the first phase consists of a review of the current 10 per cent threshold. The second phase is to update the tradables and non-tradables goods classification using the latest Input-Output tables.

For further information on the analysis, contact Shaun McNaughton on (02) 6252 5125 or shaun.mcnaughton@abs.gov.au.

Developing the Sample Design for a Survey of Private Health Care Service Providers

Health care services in Australia are always a topical issue in government, media and the community, especially in light of the recent COAG (Council of Australian Governments) reforms to the health care system. The Business Survey Methodology (BSM) group is developing the sample design for a survey of private health care service providers being run by the Annual Integrated Collections (AIC) Area for the 2009/2010 reference year. The survey is part of the Annual Integrated Collections "flexible" survey program which provides a set of standard key economic measures at ANZSIC and Input-Output industry level for National Accounts benchmarking. This survey will cover private sector GPs, specialists, pathology and diagnostic imaging, allied health care services (such as dentist, optometry, physiotherapy and chiropractors) and other health care services (such as ambulance). The survey will not include hospitals nor government run facilities. The 2009/2010 cycle is the first time an Australian Business Register (ABR)-based health care services survey has been conducted. Non-ABR based surveys of allied health services and medical practices were last conducted in the 1997/1998 and 2001/2002 reference years, when external Medicare provider lists, and practitioner lists were used as frames.

From the beginning, this survey has promised to be an interesting collection to work on due to the high level of interest from external stakeholders and the list of intricate data requirements. Consultation with key Commonwealth and state government agencies and internally with National Accounts Branch, revealed a number of priority health industry data needs. These pertain to the Commonwealth Government's COAG reform agenda, Report on Government Services, specific state government issues and NAB Input-Output data requirements. The existing quality and availability of private sector data was identified as a growing concern for government agencies that through COAG reform agendas, are increasingly expected to measure, monitor and evaluate health services of non-government businesses. The survey design seeks to address these issues and inform evidence-based policy by provision of information on the following core data requirements: number and locations of businesses; practice/practitioner data; geographical data (state and regional information by key aggregate); size/structure of industry; profitability of services/businesses; labour force profile (including age and gender of practitioners); client/patient profile (age and gender); and service delivery. While internal to the ABS, the survey will provide updated Input-Output Industry Group (IOIG) benchmarks for supply-use and input-output programs to the National Accounts Branch. Due to the relatively large number of data requirements, BSM has been juggling extensive stratification to ensure key estimates are produced at a good quality. An interesting stratification variable for this survey is geography, which divides the sample into capital city and suburbs, rural and remote areas, using business postcodes available on the ABR frame. The survey frame is also stratified by a flag for GPs which identifies businesses as either GP practices or GP practitioners. The flag was derived by a combination of employment size, type of legal organisation (TOLO) and manual investigation and will be used to meet data requirements on GP practices.

The survey is due to go into the field in July/August 2010, with publication of results sometime in 2011.

For more information, please contact Kristy Naylor on (03) 9615 7042 or kristy.naylor@abs.gov.au.

Analytical Research on Other Dwellings Price Index

Dr Thai Nguyen, a postdoctoral researcher from the UNSW and temporarily employed at the ABS, is undertaking a suite of research analysis on assessing the best method for handling compositional change in

units and apartments (collectively called 'other dwellings') as part of the investigation into the feasibility of constructing 'other dwellings' price index. (The scope of the existing House Price Index includes established detached houses only, not apartments and units). Outlined below are some exciting projects being undertaken within the NSW Office as part of a cooperation between Analytical Services Branch and the House Price Index section.

1. **Exploring alternative clustering methods for Other Dwellings Price Index**

A stratification method works well if all price observations in a stratified group are homogenous (i.e., having similar prices and price trends). The current stratification method for the House Price Index is based on suburbs' long-term median prices and the SEIFA scores. Apart from the SEIFA scores, there may be other underlying characteristics that determine other dwellings' prices as well as price trends. Therefore, it may be of interest to include suburbs' rates of change in dwelling prices as a stratified variable to capture the above-mentioned underlying other dwelling characteristics. This alternative stratification is currently being explored for the construction of the other dwellings price index.

2. **Exploring repeat sales method for constructing Other Dwellings Price Index**

Together with stratification, repeat sales method is a possible approach to constructing Other Dwellings Price Indexes, in the absence of detailed housing characteristics data. Essentially, the repeat sales method is a *matched model approach* since it utilises information on the same properties that have been sold more than once. This approach automatically controls for micro location (i.e. address) of houses and quality mix. Although the repeat sales approach has its own limitations, it may be useful to use it *indirectly* such as to align it with the benchmarking indexes or to compare the results with the repeat sales indexes produced outside the ABS.

3. **Retrospective approximation of Other Dwellings Price Index for non-Census years (where weights data is not available)**

House price indexes are currently constructed using a fixed-weighted Laspeyres price index, with the weights based on Census count. These weights remain constant until the release of new Census data, which can lead to increasingly unrepresentative weights as time passes by. When a new Census becomes available, it is desirable to use this information to retrospectively revise the indexes back to the previous housing Census date. The retrospective approximations of superlative other dwellings price index can help to reduce the well-known substitution bias associated with the Laspeyres index.

For more information please contact Thai Nguyen on (02) 9268 4449 or thai.nguyen@abs.gov.au.

Data Collection Methodology - Overseas Trip Summary

In May 2010 I embarked for Germany to attend the Third International Business Data Collection Methodology Workshop hosted by the Federal Statistical Office (Destatis) in Wiesbaden. I presented two papers at this workshop, which was a unique opportunity to share DCM's work on questionnaire design and pre-testing with like-minded data collection methodologists. Discussions focused on learnings and challenges around questionnaire development and testing, instrument design guidelines, web surveys, communication and contact strategies, burden, use of paradata, use of administrative data and the future of statistical data collection. Workshop participants were particularly impressed with the number of centralised, coherent guidelines and standards the ABS has for questionnaire design and testing. I also learnt that other agencies face similar challenges to us in terms of pre-testing of business data collection instruments.

Following the workshop in Germany, I attended the Q2010 Quality Conference in Helsinki, Finland. At this conference, I presented two papers: one of my own regarding development of web form design standards, and one on behalf of my colleague, Stephen Cohen, regarding improving screening procedures for rare populations in the ABS. This conference covered broader quality issues than the workshop and was a great opportunity to learn from the wider methodological community about the quality issues affecting other statistical organisations. A memorable message from the closing keynote speaker, Professor Denise Lievesley, of King's College London, was that

rather than focusing so much on reducing respondent burden, statistical agencies need to get better at explaining the reciprocal benefits and the necessity of statistics to the respondent.

Next I attended the 65th American Association for Public Opinion Research (AAPOR) Conference held in Chicago. With over 1,000 conference participants, and so many interesting and relevant parallel sessions I was spoilt for choice. A couple of sessions stood out, including one about mixed mode design and another on alternative data collection procedures (such as GPS and bio-specimens). The message from the mixed-mode design session was anything but mixed. In fact, researchers were presenting consistent findings that providing a choice of mode actually reduced response rates, which is contrary to the previous held thought that offering a choice of mode increased response rates. In terms of alternative data collection procedures, I heard a fascinating presentation about using Second Life (a virtual world) to research the polling of young adults.

During the trip, I also took the opportunity to meet individual methodologists or equivalent data collection methodology sections from various statistical organisations. The broad objectives of these visits was to learn more about the use of different modes of data collection, pre-testing methods, methodological training and instrument design guidelines and best practice. Meeting other experts in person and seeing demonstrations in their environment adds a world of value over e.g. reading their journal articles. I visited Statistics Netherlands, the Office for National Statistics, National Agricultural Statistical Service, Bureau of Labour Statistics and the US Census Bureau.

If you would like to know more about my travels or have a question about data collection activity at another agency please contact me, Kettie Hewett on (02) 6252 7295 or kettie.hewett@abs.gov.au.

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The Methodological Newsletter features articles and developments in relation to methodology 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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