The Australian Statistical System: Evolution and Challenges

1. Introduction

A national statistical service is an essential element of any democracy. For example, it must provide the population counts which are needed to establish and maintain a fair electoral system. But it should do more than this. A national statistical service should reflect back to a society a comprehensive, balanced and accurate picture of itself. This gives a society its best chance of understanding where a country has come from and of charting where it wishes to go.

> 'Official statistics are collected by governments to inform debate, decision making and research both within government and by the wider community. They provide an objective perspective of the changes taking place in national life and allow comparisons between periods of time and geographical areas.
>
> 'Open access to official statistics provides the citizen with more than a picture of society. It offers a window on the work and performance of government itself, showing the scale of government activity in every area of public policy and allowing the impact of public policies and actions to be assessed.'
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> *UK White Paper on Open Government*, 1993 quoted by Bill McLennan (Australian Statistician 1995–2000), in 'Australian official statistics – aims, issues and prospects', Address to the National Press Club, July 1995.

The Australian Bureau of Statistics, which now comprises around 3000 staff plus 550 interviewers in nine offices across Australia, produces information on everything from the population to the value of apple production. It is instrumental to the debates and decisions on everything from interest rate adjustments to the placement of aged care facilities. The Bureau gives Australia the chance to understand how it has been evolving as a nation as well as providing the objective statistics that enable the performance of governments to be assessed. The information it generates helps the various stakeholders in our society to evaluate how the issues of concern to them may progress in the future and to make decisions that will shape that future.

The ABS mission and roles

> 'We assist and encourage informed decision-making, research and discussion within government and the community, by leading a high quality, objective and responsive national statistical service.'
>
> *ABS Corporate Plan 2006*.

The legislated roles of the ABS are:

> (a) to constitute the central statistical authority for the Australian Government and, by arrangements with the Governments of the States, provide statistical services for those Governments;
> (b) to collect, compile, analyse and disseminate statistics and related information ;
> (c) to ensure co-ordination of the operations of official bodies in the collection, compilation and dissemination of statistics and related information, with particular

regard to:
(i) the avoidance of duplication in the collection by official bodies of information for statistical purposes;
(ii) the attainment of compatibility between, and the integration of, statistics compiled by official bodies; and
(iii) the maximum possible utilization, for statistical purposes, of information, and means of collection of information, available to official bodies;
(d) to formulate, and ensure compliance with, standards for the carrying out by official bodies of operations for statistical purposes;
(e) to provide advice and assistance to official bodies in relation to statistics; and
(f) to provide liaison between Australia, on the one hand, and other countries and international organizations, on the other hand, in relation to statistical matters.

The Australian Bureau of Statistics Act 1975 (Cwlth)

2. Brief History of Australia's statistical system and the ABS

2.1 Chronology

The table below provides a snapshot of how the ABS developed over its 100 year history. The Sections below amplify some themes in the development of official statistics in Australia.

Table 1 - Chronology of development of the ABS

pre 1822	Dispatch of statistical details such as population numbers from each colony to England
1822	The 'blue book system', which specified required statistical returns, initiated
1830s onwards	Frequent Conferences of Statisticians involving the Statists of each State aimed at improving consistency of statistical collections
1861	Population Censuses held simultaneously in New South Wales, Victoria, South Australia and Tasmania
1902 and 1903	Conferences of Statisticians discuss unifying the Australian Statistical system - progress in this arena is very slow
1905	*Census and Statistics Act 1905 (Cwlth)* given assent on 8 December. The population Census and some other statistical functions become Commonwealth functions
1906	First Commonwealth Statisticians (George Handley Knibbs) appointed to set up the Commonwealth Bureau of Census and Statistics (CBSC)
1906-1916	CBCS seeks further standardisation in statistical practice between the States but progress is slow. The range of statistics produced grows to include banking, insurance, cost of living and labour and wages statistics
1906, 1918, 1923	Further resolutions passed at both Conferences of Statisticians and Premiers' Conferences in favour of combining state and federal bureaus - but little actual progress
1924	The Tasmanian Statistical Bureau transferred to the Commonwealth
1922 - 1941	Increased focus on statistical issues including construction of the first balance of payments. Unification put on the back-burner
1956	After increasing frustrations with the cumbersome and duplicative systems in place, the Statistics (Arrangements with States) Act 1956 was given assent on 12 May. This enabled the Commonwealth to provide statistical Services by the Commonwealth Bureau to State Governments
1959	The Statistical Cadetship Scheme began - this has produced many leaders in the ABS, and more widely across the public service
1950 - 1970	Post WWII demand for statistics rose dramatically. Simultaneously, the first computer in the ABS was installed in 1961. Full assimilation of the State Statistical

	Offices was not really achieved until the late 1970s
1960s	Sample surveys were introduced as a routine method of data collection - this facilitated the growth of household surveys and social statistics.
1960s	A major push to integrate the economic statistics collections to provide high quality industry statistics and compile the national accounts using the UN System of National Accounts
1961	First computer installed in the ABS - its spare capacity is used to process administrative records of other departments
1968 - 1970	The Australian Statistician, Keith Archer, chairs the UNSC
1974	Crisp Committee which looked into the discrepancies in statistics from various Commonwealth Departments and the lack of statistics on some key areas of the economy recommends the establishment of the Australian Bureau of Statistics as the central statistical agency with full statutory powers, independent of any Department
1976	The Australian Bureau of Statistics Act 1976 (Cwlth) given assent. This act establishes the ABS as the central statistical authority for the Australian Government and, by arrangements, for the governments of the States. It also establishes (i) the position of Australian Statistician as a statutory appointment with the powers of a head of Department, (ii) the roles of the ABS, and (iii) the Australian Statistics Advisory Council. Its role is to advise the Minister and the Australian Statistician on the improvement, extension and coordination of statistical services provided for public purposes, and annual and longer term priorities and programs of work
1970s and 1980s	An increased focus on both improving responsiveness to clients and improving productivity through cost cutting, innovative methodologies and use of technology. User consultation and longer range planning introduced
1981	Amendments to the Census and Statistics Act passed to update terminology, ratify the power to determine the timing and content of collections, require the Statistician to publish and disseminate collected information and make possible the release of unidentifiable data in unit record files
1982	ABS is no longer a processing agent of administrative records for other Departments
mid 1980s	Corporate structure reviewed, leading to a matrix management arrangement between the State offices and the central office of the ABS
1987	Introduction of user funding - this was a clear driver to improve ABS' focus on its clients
1990s	Development of a more unified corporate entity including development of a strategic plan and mission statement. Increased focus on client needs through establishing marketing plans and an increased analytical capacity
late 1990s	Development of a program of work in Environmental statistics to supplement existing statistical collections. This area of work continues to grow in response to client needs
2000s	An increased focus on the ABS' role in coordinating the wider statistical system. This is ongoing
2006	Fifteenth Census of Population and Housing held on 8 August
2007	ABS is about 3000 staff plus 200 interviewers. It operates from 9 offices.

2.2 Unification of Australia's Statistical System

In 1822 the British Colonial Office set up a formal system of statistical collection, known as the 'Blue Books', in which statistical requirements were prescribed. These requirements covered such matters as population characteristics, production of agricultural commodities and consumption of imported goods. This led to the development, in the Australian colonies, of statistical officers and, in time, statistical offices. By the end of the 19th century, each self-governing colony had a functioning statistical office. Some produced statistics of a very high standard.

The Australian statistical landscape, prior to and immediately following Federation, was coordinated by frequent Conferences of Statisticians. These involved the Statists of each state, and where possible New Zealand, meeting to discuss statistical issues and agree on measures to aid the consistency of statistics across the states. As early as 1861 this cooperation led to population censuses being held simultaneously in New South Wales, Victoria, South Australia and Tasmania. The Conference of Statisticians' minutes show persistent attempts to reach broad agreement on the content of questions. By Federation, the Conference of Statisticians was chiefly concerned with ensuring uniformity of statistics from all states.

The *Census and Statistics Act 1905* (Cwlth) was given assent on 8 December 1905. Under the Act, the population census and some Commonwealth statistics became Commonwealth functions. Other general statistics were still to be collected by the states. A role remained for the Conference of Statisticians. The new Bureau was established under a system which retained the State Bureaus of Statistics and the Commonwealth and state Bureaus shared responsibility for the collection of statistics.

It soon became clear that the goal of uniform national statistics was not to be easily achieved. Conferences of state premiers in 1906 and 1918, attempting to end duplication, passed resolutions in favour of combining state and federal bureaus. The issue of unification continued to be discussed but, save the Tasmanian State Statistical bureau being transferred to the Commonwealth in 1924, there was little practical progress until after the second world war.

Various arrangements for wartime management of the economy had resulted in increasing responsibility for the Commonwealth government and a decreasing role for state governments. This was compounded by the move to the Commonwealth government of responsibility for income tax collection. In an environment of greatly reduced budgets and no involvement in economic management, state governments' requirements for statistics diminished, and consequently, so did the capacity of state statistical bureaus to produce them.

In the post-war period, as Commonwealth demands for statistics grew, the duplicative and cumbersome system started to crack at the seams. Conference of Statisticians' minutes of 1945, 1949, 1950 and 1953 all commented on increasing demands for statistics and lack of resources. The 1950 Conference also noted 'with approval', moves initiated to prevent various Commonwealth agencies from collecting their own statistics without reference (or deference) to the CBCS. Both issues highlighted the need to have clear authority over statistics residing in one body.

The *Statistics (Arrangements with States) Act 1956* (Cwlth) was given assent on 12 May 1956. The legislation allowed for the provision of statistical services by the Commonwealth Bureau to state governments, in the same way that such needs had been provided by state Bureaus in the past. Despite passing of this legislation it would be at least another decade until the process of unification was considered complete with clearly understood roles and responsibilities in place.

2.3 Broadening of the role and reach of official statistics

As noted, Australia has produced statistics since the beginning of European settlement. Initially, progress in the colonies was monitored in the 'mother country' through the yearly dispatch of statistical details covering mainly the population and availability of food. Over the years the statistical content became more pervasive, as populations grew, colonies multiplied and farming emerged, followed by commerce. The purpose of statistical collection in the early days of European settlement in Australia was to provide a service directly to government - initially British government, then the government of each colony and, after federation of Australia in 1901, also the Commonwealth government.

Within its first decade, the Commonwealth Bureau was compiling vitals statistics and producing banking, insurance, cost of living, and labour and wages statistics. However statistics of production, for example agricultural, pastoral, dairying, mining, manufacturing, forestry and fishing, continued to be collected by the states.

Between 1922 and 1941, the Commonwealth Bureau focused on economic and statistical issues such as construction of the Australian balance of payments. The pre-war work of developing economic statistics, such as putting values on theoretical concepts like national income and investment, placed the Bureau in a sound position to respond to post-war demands for economic statistics. As post-war reconstruction took off, governments were interested in measuring the success of their policies.

After the Second World War, there was a major lift in the pace of change, and the demand for information increased dramatically.

Following successful use of probability-based sample surveys in official statistics in the United States, the 1950s saw their emergence as an important innovation for the Bureau's official statistical work. This allowed statistically valid sample surveys to be undertaken by the Bureau at a lower cost than complete enumerations.

Released from the onerous necessity of conducting a census for every collection (apart from those based on administrative data), the Bureau could produce more statistics than it had before, so satisfying the increasing demands of Treasury and the Commonwealth government. The development of surveys also facilitated the growth of social statistics from the late 1960s and through the 1970s, based on the Bureau's household survey program.

More recently demand for environmental statistics has burgeoned and the Bureau has responded by developing a more comprehensive program of work in this area.

Over the 1980s, Australian government was looking closely at its role, with an emphasis on reducing costs, improving productivity, and rationalising its activities. ABS was not immune to the cost pressures, or the questioning of role and relationships to the private sector. With the increasing range of statistics produced by the ABS, came a necessity to forge a deeper relationship between different areas of the organisation, both to avoid duplication of effort and to ensure a unity of purpose across the organisation. Emphasis was placed on building a common understanding of role and corporate mentality at all levels within the Bureau. Part of this new corporate identity and reassessment of the purpose of the Bureau, was a clear acknowledgment that it was more than a factory for publications. Out of this process emerged the mission statement, and a focus on the outcomes of ABS, as distinct from the outputs. This was accompanied by development of corporate objectives and a commitment to statistical coordination and analysis.

The mission statement explicitly acknowledges that the national statistical service exists to meet the needs of a broad range of stakeholders, not only governments. This thinking has driven a range of changes to how the ABS views its clients and executes its role. For example, the greater availability of microdata, while used by Governments, has been driven by recognition that good community outcomes from good research is based ultimately on effective use of data in the research community. We have sought to make a very wide range of statistics available in a comprehensive and affordable form to all Australians, most

recently through the provision of all our statistics free on our website.

Important in the evolution of the ABS role was the growth in the Bureau's analytical capacity. The Bureau can add considerable value to its statistics by judicious use of analysis and analytical methods. The Bureau started to devote more publication space to the analysis of its statistics. Authority for this came from the Australian Bureau of Statistics Act, and the emphasis on 'informed decision-making' in the mission statement in 1987 highlighted the need for greater effort in this area.

2.4 Organisational development of the ABS

In the early 1970s the Government acted on concerns about recent discrepancies in statistics from various Commonwealth departments and the lack of statistical data on key areas of the economy. As a result, a Committee was set up that 'undertook wide ranging investigations of Australia's statistical system'. The Committee reported in March 1974. It recommended the establishment of the Australian Bureau of Statistics as the central statistical authority with full statutory powers, administratively independent of any department and thereby perceived to be policy neutral.

Under the Australian Bureau of Statistics Act, the Australian Bureau of Statistics was established with the role of central statistical authority for the Australian government and, by arrangements, for the governments of the states. Its legislated roles are described in Section 1 of this paper and are clearly much broader than collecting and disseminating official statistics.

Bill McLennan, (Australian Statistician 1995–2000) observed:

> 'For the first time Australia's statistical agency was organisationally independent of any department of state. Further, the Statistician was given the powers of a Departmental Permanent Head in respect of the Public Service Act. Perhaps, at this stage, it could be considered that the integrated statistical service had just reached adulthood.'
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> Bill McLennan, 'The development of official statistics in Australia, and some possible future challenges', in ABS, *Year Book Australia 2001*, No.83.

In the 1980s, across the public sector, emphasis started to be placed on improving responsiveness to clients, on cost-cutting and on recovering some costs of some government services from users. The Bureau embraced these potentially contradictory approaches to service provision. User consultation was formally introduced. At the same time the cost cutting mentality made surveys a more palatable way of providing current and new statistics. The Bureau began to strike a more deliberate balance between new areas of statistics and the mass of ongoing statistical series.

In the late 1970s Bureau senior management implemented a rolling forward work program. Designed to force the incorporation of long-range strategic planning and thinking into Bureau decision-making, it enabled the Bureau to foresee changes to its external environment. This has resulted in a greater ability to quickly respond to changing community statistical needs and changing government budgetary policy. The Bureau operates on a constantly reworked three year forward work plan.

The early to mid-1980s was an important period of change for the Bureau. The Bureau subjected itself to rigorous external examination, in the form of the Joint Management Review, which was convened to examine the effectiveness of the top management structure of central office and the state offices, with the aim of guiding the Bureau soundly through current and future challenges, properly using state and central office resources and adequately addressing client needs.

More recently, in 2005 the ABS opened itself to scrutiny in the form of a review of its strategic directions and engagement with clients. The review found very strong support for the independence and integrity of the ABS and a desire for it to succeed. The review noted however that, in the climate of accelerating interest in information and statistics across a range of players both in government and externally, the ABS needed to build strong

networks and deep engagement with clients to provide the leadership needed to achieve a strong and responsive national statistical system. Our major clients called for efforts from the ABS to enhance its leadership of Australia's statistical system. The challenges faced in these areas are described in Section 3 of this paper.

2.5 Technology drives change

The Bureau's first computer was installed in 1961. To properly exploit the possibilities this created, a large number of programmers were recruited from the United Kingdom. They were to form the basis of the Bureau's fledgling computing team, and many stayed on as members of the Bureau community.

The Bureau was among the first Commonwealth agencies to acquire a computer, and its capacity was initially greater than the Bureau's need. As part of the deal, initially to help justify the cost of the computer, the Bureau took on the processing of administrative records in many areas, such as health and trade. The side effect of this policy was that the Bureau was able to make use of the administrative by-product statistics thus produced. This responsibility was to remain with the Bureau for the next two decades, at which time, a combination of improved capability outside the ABS, and a greater focus on clarifying the role of the ABS led to the return of these functions to the relevant government agencies. The diminution of the ABS role in this area has led to some difficulties in accessing and managing some government based datasets for statistical uses, although access to key datasets such as taxation data, and vitals data have been retained and the use strengthened. The relationship with the Australian Taxation Office, in particular, is strong and a number of cooperative agreements enhance the usability of taxation data to derive statistics.

Throughout the 1990s there was an increasing emphasis on the use of administrative by-product data, particularly to meet the growing demand for data at the regional and small area level. This demand has accompanied an increased IT capability to analyse data and increased expectations that planning and service delivery at the local level should be based on data that exists in the administrative systems. Efforts to use administrative data for statistical purposes to meet these expectations and needs, continue to be made, requiring cooperation and effort across government to achieve progress.

Technology has been a driver of both efficiency and innovation in how the ABS works. In addition to facilitating the use of administrative data for statistical purposes, both in the ABS and more broadly throughout Australia's statistical system, technology has enabled an explosion in how much statistical material is disseminated. Over a period of 10 years the ABS has moved from the production of a large body of hard copy publications, to production of print on demand publications supplemented with a huge array of spreadsheets and related statistical output. The ABS website has over 320,000 pages of statistics.

Technology has also provided a way to solve the problem faced by statistical agencies of allowing access to rich microdata sets to allow the value of the information to be mined, whilst ensuring the confidentiality of information is maintained. The ABS now offers three levels of access to microdata through the construction of confidentialised unit record files: on CD-ROM (the least detailed files); through a remote access system where users send commands to analyse the data and receive output; and from data laboratories situated on ABS' premises (the most detailed files). Microdata is now seen as a standard output for ABS household surveys.

2.6 The Australian Statistical System today

The Australian Statistical system today is characterised by a plurality of data providers. The ABS is still the largest collector of official statistics with well established capabilities and credentials. However, there is no mandate that clients must source statistics from the ABS, nor do we have the resources to meet the needs of all users.

Some statistical work is done by State governments, some by other government agencies undertaking their own collections and some in the private sector. In some arenas such as health and agriculture, specific agencies such as the Australian Institute of Health and Welfare (AIHW) and the Australian Bureau of Agricultural Research Economics (ABARE) exist to undertake statistical collection and analysis work. The work of these specialist agencies complement the work of the broader ABS workprograms, and cooperative arrangements, including joint work and publications, are maintained in such areas.

Given the high level of demand for statistics, and the multiplicity of sources, a focus for the ABS in providing statistical leadership is to support the development of information plans for different topic areas. The aim with this work is to achieve an understanding of user priorities for data development and for improved access, and to establish an agreed set of strategies amongst the partner producing agencies to optimise data development.

The ABS has a legislated role to ensure co-ordination of the operations of official bodies in the collection, compilation and dissemination of statistics and related information to avoid duplication between collections, attain compatibility between collections and ensure the maximum utilisation of statistics. Some of the challenges we face in executing this role are detailed in the following sections of the paper.

3. Issues for the future

The Bureau has provided a very effective national statistical service throughout its rich history. Of course the way statistics are produced and disseminated has changed rapidly, particularly since the advent of electronic dissemination. One of the strengths of the ABS has been its ability to use new methodology and technology to improve its statistical service. This has led to improvements in the statistical product and in the effectiveness with which statistics are collected, processed and disseminated.

But some things have remained constant:

- the core purpose of the Bureau's work as the provider of official statistics for both governments and the community
- the support of a succession of governments for a strong, independent national statistical office, including the appointment of leaders of the Bureau who were able to put their own stamp on the job (as Commonwealth Statistician until 1975 and then as Australian Statistician)
- the importance accorded by the staff to the values of integrity, professionalism, equality of access, and protection of the confidentiality of information provided to the Bureau by individuals and organisations.

Our forefathers have created an excellent legacy and foundation for our future development. This is important: as with all effective organisations, we cannot rest on our achievements. The ABS does and will continue to learn from the experiences of the past in working out how best to position itself for the future.

The rest of this paper is devoted to some of the more important challenges for the immediate future. In looking at how the ABS may evolve, it is useful to consider the ABS both as a statistics provider and as a statistical leader.

3.1 The ABS as statistics provider

The core role for the ABS will continue to be to provide a statistical service that is timely, relevant, responsive and respected for its integrity and quality. The users of this service will continue to expect the most appropriate sets of statistics with a quality fit for their needs. But the mix of needs, in terms of statistical content, level of detail, timeliness and presentation media will evolve. A key challenge for the ABS will be to remain abreast of the changing needs of users and to respond to those needs, some quite short term, while continuing to maintain a long term view and capability.

Looking back on the past 10 years, and projecting this through to the future, there have been a number of major trends in demand for statistics in Australia. Many of these are driven by globalisation, and increasing movement of people and capital, as well as growth in trade across national boundaries. Pressure on government to be efficient and to ensure interventions are effective, has led to a steady growth in interest in and use of statistics. Areas that have expanded over recent years and are likely to continue to be important include service industry statistics and statistics on innovation. There has been a substantial growth in interest in environmental, energy and water statistics, and on the social side there has been growth in demand for information on population flows, fertility trends, the ageing population, migrant settlement, Indigenous statistics, children and youth and child care, drivers of labour force participation and changing family structures and dynamics.

In a number of areas both for businesses and for people, the interest has been on understanding longitudinal pathways into and out of particular economic and social circumstances, rather than simply the levels and movements in aggregates, and this has led to changed approaches to data collection, new ways of linking administrative data, and different ways of looking at fitness for purpose in our statistics.

There has also been an interest in understanding changing social, economic and environmental circumstances at the regional and even community level, and for particular population groups, in order to support effective and targeted interventions. This interest has coincided with growth in geospatial technology that supports the development of new sorts of statistics and new ways of looking at, and understanding information.

3.1.1 International Comparability

Another emerging trend is for users of statistics to place increasing importance on international comparisons. This is a consequence of a number of things: the increased connectedness of economies, the flow of capital, the mobility of people, and the desire by governments seeking to identify effective interventions, to learn from international experience. Comparisons of statistics for Australia with those of other countries, provide a context for Australian figures, a measure of the performance of Australia compared to other countries, and can be very illuminating in evaluating the effectiveness of current policy or for assessing alternative policy options.

International comparability of economic statistics is relatively well developed. Moves are now afoot to do more for the comparability of social statistics. This is likely to prove quite challenging as the relevant International agencies find more effective ways to work with each other and with National Statistical Offices. The approach taken for social statistics may be different to that for economic statistics – international surveys are likely to be a growing source of internationally comparable data for social statistics, potentially raising a challenge to ensure coherence between the national data and the international data. The national statistical organisations and the international agencies will need to continue to improve cooperation to meet this and related challenges. In addition, the level of cooperation between international bodies in the development of frameworks, standards and systems will need to continue to improve.

3.1.2 Changing data sources

As new pressures on statistics emerge, data sources and collection methods are changing. The demand for regional economic information as well as small area and small population group data brings a particular interest in administrative data as statistical sources. To improve the richness of this data, strategies for linking datasets together in a way that is acceptable to the community, are being developed and applied both within the ABS, and by other producers of statistical information more broadly. This includes both the linkage of administrative data to other administrative data, and the linkage of collected data to administrative data. In both cases, the use of administrative data often brings with it the ability to develop a longitudinal view as well as a cross sectional view. As well as looking at the use of administrative data, the ABS is looking at ways that are acceptable to the Australian public, to more effectively tap the richness of its five yearly census through the development of a longitudinal view of the census and through links to agreed administrative data. This work is proceeding with close attention to public consultation.

An increasingly important role of the ABS is to support other agencies in the use of their own administrative data, and in some cases survey data, for statistical purposes and in making resulting statistical sources and outputs more broadly accessible. The ABS recognises it is working within, and providing leadership to, an increasingly broad system of statistics producers.

As well as helping others achieve better use of their own data, an area of strong current and continuing focus for the ABS is in finding ways to make its own data sources more accessible to researchers while safeguarding respondent confidentiality. This again is a response to the increased demand for information and the interest in research building on rich data sources. The ABS response of encouraging effective value adding to its data sources by others is another facet of its growing role in a broader statistical community.

3.1.3 Changing methods and approaches

There has been increasing demand to make statistics work harder, for example by telling us not only where we have been and where we are now, as a group or an economy, but also to give insights into the drivers that took us there, and the pathways followed.

This has led the ABS to an increasing involvement in longitudinal surveys on both the household and business side. These surveys are resource intensive, and require considerable analytic input to take account of additional complexities, in particular sample attrition. Clever use of models to make the most of all available data in a particular area are increasingly explored and being used, both within the ABS and more broadly within the Australian statistical community, recent ABS examples being estimates of human capital, and wealth distribution statistics. Analytic methods can be used to produce statistics that are relevant and responsive to user needs. The challenge is to be able to validate the underlying models, and to describe them and their assumptions clearly so that users understand what is behind the statistics, and the implications of associated error sources for their uses. It is also important to be able to describe data quality in a meaningful way. Given the continuing demand for usable information across a spectrum of fields, it seems likely that analytical methods will become ever more prominent in the production of national statistics.

While the use of administrative data presents one aspect of the change in data collection approaches, another relates to the technology used in the collections administered by the ABS. Increasingly the public, both businesses and households, expect to be able to deal with the ABS electronically. They also expect any information collection processes to be efficient, and, in general, well coordinated across government while recognising a conflict with regard to privacy in relation to the latter point.

Users expect data collection to be speedy, processing to be immediate and results to be quickly available. They assume technological advances will make this possible.

Some of the more prominent developments in this direction have been Computer Assisted

Telephone Interviewing (CATI) for the monthly retail survey, Computer Assisted Personal Interviewing (CAPI) for the monthly labour force survey and a range of social surveys, Intelligent Character Recognition (ICR) for the processing of the population census, and more recently use of the e-form for the 2006 population census, with a take up rate of 9% of the population.

For a number of reasons the ABS has been slow to make significant use of electronic data collection over the internet in its collections other than the Census, and is watching progress in overseas national statistical agencies with interest. A clear direction across Australian governments for business collections will be to reduce government load on business by rationalising data collection as far as possible and providing robust electronic means of reporting, ideally through automatic extraction from their own accounting systems. Languages such as XML make this increasingly feasible. A cross government project to implement a coordinated approach along these lines, including sharing of the reported data where applicable, is being considered.

The very successful implementation of the e-form for the 2006 Population and Housing Census has paved the way for a much stronger push for this technology in 2011, both to provide a convenient option for the public, and also to reduce ABS dependency on a very large temporary field force over the census period. The success of the internet version of the Census is expected to increase the pressure for ABS to provide internet based options for completion of household as well as business surveys. Whether or not it achieves this, the ABS is aware of the need to find new ways of contacting and gaining the cooperation of households, as higher rates of labour force participation, and smaller household sizes, make contacting selected households difficult. To date the ABS experience is that if contact can be made, people are generally very willing to cooperate in our surveys.

3.1.4 Dissemination: changing content and access methods

With regard to statistical outputs, it is hard to believe that it is only a decade since the ABS first established its web site. Now, apart from information provided through the media, most statistical users obtain ABS data by accessing our web site. This trend will continue with the rapid increase in the demand for data. The Internet has provided the means by which the ABS might be able to satisfy this demand without undue impact on its resources. It enables the provision of 'self-help' facilities which allow users to generate more of their own statistical outputs without relying on the services of ABS staff.

One type of information disseminated by the ABS is confidentialised unit record data. This enables researchers to add to the value extracted from collected data for better community outcomes. An important 'self help' initiative in this area, is the ABS's Remote Access Data Laboratory (RADL). This facility enables registered users to submit statistical processing requests direct to the ABS's microdata bases. It also enforces a range of confidentiality checks, supported by manual checks and audits, to complement the undertaking given by the user at registration. The use of these remote access facilities, and the types of services that are available, will continue to grow and enable much better use of the detail in our data for our more sophisticated analysts while at the same time placing a strong focus on maintaining the trust and confidence of respondents.

More generally, our sophisticated users are looking for improved access to microdata for research and policy analysis purposes. While fully understanding this need and trying to support it, the ABS will continue to ensure that it maintains the trust and confidence of respondents. Without that trust, cooperation in our surveys would be much lower and the quality of the resulting statistics would suffer. This involves finding a continuing balance. More sophisticated ways of supporting the research community can be expected.

In another area of dissemination, the ABS is looking at the best ways to make accessible area based data. Given the interest in information for regions and communities, the ABS will make use of geocoding for industry statistics and has introduced the 'mesh block' as the finest level geographical unit for outputs from the 2006 population census. A mesh block coder is also being developed for use by other government agencies with their

administrative datasets to enable them to provide information based on flexible boundaries. Opportunities for effective presentation of ABS and other data through a geographic view are becoming increasingly available, and the ABS is moving to build effective area based dissemination strategies on the back of its more specific census dissemination infrastructure.

The Census dissemination approach for 2006 aims to incorporate a range of these advances: it will be almost entirely web based and allow users to develop customised output tables on-line which will meet confidentiality requirements. Census data will be able to be easily integrated with geospatial products and the range of microdata available from the Census will be expanded.

Given it is increasingly just one source amongst many sources, of statistical information in Australia, the ABS is working with other producers to develop better access to statistical information in Australia regardless of source. One of the most important initiatives is the ABS National Data Network. The Network will create a distributed library of data holdings relevant to policy analysis and research. These data holdings will remain held and controlled by their custodian organisations, and the National Data Network will provide a complete catalogue of available data sources to allow users to easily search for and access data holdings which have been published. In effect, it will provide a portal to official statistics. The National Data Network will also provide access to a range of services to support the creation, management, integration and analysis of data. The Network will also be a means for producers of statistics to share infrastructure such as coders and classifications, as well as access tools.

3.2 The ABS as statistical leader

The ABS has a responsibility for the coordination of official statistics. It is fair to say that, over its history since the Australian Bureau of Statistics Act was passed, the Bureau has struggled to decide how to best fulfil this responsibility.

As the demand for and interest in statistics grows, and as a number of government and non government agencies increase their involvement in statistical production, the coordination role of the ABS to ensure maximum use of official data for statistical purposes becomes more important. The need for the ABS to move from a relatively passive role to take a leadership role is becoming clear and is likely to become more so in the future. Australia is evolving towards a National Statistical Service in which the ABS is the leading provider, but not the sole provider.

There is strong support for the ABS taking a leadership role in the development of national statistics, as government looks to work in a joined up way. The value of statistical infrastructure is recognised, and the benefits of making classifications, definitions, conceptual frameworks, question modules, methods and tools to support these and other statistical activities more broadly available to other producers is well recognised. The ABS is working with other producers to develop the pool of available infrastructure. As well as the development of frameworks and standards, an important initiative in this area is the National Data Network referred to above.

In the past 5 years the ABS has also reorganised its structure to create units, separate from areas managing the collection and dissemination of data, which focus on fields of statistics, whatever the source of the statistic. These units look out across policy developments within those fields and assess the information needs and data availability. For example, a statistical centre for agriculture would be familiar with agriculture policy and related issues in environment statistics, as well as statistics produced by the ABS, by the relevant state and commonwealth departments, by producer boards and by research institutes involved in agriculture. The centre works with the other statistics producers to identify priority development needs, and to negotiate roles of the various players in meeting these needs. In a number of fields this planning is being formalised in an Information Development Plan, signed off by the major players, with implementation overseen by a joint steering committee.

4. Concluding remarks

The ABS has a fine history and has served Australia well. The Bureau's history has provided a fine shoulder on which to stand as we address the challenges of the future. The ABS must evolve to meet the changing needs of society if it is to remain relevant and represent good value for the money appropriated to it. However the vital role that the ABS plays in an Australian democracy, to hold a trusted mirror up to the society, remains. This trust has proved important to governments as well as to the community more broadly. Because of it, discussions can focus on what the statistics mean for policy rather than on the integrity of the statistics themselves.

Trust of respondents in providing the ABS with their data, and of users in the integrity of our outputs, remain core guiding principles as we move into the future.